

COUNCIL AGENDA ADDENDUM

ORDINARY COUNCIL MEETING

25 November 2020

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EGROW 05	Planning proposal request to rezone land and amend development standards in the Liverpool Local Environmental Plan for land at Moore Point Bridges Road, Moorebank
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Strategic Direction	Generating Opportunity Meet the challenges of Liverpool's growing population
File Ref	297711.2020
Report By	David Smith - Acting Director City Economy and Growth
Approved By	David Smith - Acting Director City Economy and Growth

Property	3 Bridges Road, Moorebank (Lot 200, DP 1009044); 5 Bridges Road (Lot 100, DP 775780); 6 Bridges Road (Lot 10, DP 875626); 8 Bridges Road (Lot 111, DP 1133744); 11 Bridges Road (Lot 201, DP 1009044); 361 Newbridge Road (Lot 101, DP 827141)
Owner	Coronation Property Co Pty Ltd and Leamac Property Group
Applicant	Mecone

EXECUTIVE SUMMARY

Council received a request to prepare a planning proposal on behalf of Coronation Property and Leamac Property Group (**Attachment 1**) for 32 hectares of land in the precinct known as Georges River North, or Moore Point in Moorebank. The planning proposal request seeks to rezone the site, amend development standards, introduce additional permitted uses, and introduce site-specific development controls to enable a mixed-use development on the site, which would allow for approximately 12,200 dwellings and 249,364m² of commercial floor space over a long-term period until 2051.

The planning proposal request specifically seeks the following amendments to the Liverpool Local Environmental Plan (LEP) 2008:

- Rezone the subject land from IN2 Light Industrial to B4 Mixed Use, B6 Enterprise Corridor and RE1 Public Recreation;
- Increase the maximum floor space ratio to 4.2:1 and 3.5:1;

- Increase the maximum height of buildings from 18m and 15m to RL 136 and RL 108; and
- Introduce Division 1A into the LEP to provide site-specific development controls for the site including design excellence, sun access and requirements for the preparation of a development control plan. This Division also seeks an amendment to the Key Sites Map such that Clause 7.22(4) of the LEP applies to the site, which would allow residential development within 50m of a classified road within the B6 zone, as long as it is not within 8m of the classified road.

The planning proposal request also includes an Urban Design Study, which includes a structure plan for the entire ~38.5-hectare Moore Point precinct, as well as studies for the entire precinct.

The Council officer's planning assessment report to the Local Planning Panel is included in **Attachment 2**. The report concludes that the proposal demonstrates strategic and site-specific merit. It is noted that the finalisation of flooding and traffic studies is required and will be completed post a Gateway determination. The report recommends that a planning proposal be submitted to the Department of Planning, Industry and Environment (DPIE) for a Gateway determination.

Advice was sought from the *Liverpool Local Planning Panel* (LPP) at its meeting on 26 October 2020 in accordance with the *Local Planning Panel Direction – Planning Proposals* dated 23 February 2018. The panel concluded that the proposal had strategic merit. A majority of the panel (3-1) agreed that the proposal had site-specific merit, with a dissenting opinion stating that there was not enough information to determine whether there was site-specific merit at this point in time. The panel advice is that it is appropriate for the planning proposal to proceed to a Gateway determination, with all issues raised in the majority and dissenting opinion to be appropriately addressed at the post Gateway stage. The advice of the LPP is provided at **Attachment 3**.

It is recommended that Council note the advice of the LPP, support in principle the planning proposal request with the recommended amendments and submit the proposal to DPIE seeking a Gateway determination.

RECOMMENDATION

That Council:

1. Notes the advice of the Liverpool Local Planning Panel;
2. Endorses in principle the planning proposal request with the following amendments:
 - a) an additional 1.5 hectares of open space marked as 'Open Space Investigation' adjacent to Haigh Park;
 - b) a minimum 40m RE1 – Public Recreation zone is provided along Lake Moore;

3. Endorses the Urban Design Study and Structure Plan for the George's River North precinct, with the above amendments, to guide the assessment of future planning proposals in this area;
4. Notes that further detailed studies, including site contamination, acoustic, flood, flood evacuation and transport impact assessment will be completed post Gateway determination;
5. Notes the offer from the proponent to enter into a Voluntary Planning Agreement and/or the preparation of a Local Infrastructure Contributions Plan to ensure there is appropriate funding for local infrastructure to support development in the precinct;
6. Delegates to the A/CEO authority to negotiate a planning agreement with the proponent, agree the terms of offer with the proponent and report back to Council the details of any planning agreement, consistent with Council's Planning Agreements Policy;
7. Delegates to the A/CEO authority to prepare the formal planning proposal including any typographical or other editing amendments if required;
8. Forwards a planning proposal to the Department of Planning, Industry and Environment, pursuant to Section 3.34 of the *Environmental Planning and Assessment Act 1979*, seeking a Gateway determination with a recommendation that completion of relevant studies be included as a condition of any Gateway determination and that the Department play an active role in the planning process given the strategic significance of this proposal to Liverpool and Greater Sydney; and
9. Receives a further report on the outcomes of public exhibition and community consultation.

REPORT

Background

Council received this planning proposal request on 15 April 2020. The planning proposal request replaced the previous planning proposal request lodged in 2015, and all other previous site-specific planning proposal requests in this area, lodged by the proponents, were withdrawn.

Council had previously resolved to defer consideration of these planning proposal requests while the draft Georges River Precinct Plan was developed in 2016, and again until the release of the Liverpool Collaboration Area Place Strategy.

Following the adoption of the Liverpool Collaboration Area Place Strategy by the Greater Sydney Commission in September 2018, Council indicated to landowners in Moore Point that it was prepared to consider a rezoning of land in the precinct that would meet the intention expressed in the Liverpool Collaboration Area Place Strategy, namely 'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core of the Liverpool CBD'.

Council's Local Strategic Planning Statement (LSPS) also provides strategic support for the rezoning of the precinct. The LSPS, adopted by Council earlier this year, states that Council will 'investigate amendments to the LEP to rezone the river precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages' over the short-to-medium term.

The site and locality

The subject site is located in the Georges River North (Moore Point) precinct, defined as being all lots bounded by Newbridge Road to the south, the Georges River to the east and north, and Haigh Park, Lake Moore and McMillan Park to the north and west. The primary access to the site is via Bridges Road and Newbridge Road.



Figure 1: Aerial view of the Georges River North precinct

Source: Nearmap 03 August 2020

The planning proposal request submitted to Council seeks changes to those lots owned by a Joint Landowner Group (JLG) comprising Leamac Property Group and Coronation Property. A separate planning proposal request has been lodged within the precinct at 335-349 Newbridge Road, which is currently under assessment.

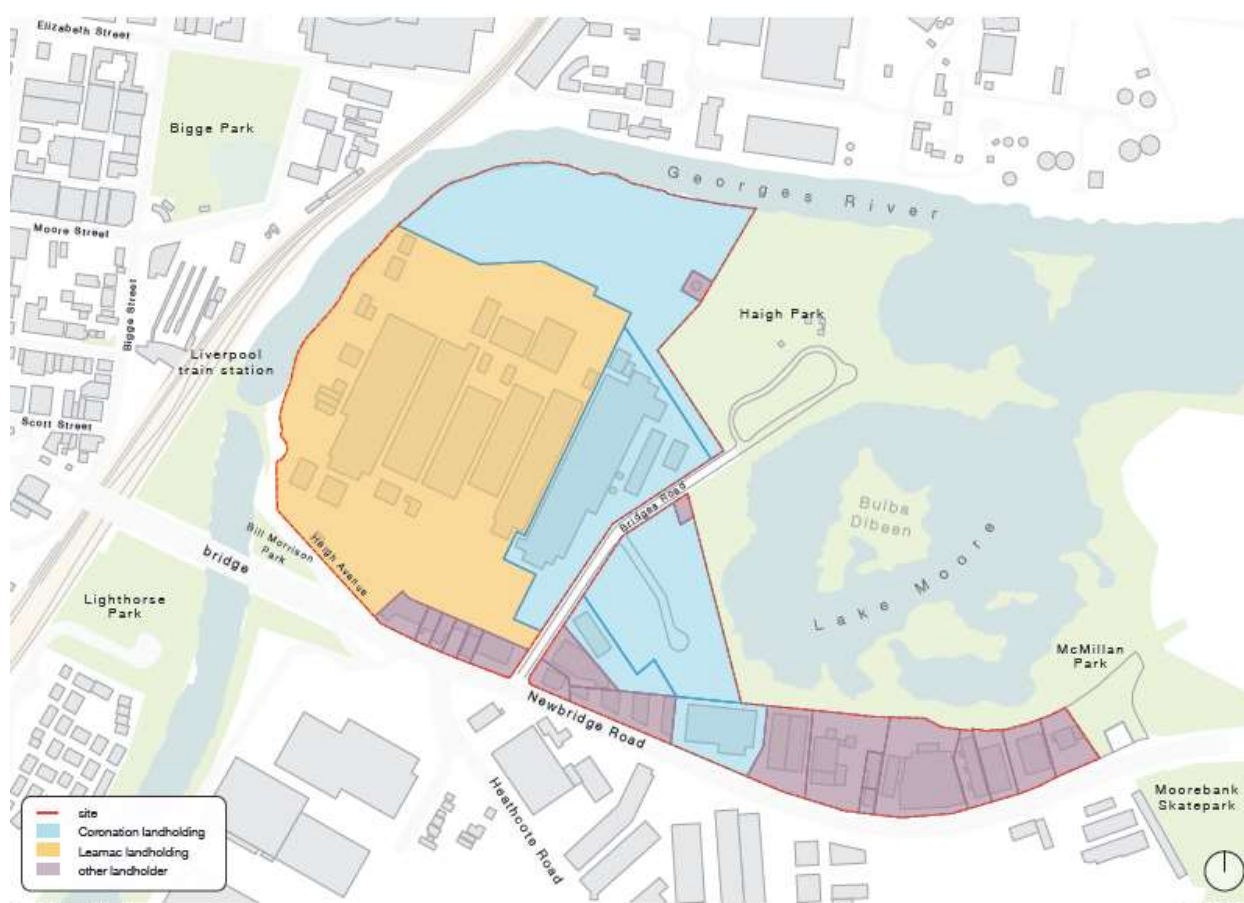


Figure 2: Ownership of land within the Georges River North precinct

Blue/yellow = Joint Landowner Group

Purple = other landowners

Source: Mecone 2020

The planning proposal request applies to six lots of varying sizes represented in yellow and blue in **Figure 2**. All lots in the precinct are currently zoned IN2 Light Industrial.

The site is currently used for a range of light industrial purposes, the largest of which is Pysmian, a cable and electrical wire manufacturer.

The Proposal

The planning proposal request seeks to amend the Liverpool Local Environmental Plan to facilitate high-density mixed-use development. It is envisaged that the development could support approximately 12,220 dwellings and provide 249,364m² of commercial floor space over a long period to 2051.

An associated Urban Design Study envisages that the entire precinct could ultimately accommodate approximately 14,054 dwellings and 344,499m² of commercial floor space, with a residential population of approximately 30,760 persons. The gross residential density of the precinct would be approximately 365 dwellings per hectare, with a residential population

density of 800 people per hectare, making it one of the densest urban regeneration projects in Australia.

The proposal would be achieved through the following amendments to the LEP:

- Rezone the site from IN2 Light Industrial to B4 Mixed Use, B6 Enterprise Corridor and RE1 Public Recreation;
- Increase the maximum floor space ratio (FSR) development standard to 4.2:1 and 3.5:1;
- Increase the maximum height of buildings (HOB) development standard from 18m and 15m to RL 136 and RL 108; and
- Introduce Division 1A to the LEP to provide site-specific development controls for the site including design excellence, sun access and requirements for preparation of a development control plan. It also seeks to amend the Key Sites Map such that Clause 7.22(4) applies to the site, which would allow residential development within 50m of a classified road within the B6 zone, as long as the development was more than 8m from the classified road.

The intended Land Zoning Map is pictured in **Figure 4**, FSR in **Figure 5**, and HOB in **Figure 6**.

An illustrative masterplan for the entire precinct is shown in **Figure 7**.



Figure 4: Intended zoning map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020

Initially, the planning proposal request did not include any RE1 zoned land, however the proposal was revised to include RE1 land along the Georges River. Council officers

recommend an additional 1.5 hectares be provided as an 'open space investigation area' adjacent to Haigh Park, as well as additional RE1 zoned land of 40m from the top of bank around Lake Moore, in order to better provide for active recreation onsite, and for there to be an appropriate buffer between Lake Moore and development. Further information on the request for additional open space is provided in the planning assessment (**Attachment 2**).

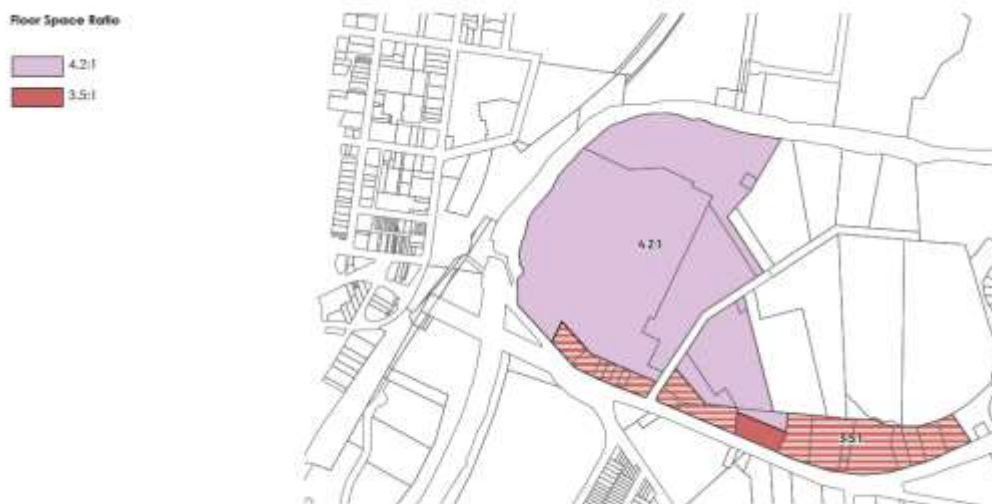


Figure 5: Intended FSR map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020

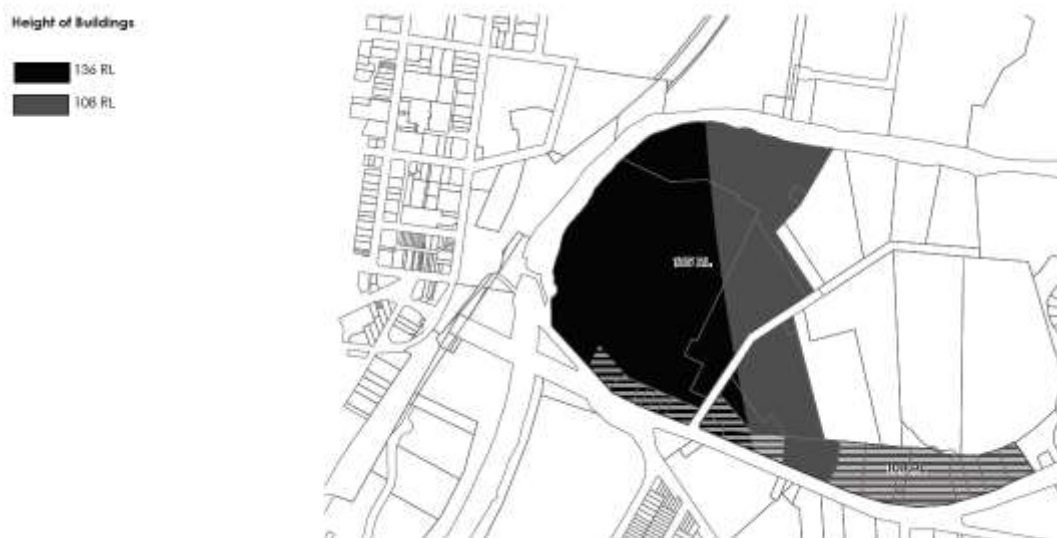
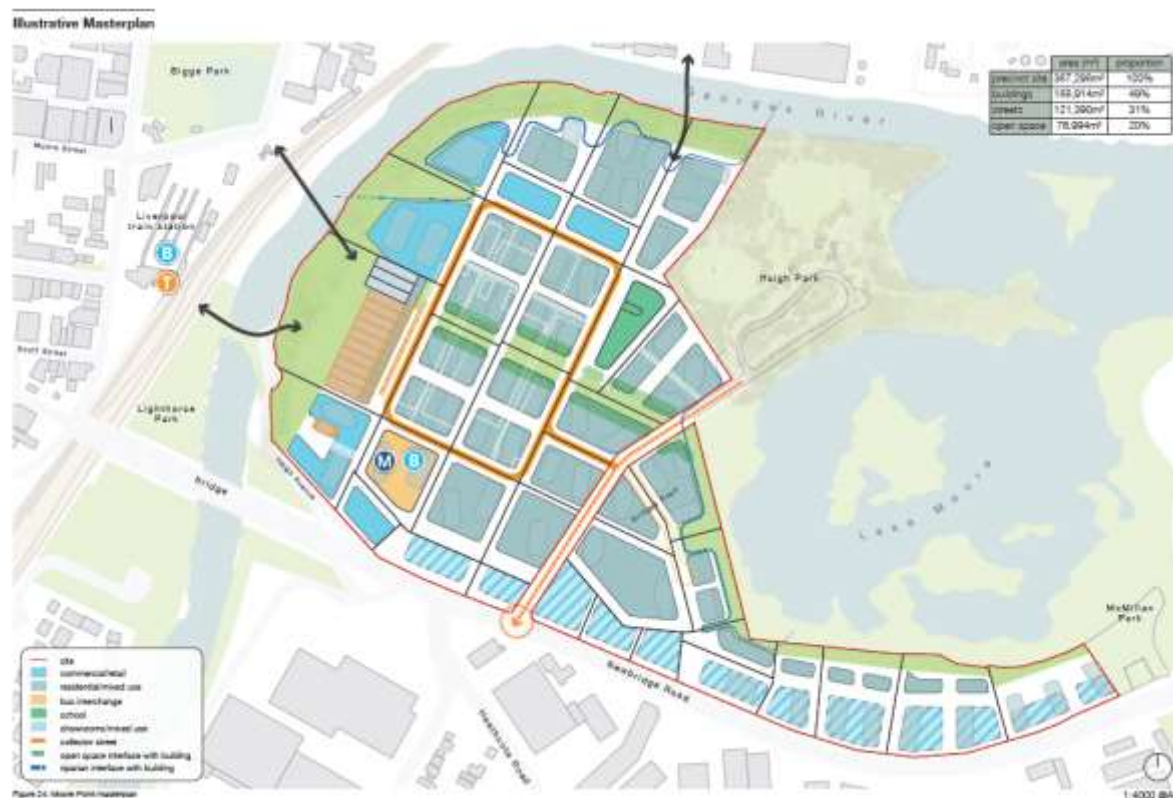


Figure 6: Intended HOB map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020



Council officers recommend that Council endorse the illustrative masterplan (**Figure 7**) with the recommended changes to guide future assessment of planning proposals in the Moore Point precinct. Changes recommended include marking an additional 1.5 hectares as 'open space investigation' south-west of Haigh Park, and providing a minimum 40m open space buffer from the top of bank of Lake Moore.

It is intended that a suitable staging and sequencing plan will be further developed to ensure appropriate infrastructure is in place to support development. An indicative staging plan for the subject land has been provided as part of the Urban Design Study (**Figure 8**). Council officers consider the planning proposal request should include clear staging which limits the ability to obtain development consent for later stages to ensure development is appropriately sequenced and supported by infrastructure. How staging and sequencing will be implemented through planning controls is expected to be resolved post-Gateway in close consultation with DPIE, GSC, TfNSW and other state agencies.

An indicative render of the development is provided at **Figure 9**.



Figure 8: Indicative staging plan
Source: SJB



Figure 9: Indicative render of precinct viewed from the east.
Source: SJB

Planning Assessment

The planning assessment report is contained in **Attachment 2**. It provides an assessment of the merits of the proposal against the District and Region Plans, Council's Local Strategic Planning Statement and the Department's 'A Guide to Preparing Planning Proposals'. The report concludes that the planning proposal request has strategic and site-specific merit and should proceed to a Gateway determination. The report notes that resolution of outstanding traffic and flooding considerations is required, as well as changes to the planning proposal request to increase the amount of public open space.

Local Planning Panel Advice

The planning proposal request was considered by the Local Planning Panel at its 26 October 2020 meeting, and this advice is included at **Attachment 3**.

The Panel agreed unanimously with the Council officers conclusion that the planning proposal request has strategic merit, having regard to the broader policy context, including the Greater Sydney Regional Plan – A Metropolis of Three Cities, the Western City District Plan, Local Strategic Planning Statement and the Liverpool Collaboration Area Place Strategy.

A majority of the Panel (3-1) agreed that the planning proposal request has site-specific merit, noting that the final form and ultimate capacity of the site will be determined through the completion of investigations that will determine the carrying capacity and configuration of the Precinct. This includes:

- Detailed analysis of flooding conditions and required mitigation and management measures;
- Outcomes of the strategic transport modelling and transport impact assessment;
- Outcomes of the open space needs analysis for the Collaboration Area (with in principle support given for a larger quantum of open space, dependent on the outcome of the analysis); and
- Advice on the need for schools within the precinct.

The Panel noted Council's planning assessment report detailing issues that required further resolution post-Gateway, including:

- Contamination;
- The treatment of offensive odour from the Liverpool water recycling plant;
- The extent of the riparian zone buffer and its treatment;
- Urban design;
- Connectivity;
- Affordable housing – the Panel notes and supports the Council officers recommended 5-10% affordable housing target;

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- The quantum and extent of physical and social infrastructure to support a major population and employment precinct;
- A suitable staging and sequencing plan to ensure appropriate infrastructure is in place to meet the demands of the precinct.

There was a dissenting view that the proposal is not supported by appropriate studies, in sufficient detail, to establish whether there is site-specific merit. This includes the following:

- Flooding – the minority opinion believes there is insufficient information to assess environmental, socio-economic and climate change-related impacts from the proposed flood mitigation strategy;
- Connectivity – it is unclear whether the three bridge connections to the Liverpool CBD, Innovation Precinct and Warwick Farm can be adequately captured through a VPA or contributions plan to a standard that is equitable and accessible to ratepayers, and that climate change must be addressed in the design. It is argued that this must be resolved at the planning proposal stage rather than at concept DA or DA stage;
- Aboriginal culture – the minority opinion questions whether consultation has been done with the Gandangara Local Aboriginal Land Council (LALC). It is stated that engagement with the LALC and local Aboriginal community is pertinent at this stage of the planning proposal;
- Aquatic Ecology – there is no information on the aquatic ecology values of the Georges River in Moore Point or upstream in the compensatory flood storage locations. Given the large potential disturbance footprint and infrastructure required for riparian improvements, it is considered important to establish an understanding of aquatic environment. The Coastal Management Plan objective to “protect and improve the extent and condition of estuarine and riparian vegetation” does not appear to have been considered.

Key issuesTraffic

Council’s traffic planning department have provided in principle support to the planning proposal proceeding to a Gateway determination. They note the strategic transport modelling work underway by Transport for NSW which includes:

- Stage 1 - A strategic analysis of the transport infrastructure required to support the planning proposal;
- Stage 2 - Detailed Transport and Traffic Assessment in the context of a Transport Management Accessibility Plan (TMAP) to identify the infrastructure and service requirements and determine development contributions / SIC.

Flooding

Council’s Flood Plain and Water Management department required the following in order to determine the suitability of the proposal:

- A detailed hydraulic analysis to assess the effectiveness of the proposed flood mitigation option;
- A flood impact assessment for all design flood events including the 1% AEP and PMF. Appropriate flood mitigation measures shall be incorporated including provision of compensatory flood storage and to demonstrate that there will be no adverse impacts on flood levels and flow velocity in the river and on the adjoining properties;
- Further detail on how the proposed flood mitigation option in Helles Park will ensure enhanced and effective recreation uses, in addition to effective flood mitigation; and
- A revised flood evacuation strategy with plans including levels to demonstrate that a continuous rising grade is achieved to a level above the PMF.

Council officers have agreed that this information is important and necessary, and that it must be provided at the post-Gateway stage. Council will also need to resolve whether off-site compensatory storage is an acceptable solution, as it is currently not Council policy to support off-site solutions. However, as part of the solution, the proponent has offered to further embellish land at Helles Park to provide superior active recreation facilities. Once the above studies have been completed, Council staff will be able to make a recommendation to Council regarding whether off-site flood mitigation can be supported as a solution. If it is not, the planning proposal will need to be amended to include on-site flood mitigation.

Environmental Health

Council's Environment & Health department have advised that the following information is required before they can support the planning proposal being gazetted:

- a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines – the currently provided report does not fulfil all requirements of a Stage 1 Preliminary Site Investigation as outlined within the contaminated land planning guidelines referenced in Ministerial direction (No 2.6) issued 17th April 2020 and guidelines made and approved by the NSW EPA under the *Contaminated Land Management Act 1997*.
- an acoustic report prepared by a suitably qualified acoustic consultant for the noise sensitive development

Council officers have agreed that this information is important and necessary, and that it must be provided at the post-Gateway stage.

Part of the site is also affected by the Sydney Water odour buffer, and Council will engage with Sydney Water post-Gateway to understand whether they can support increased residential development within the 2OU buffer. The Gateway determination will include Sydney Water as a state agency that must be consulted.

Open Space

Council's Community Planning department raised concern with the provision of open space in the proposal. Council typically requires 2.83 hectares of open space per 1000 persons. With a precinct-wide population expected to be 30,760 persons, this would require 87 hectares for open space, including eight sports fields, which is larger than the precinct itself.

It is clearly understood that such metrics are not suitable for urban renewal areas, however percentage-based open space metrics (for example 20% of site area), which have been applied to the proposal and reflected in the proponent's Community Benefits Analysis (**Attachment 10**), are also problematic as they do not account for density or open space capacity limits. In the case of this planning proposal, the density is significantly higher than any other similarly scaled urban renewal precincts in Sydney. For example, Green Square has a population density of 211 persons per hectare, while Georges River North is predicted to have an ultimate density of 799 persons per hectare.

Active recreation demand triggered by the proposed development should primarily be addressed within the development area, with Haigh Park a complementary open space area. It is recommended that a metric of 1 hectare of open space be provided per 1000 persons, or 10 square metres per person, based on international best practice examples. Currently the proposal provides for around 0.25 hectares per person, or 2.5 sq m per person.

Council staff recommend that an additional 1.5 hectares of open space be provided as an 'Open Space Investigation' in line with Community Planning's feedback and the Community Benefit Analysis recommendation that there should be 1.5 hectares for a district-level park on-site inclusive of sporting fields. The Community Benefits Analysis suggests Haigh Park could support an additional two sporting fields, which is supported by Community Planning.

It should be noted that following the preparation of the planning assessment report by staff for the Local Planning Panel, including the recommendation on open space, the proponent submitted updated advice (**Attachment 11**) from the Community Benefits Analysis consultant that contended that sports recreation does not need to be provided on-site, and that Haigh Park could support one local sports space, with two additional sports fields to be provided offsite. It is Community Planning's and the Council officer's view that the provision of only one informal sports space within Moore Point is not adequate for a projected population of over 30,000 persons. A population of 30,000 residents warrants 8 soccer fields and 3 cricket pitches. The integration of additional sports fields with Haigh park is acceptable for capacity building, integration and co-location of recreation facilities.

Council staff support the inclusion of 1.5 hectares of additional open space adjacent to Haigh Park as 'open space investigation' while an open space needs assessment is conducted for the entire Liverpool Collaboration Area. This will give Council a better understanding of the quantum of open space required across the Collaboration Area, and its necessary configuration and locations. It is also noted that the proposal's dwelling yield may need to be reduced following the finalisation of studies, including transport and flooding. This may change the amount of open space required to be provided.

Council's City Design and Public Domain department identified a number of urban design issues concerning built form and public domain that will need to be resolved through the Place Making and Statutory Planning Working Groups, post Gateway. While the scale of development is supported on the east of the site closer to Liverpool Station, further consideration should be given to the scale of development, including bulk and height of development closer to Haigh Park and around Lake Moore. The proponents have suggested that this can be addressed through the development of DCP controls, though the City Design team have concerns that this could lead to challenges during the development assessment stage. This issue will be closely considered in consultation with the Department of Planning, Industry and Environment through the next stages of the planning process.

There is also concern over the 'urbanised' treatment around Lake Moore, which is listed as a Coastal Wetland, and where Council's City Design and Public Domain unit indicate that the environmental qualities of the lake should have primacy. This issue will also be considered carefully by the Environment, Energy and Science Group (EES) within DPIE as part of state agency consultation.

Council staff recommend the planning proposal request be amended to provide a minimum 40m buffer of RE1 zoned open space surrounding Lake Moore in order to provide a suitable urban design outcome. While recognising that other urban design issues need to be addressed, as noted in the LPP report, it is considered that the refinement of these detailed design elements can be undertaken during the post-Gateway stage through inclusion into a site-specific DCP.

CONSULTATION

Section 10 of the Liverpool Community Participation Plan (CPP) 2019 states the following:

For large scale planning proposals, Council will also exhibit the planning proposal for 28 days prior to a Council decision on whether to endorse the planning proposal for a Gateway determination. Feedback from the community will be incorporated into a report to Council.

As required by Council's Community Participation Plan, the proposal was publicly exhibited for 28 days prior to being reported to Council.

The proposal received three community responses during this period, and one agency response. Of the three community responses, one was in support, one was in opposition, and one was neutral.

The response in support of the proposal came from the Liverpool Innovation Precinct, which comprises nine of Liverpool's largest organisations, including South Western Sydney Local Health District; Ingham Institute for Applied Medical Research; Western Sydney University; University of NSW; South Western Sydney Primary Health Network; TAFE NSW; Department

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of Education and the University of Wollongong; and Liverpool City Council. It is independently chaired by the Western Sydney Business Chamber.

The submission stated that *“Moore Point represents the logical extension of the Liverpool CBD and will help to reorientate the city towards the Georges River by providing several new connections across the river between the Liverpool CBD, the transport interchange and Moore Point, and a new community of residents who will seek to connect to the Liverpool city centre in new ways.”*

The submission stated that the Liverpool Innovation Precinct seeks to leverage the strong health, research and education assets of the Liverpool CBD to attract more private sector investment, and employment opportunities in knowledge jobs, which requires an expansion of its housing, cultural, recreational and amenity opportunities, which Moore Point would deliver.

The submission objecting to the proposal was from a resident and ratepayer. The objection was based on the proposal likely adding to congestion already experienced on Newbridge Road. It also objected to the proposal on the basis that the land is flood prone, and that Newbridge Road floods during heavy rain events, making the site unsuitable for further development.

The final submission suggested that the proposal may fall short by seeking to maximise residential and commercial space, and that Covid-19 may require amendments to better accommodate changing social and commercial needs. It also stated that the proposal didn't respond to the need for parking, and that a parking station should be incorporated into the development.

One state agency, Schools Infrastructure NSW, responded to the proposal, stating that the proposal would lead to a substantial increase in the total number of government primary and secondary school students, which would be more than can be accommodated at existing schools. SINSW requested further ongoing consultation to ensure educational facilities are supporting community needs and are appropriately resourced to service future population growth.

Next Steps

If Council supports in principle the planning proposal request, a formal planning proposal will be prepared and submitted to the Department of Planning, Industry and Environment (DPIE) seeking a Gateway determination.

A further report will be provided to Council following the public exhibition period detailing submissions received and any amendments proposed.

CONCLUSION

It is recommended that Council support in principle the planning proposal request with the changes recommended by staff, as the proposal demonstrates strategic and site-specific merit. The finalisation of necessary studies can be conditioned through the Gateway process.

CONSIDERATIONS

Economic	<p>Further develop a commercial centre that accommodates a variety of employment opportunities.</p> <p>Deliver and maintain a range of transport related infrastructure such as footpaths, bus shelters and bikeways.</p> <p>Encourage and promote businesses to develop in the hospital health and medical precinct (of the City Centre).</p> <p>Provide efficient parking for the City Centre.</p> <p>Facilitate economic development.</p>
Environment	<p>Manage the environmental health of waterways.</p> <p>Protect, enhance and maintain areas of endangered ecological communities and high quality bushland as part of an attractive mix of land uses.</p> <p>Support the delivery of a range of transport options.</p>
Social	<p>Preserve and maintain heritage, both landscape and cultural as urban development takes place.</p> <p>Regulate for a mix of housing types that responds to different population groups such as young families and older people.</p>
Civic Leadership	<p>Operate a well developed governance system that demonstrates accountability, transparency and ethical conduct.</p>
Legislative	<p><i>Environmental Planning And Assessment Act 1979</i></p>
Risk	<p>The risk is deemed to be Low. If Council does not support the planning proposal request, there is a risk that the landowner will seek a review of Council's decision by the Sydney Western City Planning Panel.</p>

ATTACHMENTS

1. Applicant's Planning Proposal Request
2. Local Planning Panel Report
3. Local Planning Panel advice
4. Urban Design Study
5. Amended Urban Design Analysis
6. Aboriginal Heritage Report
7. Aeronautical Assessment
8. Air Quality Assessment
9. Biodiversity Assessment
10. Community Benefits Analysis
11. Community Benefits Analysis Addendum
12. Demographic Analysis
13. Economic Impact Assessment
14. Flood Evacuation Strategy
15. Flood Impact Assessment
16. Historical Heritage Assessment
17. Interim Letter of Offer - Voluntary Planning Agreement
18. Benchmarking report
19. Part 1 Contamination Assessment
20. Part 2 Acid Sulfate Management Plan
21. Place Design Framework
22. Riparian Strategy
23. Riparian Strategy Appendix A
24. Servicing Infrastructure Report
25. Strategic Transport Impact Assessment
26. Sustainability Statement

Moore Point, Liverpool

Planning Proposal for residential/mixed-use precinct

On behalf of
Coronation Property and Leamac Property Group

April 2020



Project Director

Ben Hendriks

Adam Coburn



Date

16 April 2020

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* This document is for discussion purposes only unless signed and dated by the persons identified. This document has been reviewed by the Project Director.

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Executive Summary

Introduction

This Planning Proposal Report has been prepared by Mecone on behalf of Coronation Property and Leamac Property Group in support of a Planning Proposal to Liverpool City Council for a 32 hectare joint landholding known as Moore Point, Liverpool.



Figure 1: Site Context [Source: SJB]

Moore Point is one of the largest and long-term urban regeneration projects in Sydney and will be a catalyst for government to realise its objectives for the Liverpool Collaboration Area. When implemented it will consolidate Liverpool's role as Sydney's third CBD and provide a high quality living and working environment for future generations.

Moore Point reflects a delivery of homes, jobs and infrastructure up to 2051, in a highly accessible location, with high urban amenity alongside the Georges River. As a result of its transformational influence on Liverpool and surrounds over a long period, it cannot be regarded as a standard Planning Proposal. It warrants a clear and concise governance structure that allows the planning and development of the precinct to proceed in an orderly manner, in collaboration with Council and key agencies.

Strategic Merit

The site has been the subject of extensive strategic planning investigations over the past decade. These investigations have envisaged the site as the future extension of Liverpool Central Business District (CBD). It has both state and local level endorsement that commences since 2008, which are briefly summarised below.



Liverpool Local Environmental Plan – 2008

Moore Point was first acknowledged as a natural extension to the CBD via Liverpool Local Environmental Plan (LLEP) 2008, which identifies the site as part of the Liverpool city centre pursuant to Division 1 and as shown on the Key Sites map.



Draft Georges River Precinct Plan – 2016

The draft Georges River Precinct Plan (draft GRPP) established the design principles and vision to transform land uses around Moorebank, including a vision for an activated mixed use precinct.



Our Home, Liverpool 2027 – 2017

Our Home, Liverpool 2027 (Community Strategic Plan) provides directions to celebrate diversity, recognise heritage, provide accessible community facilities and exercise planning controls to create high-quality, inclusive, urban environments.



Greater Sydney Region Plan – 2017/18

The Greater Sydney Region Plan (Region Plan) introduced Collaboration Areas across Sydney, including Liverpool and environs.



Western City District Plan – 2017/18

The Western City District Plan (District Plan) established the physical extent of the Liverpool Collaboration Area, which incorporated land pertaining to the draft GRPP.



Liverpool Collaboration Area Place Strategy – 2018

Liverpool Collaboration Area Place Strategy (Place Strategy) identifies the site as 'mixed use', which is to comprise a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to the commercial core.



Liverpool Local Strategic Planning Statement – 2020

Liverpool Local Strategic Planning Statement (LSPS) formally refers to the site extent as 'Moore Point', which provides short-medium term actions to be rezoned into residential/mixed-use to support the CBD and Innovation Precinct.

The Planning Proposal represents a clear strategic line of sight from State to local planning. Specifically, and most recently, it responds to the Place Strategy and LSPS as discussed further below.

Under the Place Strategy, the site is identified as 'mixed use', which comprises:

a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core

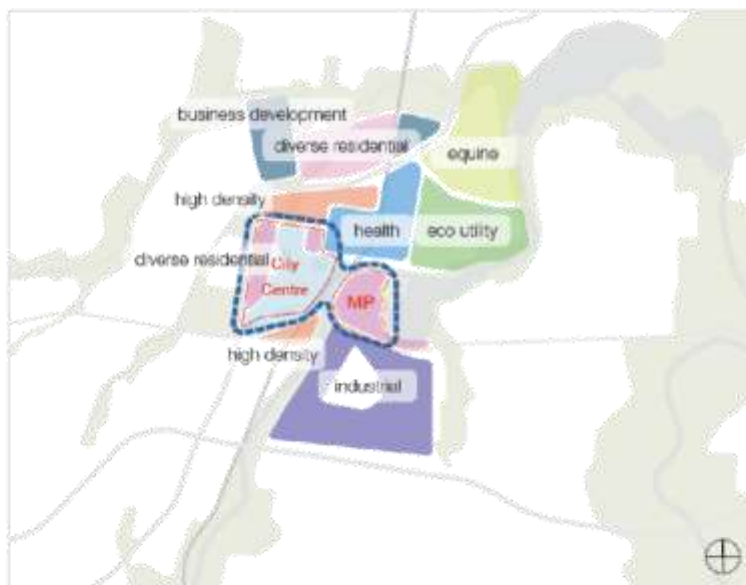


Figure 2: Liverpool Collaboration Area (Source: Place Strategy modified by SJB)

The vision of this precinct will be realised through investment in new infrastructure such as bridges connecting to the Liverpool CBD, open space adjacent to the Georges River, road upgrades, community facilities and improved local access connections.

The Planning Proposal responds to these needs by facilitating a mixed use precinct with a mix of recreational, educational, cultural, residential and commercial uses. The Planning Proposal provides an emphasis on reorienting Liverpool to the Georges River foreshore and providing new open space, facilities and connections adjoining the Liverpool CBD.

The LSPS recognises Moore Point as future residential/mixed-use to support the CBD and Innovation Precinct supported by new jobs. Key themes emerging from the LSPS that relate to future strategic planning for the site include:

- Review LEP to rezone land east of Georges River and north of Newbridge Road (Moore Point) as mixed use to support the growth of Liverpool Innovation Precinct (short to medium term);
- Modal shift to public transport including Council's flagship project – the Fifteenth Avenue Smart Transit Corridor (FAST) with potential allowance of an interchange at Moore Point;
- Increased pedestrian connections including the River Connections Program;
- Rehabilitation and improvements to the Georges River foreshore;

- Linking green space along the Georges River at Moore Point to Liverpool Interchange; and
- Revitalising the city centre including the need to foster a 24 hour economy and support development of community and cultural facilities.

The Planning Proposal directly responds to these key actions by seeking to rezone the site identified as Moore Point for future mixed use purposes. It will establish a new mixed use centre and support a variety of land uses to the benefit of the surrounding current and future population in tandem with new employment opportunities.

The Planning Proposal exhibits site-specific merit due to the following:

- The site represents one of the largest urban renewal opportunities in Liverpool, capable of mitigating environmental constraints and delivery of a place-based masterplan response;
- The masterplan demonstrates the site can achieve a high level of residential and public amenity and will minimise impacts on surrounding areas through careful consideration of siting of buildings, orientation and built form envelopes;
- The size of the site has a significant influence on the transformation of Liverpool CBD and the growth of the Liverpool Collaboration Area. The proposed land uses align with the Collaboration Area vision and objectives;
- The site provides excellent access and proximity to Liverpool CBD, Train Station and Health and Education Precinct and has capacity to influence the future alignment and provision of the Southwest Metro extension. The site is well supported by existing infrastructure, jobs and services to support a future population notwithstanding what can be delivered on site;
- A site-specific S.7.11 Contributions Plan will be prepared to capture bespoke and local infrastructure items to be delivered through the course of redevelopment. This will ensure development is sequenced in line with new infrastructure;
- The site can adequately mitigate a range of environmental issues and constraints, whilst also improving environmental characteristics of the site, as addressed in this Planning Proposal and supporting technical studies.

This Planning Proposal replaces RZ-6-2015 and withdraws all other previous site-specific proposals lodged by the proponents. It represents a once in a generation opportunity for a coordinated approach to planning and infrastructure delivery of Moore Point. The proponents look forward to working constructively with Council.

Governance

The Planning Proposal's size, scale and influence is regarded to be of metropolitan significance and therefore, its consideration and assessment as a business as usual Planning Proposal will not facilitate the envisaged outcomes expressed by government.

The Planning Proposal requires a whole-of-government approach whereby a series of governance structures are established to oversee and advocate the best outcomes for Liverpool in regard to infrastructure and city-shaping elements.

The proponents have put forward a number of interlinked working groups. These include:

- Placemaking Working Group;
- Transport Infrastructure Working Group;

and

- Proposed – Statutory Planning Working Group.

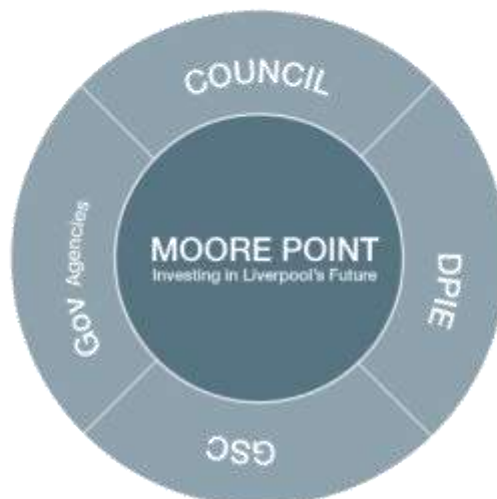


Figure 3: Governance Structure

Placemaking Working Group

The Placemaking Working Group (PWG) has been established to oversee precinct governance for Moore Point from a sustainability and design perspective. The PWG will work collaboratively to explore and assess place-led opportunities to ensure sustainability principles aligned with the sustainability priorities under the Place Strategy.

The Working Group will be chaired by Council with representatives from the proponent, GSC, Office of Water and other key agencies.

The aim of the Working Group is to collaboratively explore and assess place-led opportunities to ensure the precinct vision is delivered based on world's best practice for placemaking, river interface and sustainability. Through this Group, Liverpool Council and the proponents will collaboratively ensure key elements of the masterplan are advocated for from rezoning to delivery. This includes consideration of the public domain, streetscapes and the rehabilitation of the Georges River foreshore.

Transport Infrastructure Working Group

The Transport Infrastructure Working Group (TIWG) has been established to facilitate an integrated and connected transport vision for Moore Point.

The TIWG will involve Transport for NSW (TfNSW) and Council to ensure the Planning Proposal aligns with the overarching Liverpool Collaboration Area Place Strategy (Place Strategy) and the successful integration of Moore Point into the current and future planned transport network.

Proposed – Statutory Planning Working Group

The Statutory Planning Working Group (SPWG) will involve representatives from Council, GSC and the proponent to ensure the proposed amendments and wording to LLEP 2008 are able to enable the most robust and effective delivery of Moore Point and the envisaged masterplan.

This Planning Proposal, and the associated governance structures focus on the how, that is how we work together, as much as the what or content of the Planning Proposal itself.

Vision and Masterplan

The vision for Moore Point, as developed by the project team, is described below:

Moore Point will be a riverfront place for people, which is well connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront, it will be a focal point for the growing Western Sydney metropolis and a place for everyone

The masterplan functions as the orderly extension of Liverpool CBD, supported by accessible, and desirable bridge connections that draw people across the Georges River between the two destinations.



Figure 4: Moore Point Concept (Source: SJB)

The aim of the masterplan is to create a riverfront development that supports Liverpool as being Sydney's third CBD – a place that references its unique cultural, natural and built heritage, and ensures this once-in-a-generation opportunity is properly secured and celebrated.



Figure 5: Moore Point Masterplan (Source: SJB)

The masterplan provides a dwelling capacity for 14,800 dwellings and 23,000 jobs to 2051. The masterplan reinforces Liverpool as Sydney's third CBD and supports the growth of the Innovation Precinct. Take-up analysis indicates demand for approximately 6,900 dwellings to 2036.

Public Benefits

Key public benefits associated with the proposal include:

- Adaptive re-use of existing heritage items;
- 21% of the site dedicated to public open space
- Rehabilitation, access and activation of the Georges River foreshore;
- Contribution to an 8km network of foreshore pedestrian and cycle paths;
- Educational and cultural facilities;
- Bridge crossings to Liverpool CBD, Train Station and Liverpool Innovation Precinct; and
- Transport, intersection and collector road improvements.

In order to realise the vision for Moore Point, it is critical that the design of the place and delivery of infrastructure are coordinated across all levels of government over the course of the project. This will be facilitated by governance structures proposed.

Technical Analysis

A review of the technical reports finds there are no constraints that would not preclude redevelopment of the site for mixed use and residential purposes. Through appropriate mitigation measures and further detailing to be provided post-Gateway, the proposal will demonstrate suitable levels of amenity.

Key environmental considerations are summarised below.

Contamination

The site can be made suitable for mixed use and residential purposes. A combination of remedial options may be implemented to remediate the site for its intended

purpose. A detailed, site-specific remedial action plan (RAP) will be required for each site, before the commencement of site remediation.

Flooding

The site is suitable for mixed use and residential development from a flooding perspective. Peak flood levels in surrounding properties and within the Georges River will not increase as compared to existing conditions in the catchment in the 1% AEP events. Therefore, on-site detention is not considered necessary for the Planning Proposal's development outcomes.

Flood evacuation routes are identified to ensure a 'continuous rising grade' can be maintained to a level above the PMF for all evacuees, with connections to Newbridge Road to the south of the site.

Traffic and Transport

The TIWG will facilitate an integrated and connected transport vision for Moore Point over two stages. Stage 1 (pre-Gateway) will establish a strategic analysis of the transport infrastructure required to support the Planning Proposal and eventual masterplan.

Stage 2 (post-Gateway) will involve the development of a more detailed assessment to assist in accurately identifying and informing the scope and costs for any infrastructure including local transport infrastructure.

Aviation

None of the proposed buildings in the masterplan would penetrate the limiting PANS—OPS surfaces shown in Bankstown Airport's prescribed airspace. Therefore, all buildings depicted in the masterplan are considered approvable under the Airports Regulations.

Precinct Rezoning Process

This Planning Proposal initiates a rezoning for one of the largest urban regeneration projects in Metropolitan Sydney and is a catalyst to initiate the actions and objectives for Liverpool Collaboration Area.

The Planning Proposal demonstrates that land use change is appropriate and that an appropriate level of density can be achieved in line with the site's strategic planning objectives, optimising precinct-wide amenity and mitigating environmental impacts.

Overall, it demonstrates the built form and land use propositions are suitable for Council to proceed the application to the Department of Planning Industry and Environment (DPIE) for Gateway.

The proposed working groups will facilitate a number of imperatives in parallel with its assessment to ensure infrastructure and place making elements are embedded into the masterplan.

It is anticipated additional documents will be prepared following Gateway Determination including the preparation of a site-specific Development Control Plan (DCP), which will align with the masterplan for the site and detail how built form will generally occur up to 2051.

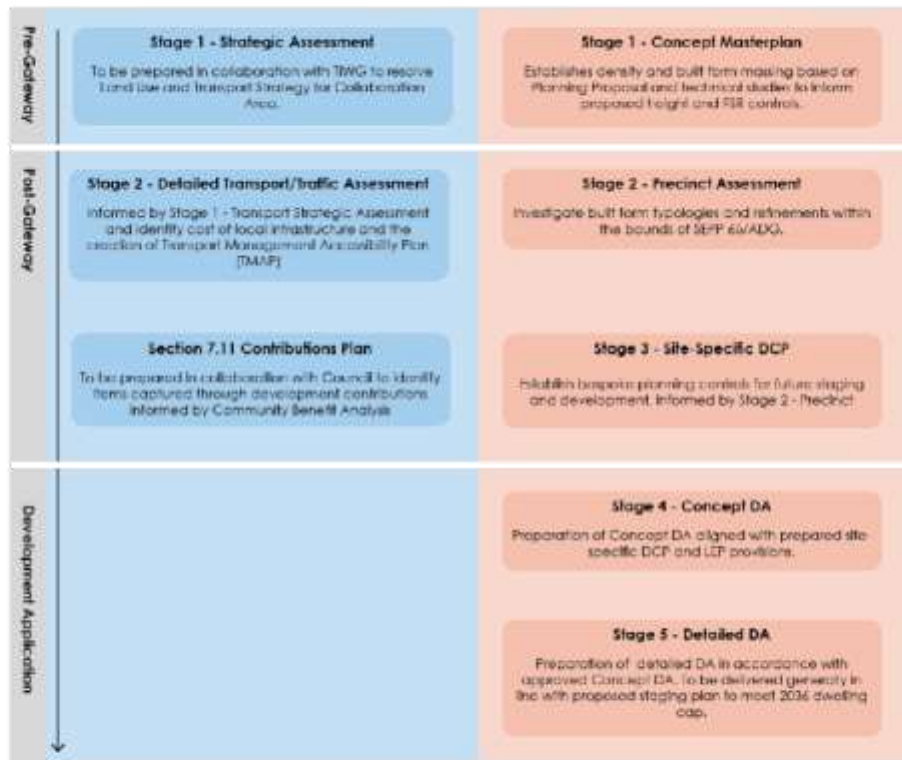


Figure 6: Precinct Rezoning Process (Source: Mecone)

1 Introduction

1.1 Overview

This Planning Proposal Report (PPR) has been prepared by Mecone NSW Pty Ltd (Mecone) on behalf of Coronation Property and Leamac Property Group (the proponents) in support of a Planning Proposal to amend Liverpool Local Environmental Plan (LLEP) 2008, for land forming Moore Point, Liverpool (the site).

The Planning Proposal (the proposal) serves as a statement of intent for the future quality and character of Moore Point and its objective to re-balance Liverpool Central Business District (CBD) towards the Georges River.

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. Moore Point provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The Planning Proposal pertains to the site owned by the proponents, which comprise of 32 hectares as shown **Figure 7** below. The Planning Proposal considers additional landholdings along Newbridge Road as part of the precinct-wide master plan response, which comprises a total of 38.5 hectares.



Figure 7: Subject Site (Source: Mecone)

The site represents one of the largest joint landholdings immediately adjoining a Strategic Centre, and as a consequence of changes to its strategic planning context, offers a once in a generation opportunity to come into complete alignment with the priorities of government, as expressed in State and local strategic planning documents.

The site is situated within Liverpool Collaboration Area's Georges River North Precinct and is subject to the priorities and actions of the Liverpool Collaboration Area Place Strategy (the Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018.

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands

alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core

These land uses are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following action specific to Moore Point:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed-use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key public benefits of the proposal include:

- Adaptive re-use of existing heritage items;
- 21% of the site dedicated to public open space
- Rehabilitation, access and activation of the Georges River foreshore;
- Contribution to an 8km network of foreshore pedestrian and cycle paths;
- Educational and cultural facilities;
- Bridge crossings to Liverpool CBD, Train Station and Liverpool Innovation Precinct; and
- Transport, intersection and collector road improvements.

To achieve these outcomes, the Planning Proposal seeks the following amendments to LLEP 2008:

- Rezone the site from IN2 Light Industrial to B4 Mixed Use and B6 Enterprise Corridor;
- Increase the maximum floor space ratio to 4.2:1 and 3.5:1;
- Increase the maximum height of buildings from 18m and 15m to RL 136 and RL 108; and
- Introduce Division 1A to provide site specific development controls for the site including design excellence, sun access and requirements for preparation of a development control plan.

The Planning Proposal provides a direct and clear strategic line of sight with the priorities of government and the implementation phase of the Place Strategy by facilitating the transformation of the site with new jobs, infrastructure, green spaces and housing.

The Planning Proposal's size, scale and long term delivery is regarded to be of metropolitan significance and therefore, its consideration as a business as usual Planning Proposal will not facilitate the envisaged outcomes expressed by government.

A series of working groups have been established or are in the process of being established to advocate for infrastructure and place making objectives through the course of the rezoning to construction.

1.2 Report Structure

The planning proposal has been prepared in accordance with:

- Section 3.33 of the *Environmental Planning and Assessment Act 1979* (the Act); and
- The NSW Department of Planning and Environment's (DP&E) *A guide to preparing planning proposals*.

Specifically, the planning proposal includes the following information:

- A description of the site in its local and regional context;
- A statement of the objectives or intended outcomes of the proposed instrument;
- An explanation of the provisions that are to be included in the proposed instrument; and
- The justification for those provisions and the process for their implementation including:
 - Whether the proposed instrument will comply with relevant directions under Section 9.1;
 - The relationship to the strategic planning framework;
 - Environmental, social and economic impacts;
 - Any relevant State and Commonwealth interests; and
 - Details of the community consultation that is to be undertaken before consideration is given to the making of the proposed instrument.

1.3 Proponent and Project Team

Table 1 below identifies the proponent and project team.

Table 1. Project Team	
Discipline	Consultant
Proponent	Coronation Property and Leamac Property Group
Urban Planning	Mecone
Urban Design	SJB Architects
Place Framework	Roberts Day
Employment Lands Strategy	Hill PDA
Social Impact and Open Space	Cred Consulting
Infrastructure Planning	ADW Johnson

Table 1. Project Team	
Discipline	Consultant
Riparian Corridor	Northrop
Traffic and Transport Planning	Aurecon
Flood, Stormwater and Evacuation	J. Wyndham Prince
Contamination	El Aus
Air Quality	Todorski Air Sciences
Aviation	Strategic Airspace
Flora and Fauna	Ecological Aus
Historical Heritage	Ecological Aus
Aboriginal Heritage	Ecological Aus
Sustainability	Integral Group

2 The Site

2.1 Site Description

The site is located east of Liverpool CBD on the opposite side of the Georges River and North of Newbridge Road. It provides a site area of approximately 32 hectares across the joint landholdings and 38.5 hectares across the entire precinct, with most lots developed with single storey industrial warehouses and associated facilities.

The site is at the confluence of a CBD, transport interchange and health services. It is located directly across the river from Liverpool CBD, Liverpool Train Station and Bus Interchange and Liverpool Innovation Precinct.

Figure 8 below depicts land owned by Coronation Property (blue) and Leamac Property Group (yellow). Land filled purple are owned by other landowners, who are not subject to the Planning Proposal, however, are included as part of the study area to represent a holistic precinct-wide planning outcome for the area.

The Planning Proposal pertains to the area of land owned only by Coronation Property and Leamac Property Group.



Figure 8: Subject Site (Source: SJB)

The site is currently zoned IN2 Light Industrial under LLEP 2008 however, with the release of the GSC Place Strategy and Council's LSPS advancing a mixed use vision for the site, the current built form and use no longer reflects the desired future character of the area as Liverpool seeks to reorient itself to the Georges River.

Table 2 provides a brief summary of the site and its surrounding context:

Table 2: Site Description	
Feature	Description
Street Address	Leamac Property Group 3 Bridges Road, Moorebank

Table 2. Site Description	
	Coronation Property 11 Bridges Road, Moorebank 5 Bridges Road, Moorebank 6 Bridges Road, Moorebank 8 Bridges Road, Moorebank 361 Newbridge Road, Moorebank
Legal Description	Leamac Property Group
	Lot 200 DP 1009044
	Lot 100 DP 775780
	Coronation Property
	Lot 201 DP 1009044
	Lot 111 DP 1133744
	Lot 10 DP 875626
	Lot 101 DP 827141
Site Area	Site (landowners) – Approx. 32 hectares Precinct – Approx. 38.5 hectares
Description	The site contains multiple industrial warehouses and business premises of various ages across multiple lots along Newbridge Road and Bridge Road. Some lots are largely vacant and contain only minor structures or recently completed roadworks.
Frontages	The site provides a frontage to Newbridge Road of approximately 1 kilometre and a frontage to the Georges River Foreshore of approximately 920 metres. The site provides a 230 metre frontage to Haigh Park to the east.
Access	Most lots have dedicated private driveways off Newbridge Road and Bridges Road.
Public Transport	The site is located within 200m radius of Liverpool Train Station and Bus Interchange. Liverpool Train Station is served by the T2 Inner West and Leppington Line, T3 Bankstown Line and the T5 Cumberland Line. The station connects Liverpool to a range of centres

Table 2.	Site Description
	<p>Including Parramatta, Bankstown, Strathfield, Blacktown and Sydney CBD.</p> <p>Liverpool Bus Interchange provides over 45 bus services connecting Liverpool CBD across Metropolitan Sydney. During the AM and PM peak periods, the interchange services approximately 110 bus movements during peak hour across all the stands.</p>
Heritage	<p>3 Bridges Road contains the Pirelli Power Cables and Systems Building (formerly MM Cables Factory and Cable Makers Australia).</p>
Surrounding Development	<p>The site is uniquely positioned in Liverpool Collaboration Area and provides excellent proximity to a range of infrastructure, jobs and services.</p> <p>Development to the south on the opposite side of Newbridge Road is developed with a mix of low-rise industrial developments and detached residential dwellings.</p> <p>Development to the west on the opposite side of the Georges River is Liverpool CBD, Train Station and Bus Interchange and Shepherd Street Precinct, which contains a mix of high-density mixed use, residential and commercial developments.</p> <p>Development to the north on the opposite side of the Georges River is Liverpool Hospital and a range of educational institutions including Liverpool Boys/Girls High School and TAFE NSW Liverpool.</p>

A series of site photographs, depicting the site and its surrounding context are provided below:





Figure 9: Site Photographs (Source: Mecone)

2.2 Strategic Context

2.2.1 Regional Context

The site is adjacent to Liverpool CBD within the local government area of Liverpool, approximately 25 kilometres south west of Sydney CBD, 15 kilometres south of Parramatta CBD and 17 kilometres east of the future Badgery's Creek Aerotropolis.

The Greater Sydney Region Plan (Region Plan) nominates Liverpool as part of the Western Parkland City Metropolitan City Cluster and a Collaboration Area, driven by the co-location of world class health and education infrastructure, Warwick Farm Precinct and Moorebank Intermodal Terminal.

The Region Plan identifies a Metropolitan Centre/City Cluster as:

...the economic focus of Greater Sydney, fundamental to growing its global competitiveness and where government actions and investment, including transport, will be focused. The intent of these centres is to deliver very high levels of development and amenity. Metropolitan centres occur in two forms: single centres or a cluster of centres.

Liverpool is a nominated Strategic Centre and is acknowledged as a well-established metropolitan centre that will facilitate the growth of the Western Parkland City and Badgery's Creek Aerotropolis.

The site is strategically positioned around a number of existing and prospective structural changes that will shape the Western City District.



Figure 10: A Metropolis of Three Cities (Source: Greater Sydney Commission)

2.2.2 Movement and Access Context

The site is within 200 metres of Liverpool Train Station and Bus Interchange, which provides greater access to a number of Sydney's local and strategic centres through local and express services.

The site provides a southern edge to Newbridge Road, which functions as a major movement corridor between Liverpool and Bankstown and is utilised by a number of freight and industry to connect onto the M7 Motorway and South Western Motorway.

There are a number of planned transport infrastructure projects that will have a significant impact on the site and growth of Liverpool CBD. These are discussed below.

Georges River Boardwalk Crossing

Council has committed to the design and construction of a pedestrian bridge built on the existing heritage-listed railway pylons along the Georges River. The crossing will provide connection to Liverpool Train Station and Lighthorse Park.

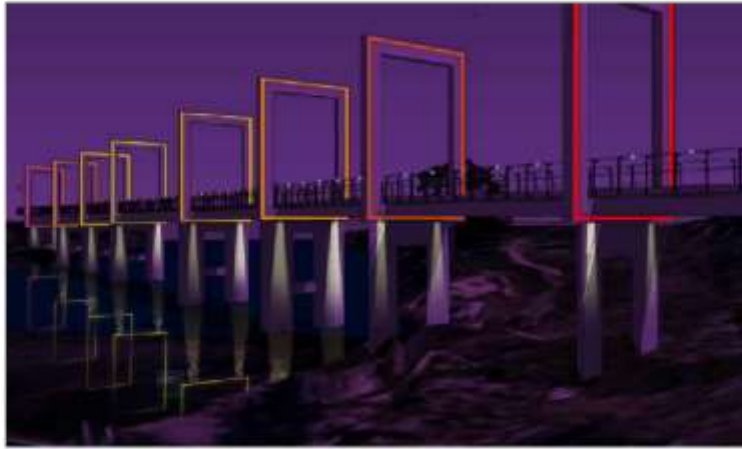


Figure 11: Proposed Georges River Boardwalk Crossing (Source: Liverpool City Council)

Sydney Metro City and Southwest Extension

Sydney Metro City and Southwest is currently under construction and is anticipated for completion in 2024.

The project, along with increased signalling and infrastructure upgrades across the network, will increase the capacity of train services from approximately 120 an hour today, to up to 2000 services an hour beyond 2024. After the conversion, metro trains from Bankstown will run at least every 4 minutes in the peak, or 15 trains an hour.

The Future Transport Strategy 2056 prepared by TfNSW articulates a 20 year initiative for the Sydney Metro City and Southwest extension to Liverpool. A Southwest Metro will become increasingly important to the success of Liverpool's thriving innovation precinct.



Figure 12: Greater Sydney Mass Transit Corridor 2056 Visionary (Source: Transport for NSW)

Fifteenth Avenue Smart Transit Corridor (FAST)

The Fifteenth Avenue Smart Transit Corridor (FAST Corridor) is Council's visionary city-shaping project to deliver a high quality public transport connection between Liverpool CBD and Badgery's Creek Aerotropolis. This has been reflected through the Western Sydney City deal, which has committed to a rapid bus connection between the Airport, Badgery's Creek Aerotropolis and Liverpool CBD in time for the airports opening in 2026.

Council recently commissioned a Design Framework for the FAST Corridor, which identifies opportunities for fast and efficient transport, such as zero-emission rapid buses, trackless trams or light rail.

2.2.3 Western City District Plan

The Western City District Plan (District Plan) advances the outcomes of the Region Plan at a District level, through productivity, liveability and sustainability priorities.

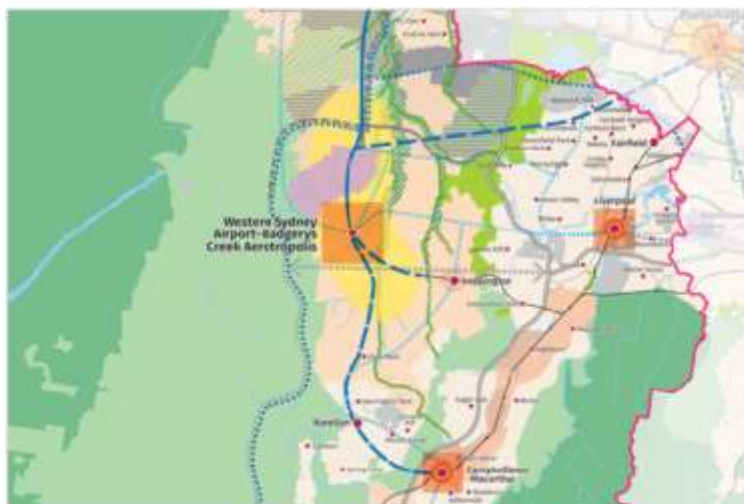


Figure 13: Western City District Plan (Source: Greater Sydney Commission)

The District Plan mandates a 0-5 year housing target of 8,250 dwellings for Liverpool LGA, reinforcing its role as a leading metropolitan cluster in the region. Medium-term (5-10 year) housing targets will be developed by Council.

Liverpool CBD will play a significant role in the transformation and development of the Western City District. It identifies that the health and education precinct alone will create 7,000 new jobs over the next 20 years, contributing to the 2036 higher target of 39,000 jobs for the LGA.

Central to the District Plan is the physical consideration of the Liverpool Collaboration Area, which incorporates the following:

- Liverpool CBD;
- Health and Education Precinct;
- Nearby Residential and Industrial Areas;
- Warwick Farm Precinct;
- Moorebank Intermodal Terminal; and
- The draft Georges River Masterplan

Collaboration Areas will undergo an integrated process for defining a shared vision for the area and are chaired by the GSC, with initiatives being facilitated by Department of Planning Industry and Environment (DPIE). Furthermore, the District Plan emphasises the importance of the Liverpool CBD, identifying the following actions:

- *Protect, develop and expand the commercial core.*
- *Improve and coordinate transport and other infrastructure to support jobs growth.*
- *Develop smart jobs around the health and education precinct.*
- *Build on the centre's administrative and civic role.*
- *Improve public domain including tree-lined, comfortable open spaces and outdoor dining.*
- *Improve connectivity to links to the Georges River and prioritise pedestrian, cycle and public transport facilities.*
- *Encourage a vibrant mix of uses, new lifestyle and entertainment uses to activate streets and grow the night-time economy.*
- *Capitalise on the Western Sydney Airport and Western Sydney City Deal Initiatives.*

The GSC is reviewing industrial land and urban services within Liverpool and its surrounds to confirm is retention or manage uses to allow sites to transition to higher-order employment uses.

This has since been confirmed through the Place Strategy and LSPS, which advance a mixed-use vision for the site and Georges River North Precinct. We further note Council's Employment Land Strategy (ELS) executive summary, which provides a recommendation for industrial land located within Collaboration Areas to be no longer safeguarded or retained as industrial.

The District Plan prioritises the growth and diversification of economic opportunities in Liverpool in tandem with increased housing diversity and rezoning land for additional housing, including the industrial waterfront to rebalance Liverpool CBD towards the Georges River.

2.2.4 Liverpool Collaboration Area Place Strategy

The Place Strategy was released in December 2018 and establishes the priorities, opportunities and delivery actions for the area. The vision for the collaboration area is:

By 2036, Liverpool is a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a network of open spaces and parklands alongside the Georges River, create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Place Strategy, the site is identified as 'mixed use' and within the Georges River North Precinct, which aims to provide a mixture of retail, residential and community uses that provide sustainable employment that is not in competition with the commercial core.



Figure 14: Liverpool Place Strategy (Source: Greater Sydney Commission)

The preferred growth scenario for the collaboration area is 16,200 new jobs and potential capacity for 18,800 new dwellings by 2036. This will provide a significant contribution towards Western Parkland City's population growth.

The Place Strategy identifies a number of areas capable of accommodating diverse and high density residential development however, many of these areas are located away from Liverpool CBD, present land fragmentation challenges or have recently been redeveloped with apartments and consequently have limited capacity to deliver the density and infrastructure required for Liverpool moving towards its 2036 dwelling forecasts.

Moore Point, being historically dominated by monofunctional industrial uses and owned by only a handful of key landowners, has capacity to meet a significant number of dwellings outlined in the growth scenario through a master planned and placed-based approach.

The Place Strategy identifies a number of immediate imperatives that are to be undertaken as planning for the Liverpool Collaboration Area progresses, these include:

- Develop an integrated transport strategy;
- Update and complete the Georges River, Brickmakers Creek and Liverpool CBD Overland Flow studies and prepare floodplain risk management plans;
- Prepare a floodplain constraints categorisation study and flood evacuation study; and
- Establish a collaboration area partnership that facilitates the implementation of stakeholder actions and builds on existing governance structures.

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and

- Flood studies and floodplain risk management plan completed by Liverpool City Council.

It is acknowledged these imperatives can be prepared in parallel with the assessment of the subject Planning Proposal, which can be brought forward through an integrated governance approach with state agencies and Council.

Preparation of the Place-based Integrated Transport Study is being undertaken in collaboration with the Transport Infrastructure Working Group (TIWG) to ensure the Planning Proposal and subsequent masterplan can be supported by existing and future transport. This is discussed in Section C of this PPR.

2.2.5 Liverpool Local Strategic Planning Statement

Liverpool's LSPS, also referred to as Connected Liverpool 2050, sets out a 30-year strategic vision for land use planning in Liverpool and the necessary actions required to align with broader regional and district planning objectives.

The vision for Liverpool is:

A vibrant place for people that is community-focused, walkable, public transport-oriented, sustainable, resilient and connected to its landscape. A place that celebrates local diversity and history and is connected to other Sydney centres. A jobs-rich city that harnesses health, research and education, innovation and growth opportunities to establish an inclusive and fair place for all.

Key to the LSPS is the recognition of the Moore Point as future residential/mixed-use to support the CBD and Innovation Precinct. Key themes emerging from the LSPS that relate to future strategic planning for the site include:

- Review LEP to rezone land east of Georges River and north of Newbridge Road as mixed use to support the growth of Liverpool Innovation Precinct;
- Modal shift to public transport including Council's flagship project – the Fifteenth Avenue Smart Transit Corridor (FAST) and potential allowance of potential station at Moore Point;
- Increased connections including the River Connections Program;
- Linking green space along the Georges River; and
- Revitalising the city centre including the need to foster into a 24 hour economy and support development of community and cultural facilities.

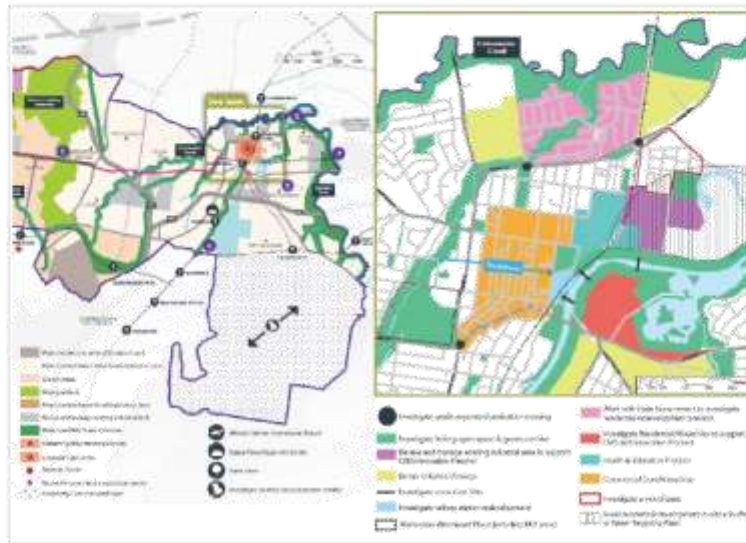


Figure 15: Connected Liverpool 2050 (Source: Liverpool City Council)

2.3 Local Context

2.3.1 Surrounding Development

Moorebank is anticipated to undergo significant urban regeneration.

The movement towards higher order employment and residential development in Liverpool has been reflected in several major development proposals discussed below.

Shepherd Street

Shepherd Street, delivered by Coronation Property, is located within 500m of Liverpool CBD and is one of the first major completed development projects that aligns with Council's vision for a River City.

It will ultimately provide approximately 1,200 dwellings across a 3.1 hectare area and features a mix of low, medium and high rise buildings (up to 68m in height), adaptive re-use of the existing 'Challenge Woollen Mills' heritage building and foreshore improvements to create a thriving local hub for dining, recreation and living.



Figure 16: Paper Mill and Shepherd Street Precinct (Source: Coronation Property)

Liverpool Civic Place

A Concept Development Application is currently under assessment for a mixed use precinct known as Liverpool Civic Place. Specifically, the development provides:

- A building envelope with a maximum height of RL 43.45 for the purpose of an information and education facility (public library) use and;
- A building envelope with a maximum height of RL 84.25 for the purpose of a public administration building use, and either (or a combination of) commercial premises or child-care centre uses and;
- A building envelope with a maximum height of RL 118.85 which will accommodate either (or a combination of) commercial premises, educational establishments, tourist and visitor accommodation or boarding house (student accommodation) uses and;
- A landscaping and public domain concept including the provision of a public through-site link running north to south through the site, connecting Scott Street to the north through to Terminus Street to the south; and
- A building envelope for a three-level shared basement car park across the entire site to accommodate parking for all future uses (approximately 413 spaces, to be determined as part of future detailed DAs) and accommodating a public car park to be owned by Council.



Figure 17: Reference Design for Liverpool Civic Place (Source: FJMT)

3 Statutory Planning Context

3.1 Liverpool LEP 2008

LLEP 2008 is the principle planning instrument, guiding development in the LGA.

Moore Point was first acknowledged as a natural extension to the CBD via the introduction of the Standard Instrument Liverpool Local Environmental Plan (LLEP) 2008, which identifies land north of Newbridge Road and east of Bridge Road as part of the Liverpool city centre pursuant to Division 1 and as shown on the Key Sites map.

From a statutory perspective, the land since 2008 has been considered part of Liverpool CBD.

Table 3 provides an overview of the key local planning controls contained in LLEP 2008 in relation to the subject site.

Table 3. Liverpool Local Environmental Plan 2008	
Clause/standard	Provisions
Zoning	IN2 Light Industrial.
Clause 4.1 – Minimum Lot Size	2,000m ² .
Clause 4.3 – Height of Building	The site has a maximum building height of 18m and 15m.
Clause 4.4 – Floor Space Ratio	0.75:1
Clause 5.10 – Heritage Conservation	Lot 200 DP 1009044 contains a Local Heritage Item known as – Pirelli Power Cables and Systems Building (formerly MM Cables Factory, and Cable Makers Australia Factory)
Clause 7.6 – Environmentally Significant Land	Part of the site contains Environmentally Significant Land (ESL), largely situated along the Georges River Foreshore and Lake Moore.
Clause 7.7 – Acid Sulfate Soils	The site contains Class 5 and Class 3 Acid Sulfate Soils.
Clause 7.8 – Flood Planning	The site contains land identified as High, Medium and Low Flood Risk. The site contains land identified as Flood Planning Area (1% AEP plus 0.5 metre freeboard).
Clause 7.9 – Foreshore Building Line	Lot 200-201 DP 1009044 contain land subject to foreshore building line along the Georges River Foreshore.

Table 3: Liverpool Local Environmental Plan 2008	
Clause/standard	Provisions
Division 1 Liverpool City Centre	<p>The site is located within the Liverpool City Centre Boundary as shown on the key sites map however, no lots within the site are identified as having site specific provisions.</p> <p>The site is not affected by Helicopter OLS Contours.</p>
Bush Fire Prone	<p>Part of the site, largely east of Bridges Road, is identified as containing Bushfire Risk land in Category 1 and Buffer zones.</p>

4.1 Vision

Moore Point will be a riverfront place for people, which is well connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront, it will be a focal point for the growing Western Sydney metropolis and a place for everyone

The vision builds off the unique assets and characteristics of the site, comprising an area of approximately 38.5 hectares. Moore Point represents one of the largest urban regeneration projects in the Western District. The vision will be refined over time to reflect the guidance of the Placemaking Working Group.

To support the vision, SJB have prepared a masterplan for the site and additional landholdings comprising the Georges River North Precinct. The masterplan has been in the making for several years and has been shaped through an iterative and collaborative process with Council and a number of interdisciplinary consultants.

The masterplan aligns with State and local government's view to transform land east of the Georges River and north of Newbridge Road for mixed-use purposes including residential, commercial and recreation that complement Liverpool CBD.



Figure 18: Moore Point Masterplan (Source: SJB)

The aim of the masterplan is to create a riverfront development that supports Liverpool as being Sydney's third CBD – a place that references its unique cultural, natural and built heritage, and ensures this once-in-a generation opportunity is properly secured and celebrated. Key features of the proposal include:

- Adaptive re-use of existing heritage items;
- 21% of the site dedicated to public open space
- Rehabilitation, access and activation of the Georges River foreshore;
- Contribution to an 8km network of foreshore pedestrian and cycle paths;
- Educational and cultural facilities;
- Bridge crossings to Liverpool CBD, Train Station and Liverpool Innovation Precinct; and
- Transport, intersection and collector road improvements.

The masterplan is explained through a series of structure plans that detail future land uses, open space and landscaping, movement and access and activation of the site, and how it responds to strategic planning objectives for Liverpool CBD.

Movement and Access

Movement network will be defined by an internal loop road, which provides access from Newbridge Road. Several smaller primary streets provide access to the site including the existing underpass access to the east of the site, existing entrance on Bridges Road and other access points along the lakefront.

Two pedestrian bridges will connect the western riverfront to Liverpool Train Station and Bigge Park. There is an opportunity to establish a third pedestrian bridge to Liverpool Health and Education Precinct, subject to separate investigation and at a later stage in the project.

Integrated pedestrian and cycle paths are proposed along the Georges River foreshore and provide linkages to Haigh Park and Lake Moore.

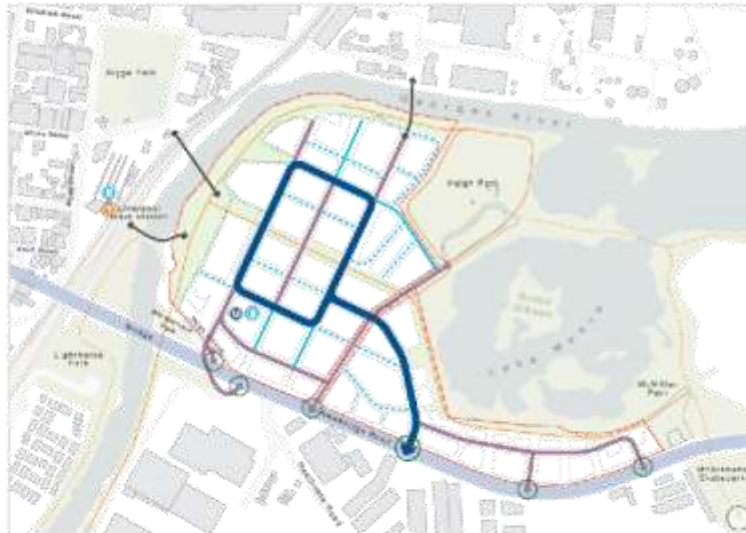


Figure 19: Movement and Access Structure Plan (Source: SJB)

Landscape and Open Space

Landscape and open space are defined by the Georges River, Lake Moore and Haigh Park, which are unique assets to Liverpool. The public domain and landscape network propose to connect these unique assets, while reinforcing the urban grid of the site.

The masterplan proposes 21% of the site be dedicated as a combination of active and passive uses along the riverfront, linear parks and lakefront parks.

The existing heritage item (Pirelli Power Cables and Systems Building) will be retained and adaptively reused for the purposes of a marketplace to facilitate additional place-making opportunities. The foreshore open space fronting the building will receive sufficient solar access and it is proposed to protect this through a provision in the Planning Proposal between 11am and 1pm mid-winter.

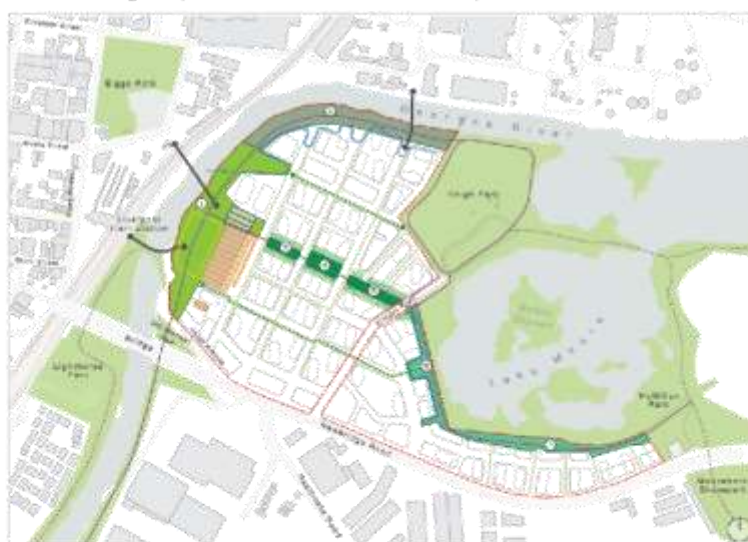


Figure 20: Public Domain and Landscape Structure Plan (Source: SJB)

Built Form and Land Use

Built form and land use is defined by a mix of land uses and building typologies through the B4 Mixed Use and B6 Enterprise Corridor zones. The masterplan has capacity to deliver 14,800 dwellings and 23,000 jobs up to 2051 with take-up analysis indicating demand for approximately 6,900 dwellings to 2036.

The predominant building typology throughout the masterplan is the mixed use tower/podium. Some mixed use buildings along Newbridge Road have residential towers on top while others are standalone residential buildings. Standalone residential buildings will front the Georges River and Lake Moore.



Figure 21: Built form and Land Use Structure Plan (Source: SJB)

Active Frontages and Servicing

Active frontages and servicing are defined by a clear distinction between pedestrian oriented activate frontages and service areas for loading and parking.

Activate frontages reflect land uses, built form and resulting activity, which will be focused around the heritage marketplace, Georges River and linear park to Lake Moore. Activation will be provided along podium edges and on alternating visible corners in order to receive good exposure from main roads or green links.



Figure 22: Active Frontages and Servicing Structure Plan (Source: SJB)

Character Areas

The masterplan is structured around seven character areas that are defined by the interface of existing environmental features including the Georges River, Haigh Park, Newbridge Road and Lake Moore.

These character areas are:

- Georges Riverfront Centre;
- Riverfront Neighbourhood;
- Urban Core;
- Education and Mixed Use Parkway;
- Newbridge Edge;
- Lakefront Village; and
- Lake Moore Foreshore.



Figure 23: Character Areas (Source: SJB)

Importantly, these character areas form the basis of the sub-precinct plans, which will be further refined and tested through the course of the Planning Proposal to establish a site-specific DCP. The PWG will be involved through this process to help refine and shape the envisaged objectives contained within the DCP.

5 Planning Proposal Overview

Section 3.33 of the Act outlines the required contents of a planning proposal. The former Department of Planning and Environment's "A Guide to Preparing Planning Proposals" (February 2019), breaks these requirements into six parts. These parts are addressed in proceeding chapters as follows:

- Chapter 4 addresses Part 1—a statement of the objectives and intended outcomes;
- Chapter 5 addresses Part 2—an explanation of the provisions to be included in the proposed instrument;
- Chapter 6 addresses Part 3—justification of the objectives, outcomes and the process for implementation;
- Chapter 7 addresses Part 4—maps to identify the modifications required to the proposed instrument and the area to which it applies;
- Chapter 8 addresses Part 5—details of the community consultation to be undertaken; and
- Chapter 9 addresses Part 6—draft timeline for the Planning Proposal.

6 Objectives and Intended Outcomes

The objectives and intended outcomes of the planning proposal are to:

- Realise Government objectives for the Georges River North Precinct, expressed both through the Place Strategy and LSPS, to provide a mixture of uses that complement the Liverpool CBD;
- Complement the objective of Liverpool Collaboration Area as a "rejuvenated river city";
- Assist the collaboration area in achieving its 2036 job and housing targets, which include 18,800 new dwellings and 16,200 new jobs;
- Ensure infrastructure is delivered in line with development;
- Celebrate local character and heritage through the adaptive re-use of existing heritage items;
- Provide future housing and jobs within close proximity of a potential future Metro connection to Bankstown and the FAST Corridor;
- Achieve Council's vision of the Georges River Precinct as a "true River City that has a vibrant mix of uses and activities";
- Enhance access to the Georges River Foreshore and improve opportunities along the waterfront;
- Provide active and passive recreation opportunities for residents and workers in the area;
- Act as a statement of intent to set a benchmark for new development in Moorebank that prioritises a high quality public realm;
- Provide new public domain infrastructure and uses conducive to the foreshore nature of the site;
- Deliver new pedestrian and cycleway improvements along the foreshore, and additional connections from the site to Liverpool CBD and Train Station;
- Provide a mix of uses with excellent access to existing public transport, community infrastructure, health and education services and Liverpool CBD;
- Enable new services and accommodation in close proximity to the Liverpool Health and Education Precinct and Innovation Precinct;
- Deliver a local street network and pedestrian connections to the foreshore; and
- Provide high quality mixed use development, which will facilitate opportunities for new employment, housing choice and public amenity.

7 Explanation of Provisions

The planning proposal seeks to achieve the intended outcomes outlined in Section 3 of this report through the following amendments to LLEP 2008:

- Rezone the site from IN2 Light Industrial to B4 Mixed Use and B6 Enterprise Corridor;
- Increase the maximum floor space ratio to part 4.2:1 and 3.5:1;
- Introduce an RL height for the site and increase the maximum height of buildings to from 18m and 15m to 136 RL and 108 RL;
- Introduce Division 1A to manage site specific provisions; and
- Introduce new subclause in Schedule 1 to permit additional uses.

The relevant mapping changes are shown in Section 7 of this report.

The RL heights have been specifically determined by the Bankstown Airports Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) circling surfaces.

In order to manage site specific development outcomes on the site, it is proposed to create a new Division to LLEP 2008. We note part of the land is already located within Division 1 Liverpool city centre however, it would be intended to amend this map to refer to Moore Point as city centre east.

The following structure and wording are suggested:

7.1 Part 7 Additional Local Provisions

Following Division 1 Liverpool city centre provisions

7.1.1 Division 1A Liverpool city centre eastern expansion – Moore Point provisions

7.5AB Objectives for development in Moore Point

(1) Before granting consent for development on land in the Moore Point, the consent authority must be satisfied that the proposed development is consistent with such of the following objectives for the redevelopment of Moore Point as are relevant to that development—

- (a) to provide building forms and land uses that are complementary to Liverpool city centre,*
- (b) to enhance the Georges River foreshore for passive and active recreational purposes,*
- (c) to enhance places of heritage significance including the Pirelli Powercables and Systems Building,*
- (d) Provide a mix of uses that exhibit a high level of design excellence,*
- (e) to provide direct, convenient and safe pedestrian links to Liverpool Train Station and Liverpool city centre,*
- (f) to ensure land uses respond appropriately to Newbridge Road including traffic and residential amenity.*

7.5AC Land to which this Division Applies.

(1) This division applies to Moore Point marked "AREA A" on the Special Provisions Area Map.

7.5AD Development requiring or authorising the preparation of a development control plan

- (1) *The objective of this clause is to ensure development occurs with a site-specific development control plan*
- (2) *This clause applies to development on land –*
 - (a) *That is shown in black outline on the Special Provisions Area Map that is for the purposes of a new building, which will have a gross development area in excess of 5000 sqm.*
- (3) *A development control plan is not required to be prepared if the consent authority is satisfied that such a plan would be unreasonable or unnecessary in the circumstances or that the development*
 - (a) *Involves only alterations and additions to an existing building, and*
 - (b) *Does not significantly increase the height or gross floor area of the building, and*
 - (c) *Does not have significant adverse impacts on adjoining buildings or the public domain, and*
 - (d) *Does not significantly alter any aspect of the building when viewed from public places.*
- (4) *Development consent must not be granted for development on land to which this clause applies unless –*
 - (a) *A concept development application has been prepared or applies to the land, or*
 - (b) *The development is of a minor nature and is consistent with the objectives of the zone in which the land is situated.*
- (5) *The development control plan must provide for all of the following –*
 - (a) *requirements as to the form and external appearance of proposed development so as to improve the quality and amenity of the public domain,*
 - (b) *how proposed development addresses the following matters—*
 - i. *the suitability of the land for development,*
 - ii. *the existing and proposed uses and use mix,*
 - iii. *any heritage issues and streetscape constraints,*
 - iv. *the location of any tower proposed, having regard to the need to achieve an acceptable relationship with other towers (existing or proposed) on the same site or on neighbouring sites in terms of separation, setbacks, amenity and urban form,*
 - v. *the bulk, massing and modulation of buildings,*
 - vi. *street frontage heights,*
 - vii. *environmental impacts, such as sustainable design, overshadowing and solar access, visual and acoustic privacy, noise, wind and reflectivity,*
 - viii. *the achievement of the principles of ecologically sustainable development,*

- ix. pedestrian, cycle, vehicular and service access and circulation requirements, including the permeability of any pedestrian network,
- x. the impact on, and any proposed improvements to, the public domain,
- xi. the impact on any character area,
- xii. achieving appropriate interface at ground level between the building and the public domain,
- xiii. the excellence and integration of landscape design,
- xiv. manage the interface with industrial uses and associated amenity impacts from their ongoing operation,
- xv. the incorporation of high quality public art into the fabric of buildings in the public domain or in other areas to which the public has access.

7.5AE Design excellence in Moore Point

- (1) *The objective of this clause is to deliver the highest standard of architectural and urban design.*
- (2) *Development consent must not be granted to development involving the construction of a new building or external alterations to an existing building in Moore Point unless the consent authority considers that the development exhibits design excellence.*
- (3) *In considering whether development exhibits design excellence, the consent authority must have regard to the following matters—*
 - (a) *whether a high standard of architectural design, materials and detailing appropriate to the building type and location will be achieved,*
 - (b) *whether the form and external appearance of the proposed development will improve the quality and amenity of the public domain,*
 - (c) *whether the proposed development detrimentally overshadows the Georges River foreshore,*
 - (d) *any relevant requirements of applicable development control plans,*
 - (e) *how the proposed development addresses the following matters—*
 - i. *the suitability of the site for development,*
 - ii. *existing and proposed uses and use mix,*
 - iii. *heritage issues and streetscape constraints,*
 - iv. *the location of any tower proposed, having regard to the need to achieve an acceptable relationship with other towers (existing or proposed) on the same site or on neighbouring sites in terms of separation, setbacks, amenity and urban form,*
 - v. *bulk, massing and modulation of buildings,*
 - vi. *street frontage heights,*

- vii. environmental impacts such as sustainable design, overshadowing, wind and reflectivity,
- viii. the achievement of the principles of ecologically sustainable development,
- ix. manage the interface with industrial uses and associated amenity impacts from their ongoing operation,
- x. pedestrian, cycle, vehicular and service access, circulation and requirements,
- xi. the impact on, and any proposed improvements to, the public domain.

7.5AF Overshadowing of certain public spaces

- (1) *The objective of this clause is to protect specific public space from excessive overshadowing along the Georges River Foreshore.*
- (2) *The consent authority must not grant consent to development on any land unless it is satisfied that the development will not result in any net additional overshadowing between 11am and 1pm mid-winter, on the Georges River, shown in blue hatching on the Special Provisions Area Map.*

7.5AG Development in zone B6

- (1) *Clause 7.22 does not apply to this Division.*

7.2 Schedule 1 Additional Permitted Uses

In recognition of the precincts long-term staging, it is proposed to enable the continuation of industrial related uses as the precinct develops. This will conserve existing consents over the lifecycle without creating issues regarding existing use rights.

As such, a new subclause is proposed to Schedule 1 with the following wording suggested.

Use of certain land at Moore Point in zone B4 and B6

- (1) *This clause applies to B4 and B6 land in Moore Point*
- (2) *The objective of this clause is to permit industrial uses as Moore Point transitions from industrial to mixed use and residential land uses.*
- (3) *Development for the purposes of 'light industry', 'general industry' and 'warehouse or distribution centre's are permitted with consent.*
- (4) *Clauses 7.5 AD and 7.5AE do not apply to development subject to this clause.*

8 Justification

8.1 Section A – Need for the proposal

1. Is the planning proposal a result of an endorsed local strategic planning statement, strategic study or report?

The Planning Proposal is the direct result of a range of strategic planning studies including the Place Strategy and LSPS. These studies provide a clear strategic line of sight aimed at the successful transformation of Liverpool CBD eastwards and the regeneration of Moorebank. Overall, it reflects strong strategic and site-specific merit to facilitate land use change.

We note the recognition of Moore Point as an extension of Liverpool CBD was realised in 2008 through the creation of LEP 2008 and the inclusion of land north of Newbridge Road and west of Bridge Road under Division 1 – Liverpool city centre.

Place Strategy

The Place Strategy acknowledges Liverpool's complex challenges including the provision of new local amenity along the Georges River, constrained road networks, lack of sequencing and coordination associated with planning proposals and market interests in new residential development.

The site is situated within the Georges River North Precinct, which is identified as 'mixed use'. The mixed use area is defined as:

a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to and not in competition with, the commercial core.

The Planning Proposal is directly responding to the vision of the Georges River North Precinct by providing a mix of land uses, heights and floor space amendments that will facilitate a combination of uses across the area.

Liverpool Local Strategic Planning Statement

The LSPS establishes a 30 year strategic vision for land use planning in Liverpool and the necessary actions required to align with broader regional and district planning objectives.

Key to the LSPS is the recognition of the Georges River North Precinct as future residential/mixed-use to support the CBD and Innovation Precinct as advanced through the Place Strategy.

Key actions emerging from the LSPS that directly relate to the preparation of a Planning Proposal for the site include:

Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages. (short to medium term)

We note short to medium term in the LSPS refers to the following periods:

- Short term – Now-2020/2021; and
- Medium term – 2021/2022-2024/2025.

Following the clear alignment between the Place Strategy and LSPS, the Planning Proposal has been prepared to realise the priorities for Liverpool.

Draft Georges River Precinct Plan

Whilst not formally endorsed or finalised, the draft GRPP established the design principles and vision to transform land uses around Moorebank.

The masterplan provided the following vision for the River City:

By 2035 Liverpool and the Georges River Moorebank Precinct will become a true River City that has a vibrant mix of uses and activities. To support this new 21st century vision, employment opportunities will be created by leveraging the existing health-related industries in Liverpool and capitalising on the Precinct's strategic location within the south-west of Sydney.

The unique natural environment that surrounds the Precinct will be taken advantage of with mixed use development overlooking the river. New and upgraded open space along the river will encourage greater interaction and enjoyment of the area.

The proposal has been developed in consideration of the vision, design strategies and opportunities detailed within the masterplan. This includes the creation of an activated mixed use precinct, adopting highest and best uses to capitalise on proximity to Liverpool CBD, creation of a contiguous and accessible foreshore and responding to the waterfront character of the Georges River.

2. Is the planning proposal the best means of achieving the objectives and outcomes, or is there a better way?

The planning proposal is the best means of achieving the objectives and outcomes mandated in the Place Strategy and LSPS.

The site is zoned for IN2 Light Industrial purposes. Land uses within this zone are unable to achieve the mix of uses that are envisaged for the Georges River North Precinct. Therefore, a change of land use is required to facilitate a combination of residential and non-residential uses on the site.

The permitted uses contained under the IN2 zone would also fail to facilitate the job and dwelling targets stipulated in the Place Strategy and LSPS.

The existing land use and development standards would not be able to deliver the public domain improvements envisaged for the Georges River North Precinct including embellishment of the foreshore, adaptive re-use of existing heritage and creation of integrated and connected pedestrian and cycle links.

While it would be possible for a rezoning to be contemplated through a comprehensive LEP review, this is considered to be a less desirable method as it would not allow for detailed site master planning or consideration of public benefits and sequencing alongside the changes to planning controls including precinct specific provisions aligned to built form considerations.

A change of land use in conjunction with amendments to key development standards and the introduction of a new Division to the LEP is necessary to transform Moorebank into the natural extension of Liverpool CBD. This will provide land uses conducive to satisfying the objectives of the Place Strategy and LSPS as well as ensuring public benefits associated with the proposal are safeguarded.

The Planning Proposal will facilitate the following public benefits that are entirely consistent with the objectives and outcomes of the LSPS. These include:

- Riverbank rehabilitation and revegetation, including associated flooding and foreshore water quality treatments;
- Bridge connections to Liverpool CBD including 7km of shared cycle/pedestrian paths to foster healthy and socially connected communities across Liverpool;

- 21% of the site dedicated to new public open space and upgraded parkland, enhancing the green grid and delivering bespoke and high quality open space;
- Adaptive re-use of existing heritage building and retention of heritage grid adjacent to foreshore open space, creating a destination for the community;
- Upgrades to Newbridge Road and creation of new streets, improving infrastructure and enhancing connectivity prior to the future Metro Southwest;
- Provision of cultural uses and opportunities, establishing new experiences for a diversifying Liverpool and contributing to local character;
- Contribution to the 8km 'Georges River Walk' from Chipping Norton to Casula Powerhouse to activate but also protect and improve the health and activation of the Georges River; and
- Capacity to provide over 23,000 jobs in excellent proximity to Liverpool CBD and the associated Health and Education Precinct, strengthening the areas productivity.

Summary

The Planning Proposal is a direct result of Liverpool's LSPS, which provides actions to rezone Moore point for residential and mixed-use purposes. A proponent driven Planning Proposal is the best means of achieving this outcome through an integrated masterplan response in tandem with bespoke planning provisions to optimise built form and amenity outcomes for Moore Point.

8.2 Section B – Relationship to strategic planning framework

3. Will the planning proposal give effect to the objectives and actions of the applicable regional, or district plan or strategy (including any exhibited draft plans or strategies)?

The proposal has been considered against the strategic and site-specific merit test to demonstrate that the proposal has strategic merit (**Appendix 2**).

The planning proposal will give effect to the objectives and actions of the Premiers Priorities, Region Plan, District Plan and Place Strategy, as discussed below:

8.2.1 NSW Premiers Priorities

The NSW Government Premier Priorities sets ambitious targets to enhance the quality of life of residents in NSW. This is reflected through 15 key policy priorities centred around environmental, social and economic objectives. The Planning Proposal responds directly to the following priorities:

Table 4. NSW Premiers Priorities	
Priority	Consistency
Greening our city <i>Increase the tree canopy and green cover across Greater Sydney by planting one million trees by 2022.</i>	The proposal will facilitate a significant improvement of the existing tree canopy on the site by dedicating approximately 21% of the area to open space and green connections.

	<p>In particular, the proposal will introduce new tree canopies along a remediated and rehabilitated Georges River foreshore and Lake Moore. In this regard, the proposal is considered to significantly improve tree canopy across Greater Sydney.</p> <p>As detailed within the masterplan, the proposed street widths and building setbacks will facilitate the growth of mature trees in the streetscape.</p>
<p>Greener public spaces</p> <p><i>Increase the proportion of homes in urban areas within 10 minutes' walk of quality green, open and public space by 10 per cent by 2023.</i></p>	<p>The proposal will provide significant and interconnected open space areas in close proximity to Liverpool CBD and surrounding suburbs.</p> <p>This supports Sydney's Green Grid by creating a continuous Georges River foreshore park in tandem with an east-west green spine connecting to Lake Moore.</p> <p>Residents in Liverpool CBD and surrounding urban areas will be able to access this amenity with bridge connections across the Georges River to the site, which ensure these spaces are accessible by active modes of transport.</p>

Summary

The Planning Proposal aligns with the applicable NSW Premier Priorities. The proposal substantially improves tree canopy across industrial land and creates a network of new open spaces and green in walking/cycling distance to Liverpool CBD.

8.2.2 Greater Sydney Region Plan

The Region Plan was published in March 2018 and sets out the vision, objectives, strategies and actions for a metropolis of three cities across Greater Sydney.

The Plan replaced the previous A Plan for Growing Sydney and outlines 10 overarching directions supported by 40 objectives, which aim to provide interconnected infrastructure, productivity, liveability and sustainability benefits to all residents.

Table 5 demonstrates the consistency of the Planning Proposal in relation to the Region Plan objectives.

Table 5. A Metropolis of Three Cities	
Objective	Consistency
1 Infrastructure supports the three cities	The proposal seeks to align new infrastructure to support the growth of Liverpool as Sydney's third CBD including extensive foreshore open

		space embellishments, creation of new roads and upgrades of existing intersections.
2	Infrastructure aligns with forecast growth – growth infrastructure compact	The proposal aligns with population, employment and housing demand for Liverpool LGA and will be addressed through commercial and residential floor space.
3	Infrastructure adapts to meet future needs	The proposal will provide new infrastructure along the Georges River foreshore and responds to the vision of the area articulated in the LSPS and Place Strategy. This will be achieved through further consideration of planned and future transport required to support Moore Point through the TIWG.
4	Infrastructure use is optimised	The proposal will locate future residents within immediate proximity to Liverpool CBD, Innovation Precinct and Liverpool Train Station.
5	Benefits of growth realised by collaboration of governments, community and business	The proposal provides a complete alignment with the land uses articulated in the Place Strategy and Liverpool Collaboration Area including residential, recreational, retail and commercial uses. The proposal has established a series of working groups to drive a number of strategic objectives and principles for Moore Point.
6	Services and infrastructure meet communities' changing needs	The proposal will provide new open spaces, soft infrastructure such as cycle links, civic spaces, educational facilities and service that will cater for the future population growth of Liverpool.
7	Communities are healthy, resilient and socially connected	<p>The proposal will provide new pedestrian and cycleway connections to form part of a broader integrated network, promoting walkability and pedestrian movement along the Georges River foreshore, Lake Moore and Casula.</p> <p>The proposal will establish a fine grain urban character in an area which is largely defined by large industrial lots as outlined in the sub-precinct character statements.</p>
8	Greater Sydney's communities are culturally	The proposal will celebrate the identity and sense of place of the River City.

	rich with diverse neighbourhoods	<p>In particular, the proposal seeks to utilise the existing local heritage item on the site (Pirelli Power Cables and Systems Building) as a focal point and destination for Liverpool CBD.</p> <p>The use of this item for retail and marketplace purposes will provide opportunities to create new diverse neighbourhoods that are founded on an identity unique to the Georges River.</p>
9	Greater Sydney celebrates the arts and supports creative industries and innovation	<p>The proposal will provide new public spaces and street corners that will facilitate public art and opportunities for civic gathering.</p> <p>The proposal will also ensure commercial/ bulky uses are retained on site to facilitate new industries and job opportunities along Newbridge Road, which is proposed to be zoned B6 Enterprise Corridor.</p>
10	Greater housing supply	<p>The proposal seeks to provide approximately 14,800 dwellings when ultimately developed. This will contribute to the housing targets as mandated by the GSC in the medium and long term.</p>
11	Housing is more diverse and affordable	<p>The proposal will provide additional housing supply to Liverpool LGA and CBD, ensuring enough supply is provided to lower the cost of housing.</p>
12	Great places that bring people together	<p>The proposal seeks to unify Liverpool CBD with Moorebank. Under the current planning provisions, the site fails to respond and complement the changing aspirations and vision of Liverpool CBD.</p> <p>The proposal will rebalance Liverpool CBD and focus of a vibrant mix of uses oriented around the Georges River foreshore including passive and active recreational opportunities and bridge connections.</p>
13	Environmental heritage is identified, conserved and enhanced	<p>The proposal will adaptively reuse a local heritage item on the site (Pirelli Power Cables and Systems Building) for a future retail and marketplace.</p> <p>This will ensure that the unique environmental assets of the site are utilised and celebrated.</p>

14	<i>A Metropolis of Three Cities</i> – integrated land use and transport creates walkable and 30-minute cities	<p>The site is located within excellent proximity of Liverpool CBD, which connects residents and employers across Sydney and to the future Badgerys Creek Aerotropolis.</p> <p>The proposal will provide new cycle and pedestrian links coordinated across the Moorebank area to improve connections to Liverpool CBD.</p> <p>The proposal provides capacity for a future Southwest metro extension into Liverpool CBD, which would further integrate land use around transport.</p>
15	The Eastern, GOP and Western Economic Corridors are better connected and more competitive	The proposal will reinforce the role of the Western Economic Corridor by contributing to employment and residential growth in Liverpool CBD. This will leverage off the strategic location of the site in relation to the Badgerys Creek Aerotropolis.
16	Freight and logistics network is competitive and efficient	The proposal will not undermine the existing freight and logistical projects being undertaken at Moorebank Intermodal Terminal.
20	Western Sydney Airport and Badgerys Creek Aerotropolis are economic catalysts for Western Sydney	The proposal will ensure residents are living within a closer proximity to the potential economic benefits of Badgerys Creek and the western city, which will be accessible via the FAST Corridor.
21	Internationally competitive health, education, research and innovation precincts	<p>The proposal will contribute to the regeneration of Moorebank, facilitating new residents into the area who will benefit from close proximity to Liverpool's existing key education and health assets and transport infrastructure.</p> <p>The proposal will facilitate high-quality residential and services in close proximity to the major Liverpool institutions including Western Sydney University and Liverpool Hospital, as well as providing capacity for educational and cultural institutions on the site.</p>
22	Investment and business activity in centres	The proposal will facilitate increased business activity in Moorebank and Liverpool CBD by providing critical mass of new residents. This in turn will facilitate the demand for additional

		<p>services and business in the CBD and the site itself.</p> <p>Importantly, the uses and floorspace proposed would act as complementary, and not in competition with the CBD. The proposal has capacity to deliver 23,000 new jobs in the long-term up to 2051.</p>
23	Industrial and urban services land is planned, retained and managed	<p>The proposal seeks to rezone land from industrial to mixed use and recreational purposes.</p> <p>The District Plan states that where appropriate, conversion of industrial lands into other uses may be appropriate. Moore Point is identified in the District Plan as 'Review and Manage'.</p> <p>We further note Council's ELS seeks to only retain land industrial land outside of the Collaboration Area. Land within Collaboration Areas are subject to future alternative uses.</p> <p>As identified in the Place Strategy, the site is located in the Georges River North Precinct, which is envisaged to accommodate a mix of land uses.</p> <p>Furthermore, the LSPS advances a mixed-use vision for the Precinct via a rezoning in the short to medium term.</p> <p>Given the strategic line of sight and consistency amongst strategic planning to see a mix of uses on the site, the site provides a circumstance where conversion would be appropriate to satisfy the overall strategic vision for Liverpool's diversifying and expanding CBD.</p>
24	Economic sectors are targeted for success	<p>The proposal will increase employment opportunities in the precinct by proposing non-residential floor space that can be allocated to a mix of entertainment, retail, commercial and business uses. The proposal is capable of delivering up to 23,000 new jobs by 2051.</p>
25	The coasts and waterways are protected and healthier	<p>The proposal will contribute to the remediation and revitalisation of the Georges River foreshore by improving foreshore vegetation and bank stabilisation.</p>

27	Biodiversity is protected, urban bushland and remnant vegetation is enhanced	<p>The proposal will revitalise parts of the Georges River foreshore, facilitating new landscaping, vegetation and tree planting across the site.</p> <p>The site in its current state and capacity under existing planning controls fails to incentivise or facilitate additional tree canopy or landscaping.</p>
28	Scenic and cultural landscapes are protected	The proposal will ensure future residents and visitors will benefit from new views and vistas towards the Georges River foreshore.
29	Environmental, social and economic values in rural areas are protected and enhanced	The proposal will strengthen the environmental, social and economic values of the area by celebrating cultural heritage items on the site and surrounding environmental assets including Haigh Park, Lake Moore and the Georges River foreshore.
30	Urban tree canopy cover is increased	The proposal will provide opportunities for additional landscaping and street trees along new local streets, pocket parks and the Georges River foreshore.
31	Public open space is accessible, protected and enhanced	The proposal seeks to create and embellish open space across the site and improving Sydney's green grid connections to Liverpool CBD and the Georges River.
32	The Green Grid links parks, open spaces, bushland and walking and cycling paths	The proposal will deliver a green and blue grid, integrating the site with a series of bespoke landscape and open space areas supporting by pedestrian and cycling infrastructure. The proposal importantly, facilitates public access to the riverfront and previously underutilised open space.
33	A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change	The proposal will contribute to a more sustainable and resilient city through remediation of the Georges River and the utilisation of ESD principles in future development.
34	Energy and water flows are captured, used and re-used	<p>The proposal will provide uses that will enable WSUD and ensure water is appropriately drained across the site.</p> <p>The Placemaking Working Group will be established to drive sustainability governance</p>

		for the site (actions 30-35). The Group will have representation from Council, the GSC and the project team.
35	More waste is re-used and recycled to support the development of a circular economy	The proposal will facilitate a mix of land uses that can utilise recycled water for landscaping and WSUD.
36	People and places adapt to climate change and future shocks and stresses	The proposal will deliver a resilient waterfront that is able to respond to the varying shocks and stresses of the Georges River. The proposal aligns with the foreshore building line in accordance with the LEP.
37	Exposure to natural and urban hazards is reduced	The proposal will improve the landscape quality of the site.
38	Heatwaves and extreme heat are managed	The proposal will deliver additional landscaping and tree plantings on the site and along the riparian waterfront, improving the overall urban cooling of the site.
39	A collaborative approach to city planning	The proposal is responding to a precinct wide approach for Moorebank as outlined in the Place Strategy and LSPS. The proposed working groups that includes Council, relevant State agencies and the proponents, builds on the collaborative approach established by the GSC Collaboration Area. The proposal aims to provide an integrated and whole of government approach to the future of the area including new land uses, foreshore spaces, cycle and pedestrian links.
40	Plans refined by monitoring and reporting	Consistent. The proposal responds to the Pulse of Greater Sydney and the 2019 Annual Report for the Liverpool Collaboration Area.

The section below discusses objectives of the Plan that the Planning Proposal may contradict. These are discussed below:

Industrial Land Protection

Objective 23 of the Plan provides directives to plan, manage and retain industrial and urban services land.

The Plan acknowledges that Liverpool and its surrounding areas will undergo a review of all industrial and urban services land to confirm its retention or to manage uses to allow sites to transition to higher-order employment activities.

As discussed in the table above, there has been a clear mandate from a suite of strategic planning documents to reconsider land uses east of the Georges River and north of Newbridge Road for mixed use purposes.

This has most recently been reflected in the LSPS, which provides actions to rezone land east of the Georges River and north of Newbridge Road for mixed use purposes as a short term priority.

In light of this, the site provides a circumstance where conversion from industrial uses would be appropriate to satisfy the overall strategic vision for Liverpool's diversifying and expanding CBD.

The Planning Proposal proposes a B4 zone that is capable of providing a genuine mix of uses including hotels and serviced apartments that will contribute to additional employment generation and job density.

With regards to transitioning to higher-order employment activities, the Planning Proposal proposes a B6 Enterprise Corridor zone. The B6 zone responds to the changing demographic requirements and business trends in Liverpool's economy.

A monofunctional industrial use of the site does not present the most intensive and efficient use of the land. The site is suitable to accommodate higher order jobs via the B4 and B6 zone and to co-locate these uses with high levels of visibility and exposure to Newbridge Road or in mixed use buildings.

An Economic Impact Assessment has been prepared by Hill PDA under separate cover (**Appendix 4**), which considers the potential loss of industrial lands. Key findings of the report in relation to the loss of industrial land include:

- The potential impact of the masterplan would have on Liverpool LGA to meet its future industrial lands would have been explored in detail during preparation of the LSPS, which supports the transition of the site into a residential/mixed-use precinct;
- The executive summary of Council's Employment Lands Strategy (ELS), which supports the LSPS, states 'retain and protect all industrial precincts in the LGA that is not identified as required as part of the Collaboration Area Place Strategy'. The outcome is that the ELS endorses the transformation of Moore Point to mixed-use purposes;
- The endorsement of these strategies implies that any negative impacts resulting from the transformation of Moore Point into mixed-use are outweighed by the positive benefits and that appropriate land stock exists to accommodate the relocation of urban services; and
- The Planning Proposal proposes a B6 Enterprise Corridor zone that has the potential to provide 47,570m² of employment space, providing an opportunity for typically low impact industrial land occupiers to be located in the precinct.

Summary

The Planning Proposal is consistent with the Region Plan by building upon liveability, productivity and sustainability objectives including increasing housing supply and diversity, co-locating new jobs and homes in close proximity to existing infrastructure in Liverpool CBD, building upon the Green Grid through the Georges River foreshore and Lake Moore remediation and adaptive re-use of heritage items that celebrate Liverpool's local character.

The Region Plan nominates industrial land in Liverpool to be reviewed. The Place Strategy, LSPS and ELS support the transformation of Moore Point into a mixed use precinct and implies that loss of industrial zoned land is required to facilitate the future outcomes for the site. Nonetheless, the proposed B4 and B6 zones will accommodate the transition to high order employment activities, with significant intensification of jobs and a genuine mix of employment opportunities as well as low impact industrial uses.

8.2.3 Western City District Plan

Table 6 provides a summary of the Planning Proposal's consistency with the District Plan with specific reference to the actions for Liverpool.

Table 6. Western City District Plan		
Actions for Collaboration Area		Consistency
1	Increase housing diversity and provide affordable housing	<p>The proposal will provide approximately 14,800 residential apartments on the site in the long term to 2051. Take-up analysis indicates demand for approximately 6,900 dwellings to 2036.</p> <p>The additional housing proposed will provide housing choice and diversity and reducing pressure on affordability for the area.</p>
2	Improve and coordinate transport and other infrastructure to support job growth	<p>The proposal integrates active modes of transport with public transport infrastructure including new cycle links and pedestrian connectivity to Liverpool Train Station.</p> <p>The future South West Metro extension will further reinforce the suitability of new development in Moorebank. The project team has established a TIWG to ensure place-based transport infrastructure can be planned and delivered in line with the site's rezoning.</p>
3	Develop smart jobs around the health and education precinct, particularly in the areas of advanced manufacturing and logistics, automation and translational research	<p>The proposal will ensure smart jobs can be pursued through the B6 Enterprise Corridor zone located along Newbridge Road to ensure smart jobs align with the function of Newbridge Road.</p> <p>The B6 Enterprise Corridor provides for land uses that are conducive to the creation of smart jobs on the site.</p>

Table 6. Western City District Plan		
Actions for Collaboration Area		Consistency
4	Improve the night-time economy, mixed use and transport connections	The proposal will facilitate the creation of a night-time economy through the proposed B4 mixed use zoning, which can facilitate a variety of active uses.
5	Improve urban liveability and Liverpool's sense of place	<p>The site's current zoning and planning controls do not improve urban liveability or allow residents to celebrate the city's sense of place.</p> <p>The proposal will transform Liverpool CBD into Sydney's third CBD with significant investment in open space and public domain, high-quality mixed-use buildings and celebration of local heritage and orientation towards natural assets.</p>
6	Improve environmental outcomes around the Georges River	<p>The current industrial use on the site is considered to have a higher impact in regard to the health and remediation of the surrounding river and waterways. The current use of the site provides no incentive to respond to its foreshore setting via built form and design of buildings.</p> <p>The proposal will result in uses that have lower impact on the Georges River in tandem with bank rehabilitation for passive recreational uses.</p>
7	Develop Greater Sydney Green Grid projects	The proposal will deliver a suite of open spaces and form part of a more integrated open space network for the Moorebank area. The proposal will provide approximately 20% of the site to public open space.
8	Capitalise on Western Sydney Airport and the Western Sydney City Deal	The proposal capitalises on the opportunities presented by the Western Sydney City Deal and Western City Airport by providing a catalyst for urban regeneration east of Liverpool CBD and strengthening its prominence as Sydney's third CBD.
9	Revitalise Liverpool CBD	The proposal will rebalance Liverpool CBD towards the Georges River, which has been a

Table 6. Western City District Plan		
Actions for Collaboration Area		Consistency
		<p>clear objective of Council and Government for land east of the Georges River.</p> <p>The proposal will complement the revitalisation of Liverpool CBD by increasing residential and non-residential uses in tandem with new open space and infrastructure improvements.</p>
10	Examine flooding issues and water management	The proposal has considered flooding on the site and has demonstrated that development of the land can proceed in a manner that will not result in increased flooding either on or off the site.
11	Consider the opportunities presented by the Liverpool Water Recycling Facility	The proposal does not interfere with the Liverpool Water Recycling Facility.
Actions for Liverpool		
a	Protect and develop the commercial core	The proposal will strengthen the critical mass available to Liverpool's commercial core, by providing for new residential communities that require access to goods and services in Liverpool CBD. It will aim to provide uses that are complementary to the CBD.
b	Improve and coordinate transport and other infrastructure to support jobs growth	<p>The proposal will provide new active transport options across the site, acting as a catalyst for wider regional active transport links to the CBD.</p> <p>The proposal will provide new bridge crossings over the Georges River to Liverpool CBD and Train Station, ensuring new residents have access to services and employment.</p>
c	Develop smart jobs around the health and education precinct	The proposal will provide for new higher order commercial uses on the site through the B4 Mixed Use and B6 Enterprise Corridor Zone.
d	Build on the centre's administrative and civic role	The proposal does not undermine Liverpool's administrative and civic role.
e	Improve public domain including tree-lined,	The site has traditionally operated for uses that does not require consideration of the

Table 6. Western City District Plan	
Actions for Collaboration Area	Consistency
comfortable open spaces and outdoor dining	public domain, street trees, open spaces and outdoor dining. The proposal will facilitate transformation of the site for mixed use purposes, ensuring open space, tree plantings and active frontages are introduced to promote the public domain.
f Improve connectivity and links to the Georges River and prioritise pedestrian, cycle and public transport facilities	The proposal will provide cycle links along the Georges River foreshore and pedestrian links to Liverpool CBD and Train Station.
g Encourage vibrant mix of uses, new lifestyle and entertainment uses to activate streets and grow the night-time economy	The current planning controls and controls only allow for more intensive employment related uses and do not encourage a vibrant mix of lifestyle and entertainment uses. The proposal will facilitate a mixed-use precinct consistent with the vision of the Georges River North Precinct.
h Capitalise on the Western Sydney Airport and Western Sydney City Deal initiatives	The proposal capitalises on the Western Sydney Airport and Sydney City Deal by reinforcing the role of Liverpool as a major centre in Western Sydney. The FAST Corridor will also ensure future residents can access the Western Sydney Aerotropolis, increasing job accessibility.

Summary

The Planning Proposal is consistent with the Western City District Plan by advancing key actions for Liverpool. In particular, it provides a genuine mix of uses complementary to Liverpool CBD, creates new active connections across the Georges River to Liverpool CBD and Train Station and results in the creation of place-making opportunities along the Georges River foreshore.

8.2.4 Liverpool Collaboration Area Place Strategy

The Place Strategy for Liverpool Collaboration Area was released in December 2018 and establishes the priorities, opportunities and delivery actions for the area.

Under the Place Strategy, the site is identified as 'mixed use' and within the Georges River North Precinct, which aims to provide a mixture of retail, residential and community uses that provide sustainable employment that is not in competition with the commercial core.

Table 7. Place Strategy		
Priorities for Collaboration Area		Consistency
1	Plan for movement and place functions in Liverpool City Centre, improve accessibility and walkability, and reduce congestion in and around the centre.	<p>The proposal will improve accessibility and walkability in Liverpool CBD by proposing pedestrian and cycle links along the Georges River foreshore and bridge crossings into Liverpool CBD.</p> <p>This will reduce car dependence and encourage active modes of transport in the wider area.</p>
2	Improve public transport to and from Liverpool	The proposal would benefit from a Metro extension to Liverpool CBD, if realised.
4	Create and renew great places for people	The proposal and accompanying framework plans provide a holistic precinct wide outcome involving the celebration of existing heritage, embellishment of open space and capacity for new educational and cultural institutions to reinforce the areas local character and place making assets.
5	Provide social and civic infrastructure for current and future generations	The proposal will introduce new civic and social infrastructure around the Georges River foreshore and within the site.
6	Support the growth of critical employment hubs in the Collaboration Area	The proposal supports non-residential floorspace that can support employment growth adjacent to Liverpool CBD and Innovation Precinct that is complementary to the existing city centre.
7	Support the role and function of employment and urban services land	<p>The proposal is located in a designated 'mixed use' area under the Place Strategy.</p> <p>The proposal has capacity to deliver a mix of employment opportunities without competing with the CBD.</p> <p>The proposal aims to transition part of the site to higher-order industry via the proposed B4 Mixed Use zone and B6 Enterprise Corridor zone along Newbridge Road.</p>
8	Develop a network of high-quality open space linked by the Greater Sydney Green Grid and invest in	The proposal implements green and blue grid aspirations by remediating the Georges River foreshore and introducing a network of new

Table 7. Place Strategy		
Priorities for Collaboration Area		Consistency
	Improvements to the Georges River and its foreshores	open spaces to connect to Liverpool CBD and the wider area.
9	Create a resilient place	<p>The proposal has been designed in consideration of flooding on the site and proposes approximately 21% of the site as open space.</p> <p>A Placemaking Working Group will be established to drive sustainability governance for the site. The Group will have representation from Council, the GSC and the project team.</p>
10	Establish a precinct-level governance to deliver the vision	The proposal is consistent with the vision set out under the Place Strategy.

Summary

The proposal is consistent with the Place Strategy by proposing land uses that will achieve the mix of residential, commercial and recreational uses east of the Georges River and north of Newbridge Road.

8.2.5 Future Transport Strategy 2056

The Future Transport Strategy is an update to the 2012 Long Term Transport Masterplan for NSW. It is a 40-year strategy supported by plans for regional NSW and Greater Sydney that seeks to align transport with land use.

The Strategy describes a number of new Greater Sydney initiatives for investigation (0-10 years) including infrastructure to support rapid bus connections and improved bus connections between Western Sydney Airport and Liverpool.

As previously described, this has been actioned through Council's collective vision and flagship project of a FAST Corridor to provide express and frequent services from Liverpool CBD to Badgery's Creek Aerotropolis.

A more critical initiative for investigation (20+ years) is the future Sydney Metro City and Southwest Extension to Liverpool CBD and the M5 motorway extension from Liverpool to Outer Sydney Orbital.

While these investigations are long-term, they demonstrate that there is potential for significant transport investment in Liverpool and its surrounding areas. The site is well placed to capitalise on a future metro station and provide additional jobs and homes near public transport. The TIWG will further implement the Movement and Place Framework as set out in Future Transport Strategy 2056.

Summary

The proposal is consistent with Future Transport Strategy and ensures new residents are able to utilise prospective transport infrastructure including the FAST corridor and a future potential Southwest Metro extension.

The TIWG and sequenced transport investigations will ensure existing and planned infrastructure can meet forecast land use and population growth resulting from the Planning Proposal and wider Collaboration Area.

4. Will the planning proposal give effect to council's endorsed local strategic planning statement, or another endorsed local strategy or strategic plan?

8.2.6 Liverpool Local Strategic Planning Statement

Connected Liverpool 2050 is Council's LSPS and sets out a 30 year strategic vision for land use planning in Liverpool and the necessary actions required to align with broader regional and district planning objectives.





Figure 24: Connected Liverpool 2050 (Source: Liverpool City Council)

The site is marked with the following legend:

Investigate residential/mixed use at Moore Point to support CBD and Innovation precinct (River Precinct)

While some actions are prescribed to the entire LGA or specific areas, actions relevant or related to the Planning Proposal are outlined in **Table 8**.

Table 8. Connected Liverpool 2050		
Actions		Consistency
1.7	Work with Transport for NSW (TfNSW) to bring forward extension of the Sydney Metro City and Southwest and investigate a preferred alignment <i>(short term planning, with delivery in the long term)</i>	The proposal supports the prospect for a future Southwest Metro extension to Liverpool CBD by providing additional land capacity to co-locate a station box and over-station development.
2.1	Finalise investigations into the FAST corridor in collaboration with State and Federal government agencies <i>(short term)</i>	The proposal will provide new jobs and dwellings in Liverpool CBD and support the use and patronage of the FAST Corridor to major employment opportunities in Western Sydney.
2.4	Investigate extension of FAST corridor to Holsworthy station with consideration of appropriate station locations, including Moore Point. <i>(medium to long term)</i>	The proposal has the capacity to accommodate a future transport interchange and bus services. Additional public transport infrastructure will support the proposed densities in addition to the bridge crossings to Liverpool interchange.

Table 8. Connected Liverpool 2050		
Actions		Consistency
3.2	Optimise public transport infrastructure and accessibility as well as connectivity to pathways and cycleways as part of place-making for neighbourhood centres <i>(short to medium term)</i>	The proposal provides multiple bridge crossings over the Georges River to Liverpool CBD and Train Station. These bridge crossings could be capable of supporting both pedestrian and cycleway links in tandem with new active connections within the site.
4.1	Collaborate with government agencies to prepare a local and regional level infrastructure schedule. <i>(short term)</i>	The proponent is seeking to prepare a Section 7.11 Contributions Plan following Gateway Determination of the Planning Proposal. The Plan will incorporate a list of infrastructure items bespoke to the development of the site in a sequenced order.
4.2	Work with Greater Sydney Commission and relevant stakeholders to address the Liverpool Collaboration Area Place Strategy through amendments to the LEP. <i>(short to medium term)</i>	The proponent and project team have been collaborating with Council and the GSC in relation to achieving the vision of the Collaboration Area and more specifically, the Georges River North Precinct.
6.6	Review LEP to give effect to River Connections Program linking green space networks from Casula to Pleasure Point, improving accessibility and visual amenity <i>(short, medium and long term)</i>	The proposal seeks to establish a continuous public foreshore connection from Lake Moore, Haigh Park and along the Georges River to improve activation and celebration of the riverfront.
6.4	Establish a metropolitan-scale cultural/entertainment facility in the City Centre. <i>(visionary)</i>	The proposal has identified capacity for a cultural facility/uses within the site. The proposed B4 Mixed Use zone is conducive for such uses in close proximity to jobs and housing.
11.2	Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the	The proposal directly responds to this action and rezones the site area identified as Georges River North Precinct to B4 Mixed Use.

Table 8. Connected Liverpool 2050		
Actions		Consistency
	Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages. <i>(short to medium term)</i>	The proposal supports the creation of a significant open space network and additional connections to Liverpool CBD.
11.4	Work with Transport for NSW and RMS to create links from Liverpool Train Station to the Georges River and investigate opportunities for transport interchanges at Moore Point (CBD extension east of the Georges River) <i>(short to medium term)</i>	The proposal seeks to introduce two pedestrian/cycle bridge crossings into Liverpool CBD and transport interchange, which will improve connectivity from Moore Point and the Georges River.
12.2	Review the LEP and DCP to ensure statutory planning controls protect key freight routes and employment lands from sensitive land uses. <i>(short to medium term)</i>	The proposal has carefully considered the transition of industrial uses permitted under the IN2 Light Industrial zone and seeks to provide new high-order employment in the B6 Enterprise Corridor zone.
14.1	Review Environmentally Significant Land overlay in LEP to ensure protection of areas of high ecological conservation value. <i>(short term)</i>	The proposal ensures all future built form and development occur away from areas marked as environmentally significant land particularly along the Georges River. The proposal seeks to remediate and rehabilitate this land for recreational purposes.
14.3	Develop a strategy to increase tree canopy cover in the LGA. <i>(short term)</i>	The proposal will convert monofunctional uses on the land into a mixed-use precinct that will provide new pedestrian links, public open spaces and plazas that will be supported by new tree canopies and landscaping. This is further consistent with the Premiers priorities to increase tree canopy and improve access to open space.

Summary

The proposal is consistent with the LSPS and seeks to rezone land east of Georges River and north of Newbridge Road for mixed-use purposes as a short to medium term priority to support the Innovation precinct. The masterplan accompanied by the Planning Proposal reinforces the creation of an integrated and interconnected open space network that will be accessible from Liverpool CBD and surrounding areas.

8.2.7 Our Home, Liverpool 2027

Our Home, Liverpool 2027 is a 10-year plan to refine future strategic directions and actions for Liverpool.

The proposal achieves a number of strategic directions, as described in **Table 9**.

Table 9: Our Home, Liverpool 2027		
Strategic Directions		Consistency
1	Creating Connection	<p>The proposal will attract business and investment in the Western City through increasing new jobs and improving the work life balance of new residents with new dwellings located close to Liverpool.</p> <p>The proposal will promote active modes of transport and recreational opportunities along the Georges River foreshore, as well as bridge crossings to Liverpool CBD.</p>
2	Strengthening and Protecting our Environment	<p>The proposal will unlock the Georges River and improve banks stabilisation and rehabilitation of the foreshore. The proposal will also establish new open spaces supported by landscaping and tree canopies.</p>
3	Generating Opportunity	<p>The proposal will convert industrial land into a mixture of uses including residential, commercial, retail and recreational. This will stimulate additional job and employment growth, including high skilled employment, in the CBD and capitalise on the Western Sydney Airport.</p>
4	Leading through Collaboration	<p>The proposal will connect Moorebank to Liverpool CBD and Health and Education and provide appropriate co-location of uses to stimulate and promote innovation.</p>

Summary

The proposal is consistent with the Our Home, Liverpool 2027 and aims to create a vibrant, accessible, natural and liveable city with improved cycling and walking

connections along the Georges River, enhanced place-making opportunities through the adaptive re-use of the existing heritage item, capacity for new cultural and educational institutions and a vibrant mixture of uses oriented along the foreshore.

5. Is the planning proposal consistent with the applicable state environmental planning policies?

Yes, as outlined in **Table 10**, the planning proposal is consistent with relevant State Environmental Planning Policies (SEPPs).

Table 10: State Environmental Planning Policies

SEPP	Consistency	Comments
SEPP No. 19 – Bushland in Urban Areas	Not Applicable.	
SEPP No 21 – Caravan Parks	Not Applicable.	
SEPP No. 33 – Hazardous and Offensive Development	Consistent.	The proposal will adopt the standard instrument definitions of hazardous and offensive development, which are not permitted on the site.
SEPP No. 36 – Manufactured Home Estates	Not Applicable.	
SEPP No. 47 – Moore Park Showground	Not Applicable.	
SEPP no. 50 – Canal Estate Development	Not Applicable.	
SEPP No. 55 – Remediation of Land	Consistent.	The site will be appropriately remediated to ensure it is suitable for residential development. A Preliminary Site Investigation (PSI) report has been prepared to support the Planning Proposal and concludes the site can be remediated for its intended purpose. Refer to Appendix 10 .
SEPP No. 64 – Advertising and Signage	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP No. 65 – Design Quality of Residential Apartment Development	Consistent.	The building envelope established by the proposal is capable of accommodating

Table 10: State Environmental Planning Policies		
SEPP	Consistency	Comments
		residential and mixed-use development that is consistent with SEPP 65 principles and with the Apartment Design Guide. An overview of the proposal's ability to comply with key ADG criteria is provided with the urban design report at Appendix 3 .
SEPP No. 70 – Affordable Housing (Revised Schemes)	Not Applicable.	
SEPP (Aboriginal Land) 2019	Not Applicable.	
SEPP (Affordable Rental Housing) 2009	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Building Sustainability Index: BASIX) 2004	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Coastal Management) 2018	Not Applicable.	
SEPP (Education Establishments and Child Care Facilities) 2017	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Exempt and Complying Development Codes) 2008	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Gosford City Centre) 2018	Not Applicable.	
SEPP (Concurrences and Consents) 2018	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Housing for Seniors or People with a Disability) 2004	Consistent.	The proposal does not contradict or hinder the application of the SEPP.

Table 10: State Environmental Planning Policies		
SEPP	Consistency	Comments
SEPP (Infrastructure) 2007	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Koala Habitat Protection) 2019	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Kosciuszko National Park – Alpine Resorts) 2007	Not Applicable.	
SEPP (Kurnell Peninsula) 1989	Not Applicable.	
SEPP (Mining, Petroleum Production and Extractive Industries)	Not Applicable.	
SEPP (Penrith Lakes Scheme) 1989	Not Applicable.	
SEPP (Primary Production and Rural Development) 2019	Consistent.	The proposal does not contradict or hinder the application of the SEPP.
SEPP (State and Regional Development) 2011	Not Applicable.	
SEPP (State Significant Precincts) 2005	Not Applicable.	
SEPP (Sydney Drinking Water Catchment) 2011	Not Applicable.	
SEPP (Sydney Region Growth Centres) 2006	Not Applicable.	
SEPP (Three Ports) 2013	Not Applicable.	
SEPP (Urban Renewal) 2010	Not Applicable.	
SEPP (Vegetation in Non-Rural Areas) 2017	Consistent.	The proposal is supported by a Biodiversity Assessment, which notes the site has been subject to considerable vegetation disturbance and does not

Table 10: State Environmental Planning Policies		
SEPP	Consistency	Comments
		<p>contain remnant native vegetation.</p> <p>Any potential ecological communities discovered on site through detailed investigations may require a Biodiversity Development Assessment Report (BDAR) to determine ecosystem credits and offsets.</p> <p>Refer to Appendix 13.</p>
SEPP (Western Sydney Employment Area) 2009	Not Applicable.	
SEPP (Western Sydney Parklands) 2009	Not Applicable.	
Greater Metropolitan REP No. 2 – Georges River Catchment	Consistent.	The proposal is consistent with the Planning Principles contained in the REP including Acid Sulfate Soils, bank disturbance, flooding and water quality.
SREP No. 8 – Central Coast Plateau Areas	Not Applicable.	
SREP No. 9 – Extractive Industry (No 2 – 1995)	Not Applicable.	
SREP No. 16 – Walsh Bay	Not Applicable.	
SREP No. 20 – Hawkesbury – Nepean River (No 2 – 1997)	Not Applicable.	
SREP No. 24 – Homebush Bay Area	Not Applicable.	
SREP No. 26 – City West	Not Applicable.	
SREP No. 30 – St Marys	Not Applicable.	
SREP No. 33 – Cooks Cove	Not Applicable.	
SREP (Sydney Harbour Catchment) 2005	Not Applicable.	

6. Is the planning proposal consistent with applicable Ministerial Directions (S. 9.1 directions)?

As outlined in **Table 11**, the planning proposal is generally consistent with all applicable Section 9.1 Directions. Where the proposal is inconsistent with a direction, justification is provided.

Table 11. Section 9.1 Ministerial Directions

Clause	Direction	Consistent	Comments
1 Employment and Resources			
1.1	Business and Industrial Zones	Not consistent but justified as considered appropriate by Direction.	<p>The proposal seeks to rezone land from IN2 Light Industrial to B4 Mixed Use and B6 Enterprise Corridor.</p> <p>The conversion of existing industrial land and its justification is discussed below the table.</p>
2. Environment and Heritage			
2.1	Environment Protection Zones	Consistent.	<p>The site is identified as being adjacent to Environmentally Significant Land in accordance with LLEP 2008. This relates to land located on the north and western boundary of the site and generally follows the alignment of the Georges River foreshore.</p> <p>The Planning Proposal does not propose amendments to the existing provision and area relating to Environmentally Sensitive Land contained in LLEP 2008.</p> <p>The Planning Proposal considers the known environmental constraints around the foreshore and envisages future development be situated behind the foreshore building line in accordance with LLEP 2008.</p>
2.3	Heritage Conservation	Consistent.	An Aboriginal Heritage Assessment has been undertaken, which confirms the study area possesses

Table 11. Section 9.1 Ministerial Directions

Clause	Direction	Consistent	Comments
			<p>low archaeological potential and no further assessment is necessary.</p> <p>A further Historical Heritage Assessment has been submitted, which provide recommendations for the management of the Pirelli Power Cables Heritage item.</p> <p>Refer to Appendix 15.</p>
3. Housing, Infrastructure and Urban Development			
3.1	Residential Zones	Consistent.	<p>The proposal will facilitate residential accommodation in close proximity to existing infrastructure and services.</p> <p>Residential accommodation is proposed within the bounds of existing urban areas and is not proposed to encroach into any environmental protection or sensitive areas.</p>
3.4	Integrating Land Use and Transport	Consistent.	<p>The proposal will improve access to housing, jobs and services by walking, cycling and public transport infrastructure.</p> <p>The proposal aims to provide a range of active transport connections to reduce travel demand including the number of trips generated by the development and the distances travelled, in particular by car.</p>
3.5	Development Near Regulation Airports and Defence Airfields.	Consistent.	<p>The proposal has been designed in consideration of its proximity to Bankstown Airport, including the known PANS-OPS and OLS requirements. The proposal seeks to amend LLEP 2008 by introducing new heights of 136 RL and 108 RL across the site in line with the</p>

Table 11. Section 9.1 Ministerial Directions

Clause	Direction	Consistent	Comments
			<p>recommended PANS-OPS measures.</p> <p>An RL is considered the preferred height measurement to respond to the varied topography across the site where a height measured from natural ground level would result in irregular and stepped building forms at the detailed Development Application stage.</p>
4. Hazard and Risk			
4.1	Acid Sulfate Soils	Consistent.	<p>LLEP 2008 contains provisions relating to acid sulfate soils. The proposal does not seek to contravene or alter these controls.</p> <p>The proposal is accompanied by an Acid Sulfate Soils and Remedial Strategy, which advises a range of remedial options may be implemented to remediate the site for its intended purpose.</p> <p>It is anticipated future Development Applications will provide a Remedial Action Plan to provide guidance on addressing unexpected contamination that may be identified during the course of redevelopment.</p>
4.3	Flood Prone Land	Not consistent but justified as considered appropriate by Direction.	See discussion on flood prone land below this table.
4.4	Planning for Bushfire Protection	Consistent.	<p>Part of the site, largely east of Bridge Road, is identified as containing Bushfire Risk land in Category 1 and Buffer zones.</p> <p>The proposal has been prepared with regard to the bush fire constraints on the site and is</p>

Table 11. Section 9.1 Ministerial Directions			
Clause	Direction	Consistent	Comments
			capable of incorporating a number of strategies to guide future development.
Local Plan Making			
6.1	Approval and Referral Requirements	Consistent.	The proposal does not include consultation, referral or concurrence provisions, nor identifies any development as designated development.
6.2	Reserving Land for Public Purposes	Consistent.	The proposal does not contain any land that has been reserved for a public purpose.
6.3	Site Specific Provisions	Consistent.	<p>The proposal seeks to incorporate site specific provisions to deliver a tailored and bespoke planning response to the site and its objectives.</p> <p>These provisions relate preparation of a development control plan and sun protection of public open space.</p>
Metropolitan Planning			
7.1	Implementation of A Plan for Growing Sydney		N/A.

8.2.8 Key Section 9.1 Directions

Direction 1.1 Business and Industrial Zones

Objective

Direction 1.1 provides objectives to encourage employment growth in suitable locations, protect employment land in business and industrial zones.

A planning proposal may be inconsistent with this direction if the relevant authority can satisfy that the provisions of the planning proposal are:

(a) Justified by a strategy which:

- I. Gives consideration to the objective of this direction,
- II. Identifies the land which is the subject of the planning proposal, and
- III. Is approved by the Secretary of the Department of Planning and Environment, or

(b) Justified by a study (prepared in support of the planning proposal) which gives consideration to the objective of this direction, or

(c) In accordance with the relevant Regional Strategy, Regional Plan or Sub-Regional Strategy prepared by the Department of Planning and Environment which gives consideration to the objective of this direction, or

(d) Of minor significance.

Response

The Planning Proposal is justified by a strategy which meets the criteria of I, II and III of Direction 1.1.

The site forms part of the Liverpool Collaboration Area Place Strategy, which is identified and endorsed within a suite of planning policy documents including the Region Plan and District Plan.

The Place Strategy identifies the site within the Georges River North Precinct, which is nominated as 'mixed use'. This area is identified to provide a mixture of commercial, retail, residential and community uses that provide sustainable employment that is not in competition with the commercial core.

The transition of the site to mixed use is advanced and reinforced in the LSPS, which identifies the site for further investigation into a residential/mixed-use precinct, with supporting actions to rezone the land as a short-term priority.

Council are currently preparing the ELS, which will guide the development and management of industrial land over the next few decades. The site is zoned for industrial purposes and as such, the impact from the possible loss of industrial land on the site would have been assessed within the ELS.

Hill PDA advise the executive summary of the ELS was released and provides the following recommendation in relation to the site:

Retain and protect all industrial precincts in the LGA that is not identified as required as part of the Collaboration Area Place Strategy.

This asserts that the ELS also endorses the transition of land uses on the site to residential and mixed-use. As such, the rezoning of the site will facilitate a vibrant mixed-use precinct supported and endorsed at both State and Local government levels.

We note Council had prepared an Industrial Development Lands study in 2019 that is silent on recommendations to retain the site for industrial purposes. Noting the role of the Collaboration Area, it makes recommendations to retain Georges River south for industrial purposes.

The Planning Proposal further proposes a B6 Enterprise Corridor zone along Newbridge Road. This area has the potential to provide 47,570m² of employment space, providing an opportunity for urban services and other typically low impact industrial land occupiers on the site. Importantly, the Planning Proposal results in an intensification of job activity adjacent to Liverpool CBD that can only be realised through alternative land uses.

Any temporary loss of urban services during construction has the potential to be relocated back into the site or in close proximity upon completion, reducing any long term impact.

It is important to note the delivery of the masterplan is a long-term process and any relocation of urban services land could be undertaken in a staged approach to minimise large scale relocation of urban services at any point in time.

Direction 4.3 Flood Prone Land

Objective

Direction 4.3 provides objectives to ensure development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy. It also aims to ensure that the provisions of an LEP on flood prone land is commensurate with flood hazard, including the potential flood impacts on and off the subject land.

A planning proposal may be inconsistent with this direction, only if the relevant authority is satisfied that:

- a) *the planning proposal is in accordance with a floodplain risk management plan prepared in accordance with the principles and guidelines of the Floodplain Development Manual 2005, or*
- b) *the provisions of the planning proposal that are inconsistent are of minor significance.*

Response

A Flood Report has been prepared by J. Wyndham Prince under separate cover (**Appendix 9**) in support of the Planning Proposal.

The site is partially inundated by mainstream flooding in 1% AEP event, where flows breach the banks of the Georges River and enter the site. However, the assessment has shown that with the implementation of the mitigation measures, the proposed development can safely occupy the floodplain within minimal impact and be consistent with the principles outlined in the Floodplain Development Manual.

The flood management regimes for Moore Point are consistent with the Section 9.1 Directions.

8.3 Section C – Environmental, Social and Economic Impact

7. Is there any likelihood that critical habitat or threatened species, or their habitats, will be adversely affected as a result of the proposal?

A Biodiversity Assessment has been prepared by Eco Logical Australia Pty Ltd under separate cover (**Appendix 13**) in support of the Planning Proposal.

The study describes the biodiversity values within the site and assesses the impacts of the Planning Proposal and subsequent masterplan on the biodiversity values.

The report notes the study area has been subject to considerable vegetation disturbance and does not contain any remnant native vegetation.

One threatened ecological community *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South Eastern Bioregions* listed as an endangered ecological community (EEC) and has been mapped as occurring within the study area. The vegetation has been established through revegetation works. It contains high weed blooms and is in poor condition. Therefore, it did not satisfy listing criteria under the *Environmental Protection Biodiversity Conservation Act* (EPBC Act).

One matter of National Environmental Significance was identified as having potential to be adversely affected by the proposed works is the *Pteropus poliocephalus* (Grey-headed Flying-fox), which is listed as a vulnerable species under the EPBC Act. It is considered that this species is likely to use some of the study area for seasonal foraging. An assessment of the Commonwealth Significant Impact Criteria is required for species listed under the EPBC Act and submitted with a Biodiversity Development Assessment Report (BDAR).

8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

All relevant environmental effects have been assessed in consideration of the Planning Proposal and the envisaged development outcome achieved via the proposed amendments to LLEP 2008.

Discussion and assessment of the environmental and urban context is discussed below.

8.3.1 Urban Design

An Urban Design Report has been prepared by SJB under separate cover (**Appendix 3**) in support of the Planning Proposal.

The report functions as the Strategic Framework for Moore Point and provides an envisaged masterplan and the foundation for the project moving forward from strategy to implementation.

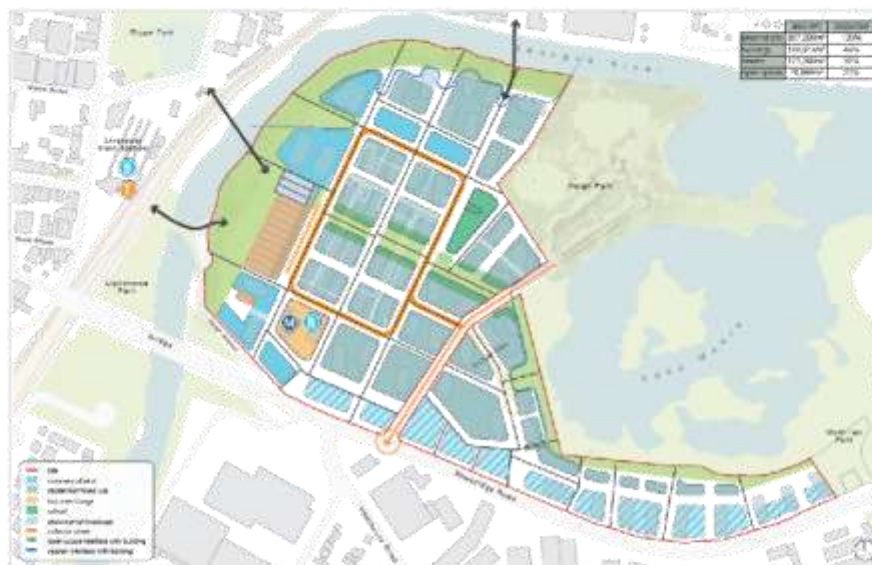


Figure 25: Moore Point Masterplan (Source: SJB)

Of particular importance technical criteria, which outlines how the masterplan has considered the objectives and guidance of current planning policy including State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development (SEPP 65) and the Apartment Design Guide (ADG).

The proposed massing represents what could potentially be realised on the site based on environmental and physical constraints. It is anticipated additional technical analysis and sub-precinct design will be undertaken following Gateway

Determination to further rationalise the built form and address any additional matters raised through the assessment process.

Following this, a site-specific DCP will be prepared that articulates the relevant built form and planning controls for the site for the character areas within the masterplan.

SEPP 65 Considerations

Building Setbacks

Streets and blocks within the masterplan have been designed to ensure building separation requirements of the ADG can be achieved. All streets and setbacks have been designed to allow a minimum of 20m between podiums, and all block depths have been designed to allow for 18 to 24m separation above podiums. It is anticipated through detailed design, that all buildings will be designed to meet the design guidance and objectives of the ADG.

Solar Access

The nature of the existing grid pattern and the resulting built-form balances the site constraints and addresses amenity through the strategic placement and orientation of uses to maximise solar access in order to meet the requirements of the ADG.

A key factor for consideration with regards to solar access for a precinct this size is the timeframe and staging, which will be driven by market demands meaning the ultimate mix of uses between residential and non-residential may evolve over time. To respond to this, the masterplan ensures there is flexibility within the envelopes to ensure solar access is managed at a block-by-block level at the next stage of planning assessment.

The masterplan proposes the following design measures to ensure solar access requirements can be achieved on each block:

- Orientate towers on a north south axis to maximise solarup to a maximum of 8 degrees off north; and
- Maximise apartments on the northern edges of the blocks – locating cores and on-residential uses to the south.

The masterplan provides a balance between a place-based approach (heritage grid, relationship to river and lake) and the requirement for compliance including building separation, overshadowing and solar access. The envisaged masterplan reflects existing site characteristics and optimises place-based opportunities, enabling a level of density that does not compromise on the amenity of surrounding residents or future residents within the site.

Staging

The delivery of the masterplan will be staged up to 2051. The staging only considers the proponents landholdings and does not take into consideration other landholdings in the study area. The approach to staging considers the availability of land over time, and the associated delivery of public open space and community infrastructure.

The staging plan is proposed as follows:

- Stage 1 – North west of the site closest to Liverpool CBD;
- Stage 2 – Predominantly around Haigh Park, Lake Moore and two blocks bound by the Internal loop road; and
- Stage 3 – Southern portion of the masterplan closest to Newbridge Road.



Figure 26: Staging Plan (Source: SJB)

It is proposed to incorporate a detailed staging plan into the site-specific Section 7.11 Contributions Plan following Gateway Determination to lock in the delivery of certain infrastructure items with construction of development.

A Place Design Framework has been prepared by Roberts Day under separate cover (**Appendix 18**) in support of the Planning Proposal. The Place Design Framework sets out the key principles that will guide activation and decision making at the site transforms and should be read in conjunction with the Urban Design Report prepared by SJB.

8.3.2 Traffic and Transport

A Strategic Transport Impact Assessment has been prepared by Aurecon under separate cover (**Appendix 8**) in support of the Planning Proposal.

The report provides an overview of existing and planned transport infrastructure capable of supporting the Planning Proposal, as well as outlining a two-stage transport investigation assessment during the rezoning process.

The objective of these studies is to ensure the successful integration of Moore Point into the current and future planned transport network of the Collaboration Area. These are detailed below.

Transport Infrastructure Working Group

A Transport Infrastructure Working Group (TIWG) has been established to facilitate an integrated and connected transport vision for Moore Point.

The TIWG will involve TfNSW and Council to ensure the Planning Proposal aligns with the overarching Place Strategy for Liverpool Collaboration Area and the successful integration of Moore Point into the current and future planned transport network.

Stage 1 – Due Diligence and Strategic Assessment

This stage will establish a strategic analysis of the transport infrastructure required to support the Planning Proposal and eventual masterplan. The assessment will be informed by work done by TfNSW to develop a place-based transport strategy for the

Collaboration Area and surrounds. The findings will inform development scenarios for further assessment.

The appropriate land use and staging scenarios will be agreed with Council, while also ensuring committed and planned infrastructure are agreed with TfNSW to feed into the assumptions of the baseline scenario.

Once the assumptions and staging scenarios have been agreed, strategic transport modelling will be undertaken using TfNSW Strategic Transport Model (STM) and Public Transport Project Model (PTPM). This will derive the additional distribution of transport demand across various parts of the transport network as a result of land use changes envisaged across the Collaboration Area.

These outputs will be fed into a Strategic Traffic Forecasting Model (FTFM) to inform the strategic transport evaluation component and provide an understanding of the scale of impacts of the Planning Proposal on the transport network.

A summary of this process is provided below.

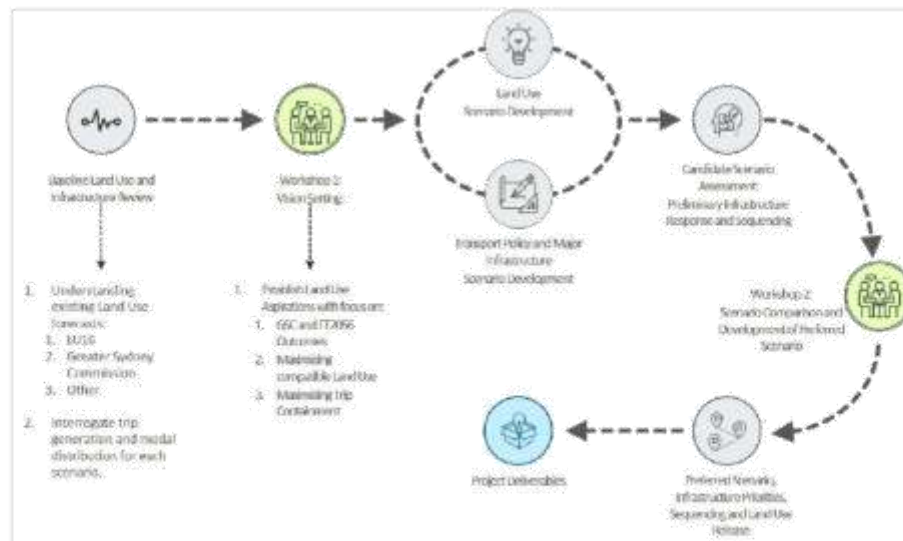


Figure 27: Proposed Stage 1 Approach (Source: Aurecon)

The final deliverable for Stage 1 will be the submission of a Preferred Land Use and Transport Infrastructure Scenario, which will include:

- A Land Use and Transport Strategy for the Collaboration Area;
- A high level cost estimate of key infrastructure requirements and transport access strategy for interim and ultimate development scenarios; and
- An agreed funding mechanism.

Stage 2 – Detailed Transport and Traffic Assessment

Stage 2 will involve the development of a more detailed assessment to assist in accurately identifying and informing the scope and costs for any infrastructure including local transport infrastructure.

A detailed transport and traffic assessment largely in the context of a Transport Management Accessibility Plan (TMAP) will be required to identify the infrastructure and service requirements and determine the development contributions.

It is anticipated that Gateway Determination will be issued with conditions that will align with the outcomes of the Stage 1 Strategic Assessment, to be agreed by the TIWG.

8.3.3 Aviation

An Aeronautical Assessment Report has been prepared by Strategic Airspace under separate cover (**Appendix 12**) in support of the Planning Proposal.

The report examines the current and future regulated airspace height constraints overhead the site that are related to airspace protection requirements that would trigger requirements for an airspace height approval (Obstacle Limitation Surface/OLS) and constrain the maximum permissible envelope heights (Procedures for Air Navigation Services – Aircraft Operations/PANS-OPS). Key findings of the report are summarised below.

Obstacle Limitation Surface

Under OLS, buildings are constrained by height limits which slope up from 76m Australian Height Datum (AHD) at the north-eastern corner to around 108m AHD at the western edge of the site.

Any of the buildings in the site, as well as cranes used from construction, where their maximum heights would penetrate the relevant OLS height constraint overhead would need to be included in 'airspace height' applications under the Airports Regulations, for consideration and explicit approval prior to construction. This would not be required until submission of Development Applications at the earliest.

Proposed buildings within the maximum heights that would be lower than the relevant OLS height constraints do not need such 'airspace height' approvals.

The figure below depicts which building envelopes, based on the masterplan, would infringe the OLS Conical Surface.



Figure 28: Envelopes which would infringe OLS Conical Surface (Source: Strategic Airspace)

Buildings that gain height approvals may be required to install and operate obstacle lights on either side and/or tops of the buildings, subject to recommendations made by the Civil Aviation Safety Authority (CASA) during their assessment of the height application.

PANS-OPS

Under PANS-OPS, buildings are ultimately constrained by the PANS-OPS circling surfaces, which include Circling Category B (eastern portion of site) with a surface

height of 108.12m and Circling Category A (western portion of site) with a surface height of 136.



Figure 29: PANS-OPS Category B and C Constraining Surfaces (Source: Strategic Airspace)

None of the proposed buildings in the masterplan would penetrate the limiting PANS—OPS surfaces shown in Bankstown Airport's prescribed airspace in accordance with the figure above. Therefore, all buildings are considered approvable under the Airports Regulations.

Conclusion

Strategic Airspace conclude that there is no technical impediment to the approval of the proposed development envisaged in the Planning Proposal. It is considered that any future applications for buildings in the masterplan, under the Airports Regulations, supported by a full aeronautical assessment and safety case could be approved by the Department of Infrastructure, Transport, Regional Development and Communications.

8.3.4 Flooding

A Flood Report has been prepared by J. Wyndham Prince under separate cover (**Appendix 9**) in support of the Planning Proposal.

The study details the procedures used and presents the results of the flood impact assessment in support of the site's redevelopment. It also has developed a flood evacuation strategy to inform the planning process. Key findings of the report are summarised below.

Flood Management

The current floodplain storage during the 1% AEP event has considered the proposed development landform and regional floodplain reclamation strategy. The proposed implementation of the two flood storages and on the banks on the Georges River adjacent to the western motorway will result in an increase in the available floodplain storage by 31,930m³.

The detailed flood assessment completed for the strategy has demonstrated that, with the site, peak flood levels in surrounding properties and within the Georges River will not increase as compared to existing conditions in the catchment in the 1% AEP

events. Importantly, provision of the proposed flood levels to the south of Newbridge Road will also reduce the extent of flooding within the Moorebank area, which is therefore considered to be an improvement upon existing conditions.

Water Quantity Management

Peak flow results determined as part of the hydrologic modelling demonstrates the site provides only 0.1% of the total peak flow in the Georges River and therefore, any changes to the characteristics of the site as a result of the Planning Proposal development outcomes will unlikely impact the flow regime of the Georges River.

Therefore, on-site detention is not considered necessary for the Planning Proposal's development outcomes. Further assessments will be undertaken to confirm that detention is not required as part of the Development Application process.

Flood Evacuation

Flood evacuation routes are identified to ensure a 'continuous rising grade' can be maintained to a level above the PMF for all evacuees, with connections to Newbridge Road to the south of the site. In addition, the use of the proposed pedestrian bridges connecting the site to Liverpool CBD will provide additional early flood evacuation options during a PMF event.

The proposed Flood Management Strategy for the site provides a basis for detailed design and development of Moore Point to ensure that environmental, urban amenity, engineering and economic objectives from stormwater management are achieved.

8.3.5 Riparian

A Riparian Strategy has been prepared by Northrop under separate cover (**Appendix 7**) in support of the Planning Proposal.

The study provides a qualitative assessment of the proposed development in relation to the protection of the riparian corridor zones. Key findings of the report are summarised below.

Findings

For most of the site, the riparian corridor will contain three structured zones, i.e. Riverbank, Inner Vegetation Riparian Zone (VRZ) and Outer VRZ, which is consistent with the NRAR Riparian Guideline. However, the creation of the Georges River foreshore park as envisioned does not conform to the Guideline. Therefore, a merit-based approach to assess this strategy for the entire site is proposed, which relies on offsetting for an overall improved environmental outcome:

- Development encroachment into outer VRZ reduced by 6,765m²;
- Development encroachment into Inner VRZ reduced by 1,393m², with total proposed encroachment of only 24m²;
- Typically, where there is no native vegetation present in the riparian corridor currently, it will be provided as revegetation representing the ecologically significant communities present around the site. Areas adjoining the Outer CRZ and interfacing with the development will also be revegetated and landscaped in the same manner. This includes offsetting;
- The Riverfront zone on the western bank of the site will be variously landscaped. Some of this will be native vegetation and a total of 20% of this area will be dedicated to natives, which counts as offsetting;

- As a result, the total amount of revegetated Outer VRZ created compared to the lost is 31,847m² vs 776m²; and
- The total amount of revegetated Inner CRZ and Riverbank created compared to that lost is 16,491m² vs 5,538m².

Conclusion

Northrop conclude that the outcomes presented above provide a significant environmental improvement for the site and Lake Moore. The approach has a sound rationale, which justifies a merit-based assessment on this basis. It is proposed that the Placemaking Working Group will further shape and determine the riparian outcomes to achieve the vision for the precinct.

8.3.6 Air Quality

An Air Quality Suitability Study has been prepared by Todoroski Air Sciences under separate cover (**Appendix 11**) in support of the Planning Proposal.

The study provides a qualitative assessment of any likely constraints on air quality relating to the development of the site. Key findings of the report are summarised below.

Findings

The key potential source of air quality impact on the site is the existing water treatment facility on the opposite side of the Georges River along the northern boundary. However, the closest potential sources of odour are located 400m from the nearest proposed new receptors and are generally downwind of the proposal.

There are existing receptors that are closer to and also generally downwind of the water treatment facility, therefore significantly lower odour levels than at any existing receptor can be expected at the site.

There is only low potential for impacts from other existing facilities, as these industries are generally good distance away and are not on the prevailing wind axes to the site.

The site would replace existing industry with commercial and residential activities, and therefore it is reasonable to expect some reduction in existing pollutant levels. The residential dwellings also maintain an acceptable setback from existing major roads in terms of siting and height.

Conclusion

Todoroski Air Sciences conclude there is no reasonable indication of any likely air quality impacts that may prevent development at this location. It is anticipated a detailed study would be required as part of the Development Application process.

8.3.7 Contamination

A Contamination, Acid Sulfate Soils and Remedial Strategy has been prepared by El Australia under separate cover (**Appendix 10**) in support of the Planning Proposal.

The study provides an appreciation of how existing site contamination might affect potential land use changes that may be facilitated by the Planning Proposal. The report identifies areas within the site that are contaminated, or potentially subject to contamination to an extent that could impact on future land uses.

For land identified as contaminated or potentially contaminated, remedial options and data gap enclosures were considered where necessary, to enable a feasible remediation strategy to be developed and make impacted areas suitable for their intended purpose. Key findings of the report are summarised below.



Figure 30: Land Parcel Identification for Contamination (Source: El Australia)

Findings

Potential Contamination Sources

Based on the reviewed site history and findings documented in the available environmental reports for selected sites, potential contamination sources for the site are summarised as follows:

- Imported fill soils of largely unknown origins used as backfill for releveling various parts of the site;
- Previous farming, market gardening and cultivation activities, which typically involved the application of chemicals for weed and pest control, fertilisers, petroleum hydrocarbon products used to power and maintain motorised farming equipment;
- The use of handling of paints and other chemicals, including volatile organic compounds (VOCs), during historical and current industrial activities involving manufacturing, chemical reacting, dispensing, treatment and production of liquid waste;
- TCFM, leaked from an underground, concrete liquid waste tank located within the south western portion of Area B-east, which was reported to have migrated westwards to the adjacent property Area B-west at 3 Bridges Road;
- Multiple underground and above ground storage of petroleum fuels (i.e. UPSS and ASTs) particularly within areas B-west, B-east, M and O, some of which are still in use and/or remain in partially decommissioned condition; a
- Deeper, natural soils and groundwater containing residual impacts from leaked hydrocarbons and other chemicals, representing potential secondary sources of contamination;
- Hazardous building materials, including ACM and lead-based paints; and
- Asbestos impacted soils.

Data Gap Closure Requirements

The report identifies the need to establish the environmental conditions for land parcels that have not yet been investigated or have been investigated to a limited extent. These include:

- Area A, B, C, D, M and O.

The following areas within the site require both a Stage 1 Preliminary Site Investigation (PSI) and Stage 2 Detailed Site Investigation (DSI):

- Group 1 (Areas A – E);
- Group 2 (Areas K, L and N);
- Group 3 (Areas P to X); and
- Group 4 (Area Y).

Contamination Summary

A summary of potential contamination sources for each area is provided below:

- Areas A, and D – widespread filling for site releveling purposes;
- Area C was also reported to have received uncontrolled waste from unknown sources, with previous identification of ACM fragments in fill and stockpiles at multiple on-site locations;
- Area B:
 - Area B-west and Area B-east were subject to chemical spills and leaks from the handling and storage of hazardous substances;
 - Area B-west was also subject to burial of industrial waste, including asbestos waste and disused chemical drums;
 - Area B-west, south of Factory, 4 diesel-type phase separated hydrocarbons (PSH), were previously reported on groundwater at former monitoring well WS01 and remedial product recovery works were reported by RES (1999), however it is assumed that further remedial action may be needed in regard to PSH;
 - Area B-west, southeast of Factory 5, at former monitoring wells WS13 and WS14, diesel-type PSH and dissolved petroleum hydrocarbons were previously reported for groundwater located in Area B-west, this was thought to be a result of onsite migration from an up-gradient UST on Area B-east, as reported by AGC-WC (1999);
- Area K – Petroleum hydrocarbon and VOC impacts associated with service station operations at the Caltex Service Station;
- Area F – Plastics extrusion factory, which stores and handles a range of chemicals, including resins, plasticisers, phenols and solvents;
- Area G, J, L, R and S – Mechanical workshops, tyre repair, car wash, and smash repair businesses handling a range of chemicals including metals, automotive fluids, PFAS, oil, grease, paints, resins, plasticisers, phenols and degreasing solvents; and
- Area O – Furniture manufacturing facility, with a disused UST and other potentially contaminating operations including flammable liquids storage, painting and staining of furniture and the onsite burial of ACM in site fill.

Conclusion

EI Australia conclude that the site can be made suitable for the proposed use and that a combination of the following remedial options may be implemented to remediate the site for its intended purpose:

- Excavation and On-site Encapsulation – Involving excavation of impacted soils from bulk excavations that are intended for the construction of basement car parking facilities followed by onsite reuse to the extent possible.

On-site containment of contaminated soils by way of capping and/or encapsulation within low permeability cells or other appropriately designed barrier system, where subsurface or above-ground storage areas are available. Contaminated materials that are retained on-site will need to be managed under a site-specific LTEMP, which will include periodic groundwater monitoring to confirm that off-site containment migration is not occurring. Should off-site mitigation be detected, then contingent groundwater measures will need to be implemented;

- Excavation and Off-site Disposal – Involving excavation of impacted soils from bulk excavation followed by off-site disposal of surplus impacted soils to licensed waste landfill;
- In-site Soil Vapour Extraction – Coarse grained soils impacted with VOCs (including chlorinated VOCs, light fraction petroleum hydrocarbons and BTEX), may be treated in-situ by extracting soil vapour under vacuum, via horizontal vent pipes installed in trenches throughout the impacted area. The contamination is drawn out of the soil as vapour and liquid, which are collected for appropriate on-site treatment and/or off-site recycling; and
- Ex-situ Bioremediation with Soil Vapour Extraction – Coarse grained soils impacted with VOCs (including chlorinated VOCs, light fraction petroleum hydrocarbons and BTEX), may be treated ex-situ by extracting soil vapour under vacuum, via horizontal vent pipes installed in bio-piles created from the excavation of impacted soils. The contamination is drawn out of the soil bio-piles as vapour and liquid, which are collected for appropriate on-site treatment and/or off-site recycling.

Overall, once the data gap closure investigations are available, the remedial strategy may be refined. A detailed, site-specific remedial action plan (RAP) is required for each site, before the commencement of site remediation.

The site-specific RAP must include an Unexpected Finds Protocol to provide guidance on addressing unexpected contamination that may be identified during the course of site redevelopment.

8.3.8 Heritage

A Historical Heritage Assessment and Aboriginal Heritage Assessment has been prepared by Eco Logical Australia under separate cover (**Appendix 14-15**) in support of the Planning Proposal.

Historical Heritage Assessment

The Historical Heritage Assessment identifies if historical heritage items were locality to be located within the study area, and if so, whether future development of the area had potential to impact upon the heritage significance of those items.

Part of the site is a locally listed heritage item on LLEP 2008 known as the Pirelli Power Cables and Systems Building (Formerly MM Cables Factory and now known as Prysmian).

Heritage Grading

Grading of items on the site as possessing heritage significance for the Pirelli Power Cables Administration Building and Factory are provided below:

High Significance:

- Original Administration Building;
- Original Factory Building No. 1; and
- Original Factory Building No. 2.

Moderate Significance

- Guard house/entry building;
- Rear additions to Factory No. 2; and
- Original landscape layout in front of the Administration Building (including sides and the front gate).

Little Significance

- Rear additions to the Administration Building;
- North bays to Factory No. 1 and No. 2;
- Factory No. 3, No. 4 and No. 5; and
- All other remaining structures.

Intrusive

- West and South additions to Factory No. 1.



Figure 31: Heritage Significance Grading (Source: Eco Logical Australia)

Assessment

The report refers to the previous heritage assessment undertaken in 2018 by GBA, which identified the heritage significance structures on the site and recognised retention and re-use of the original factory buildings (No. 1 and No. 2) as a priority and preferable to the retention of the Administration building. GBA concludes the original function of the factory buildings are a good representation of the sites function and operational history.

Eco Logical assessed the proposed masterplan and agree with the recommendations provided by GBA. The Administration Building, which is in poor condition, was recommended for demolition by GBA however, it is proposed to retain this in the masterplan and future development.

Conclusion and Recommendations

Eco Logical Australia make the following recommendations with respect to the existing heritage items on site:

- Structures graded as being of little and intrusive heritage significance to be demolished;
- Areas identified as being of moderate heritage significance may be able to have their demolition justified in the context of the overall future development and the necessity for certain elements of the site to be developed within the areas these items occupy;
- The Administration Building will be retained and adaptively re-used;
- The original factory buildings will be retained and re-used to enable reasonable use and interpretation within the context of future development;
- Future development must consider DCP controls for the site;
- In the highly unlikely event that unexpected historical archaeological material is encountered during works, it would be necessary to stop all works in the immediate vicinity of the identified material. The NSW Heritage Council would be notified, and a qualified archaeologist would be engaged to assess the significance of the material and recommend whether further investigation is required.

Aboriginal Heritage Assessment

The Aboriginal Heritage Assessment aims to identify if any Aboriginal objects are likely to be located within the study area of the proposed works and, if so, whether the proposed works will have potential harm to those objects.

Assessment

The study identified one registered Aboriginal heritage site within 1km of the study area, located on the opposite side of the Georges River. No registered AHIMS sites are located within the study area. The report has also reviewed past Aboriginal archaeological studies within and nearby the study area, which have demonstrated the Georges River as an area of high archaeological potential and a focal point of Aboriginal activity in Western Sydney in the past.

A pedestrian survey was conducted of the proposed site. The survey identified almost all areas as having been significantly disturbed by past land use. One portion of the study area, in the north western riparian corridor of the Georges River, has moderate archaeological potential due to the proximity of the Georges River and lack of development in that portion of the site.



Figure 32: AHIMS Sites within Study Area [Source: Eco Logical Australia]

Conclusion and Recommendations

Eco Logical Australia advise that development is not proposed in the area noted as having moderate archaeological potential, which will be used for a planned riparian corridor. The remainder of the study area possesses low archaeological potential and no further assessment is therefore required.

Nonetheless Eco Logical Australia provide the following recommendations in accordance with the National Parks and Wildlife (NP&W) Act:

- Any potential modification to the proposed development area for the site should avoid the north western riparian corridor area identified as possessing moderate archaeological potential. If any development were proposed and could not be avoided, subsurface test excavation is recommended to determine whether the presence of Aboriginal objects is present. If objects are present and an impact is proposed, an Aboriginal Heritage Impact Permit would be required; and
- In the unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, the DPIE may also be contacted at this time to assist in determining appropriate management.

8.3.9 Sustainability

A Sustainability Statement has been prepared by Integral Group under separate cover (**Appendix 16**) in support of the Planning Proposal.

The statement presents a strategy for how the project will consider sustainability opportunities as it develops through planning, design and infrastructure provisioning.

The masterplan for the site has identified specific design opportunities for delivering a sustainable urban environment including opportunities for:

- Rainwater catchment in parks and in the promenade of the site;
- Green roof provisions for low-rise buildings;
- Building fabric to support passive design;

- On-site renewable energy;
- Use of native plants in urban green space to support biodiversity and habitat connectivity; and
- Land use mix – employment dividend.

A place-making group will be established to drive place-making and urban design, riverfront outcomes and sustainability governance for the site. The Group will have representation from Council, the GSC and the project team. It will interface with the transport group for integrated land use and transport considerations.

The Group will consider sustainability principles aligned with the sustainability priorities of the Place Strategy including:

- Energy efficient, renewable energy and GHG emissions reduction towards net zero emissions;
- Water quality and stormwater improvement;
- Waste, materials and the circular economy;
- Climate change risk mitigation including heat and flood risks;
- Reduced reliance on private cars with support for active mobility;
- Support high amenity public places with canopy cover, green infrastructure and activation; and
- Supporting connected green spaces and urban biodiversity.

9. How has the planning proposal adequately addressed any social and economic effects?

Social

A Community Benefits Analysis (CBA) has been prepared by Cred under separate cover (**Appendix 5**) in support of the Planning Proposal.

The CBA assesses the community benefits that could be delivered through the proposal to support a socially sustainable, resilient and connected community and place. Key findings are the report are summarised below.

The CBA assumes the rezoned site will provide 530 dwellings each year beginning mid-2023. This yields approximately 6,900 dwellings by mid-2036. The site is being designed for an ultimate capacity of 14,800, which would be achieved by 2051 if the rate of 530 dwellings/year continues.

By 2051 there will be an additional 46,000 people living in the suburb of Moorebank, with 32,489 of these living within Moore Point. The forecast population for the site will be a young population, home to young professionals aged 25 to 34, and new home builders aged 35 to 49.

It is therefore important that the envisaged masterplan delivers unique social infrastructure facilities capable of supporting the prospective demographic and contributing the quality and character of the site and its positive impact on the surrounding area.

Community Benefit Opportunities

The following community and place benefits are identified by Cred to support the delivery of a sustainable and resilient place and community including:

- New multipurpose community hub – approx. 2000m²;
- New local facility with indoor and outdoor space – approx. 400m²;

- Repurposing Moorebank Library and Community Centre to a district level multipurpose library facility – approx. 598m² to 2036 and 1,365m² to 2051;
- Deliver 1 new primary school, including Out of School Hours Care built facility;
- Provision of quality early education and childcare centres (under 90 places);
- Deliver a total of at least 7.7. hectares of new quality open space. Should be delivered as 6.2 hectare of local parks of a minimum size of 0.3 hectares to 0.5 hectares. Parks should be within 200m of resident homes;
- Deliver up to 3 new (or embellished) district sports-fields including:
 - 1 new sports-field space within the precinct up to 2051;
 - Embellishments to Haigh Park to deliver additional sports-fields for informal team sports by 2036;
 - Protection and enhancement of Satyam Ghat.
- Up to 4.5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051 located throughout the precinct next to new open spaces;
- Up to 1 regional/district level outdoor youth recreation precinct. This could be provided through embellishment to existing Kelso Skate Park or through a new youth focused outdoor recreation space;
- 1 indoor recreation centre providing up to 4 indoor courts that support a range of culturally appropriate sports such as futsal, indoor volleyball, badminton and table tennis;
- Provision of a water launch point for passive boating and viewing decks for passive recreation and fishing at Lake Moore;
- Communal pools or a contribution to improving facilities at Whitlam Centre;
- Provision of communal facilities within residential towers; and
- Affordable housing for key workers.

The Planning Proposal is capable of delivering upon many, if not all, of the community infrastructure items recommended by Cred and are detailed within the masterplan. The Placemaking Working Group may provide advice on the location of community infrastructure items. Some of these will be delivered off site through contributions to existing facilities and their enhancement. Infrastructure funding for specific items will be dealt with separately through a site-specific Section 7.11 Contributions Plan to be prepared in collaboration with Council following Gateway Determination.

Economic

An Economic Impact Assessment (EIA) has been prepared by Hill PDA under separate cover (**Appendix 4**) in support of the Planning Proposal.

The report provides an independent economic assessment of site and quantifies the economic impact or benefits of that the masterplan would provide over that already generated on the site under its current industrial zoning.

This section does not cover the loss of industrial land or relocation of urban services, as this has been discussed at other relevant sections.

Economic Benefits (During Construction)

Based on a construction cost of \$8.72 billion and construction life span 30 to 40 years, the economic benefits resulting from the Planning Proposal are estimated at:

- \$11.2 billion of activity in production induced effects;
- \$7.9 billion in consumption induced effects;
- Total economic activity generated by the construction of the proposed masterplan of around \$27.8 billion;
- 21,762 job years, equating to 544 and 725 jobs generated directly per annum;
- 87,503 job years, equating to 2,185 and 2,913 jobs generated directly and indirectly per annum;
- Around \$50 million of additional retail expenditure from construction workers on-site during the period of construction. This equates to around \$1.3 to \$1.7 million per annum over the construction period. The majority of this would be captured by local retailers.

Economic Benefits (Post Construction)

Upon completion, the Planning Proposal's envisaged masterplan would provide approximately 344,499m² gross floor area of employment space and 14,789 dwellings. The provision of these land uses on site would potentially increase the economic output of the site, Liverpool and the wider District.

The table prepared by Hill PDA describes the outputs that would result from the development compared to that currently estimated to be generated on-site with current industrial uses (base case).

Category	Base case	Masterplan	Benefits of Masterplan
Potential jobs	770	20,427	+19,657
Wages (\$m)	49.6	1,669.3	+1,619.7
GVA (\$m)	82.9	3,987.1	+3,904.2
Retail spend (\$m)	1.9	471.5	+469.6
Retail floorspace demand (sqm)	0	72,237	+72,237

Figure 33: Base Case Versus Planning Proposal (Source: Hill PDA)

The table confirms the masterplan would generate an addition 19,657 jobs, \$1.62 billion in wages and contribute \$3.9 billion per annum to local economy or GDP.

Non-resident workers on-site would also generate an estimated \$94 million per annum in retail expenditure that would be captured by local retailers. This is around \$92.1 million greater than that already estimated to be generated under the base case.

In addition, the Planning Proposal would generate economic benefits resulting from the resident's on-site. These economic benefits primarily relate to increased residential expenditure, which could be captured by retailers in the locality including Liverpool CBD. This is estimated at an additional \$377.5 million per annum.

The population would also increase the demand for retail space by around 72,237m², the majority of this would be likely directed towards surrounding retail centres, such as Liverpool, which would increase the vibrancy, viability and attractiveness towards investors.

Hill PDA also note the following additional economic benefits including:

- Providing a catalyst for further investment in the locality;
- Contributing to increasing housing diversity and affordability in the LGA and District;
- Providing jobs closer to home and contributing to the LGAs employment targets;

- Contribute to transit oriented development objectives by concentrating more people near the train station and commercial services, thereby reducing the reliance on private motor vehicle travel and increasing public transport usage; and
- Contributing to Sydney achieving the 30-minute city concept.

Conclusion

Overall, Hill PDA confirm the Planning Proposal is supportable from an economic perspective.

8.4 Section D – State and Commonwealth Interests

10. Is there adequate public infrastructure for the planning proposal?

Infrastructure Servicing

The site is well serviced by existing transport, infrastructure and services.

A Services Infrastructure Report has been prepared by ADW Johnson under separate cover (**Appendix 6**) in support of the Planning Proposal.

The report made applications to Endeavour Energy, Sydney Water, NBN Co and Jemena in relation to the provision of infrastructure to service the Planning Proposal and future development outcomes.

All authorities have advised that they can service the proposed overall development outcome. In some cases, upgrades to the existing network will be required. This is summarised below.

Sydney Water

- Upgrade of potable water supply likely;
- Major upgrade of existing pumping station to be completed to service development. The upgrade works will be completed by Sydney Water and take an estimated 3 years from concept to completion.

Endeavour

- Eight new 11kV feeders from Moorebank Zone Substation;
- Six new circuit breaker terminations at Moorebank Zone Substation; and
- Two new switching stations at Moorebank Zone Substation.

NBN Co

- Fibre connecting the site to the existing Liverpool Fibre Access Node (FAN) to be constructed by NBN,

Jemena

- Installation of below-ground regulator station.

Notwithstanding the above, the Planning Proposal includes the provision of new public infrastructure including new roads, open space, pedestrian pathways, cycleway and bridge crossings. This proposed infrastructure will benefit the surrounding context in the short, medium and long-term.

Site-Specific Section 7.11 Contributions Plan

In addition, a letter has been prepared by Mecone as a statement of intent to prepare a site-specific Section 7.11 Contributions Plan (s.7.11 Plan) in support of the Planning Proposal on behalf of the proponent. This will involve amendment to the current

Liverpool City Centre Contributions Plan, which currently includes part of Moore Point in the Section 7.12 levy area.

The letter serves as initial consideration by Liverpool City Council (Council) with the intent to prepare a detailed s.7.11 Plan following the issue of a Gateway Determination by the Department of Planning Industry and Environment (DPIE).

Specific to the Planning Proposal, items captured through the Plan could include:

- Multi-purpose community centres;
- Rehabilitation and embellishment of the Georges River foreshore and Lake Moore;
- Pedestrian bridge/s from Moore Point to Liverpool CBD;
- Dedicated pedestrian and cycle paths;
- Creation of new open space along Georges River foreshore;
- Heritage conservation and adaptive re-use of existing heritage building as new marketplace;
- Embellishment and upgrade of existing open spaces in the surrounding locality;
- Intersection upgrade works at Newbridge Road; and
- Creation of new local streets and collector roads.

11. What are the views of State and Commonwealth public authorities consulted in accordance with the gateway determination?

At this stage, the views of relevant State and Commonwealth authorities have not been obtained. This will occur following Gateway Determination.

9 Mapping

A comparison of existing controls and proposed controls is provided in **Table 11**.

Table 12: Existing vs. Proposed Controls

Control	Existing	Proposed
Zone	IN2 – Light Industrial	B4 – Mixed Use B6 – Enterprise Corridor
Height of Buildings	18m and 15m	136 RL and 108 RL
Floor Space Ratio	0.75:1	4.2:1 and 3.5:1

Changes are reflected in amendments to the mapping as shown in the figures below.

Note: Areas marked white hatching do not apply to the subject Planning Proposal amendment.





Figure 34: Proposed LEP Maps (Source: LLEP 2008 Modified by Mecone)

10 Community Consultation

Community consultation would take place following a Gateway determination made by the Minister for Planning and Infrastructure in accordance with Section 56 and 57 of the Act. It is anticipated that public exhibition would include:

- Notification on Council's Website;
- Advertisement in local newspapers that are circulated within the local government area;
- Notification in writing to adjoining landowners and neighbours, and any other relevant stakeholders; and
- A four-week exhibition period.

11 Project Timeline

This project timeline has been provided to assist with monitoring the progress of the planning proposal through the plan making process and assist with resourcing to reduce potential delays.

Table 13. Project Timeline

Milestone	Date	Comments
Council Report.	July 2020.	
Council Meeting.	July 2020.	
Anticipated date of Gateway Determination.	October 2020.	
Anticipated timeframe for the completion of required technical information.	Completed prior to lodgement.	Updates to be made as required.
Timeframe for government agency consultation.	November 2020 – January 2021	Other relevant agencies to be consultant as necessary or required by Gateway.
Commencement and completion dates for public exhibition period.	February – March 2021.	
Dates for public hearing (if required).	Within exhibition period.	
Timeframe for consideration of submissions.	Within exhibition period.	
Date of submission to the Department to finalise the LEP.	June 2021.	
Anticipate date Relevant Planning Authority (RPA) will make the plan (if delegated).	July 2021.	
Anticipated date RPA will forward to the Department for notification.	As above.	

12 Conclusion

The planning proposal has been prepared in accordance with:

- Section 3.33 of the *Environmental Planning and Assessment Act 1979* (the Act); and
- The NSW Department of Planning and Environment's (DP&E) *A guide to preparing planning proposals*.

The site is located comprises multiple allotments east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The Planning Proposal seeks to realise the ultimate vision of Moore Point as an extension of Liverpool CBD, as manifested through the creation of LLEP 2008, ongoing strategic studies up to the LSPS.

This report provides a full justification of the proposal in line with the Department of Planning and Environment's template for gateway rezonings. The justification demonstrates that the proposal:

- Realises Government objectives for the Georges River North Precinct, expressed both through the Place Strategy and LSPS, to provide a mixture of uses that complement the Liverpool CBD;
- Complements the objective of Liverpool Collaboration Area as a "rejuvenated river city";
- Assists the collaboration area in achieving its 2036 job and housing targets, which include 18,800 new dwellings and 16,200 new jobs;
- Ensure Infrastructure is delivered in line with development;
- Celebrates local character and heritage through the adaptive re-use of existing heritage items;
- Provides future housing and jobs within close proximity of a potential future Metro connection to Bankstown and the FAST Corridor;
- Enhances access to the Georges River foreshore and improve opportunities along the waterfront;
- Provide active and passive recreation opportunities for residents and workers in the area;
- Acts as a statement of intent to set a benchmark for new development in Moorebank that prioritises a high quality public realm;
- Provides new public domain infrastructure and uses conducive to the foreshore nature of the site;
- Delivers new pedestrian and cycleway improvements along the foreshore, and additional connections from the site to Liverpool CBD and Train Station;
- Provides a mix of uses within excellent access existing public transport, community infrastructure, health and education services and Liverpool CBD;
- Enables new services and accommodation in close proximity to the Liverpool Health and Education Precinct and Innovation Precinct; and
- Provides high quality mixed use development, which will facilitate opportunities for new employment, housing choice and public amenity.

EGROW 05	Planning proposal request to rezone land and amend development standards in the Liverpool Local Environmental Plan for land at Moore Point Bridges Road, Moorebank
<i>Attachment 1</i>	Applicant's Planning Proposal Request

The Planning Proposal demonstrates the built form and land use propositions sought via amendments to LLEP 2008 are suitable for Council to proceed the application to DPIE for Gateway.

APPENDIX 1 – AMENDED LEP MAPPING

APPENDIX 2 – STRATEGIC AND SITE-SPECIFIC MERIT TEST

APPENDIX 3 – URBAN DESIGN REPORT

APPENDIX 4 – EMPLOYMENT LANDS STRATEGY

APPENDIX 5 – SOCIAL IMPACT AND OPEN SPACE ASSESSMENT

APPENDIX 6 – SERVICES INFRASTRUCTURE REPORT

APPENDIX 7 – RIPARIAN CORRIDOR ASSESSMENT

APPENDIX 8 – TRAFFIC AND TRANSPORT PLANNING

APPENDIX 9 – FLOOD REPORT AND EVACUATION STRATEGY

APPENDIX 10 – CONTAMINATION, ACID SULFATE SOILS AND REMEDIAL STRATEGY

APPENDIX 11 – AIR QUALITY SUITABILITY STUDY

APPENDIX 12 – AVIATION

APPENDIX 13 – BIODIVERSITY ASSESSMENT

APPENDIX 14 – HERITAGE STUDY

APPENDIX 15 – HISTORICAL HERITAGE ASSESSMENT

APPENDIX 16 – SUSTAINABILITY STATEMENT

APPENDIX 17 – GEOTECHNICAL ASSESSMENT

APPENDIX 18 – PLACE FRAMEWORK

APPENDIX 19 – LETTER TO PREPARE A SITE- SPECIFIC S7.11 PLAN

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Application Number:	RZ-6/2015
Proposal:	Planning proposal request to rezone the Georges River North (Moore Point) precinct to part B4 Mixed Use, part B6 Enterprise Corridor and part RE1 Public Recreation
Property Addresses	3 Bridges Road, Moorebank; 11 Bridges Road, Moorebank; 5 Bridges Road, Moorebank; 6 Bridges Road, Moorebank; 8 Bridges Road, Moorebank; and 361 Newbridge Road, Moorebank
Legal Descriptions:	Lot 200, DP 1009044; Lot 100, DP 775780; Lot 201, DP 1009044; Lot 111, DP 1133744; Lot 10, DP 875626; Lot 101, DP 827141
Applicant:	Mecone
Landowners:	Leamac Property Group and Coronation Property
Recommendation:	Proceed to Gateway review
Assessing Officer:	Cameron Jewell, Programme Lead Liverpool Collaboration Area

1. EXECUTIVE SUMMARY

On 15 April 2020, Council received a planning proposal request to rezone a 32-hectare portion of the 38.5-hectare Georges River North (Moore Point) precinct from IN2 Light Industrial to B4 Mixed Use, B6 Enterprise Corridor and RE1 Public Recreation. The planning proposal request also seeks to increase the maximum floor space ratio from 0.75:1 to part 4.2:1 and part 3.5:1, increase the maximum height of buildings from 18m and 15m to RL 136 and RL 108 (which is the PANS-OPS surface height) and introduce site-specific development controls relating to sun access, design excellence and the preparation of a development control plan.

The planning proposal request is accompanied by an Urban Design Study (masterplan), which provides an indicative structure for the development of the entire Georges River North precinct. While the planning proposal request applies to only 32 hectares of the precinct, Council may elect to prepare a planning proposal that includes all land within the precinct. Council's ultimate vision is for the entire precinct to be rezoned, potentially through a staged approach. Supporting studies by the proponent have been conducted for the entire Georges River North precinct.

The planning proposal request will facilitate the development of approximately 12,220 dwellings and 249,364m² of commercial floor space over a long-term period until 2051. The Urban Design Study envisages that the precinct will ultimately accommodate 14,054 dwellings and 344,499m² of commercial floor space, with a residential population of approximately 30,760. The total gross floor area across the precinct would be 1,571,615.5m².

Pursuant to the requirements of a Guide to Preparing Planning Proposals and relevant Ministerial Directions, this report provides a merit assessment of the planning proposal request. The report finds that the proposal has strategic merit and site merit. This is partly dependent on resolution of outstanding traffic and flooding considerations, and following changes to the planning proposal request to increase the amount of public open space, and reduce the scale of development, particularly that land closer to Haigh Park and Lake Moore.

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2. SITE DESCRIPTION AND LOCALITY

The Site

The subject site is located in the Georges River North (Moore Point) precinct, defined as being all lots bounded by Newbridge Road to the south, the Georges River to the east and north, and Haigh Park, Lake Moore and McMillan Park to the north and west. The primary access to the site is via Bridges Road and Newbridge Road.



Figure 1: Aerial view of the Georges River North precinct
Source: Nearmap 03 August 2020

The planning proposal request submitted to Council only seeks changes to those lots owned by a Joint Landowner Group (JLG) comprising Leamac Property Group and Coronation Property, however Council may choose to prepare a planning proposal that includes all properties in the precinct. It should be noted that Council is currently also considering another planning proposal request within the precinct at 335-349 Newbridge Road.

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Figure 2: Ownership of land within the Georges River North precinct
 Source: Mecone 2020

The planning proposal request as submitted applies to a total of six lots of varying sizes represented in gold and blue in **Figure 2**. All lots in the precinct are currently zoned IN2 Light Industrial.

The site is currently used for a range of light industrial purposes, the largest of which is Prysmian, a cable and electrical wire manufacturer.

Locality

The Georges River North precinct is situated within the broader Liverpool Collaboration Area, as defined by Objective 5 of Section 3 of the Greater Sydney Region Plan, *A Metropolis of 3 Cities*. The Collaboration Area includes Liverpool's Central Business District (CBD), the health and education precinct and nearby residential and industrial land areas.

The Georges River North precinct is bordered by IN1 General Industrial zoned land to the south of Newbridge Road Street and R2 Low Density Residential zoned land to the west.

To the north of the Georges River North precinct, separated by the Georges River, is Liverpool Hospital and the Scrivener Street industrial area. The Liverpool Water Recycling Plant, owned by

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Sydney Water, is located to the north-east of the precinct. An offensive odour buffer, which may limit residential development, extends from the Sewage Treatment Plant across the north-eastern portion of the precinct, as depicted in **Figure 10** below.

To the east of the subject site is the Liverpool railway station, providing frequent services west to Leppington and east to Sydney City via Granville and north to Parramatta. To the east of the Liverpool railway station is Liverpool city centre with an abundance of employment-zoned land (B3 Commercial Core and B4 Mixed Use), schools and other educational institutions (University of Wollongong, University of Western Sydney and Liverpool TAFE), health facilities including Liverpool Hospital and retail premises including Liverpool Westfield. **Figure 3** below outlines the precincts of the Collaboration Area.

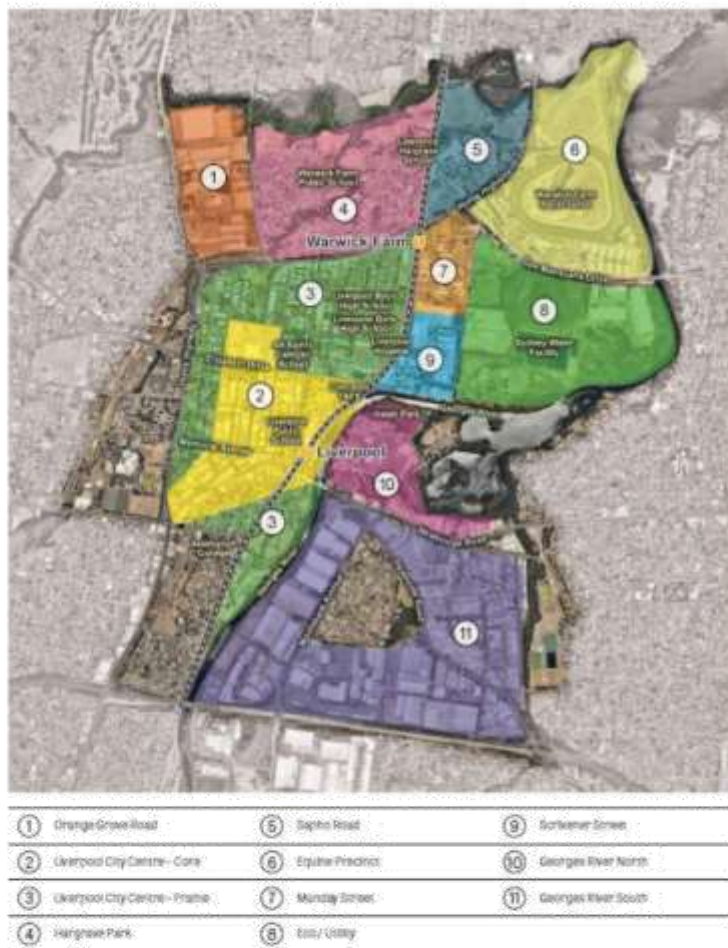


Figure 3: Liverpool Collaboration Area

NB: The subject site is depicted as "10 Georges River North"

Source: Liverpool Collaboration Area Place Strategy, Greater Sydney Commission, 2018

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3. DETAILS OF THE PROPOSAL

History

A number of planning proposal requests have previously been submitted for land within the Georges River North Precinct. Council deferred consideration of these requests while the Georges River Precinct Plan was developed in 2016. The draft Georges River Precinct Plan was placed on exhibition however was not further considered by Council due to the development of the Liverpool Collaboration Area Place Strategy in 2017-2018 by the Greater Sydney Commission, which included the land defined in the Georges River Precinct Plan – namely Georges River North and Georges River South, as depicted in **Figure 3**.

Following the adoption of the Liverpool Collaboration Area Place Strategy by the Greater Sydney Commission in September 2018, Council indicated to landowners in Moore Point that it was prepared to consider a rezoning of land in the precinct that would meet the intention expressed in the Liverpool Collaboration Area Place Strategy, namely 'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core of the Liverpool CBD. Council indicated to landowners that had previously submitted planning proposals that a precinct-wide approach to development of Moore Point should be undertaken, including a structure plan for the entire precinct.

The current planning proposal request, submitted on 15 April 2020, replaces the original planning proposal request lodged in 2015 and all other previous site-specific proposals lodged by the proponents were withdrawn.

Due to the strategic importance and large-scale nature of the proposal, Council has established several working groups to progress planning for the precinct. This includes a transport infrastructure working group to oversee transport impact assessment to deliver transport infrastructure requirements and costings to support the land being rezoned, as well as to support the future development of the entire Liverpool Collaboration Area. This group includes Council, Transport for NSW (TFNSW), the Department of Planning, Industry and Environment (DPIE), the Greater Sydney Commission (GSC), the JLG and consultants. There is also a Placemaking Working Group, which explores and assesses place-led opportunities to ensure the precinct vision is delivered based on world's best practice. This working group includes Council, the JLG and consultants.

The Proposal

The Planning Proposal request seeks to amend the Liverpool Local Environmental Plan to facilitate high-density mixed-use development. It is envisaged that the development could support approximately 12,220 dwellings and provide 249,364m² of commercial floor space over a period to 2051. An associated Urban Design Study envisages that the entire precinct will ultimately accommodate approximately 14,054 dwellings and 344,499m² of commercial floor space, with a residential population of approximately 30,760. The gross residential density of the precinct would be approximately 365 dwellings per hectare, with a residential population density of 800 people per hectare, making it one of the densest urban regeneration projects in Australia.

The proposal would be achieved through the following amendments to the LLEP:

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- Rezone the site from IN2 Light Industrial to B4 Mixed Use, B6 Enterprise Corridor and RE1 Public Recreation;
- Increase the maximum floor space ratio (FSR) to 4.2:1 and 3.5:1;
- Increase maximum height of buildings (HOB) from 18m and 15m to RL 136 and RL 108; and
- Introduce Division 1A to provide site-specific development controls for the site including design excellence, sun access and requirements for preparation of a development control plan.

The intended Land Zoning Map is pictured in **Figure 4**, FSR in **Figure 5**, and HOB in **Figure 6**. An illustrative masterplan for the entire precinct is shown in **Figure 7**.



Figure 4: Intended zoning map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020

Council officers recommend additional RE1 open space be added to the planning proposal request, namely the block to the south of Haigh Park, as well as RE1 land of approximately 40m from the top of bank around Lake Moore, in order to better provide for active recreation onsite, and have an appropriate buffer between Lake Moore and development, which is discussed further in the report.

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Floor Space Ratio



Figure 5: Intended FSR map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020

Height of Buildings



Figure 6: Intended HOB map for Georges River North Precinct

NB: Striped land indicates land not subject to planning proposal

Source: Mecone, 2020

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Figure 7: Illustrative masterplan

NB: Striped land indicates land not subject to planning proposal

Source: SJB, 2020

It is intended that a suitable staging and sequencing plan is developed to ensure appropriate infrastructure is in place to support development. An indicative staging plan for the subject land has been provided as part of the Urban Design Study (**Figure 8**). Council considers the planning proposal request should include clear staging which limits the ability to obtain development consent for later stages to ensure development is appropriately sequenced and supported by infrastructure. How staging and sequencing will be implemented through planning controls and is expected to be resolved post-Gateway in close consultation with DPIE, GSC and TfNSW and other state agencies.

An indicative render of the development is provided at **Figure 9**.

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Figure 8: Indicative staging plan

Source: SJB



Figure 9: Indicative render of precinct viewed from the east.

Source: SJ

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Preliminary consultation

As required by Council's Community Participation Plan, large scale planning proposal requests are required to be publicly exhibited for 28 days prior to being reported to Council.

This planning proposal request received three community responses during this period, and one agency response. Of the three community responses, one was in support, one was in opposition, and one was neutral.

The response in support of the proposal came from the Liverpool Innovation Precinct, which comprises nine of Liverpool's largest organisations, including South Western Sydney Local Health District; Ingham Institute for Applied Medical Research; Western Sydney University; University of NSW; South Western Sydney Primary Health Network; TAFE NSW; Department of Education and the University of Wollongong; and Liverpool City Council. It is independently chaired by the Western Sydney Business Chamber.

The submission stated that "Moore Point represents the logical extension of the Liverpool CBD and will help to reorientate the city towards the Georges River by providing several new connections across the river between the Liverpool CBD, the transport interchange and Moore Point, and a new community of residents who will seek to connect to the Liverpool city centre in new ways."

The submission stated that the Liverpool Innovation Precinct seeks to leverage the strong health, research and education assets of the Liverpool CBD to attract more private sector investment, and employment opportunities in knowledge jobs, which requires an expansion of its housing, cultural, recreational and amenity opportunities, which Moore Point would deliver.

The submission objecting to the proposal was from a resident and ratepayer. The objection was based on the proposal likely adding to congestion already experienced on Newbridge Road. It also objected to the proposal on the basis that the land is flood prone, and that Newbridge Road floods during heavy rain events, making the site unsuitable for further development.

The final submission suggested that the proposal may fall short by seeking to maximise residential and commercial space, and that Covid-19 may require amendments to better accommodate changing social and commercial needs. It also stated that the proposal didn't respond to the need for parking, and that a parking station should be incorporated into the development.

One state agency, Schools Infrastructure NSW, responded to the proposal, stating that the proposal would lead to a substantial increase in the total number of government primary and secondary school students, which would be more than can be accommodated at existing schools. SINSW requested further ongoing consultation to ensure educational facilities are supporting community needs and are appropriately resourced to service future population growth.

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4. CONSIDERATIONS FOR STRATEGIC MERIT

Section A – Need for the planning proposal

1. *Is the planning proposal a result of an endorsed local strategic planning statement, strategic study or report?*

The planning proposal request is the direct result of an endorsed local strategic planning statement, being the Liverpool Local Strategic Planning Statement (LSPS) – Connected Liverpool 2040. The LSPS specifically states that Council will “investigate residential/mixed use at Moore Point to support CBD and Innovation precinct”. Action 11.2 of the LSPS also states Council will “Investigate amendments to LEP to rezone the River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)”.

The precinct is also described in the Liverpool Collaboration Area Place Strategy as future mixed use.

2. *Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?*

Action 11.2 of the Liverpool LSPS stipulates that Council will investigate amendments to the LEP to rezone the land for mixed use. There is no other way to achieve the outcomes without rezoning the subject site and amending development standards in the LEP.

Section B – Relationship to the strategic planning framework

3. *Is the planning proposal consistent with the objectives and actions of the applicable regional, sub-regional or district plan or strategy (including any exhibited draft plans or strategies)?*

Greater Sydney Regional Plan – A Metropolis of Three Cities

The *Greater Sydney Regional Plan - A Metropolis of Three Cities* (Regional Plan) was released in March 2018 and prepared by the Greater Sydney Commission (GSC). The plan encompasses a global metropolis of three cities – the Western Parkland City, the Central River City and the Eastern Harbour City. The plan envisions for the people of greater Sydney to live within 30 minutes of their jobs and have access to education and health facilities, services and high-quality places. The Liverpool LGA is located within the Western Parkland City and is identified as a significant metropolitan cluster and future health and education precinct. Consistency with the relevant parts of the Regional Plan is assessed below in the following table.

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Table 1: Consistency with the Regional Plan

Objective	Comment
<i>Objective 6 – Services and infrastructure meet communities changing needs</i>	The proposal sets aside land for a primary school and a community centre, as indicated as necessary in a Community Benefits Analysis. Further consultation will need to be held with Schools Infrastructure NSW to determine how the proposal can best satisfy the demand it will create for both primary and high schools.
<i>Objective 7 – Communities are healthy, resilient and socially connected</i>	The Urban Design Study envisages a walkable precinct with most residential development within a 200m radius of open space, and a high level of tree canopy to reduce urban heat island effect and encourage walkability. The site location is near to Liverpool Station, which is predicted to reduce car dependence.
<i>Objective 10 – Greater housing supply</i>	The development would add to the provision of additional housing supply within the Liverpool areas, and help Council to meet its 6-10 year and 10-20 year housing targets.
<i>Objective 11 – Housing is more diverse and affordable</i>	<p>The proposal would increase the number of residential apartments in the area, which is the dominant dwelling structure of the locale, though detached dwellings are the dominant dwelling type across the local government area. A site-specific DCP may need to specify a higher than current proportion of one-bedroom and three-bedroom apartments to improve diversity, given a predicted increase in student and single worker populations, as well as overcrowding issues that have been identified through Council's Local Housing Study.</p> <p>The proposal has not sufficiently addressed affordability. While the Community Benefits Analysis provided indicates that the proposal could "deliver at least 5% affordable housing for key workers", which is in line with the Regional Plan's inclusionary zoning target of 5-10% "in defined precincts prior to rezoning" to capture some of the windfall gains of rezoning, and directing it towards affordable rental housing for very low and low-income households, an interim letter of offer does not include affordable housing as an item that could form part of a public benefits package.</p>
<i>Objective 12 – Great places that bring people together</i>	The proposal will reconnect the Liverpool city centre area to the Georges River and provide a continuous public open space network, as well as adaptive reuse of existing heritage items for community uses. It is envisaged that through a site-specific DCP a high amenity and connected precinct will result.
<i>Objective 13 – Environmental heritage is identified, conserved and enhanced</i>	A historical heritage assessment has indicated that three buildings – two 1940s sawtooth factory buildings and a front façade of an administration building – have high heritage value. The planning proposal request indicates that part of the two sawtooth factory buildings will be retained and adaptively reused for the purpose of a retail marketplace. The Administration building will also be retained and adapted for re-use.
<i>Objective 14 – A Metropolis of Three Cities – integrated</i>	The proposal is in an area defined as part of Liverpool City Centre. It reinforces Liverpool's role as a metropolitan cluster by

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<i>land use and transport creates walkable and 30-minute cities</i>	locating additional housing and jobs in the city centre close to public transport.
<i>Objective 22 – Investment and business activity in centres</i>	The planning proposal indicates potential for over 200,000 sq m of commercial floor space in the Liverpool city centre.
<i>Objective 23 – Industrial and urban services land is planned, managed and retained</i>	The proposal will see the transition of industrial land to mixed-use including residential. While this is not entirely consistent with the objective, both the Liverpool Collaboration Area Place Strategy and the LSPS identify that this precinct will transition from industrial to mixed use. Council's LSPS was assured by the Greater Sydney Commission and therefore it is considered that this proposal is consistent with the Greater Sydney Regional Plan.
<i>Objective 25 – The coast and waterways are protected and healthier</i>	The proposal seeks to rezone industrial land around the Georges River to RE1, which will better protect the waterway while enhancing liveability by improving access and recreation opportunities. Some parts of planning proposal request impinge on Coastal Wetland Areas and may need to be revised to meet this Objective and Ministerial Directions.
<i>Objective 30 – Urban tree canopy cover is increased</i>	The proposal's Urban Design Study states an intention to significantly increase urban tree canopy on-site to 25%.
<i>Objective 31 – Public open space is accessible, protected and enhanced</i>	The proposal seeks to increase the amount of RE1 Public Open Space on the site, providing connections to the existing Haigh Park. An interim letter of offer indicates the potential for a voluntary planning agreement to include embellishment and upgrade of existing local open spaces.
<i>Objective 33 – A low-carbon city contributes to net-zero emissions by 2050 and mitigates climate change</i>	A Placemaking Working Group has been established between Council and the proponents to explore placemaking and sustainability opportunities post-Gateway. At present, the planning proposal request does not include mechanisms to incentivise sustainability outcomes above minimums required, such as FSR bonuses.
<i>Objective 34 – Energy and water flows are captured, used and re-used</i>	It is the intention for development to incorporate water sensitive urban design through a site-specific DCP. Ongoing consultation with Sydney Water to investigate recycled water provision on-site has also been encouraged.
<i>Objective 37 – Exposure to natural and urban hazards is reduced</i>	The site currently sits within the flood planning area, with much of the site subject to 1-in-100-year flood events. The proponent has advised that there is likely to be an engineering solution to make the development site suitable for residential development with off-site flood mitigation works, however further investigations needs

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	to be conducted post-Gateway to ensure this is a workable and acceptable solution to Council.
<i>Objective 38 – Heatwaves and extreme heat are managed</i>	Urban canopy targets will work to help manage heatwaves and mitigate extreme heat events.

Western City District Plan

Section 3.8 of the EP&A Act requires that the planning proposal authority gives effect to any district strategic plan applying to the LGA to which a planning proposal relates. The Western City District Plan outlines a series of priorities and actions to guide development and accommodate growth across the district.

Table 2: Consistency with the Western City District Plan

Planning Priority	Comment
<i>W3 – Providing services and social infrastructure to meet people's changing needs</i>	The proposal sets aside land for a primary school and a community centre, as indicated as necessary in a Community Benefits Analysis. Further consultation will need to be held with Schools Infrastructure NSW to determine how the proposal can best satisfy the demand it will create for both primary and high schools.
<i>W4 – Fostering healthy, creative, culturally rich and socially connected communities</i>	The Urban Design Study envisages a walkable precinct with most residential development within a 200m radius of open space, and a high level of tree canopy to reduce the urban heat island effect and encourage walkability. The sites location is near to Liverpool Station, which is predicted to reduce car dependence, and it is proposed that heritage assets are repurposed into a community market.
<i>W5 – Providing housing supply, choice and affordability, with access to jobs, services and public transport</i>	The proposal increases housing supply and access to jobs, services and public transport. It has not been indicated how the proposal increases housing choice or affordability. All dwelling types will be apartments, consistent with the locale, and the proposal does not indicate measures to improve housing affordability, such as a percentage of housing to be provided as affordable rental housing. Further discussion with the applicant and DPIE/GSC is required on this point.
<i>W6 – Creating and renewing great places and local centres, and respecting the District's heritage</i>	The proposal will reconnect the Liverpool city centre area to the Georges River and provide a continuous public open space network. It is envisaged that through a site-specific DCP a high amenity and connected precinct will result. A historical heritage assessment has indicated that three buildings – two 1940s sawtooth factory buildings and a front façade of an administration

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	building – have high heritage value. The planning proposal request indicates that part of the two sawtooth factory buildings will be retained and adaptively reused for the purpose of a retail marketplace. The Administration building will also be retained and adapted for re-use.
<i>W9 – Growing and strengthening the metropolitan cluster</i>	The proposal will provide further housing and jobs to support the development of Liverpool as a metropolitan cluster, however the scale of development and amount of commercial floorspace indicated could compete with the existing commercial core if not appropriately managed and development staged.
<i>W11 – Growing investment, business opportunities and jobs in strategic centres</i>	An increase in residential and commercial development will support investment, business opportunities and jobs in the Liverpool city centre. An improvement in amenity and additional open space around the Georges River will also increase the attractiveness of the area as an investment destination.
<i>W12 – Protecting and improving the health and enjoyment of the District's waterways</i>	The proposal seeks to rezone industrial land around the Georges River to RE1, which will better protect the waterway while enhancing liveability by improving access and recreation opportunities. Some parts of planning proposal request impinge on Coastal Wetland Areas and may need to be revised to meet this Objective and Ministerial Directions.
<i>W15 – Increasing urban tree canopy cover and delivering Green Grid connections</i>	The proposal provides green corridor connections between Liverpool Station and Haigh Park. The Urban Design Study also states an intention to significantly increase urban tree canopy on-site to 25%.
<i>W18 – Delivering high quality open space</i>	The proposal will provide additional open space in the city centre and provide better access to natural assets, such as Lake Moore. An Interim Letter of Offer also states that park embellishments could be provided as part of a public benefits package through a voluntary planning agreement. With a population of over 30,000 people expected at completion, Council staff are concerned that the quantum of open space provided will not be sufficient. It is Council's recommendation that an additional ~1.5 hectares of open space be provided so that a more appropriate quantum of open space is provided.
<i>W19 – Reducing carbon emissions and managing energy, water and waste efficiently</i>	<p>A Placemaking Working Group has been established between Council and the proponents to explore placemaking and sustainability opportunities post-Gateway, which could include ways the proposal can address climate change. It is the planning proposal's intention for development to incorporate water sensitive urban design through a site-specific DCP. Ongoing consultation with Sydney Water to investigate recycled water provision on-site has also been encouraged.</p> <p>While the proposal has a stated goal to be 'world's best practice', there is currently no mechanism in which to incentivise sustainability standards above business as usual.</p>
<i>W20 – Adapting to the impacts of urban and natural hazards and climate change</i>	The site currently sits within the flood planning area, with much of the site exposed to 1-in-100-year flood events. The proponent has stated that there is likely to be a solution to make the development site suitable for residential development with off-site

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	flood mitigation works, however further investigations needs to be conducted post-Gateway to ensure this is a workable and acceptable solution to Council.
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4. Will the planning proposal give effect to a council's endorsed local strategic planning statement, or another endorsed local strategy or strategic plan?

The planning proposal gives effect to Action 11.2 of the Liverpool LSPS. However it is noted that the action refers to 'an extensive open space system', and that it is Council officers' view that the quantum of open space proposed for the precinct, particularly space for active recreation, is not sufficient for the proposed population, and does not align with current Council adopted policy (the Recreation and Open Space Strategy) nor recommendations from the proposal's Community Benefits Analysis. Additional open space is recommended.

5. Is the planning proposal consistent with the applicable State Environmental Planning Policies?

The following State Environmental Planning Policies (SEPPs) are of relevance to the site.

Table 3: Consistency with SEPPs

Policy	Compliance	Justification
SEPP No. 33 – Hazardous and Offensive Development	Consistent	The proposal will adopt the standard instrument definitions of hazardous and offensive development, which are not permitted on the site.
SEPP No. 55 – Remediation of Land	Consistent	The site will be appropriately remediated to ensure it is suitable for residential development. A Preliminary Site Investigation (PSI) report has been prepared to support the Planning Proposal Request and concludes the site can be remediated for its intended purpose.
SEPP No. 64 – Advertising and Signage	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP No. 65 – Design Quality of Residential Apartment Development	Consistent	The building envelope established by the proposal is capable of accommodating residential and mixed-use development that is consistent with SEPP 65 principles and with the Apartment Design Guide
SEPP (Affordable Rental Housing) 2009	Consistent	The proposal does not contradict or hinder application of the SEPP.
SEPP (Building Sustainability Index: BASIX) 2004	Consistent	The proposal does not contradict or hinder application of the SEPP.

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SEPP (Coastal Management) 2018	Consistent	The proposal contains areas listed as Coastal Wetland, Coastal Use Area, Coastal Environment Area and Coastal Wetlands Proximity Area. The SEPP, however, places conditions on development and not land use change, therefore the proposal itself is not inconsistent.
SEPP (Education Establishments and Child Care Facilities) 2017	Consistent	The proposal does not contradict or hinder application of the SEPP.
SEPP (Exempt and Complying Development Codes 2008	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Concurrences and Consents) 2018	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Housing for Seniors or People with a Disability) 2004	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Infrastructure) 2007	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Koala Habitat Protection) 2019	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Primary Production and Rural Development) 2019	Consistent	The proposal does not contradict or hinder the application of the SEPP.
SEPP (Vegetation in Non-Rural Areas) 2017	Consistent	The proposal is supported by a Biodiversity Assessment, which notes the site has been subject to considerable vegetation disturbance and does not contain remnant native vegetation. Any potential ecological communities discovered on site through detailed investigations may require a Biodiversity Development Assessment Report (BDAR) to determine ecosystem credits and offsets.
Greater Metropolitan REP No. 2 – Georges River Catchment	Consistent	The proposal is consistent with the Planning Principles contained in the REP including Acid Sulfate Soils, bank disturbance, flooding and water quality.

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6. Is the planning proposal consistent with applicable Ministerial Directions?

The planning proposal addresses the Ministerial Directions, pursuant to Section 9.1 of the EP&A Act 1979.

Section 9.1 Direction	Consistency	Justification
1. Employment and Resources		
1.1 Business and Industrial Zones	Justifiably Inconsistent	The Planning Proposal is justified by a strategy which meets the criteria of i, ii and iii of Direction 1.1. The site forms part of the Liverpool Collaboration Area Place Strategy, which is identified and endorsed within a suite of planning policy documents including the Region Plan and District Plan. This identifies the area as future 'mixed use'. The conversion of existing industrial land at Georges River North (Moore Point) is also supported by Council's LSPS. The Planning Proposal request further proposes a B6 Enterprise Corridor zone along Newbridge Road. This area has the potential to provide 47,570m ² of employment space, providing an opportunity for urban services and other typically low impact land uses on the site. The delivery of the masterplan is a long-term process and any relocation of urban services land could be undertaken in a staged approach to minimise large scale relocation of urban services at any point in time. The Planning Proposal request is also supported by an Economic Impact Assessment, which supports the strategic merit of the rezoning.
Environment and Heritage		
2.1 Environment Protection Zones	Consistent	The site is identified as being adjacent to Environmentally Significant Land in accordance with LLEP 2008. This relates to land located on the north and western boundary of the site and generally follows the alignment of the Georges River foreshore. The Planning Proposal request does not propose amendments to the existing provision and area relating to Environmentally Sensitive Land contained in LLEP 2008. The Planning Proposal request considers the known environmental constraints around the foreshore and envisages future development be situated behind the foreshore building line in accordance with LLEP 2008.
2.2 Coastal Management	Justifiably Inconsistent	The site contains land identified as Coastal Environment Area, Coastal Use Area, Coastal Wetlands Proximity Area and Coastal Wetlands, as identified in the SEPP (Coastal Management). Part of this land is earmarked for public recreation, which will provide a better outcome than the currently IN2 zoned land. However, the Urban Design Study envisages a public domain around Lake Moore that

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		<p>may be inconsistent with the Coastal Management Plan objective to "protect and improve the extent and condition of estuarine and riparian vegetation". Therefore, the Planning Proposal request may be inconsistent with part (4) of the Direction.</p> <p>The proposal also seeks to rezone an area that is Coastal Wetland to B4 Mixed Use. This would rezone land that would enable increased development, making it inconsistent with part (6) of the Direction.</p> <p>It is noted that the Urban Design Study envisages the area of Coastal Wetland to be open space. As such, no development is identified at this location that would undermine the protection of the coastal wetland.</p> <p>It is anticipated that future Development Applications (DAs) for the site will be required to address clause 13 and clause 14 of SEPP (Coastal Management) 2018. The Planning Proposal request, including the provision of open space along the foreshore, can thus allow for outcomes that can provide a significant environmental improvement for the site, the Georges River and Lake Moore consistent with the objectives of SEPP (Coastal Management) 2018 and the Direction, and thus satisfy part (4) of the Direction.</p> <p>While the Planning Proposal is inconsistent with part (6) of this direction, the rezoning of land identified as coastal wetland is of minor significance, and is indicated as open space on the Urban Design Study. Council may choose to add additional RE1 Open Space around Lake Moore to further protect coastal wetlands.</p> <p>As such, the Planning Proposal request addresses the objectives of the direction by continuing to protect and manage coastal areas.</p>
2.3 Heritage Conservation	Consistent	<p>An Aboriginal Heritage Assessment has been undertaken, which confirms the study area possesses low archaeological potential and no further assessment is necessary. A further Historical Heritage Assessment has been submitted, which provides recommendations for the management of the Heritage item.</p>
2.6 Remediation of Contaminated Land	Consistent	<p>The Planning Proposal request is supported by a Preliminary Site Investigation, which outlines various mitigation measures such as the preparation</p>

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		<p>of a RAP that can be implemented to ensure the land is suitable for its intended purpose.</p> <p>Council notes that the provided Preliminary Site Investigation does not satisfy all elements of the Ministerial Direction, however understands that this assessment can be revised post-Gateway.</p>
3. Housing, Infrastructure and Urban Development		
3.1 Residential Zones	Consistent	<p>The proposal will facilitate residential accommodation in close proximity to existing infrastructure and services. In particular, the proposal will provide an increase portion of apartments and high density living in an LGA typically characterised by low density detached dwellings. Residential accommodation is proposed within the bounds of existing urban areas and is not proposed to encroach into any environmental protection or sensitive areas.</p>
3.4 Integrating Land Use and Transport	Consistent	<p>The proposal will improve access to housing, jobs and services by walking, cycling and public transport infrastructure. The proposal aims to provide a range of active transport connections to reduce travel demand including the number of trips generated by the development and the distances travelled by car.</p> <p>Strategic transport modelling is being conducted for the site, and the wider Liverpool Collaboration Area, to understand the impacts and infrastructure needs required from the additional population. It is expected that this strategic modelling will be completed post gateway and prior to exhibition of the planning proposal.</p>
3.5 Development Near Regulated Airports and Defence Airfields	Consistent	<p>The proposal has been designed in consideration of its proximity to Bankstown Airport, including the known PANS-OPS and OLS requirements. The proposal seeks to amend LLEP 2008 by introducing new heights of 136 RL and 108 RL across the site in line with the recommended PANS-OPS measures.</p> <p>The proponent considers an RL the preferred height measurement to respond to the varied topography across the site where a height measured from natural ground level would result in irregular and stepped building forms at the detailed Development Application stage.</p> <p>It is anticipated consultation with the Commonwealth department responsible for airports and the Bankstown Airport operators will be undertaken during state agency consultation.</p>

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		Dependent on the outcomes of consultation, height of building controls may need to be reduced to the OLS, which would require a concomitant reduction in FSR to ensure appropriate scale and bulk of buildings.
4. Hazard and Risk		
4.1 Acid Sulfate Soils	Consistent	LLEP 2008 contains provisions relating to acid sulfate soils. The proposal does not seek to contravene or alter these controls. The proposal is accompanied by an Acid Sulfate Soils and Remedial Strategy, which advises a range of remedial options may be implemented to remediate the site for its intended purpose. It is anticipated future Development Applications will provide a Remedial Action Plan to provide guidance on addressing unexpected contamination that may be identified during the course of redevelopment.
4.3 Flood Prone Land	Justifiably Inconsistent	<p>A Flood Report has been prepared by J. Wyndham Prince under separate cover in support of the Planning Proposal request. The site is partially inundated by mainstream flooding in a 1% AEP event, where flows breach the banks of the Georges River and enter the site. However, the assessment has shown that with the implementation of mitigation measures, the proposed development may be consistent with the principles outlined in the Floodplain Development Manual.</p> <p>Council has requested the following additional information from the proponent to be provided post gateway and before exhibition of the proposal:</p> <ul style="list-style-type: none"> • A detailed hydraulic analysis to assess the effectiveness of the proposed flood mitigation option • Provide flood impact assessment for all design flood events including the 1% AEP and PMF. Appropriate flood mitigation measures shall be incorporated including provision of compensatory flood storage and to demonstrate that there will be no adverse impacts on flood levels and flow velocity in the river and on the adjoining properties • Provide further detail on how the proposed flood mitigation option in Helles Park will ensure enhanced and effective recreation uses, in addition to effective flood mitigation • Submit a revised flood evacuation strategy with plans including levels to demonstrate that a continuous rising grade is achieved to a level above the PMF

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4.4 Planning for Bushfire Protection	Consistent	Part of the site, largely east of Bridge Road, is identified as containing Bushfire prone land in Category 1 and Buffer zones. The proposal has been prepared with regards to the bush fire constraints on the site and is capable of incorporating a number of strategies to guide future development.
6. Local Plan Making		
6.1 Approval and Referral Requirements	Consistent	The proposal does not include consultation, referral or concurrence provisions, nor identifies any development as designated development.
6.2 Reserving Land for Public Purposes	Consistent	The proposal seeks to dedicate RE1 Public Recreation land that will form part of a public benefit offer/Voluntary Planning Agreement. This will be further negotiated with Council.
6.3 Site Specific Provision	Consistent	The proposal seeks to incorporate site-specific provisions to deliver a tailored and bespoke planning response to the site and its objectives. These provisions relate to preparation of a development control plan and sun protection of public open space.

5. CONSIDERATIONS FOR SITE SPECIFIC MERIT

Section C – Environmental, social and economic impact

7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

The planning proposal request is accompanied by a Biodiversity Assessment Report. The report finds that there is nothing that would preclude rezoning. Relevant Council staff have indicated that the Biodiversity Assessment Report provides sufficient information on potential ecological matters for Gateway consideration.

Some of the land is listed as Environmentally Significant in the Liverpool LEP, however this land is to be provided as RE1 Public Open Space and will not be developed.

It is assumed that future development of the site in accordance with the Urban Design Study may require a Biodiversity Development Assessment Report (BDAR) and would include assessment of impacts across the entire site, including a targeted threatened species survey that will be undertaken post-Gateway.

One matter of National Environmental Significance was identified as having potential to be adversely affected by the proposed works is the *Pteropus poliocephalus* (Grey-headed Flyingfox), which is listed as a vulnerable species under the EPBC Act. It is considered that this species is likely to use some of the study area for seasonal foraging. An assessment on the Commonwealth

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Significant Impact Criteria is required for species listed under the EPBC Act and submitted with a BDAR.

8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Contamination

A Phase 1 site contamination assessment has been conducted by EI Australia, with the consultant stating that the assessment did not identify any evidence to preclude the Planning Proposal for rezoning the site to enable a mixed-use precinct. Council's internal referrals have indicated that the assessment does not fulfil all requirements of a Stage 1 Preliminary Site Investigation as outlined within the contaminated land planning guidelines referenced in Ministerial direction (No 2.6) issued 17th April 2020 and guidelines made and approved by the NSW EPA under the Contaminated Land Management Act 1997. However, Council understands that the Ministerial Direction allows for contamination issues to be resolved post-Gateway. It is expected that a revised contamination report meeting Ministerial Directions will be provided post-Gateway.

Offensive odour

The precinct is located on the opposite side of the river from the Liverpool water recycling plant, which includes an odour buffer that partially intrudes into the north-east of the site, according to the latest modelling provided by Sydney Water (see **Figure 11**). Council notes the EPA's *Technical framework - assessment and management of odour from stationary sources in NSW* indicates that councils should consider odour as part of strategic land use planning when determining future uses. While advice to date from Sydney Water has been to discourage development within odour buffers, the proposal does show residential development within this area. These issues can be further addressed during formal agency consultation with Sydney Water. It is also noted that an Air Quality Assessment provided with the Planning Proposal request indicates that there is a low likelihood of odour impact from water recycling plant.

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Figure 10: Liverpool water recycling plant odour buffer at 2 odour units and 5 odour units
 Source: Sydney Water, 2019

Strategic Transport Impact Assessment

A transport impact assessment is currently under development to understand transport infrastructure requirements and costings to support the Moore Point precinct being rezoned. A transport infrastructure working group (TIWG) has been established to progress this work, which includes Council, TfNSW, DPIE, GSC the JLG and consultants.

Stage 1 includes a due diligence and strategic assessment to understand infrastructure and services required to support planning proposals for the Georges River North precinct. The strategic assessment will be undertaken in the context of cumulative impacts due to growth in the Collaboration Area and surrounds.

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A Stage 2 Detailed Transport and Traffic Assessment will entail development of a more detailed assessment to assist in accurately identifying and informing the scope and costs for any infrastructure, including local transport infrastructure.

The strategic modelling will be completed post gateway and prior to exhibition of the planning proposal.

Flood mitigation and evacuation

The precinct is mostly mapped as being within the Flood Planning Area. The majority the precinct is mapped as having a medium flood risk with some areas of low and high flood risk, and a small portion along Newbridge Road unaffected by flooding.

The entirety of the subject land is flood affected. A Flood Impact Assessment accompanies the planning proposal request and indicates the site can be made suitable for mixed-use development. Council requires land used for residential and commercial development to be no lower than the 1% AEP flood level plus 0.5 m freeboard. This would require 74,000m³ of fill on site. It is proposed that compensatory storage be provided off-site at Helles and Titalka Park, as indicated in **Figure 11**.

The Flood Impact Assessment concludes that the detailed flood assessment has demonstrated that, with the site, peak flood levels in surrounding properties and within the Georges River will not increase as compared to existing conditions in the catchment in the 1% AEP events.

Council's internal referral indicated that the Flood Impact Assessment and Flood Evacuation Strategy needs to address the following additional information to be considered satisfactory:

- A detailed hydraulic analysis to assess the effectiveness of the proposed flood mitigation option;
- A flood impact assessment for all design flood events including the 1% AEP and PMF. Appropriate flood mitigation measures shall be incorporated including provision of compensatory flood storage and to demonstrate that there is no adverse impacts on flood levels and flow velocity in the river and on the adjoining properties;
- Further detail on how the proposed flood mitigation option in Helles Park will ensure enhanced and effective recreation uses, in addition to effective flood mitigation; and
- A revised flood evacuation strategy with plans including levels to demonstrate that a continuous rising grade is achieved to a level above the PMF.

This additional information can be provided at the post gateway stage and prior to exhibition of the planning proposal.

Council will also need to resolve whether off-site compensatory storage is an acceptable solution, as it is currently not Council policy to support off-site solutions. However, as part of the solution, the proponent has offered to further embellish land at Helles Park to provide superior active recreation facilities.

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Figure 11: Proposed compensatory cut areas

Source: J Wyndham Price, 2020

Riparian land

The treatment of the riparian zone is largely consistent with the *National Resources Access Regulator (NRAR) Riparian Guideline*. However, the treatment of the envisioned foreshore park does not conform to the Guideline, and thus a merit-based approach to assess this strategy for the entire site is proposed.

There are elements of built form that intrude into the outer riparian zone and slightly into the inner riparian zone close to Lake Moore, which requires further resolution as shown in the Urban Design Study and Riparian Strategy (see **Figure 12**). Council has indicated that it expects approximately a minimum 40-metre buffer of open space from top of bank adjacent to the Georges River and Lake Moore to ensure an appropriate interface with the river and lake. This is supported by Council's City Design and Public Domain team.

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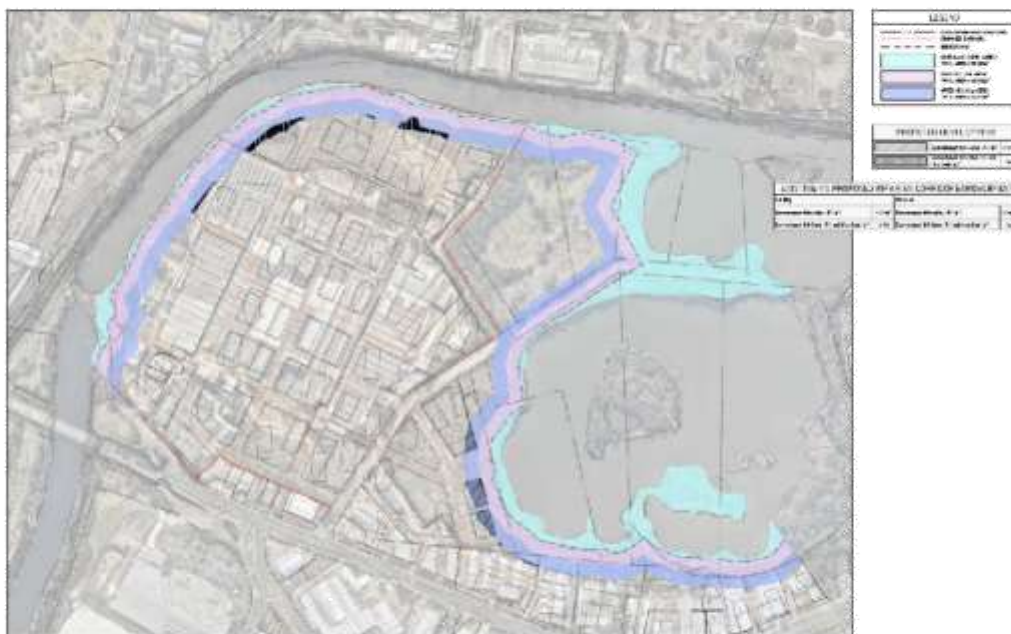


Figure 12: Proposed built form intrusion into Riparian Zone

Source: Northrop, 2020

Urban Design

Referral to Council's City Design and Public Domain unit has identified urban design issues concerning built form and public domain that are still to be resolved. While the scale of development is supported on the east of the site closer to Liverpool Station, the intended bulk and height of development closer to Haigh Park and around Lake Moore is not supported. The proponents have suggested that this can be controlled through the development of DCP controls, though the City Design staff have concerns that this could lead to challenges during the development assessment stage.

There is also concern over the 'urbanised' treatment around Lake Moore, which is listed as Coastal Wetland, and where Council's City Design and Public Domain unit indicate that the environmental qualities of the lake should have primacy.

Other urban design issues raised include:

1. Context

- The illustrative master plan identifies a pedestrian bridge connection across the Georges River along the Liverpool Weir. However, Council is exploring the potential for a pedestrian connection over the existing pylons.

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- The location of Metro/Bus Interchange block in the proposed master plan would require pedestrians to walk at least 400m to the Liverpool Station to catch Sydney Trains. It is recommended that consideration be given to relocating the Metro/Bus Interchange block further west to improve the sites location relative to the existing Liverpool Station on the western side of the Georges River. Alternatively, an extension of the Metro/Bus Interchange block could be indicated along the south-west corner of the precinct.
- The proposed location of the community centre block (i.e. south-east corner of green corridor-linear park) fronts on to Lake Moore and limits its access to Haigh Park. It is recommended that the community centre block be relocated north of the green corridor (i.e. north-east corner of green corridor-linear park) to enable the community centre block to face both Haigh Park and Lake Moore.
- The streetscape cross section for the main road identifies the width of the road to be 20m wide with three lanes of vehicular traffic. It is requested that the plan include an option which caters to the future need of a different mode of transport and encourages residents to use public/active transport within the area.
- The streetscape sections show a 2m setback on either side of the street and rely on this proposed setback to achieve a wider pedestrian realm (i.e. 2.5m footpath and 2m building setback). The proposed 2m setback along property boundaries should be included as part of the street width to ensure a consistency in surface treatments and a consistent width of unobstructed pedestrian realm along the street.

2. *Built Form + Scale*

- The urban design report/structure plan should be amended to show indicative building heights across the entire George's River North Precinct. Density and heights should progress from west to east (i.e higher densities and heights in the west, transitioning to lower densities and heights to the east).
- The built form identifies the importance of permeability at ground plane, however, falls short on elaborating on the character of mid-block crossings and shared serviceways. It is requested the plan include a section within the master plan that identifies all mid-block crossings/shared serviceways within the development and elaborates on the character, design quality and the desired visual/functional amenity for these mid-block crossings/serviceways.

3. *Sustainability*

- It is essential to capture storm water runoff along the streets to the maximum extent possible. It is requested that Water Sensitive Urban Design (WSUD) principles are incorporated for streetscape planting and passive irrigation to capture the runoff and improve the quality of streets.

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4. Landscape

- The landscape structure plan quantifies the overall open space provision being approximately 20% of the area, however, the majority of this open space is located along the river foreshore. It is requested the plan is updated to provide for smaller open spaces that are publicly accessible (e.g. corner/pocket parks) to improve the distribution of open spaces within the blocks and increase the overall open space provision proposed within the master plan.
- The proposed residential flat buildings (RFB) located along Lake Moore do not have a consistent setback along the lot boundary and are very close to the riparian zone (i.e. the RFB building located on the south west corner of Lake Moore appears to have minimal setback from the lot boundary). The proposed master plan should have a minimum 40m setback from the lot boundary along Lake Moore to ensure that there are no building encroachments within the riparian zone.
- The interface of the linear park with the heritage plaza front (i.e. western entry of linear park) seems to be quite narrow and have a pinch point at its entry. It is requested that the width of linear park (i.e. along the interface of heritage plaza front and western entry) is increased to establish a more prominent physical and visual connection.
- The Georges River foreshore indicated in the plans does not outline the minimum width of the reserve along the foreshore. It is requested the plans are amended to identify a minimum width of the river foreshore for public use.
- The master plan identifies key recreation paths along the eastern banks of the Georges River but does not indicate any points of integration for Bill Morrison Park with the proposed River Foreshore. It is requested that the plan is amended to include a section that outlines the integration of Bill Morrison Park and larger green reserve on the eastern banks of Georges River with the proposed River foreshore within the development.
- Programming and staging for the delivery of place ideas and recreation opportunities must be aligned to ensure early release developments have adequate access to both these elements.
- Proposed street sections are too narrow and must not rely on setbacks on private land to achieve 4m wide footpaths.
- Podium landscapes with public space (e.g. street environments) with car parking below is not supported.

5. Safety

- It is essential that the aspect of public safety is ingrained within the fabric of the master plan. It is requested that a section that elaborates on the principles of Crime Prevention through Environmental Design (CPTED) be included.

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6. *Amenity*

- The proposed school seems to be dependent on Haigh Park to provide its open space requirements. The proposed master plan should include the required open space within the school site.

7. *Aesthetics*

- The master plan attempts to capture the character of the built environment for each precinct however, it does not elaborate on the design of building facades. Include a section that outlines the key principles that will guide the design of future building facades within the precinct (i.e. balconies, projections, awnings, entry features and include a suggested list of material & finishes that will help achieve the envisioned character for the precinct).

While recognising that these urban design issues may need to be addressed, it is considered that the refinement of these detailed design can be undertaken during the post-Gateway stage through inclusion into a site-specific DCP.

9. How has the planning proposal adequately addressed any social and economic effects?

Social effects

The planning proposal request is supported by a Community Benefits Analysis that indicates a range of supporting social infrastructure is required to support the development, including:

- New multipurpose community hub – approx. 2000m²;
- New local facility with indoor and outdoor space – approx. 400m²;
- Repurposing Moorebank Library and Community Centre to a district level multipurpose library facility – approx. 598m² to 2036 and 1,365m² to 2051;
- Deliver 1 new primary school, including Out of School Hours Care;
- Provision of quality early education and childcare centres (under 90 places);
- Deliver a total of at least 7.7. hectares of new quality open space. Should be delivered as 6.2 hectare of local parks of a minimum size of 0.3 hectares to 0.5 hectares. Parks should be within 200m of resident homes;
- Deliver up to 3 new (or embellished) district sports-fields including:
 - 1 new sports-field space within the precinct up to 2051;
 - Embellishments to Haigh Park to deliver additional sports-fields for informal team sports by 2036;
 - Protection and enhancement of Satyam Ghat.
- Up to 4.5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051 located throughout the precinct next to new open spaces;
- Up to 1 regional/district level outdoor youth recreation precinct. This could be provided through embellishment to existing Kelso Skate Park or through a new youth focused outdoor recreation space;

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- 1 indoor recreation centre providing up to 4 indoor courts that support a range of culturally appropriate sports such as futsal, indoor volleyball, badminton and table tennis;
- Provision of a water launch point for passive boating and viewing decks for passive recreation and fishing at Lake Moore;
- Communal pools or a contribution to improving facilities at Whitlam Centre;
- Provision of communal facilities within residential towers; and
- 5% of affordable housing for key workers.

Much of this can be provided through a Section 7.11 Contributions Scheme, or alternatively through a Voluntary Planning Agreement. It is noted, however, that the recommended affordable housing contribution has not been listed by the proponent in an initial letter of offer and thus the planning proposal request has not adequately addressed how an increased demand for affordable housing as a result of the proposal would be met. It is Council's view that up to 10% affordable rental housing could be provided, given the significant uplift on the site and the increased demand for affordable housing in the Liverpool LGA.

Economic effects

An Economic Impact Assessment has been conducted, which finds that potential loss of urban services land would be offset by the increased jobs resulting from 344,499sqm of mixed-use employment GFA across the entire precinct, supporting an estimated 23,617 jobs. Council's internal referral estimates this is more likely to be ~17,225 jobs if a benchmark of 20 sqm/job is used.

The EIA states that the effects on current urban services uses may be reduced through the zoning of part of the land facing Newbridge Road to B6 Enterprise Corridor, which provides the potential for any urban services or other low-impact industrial uses displaced during construction to be relocated back on-site.

The proposal is supported in principle by Council's City Economy unit, which notes that it is in keeping with Council's overall strategic planning for the area, as it seeks to activate and further enhance the Georges River foreshore. As well, the planning proposal request has the potential to create multiple additional jobs and training pathways, above the base case or current situation for the site.

Section D – State and Commonwealth Interests

10. Is there adequate public infrastructure for the planning proposal?

Not currently.

Social infrastructure

Open space

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While the proposal mostly satisfies requirements for social infrastructure, Council staff have not been satisfied that the proposal provides adequate open space for the intended population. The planning proposal request indicates that approximately 20 per cent of the site will be provided as open space, including foreshore parkland around the Georges River and Lake Moore, and a 'linear park' taking the form of a widened pedestrianised street.

Council policy has been to require 2.83 hectares per 1000 persons of open space, which would require 39.78 hectares, larger than the entire Moore Point precinct. However, it is also understood that this metric is not appropriate for high density urban regeneration projects.

The Community Benefits Analysis provided by the applicant indicates that 20% of the site should be provided as open space. Council's Community Planning unit has indicated that this amount is insufficient, and additional space, particularly for active recreation, should be provided on-site, given the density of development proposed and the limited provision of open space across the Liverpool City Centre.

Council has considered the new Draft Greener Places Design Guide in its consideration of open space, and notes that the proposal meets many of the criteria of the draft guide, including quality, connectivity, multifunctionality and flexibility. However, it is considered that the population projected may lead to capacity issues for the open space provided, and that there isn't a diversity of space provided in the proposal, with most land being linear parkland suitable only for passive recreation.

Council has indicated that it is prepared to reduce its typical open space requirements to 1 hectare per 1000 persons and include Haigh Park in its consideration of open space provision. Council staff propose that approximately an additional 1.5 hectares be provided adjacent to Haigh Park, indicated as super lot R on **Figure 13** for the purposes of active recreation. This is supported by the proponent's Community Benefits Analysis (CBA) which indicates that a district-level sports space of 1.5 hectares should be provided, and that one new sports field space should be delivered *within* the precinct, while another two may be accommodated offsite through upgrades to Haigh Park.

With the addition of this open space, the total yield would also be reduced. As stated in Council's LSPS, Council will "refocus the City around the amenity and assets of the Georges River, while ensuring the natural character of the river is protected through development of an appropriate scale." It is considered that with additional open space, and subsequent reduced yield, the proposal will better meet the LSPS's stated intentions for development around the Georges River, while helping to satisfy Council's open space needs and stated LSPS requirements of an "extensive open space system".

Expert advice received by Council on the Planning Proposal by Simpson Wilson Architecture + Urban Design indicates that a minimum of 0.6 hectares of active open space needs to be provided per 1000 residents. The advice states that if not provided on-site, this needs to be within 2km/25 minutes walking distance. Given the population growth expected in the entire Collaboration Area, Council plans to develop an Open Space needs assessment for the entire Collaboration Area to

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understand the quantum and types of open space required and where it is best located taking into account expected population growth.

Until the open space and active recreation needs of the Collaboration Area are better understood, Council staff support listing super lot 'R' as open space. Council staff also support including an approximately 40m buffer of open space from the top of bank around Lake Moore.

The proponent has provided additional information on open space in a Benchmarking Report, reiterating that active recreation space is not the highest and best use for the precinct, that it considers Moore Point to be an exemplar in provision of open space, and that a loss of development potential could impact upon the precinct's ability to support good urban outcomes through increased population density and its associated activity (advice provided in the Attachments).



Figure 13: Moore Point structure plan with superlot references

Source: SJB, 2020

Emergency Services

Further information on the demand for emergency services has also been requested post-Gateway. Typically, police, ambulance and fire stations are provided at a 20,000-population

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threshold. It is unknown whether the existing services can accommodate the additional demand from existing locations, and further analysis is required.

Aged services

The proposal does not investigate current or induced demand for aged services and accommodation. This requires further analysis post-Gateway.

School needs

The proposal does not meet benchmarks set by Liverpool City Council regarding the provision of schools, which indicate that 6.6 primary schools and 2 high schools will be required to support the population. The CBA indicates that one new primary school may be needed, and potentially an additional high school. At present, only space for one primary school has been provided on the structure plan, however further consultation with Schools Infrastructure NSW will be conducted post-Gateway.

Transport infrastructure

It is unclear as to the transport infrastructure that will be required to support development of the site as proposed in the planning proposal request, as Stage 1 and Stage 2 strategic transport modelling have not yet been completed. Following completion of this work post-Gateway, a suitable funding mechanism will need to be determined to ensure transport infrastructure is provided. Further consultation with TfNSW and DPIE will be undertaken through the work of the transport infrastructure working group, and post-Gateway.

Utilities

With respect to services and utilities, a report by ADW Johnson confirms all authorities have advised that they can service the proposed overall development outcome. In some cases, upgrades to the existing network will be required. This is summarised below.

Sydney Water

- Upgrade of potable water supply likely;
- Major upgrade of existing pumping station to be completed to service development;
- The upgrade works will be completed by Sydney Water and take an estimated 3 years from concept to completion.

Endeavour

- Eight new 11kV feeders from Moorebank Zone Substation;
- Six new circuit breaker terminations at Moorebank Zone Substation; and
- Two new switching stations at Moorebank Zone Substation.

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NBN Co

- Fibre connecting the site to the existing Liverpool Fibre Access Node (FAN) to be constructed by NBN

Jemena

- Installation of below-ground regulator station.

11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

Relevant public bodies will be consulted should a Gateway determination be issued.

Preliminary consultation on the planning proposal, as required by Council's Community Participation Plan, received one response from a state public authority – Schools Infrastructure NSW. It stated that the proposal would lead to a substantial increase in the total number of government primary and secondary school students, which would be more than can be accommodated at existing schools. SINSW requested further ongoing consultation to ensure educational facilities are supporting community needs and are appropriately resourced to service future population growth.

Next Steps

The usual process for planning proposal requests, following a review of the proposal, is for Council officers to finalise the proposal detailing the proposed changes to LLEP 2008. The Planning Proposal request would then be reported to Council for endorsement and subsequently forwarded to the DPIE seeking a Gateway determination.

Following a Gateway determination, in support of the planning proposal, there will be public authority and community consultations, a public exhibition period and a further report to Council prior to proceeding with the making of any amendment to LLEP 2008.

6. CONCLUSION

This assessment finds that the proposed rezoning of the subject land within the Georges River North precinct has strategic merit, and site merit subject to the finalisation of transport and flood studies, and revision of the planning proposal to increase public open space and provide a suitable scale of development, particularly around the Lake Moore area.

The proposed rezoning of the subject land in the Georges River North precinct will facilitate the development of a high-quality mixed-use precinct to support the city centre, as envisaged in Council's LSPS and the Liverpool Collaboration Area Place Strategy.

Council staff recommend that the LPP advise that the proposal should be forwarded to DPIE for a Gateway determination.

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7. ATTACHMENTS

1. Planning Proposal
2. Urban Design Study
3. Additional Urban Design Analysis
4. Aboriginal Heritage Report
5. Aeronautical Assessment
6. Air Quality Assessment
7. Biodiversity Assessment
8. Community Benefits Analysis
9. Demographic Analysis
10. Economic Impact Assessment
11. Flood Evacuation Strategy
12. Flood Impact Assessment
13. Historical Heritage Assessment
14. Interim Letter of Offer
15. Moore Point Benchmarking Report
16. Part 1 Contamination Assessment
17. Part 2 Preliminary Acid Sulfate Soil Management Plan
18. Place Design Framework
19. Riparian Strategy
20. Riparian Strategy Appendix
21. Servicing Infrastructure Report
22. Strategic Transport Impact Assessment
23. Sustainability Statement



**ADVICE ON PLANNING PROPOSALS
LIVERPOOL LOCAL PLANNING PANEL**

Monday 26th October 2020

Held electronically via Microsoft Teams

Panel: David Ryan (Chair)
Marjorie Ferguson Expert
Fiona Gainsford Expert
Daryl Hawker Community Rep

There were no conflicts of interest declared by any panel members in relation to any items on the agenda.

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ADVICE OF LIVERPOOL LOCAL PLANNING PANEL

ITEM No:	1
APPLICATION NUMBER:	RZ-6/2015
SUBJECT:	Planning proposal request to rezone the Georges River North (Moore Point) precinct to part B4 Mixed Use, part B6 Enterprise Corridor and part RE1 Public Recreation
LOCATION:	3 Bridges Road, Moorebank; 11 Bridges Road, Moorebank; 5 Bridges Road, Moorebank; 6 Bridges Road, Moorebank; 8 Bridges Road, Moorebank; and 361 Newbridge Road, Moorebank Lot 200, DP 1009044; Lot 100, DP 775780; Lot 201, DP 1009044; Lot 111, DP 1133744; Lot 10, DP 875626; Lot 101, DP 827141
OWNER:	Leamac Property Group and Coronation Property
APPLICANT:	Mecone
AUTHOR:	Cameron Jewell, Programme Lead Liverpool Collaboration Area

ADVICE OF THE PANEL

The Panel has been provided with the Council officers' assessment report and various reports submitted by the landowner in conjunction with planning proposal request. The Panel is familiar with the site and its context.

Representatives of the landowner attended the Panel meeting, providing a presentation on the proposal and answered questions from the Panel.

The Panel also received a briefing from Council's strategic planners. In addition to the matters set out in the Council officer's report, the Panel was provided with feedback on flooding issues, affordable housing, quantum of open space, social infrastructure and transportation and connectivity.

Panel Advice – Strategic Merit

The Panel recognises that the redevelopment of Moore Point represents a significant transformational opportunity adjacent to and connected with the Liverpool CBD.

The Panel agrees with Council officers' conclusion that the planning proposal has strategic merit having regard to the broader policy context, including the Greater Sydney Regional Plan – A Metropolis of Three Cities and the Western City District Plan. The proposal is consistent with Council's Local Strategic Planning Statement, which states that Council will "investigate amendments to LEP to rezone the River precinct north of Newbridge Road (Moore Point) as a mixed use zone to support the Liverpool CBD and Innovation Precinct". The precinct is also identified in the Liverpool Collaboration Area Place Strategy for "a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to and not in competition with, the commercial core of the Liverpool CBD."

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Panel Advice – Site Specific Merit

Majority opinion (David Ryan, Marjorie Ferguson, Daryl Hawker)

Moore Point represents a major opportunity for urban transformation as described above. However, it is also subject to significant environmental constraints and contextual issues that require thorough and detailed investigation and management and will shape the final planned outcomes for the precinct.

The Panel notes that the proposal describes residential and commercial development yields supported by specific floor space ratio and height mapping of the precinct. Whilst the Panel agrees with the proponent's proposition that a high density of development appropriate for the precinct and outcomes should be measured in terms of 'urbanity' rather than density, the appropriate yields, FSRs, building heights and zone boundaries will ultimately be determined following the completion of a range of investigations (post Gateway) to confirm the 'carrying capacity' and configuration of the Precinct.

Key determinants of carrying capacity include:

- Detailed analysis of flooding conditions and required mitigation and management measures,
- Outcomes of the Strategic Transport Impact Assessment and the recommendations of Council's Transport Infrastructure Working Group,
- Outcomes of the Open Space needs analysis for the wider Collaboration Area. In this regard the Panel supports in principle the Council's officer's recommendation for a larger quantum of open space on Moore Point, but accepts this should be determined based on the outcomes of the analysis, and
- School Infrastructure's advice on the need for school facilities to be located within the precinct.

Other considerations for future development of the precinct requiring resolution, as described in the Council officers' report include:

- Contamination, noting that a Preliminary Site Investigation report has been prepared and concludes that the site can be remediated for its intended purpose,
- Offensive odour from the Liverpool water recycling plant,
- Extent of riparian zone buffer and its treatment,
- Urban design, noting the role of the Placemaking Working Group and the issues raised by Council's City Design and Public Domain unit in this regard,
- Connectivity, which is vital for the successful integration of the precinct with its surrounding context,
- The quantum of affordable housing and the mechanism for delivering it. The Panel notes and supports the Council officer's recommended 5 -10% affordable housing target,
- The quantum and extent of physical and social infrastructure to support a major new population and employment precinct, and
- A suitable staging and sequencing plan to ensure appropriate infrastructure is in place to meet the progressive demands of the precinct as it is developed over its projected 25 year timeframe.

In relation to the latter points, the Panel notes the content of the proponent's Community Benefits Analysis and considers it essential for these facilities and any others negotiated or determined through the planning process, to be delivered through the mechanism of a Planning Agreement or Contributions Plan in conjunction the Planning Proposal process.

Having regard to the matters outlined above, the full Panel considers that the planning proposal has

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strategic merit and the majority of the Panel considers the planning proposal to have site specific merit.

Minority opinion (Fiona Gainsford)

Based on the documentation provided, I support the Moore Point planning proposal (RZ-6/2015) in terms of its *strategic merit* . However, I consider that the following aspects of the proposal have not been assessed in enough detail to date to determine that there is *site specific* merit. Therefore I do not support the application in its current form.

Flooding

The *NSW Floodplain Development Manual* (2005) requires a merit-based assessment to be undertaken which balances the social, economic, environmental and flood risk parameters to determine the appropriateness and sustainability of the proposed development. Climate change factors must also be taken into consideration.

The application appears to be reliant on engineered solutions:

- 1) substantial volumes of fill (~74,000t) to achieve suitable flood levels, plus freeboard
- 2) the off-site compensatory storage including two flood storages and a levee which are not part of the development footprint.

There is little information in the supporting documentation provided in relation to:

- Environmental: hydraulic analysis: hydrological patterns of the river or potential draw from its tributaries (eg the instability associated with the Southern Freight Rail line at the rear of the Liverpool TAFE)
- Socio-economic considerations:
 - identification of the cost and responsibility of providing the compensatory storage and levee, including the cost of investigation and possible remediation of Helles Park and Titalka Park. Given these structures are not in the development footprint it is unclear whether these costs can be captured through a VPA or contributions.
 - any impact on land ownership, access and public accessibility associated with acquiring land to build the compensatory structures.
- Climate change:
 - It is unclear whether *rainfall intensity* including under climate change scenarios has been considered. Given the development has a 20-25 year implementation period, consideration needs to be given to how rainfall intensity varies over the catchment, based on the assumption that large catchments will not have a uniform depth of rainfall across their entire area¹ 20192.

Connectivity

The proponents agreed that connectivity between Moore Point and Liverpool CBD will be critical to the success of the Moore Point precinct.

- Socio-economic considerations: The three pedestrian/bike connection infrastructure (eg bridges, ramps and lifts) to Liverpool Station, Bigge Park/Liverpool Hospital employment precinct and the Warwick Farm precinct are likely to have significant costs. The cost and responsibility of providing the structures on the CBD side are not in the

¹ <http://arr.ga.gov.au/> Australian Rainfall and Runoff (ARR) is a national guideline document, data and software suite that can be used for the estimation of design flood characteristics in Australia

² Referenced by WMA Water (2020) – Warwick Farm Planning Proposal Flood Study

² <https://climatechange.environment.nsw.gov.au/Climate-projections-for-NSW/Climate-projections-for-your-region>

⁴ Moore Point Precinct Plan - Aboriginal Heritage Due Diligence Assessment (Ecological, 2020)

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ADVICE OF LIVERPOOL LOCAL PLANNING PANEL

development footprint and it is unclear whether these costs can be adequately captured through a VPA or contributions to a standard that is equitable and accessible to the Liverpool LGA rate payers. Leaving these considerations to concept or DA stage potentially loses the requirement to address the broader public benefit and criticality of the connection points to the viability of the precinct.

- Climate change: the design of connection points must address climate change, including increased rainfall and increased hot days³. If the connection infrastructure is considered later in the planning process, there is the potential to overlook these aspects.

Aboriginal Culture

Aboriginal heritage considerations appear to be limited to Aboriginal *objects*⁴. It is unclear whether the Gandangara LALC has been approached in relation to this proposal to consider Aboriginal *cultural values*. Given the location of the proposal in relation to the Georges River, engagement with the LALC and the local Aboriginal community is pertinent at this stage of the planning proposal.

Aquatic Ecology

No information was presented in relation to the aquatic ecology values of the Georges River in the Moore Point locality or upstream in the compensatory flood storage locations. Given the potentially large disturbance footprint and infrastructure required for the improvement of riparian zones, flood mitigation and potentially infrastructure such as piers, it is important to establish an understanding of aquatic environment.

The regulatory framework includes the *Fisheries Management Act 1994* and Coastal SEPP. The Coastal Management Plan objective to "protect and improve the extent and condition of estuarine and riparian vegetation" does not appear to have been considered.

Panel Conclusions

The majority of the Panel agrees that the matters raised by Ms Gainsford are important and require consideration at the appropriate stage in the statutory planning process. As with other key matters identified in the majority opinion, these considerations should inform appropriate development outcomes for Moore Point and may impact on the ultimate form of the planning proposal. However, the majority considers that they do not warrant final resolution prior to the planning proposal proceeding to Gateway determination.

Panel advice

The Panel therefore considers that it is appropriate for the planning proposal to proceed to Gateway determination and that all considerations described above should be appropriately addressed post Gateway.

VOTING NUMBERS:

SJB Urban



Moore Point Masterplan Urban Design Report

Bridges Road and Haigh Avenue
Moorebank
Sydney

Prepared for
Coronation and Leamac

Issued
15 April 2020

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We create amazing places



At SJB we believe that the future of the city
is in generating a rich urban experience
through the delivery of density and activity,
facilitated by land uses, at various scales,
designed for everyone.

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Executive Summary

Moore Point in Sydney's south-west is a peninsula next to the Liverpool CBD and train station surrounded by the Georges River and major public parks. It is in an opportune location and site for development.

This Urban Design Report, which is also recognised in state and local policy, underpins the Planning Proposal for rezoning of the site and is the basis of *strategic framework* as outlined by the Government Architect of NSW. It has been crafted over several years and collaboratively shaped with Liverpool City Council and a multitude of interdisciplinary consultants.

This site encompasses the entire peninsula, including landholdings on the northern side of Newbridge Road which are outside the ownership of Leamac and Coronation. The structure plans, design concepts and recommendations cover this broader area at the request of Council, and reflect a holistic approach to the planning of the area identified in the Place Strategy.

The report has also been prepared according to the planning policy and strategic framework that identified the site for high-density mixed use development, and guidance by GANSW for the preparation of strategic frameworks, masterplans and implementation plans. The principles that underpin the masterplan have been based on the analysis regeneration precincts in CBD-fringe locations, at both a local, national and international perspective. This work has guided the scale of development, land use mix, provision of open space and community infrastructure and approaches to movement and connectivity.

The long timeframe of this project mean it will be several decades before the transformation of this precinct is complete. This requires the foundation of the masterplan to be robust enough to withstand unforeseen changes in the way we plan, develop, construct and live. We've therefore sought to strike a balance between certainty (i.e. provision of open space, upper limits in yield, access and circulation), whilst allowing some flexibility to accommodate the inevitable change (i.e. reliance on cars and parking).

The fundamental aim of the masterplan is to create a riverfront development that supports Liverpool as being a significant metropolitan CBD. A place that references its unique cultural, natural and built heritage, and ensures this once-in-a-generation is properly secured and celebrated.

The main body of the report is structured as follows:

1. Baseline and analysis, outlines the site investigations and spatial attributes of the site
2. Strategic framework, provides the planning and policy context alongside comparable benchmarks to inform the masterplan
3. Masterplan, highlights the vision, principles and broad concept plans for the place
4. Structure plans, illustrates the key plans and supporting drawings and information to deliver the place and inform future planning controls
5. Precinct plans, explores the masterplan place-by-place and explains the design intent, principles and key about how each character area could be delivered
6. Technical studies, details the assumptions and approach to DA compliance for the masterplan
7. Recommendations, summarises the conclusions of the report

In summary this Urban Design Report has been undertaken based on the following spatial and strategic reasons:

- The site is adjacent to Liverpool City Centre and Liverpool Train Station
- The site is the nearest subregional centre to the Aerotropolis and the focus of significant state and national investment in transport and other infrastructure
- The site is surrounded by Georges River, Haigh Park and Lake Moore which are unique natural assets
- The site can supply additional dwellings addressing the pressure for housing in the area
- The proposal will contribute significant public benefit such as a significant riverfront park and plazas, new public facilities, adaptively reused heritage sheds, recreational paths and space for primary school and bus interchange
- The establishment of site-specific precinct plans based on a holistic approach can ensure cohesive design excellence for the place
- The site offers the opportunity to reconnect Liverpool to its to the river by re-establishing Moore Point as a riverfront for people

Executive summary

Project background

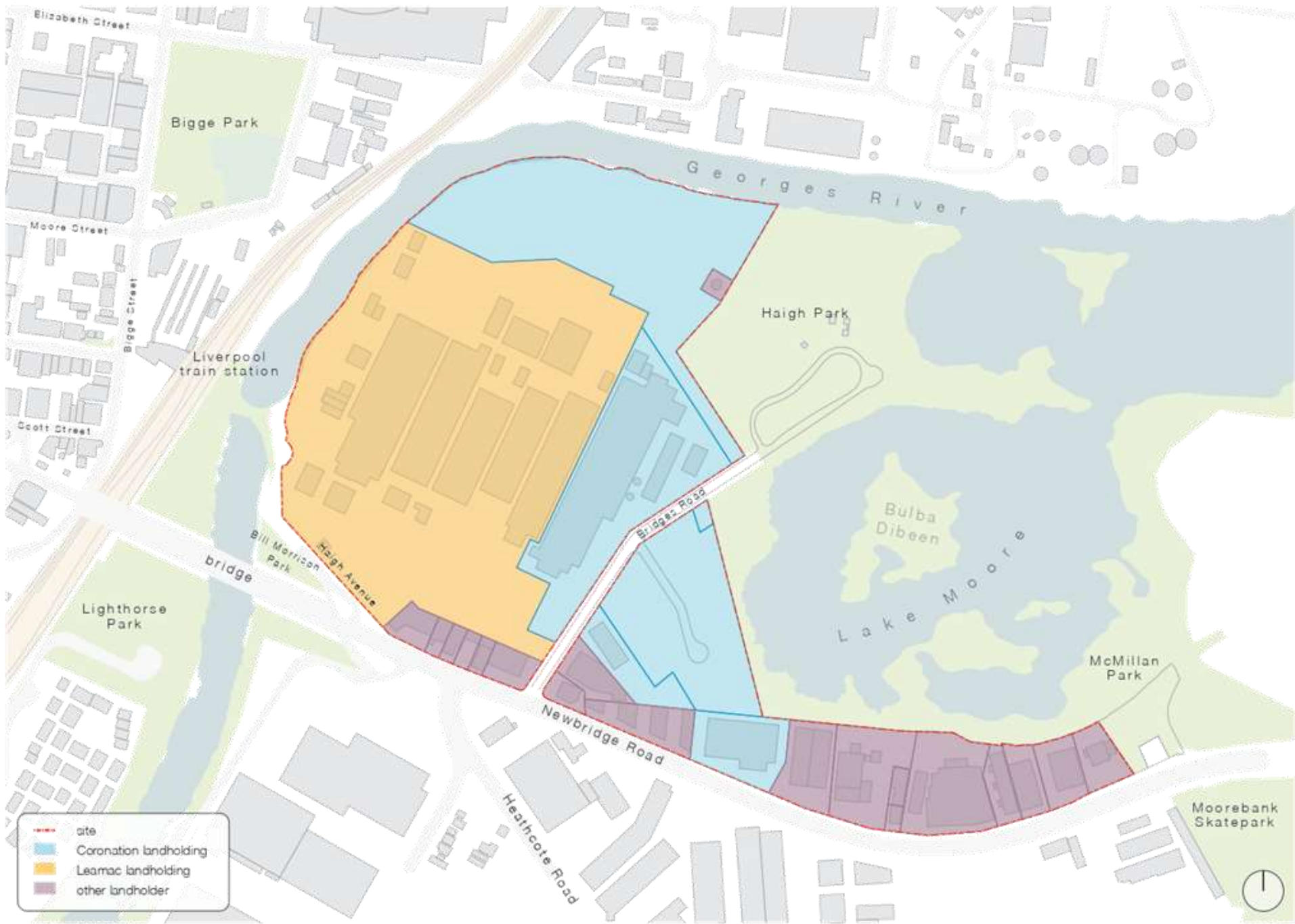
Moore Point is a large and strategically significant site as well as a major opportunity for Liverpool, the south-west district and metropolitan Sydney. Several key policies, studies and previous proposals have led to a consolidated approach demonstrated in this urban design report. Key catalysts for the project include:

- Site identified as ‘mixed use’ in the Greater Sydney Commission *Liverpool Collaboration Area Place Strategy*.
- Site identified as ‘mixed use’ in the *Georges River Precinct Plan*.
- Liverpool LSPS identifies Moore Point as ‘investigate residential/mixed use to support CBD and innovation precinct’.
- The need for a holistic approach which unifies the total of four previous planning proposals for various parts of the site undertaken by Coronation and Leamac over a period over several years.
- The significance of the combined Coronation (light blue) and Leamac (yellow) landholdings (equates to 32ha of approx. 38.5ha) which together have the potential to deliver the masterplan vision.

Over the past several years SJB in collaboration with Liverpool City Council have shaped the Moore Point Masterplan with input from a multitude of consultants. Policy and guidance from the Government Architect of NSW has directed the process and design approach. As such this report has been formulated as the ‘Strategic Framework’ for the project moving forward which is defined as:

“a statement of aims and objectives for the physical regeneration of large areas of land, parts of an urban area or for complex projects. Strategic frameworks provide vital background information for master planning and high-level decision making.” (GANSW Advisory Note: Strategic Frameworks)

As well as an overall vision document for the place, it is envisaged that chapter 4 (structure plans) and chapter 5 (precinct plans) could be extrapolated into site specific development control plans to ensure design intent is carried through to delivery.



Executive summary

Study process



Figure 02: study process diagram

Baseline and Analysis

Multi-scalar spatial analysis of the city and site

1

Baseline and Analysis

1.1 Metropolitan context

Liverpool sits at the intersection of Sydney's urban growth areas in the south west and the Sydney CBD. It is the gateway to the planned Badgery's Creek 'aerotropolis' as well as the south-west growth corridor. The NSW government is currently investigating the extension of Sydney Metro westwards from Bankstown to Liverpool which will eventually complete the outer metro loop, as well as creating a minor secondary loop through Campbelltown. Liverpool is also a gateway to the Royal National Park to the south and the Georges River Corridor, which extends eastwards to Botany Bay.

The focus of infrastructure investment and surrounded by natural assets including the Georges River and Royal National Park, Liverpool is an opportune metropolitan centre to accommodate the significant housing and population growth in Sydney. Moore Point is well placed as an area available for regeneration and revitalisation to support Liverpool as an emerging CBD.

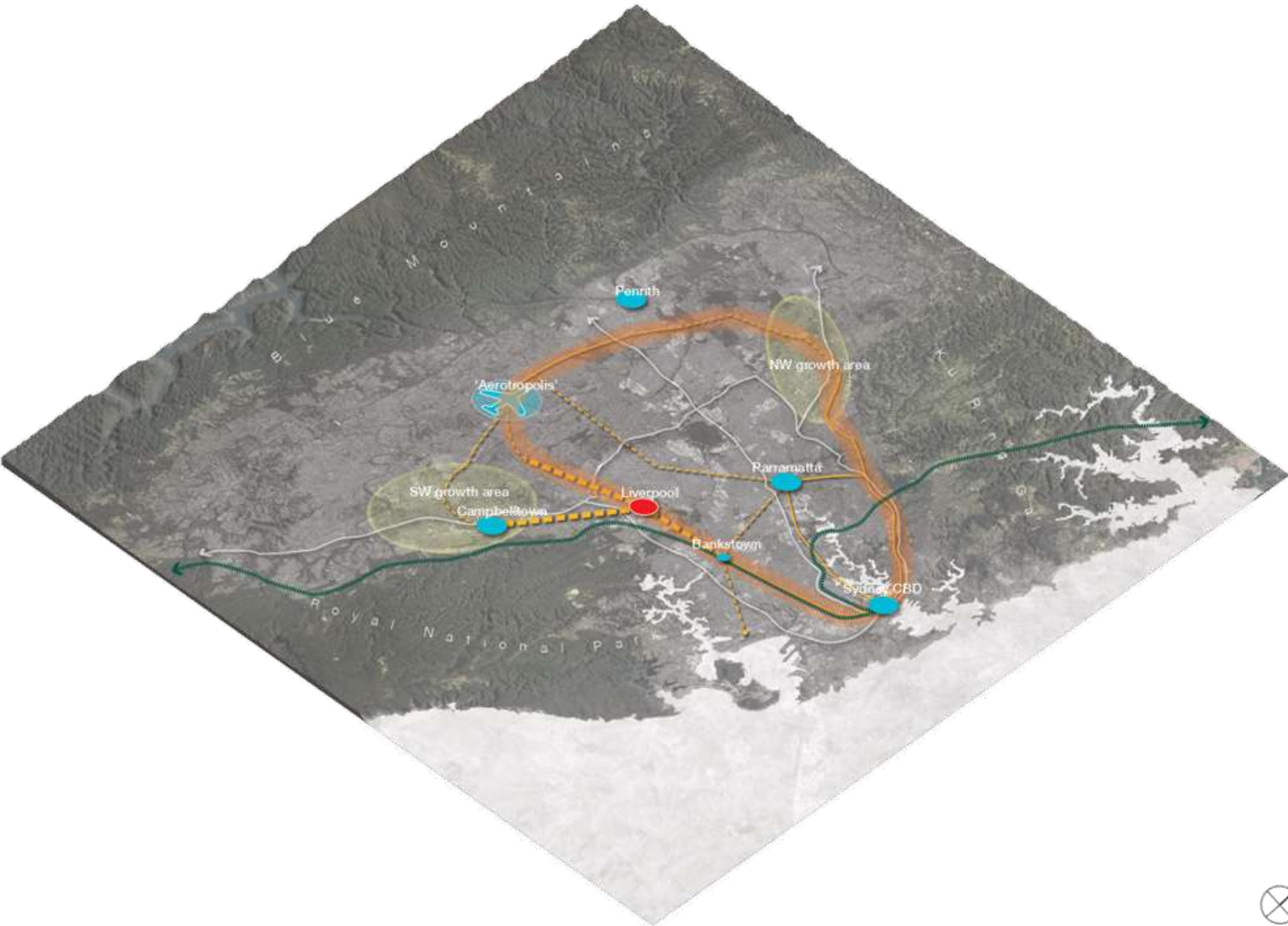


Figure 03: metropolitan context diagram



Baseline and Analysis

1.2 The site and city today

Moore Point sits east of the Liverpool city centre across the Georges River in the suburb of Moorebank, as illustrated in the adjacent map. The Georges River wraps along its western and northern edge and into Lake Moore which defines its eastern edge. The southern boundary of the site is defined by Newbridge Road which bridges the river and links into Liverpool.

The site is adjacent to Liverpool Train Station and Lighthorse park to the west. Over the river to the north sits Liverpool hospital, light industrial factories, equine sheds and a sewerage treatment plant. To the east of Lake Moore is the suburb of Chipping Norton which comprises mostly of detached houses. Light industrial sheds and suburban houses sit to the south of the site.

Historically Moore Point was an alluvial bushland peninsula, which was transformed into colonial era farmland and later industrial factories.

This broader area of Liverpool, beyond the extent of the CBD and encompassing Moore Point, has been addressed in the *Liverpool Collaboration Area Place study* which describes Moore Point as a *'High amenity mixed use precinct complementing city centre and health and education'* p.28



Figure 04: site and city map

Baseline and Analysis

1.3 Subregional analysis



1) River corridors

There is an opportunity to reinstate the Georges River corridor as the pre-eminent recreational artery through south-western Sydney. Historically, transportation, culture, economy and leisure for local people was focused along the river which connects the the broader system of creeks and joins Liverpool to Botany Bay and broader Sydney.





2) Riparian fingers

Linking green corridors is a policy priority in the GSC 'Blue and Green Grid Strategy'. Moore Point presents the opportunity to connect two of four riparian fingers which lead into the Georges River and significantly strengthen the subregional network of open spaces as has been demonstrated at Shepherd Street to the south.



3) Emerging ring of height

There is an emerging ring off current and proposed building heights around the edge of the Liverpool City Centre. This ring of landmarks reinforces the visual legibility of the place and is clearly visible on major roads into the centre as well as the Georges River. Moore Point can complement this distribution of height and frame the River to complement the distribution of height.

 primary focus of height
 secondary focus of height

Baseline and Analysis

1.4 Subregional analysis



Figure 10: future character areas diagram

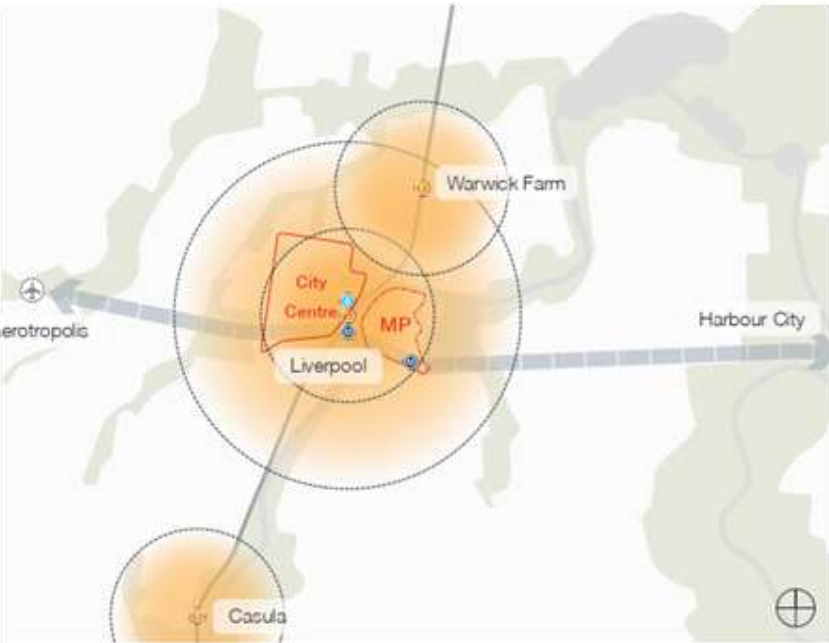


Figure 09: transit oriented consolidation and development diagram



Figure 11: key local amenities diagram

4) Envisaged character areas

Liverpool is consolidating itself as a significant metropolitan CBD which is highlighted in the *Liverpool Collaboration Area Place Strategy* which classifies Moore Point as 'diverse residential.' As part of this maturation Moore Point will complement not compete with Liverpool and support adjacent character areas such as the commercial centre and health and innovation/education precincts to the east and to the north.

- Liverpool City Centre - Core
- Diverse residential
- High density residential
- Equine
- Eco / Utility / Recreation
- Business development
- Industrial
- Innovation / Research / Health / Advanced manufacturing
- Mixed use
- Existing use
- Green space

4) Transit oriented consolidation and development

Moore Point is adjacent to the Liverpool Train Station and Bus Interchange and on the route (under investigation) for a future metro line making it a key node between the aerotropolis and the 'Harbour City' and Sydney CBD. The aerotropolis will drive the development of the south-west of Sydney making this key transport nexus a prime opportunity for transit oriented development.

5) Key local destinations

The Liverpool subregion has an evolving series of key cultural and leisure destinations. Alongside the services and facilities in Liverpool City Centre (i.e. Woodward Park, Civic Centre), Warwick Farm Racecourse, and the Casula Powerhouse Arts Centre are significant drawcards for visitors to the area. As the exemplar of active mixed-use precincts supported by high-quality amenity and services Moore Point can support Liverpool as a great river city, and focus of culture in Sydney's south-west.

Baseline and Analysis

1.5 Movement and access

Moore Point is defined on its southern edge by Newbridge Road which is the major east-west road into Liverpool City Centre. Access to the site is off Newbridge Road via Haigh Avenue (underpass) and Bridges Road which provides access to Haigh Park. Light industrial premises get access directly from Newbridge Road.

Riverfront pedestrian pathways run through Lighthorse Park and terminate at the Weir, as well as eastwards from Haigh Park along the Georges River. Moore Point waterfront presents a significant opportunity to link these paths. A pedestrian bridge is currently proposed over the old rail viaduct from Liverpool train station across the river to Bill Morrison Park. There are Government proposals to extend a metro line and station to Liverpool City Centre.

- Key findings
- Potential for future metro interchange within close proximity to the existing train station.
 - Site could accommodate bus interchange to alleviate bus traffic crossing the bridge.
 - Site access from Newbridge road potentially along Bridges Road.
 - Opportunity to integrate proposed pedestrian bridge and explore additional pedestrian connections.
 - Riverfront pedestrian pathway could be linked around Moore Point foreshore to provide a seamless route from Chipping Norton, around Lake More and Haigh Park to Moore Point and into the city.

- site
- major road
- primary street
- secondary street
- tertiary street
- pedestrian pathway
- access
- pedestrian stairway
- traffic light junction
- bus terminus (layover and stops)
- train station
- potential future metro
- proposed pedestrian bridge



Figure 12: movement and access analysis plan

1:6000 @A3

Baseline and Analysis

1.6 Landscape and open space

The site is well surrounded by natural assets, bound by the Georges River to the north and west, and Lake Moore to the east. It also has access to significant open spaces, which include Haigh Park to the east, and Lighthorse Park to the south-west. The site remains relatively flat throughout, with a gentle slope from a central high- point to the south-west and to the east, down to the respective water bodies.

More distinctive landscape zones can be found on the borders of the site, namely the riparian edges along Georges river on the northern and eastern edges, which are distinguished by its denser native tree canopies. Haigh Park also contains a small beach along its eastern edge that adds to its offering of passive recreation.

Key findings

- Site has direct access to open public space and outdoor facilities, including playing fields, playgrounds and outdoor dining.
- Potential to connect surrounding open space around the river foreshore and through the site via a series of green links, spaces and destinations.



Baseline and Analysis

1.7 Water and ecology

Moore Point fits into the broader system of the Sydney Basin which is defined by its ancient sandstone geology carved by rivers over time. The adjacent analysis and proposed approach by Realm Landscape Architects highlights how the site has changed over time while the diagram to the far right illustrates the integrated approach to water and landscape on the site.

1) Ancient Sydney

During the last ice age, 20,000 years ago, sea levels were up to 120m below present levels. Botany Bay was a river delta where the Georges River and Cooks River flowed into one another before entering the Tasman Sea.

2) Pre-european settlement

Prior to 1788 the Georges River then known as Kai'eemah flowed a similar course as it does today. Sea levels were similar. Sea level rise had drowned the river valley to create the river and estuary environment of today. This process of drowning the ancient river valley gives the lower Georges River a unique morphology. Steep and narrow banks characterise some area along the Georges River. These steep narrow banks have implications when the river floods. They act as bottle necks which can exacerbate a flood event.

3) Georges River and urbanisation today

Liverpool was the fourth town to be founded in Australia post European settlement and since that time much of the Georges River catchment has been urbanized. This has meant that the land that now surrounds the Georges River is impervious. Water can no longer infiltrate into the ground. Water now flows rapidly from where it falls into the city's stormwater system, creeks and rivers. This has a dramatic impact on the water quality of the river and the flood regime.



Figure 14: development of the Georges River diagrams (REALM)



Figure 15: integrated approach to urban liveability diagram (REALM)

Baseline and Analysis

1.8 Land use and built form

The site currently comprises low rise industrial buildings, with areas of vacant land to the north. The Liverpool City Centre and train station are located to the west, forming the eastern edge of the CBD and commercial hub, which also features major retail, local services, community the main commercial hub in the area with major retail, community facilities and key health and education offerings.

Light industrial areas can be found both to the north and south of the site. The residential neighbourhoods to the south consist of single and semi-detached housing as well as residential flat buildings and apartments. Other notable features include:

- Liverpool Hospital, located approximately 500m from Liverpool Station
- Recycling plants and similar utilities to the north of the site
- Haigh Park provides a key recreational area for the site, overlooking both Lake Moore and the Georges River

Key findings

- The site is an ideal location for a range of high-density uses (residential, commercial, community) to complement the adjacent Liverpool CBD as it progressively develops.
- Opportunity for connections to key service provisions to the north, namely Liverpool Hospital
- Potential adaptive reuse of heritage and/or industrial buildings currently on the site to provide a unique retail, commercial and community offering that isn't currently available in Liverpool.

- site
- high density residential
- low density residential
- light industry
- mixed use
- health
- utility & open space
- train station



Figure 16: land use and built form analysis plan

1:6000 @A3

Baseline and Analysis

1.9 Heritage

The site and its context feature a number of heritage items and conservation area designations. Liverpool Weir is one of the oldest structures in NSW and was constructed in 1836 as a source of fresh water for the town and hinterland. The site itself was occupied by Pirrelli Power Cables and MM Cables, which were the first electrical factories in Australia, and were important for manufacturing during WWII. In addition to the heritage listed street grid of Liverpool, key items include:

- ① Liverpool Weir (01804 LEP87)
- ② Bridge Pylons (LEP86)
- ③ Lighthorse Park (LEP70)
- ④ MM Cables Admin Building (LEP76)
- ⑤ Bigge Park
- ⑥ Old Liverpool Railway Station
- ⑦ 1 Bridges Street

The Liverpool Weir has also been identified as a significant artefact under the Aboriginal Heritage Information Management System, as a former camp site (source: *Eco Logical Australia July 2016. Liverpool Waterfront Precinct, Bridges Road, Moorebank - Aboriginal Heritage Assessment. Prepared for LAC JV Pty Ltd*)

Key findings

- Potential to maintain the footprints of factory buildings on site by maintaining references to the existing grids. This could be achieved through integrating the proposed built form, streets, spaces and reinterpretation in the public domain.
- While Liverpool Weir has long ceased its primary function, it is a major placemaking opportunity as a leisure space with historical references
- Potential for adaptive reuse and interpretation of the MM Cables Administration Building, and a majority of the adjacent manufacturing warehouse and external walls.

- site
- orange heritage listed (LEP)
- orange state heritage listed
- yellow conservation area
- green retain footprint/structure
- blue post-1943 addition
- ★ Aboriginal heritage significance
- ↔ existing grid



Figure 17: heritage analysis plan

1:6000 @A3

Baseline and Analysis

1.10 Urban form and heritage

The celebrated gridded street layout is a definitive element of the urban form of Liverpool and its heritage listing. James Meehan as well as Robert Hoddle had roles in surveying and documenting the original grid respectively.

“Although key elements of the new town of Liverpool had been decided upon in 1810 [by James Meehan] and surveyed in 1814-1815, the first full plan of the town was not presented to Governor Macquarie for his approval and signature until 1819. The 1819 plan, by an unnamed surveyor, shows a fully developed street system, in an L shape enforced by the great bend on Georges River. Some of the names must have been newly introduced in 1819 (Bigges Square, Bigges Street and Scott Street), but others, such as Elizabeth, Macquarie and George Streets, had been common in other new towns from 1811 onwards. The two areas shown as reserved public squares both lie, unusually, on the periphery of the town” (p.18 Maquarie’s Towns by Ian Jack 2010).

Moore Point also has a grid which differs from the adjacent Liverpool City Centre grid, as it is more aligned to the Georges River. It is both a physical urban factory and cadastral grid originally established according to crop rows and field delineations. The diagrams to the right illustrate a range of grid orientations highlighting the fact that the ‘Hoddle grid’ has no specific orientation and grids are usually a product of their immediate landscape, topographic features and prevailing planning theories of their time (i.e. Vitruvian principles).

Key findings

- Urban street grid of Liverpool is 8° off north
- Moore Point crop, factory and cadastral grid is 25° degrees off north
- Liverpool grid is perceptually indiscernible from Moore Point
- Moore Point grid originates from place-specific factors and should be kept as intact as possible

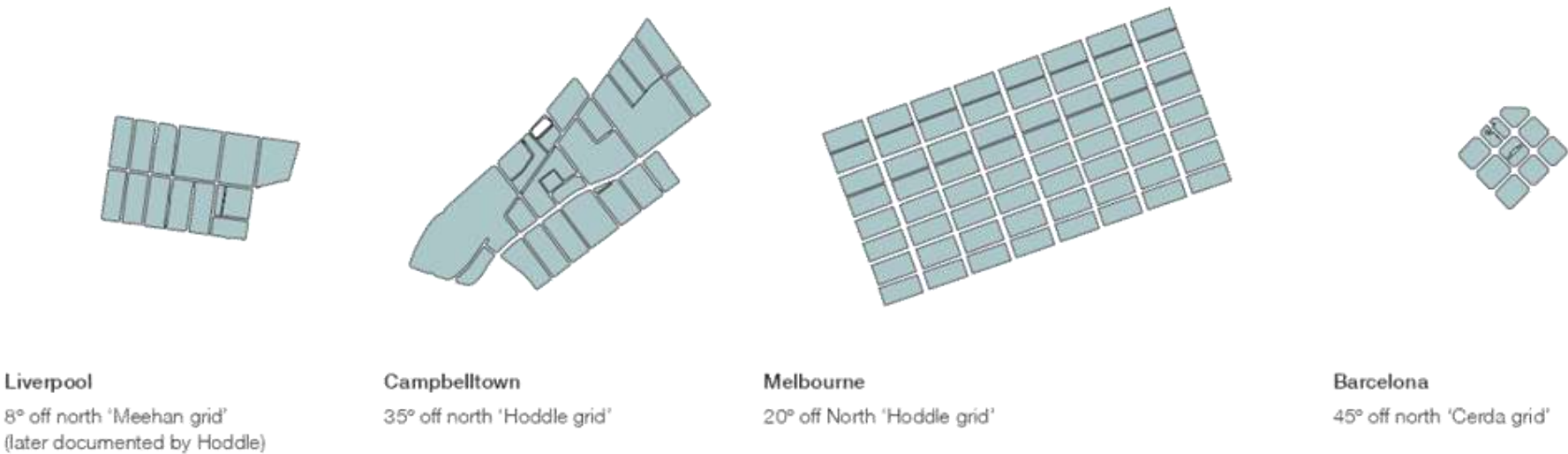


Figure 19: comparable grid figure ground plans



1) Moore Point 1943 factory, crop and orchard rows on 25° degrees off north. Note Lake Moore and Haigh Park were originally Oxbow lakes and wetlands which became sandmines

2) Moore Point 1943 original cadastral grid also on 25° degrees off north

3) Current Moore Point grid originates from the crop rows, factory grid and responds to the Georges River in contrast to the Liverpool grid

Figure 18: Moore Point historical grid study diagrams

Baseline and Analysis

1.11 Local character and place

1. **Liverpool Weir** - Opportunity to celebrate significant heritage items such as the Liverpool Weir and original factories to be retained on the site. Liverpool Station is located directly to the north-east over the river, however there are no existing direct connections and few visual references between the site and CBD.

2. **Georges river** - Water corridor with native tree canopies lining the riparian edges. Opportunity to provide connections to Liverpool Hospital across the river.

3. **The site** - Peninsula-like industrial area, with vacant land to its north. Natural assets are a key part of the surroundings, namely the Georges River and Haigh Park to the east. Defined by the heavily trafficked Newbridge Road to the south.

4. **Lake Moore** - Significant open space and waterfront recreational opportunities adjacent to the site, providing opportunities to capture key views across the lake. Recreational paths allow for pedestrian connectivity.

5. **Lakefront industrial** - Small scale industrial uses between Newbridge Road and Lake Moore. Access and views to the waterfront is restricted as pedestrian activity is discouraged, with minimal passive surveillance to a key waterfront setting.

6. **Newbridge Road** - Main enterprise corridor flanked on both sides by predominantly industrial uses. Newbridge Road provides key vehicular access to the surrounding industrial uses as well as the site, however pedestrian activity is undesirable due to the high traffic volumes.

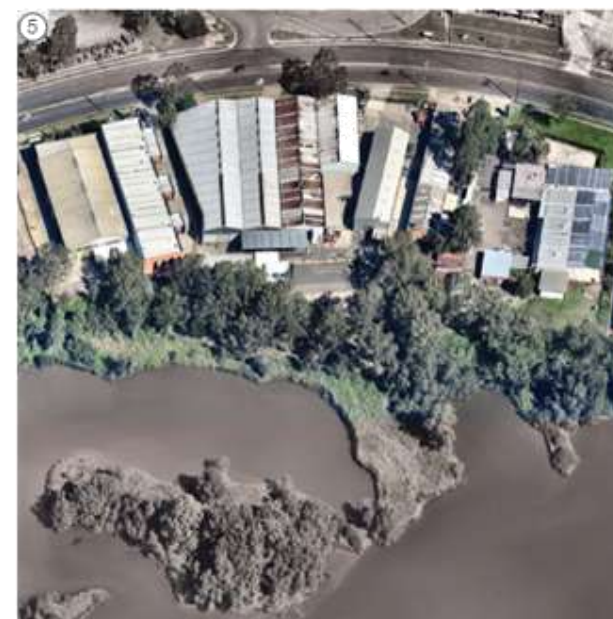
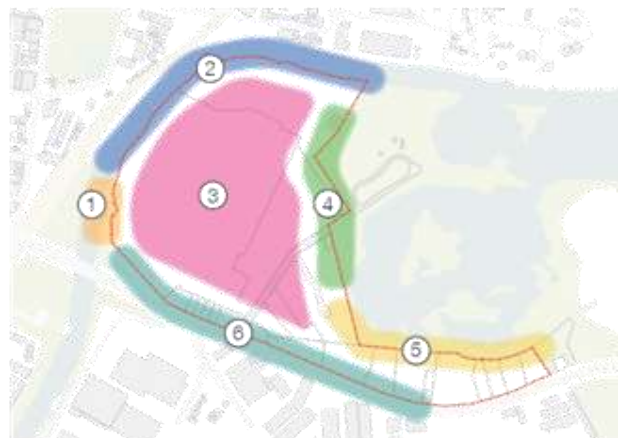


Figure 20: local character oblique aerial photographs

Baseline and Analysis

1.12 Constraints summary

The drawing to the right spatially illustrates the site-specific constraints. Each feature requires an approach to address or solve the issue. Constraints can often be interpreted as having a positive resolution, with careful consideration of their attributes often results in place-specific design solutions. Constraints for Moore Point include:

- **Flooding** - The site is prone to flooding from the Georges River and Lake Moore. A 'building limit line' according to engineering and ecological advice should be carefully established to ensure development is appropriately located relative to the vegetated riparian zone along both sides of the river. Bridges Road is also prone to flooding from Lake Moore.
- **Vehicular accessibility** - Current access to the main portion of the site is currently limited to Haigh Avenue and Bridges Road. Future site access relative to anticipated traffic movements should be considered.
- **Railway corridor** - The railway corridor and trains on the western bank to the Georges river is both a barrier to potential movement (via bridges) between Moore Point and Liverpool as well as a source of noise.
- **Future metro** - Indicative schemes have shown there is a 30m setback along Newbridge Road in order to accommodate a potential future Metro viaduct.
- **Poor connection to train station** - There is poor connection to the Liverpool Train and bus station currently requiring people to take a circuitous route around Newbridge Road.
- **Height restrictions** - Early aeronautical advice has identified the site has Pans Ops constraints of between RL136 and RL108 which should be considered with any development.

- Site
- Liverpool city centre
- Train station
- Liverpool Weir (heritage)
- Poor Connection
- Noise from train
- Noise from traffic
- 1% AEP flooding
- Lake Moore flooding
- Major intersection
- Minor intersection
- Heritage factory
- Pumping station
- 30m setback
- Cadastral boundaries
- aeronautical height limitation

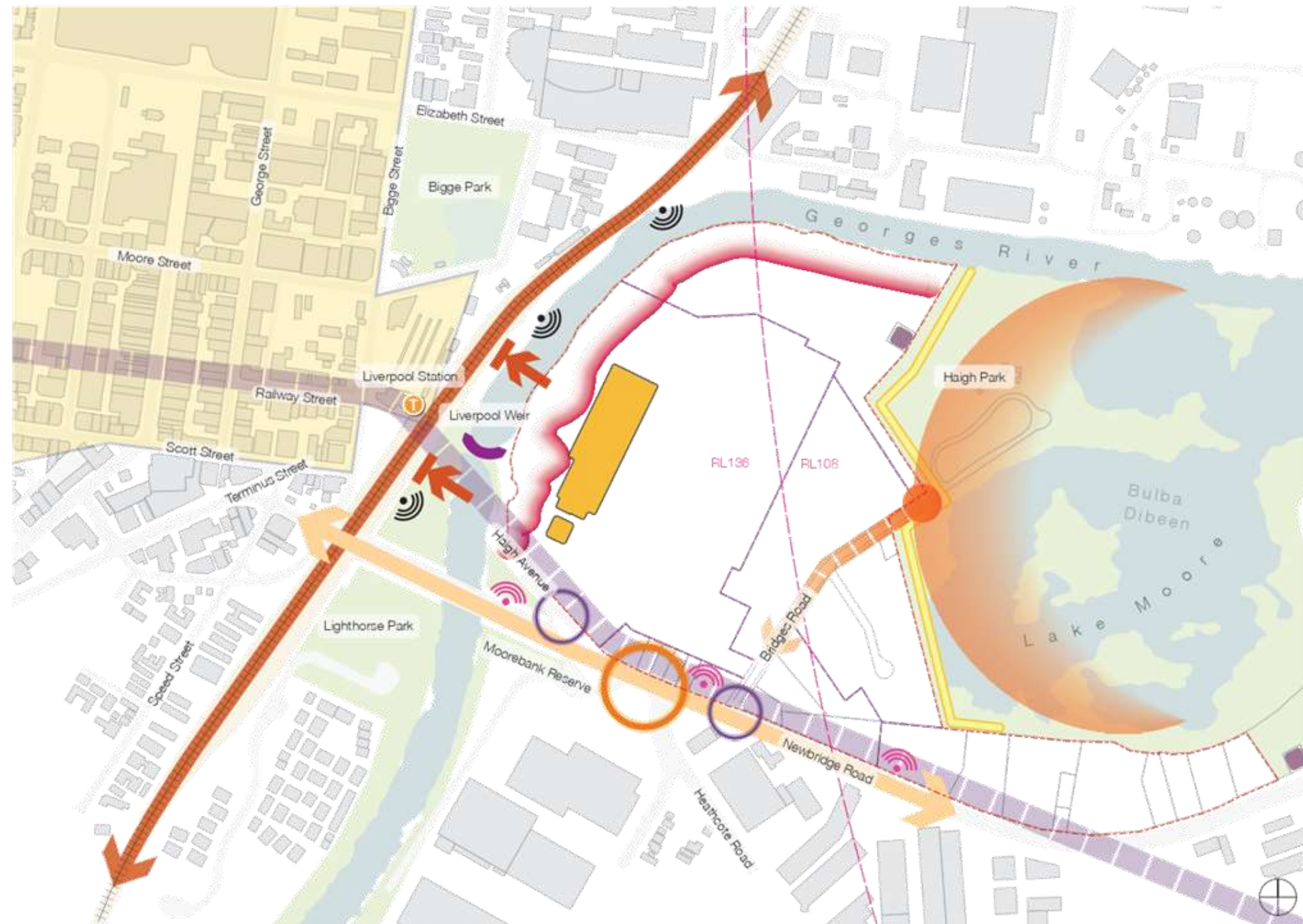


Figure 21: constraints summary plan

Baseline and Analysis

1.13 Opportunities summary

Moore Point has an array of opportunities which should be integrated into the masterplan. Key opportunities include:

- **Proximity to Liverpool City Centre** - Moore Point is directly adjacent to Liverpool City Centre and associated employment opportunities and services such as Liverpool Hospital. This proximity alongside major planned public and private investment for the centre make it a prime site for development.
- **Liverpool Train Station and bus Interchange** - sit on the adjacent bank offering fast train services to the Sydney CBD and an array of regional bus routes. Improved connections across the river could establish direct connections from the site to the station.
- **Heritage** - remnant factories, river weir, viaduct pylons and especially the existing factory and crop grid are significant historical elements to be integrated into the masterplan.
- **Reconnection to the river** - and the potential to relink Liverpool and Moorebank back to the River.
- **Georges River** - The river and vegetated banks wrap the eastern and northern edge of the site which offers an immense opportunity for riparian recreational spaces. For aboriginal peoples and colonial settlers the River was a vital source of food, transport route and place of leisure. Moore Point can reconnect the residents of both Liverpool and Moorebank to the Georges River.
- **Lake Moore and Haigh Park** - Together these natural assets provide sporting pitches, playgrounds, kilometres of recreational pathways which join into the broader Moorebank and Liverpool recreational path network.

- Site
- Liverpool city centre
- Train station
- Future metro station
- Bus interchange
- Potential connection
- Heritage factory
- Open space RE1
- Park facilities
- Potential site access
- Site aspect
- Riverside trees
- Potential pedestrian and cycling network
- Rail corridor

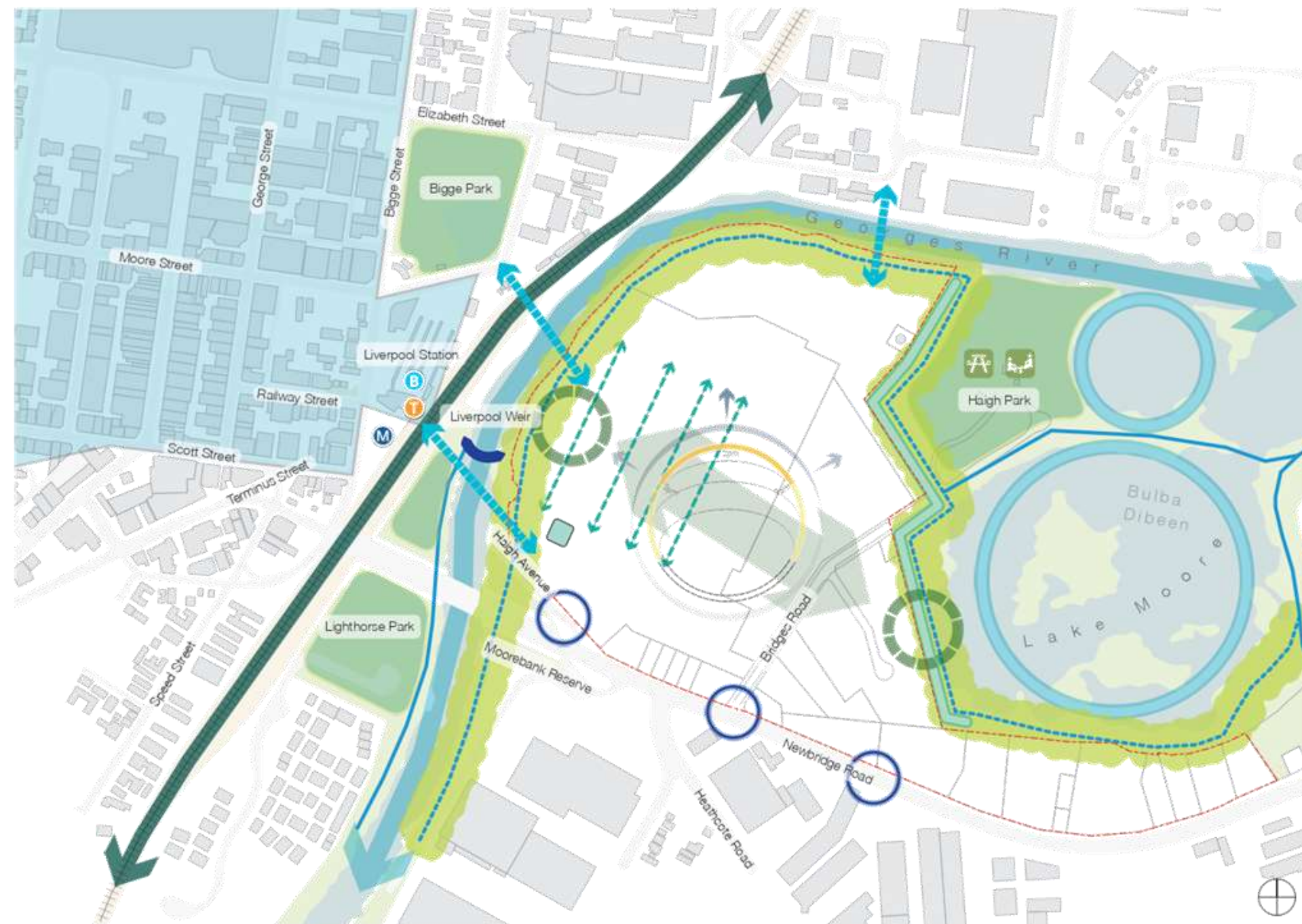


Figure 22: opportunities summary plan

Strategic Framework

Policies and planning strategies guiding development in the Region, Liverpool and Moore Point

2

Strategic Framework

2.1 Strategic framework overview

This strategic framework underpins the Moore Point masterplan and establishes a common understanding of what is collectively sought for the future of the region across local and state government. A thorough understanding of existing government strategies and policies will establish the base assumptions and drivers for the project, and enable the masterplan to incorporate and respond to the higher level thinking that has already taken place.

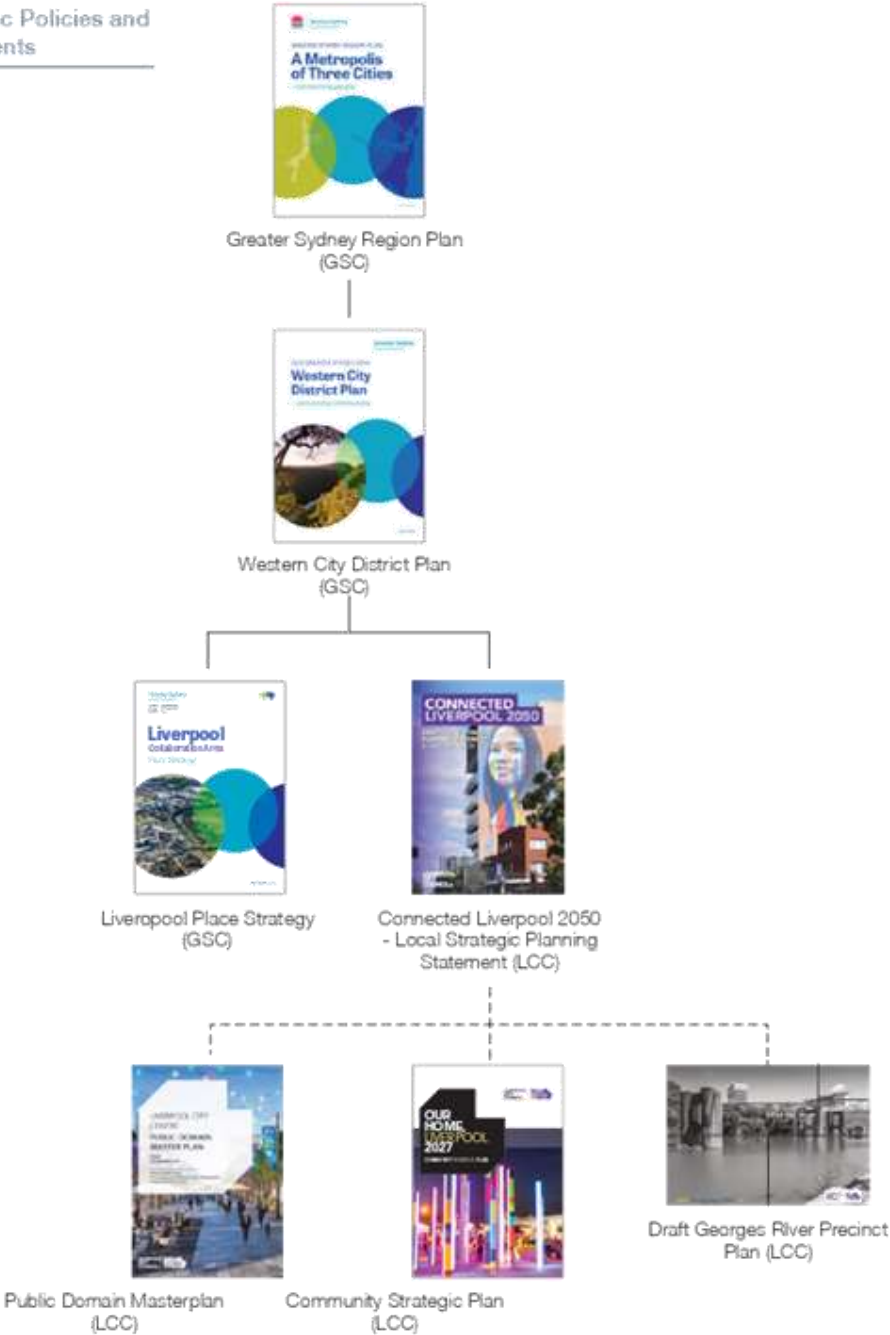
The masterplan will become a vehicle for the implementation through combining aspirations for the project with an understanding of the planning context which supports its delivery.

The policies and plans shown to the right have been considered as part of the masterplan's strategic framework. Select documents have been explored in more detail in the following pages.

Glossary of abbreviations:

GSC: Greater Sydney Commission
LCC: Liverpool City Council
TfNSW: Transport for NSW
GANSW: Government Architect NSW
DPIE: NSW Department of Planning, Industry and Environment

Strategic Policies and documents



Transport Strategy



Design Guidance







Strategic Framework

2.2 Design excellence and government policy

The policies referenced below have been prepared by the Government Architect of NSW to guide and improve the design process from the outset. Both the overriding intent and the specific principles within them have shaped the masterplan.



Better Placed is the overarching policy by the Government Architect of NSW. It establishes seven criteria which define a 'good built environment'

-  Better fit
-  Better performance
-  Better for community
-  Better for people
-  Better working
-  Better value
-  Better look and feel



Implementing Good Design is the complementary policy to Better Placed and outlines the approach for measuring places and spaces to assess whether they meet the expectations and requirements of GANSW policy.



The draft Greener Places policy outlines the importance of green spaces in towns and cities and the approach to integrating them into broader connected networks which support recreation for people and biodiversity in the urban environment.



The Design Guide for Heritage is a guideline for preserving, restoring and integrating heritage into spaces, buildings and precincts. Formulated in collaboration with the Heritage Council of NSW it defines heritage places and thematically unpacks key practical considerations for design.



The Good Urban Design Guidance note builds on the Draft Urban Design Guide which is currently being updated. It builds on the objectives in Better Placed and focuses on the strategic scale and design process for running masterplanning projects.



Aligning Movement and Place seeks to outlay the functional, aesthetic and communal importance of roads and streets. It has been produced in collaboration with Transport for NSW and provides advice and a toolkit for approaching transit oriented development at many scales.

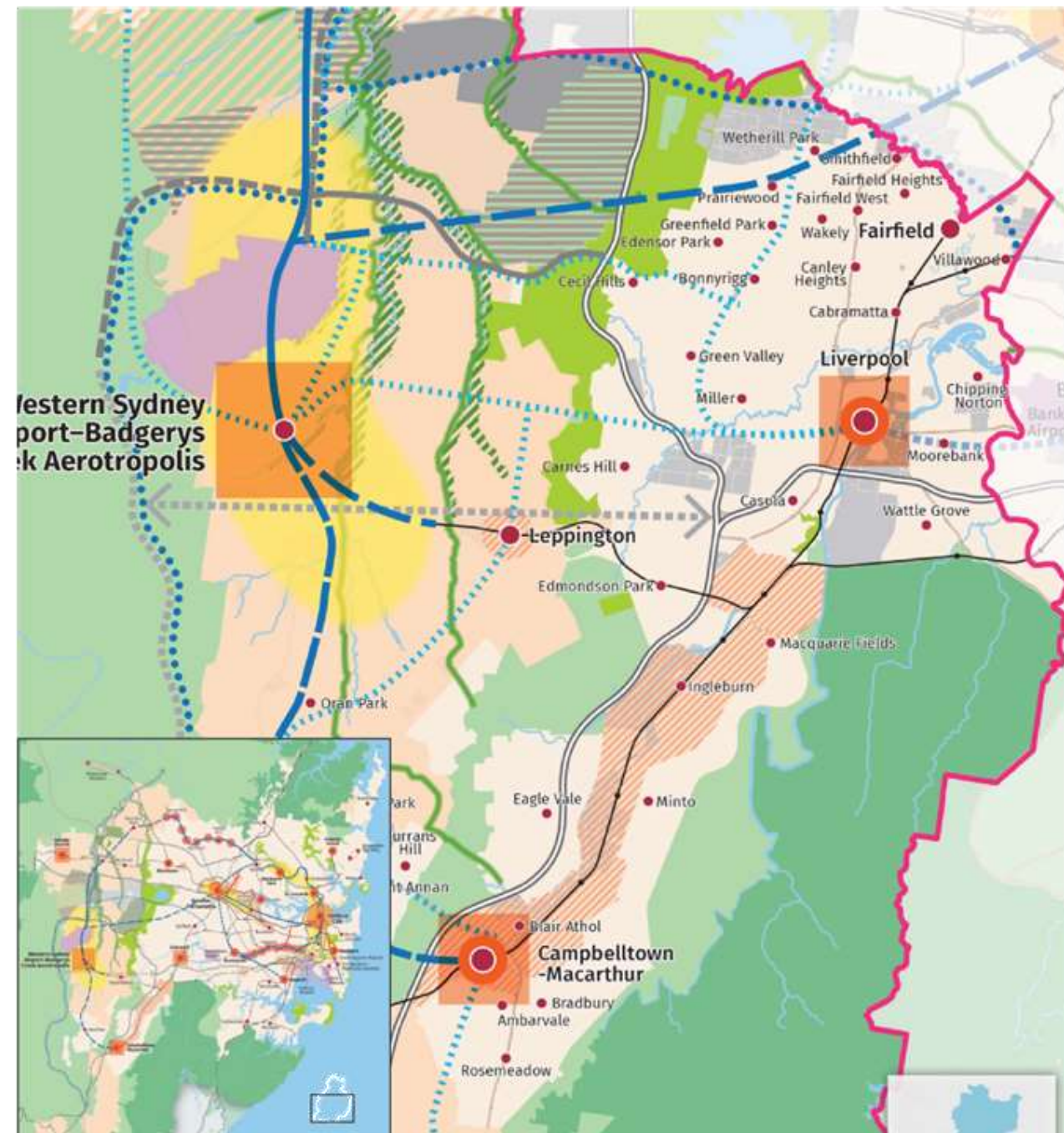
Strategic Framework

2.3 State policy and studies

The Greater Sydney Region Plan establishes the vision for a metropolitan region consisting of the western parkland city, central river city and eastern harbour city anchored by Penrith, Parramatta and the Sydney CBD respectively. The plan designates Liverpool as part of the Western Parkland City Metropolitan Cluster.

The Western City District Plan also illustrates Liverpool as a Metropolitan Cluster and at the intersection of the Upper Georges River, a train line and a city serving transport corridor. The plan identifies Liverpool as an area which has high housing demand and specifies a 0-5 year housing supply target of 8,250 dwellings. It states Liverpool should support the Badgerys Creek Aerotropolis and should have a 2036 baseline target of 36,000 jobs. It will be part of a 'Collaboration Area' in addition to the following actions (42);

- protect and develop the commercial core
- improve and coordinate transport and other infrastructure to support jobs growth
- develop smart jobs around the health and education precinct
- build on the centre's administrative and civic role
- improve public domain including tree-lined, comfortable open spaces and outdoor dining
- improve connectivity and links to the Georges River and prioritise pedestrian, cycle and public transport facilities
- encourage a vibrant mix of uses, new lifestyle and entertainment uses to activate streets and grow the night-time economy
- capitalise on the Western Sydney Airport and Western Sydney City Deal initiatives.



Strategic Framework

2.4 Subregional strategic studies



The Liverpool Collaboration Area Place Strategy

The study aims to inform public and private investment decisions by identifying and recognising complex, place-specific issues. The vision statement for Liverpool is as follows:

"By 2036, Liverpool is a rejuvenated river city, offering diverse and growing residential and employment opportunities underpinned by global leadership in health, education, research and innovation." p.9

The plan shown above indicates Moore Point as 'diverse residential' which is defined as "a mix of housing densities and typologies from affordable to executive housing, from low

to high density, retaining or enhancing the current proportion of affordable housing."

Page twelve and thirteen of the document summarises the nine priorities of the plan, all of which can be facilitated with the coordinated development of Moore Point.

Further information on the Place Strategy is provided in the accompanying Planning Report by Mecone.



Georges River Precinct Plan

The site sits in the Georges River Precinct and several key drivers of the The Draft Georges River Precinct Plan (GRPP) justify intensifying land uses in the area and have direct implications for the site:

- Access to Airports: Liverpool is uniquely positioned within the Sydney metropolitan context to be equally accessible from Sydney Airport and Badgerys Creek Airport.
- Southwest Metro Line Extension: The potential extension of the Metro line to Liverpool will improve its integration with the rest of Sydney, helping to sustain growth in the area and

- Enhance its liveability. Vice versa, the ability of the site to accommodate population growth strengthens the case for the extension of the Metro to Liverpool.
- Upgrades to Regional Roads: Future upgrades to regional road infrastructure have the potential to alleviate traffic volumes within the Precinct, laying the foundations for sustaining higher densities.
- Highest and Best Use: Existing riverfront areas are dominated by industrial uses, under-utilised, and/or difficult to access.
- Re-development of riverfront sites for mixed use residential development can open up the river for everybody to enjoy.

Strategic Framework

2.5 Local policy and studies



Connected Liverpool 2050 - Liverpool Strategic Planning Statement (LSPS)

Prepared by Liverpool City Council, the LSPS will inform the review of Liverpool City Council's LEP and guide future development, housing mix, the provision of jobs as well as public open space, community facilities and maintenance of the natural environment.

The LSPS outlines a number of objectives which should be considered in the Moore Point Masterplan:

- Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)
- Improve community access to riverfront land around



- Investigate grade separated pedestrian crossing
- Investigate living open space & green corridor
- Review and encourage existing industrial areas to support CBD and Innovation Precinct
- Rezone industrial zoning
- Investigate cross river links
- Investigate railway station redevelopment
- Masterplan Woodward Place (including RT2 zone)
- Work with State Government to investigate residential redevelopment precinct
- Investigate Residential Mixed Use to support CBD and Innovation Precinct
- Health & Education Precinct
- Commercial Core/Mixed Use
- Investigate a mix of uses
- Avoid residential development in odour buffer to Water Recycling Plant

Georges River to provide cool, clean, green spaces in which to connect, play, swim and relax.

- Investigate cross-river links
- Refocus Liverpool City Centre around the amenity of a healthy Georges River, connected to Pasrland and open space with development that is of appropriate scale which respects the natural character of the river environment
- Foster a 24-hour economy with a lively and well-integrated mix of activities



Draft Public Domain Masterplan

Prepared by Liverpool City Council, the draft masterplan outlines the 10 year plan for public domain improvements across Liverpool City Centre. The principles and strategies outlined within this document should be considered as part of the Moore Point Masterplan.

High level strategies which permeate through the masterplan include:

- street designs that encourage active and public transport, and provide increased pedestrian amenity.
- improve serviceway/laneways to support service requirements, as well as activation and events.
- upgrade existing, and provide new, open spaces to



- increase amenity and facilities.
- improve water quality, and increase access to, and activation of, the Georges River and Brickmakers Creek.
- conserve, enhance and promote Liverpool's heritage.

Objectives that specifically relate to Moore Point include:




























































- improving the condition of the Georges River to support biodiversity and the ecological community
- providing pedestrian and bicycle tracks along the Georges River
- establishing new pedestrian connections across Georges River

Strategic Framework

2.6 Benchmarking

The benchmarking analysis below provides examples of other local urban renewals of a similar scale, level of transport service and development context. The key findings from this analysis have informed the masterplan.

What is apparent from this research is that a project of the scale proposed at Moore Point is truly unique in the NSW and Australian context, and comparisons to international precincts become irrelevant based on the differences in social, economic, geographic and development contexts. Despite this realisation there are a number of important findings shown on the following page.

						
Development precinct	Wentworth Point	North Ryde	Wolli Creek	Ivanhoe Estate	Central Park, Sydney	Darling Quarter
Precinct site area	18.6ha	12.7ha	35ha	8.3Ha	6.2ha	3.7ha
Former predominant land use/ownership	 Roads & Maritime Services	 Industrial	 Industrial	 Residential	 Industrial	 Mixed Use
Number of Dwellings	 2,300	 3,000	 6,100	 3,585	 4,172	 1,510
Height	 25	 30	 30	 24	 40	 40
FSR Ranges	1:1 - 2.6:1	0.5:1 - 3.5:1	2:1 - 4:1	3.44:1	3.91:1	5.2:1
% of RE1 open space within precinct	 25%	 22%	 4%	 7%	 21%	 7%
Land use	 Residential  Mixed Use  School	 Residential  Mixed Use  Community	 Residential  Mixed Use	 Residential	 Residential  Mixed Use  Commercial	 Residential  Community  Commercial
Public transport within 800m (planned or existing)	 F  B	 M	 T  B	 M  B	 T  B	 T  B  M  F  L

Strategic Framework

2.7 Key strategic considerations

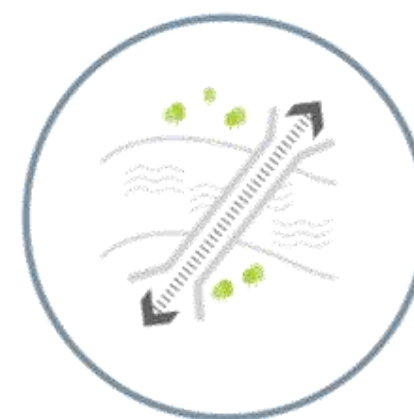
Following the review of the State and Local policies and guidance, and interrogation of similar precincts across NSW, there are eight key fundamental strategies that must underpin the masterplan and future revitalisation of Moore Point. Many of these strategies have also been identified through our early engagement with Council at the officer level, which has enable the design team to incorporate them into the foundations of the masterplan.



Establish Moore Point as a mixed use precinct to support Liverpool CBD and Innovation Precinct



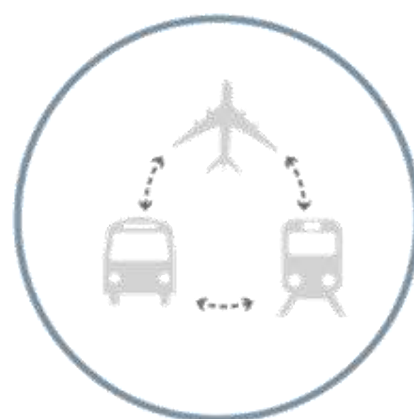
Deliver a mix of residential typologies and tenancies



Connect to Liverpool City Centre and the health and education precinct through new cross-river connections



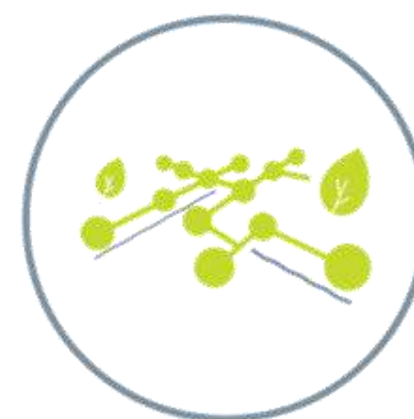
Unlock public access to Georges River and riverfront lands



Capitalise on the delivery of significant public transport infrastructure including Western Sydney Airport and South-west Metro



Embed and celebrate the indigenous and non-indigenous history of the site, connecting communities to the past and place



Create an interconnected network of open space combined integrated with urban development



Balance the need for movement with the creation of places for people and communities

Illustrative Masterplan

3

The vision, principles, concept and illustrative masterplan for Moore Point

Illustrative Masterplan

3.1 Vision



Moore Point will be a **riverfront** place for people

which is well served by **public transport**,
connected to its surrounding **landscape** and
complements **Liverpool** City Centre. It will
be mixed use with cultural and educational
opportunities for residents and visitors.
Connected with **green gridded streets**,
bridges and landscaped waterfront it will
be a focal point for the growing Western
Sydney metropolis and **place for everyone**.



Illustrative Masterplan

3.2 Design principles



A memorable Place for everyone

- Public spaces should be designed to accommodate day and night events as well as temporary and informal activities
- Buildings, streets and spaces should be arranged to promote passive surveillance in the public domain, according to principles of CPTED
- Indigenous, colonial and landscape history should inspire design at all scales especially detailing of public domain and building facades
- Public art, such as murals, sculptures, mosaics and interactive art should be integrated into the public domain to create a rich 'sense of place'
- Heritage elements, structures and infrastructure should be repaired and integrated into the built form and public domain



Strengthens Liverpool City Centre

- The urban structure of Moore Point should form a connected sequence of streets and spaces, which complement and integrate with Liverpool City Centre
- The proposed Moore Point skyline should consider the current and future growth of Liverpool City Centre, and desired future character for the Greater City of Liverpool
- Streets and landscape should encourage east-west movement from Liverpool City Centre, through the train station to the Georges River corridor, Lake Moore and the green spaces beyond
- Commercial, retail, civic and institutional buildings should complement the existing landuse configuration of Liverpool City Centre



Transport oriented development

- New transport infrastructure should be considered proportional to the expected population of the precinct (i.e. bus interchange) and improve access to Liverpool City Centre
- The masterplan should accommodate a future metro station
- Streets and spaces should connect the train station, metro station and bus interchange, and harness the associated pedestrian movement to activate the public domain
- New connections such as bridges should be established over the Georges River and major roads into surrounding areas to improve regional connectivity
- Bike and pedestrian paths should create loops linking the Georges River and Lake Moore to public transport and the broader network of green public spaces and recreational facilities



Connected and repaired Landscape

- Public spaces should harness the unique existing natural aspects of the site such as the Georges River, Lake Moore, Haigh Park and surrounding spaces
- Streets and spaces should consider the site, climate, aspect, topography, vegetation and watercourses to create microclimates to encourage pedestrian activity throughout the year
- Native vegetation should be prioritised, although evergreen and deciduous trees can be used in site specific conditions
- Planting should strengthen the legibility of the grid and complement the interfaces with buildings and public spaces to shade them at appropriate times
- Water should be harnessed according to WSUD principles to improve the environmental performance of streets, promote biodiversity, improve pedestrian amenity and filter runoff to improve the water quality of the Georges River Catchment
- Remnant pollution such as acid sulfate should be removed, capped or treated and rehabilitated using appropriate vegetation

Illustrative Masterplan

3.3 Design principles



A mix of strategically located Landuses

Functional requirements such as entrances and servicing associated with different landuses should be appropriately highlighted or screened to complement the streetscape

A mix of complementary landuses should be clustered and stacked to create a vibrant public domain throughout the day and night

Compact, commercial frontages should be clustered around public spaces to promote activity

Landuses should satisfy the needs and requirements of the surrounding neighbourhood, mitigating negative aspects, such as noise and protecting visual privacy



Variety of site specific Building Typologies

The built form must respond to the scale and density of existing context and desired future character

Buildings should define the public realm through articulation, and facade detailing and the interface should reflect and establish the desired street character

Building setbacks and podiums should be used to minimise visual bulk where possible and create fine grain street frontages, especially on streets that experience significant movement

Massing should be carefully designed to ensure solar access in accordance with the Apartment Design Guidelines as well as ensure privacy and amenity of dwellings is not compromised

Built form and facade articulation should create a comfortable microclimate for dwellings and the public domain

Built form should clearly delineate public spaces, internal communal spaces and private spaces and ensure dwellings provide passive surveillance where appropriate



Public streets and spaces for People

Street design and detailing should prioritise pedestrians and cyclists by slowing vehicular movement to promote cycling and walking

Pedestrian links and cycle routes should be shaded and visually interesting to encourage physical activity and create and integrated active transport network

Details and materials of footpaths, cycling routes, crossovers, entry thresholds and public furniture must be suitable for the elderly, disabled and children during all weather conditions

Public domain structures, elements, lighting, signage and furniture should encourage tactile engagement and encourage intuitive wayfinding



Staged development to unlock new pieces of the city

The development sequence of sites should consider access to public transport such as the pedestrian bridge to Liverpool Train Station

Development of lots should be staged to ensure the viability of retail and commercial landuses relative to the number of new residents and connections to Liverpool CBD

Multifunctional structures that can be adaptively changed should be considered to accommodate different uses such as commercial offices, retail and carparking to provide flexibility over time

Development should be staged to create unified streets and ensure infrastructure and public amenities are provided alongside residential development

Catalyst developments and programming can promote a range of small and large businesses, events and different financing models could be considered throughout the development

Illustrative Masterplan

3.4 City to Moore Point concept

Moore Point can standalone, and function as a vibrant community with access to services, public spaces and amenity of the highest quality that sets it apart from any precinct in Sydney. Its strength and unique attributes however, are derived from the proximity to the Liverpool City Centre. There lies the opportunity to leverage the co-location and shared offering of an emerging Central Business District on the doorstep of the new Western Sydney International Airport.

To make this possible, there is a need to provide a number of accessible, convenient and desirable connections that draw people across the Georges River between the two destinations. Duplication of services and spaces will be avoided. The emphasis will be on place-specific experiences, destinations and spaces that support the needs of the Moore Point community and Greater Liverpool. This can be embodied in the adaptive reuse of the heritage buildings, opening up the riverfront to the public for the first time in more than a century, and creating a series of new and reimagined spaces that activate the river, the peninsula and surrounding neighbourhoods.

The Georges River will be is the focus of the place and 'public living room' for visitors and residents. As it sits at the interface between the CBD and Moore Point, it is a natural attribute that needs investment and attention, and a project of this scale has the capacity to breathe new life into this natural asset and reestablish Liverpool as one of Sydney's great River Cities.

The following pages summarise the key conceptual moves which have been guided by the the vision and principles to shape the masterplan.

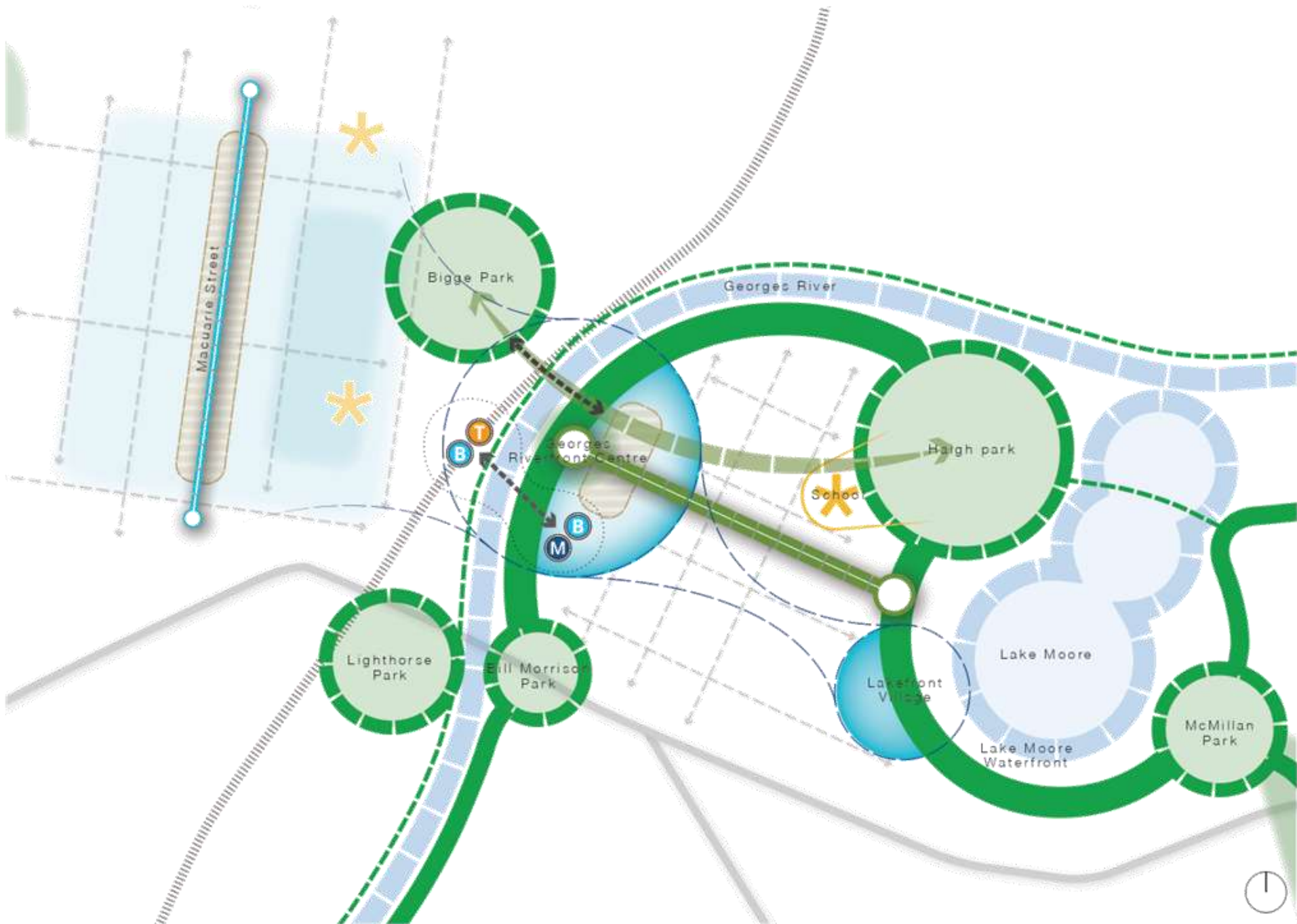


Figure 23: city to Moore Point concept diagram

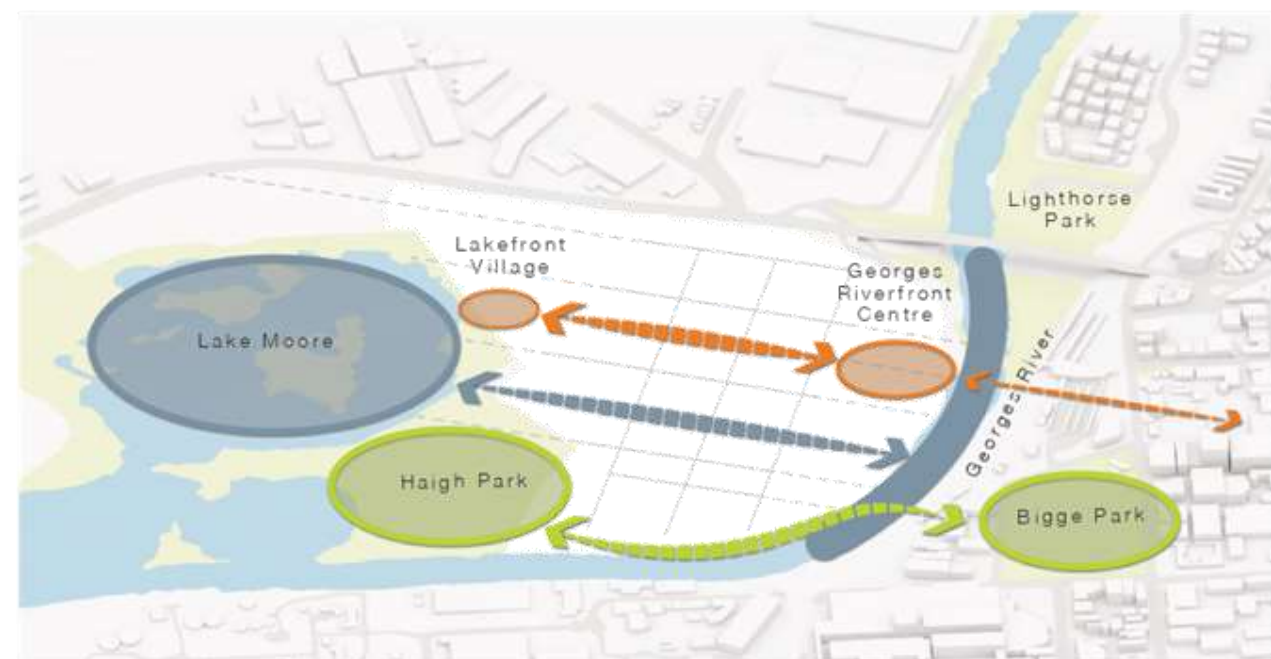
Illustrative Masterplan

3.5 Masterplan concept - grid, heritage and structuring elements



1) Aligning to the Moore Point site grid and celebrating heritage

- The Moore Point grid is 25° off north compared to the 8° off north colonial street grid of Liverpool
- The Moore Point urban grid originates from farming and factory uses that date back to the early nineteenth century. The street layout is parallel to the bend in the Georges River which segments the differing street grids of Liverpool, Bigge Park and the hospital precinct.



2) Structuring elements - park to park, river to lake, centre to centre

- Three east-west axes emerge from the heritage grid to link major elements within and around Moore Point. They create structure and legibility for the 40ha precinct. They include:
- Linking Haigh Park which is the major green space on Moore Point to Bigge Park which is the formal civic public open space for Liverpool
 - Linking Lake Moore, the intertidal basin to the Georges River next to Liverpool City Centre to make a direct connection along the green spine
 - Linking the Georges Riverfront Centre, the major new civic space to the Lakefront Village Centre which is the secondary civic space

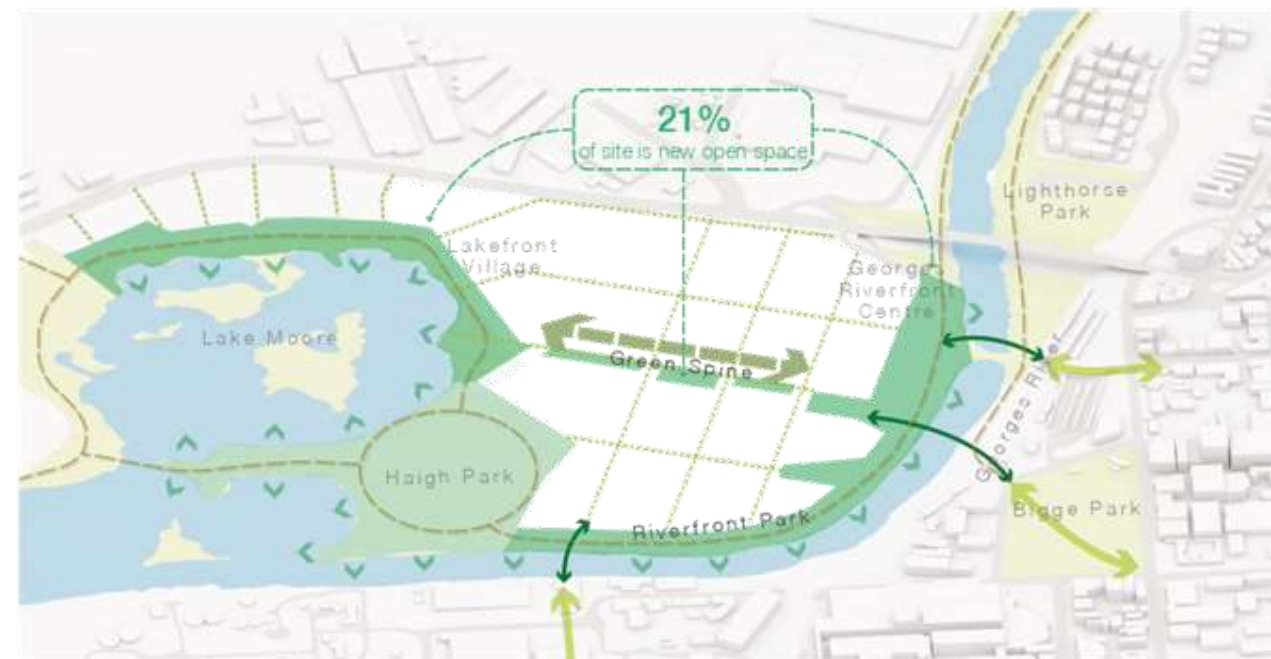
Illustrative Masterplan

3.6 Masterplan concept - connections and open space



3) Create a permeable street network and pedestrian oriented loops throughout Moore Point and Liverpool

- Access to Newbridge road via the main collector loop which anchors the hierarchical street grid
- Three pedestrian bridges connect Moore Point to Liverpool City Centre, Train Station and Liverpool Hospital Precinct
- Several pedestrian loops are created linking Lake Moore, through the precinct, to Georges Riverfront Centre and over the bridges to Liverpool City Centre



4) Green streets and a riverfront park to reconnect people to the Georges River

- Park creates a sensitive riparian buffer around the edge to the Georges River and Lake Moore
- Bridges span the river to connect Moore Point to Liverpool and to share the amenity of the riverfront and services of the city
- Green spine runs through the centre of the precinct connecting 'river-to-lake'
- Landscaped streets support raingardens and a dense canopy to cool the city
- New recreational links to connect the regional waterfront recreational path network

Illustrative Masterplan

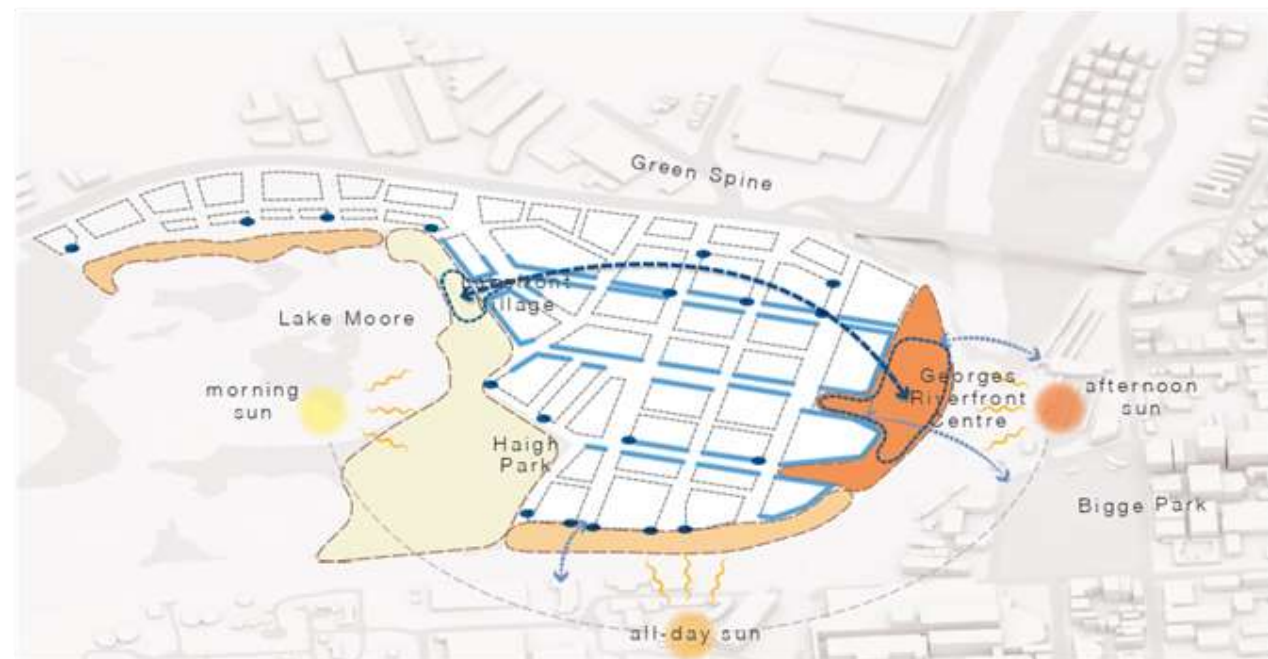
3.7 Masterplan concept - community infrastructure and activation



5) Community infrastructure

New community facilities will be integrated into the streets, buildings and public domain of Moore Point to establish an enriching place for residents. Key elements as per the CRED Community Benefits Analysis include:

- 2x major public plazas
- 1x school (primary)
- 1x bus interchange
- 3x bridges
- 1x multi-purpose community centre (2,000m²)
- 1x cultural hub (400m²)
- Up to 3x new (or upgraded) sports fields (including upgrades to Haigh Park)
- Up to 4x sporting hardcourts integrated into site and surrounding public domain
- Up to 8x playgrounds throughout the site and surrounding public domain
- 1x new indoor leisure centre
- Pontoons and water recreational facilities around Lake Moore and Georges River
- Potential for swimming pool along river or Lake Moore
- 10x childcare centres throughout the precinct
- Fitness stations and youth recreation facilities in public domain
- Recreational pedestrian and cyclepaths with riverfront boardwalk
- Upgrades to surrounding community facilities



6) Activation and experience

- Active street frontages on key routes and corners between eastern edge and western edge of Moore Point public spaces
- Program and orientation favours:
 - Haigh Park and Lake Moore as an east facing morning space
 - Riverfront Park and Lake Moore as a north facing all-day spaces
 - Georges Riverfront Centre as a west facing evening space

Illustrative Masterplan

3.8 Masterplan concept - views, amenity and built form



7) Views and amenity

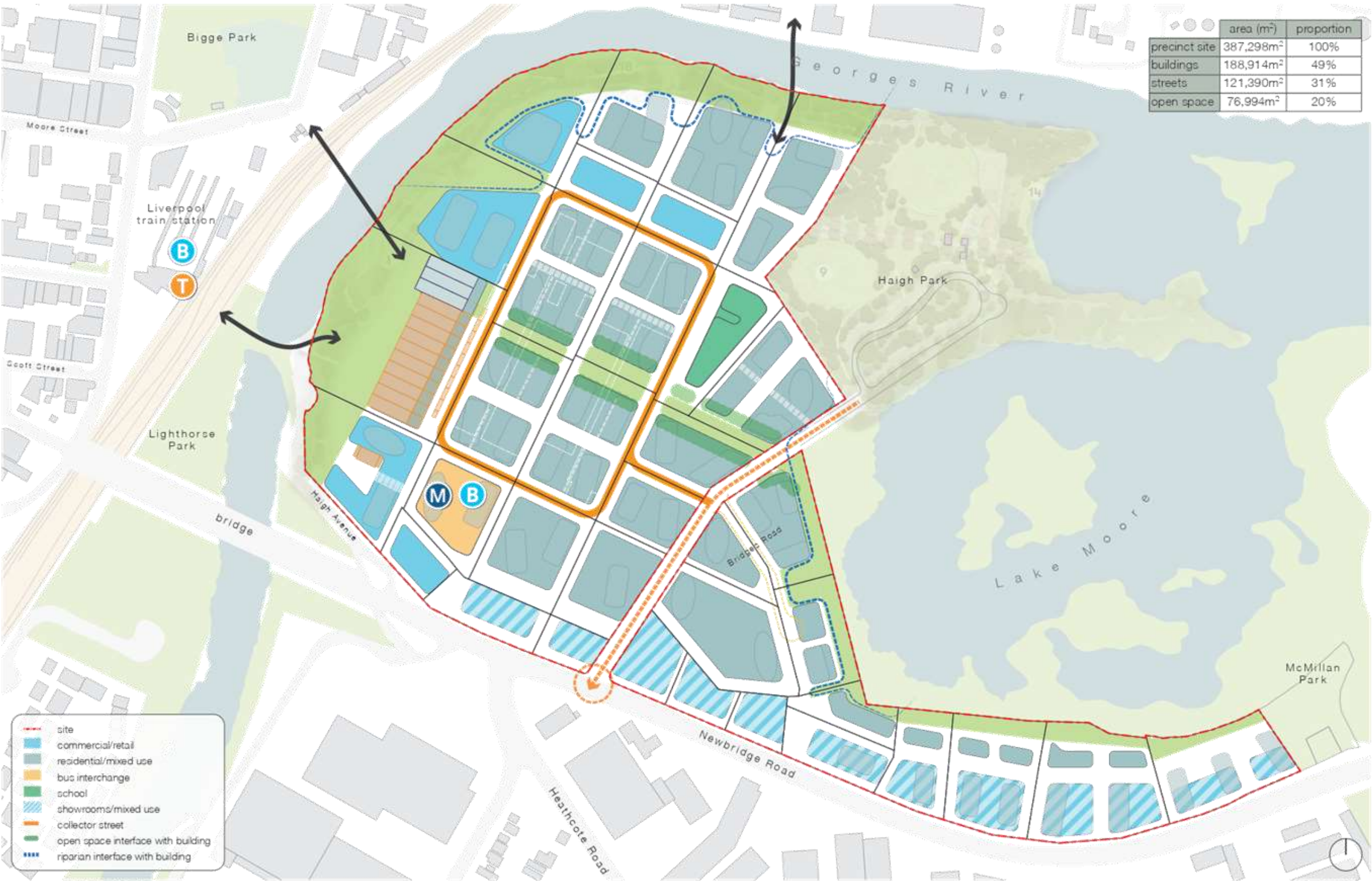
- Streets terminate with views to open space, landscape and public plazas
- Grid alignment optimises solar access down N-S streets between 10am-midday and down E-W streets from 4-5pm
- Tree canopy and shade on southern and western street edges to maximise growing potential
- Generous street widths framed by matching by streetwall heights (approximately 1:1 ratio)



8) Built Form

- Built form height transition down to Lake Moore, Haigh Park and Georges River and back up to Liverpool City Centre.
- Significant building setback line from riparian waterfront to define public domain
- Central north-south primary street depressed to maximise solar access into centre of precinct
- East-west primary street depressed to maximise solar access to green spine

Illustrative Masterplan



Illustrative Masterplan



Figure 25: Moore Point illustrative masterplan

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Structure Plans

Thematic explanation of the masterplan

4

Structure Plans

4.1 Movement and access structure plan

The proposed movement network of Moore Point is defined by an internal loop road which provides access from Newbridge Road. Several smaller primary streets also offer access to the site including the existing underpass access to the east of the site, existing entrance on Bridges Road and other access points along the lakefront portion of the site.

The central urban grid has north-south primary streets with smaller east-west oriented tertiary streets providing pedestrian through-site links, servicing and parking entrance access. Smaller shared serviceways are located along sensitive edges between open spaces to provide servicing access at slow speeds and can be opened at specific times of the day.

Two pedestrian bridges connect the western riverfront to Liverpool train Station and Bigge Park respectively. Another potential bridge connects over the Georges River subject to further study. Key recreational paths along the waterfront, park and lakefront link to the broader pathway network through Moorebank and Liverpool.

Every street has a 2m setback to accommodate a range of uses and activities, ensure adequate separation between buildings to maximise solar access, provide space for landscaping and privacy. The street hierarchy includes the following street types:

- Main road width is minimum 20m
- Primary street width is minimum 16m
- Secondary street width is minimum 16m
- Tertiary street width is minimum 12m (up to 16m)
- Shared serviceway width is variable

- site
- main road
- primary street
- secondary street
- tertiary street
- ... shared serviceway
- key recreational paths (walking and cycling)
- > site access
- traffic light junction
- bus terminus (layover and stops)
- train station
- potential future metro
- proposed pedestrian bridge

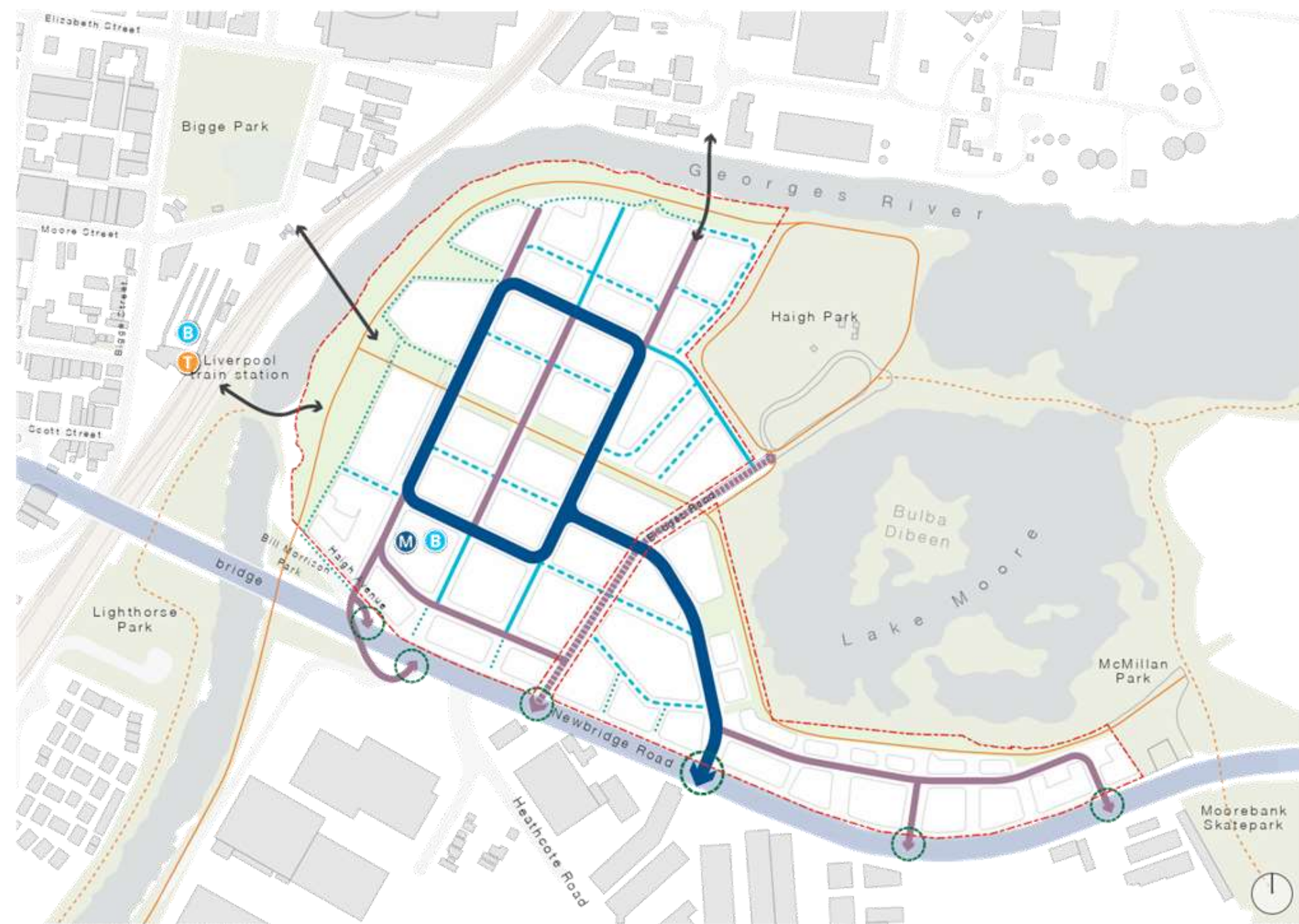
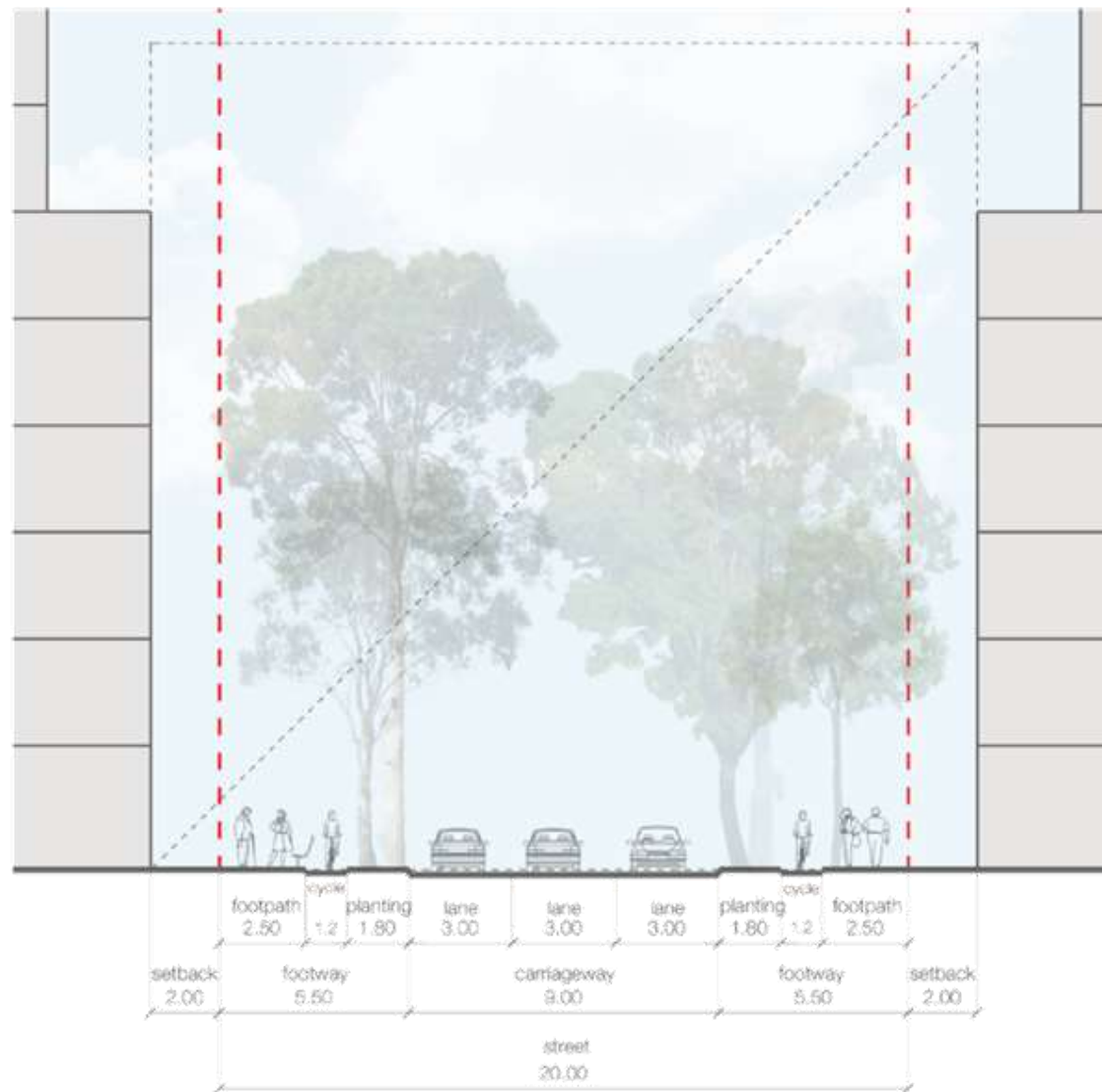


Figure 26: movement and access structure plan

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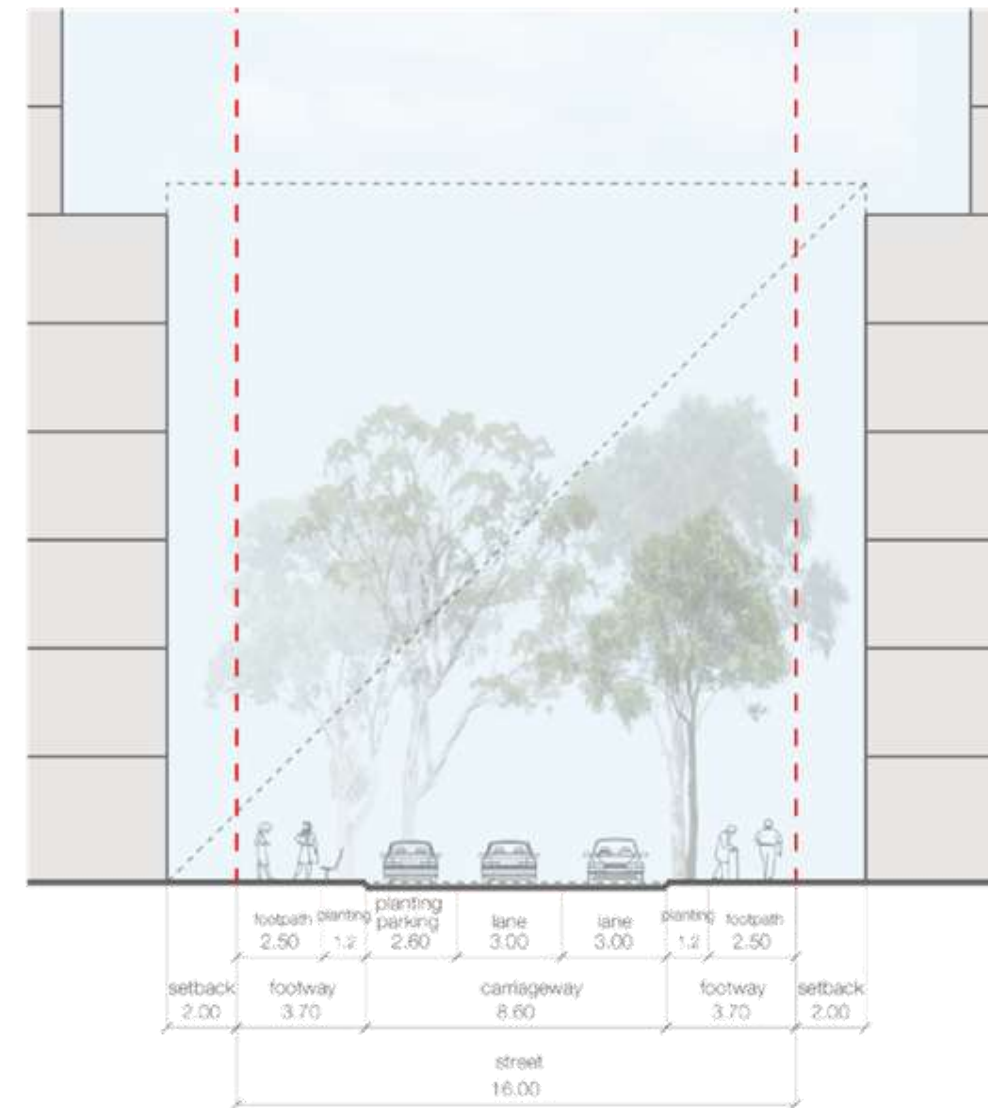
Structure Plans

4.1.1 Street types 1



● Main road 0.8 : 1 : 0.8

The main collector road for the precinct provides access from Newbridge road and carries the most vehicular traffic. the streetwall height is proportionally smaller than the perceptual street width.

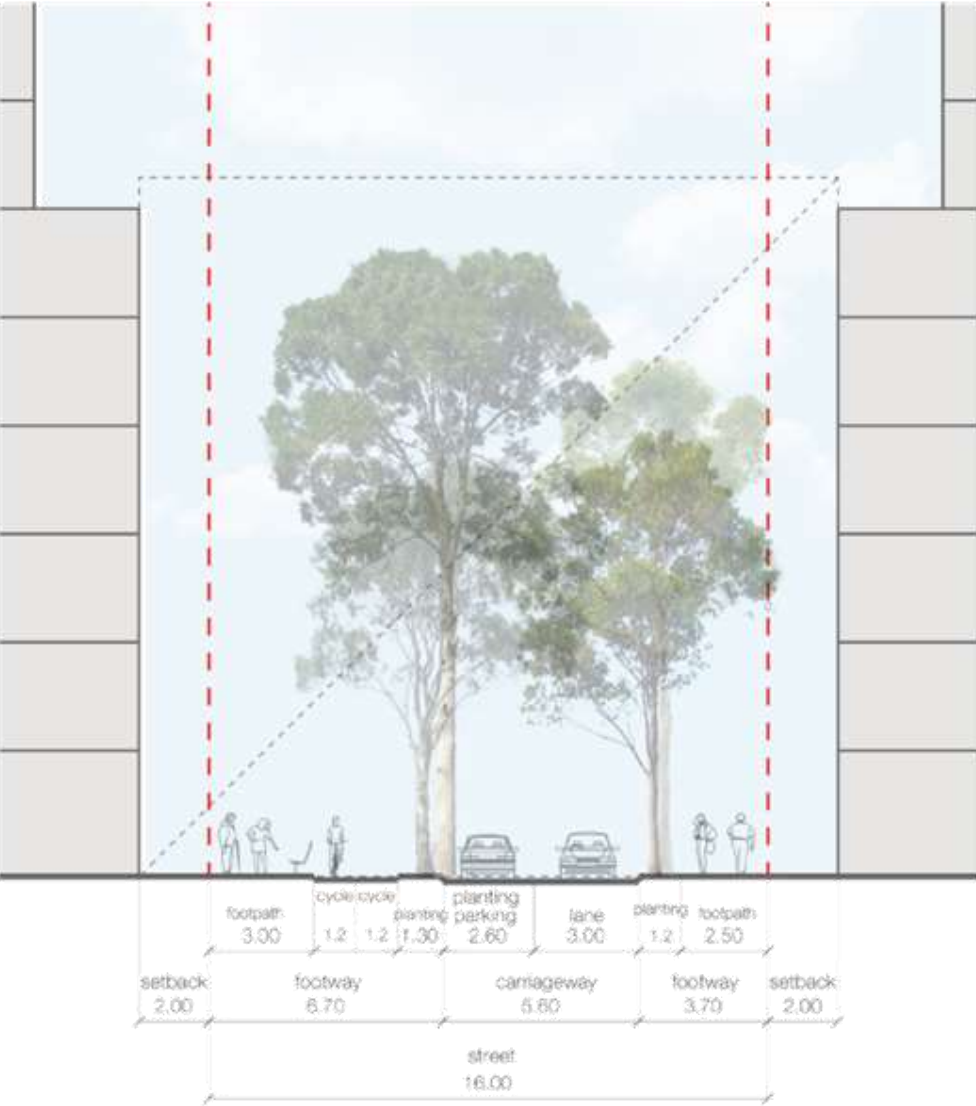


● Primary street (two way) 1 : 1 : 1

Primary two way streets are typical for the core of the precinct. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.

Structure Plans

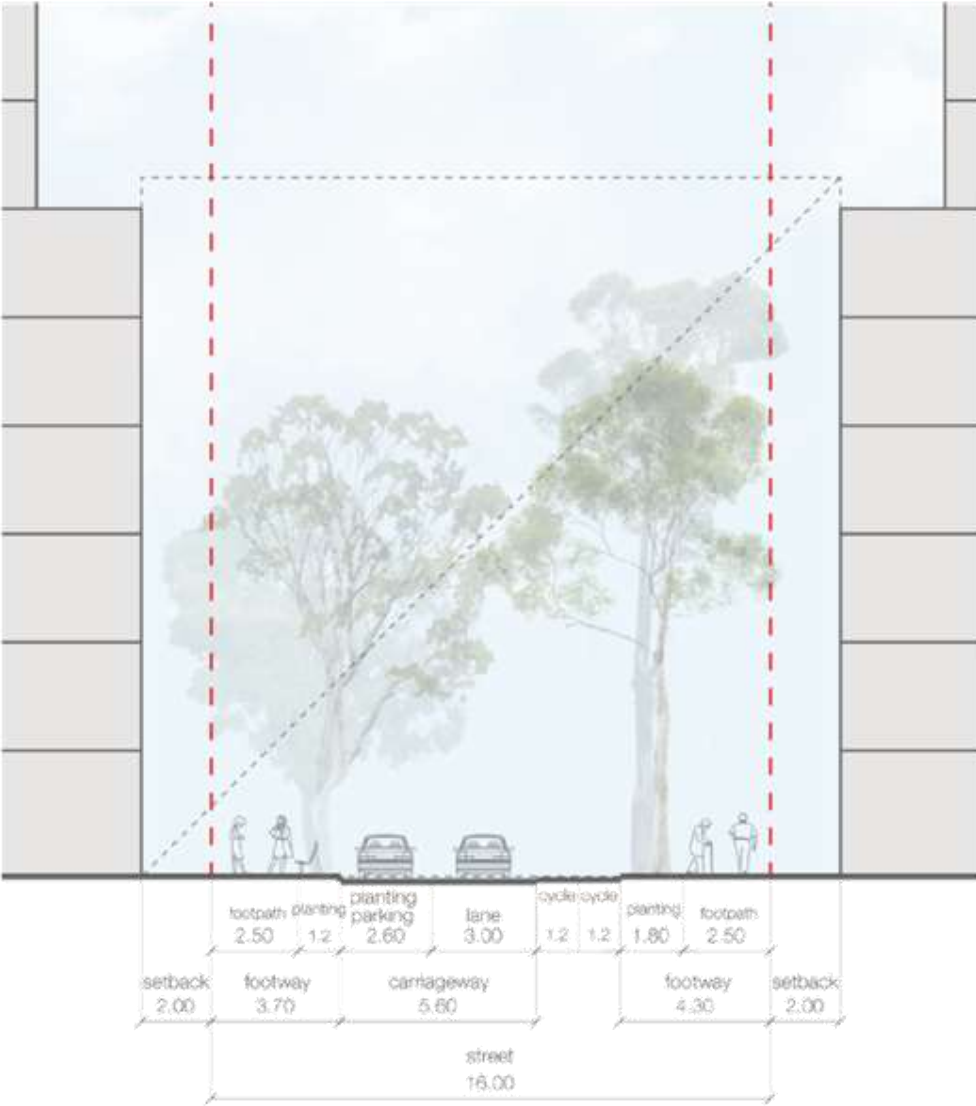
4.1.2 Street types 2



Primary street (one way)

1 : 1 : 1

This is a one way version for some primary streets which are intended to be more pedestrian and cyclist oriented. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.



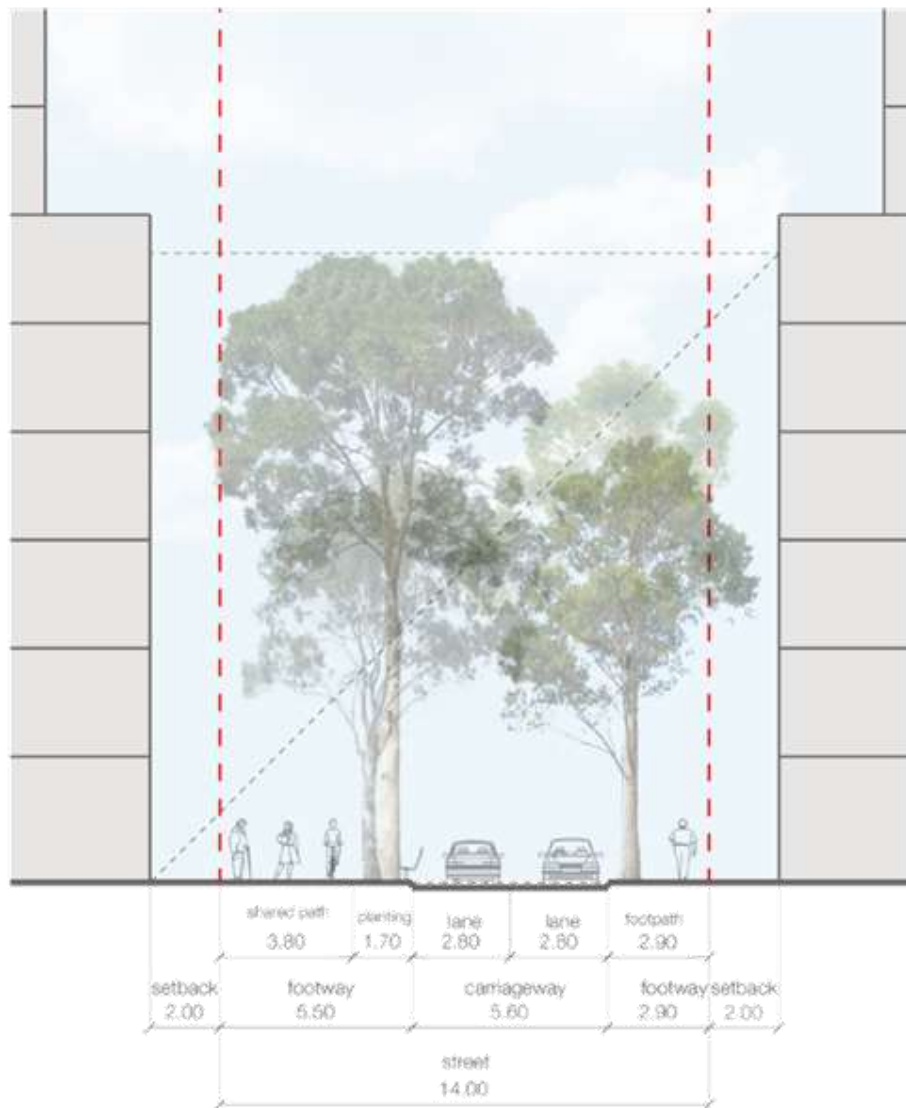
Secondary street

1 : 1 : 1

Secondary streets are typical for the core of the precinct especially at streets which terminate at open space. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.

Structure Plans

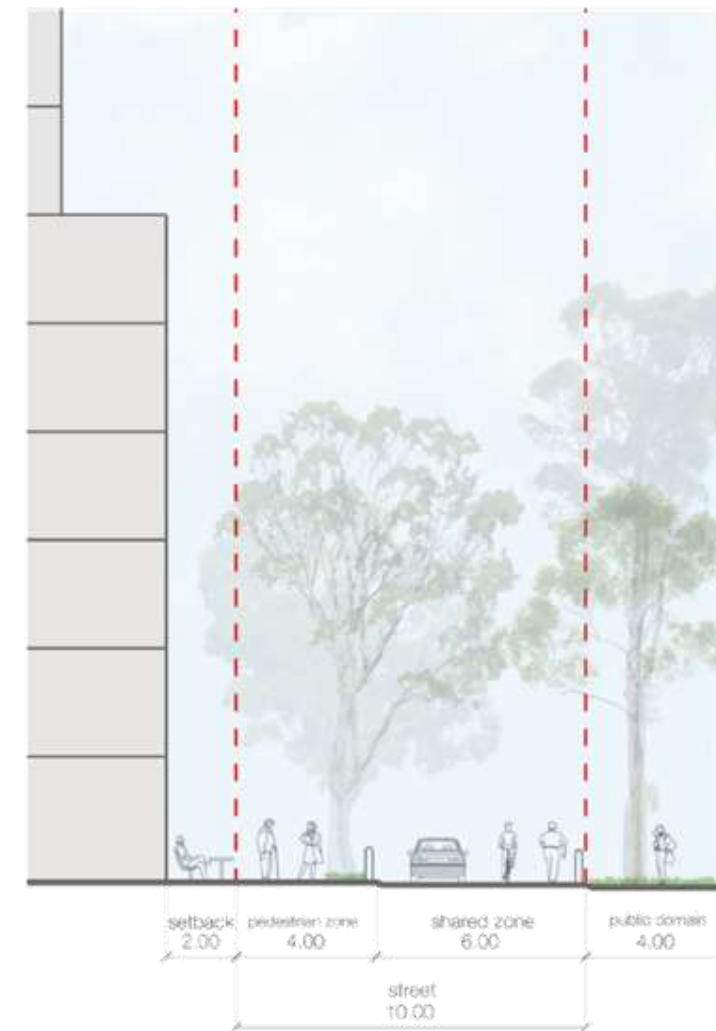
4.1.3 Street types 3



● Tertiary street

1 : 1 : 1

Tertiary streets range in width from 12m to 16m in the plan. They provide a range of functions such as serviceways, pedestrian laneways or combinations of both. Often the south side of the street is screened podium parking.



● Shared street serviceway

Shared street serviceways are along public space interfaces. They allow timed and managed access for vehicles but are predominantly pedestrian oriented throughout the day.

Structure Plans

4.2 Public domain and landscape structure plan

Moore Point is defined by the Georges River, Haigh Park and Lake Moore. Thus the landscape and public domain network of the site aims to connect these unique assets while reinforcing the urban grid of the site. Key open spaces include:

- 1

Georges riverfront park A

19,850m²

2

Georges riverfront park B

33,651m²

3

Linear park A

1,671m²

4

Linear park B

2,672m²

5

Linear park C

2,720m²

6

Lakefront park A

8,151m²

7

Lakefront park B

8,419m²

A network of landscaped street raingardens (swales) run north-south and east-west to collect, store and filter runoff. The swales also provide optimal conditions for landscaping and trees for canopy cover to mitigate the urban heat island effect and create good urban microclimatic conditions for people. The plaza in front of the adaptively reused factories should have good solar access thus a sun access plane to this space between 11am and 1pm on the winter solstice is recommended.

	Coronation & Leamac sites	Moore Point Masterplan (red boundary)
site area	319,001m ²	387,298m ²
open space area	68,575m ²	76,994m ²
proportion of OS	21.5%	20%

- site

active Georges riverfront park

passive Georges riverfront park

linear park

lakefront park

riparian interface with building

open space interface with building

major east-west swale

north-south swale

key recreational paths (walking and cycling)

surrounding open space (RE1)

sun access protection area

proposed pedestrian bridge

potential vehicular bridge



Figure 28: public domain and landscape structure plan

1:6000 @A3

Structure Plans

4.2.1 Georges riverfront plaza



Bridges over the River and Weir from the train station and Bigge Park prioritise walking, cycling and public transport access to the area activating the riverfront.



Riverfront public leisure spaces such as swimming pools are important recreational amenities for waterfront precincts around Sydney and connect residents to the water.



Existing heritage factories adaptively reused as a marketplace similar to Carriageworks or the Paper Mill nearby. This retail and F&B space is a destination anchor animating the plaza.



Accessible playgrounds such as Darling Quarter are important for social cohesion and anchor public spaces.



The existing service corridor between factories can be transformed into retail, food and beverage pods creating an intimate pedestrian laneway imbued with the heritage of the site such as Spice Alley on Kensington Lane.



Desirelines and paths can delineate functional portions of the plaza such as waterplay, landscaping, lawns, playgrounds, retail stalls and hardscape temporary spaces. Riparian waters edge and bridge access points are important interfaces to consider.



Structure Plans

4.2.3 Georges riverfront park



The extensive waterfront path should change in character depending on its place. It should provide opportunities for the public to engage with the water. Some portions may be next to the water shrouded in existing mature trees while other portions may be a raised boardwalk offering elevated views of the river. The picture above of Barangaroo Headland Park illustrates a multi-modal path, textured sandstone seating down to the water set amongst native trees and grasses



Water sensitive urban design systems such as swales, ponds and dikes should be aligned with landscaping to maximise water for trees. It should be holistically designed into the public domain to create an enriching environment which can accommodate, attenuate and filter tidal changes and surface runoff. These elements can double as recreational spaces for informal play and exploration for people and pets such as at Sydney Park south of Erskineville.



Pontoons and public decks allow direct engagement with the riverfront by extending out to Georges River. They can be paired with facilities to support watersports, temporary performances and shaded outdoor seating next to the river,



Recreational facilities along the riverfront, such as fitness stations, playgrounds and small scale hardcourts ensure there are places for people of all ages to exercise and play. A series of loops with adequate distances should create an integrated system of routes around Haigh Park and the waterfront.

Structure Plans

4.2.4 Water sensitive urban design approach

As a riparian peninsula ringed by the Georges River and Lake Moore, the site is well suited to a range of water sensitive urban design elements which ameliorate rain and flood events as well as harness water in the public domain and landscape. The site-specific approach by Realm Landscape Architects is outlined in the integrated approach diagram below.

The solution requires a connected network between the build form, streets, open spaces and river. The aim is to detain water close to its runoff point and safely discharge it into the Georges River once extreme weather events have passed. Surface management should be prioritised, however conventional pipe and pumps may also be required. Detention areas will hold water for a period of time until the Georges River water level has subsided and water can be discharged passively.

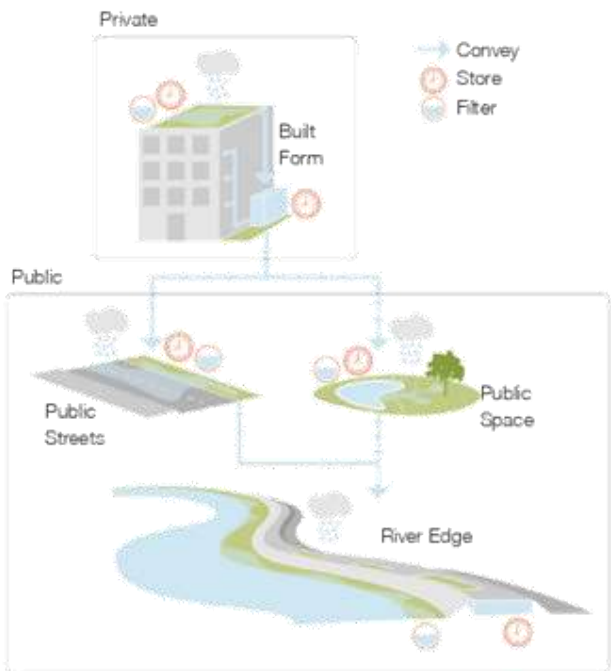


Figure 30: integrated water management approach (REALM landscape architects)

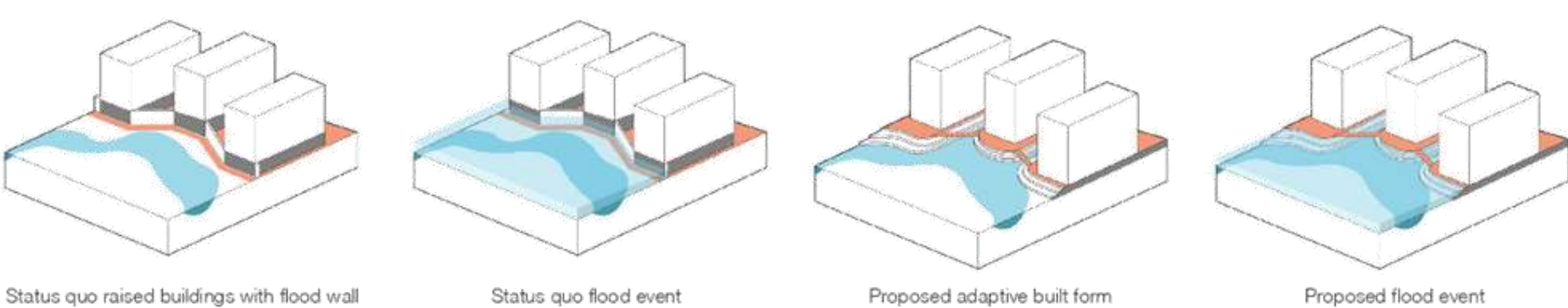


Figure 31: inundation mitigation strategy (REALM landscape architects)

1. slow vehicular access road
2. parking entrance
3. dedicated pedestrian road with controlled service and emergency vehicle access only
4. inner dike offline water cleansing wetland
5. linear outer dike offline stormwater cleansing system
6. pedestrian and cycle water linkages
7. shaded pedestrian boulevard
8. recreational spill-out spaces for buildings (restaurants, markets etc)
9. pontoon launch point
10. extensive riparian zone



Figure 32: Georges riverfront concept (REALM landscape architects)

Structure Plans

4.2.6 Linear park



Pedestrian priority street interface to support school drop-off and pick-up as well as pedestrian amenity and safety. The connection to the school from the linear park (green spine) should prioritise walking and cycling modes.



The linear park should be planted with significant trees which establish a large tree canopy for shade. It should be programmed according to different block sections and be contextually designed with fine grain, ground floor retail tenancies along the edges, with spaces for local businesses, small bars and the like.



Intersections should be carefully designed to mediate rainwater swales, tree planting pits, seating and various modes of transport. Pedestrians and cyclists should be prioritised as much as possible.



The lakefront edge will be a heavily used public open space with a range of facilities leading to the Lakefront Village. A combination of landscaped spaces and soft landscaped spaces support opportunities for retail uses at ground overlooking Lake Moore.

Structure Plans

4.3 Land use structure plan

Moore Point will have a range of land uses and built form typologies which reflect their role, function and access to the public. The spatial considerations and parameters for the built form and spaces which surround them are explored in detail in the precinct plans section of the report.

The predominant typology throughout the precinct is the mixed use tower/podium. Some mixed use buildings along Newbridge Road have residential towers on top while others are standalone.

Key elements of this building typology include:

- Retail, commercial and/or residential ground floor
- Integrated 'terraces' over two storeys can form the podium base to provide dwelling diversity
- Residential or commercial podia can wrap (sleeve) parking in the core of the structure
- Range of staggered and differently aligned tower orientations to allow solar access to apartments and communal rooftop spaces.

Commercial typologies range from large retail/F&B ground floor with commercial towers above to shorter 'boutique' buildings

Specific program (subject to further study) within typologies includes

1. supermarket
2. hotel
3. market hall
4. school
5. transport interchange

- site
- mixed use
- commercial
- school
- residential flat buildings
- adaptive reuse
- bus interchange
- proposed pedestrian bridge
- potential vehicular bridge



Figure 35: landuse and built form structure plan

1:6000 @A3

Structure Plans

4.3.2 Land use typologies

Mixed use

1. Retail ground floor and residential tower. Example adjacent is Rhodes Station Precinct by SJB.
2. Commercial ground floor and residential tower. Example adjacent is NOMA by WOHA.
3. Commercial/retail ground floor with residential podium and tower. Example adjacent is Air Apartments by Ian Moore Architects.

Key considerations include:

- programmatic relationship between the retail, food/ beverage, commercial and residential uses
- locating retail along key active frontages to maximise window exposure
- proportions of commercial floorplates are flexible for a range of tenancies and receive appropriate solar access
- locating commercial and residential lobbies to complement desirelines, building orientation and floorplates
- internal circulation, core location and waste disposal
- minimising conflict between pedestrians and active frontages relative to basement and servicing entrances
- minimising duplication of circulation, lifts, core location, parking and waste disposal for different uses
- minimising noise impact for residential built form and communal space throughout the building
- shared or separated parking for different uses
- building facades and interfaces complement the surrounding public domain



Residential flat building

Retail and residential ground floor with residential tower
 Example below is Carter Street Phase 1 by SJB.

Key considerations include:

- separation distances, solar access and other requirements specified in the apartment design guidelines
- locating residential lobbies to complement desire lines, building orientation and floorplates
- parking in basement and/or podium should take into account potential flooding, natural ventilation
- basements and servicing access should be screened where possible and complement building facades and public domain
- communal spaces on rooftops and ground plane should have adequate deep soil and support mature trees with significant canopy where appropriate
- ground plane interface between dwellings and public domain should ensure good passive surveillance of streets and spaces as well as visual privacy for occupants



School

High density school with adjacent open space. Example below is Cook and Arthur school by BVN.

Key considerations include:

- appropriately sized built form according to the NSW EFSG which caters for the envisioned number of pupils
- mitigation of overlooking by adjacent buildings through landscape screening and appropriately siting classrooms
- provision of appropriate recreational area on and adjacent to the school
- appropriate solar access for classrooms, circulation space and recreational spaces
- safe and efficient vehicular and public transport access for teachers and pupils to and from the school



Structure Plans

4.3.3 Land use typologies

Commercial

1. Commercial tower example by Ingenhoven and Architectus.
2. Commercial tower with retail and commercial podium by Architectus
3. Commercial office ('boutique') and food and beverage by Durbach Block Jagers.

Key considerations include:

- programmatic relationship between the retail, food/ beverage and commercial uses
- locating commercial lobbies to complement route from public transport, desire lines, building orientation and floorplate design
- lobby design sand threshold should complement adjacent public domain and street with landscaping, stairs, awnings and other architectural approaches
- locating retail along key active frontages to maximise window exposure
- facade design and architecture should passively optimise solar access for offices and where possible mitigate wind impact for communal spaces and the public domain
- proportions of commercial floorplates are flexible for a range of tenancies
- internal circulation, core location and waste disposal
- minimising conflict between pedestrians and active frontages relative to basement and servicing entrances
- minimising noise impact for offices and communal space throughout the building
- shared or separated parking for different uses



Adaptive reuse

Adaptively reused Tramsheds at Harold Park by GBA, Esquisse and Woods Bagot.

Key considerations include:

- creating the optimal layout for pedestrians using and moving through the space relative to contextual elements such as pedestrian bridges over the river, street layout and surrounding built form
- situating shopping and dining spaces to create positive interfaces and maximise exposure to streets and public domain
- using and enhancing the existing aesthetic and structure of the building and complying with heritage guidance and studies
- establishing a discrete vehicular and goods servicing route for tenancies throughout the building
- adding necessary services into heritage structure such as electricity, water, sewerage, disposal and fire requirements



Transport interchange

High density school with adjacent open space. Example below is Manuka transport interchange by Warren and Mahoney.

Key considerations include:

- programmatic relationship between the transport, commercial and residential elements of the building
- locating entrances to interchange according to key pedestrian desire lines and complementing lobbies to commercial and residential portions above.
- structural and servicing implications inherent in clustering metro with buses and commercial/ residential buildings above
- mitigating noise from transport for office workers and residents
- potential for the interchange to increase patronage and physical size in the future



Structure Plans

4.4 Active frontages and servicing

Moore Point will have a clear distinction between pedestrian oriented active frontages and serviceways for loading and parking access, however these functions aren't mutually exclusive. Active frontages reflect land uses, built form and resulting activity and are concentrated in the following locations:

1. Along adaptively reused factories and commercial podia facing riverfront public domain which constitute the Georges Riverfront Centre
2. Along the linear park connecting the Georges River to Lake Moore
3. Along podium edges and lakefront facing buildings in the Lakefront Centre
4. On alternating visible corners which receive good exposure from main roads or on the extensive connected system of riverfront and lakefront green spaces

Serviceways throughout Moore Point are predominantly located on mid-block east-west connections directly off collector or primary streets. These east-west serviceways which receive less direct solar access than other streets provide direct access to podia parking and basements. These serviceways can also be pedestrian friendly shared ways which improve east-west urban permeability for pedestrians.

The remaining frontages not characterised as 'active' or 'serviceways' will be prioritised for activation, or at the very least 'animation', which refers to the passive uses and activation created by residential and commercial, lobbies, terraces at street, and frontages that feature a degree of animation or visual interest - public art, landscaping or visual permeability.

- site
- active frontage - primary
- active frontage - secondary
- indicative serviceway - vehicular priority
- indicative serviceway - shared
- indicative service access
- centre of activity
- open space



Figure 37: Active frontages and servicing structure plan

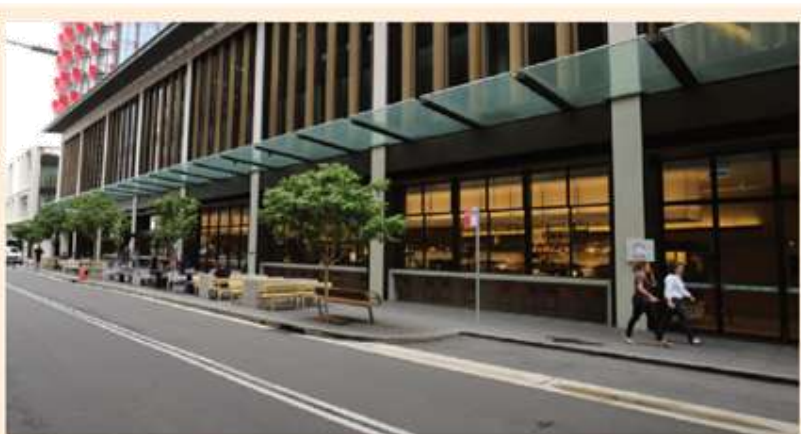
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Structure Plans

4.4.1 Frontage types and serviceway character



Active frontage - Primary
 Capitalising on foot traffic and a mix of land uses, primary active frontages will support direct engagement and interaction between vendors within the building and pedestrians outside. The inclusion of engaged shop fronts will enable shops to playfully interact with the interface between the public domain and the interior, by framing spaces for people to interact, exchange goods, and rest to enjoy the activity of the street.



Active frontage - Secondary
 Secondary active frontages provide opportunities for passive surveillance and interaction between in building and outside, housing larger format uses, building entrances and foyers. Many larger foyers often provide supportive uses to create increased opportunities for interaction and visual engagement. This also breaks up the large expanses of glass that foyers can provide by housing multiple activities in the same space



Animated/Passive frontage - Non-residential
 Larger format commercial, retail or community uses provide opportunities for visual connection with the street. While they may feature a reduced door density, and less direct interaction with pedestrians or a setback from the street, they can frame the street, provide visual interest and passive surveillance.

Structure Plans

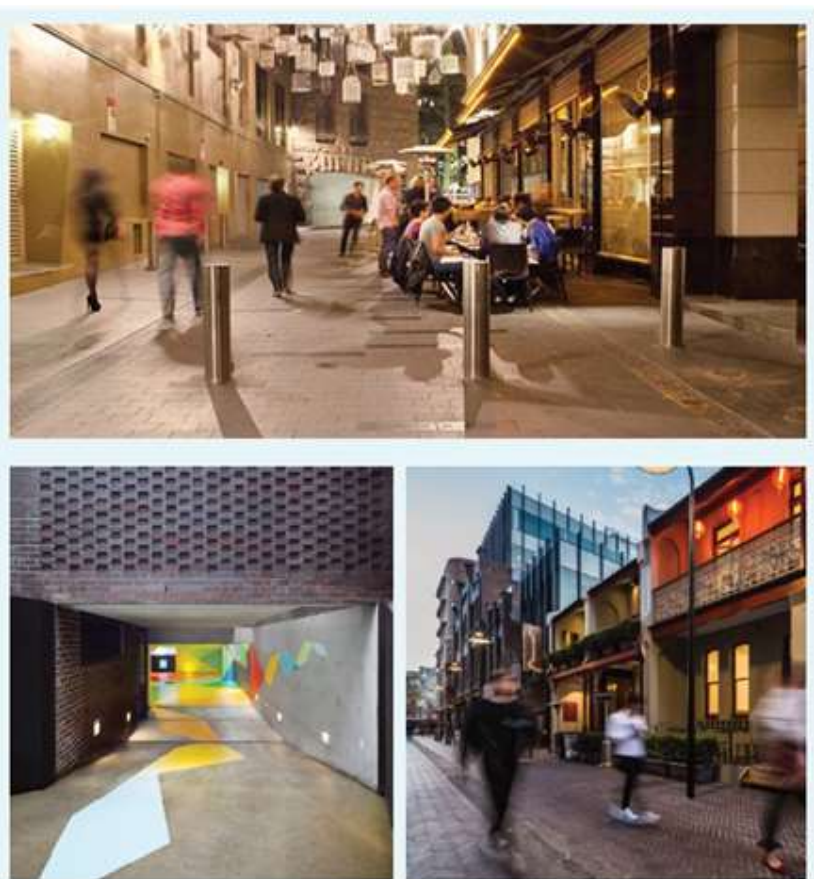
4.4.2 Frontage types and serviceway character



Animated/Passive Frontage - Residential
Residential uses can contribute to the quality of the street, the character of an area, passive surveillance and safe streets. Designed well, they balance the need for internal privacy with a connection to the activity and life of the street. The incorporation of landscaping as part of the building setback helps soften and provide a human scale to the interface.



Serviceway - Vehicular priority
Services are an integral part of the functioning of buildings within the city and do not provide opportunity for activation in the street scape of the city. Dedicated vehicular serviceways can support service, car park, and basement entries and utilise public art and or high quality finishes to either hide or celebrate what typically would be a blank facade creating points of interest along a street wall.



Serviceway - Shared
Shared serviceways provide the opportunity to support servicing, car park and basement entries alongside some retail and commercial uses, foyers, pedestrian and cycle movement. Establishing a shared surface treatment, opportunities for passive surveillance and human-scaled street frontages will create safe environments for people along these serviceways.

Structure Plans

4.5 Character and built form structure plan

Georges Riverfront Centre
This character area is an active pedestrian oriented civic and commercial precinct directly connected to Liverpool City Centre, the Georges River foreshore and the urban core. Adaptive reuse of existing warehouse buildings could accommodate markets and community uses. Built form in this area takes advantage of the views and solar access afforded by its proximity to open space.

Urban Core
This is the residential heart of Moore Point. It is defined by the internal collector road loop road and fronts the east-west linear park which links the Georges Riverfront Centre and Education and Mixed Use Parkway areas. Height is focused on key grid corners and some towers are reoriented on podia shaped to optimise amenity for surrounding buildings, spaces and streets.

Riverfront Neighbourhood
This area is defined by its north facing riparian foreshore and front to Haigh Park. These interfaces provide sweeping regional views to the north and south and ample opportunities for recreation. Height and built form takes advantage of good solar access and views to the north. The southern portion of the character area features smaller scale commercial buildings which are less reliant of direct solar access.

Education and Mixed Use Parkway
Hosting a mix of uses alongside the Moore Point School, the character area is located at a key junction between the east-west linear park, Lake Moore foreshore and Haigh Park. Built form supports a range of different spaces at ground.

Newbridge Edge
This precinct is key to providing a built and landscaped buffer to Newbridge Road. Buildings will be smaller in scale and support a range of easily accessible, commercial and retail uses.

Lakefront Village
This character area is the secondary centre for Moore Point and a commercial and retail focus. Located on the edge of Lake Moore, built form is staggered to enable views and solar access to both the street and surrounding buildings.

Lake Moore Foreshore
This character area supports residential and commercial uses with height placed along the southern edge creating a transition in height from Newbridge road down to the lake foreshore. This enables view sharing, solar access and allows residential to be located away from the noisy Newbridge Road interface.



Precinct Plans

Exploration of spatial principles and design intent of each character area

5

Precinct Plans

5.1 Character areas overview

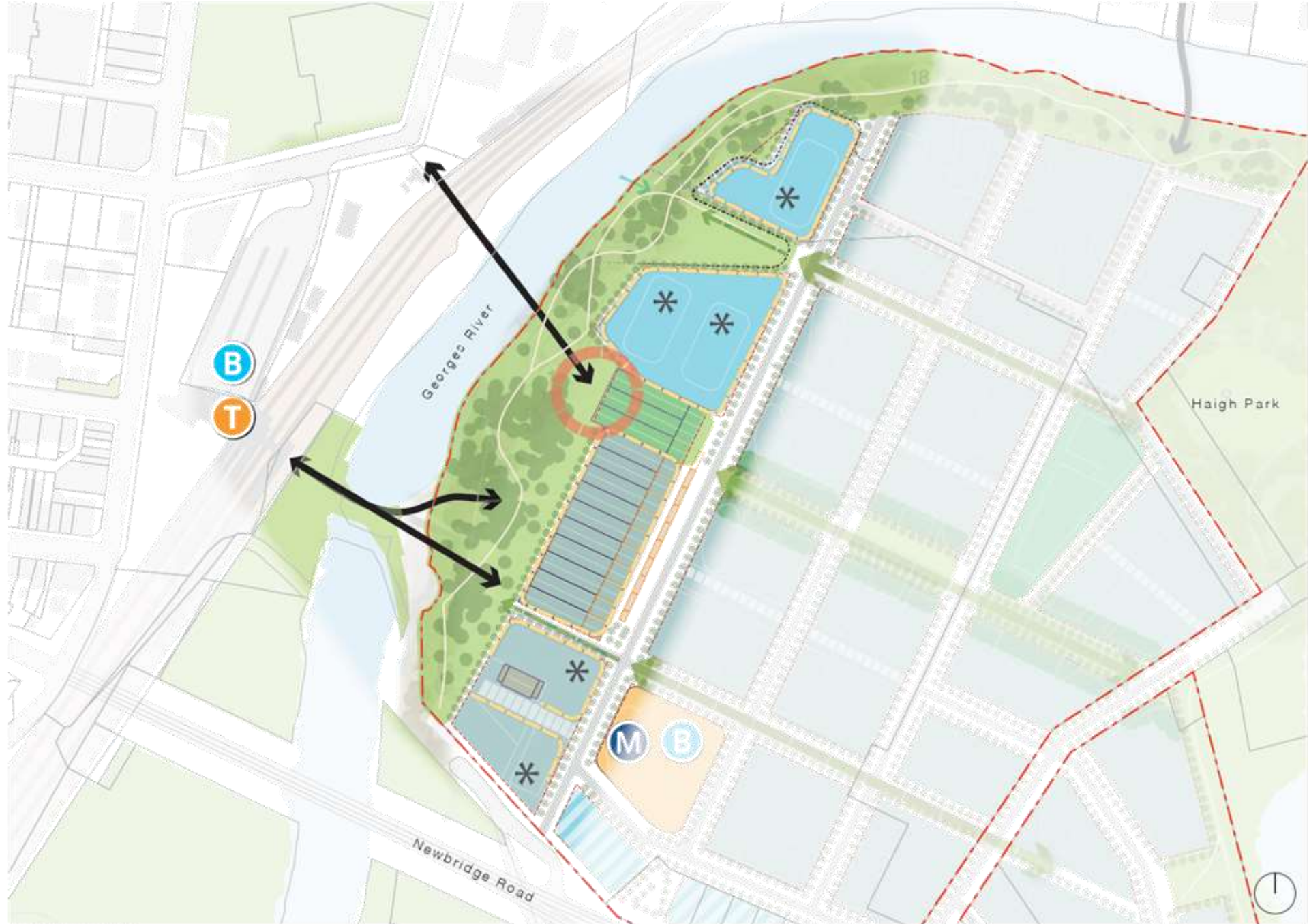
Moore Point is structured around seven unique character areas. This builds upon existing environmental features including relationships with Georges River, Lake Moore, Haigh Park and Newbridge Road. Where heritage fabric is retained, opportunities to integrate built form and reinterpret the history of the site have been embedded. These character areas will be further refined in parallel with the precinct vision through a working group who will collaboratively explore and assess place-led opportunities, ensuring the precinct vision is delivered based on world's best practice.



Precinct Plans

5.2 Georges Riverfront Centre precinct plan

The Georges riverfront centre will be a key employment area for Moore Point, capitalising on new bridge connections to Liverpool City Centre and a new large riverfront park that will host opportunities for recreation, gathering and fitness. The industrial history of Moore Point will be showcased through the adaptive reuse of heritage fabric and warehouse buildings for markets and community events. New buildings will connect through to this existing built form, referencing their scale and seeking to activate shared edges.



Precinct Plans

5.2.1 Built form

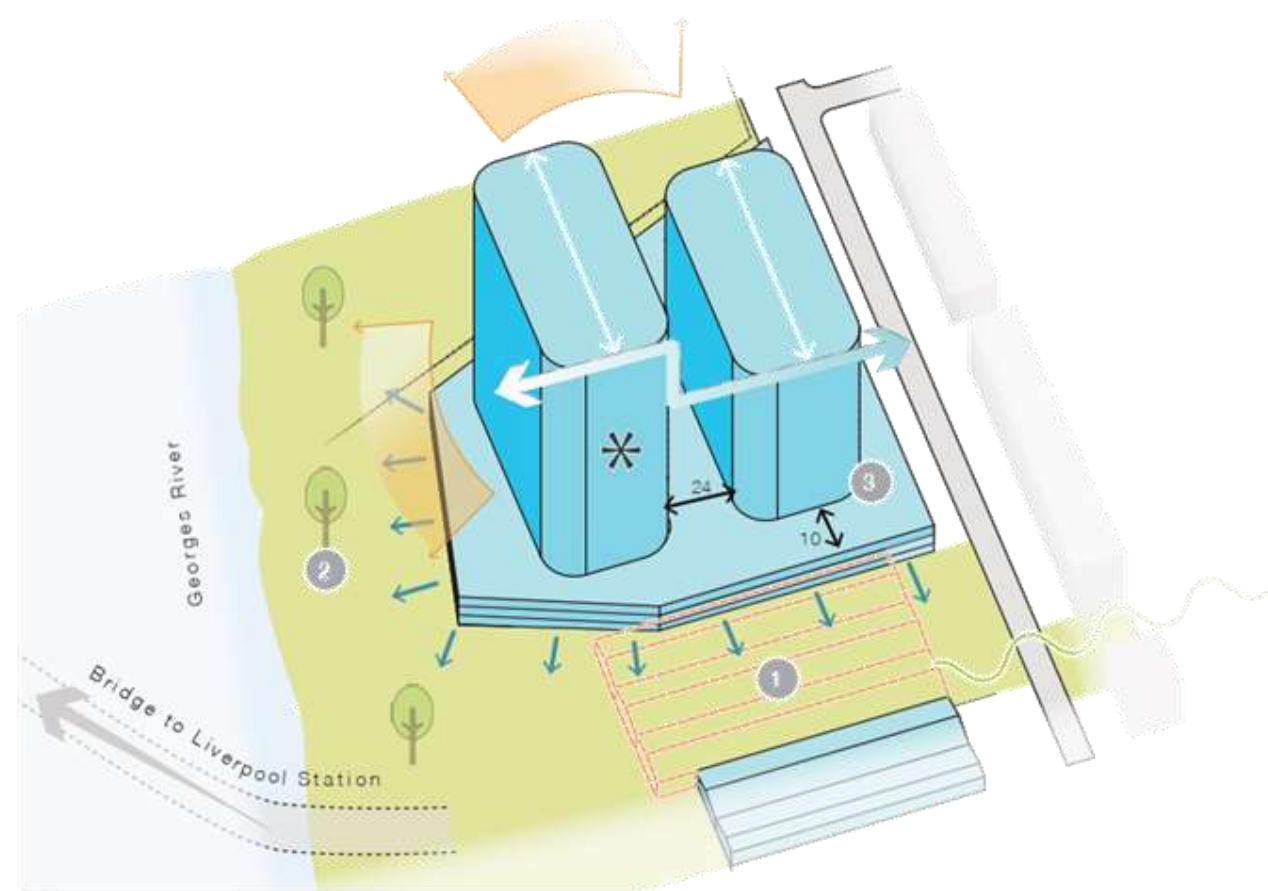


Figure 43: example block

Key objectives

- The key objectives for this precinct include:
- unlocking public access to the Georges River
 - adaptive reuse of existing heritage buildings and incorporation of heritage interpretation
 - deliver commercial and retail uses in areas well connected to Liverpool City Centre
 - seek opportunities for activation along the edges of open space and streets
 - locate and orient buildings to take advantage of regional views

- site
- retail/commercial
- landscape/riparian zone
- heritage item
- Georges river
- adjacent built form
- active frontage
- green corridor
- urban marker
- views
- foreshore building line



Riverfront Park

The Riverfront Park will be Moore Point's pre-eminent park and contribute to increased community accessibility to the Georges River. Pedestrian and cycle paths established here will connect through to Liverpool City Centre in the west through new cross-river connections. This park will also be connected to a new foreshore park in the north, Haigh Park and Lake Moore to the east. Tree canopy and soft landscaping across the park will be key in creating cool and comfortable spaces for the public to enjoy.

The riverfront park will support a range of uses from community events, playgrounds, barbeques and seating for picnics and gatherings and fitness stations. Areas adjacent to buildings will support opportunities for outdoor dining.



Adaptive Reuse

Warehouse buildings in the south of the Precinct will house markets, retail and community events. The existing large spans and generous ceiling heights make these structures perfect for large gatherings. To enable the extension of the east-west green connection through to the riverfront, public access is proposed to continue through part of the existing buildings. This will also increase accessibility to new cross-river connections from Moore Point to Liverpool City Centre.

Heritage interpretation integrated into the design of buildings and the public domain will offer a window into the history of the site.



Built Form

The precinct will include a range of building typologies supporting predominantly commercial and retail uses. Some residential towers will be located in the south of the precinct. Buildings within this precinct have been located and oriented to maximise solar and daylight access to building façades as well as the public domain. Height variation has been used to reduce the visible bulk of tower forms across the landscape.

Buildings will be designed to address the street and provide active frontages to adjacent open spaces and streets. Podium heights connecting onto existing warehouse structures will seek to remain generally consistent with the street wall established by those buildings.

Precinct Plans

5.3 Riverfront Neighbourhood precinct plan

This precinct is characterised by its unique landscape setting with direct access to the Georges River foreshore and Haigh Park. Built form lined at ground with active edges along open space, will takes advantage of sweeping regional views and solar access afforded by its location. Areas in the south of the Precinct feature smaller scale commercial buildings which are less reliant of direct solar access. Diversity in land use and typology in this precinct will support opportunities for diverse engagement

- site
- residential/mixed use
- retail/commercial
- landscape/riparian zone
- gateway
- green link
- cross-river connections
- new tree planting
- flooding impact
- landscape buffer
- foreshore building line
- active frontage
- urban marker



Figure 44: key plan



Figure 45: precinct plan

Precinct Plans

5.3.1 Built form

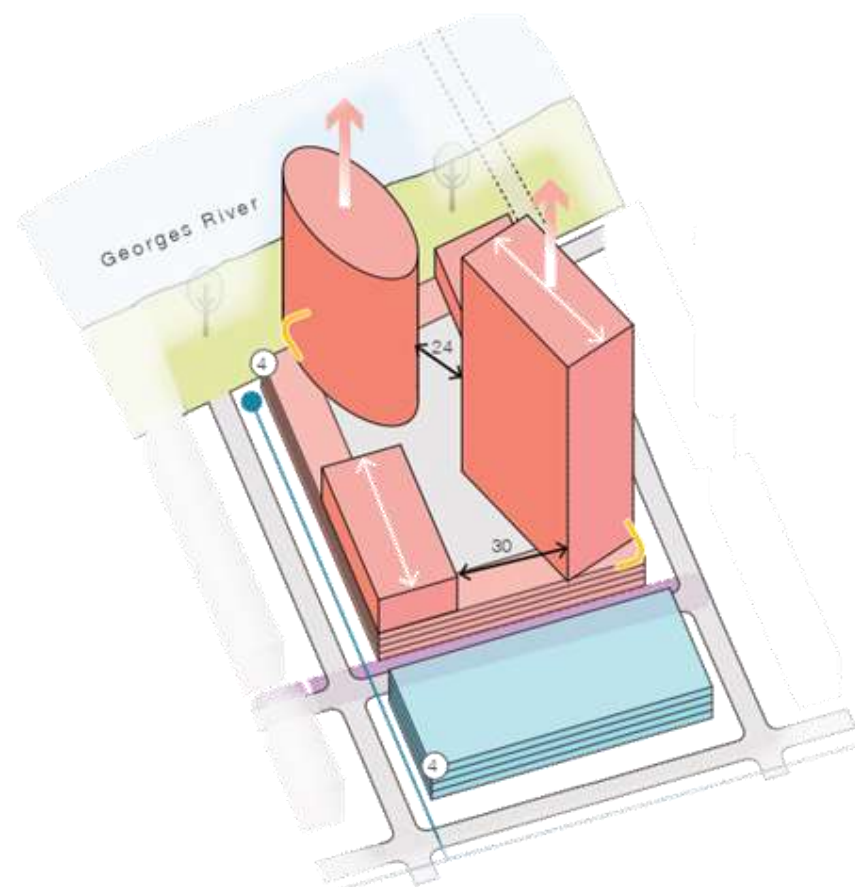


Figure 46: example block

Key objectives

The key objectives for the precinct include:

- shape built form and height to maximise solar access to the public domain and buildings to the south
- take advantage of regional views
- engage with interfaces to public open space by activating frontages at key locations
- deliver a diversity of land use and residential typologies
- manage flooding from the Georges River through integrated water sensitive urban design and landscape features

- site
- residential
- retail/commercial
- landscape/riparian zone
- pedestrian focused street
- adjacent built form
- proposed WSUD element
- variation in height



Streets

Streets will undertake a myriad of functions including supporting movement, spaces for the public to dwell, servicing and managing the effects of flooding and stormwater on the precinct. Opportunities for water sensitive urban design will be integrated into key streets to enable stormwater filtration and water retention during flood events.

A pedestrian focussed street will be established between residential buildings in the north and commercial buildings in the south of the precinct. This street will prioritise pedestrian movement through the provision of a shared surface, soft landscaping and seating which promotes use across the day.



Foreshore Park

The foreshore park will be important in mediating the effects of flooding and providing important recreation space to support residents, workers and visitors. It will include pedestrian and cycle paths that connect into the Riverfront Park to the south-west and Haigh Park to the east.

The park will include significant tree canopy to ameliorate the intensity of direct solar access provided by the park's northern aspect. Soft landscaping will also contribute to creating a cool and comfortable space for the public.



Built Form

A diversity of building typologies are proposed for this precinct to attract a range of residents and businesses. This includes residential towers of varying heights, residential uses skinning parking podiums and a smaller-scale commercial building in the precinct's south.

Smaller commercial buildings in the south of the precinct will attract more commercial tenants seeking a more "boutique" offering with smaller buildings and a closer relationship to the ground plane.

5.4 Urban Core precinct plan

The grain and porosity of the blocks will reflect the original grid of the industrial and agricultural operation, whilst also breaking down the scale of these blocks - the largest across the site.

-  site
-  residential/mixed use
-  showrooms & mixed use
-  landscape/riparian zone
-  new intersection
-  green link
-  new tree planting
-  flooding impact
-  landscape buffer
-  foreshore building line
-  fine-grain activation
-  opportunity for height
-  urban marker



Figure 47: key plan

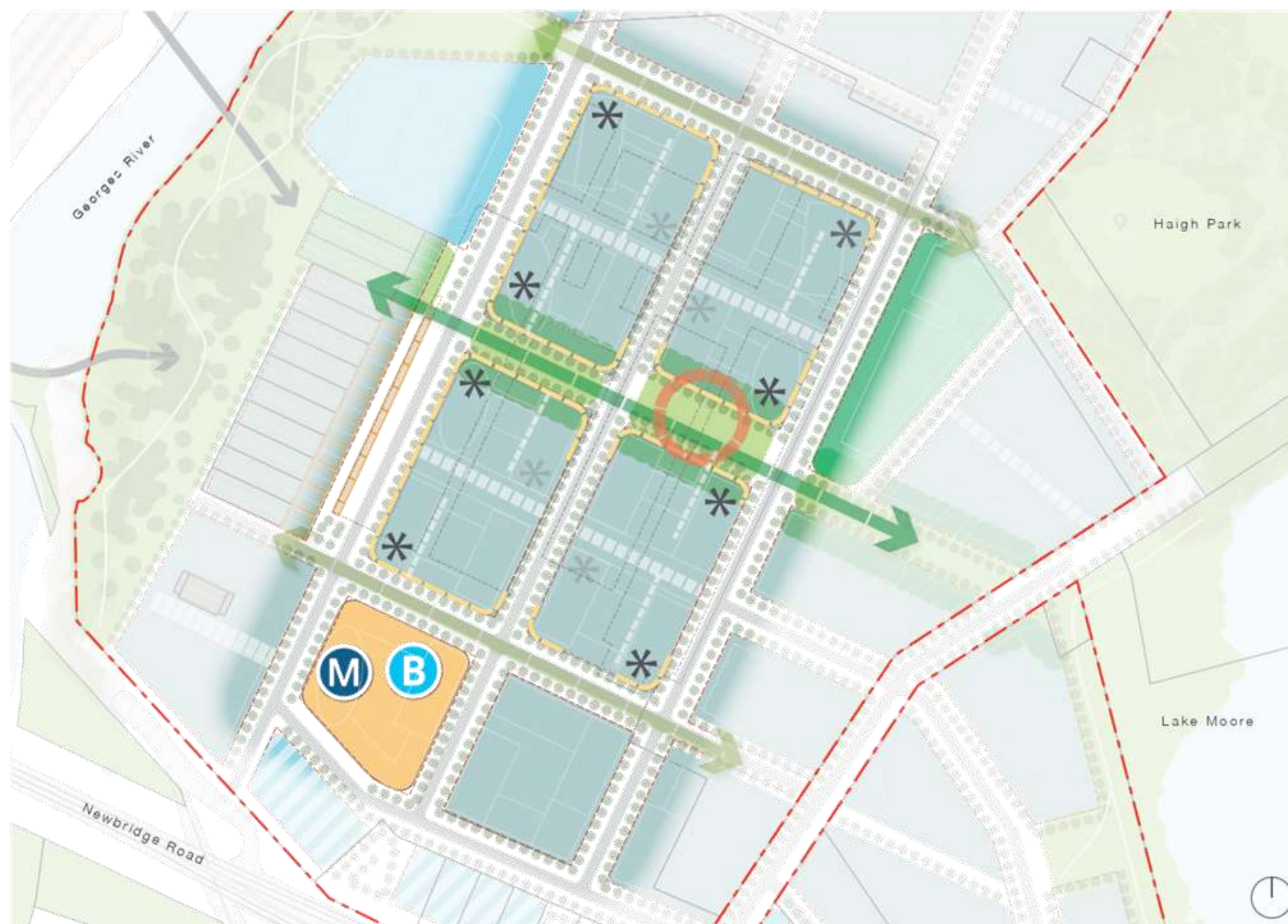


Figure 48: precinct plan

5.4.1 Built form

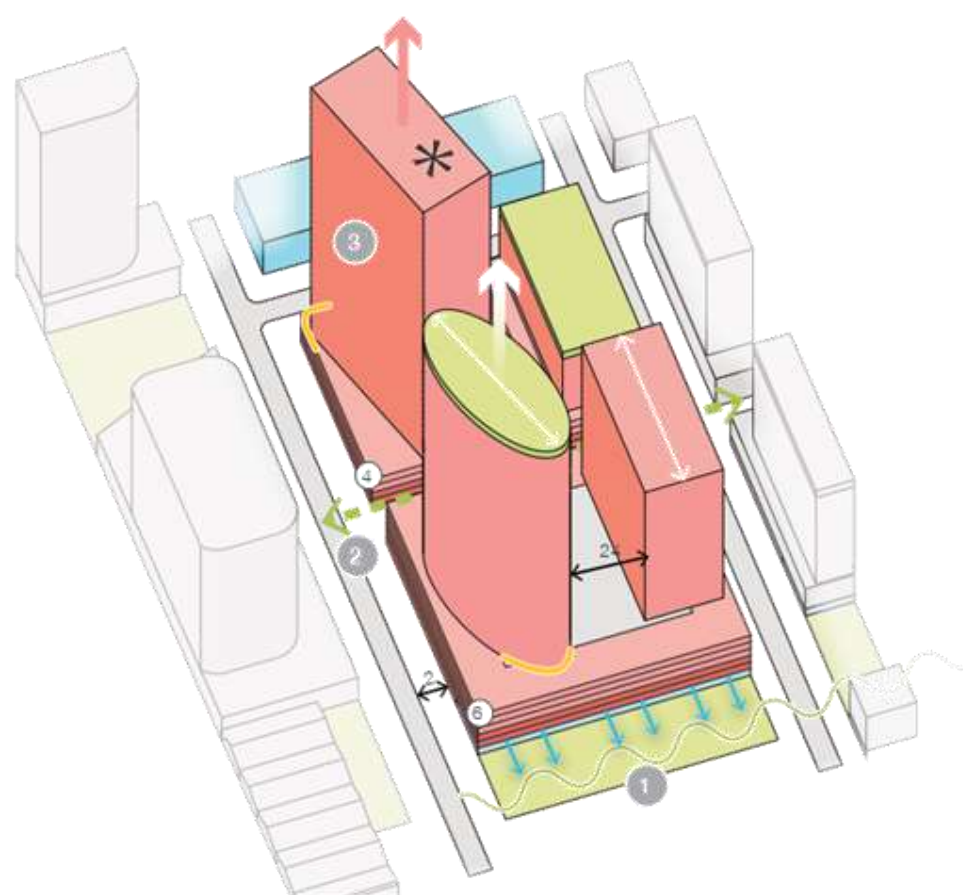


Figure 49: example block

The key objectives for this precinct include:

- Enabling pedestrian movement throughout the precinct and the large scale urban blocks via pedestrian links and internal circulation
- Creating opportunities for landscape and open space at multiple levels
- Balancing the need for solar access to the ground plane with building facades
- Focusing east-west movements along the green link, with servicing focused in key areas



The green corridor extending through the centre of the precinct will be a focus for activity, movement and recreation. It will include walking and cycling paths, playgrounds and water play (as shown to the left), seating and places for gathering. Lined with active uses at ground and residential uses above, the green corridor will be well surveilled enabling its use across the day.

Significant soft landscaping and tree canopy in this zone will contribute to urban cooling and the provision of shaded and comfortable areas to dwell. Endemic and low water species will be included to establishing low maintenance, long lasting environments.



Establishing opportunities for landscape across a range of levels will contribute to an overall cooling of Moore Point and the provision of varied private and public open spaces across the precinct. While open space at ground level is important for serving the wider community, as shown in the image to the left, upper level open spaces will have different opportunities for residents to take in views and gather.



Urban markers have been located on the precinct's periphery at the corners of the internal loop road. These articulate gateways into different precincts and contribute to integrated wayfinding across Moore Point.

Built form has been shaped to maximise solar access to the street and landscaped areas, especially the north-south central spine and east-west landscape corridor which will be key axes for movement to employment, recreation and public transport

Precinct Plans

5.5 Education and Mixed Use Parkway precinct plan

This precinct is the lively community heart of Moore Point, anchored by a new school and connected through to open space and recreation in Haigh Park and Lake Moore. A green link with pedestrian and cycle infrastructure will also connect the precinct to employment opportunities in Liverpool City Centre and the Georges Riverfront Centre to the west.

- site
- residential/mixed use
- school
- showrooms & mixed use
- shared surface treatment
- landscape/riparian zone
- gateway
- landscape gateway
- green link
- through-site link
- new tree planting
- active frontage
- urban marker



Figure 50: key plan

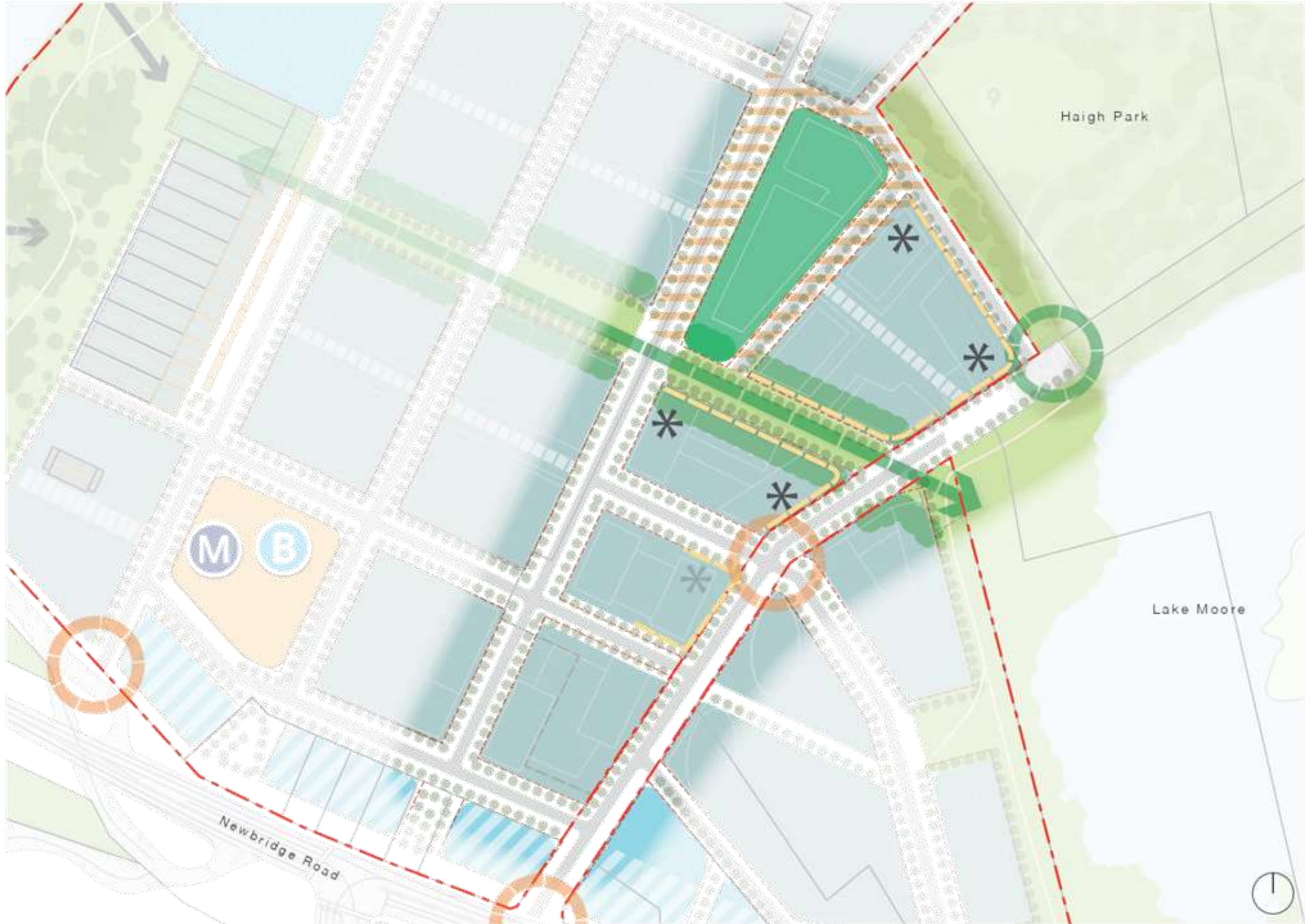


Figure 51: precinct plan

Precinct Plans

5.5.1 Built form

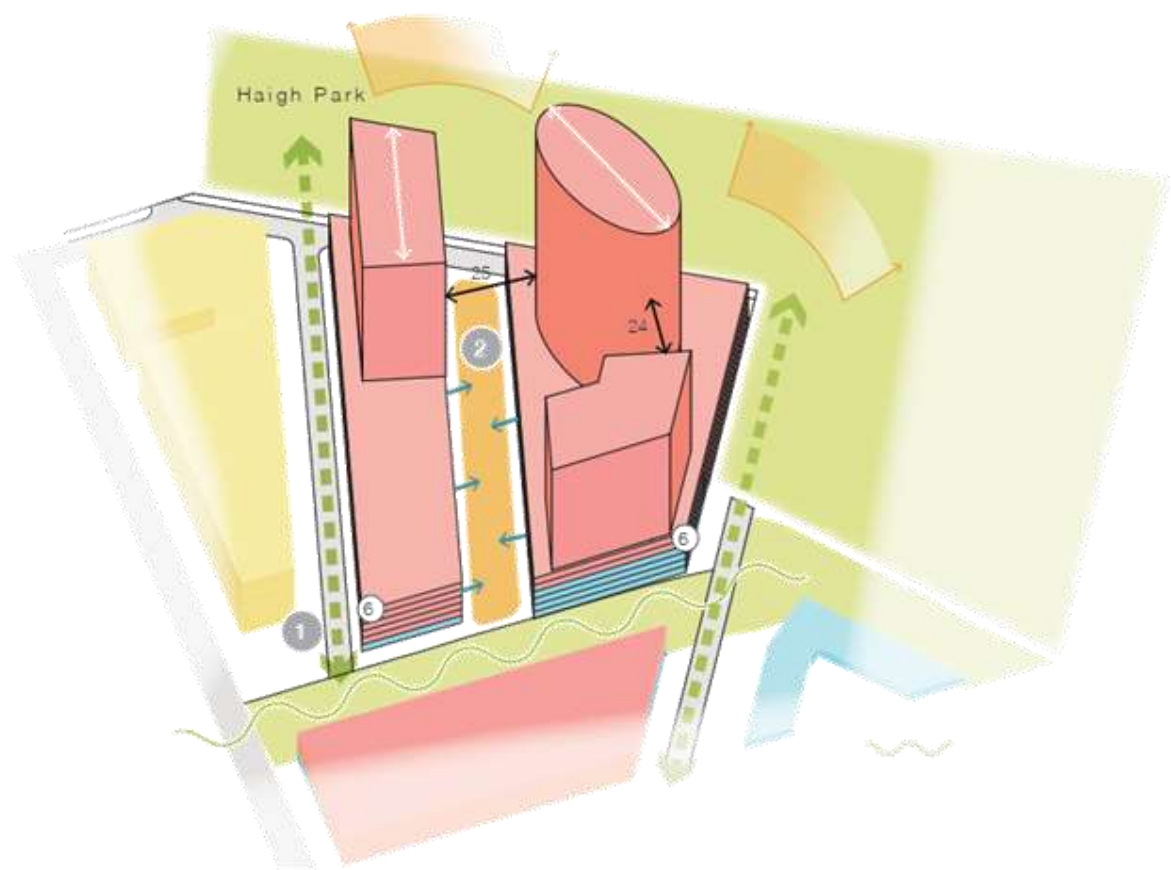


Figure 52: example block

Key objectives

- The key objectives for this precinct include:
- Capturing views across Haigh Park and Lake Moore
 - Creating a range of welcoming and comfortable streets
 - Orienting and shaping built form to reduce the impact of overshadowing
 - Establishing active and passive streets to provide equitable and inviting spaces for the community

- site
- residential
- retail/commercial
- school
- landscape/riparian zone
- adjacent built form
- community plaza
- active frontage
- through-site link
- views
- green corridor



Streets

Life will take place on the traffic-calmed streets in this precinct, spilling into Haigh Park nearby and to the lake front. A varying set of street typologies will enable the community to engage with a range of active and inviting spaces. While some streets will deliver significant activation, retail, food and beverage opportunities, some spaces, especially adjacent to the school will have more non-transactional spaces that support use by families across the day.

As shown to the left, shared surfaces that extend from building line to building line will create pedestrian and cycle friendly spaces that mediate and slow vehicular movement. This approach will be applied to the streets surrounding the school.



Permeability and accessibility

As the community heart of the precinct, permeability at ground level is important to creating equitable and accessible spaces. As shown to the left, large blocks and buildings will be broken down by through-site links and passageways to ensure open space, community assets and services can be accessed. Enabling views to be captured through these links will support integrated wayfinding across Moore Point.



Built Form and Views

Located adjacent to Haigh Park and Lake Moore, the precinct has the unique opportunity to take advantage of regional views across multiple edges. Buildings will orient to capture views and reduce their overshadowing impact on public spaces, streets. Where possible, towers will be chamfered to enable increased solar access to above podium communal open spaces and adjacent buildings.

As shown in the image to the left, height variation and floor plate shape is key to reducing the visual bulk of built form. Reducing height where possible and establishing urban markers within the precinct forms wayfinding elements within the regional landscape.

Precinct Plans

5.6 Newbridge Edge precinct plan

The precinct establishes an important buffer to Newbridge Road, mediating the impacts of noise and vibration on Moore Point. Built form along this edge is broken up with landscaping between buildings and a significant setback along Newbridge Road, which can be used for surface parking or landscaping, and in the future may be required to accommodate a Metro line extension from Bankstown. This softens the interface to this arterial road and enables views down streets in Moore Point to terminate with tree canopy and soft landscaping.

More resilient uses including large format retail and commercial uses will be located in this precinct, to leverage the high visibility, poor amenity, and servicing from the rear.

- site
- residential/mixed use
- showrooms & mixed use
- landscape/riparian zone
- transport interchange
- gateway
- green link
- new tree planting
- landscape buffer
- active frontage
- urban marker



Figure 53: key plan

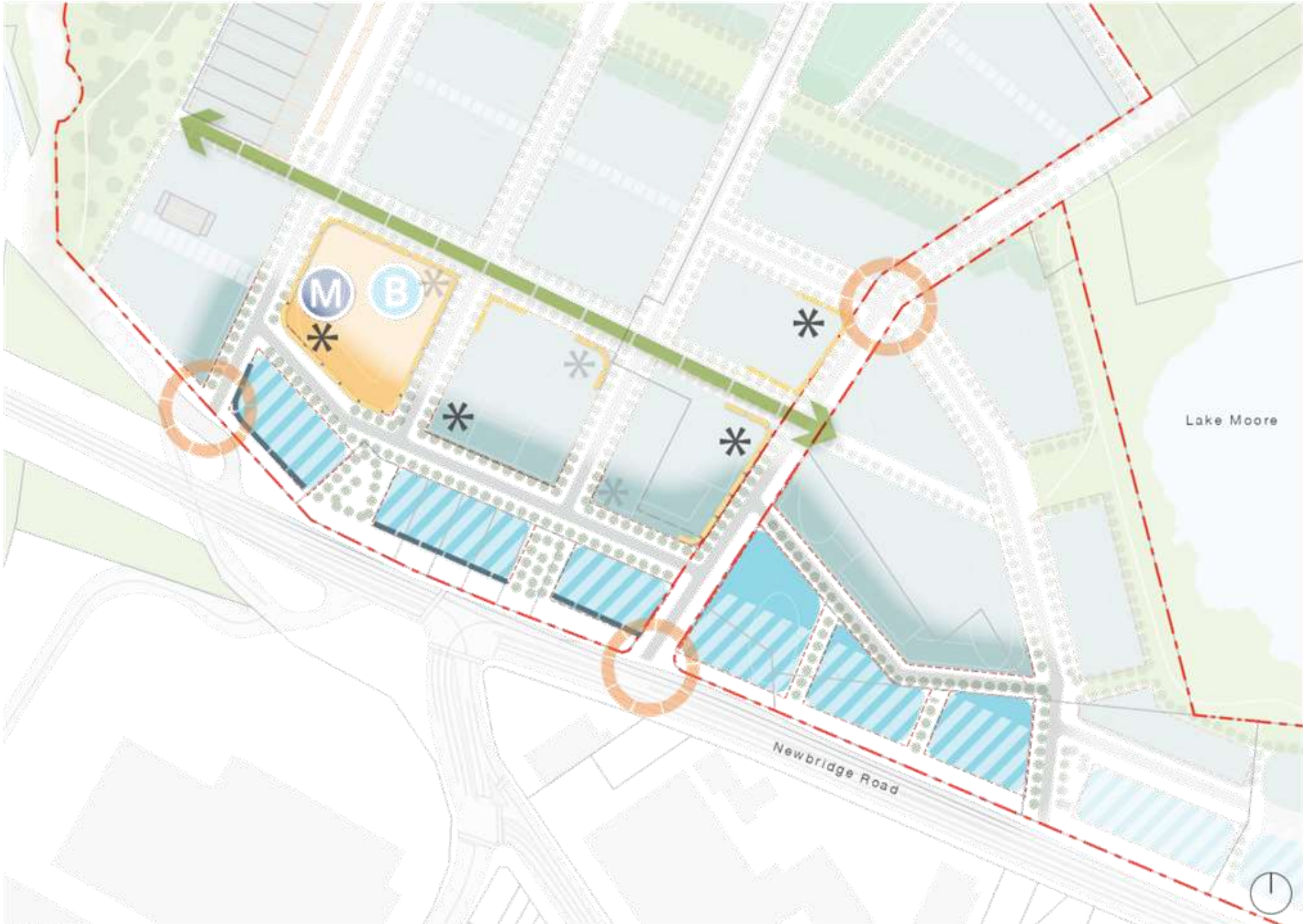
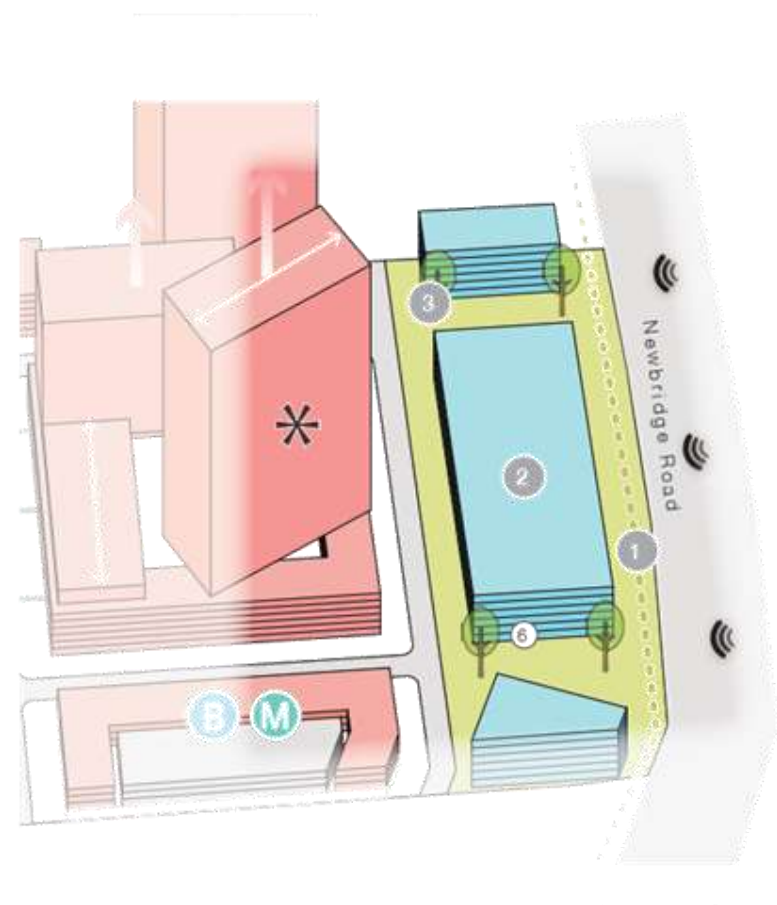


Figure 54: precinct plan

Precinct Plans

5.6.1 Built form



Key objectives

- The key objectives for this precinct include:
- establishing a built form and landscape buffer to Newbridge Road
 - creating a landscaped edge to the new streets and pocket parks between buildings
 - serviceway provided at the rear to enable access off Newbridge Road, and allow better intergration with Moore Point.

- site
- residential
- retail/commercial
- landscape/riparian zone
- adjacent built form
- landscape buffer
- active frontage
- urban marker
- noise
- variation in height



Landscape and Open Space

Landscaping in this precinct provides opportunities for increased tree canopy and softening of the Newbridge Road interface. As shown in the image to the left, these spaces will have seating, shade, planting and lighting. This will create small pocket parks for employees to take breaks and smaller spaces for adjacent residents to enjoy.

Where possible, endemic and low-water species will be used to reduce the maintenance required for these spaces.



Land Use

Large format retail and commercial uses will be housed in this Precinct. This is forms one part of the diverse commercial and retail offering across Moore Point. As shown in the left, these will include showrooms, hardware and furniture stores supported by on-site parking. Located opposite residential uses, direct pedestrian access and significant landscape along the street edge will ensure the high quality of the street frontage.



Street interface

The street interface between commercial/retail uses and residential buildings north of the precinct will be key in mediating the transition between these uses. Landscaping with significant trees along the street edge will balance the need for a visual buffer between uses above ground, with street level visibility supporting non-residential uses at ground. This landscaping will also support the creation of inviting and comfortable spaces for use across the day, including outside of commercial/retail operating hours.

Figure 55: example block

Precinct Plans

5.7 Lakefront Village precinct plan

Lakefront Village will be a vibrant and attractive place for the community, anchored by a supermarket and key service retail. Its location along Lake Moore provides opportunities for a retail, community and residential uses which take advantage of views and solar access across Lake Moore. Generous landscaped spaces opening up onto the Lake will connect through to wider east-west connections drawing people from across Moore Point to the Precinct.

Larger format commercial and retail uses will be clustered along Newbridge Road providing a noise buffer to the heart of the Precinct.

- site
- residential/mixed use
- showrooms & mixed use
- potential metro corridor
- landscape/open space
- transport interchange
- gateway
- green link
- trees
- flooding impact
- landscape buffer
- foreshore building line
- active frontage
- urban marker



Figure 56: key plan



Figure 57: precinct plan

Precinct Plans

5.7.1 Built form

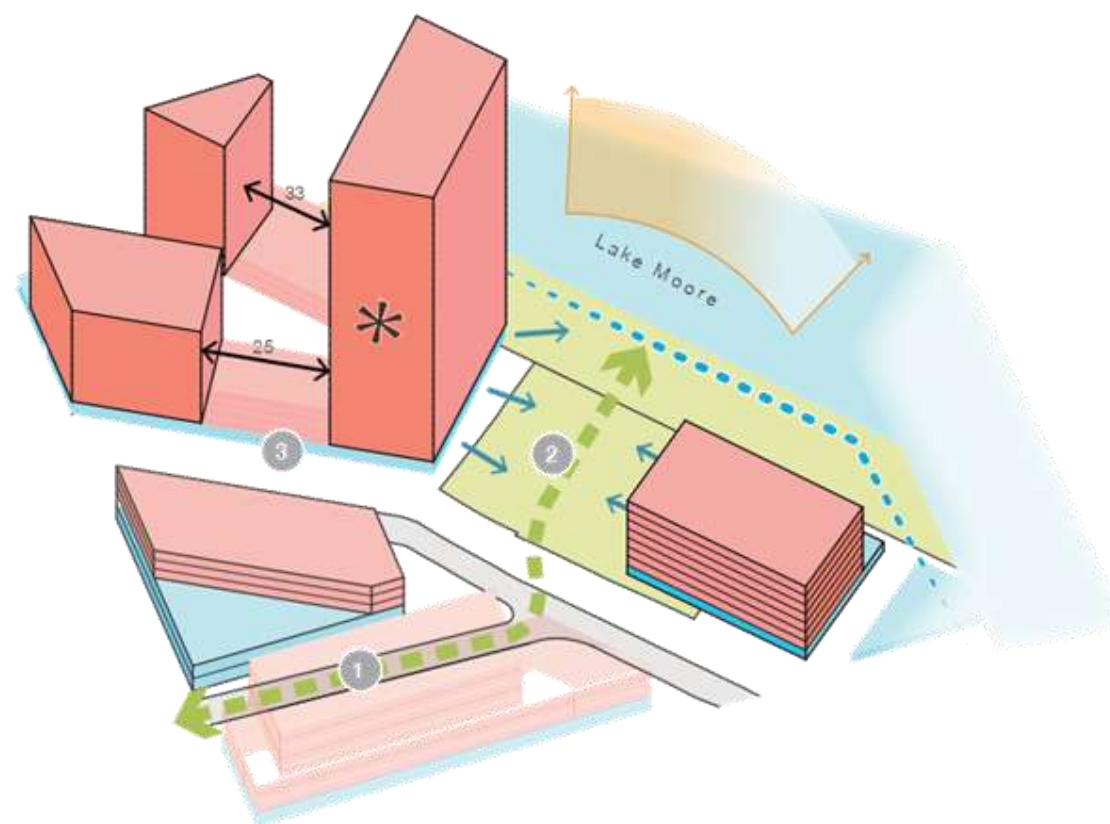


Figure 58: example block

Key objectives

- The key objectives for this precinct include:
- opening up views and connections to Lake Moore
 - establishing an active retail and commercial heart
 - providing significant public domain spaces for community events and gatherings that seamlessly integrates with the lakefront spaces and connections.
 - orientate ground floor uses, including food & beverage towards the lake front to provide improved activation and surveillance.

- site
- residential
- retail/commercial
- landscape/riparian zone
- Lake Moore
- adjacent built form
- through-site link
- active frontage
- views
- height opportunity
- riparian edge



Vibrant public domain and streets

A range of different street types will run through the precinct enabling larger format retail along major roads and finer-grain retail along pedestrian links, open space and plazas. Key in this precinct will be the pedestrian link connecting to the Urban Core in the west to Lake Moore in the east. Lined with active frontages and with direct access to a new supermarket, it will harness foot traffic to create a vibrant public domain active across the day.

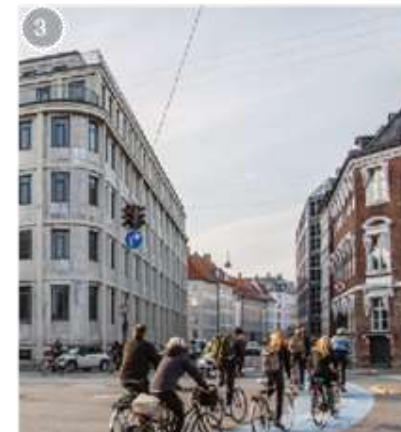
As shown in the image to the left, the east-west pedestrian link will have stores with open frontages and transparency enabling closer interaction with people moving through the streets.



Landscape and open Space

Landscape upgrades along Lake Moore will be complemented with new open spaces for community gathering and events. As shown on the left, larger hardscaped spaces will be included alongside soft landscaping and new tree planting. These spaces will be lined with retail, food, beverage and outdoor dining at ground, overlooking the space and taking advantage of solar access provided by its north-easterly aspect.

Flood mitigation strategies and accessible egress routes will be integrated into the landscape design as part of a holistic approach across the precinct. This will ensure spaces are safe for the public and resilient to flood events.



Built form and Height

Built form has been shaped to consolidate height into a few larger towers and establish a lower scale building form around key streets and pedestrian links. This height variation maximises solar access to the ground plane, above podium communal open spaces and enables smaller buildings to frame active street environments. This variation not only reduces the visible bulk but also supports:

- the reduction and better distribution of overshadowing
- tower separation which enhances the quality of residential uses
- the sharing of regional views.

Precinct Plans

5.8 Lake Moore Foreshore precinct plan

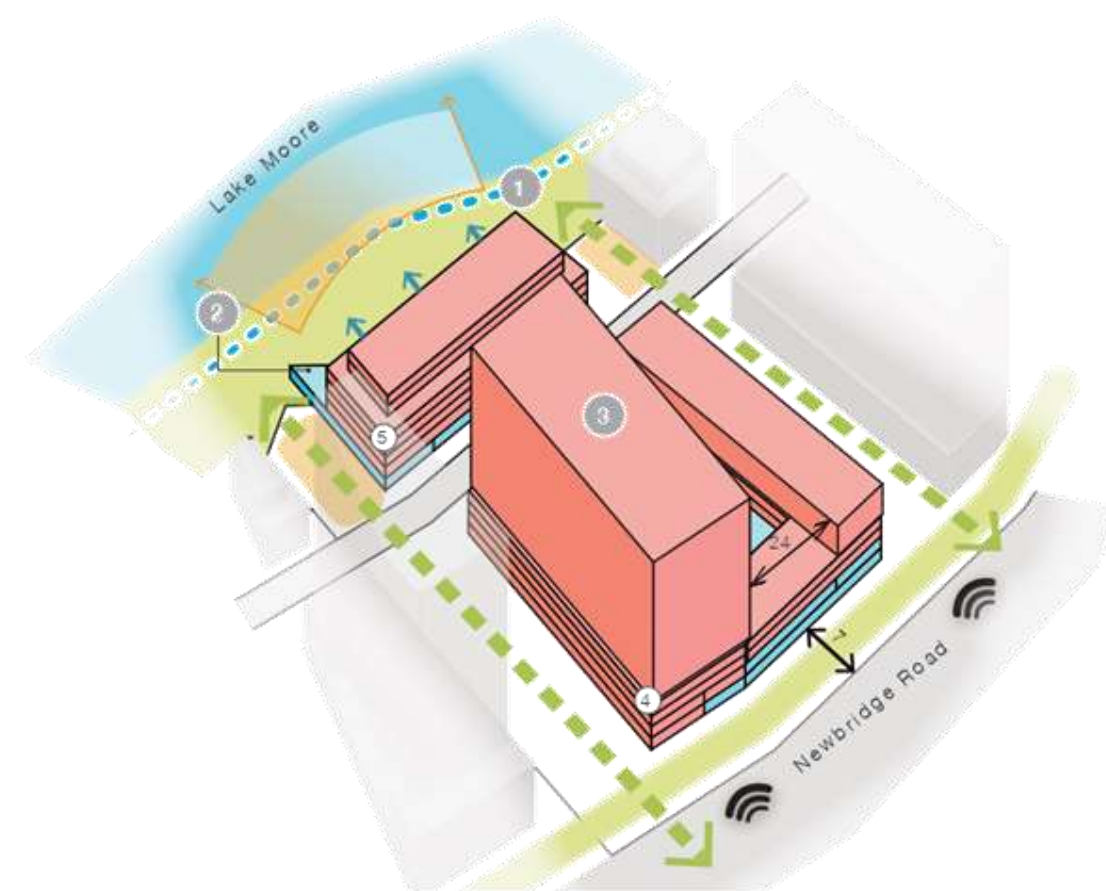
The Lake Moore Foreshore will support a new community with close connections to the water and unique wetlands of Lake Moore. Buffered by built form and landscape from Newbridge Road, a new east-west street will become an inviting and comfortable space for people with multiple connections through to the foreshore.

Small-scale retail, food and beverage, commercial and recreational uses will take advantage of locations along the foreshore while larger format commercial and retail will provide a built form buffer to Newbridge Road. This will be complemented by a landscape buffer to soften the noise and vibration impacts of the arterial road.



Precinct Plans

5.8.1 Built form



Key objectives

- The key objectives for this precinct include:
- unlock the recreational potential of Lake Moore
 - provide a series of different street environments that capitalise on views to Lake Moore
 - utilise built form and landscape to create a buffer to Newbridge Road

- site
- residential
- retail/commercial
- landscape/riparian zone
- Lake Moore
- adjacent built form
- communal open space
- through-site link
- riparian edge
- active frontage
- noise
- views

Figure 61: example block



Landscape and open space

Landscape upgrades along the Lake Moore foreshore will unlock the potential for recreation and connectivity to Haigh Park and the wider Georges River corridor. As shown in the image to the left, landscape upgrades could enable the retention of a naturalised lake edge alongside wide and inviting walking and cycling paths. Smaller pockets of space could be provided for the public to take in views across the lake, have picnics and celebrations.



Activation and non-residential uses

Landscape upgrades to the foreshore will unlock the potential for small-scale activation and residential uses that capitalise on its setting. Buildings along this edge will be of a smaller scale to enable view and solar access within buildings located to the south. As shown in the image to the left, there will be opportunities for outdoor dining and gathering, taking advantage of its sun-soaked northern aspect.

Along Newbridge Road, larger format retail and commercial uses at lower levels and significant landscape setback would be utilised to reduce the impact of noise and vibration on the wider Precinct. In these blocks, residential uses are used to skin podiums, with landscaped communal open space above.



Built form

Built form in this precinct has been shaped to transition from smaller buildings along the Lake Moore Foreshore to taller buildings along the Newbridge Road interface. This enables sharing of views and solar access and limited overshadowing impact on adjacent sites.

Height variation and tower orientation on the southern edge of the Precinct reduces the visible bulk of built form and preserve solar access to communal open space above podiums.

Where servicing and basement entrances are required, they will be appropriately screened to enable a continuity in street frontages.

Technical Design Considerations

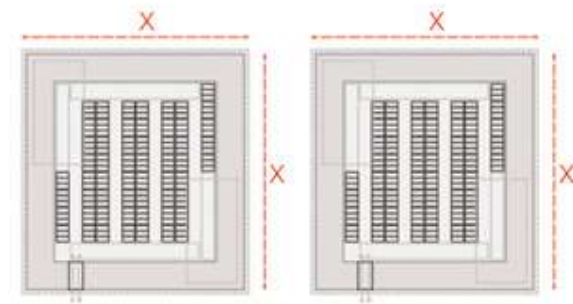
6

Analysis of the masterplan against the principles of SEPP65, the Apartment Design Guide and current 'Best Practice'

This section outlines how the foundation principles of the masterplan have considered the objectives and guidance outlined in current State Government Policy, including SEPP65 and the ADG. Throughout the evolution of the masterplan a balance has been maintained between a 'place-based' approach (i.e. heritage grid, relationship to the river and lake) and the requirement for 'compliance' with building separation, activation, solar access and over-shadowing guidelines.

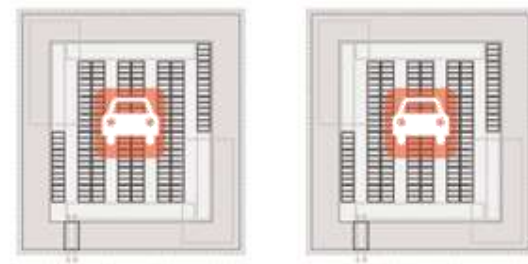
Technical Design Considerations

6.1 Key policy and design considerations



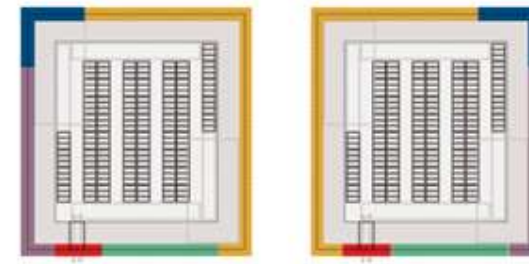
1. Block size and setbacks

The relationship between streets and spaces, the development sites and their interfaces with the private and public domain, and the efficient layout of buildings within the defined blocks have all been considered within the context of the site's heritage and natural features. Setbacks between the street and building edge also vary across the site in response to the character of streets, spaces and land use.



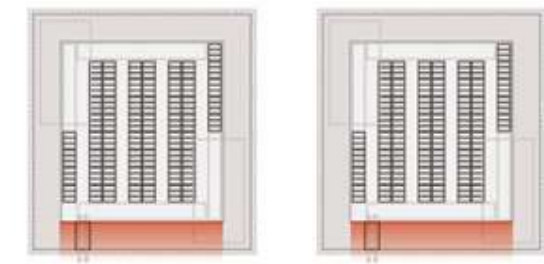
2. Parking provision

Allowances have been made in the scale, proportions and layout of the individual urban blocks to accommodate basement, combination of basement and above ground, and only above ground parking solutions across the site. Each approach presents a number of opportunities and challenges in relation to deep soil, adaptive reuse and amenity.



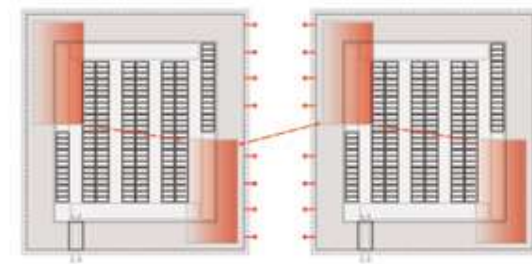
3. Active and positive frontages

The activation and animation of street frontages is a priority across the precinct, taking into consideration the characterisation and role of the frontage, its interface with uses above, and the amenity it receives (sunlight and aspect). Certain frontages will be prioritised for activation (retail and commercial), whilst others can be animated (residential), or serve a more function role (servicing & utilities).



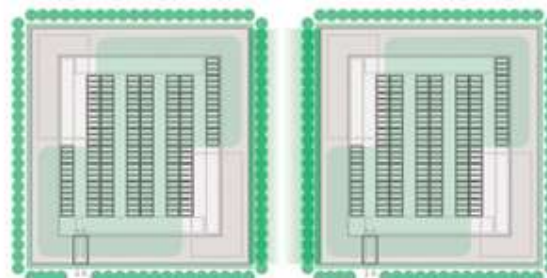
4. South-facing frontages and servicing

South-facing street frontages and podiums are inevitable across a precinct of this scale. These can be addressed through the co-location of servicing, vehicle access and utilities at ground, and non-residential uses at podium upper-levels, including naturally ventilated parking.



5. Building separation and depths

Block sizes, setbacks and street widths have all been considered to ensure the appropriate building separation at tower, podium and street levels, both in line with the ADG, but also to maximise the amenity and help define the character of the streets.



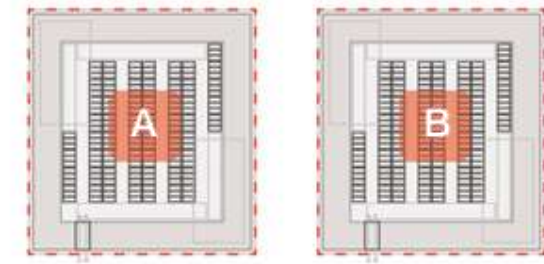
6. Landscape and public domain

A precinct-wide approach has been taken to the design and delivery of landscape, public domain and streetscape, as these are the character-defining elements that bind the blocks and streets together. The streets and spaces will support an integrated stormwater management and reuse system, whilst supporting the growth of up to 8,000 new trees, which will provide significant canopy and urban cooling of the precinct.



7. Solar access and over-shadowing

Solar access to streets, public spaces and residential uses has been a key driver for the layout of the site, block and building configuration, and individual building orientation. This approach also balances the impacts caused by the site's existing grid, which is orientated 25-degrees off north.



8. Staging

The delivery of the precinct over time has an influence on the management of impacts arising from placing new land uses within a former industrial setting and the pursuit of compliance on a building-by-building basis when the exact scale, land use and design of the neighbouring blocks is evolving over several decades.

Technical Design Considerations

6.2 Block size and setbacks

The urban block dimensions have been based on a number of fundamental spatial requirements; podium and basement layouts, sleeving of above ground parking with active uses (commercial & residential), and the potential for adaptive reuse of above ground parking. A range of block sizes have been used in order to achieve the same outcomes, whilst responding to site specific requirements (i.e. heritage grid, land ownership, open space and street hierarchy). Constant design parameters include:

- 12m deep residential sleeve
- vehicular entrance location
- ramp zone
- banks of carparking with space for structure
- towers with above-podium setback

It is important to note these are simplified diagrams to indicate the masterplanning parameters and dimensions used across the site. Core location, ventilation, circulation, access, structure and site specific considerations will alter these forms. However, they provide feasible and flexible dimensions for a podia based urban grid. The key podia width dimensions are:

- 60 (block A&E)
- 77 (block B&F)
- 94 (block C&G)
- 112 (block D&H)

Metrics per storey			
Block	Res GBA	Res GFA (75%)	Parking spaces
A	2,884	2,163	66
B	3,300	2,475	93
C	3,715	2,786	129
D	4,130	3,097	165
E	3,254	2,440	84
F	3,669	2,751	126
G	4,084	3,063	171
H	4,500	3,375	219

- Residential sleeve
- 2m setback in lot
- Circulation & ramp
- Servicing (ventilation, plant, storage etc)

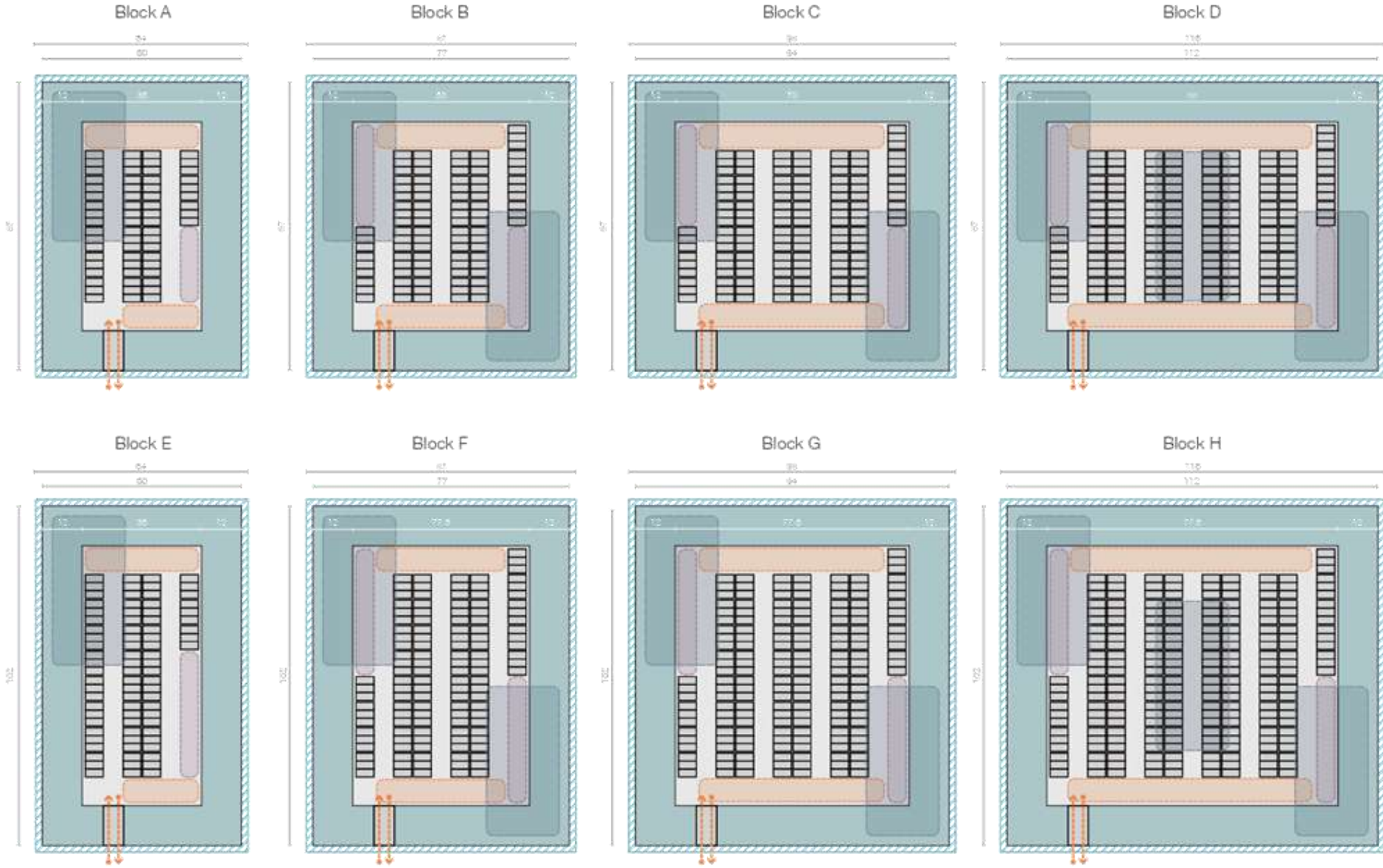


Figure 62: block size diagrams

Technical Design Considerations

6.3 Parking provision

Over the coming years our reliance on private vehicles and the associated need for parking spaces in residential and commercial developments will change. There is now a greater focus on the potential for above ground parking to be adaptively reused for commercial, community and recreational uses as the demand for parking reduces.

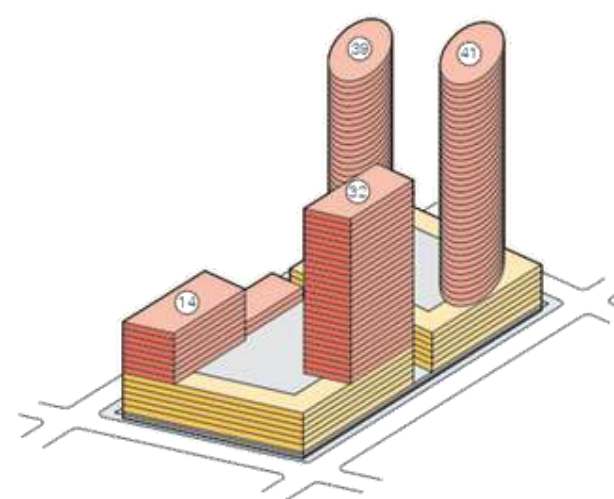
Factors such as the overall quantum, land use mix and dwelling mix have significant implications for parking and the associated built form and character of surrounding spaces. The adjacent diagrams outline three scenarios:

1. Podium parking - where car parking is internalised in the core of the structure with residential or other uses wrapping the edge of the podium. This can also be integrated with a basement.
2. Podium parking with semi-perimeter block - where carparking is internalised in both podia with an integrated basement. The built form of the front of the block creates the impression of varied streetwall heights as opposed to the consistency of the podium behind.
3. Hybrid podium and perimeter block - where parking is provided both in basements and in the sleeved rear podium. This creates a front perimeter block with direct at-grade through site links and improved amenity for built form behind.

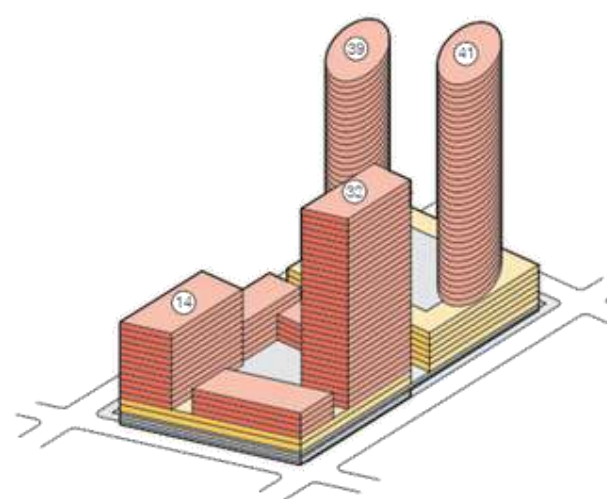
Assumptions include:

- Carparking rates as per the Liverpool DCP
- 12m deep residential sleeve
- Efficiency of 35m² per carparking space
- 70% residential GBA to GFA efficiency
- Vehicular entrances on southern elevation
- Integrated basements beneath both podia

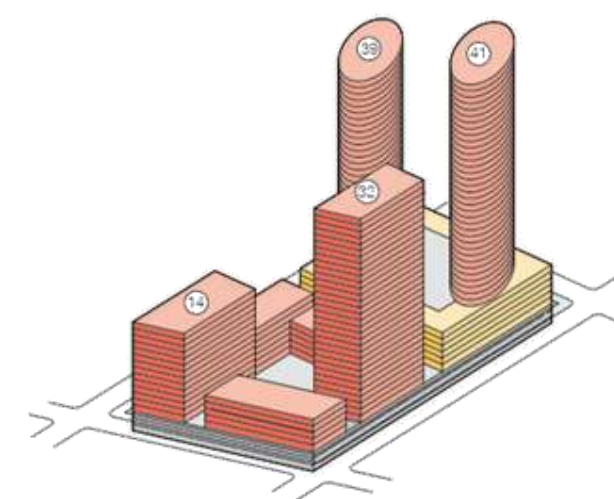
It is important to note these are simplified diagrams to explore masterplanning parameters for parking. Core location, ventilation, circulation, structure and site specific considerations will alter these forms.



Podium parking



Podium parking with semi-perimeter block



Hybrid podium and perimeter block



Example: Pagewood



Example: Carter Street



Example: Rhodes 2A&3A

Figure 63: parking provision diagrams

Technical Design Considerations

6.4 Active and positive frontages

The masterplan features several approaches to interfaces depending on their land use, desired character and surrounding street or landscape. The points below outline some important considerations when designing lower storeys and public domain.

'Positive' residential frontage considerations

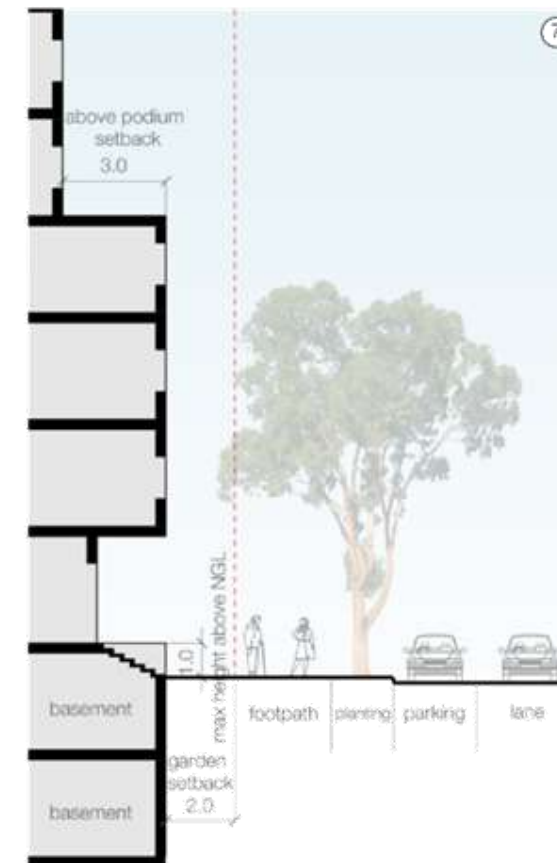
- Size and desired character of the setback to the street
- Manner of access to the dwelling - i.e. at grade (2) or via a set of steps (1)
- The ground floor can be elevated creating a private terrace for residents inside (1&7)
- Elevated ground floor can be paired with planting to screen the ground floor to improve privacy for occupants but also ensure passive surveillance of the street for people looking out (1&7)
- Basement ventilation can also be placed behind vegetation in some circumstances (7)
- Built form above can project over the ground floor setback depending on the desired typology (i.e. integrated terrace/maisonette) which creates an enclosed space and shaded space.

Active retail and commercial frontage considerations

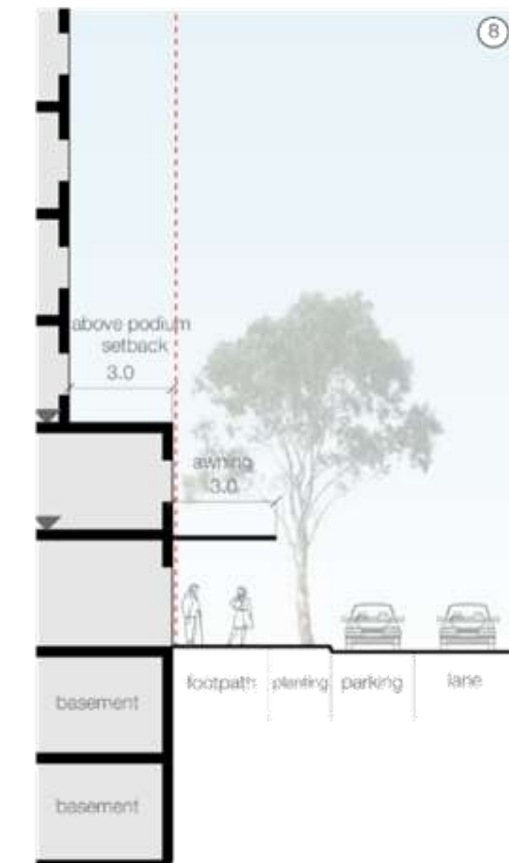
- Position and character of lobbies and entrances (6) i.e. triple height with an open ground plane
- Elevation changes between the building and street need ramps and stairs for integration (5&6)
- Exposure for tenancies i.e. glass is often used for commercial and retail businesses to entice customers to the premises
- Moveable facade elements - i.e. doors and awnings which can change according to time of day, weather and season (4)
- Ground floor design should address the outlook of the cafe cafe onto the space or street (3) especially if the entrance is at grade
- Section (8) illustrates a typical at-grade interface from the street into the ground floor
- Presence of a canopy or trees for shade



Figure 64: active and positive frontage diagrams



Example of raised residential terrace interface



Example of at-grade retail interface



Technical Design Considerations

6.5 Servicing and south-facing frontages

Each block in the masterplan will have south facing frontages which require careful design consideration to successfully combine residential and commercial land uses alongside necessary servicing and basement access.

Key considerations when designing south facing frontages include:

- Vertical stacking of land uses is responsive to the amount of solar access and adjacent street access. For example, servicing and parking on lower storeys with residential above.
- Ensuring the appropriate proportion of apartments of each development receive direct solar access according to the Apartment Design Guidelines (70% receive 2 hours direct solar access to living rooms and private open spaces).
- The number, dimensions and location of parking access points are proportional to the expected parking load and vehicular use.
- Access points should be integrated into the building facade and be as discrete as possible (i.e. 2) using strategies such as:
 - locating access points on secondary and tertiary lanes
 - street trees, planters and green walls should screen entrances where possible
 - materials and colour palette should soften the threshold between street and entrance
 - entrances should be located at the lowest point of the site to minimise ramp lengths and excavation
 - separating pedestrian access points (i.e. lobbies and through-site links) from vehicular ones
 - good design of entrance doors (i.e. lasercut screens)
- Cores, corridors, circulation spaces and spaces which are less reliant on good solar access can be positioned on south facing facades.
- Other services and requirements such as hydrants, risers, loading zones, waste collection zones and storage should be clustered and screened where possible

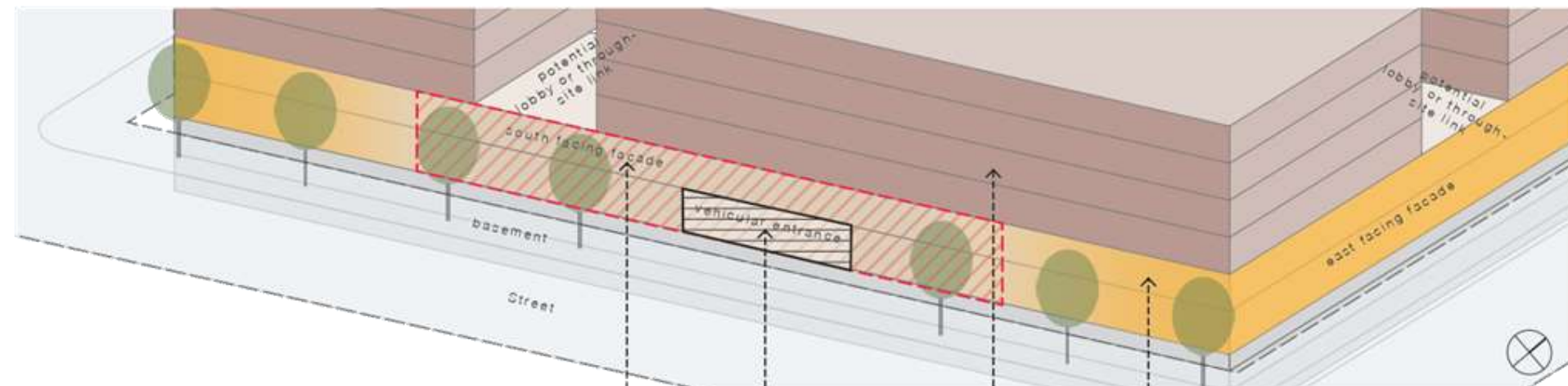


Figure 65: servicing and south-facing frontage diagrams



Above the commercial ground floor, these upper storeys are screened with vegetation and public art creating an attractive facade and allowing natural ventilation for the carpark behind.



The Casba development in Waterloo (Sydney) has a discrete basement entrance which complements the through-site pedestrian beside it. It is softened with street trees and has residential balconies above.



This south facing facade in Erskineville (Sydney) has been stacked with external apartment access corridors with mesh screens for privacy. It provides passive surveillance for communal open space behind.



Residential apartments can be wrapped around south-east and south-west corners and still receive excellent solar access especially at upper storeys.

Technical Design Considerations

6.6 Building separation and depth

The organisation and structure of the urban grid has been designed to balance the existing heritage fabric and grain of the site, ownership and cadastral boundaries, existing open space, established road network, and the provision of amenity through street setbacks and building separation at a block level.

The streets and blocks within the precinct have been sized to ensure that appropriate building footprints sizes can be achieved and provide adequate separation at tower, podium and street levels align with requirements of the ADG as a minimum, and ensure the amenity is maximised across the precinct.

All streets and setbacks have been designed to allow a minimum of 20m between the 4-6 storey podiums. All block depths have been design to allow for 18 to 24m separation above podium. The diagram to the right shows how building separation is achieved within the central core.

Building envelopes have been designed to between 22-24m to allow for 2-3m deep balconies along long elevations, whilst satisfying the 18m maximum depth glazing line to glazing line, as noted in the ADG. This approach also provides flexibility for these envelopes to accommodate a range of other uses, including hotel and commercial office.

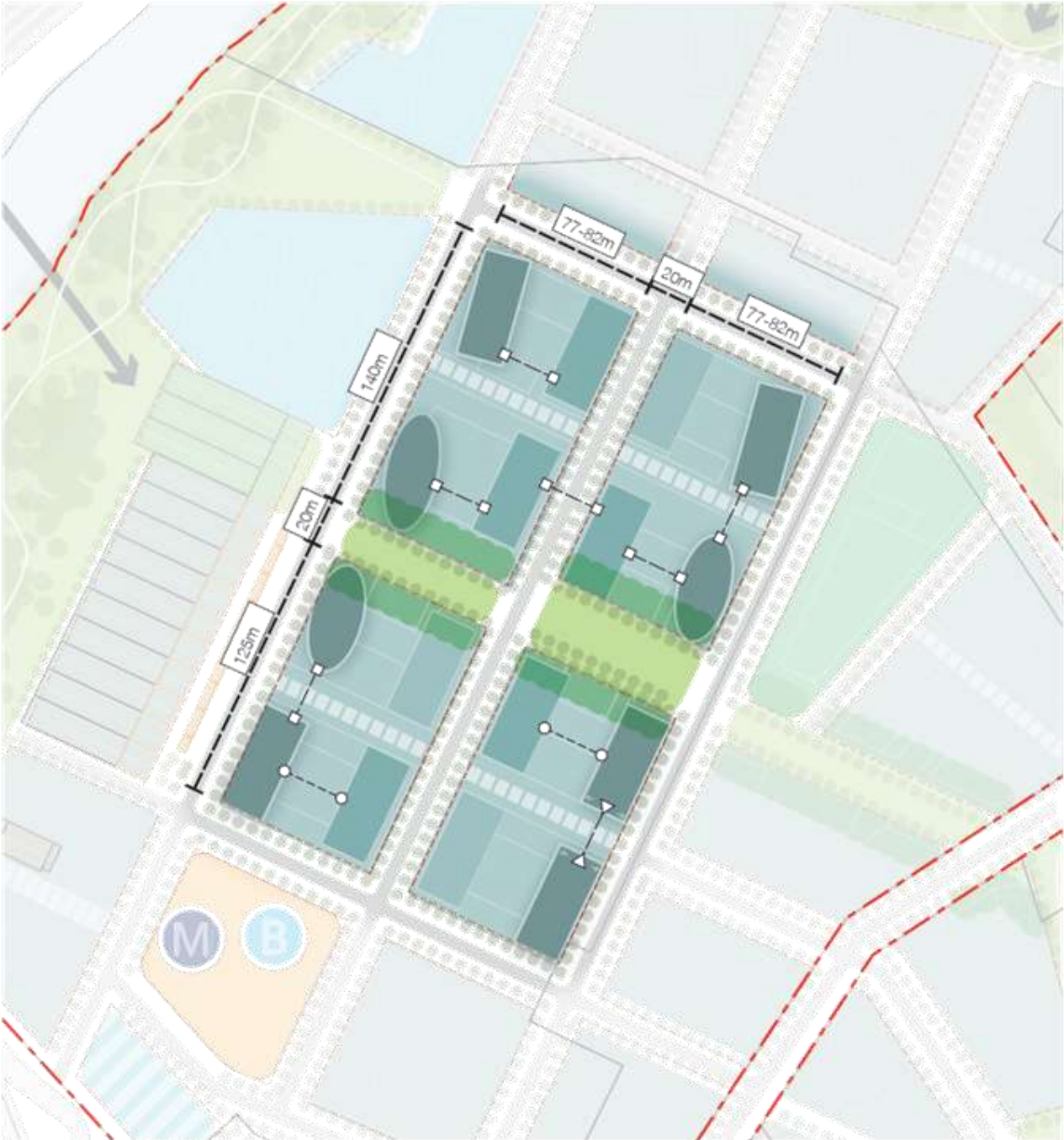


Figure 66: building separation and depth plan



Technical Design Considerations

6.7 Landscape and public domain

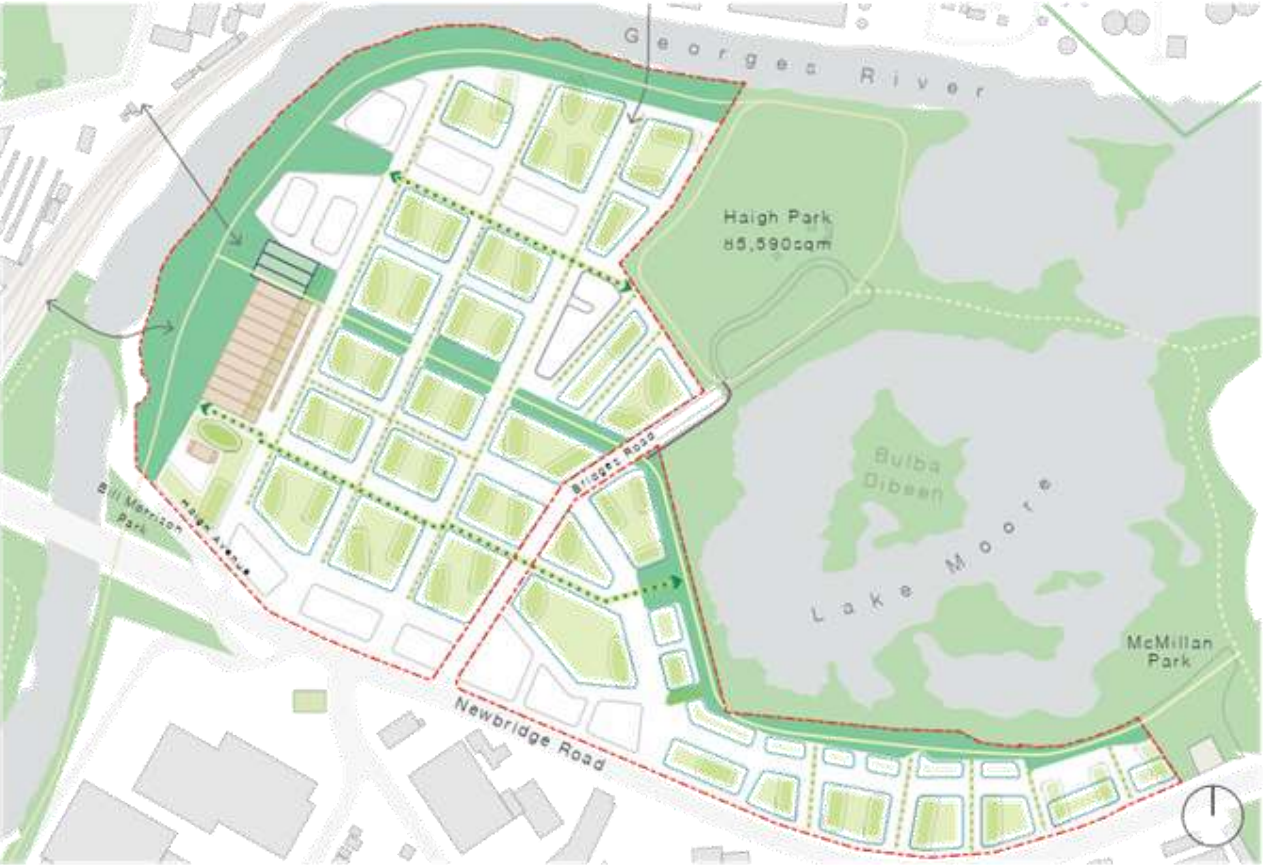


Figure 67: landscape and public domain diagram

A precinct-wide approach has been adopted to ensure that landscape, public domain and streetscape elements provides both environmental comfort and urban relief whilst contributing to the overarching character that binds the precinct together.

The proposed network of open space features rain gardens, swales, and landscape setbacks allow for significant canopy to be established to reduce urban heat island affects associated with climate change and densification of our urban environments. Stormwater will be captured and managed for reuse as part of a precinct-wide WSUD system that cleans urban run-off before it re-enters our natural waterways, and the flanking riparian zones and parks that provide a line of defence against major flooding events.

The open space network covers 21% of the site area, in addition to the adjoining Haigh Park (8.5ha) and public space around Lake Moore and along the river foreshore. These substantial areas of usable green space are supported by an extensive network of streets and smaller public and private spaces, including 7-10% of each urban block dedicated to deep soil. This is in addition to the landscaped areas within the streetscape (much of which is deep soil), and private spaces on podium and roof levels across each development site.

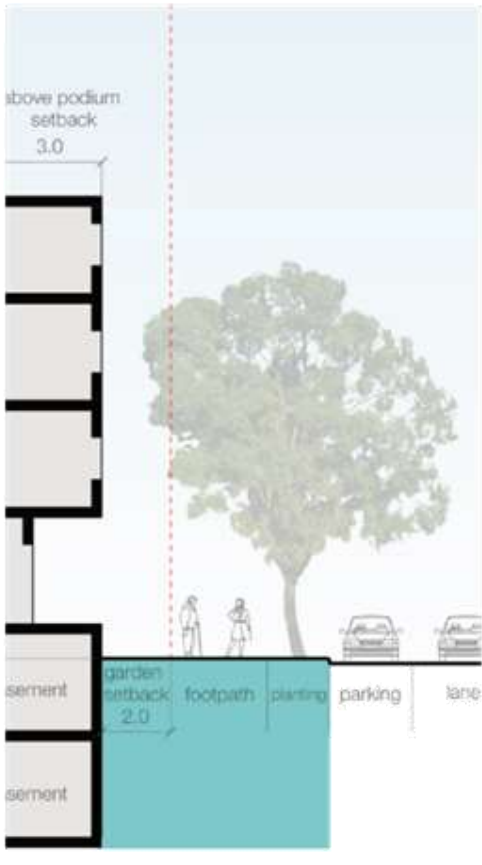


Figure 68: streetscape deep soil zone

Private amenity for each unit is to be supported by communal open space (min 25%) that will be provided above podium and on top of towers to maximise solar access (50% with direct sunlight on the winter solstice). both hard and soft landscaping to be considered for rooftop communal spaces to ensure green roofs are provided to assist in reducing urban heat island affect.

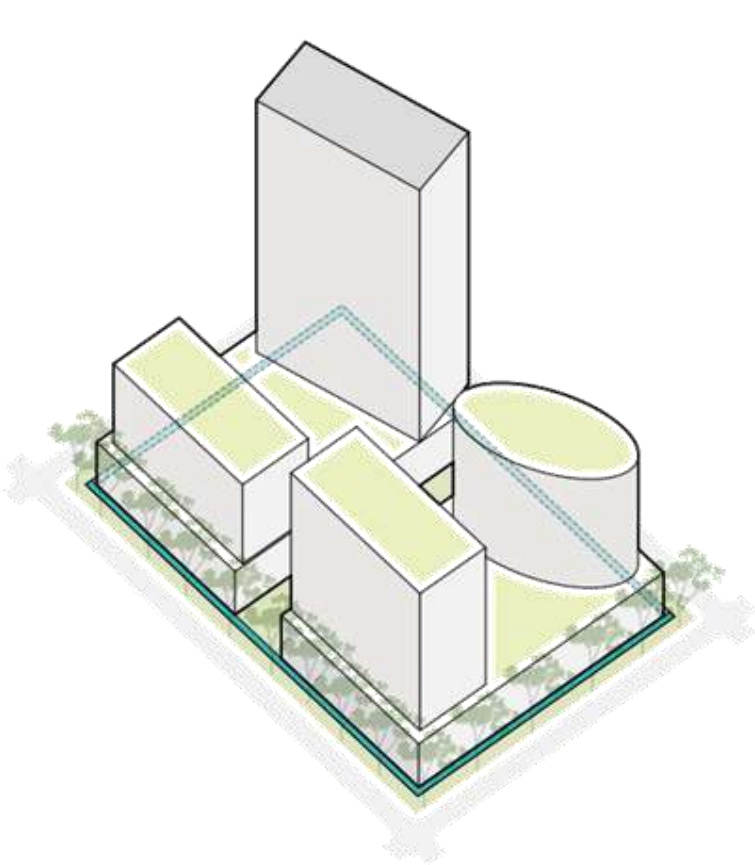


Figure 69: landscape setbacks and communal open space per block

- site
- open space (deep soil)
- rooftop open space
- 2m deep soil setback
- major east-west swale
- north-south swale
- surrounding open space (RE1)
- proposed pedestrian bridge

Technical Design Considerations

6.8 Solar access to public space

The quantum, quality and usability of public open space across the precinct has been a central consideration for the masterplan. One way to protect the amenity of these newly formed public spaces is a 'solar access plane', which is becoming a commonly used policy and planning tool to preserve the amenity and solar access to key public open spaces. Two prominent examples of such controls include:

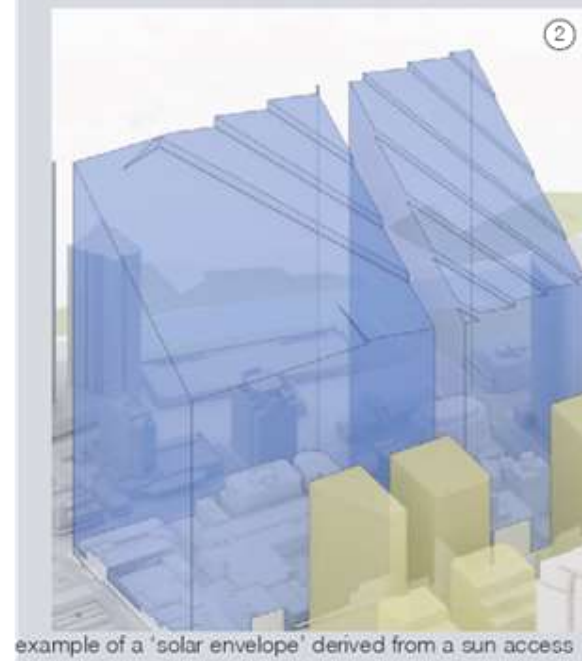
- City of Parramatta sun access plane to Lancer Barracks and Parramatta Square
- City of Sydney sun access planes to most significant major open spaces throughout the city. The example to the right (1) is Hyde Park

Typically these controls specify one of the following:

- No additional overshadowing of a defined space
- A nominated percentage (i.e. 50%) of a defined space must receive X (i.e. 2) hours of sunlight between X (i.e. 9am) and X (i.e. 3pm)



example of sun access plane in City of Sydney Draft DCP



example of a 'solar envelope' derived from a sun access

The Georges Riverfront Plaza is the premier civic space for Moore Point. Therefore it's amenity should be protected.

The public space to be protected by the sun access plane is defined in decimal coordinates system according to GDA94, MGA 56 projection:

A) 308684.8 / 6244319.2

B) 308622.5 / 6244348.9

C) 308554.6 / 6244208.6

Each point should be calculated relative to 'natural ground level' which is approximately RL9 AHD. The proposed control should be: *no additional overshadowing of the space between 11am to 1pm on the winter solstice (21st of June).*

The impact of this control has been tested and integrated into the masterplan to ensure the building marked X on the plan does not create any additional overshadowing of the new space according to the proposed control.



Figure 70: proposed sun access plane

Technical Design Considerations

6.9 Solar access and over-shadowing

The solar access and over-shadowing guidance outlined in the ADG has been used by the industry and government agencies as a development control, where numeral compliance is a requirement, without taking into consideration contextual or site-specific factors. When undertaking a precinct-planning exercise of this scale there are a number of approaches to ensure solar access and overshadowing is maximised without requiring every building to be designed in detail. These include the layout and scale of streets and blocks, the location of open space and approaches to built form (i.e. height, separation, siting and orientation of buildings).

The place-based approach to Moore Point has driven a particular layout and orientation of the streets and blocks, 25-degrees from north, which reflects the heritage grain and retained buildings on the site. This approach has been supported by Council, as it provides a strong link to the site's former uses, and provides a better relationship to the river and Haigh Park. The challenges arise when seeking solar compliance on an individual building basis, as only 2 facades will receive the 2-hours minimum direct sunlight in mid-winter, as compared to a building orientated on a north-south (or within 11-degrees of north), where three facades would receive the adequate sunlight.

The evolution of the masterplan has included extensive solar testing to provide certainty of solar compliance across the site by applying a number of principles;

- orientate towers as close to north as possible (11-degree tolerance), whilst maintaining podiums on the alignment of streets (25-degrees)
- maximise the number of units along the northern edges of the building, namely those elevations receiving the 2 hours of direct sunlight.
- limit the extent of residential along south-facing facades, particularly in blocks within the southern extent of the precinct

Another critical factor to take into consideration with regards to amenity and solar access for a precinct of this scale is the staging and evolution over time. Similar to other major regeneration precincts, like the Rhodes peninsula, the development of the area will be iterative and driven by market demands. The ultimate mix of land use may evolve over time to respond to Liverpool's growth and position within Metropolitan Sydney.

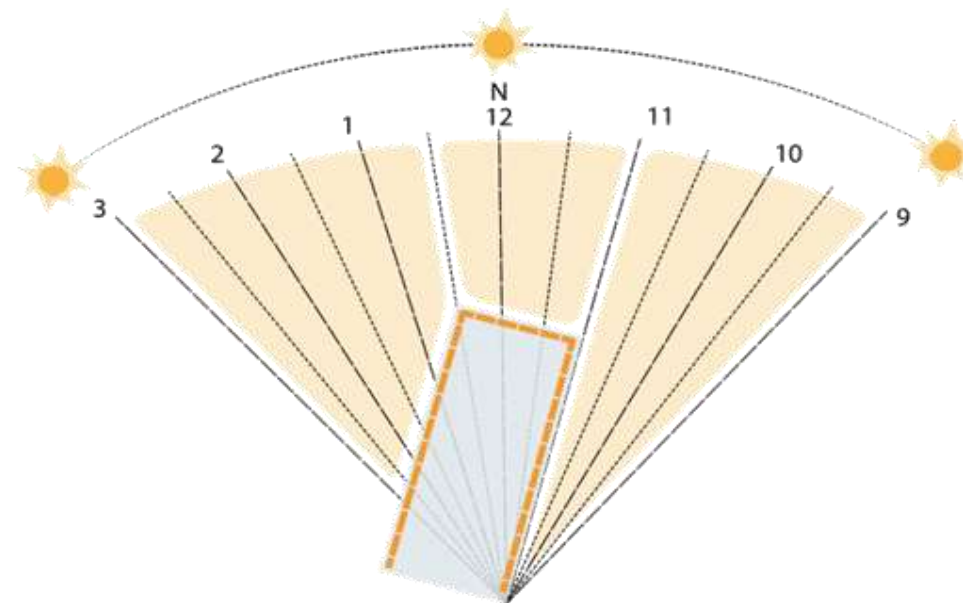


Figure 71: Residential towers can be rotated a maximum of 11 degrees off north to ensure three facades of a residential tower achieves 2 hours of solar access on the winter solstice.

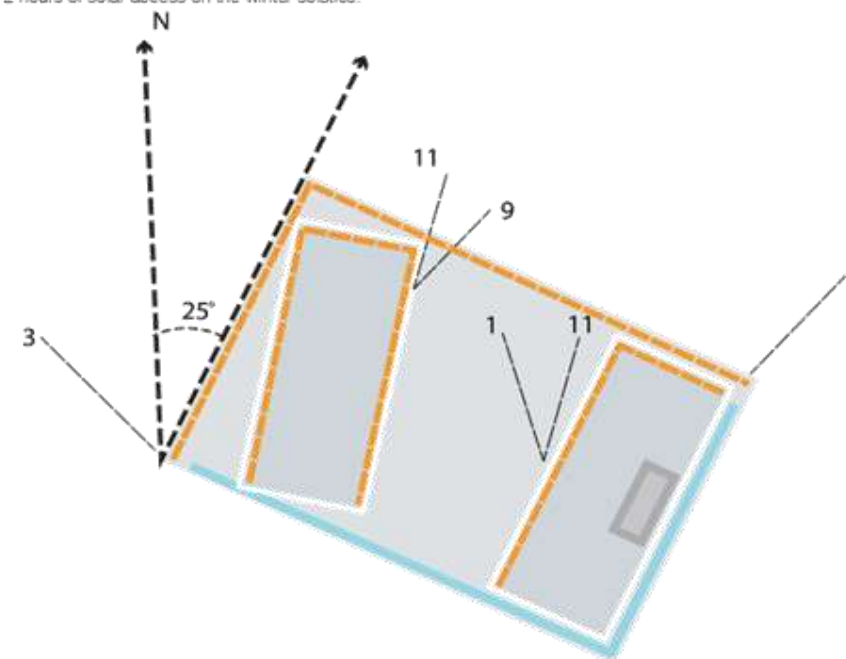


Figure 72: The proposed grid on the Moore Point peninsula is 25 degrees off north. The implications of the 25 degree orientation means that only two facades can achieve the 2 hours requirements of the ADG. Orientation of towers above podium should rotate to maximise solar access and/or locate cores on the southern side of tower.

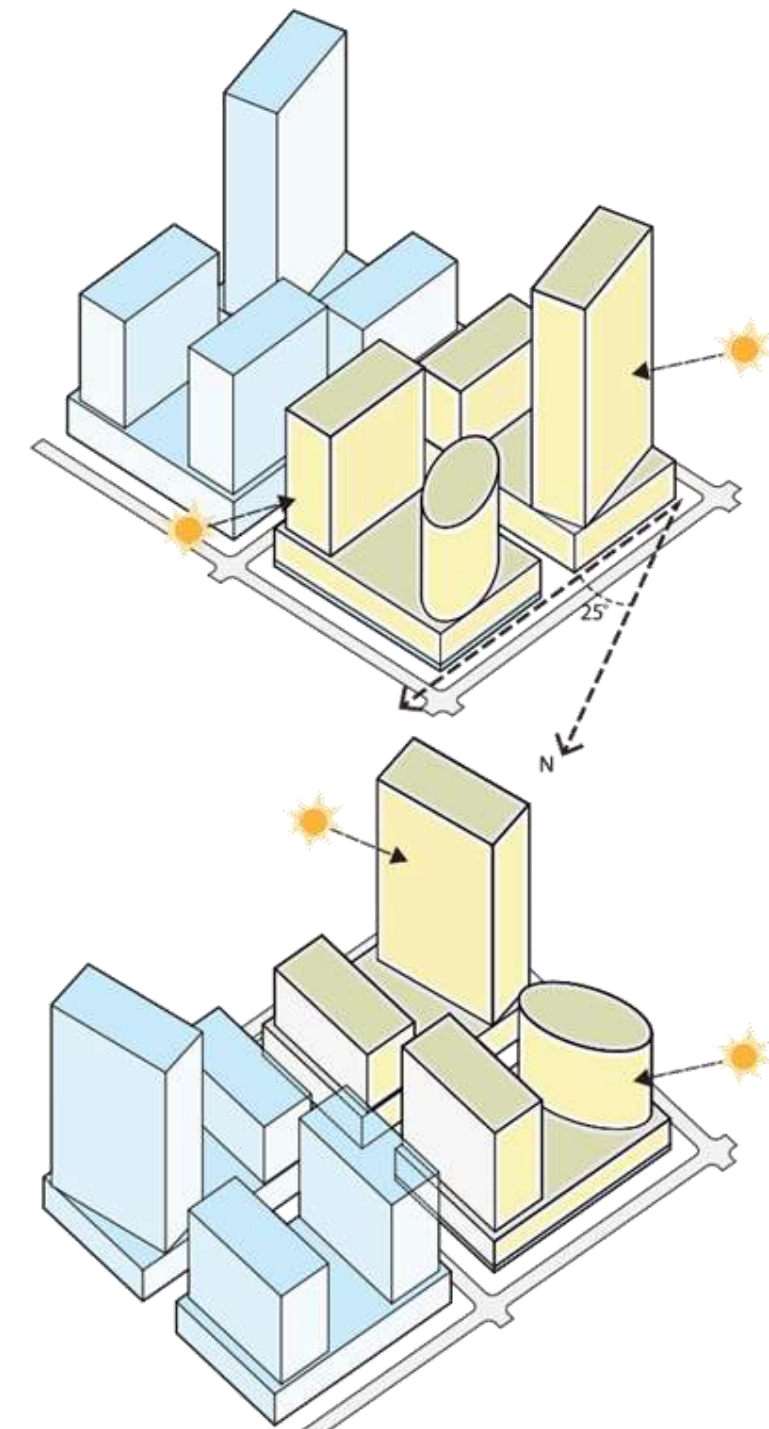


Figure 73: Diagram showing how a block can achieve solar based on the 25 degree orientation of the site.

Technical Design Considerations

6.10 Staging and delivery

The staged delivery of Moore Point considers the Leamac and Coronation holdings (32ha), and doesn't assume the timing of those other sites across the precinct. The approach to staging considers the availability of land over time, the capacity of those stages to 2036, assumed take-up rates for residential and commercial floorspace, and the associated delivery of public open space and community infrastructure (i.e. primary school). The delivery of roads, utilities and other infrastructure required to support this scale of development also has a bearing on the timing and staging of development.

The adjacent plan indicatively illustrates the envisaged staging of the masterplan.

- The first stage is in the north east of the site closest to the Liverpool City Centre.
- The second stage is predominantly around Haigh Park, Lake Moore and two blocks in the urban core.
- The third stage is the consolidation of the southern portion of the masterplan.
- Sites outside the ownership of Coronation and Leamac will be determined in future discussions.
- Staging of the anticipated school site (or potentially other public facility) will be determined in future discussions.

- site
- stage 1 delivery
- stage 2 delivery
- stage 3 delivery
- state government TBC



Figure 74: indicative staging and delivery diagram

1:6000 @A3

Technical Design Considerations

6.11 Case study: Carter Street stage 1



Project Location
The site is located along Carter Street, Lidcombe, and is positioned just outside of Sydney Olympic Park, in close proximity to ANZ Stadium, Qudos Bank Arena and the Sydney Showgrounds.

Grid orientation
Podium: North east - South east
Tower: North-south

Site Area
8,011sq.m

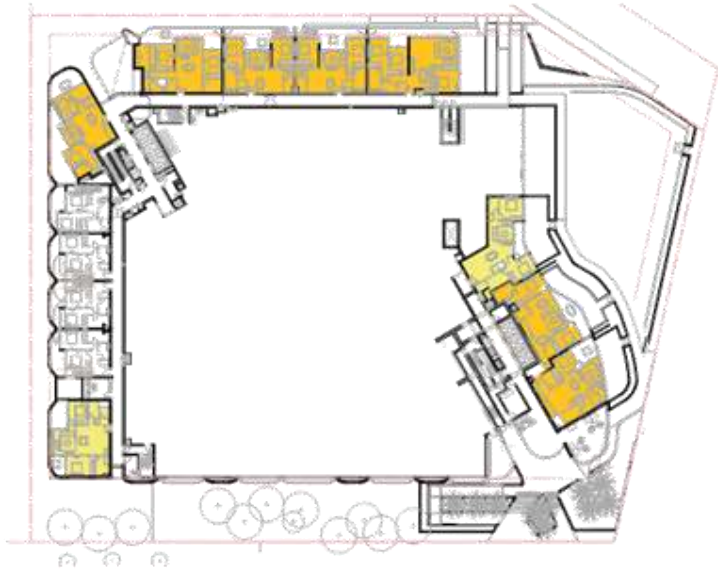
Height
21 storeys

Building typology
Podium and tower with parking in the podium

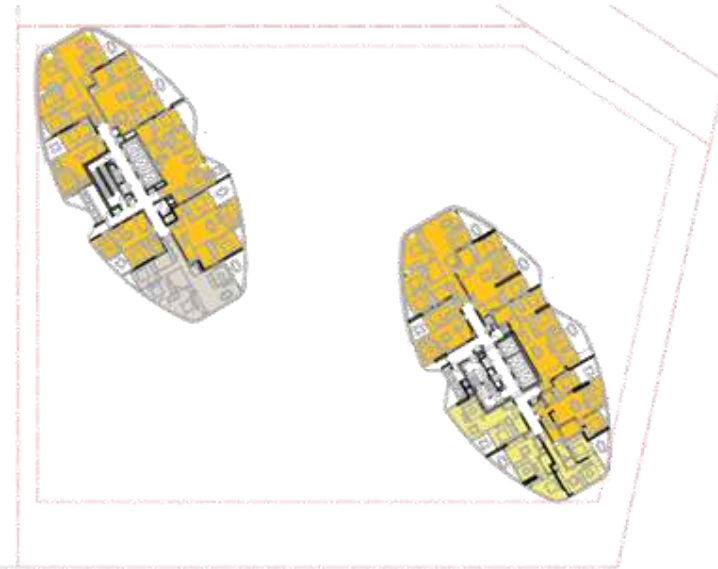
SJB



Approach to solar
The layout of the Carter Street precinct in Lidcombe is oriented 30-degrees off north, which limits solar access to two facades during mid-winter. Despite this, the first stage delivered in the precinct (by SJB) achieved 70% compliance by rotating the towers to a northern axis, whilst maintaining the podium on the street alignment. The podium frontages screened podium parking, with the southern elevation being naturally ventilated parking designed to appear like apartment balconies (see above). The residential towers disconnect from the streetwall and are orientated on a north-south axis to ensure both the east and west facades receive a minimum of two hours solar access on the winter solstice.



Ground



Typical Level 14-15



Technical Design Considerations

6.12 Case study: Carter Street stage 2



Project Location
The site is located along Carter Street, Lidcombe, and is positioned just outside of Sydney Olympic Park, in close proximity to ANZ Stadium, Qudos Bank Arena and the Sydney Showgrounds.

Grid orientation
North east - South east

Site Area
11,816sq.m

Height
12 - 13 storeys

Building typology
Podium and tower with parking in the podium

Approach to solar
The examples above achieves the 70% solar access locating residential on the northern elevations and minimises the residential to the south. The residential towers above podium align to the orientaiton of the streets and blocks and place the core on the southern facade maximising the number of apartments on the northern side of the block.



Technical Design Considerations

6.13 Case study: Pagewood BATA stage 2



Project Location
The site is located on the former British American Tobacco Australia (BATA) manufacturing facility. Prior to this it was used as the General Motors Holden Factory. It is located within 4.5 kilometres of Mascot Station and 2 kilometres to the future Kingsford Light Rail Station, with existing and future bus services providing direct access to and from the site.

Grid orientation
North-South

Site Area
8.95ha (~7,000sq.m per block)

Height
2 - 20 storeys

Building typology
Podium and tower with parking in the podium



Approach to solar
The examples above achieves the 70% solar access locating residential on the north, east, and western elevations. The residential towers above podium align to the orientation of the streets and blocks, and place the core on the southern facade maximising the number of apartments on the northern side of the block.



Podium



Tower



Recommendations & Appraisal

Conclusions and recommendations of the urban design report

7

Recommendations & Appraisal

7.1 Appraisal

In concluding the Urban Design Report for Moore Point, reference has been made to the 9 principles from SEPP65, which will form the basis for the final appraisal of the masterplan and its constituent parts.

The overarching vision is :

Moore Point will be a riverfront place for people which is well served by public transport, connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront it will be a focal point for the growing Western Sydney metropolis and place for everyone.

The masterplan will create a riverfront place that supports the emergence of Liverpool as a significant metropolitan centre in Sydney. It articulates this vision for a place that references its unique cultural, natural and built heritage, and ensures this once-in-a-generation is properly secured and celebrated.

In summary this Urban Design Report has been undertaken based on the following spatial and strategic reasons:

- The site is adjacent to Liverpool City Centre and Liverpool Train Station
- The site is the nearest subregional centre to the Aerotropolis and the focus of significant state and national investment in transport and other infrastructure
- The site is surrounded by Georges River, Haigh Park and Lake Moore which are unique natural assets
- The site can supply additional dwellings addressing the pressure for housing in the area
- The proposal will contribute significant public benefit such as a significant riverfront park and plazas, new public facilities, adaptively reused heritage sheds, recreational paths and space for primary school and bus interchange
- The establishment of site-specific precinct plans based on a holistic approach can ensure cohesive design excellence for the place
- The site offers the opportunity to reconnect Liverpool to its to the river by re-establishing Moore Point as a riverfront for people

1) Context and neighbourhood character

Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions. Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood. Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.

The Moore Point Masterplan is both contextual in its approach but equally of a considerable scale and in a geographically contained position on a peninsula which allows it to adopt other important contextual cues to establish its own palette of character areas. It is contextually responsive in the following ways:

- Three pedestrian bridges connect Moore Point to the Hospital/Equine precinct in the north, Bigge Park and the Liverpool city centre north and Train station/bus interchange in the city centre south.
- Major connections through the site join the Georges River to Lake Moore, Riverfront Centre to Lakefront Centre and Bigge Park to Moore Park.
- The layout of the existing factory street grid has provided the key structuring element for the masterplan while a riverfront brick factory and heritage listed administration building are the focus of civic activity in the precinct.
- Seven character areas have been established each of which take their design and character cues from surrounding natural features and adjacent built form.

2) Built form and scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings. Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

The Moore Point Masterplan establishes a contextual desired future character based on policy and site analysis in chapter 3. The medium and high density mixed use built form outlined in both the structure plans (chapter 4) and precinct plans (chapter 5) is appropriate as demonstrated by:

- Transitions in height, density and form to natural features such as the Georges River, Haigh Park and Lake Moore.
- Lower building heights down the central northern oriented primary street and along the northern edge of the green spine to maximise solar access into the heart of the urban core.
- A range of tower orientations and placement on podia reinforce the corners of the urban grid and are rotated and optimised to receive solar access to residential facades.
- Varying street wall heights to reflect different environmental conditions, land uses and character. In-lot setbacks and above-podium setbacks clearly define key north-south streets and the east-west green spine as well as frame views out of the precinct to the river, park and lake.

Recommendations & Appraisal

7.2 Appraisal

3) Density

Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context. Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.

The Moore Point Masterplan envisions a medium to high density precinct defining the peninsula adjacent to Liverpool. This density is appropriate for the following reasons:

- The urban density of Moore Point is approximately 360 dwellings per hectare which is significantly less than comparable precincts such as Central Park (670 dw/ph) and Ivanhoe Estate (430 dw/ph) as outlined in chapter 2 but still corresponds with the type of high-density precinct with high-amenity and close proximity to a CBD.
- Moore Point is immediately adjacent to Liverpool City Centre, Liverpool Train stations and all the employment, recreational, transport and services in this metropolitan centre.
- The masterplan includes community infrastructure including but not limited to a school, bus interchange, multipurpose community centre, cultural hub, new sporting courts and recreational paths.
- 6.8 hectares of new open space as well as Haigh Park, Lake Moore foreshore and broader system of riparian parks provide appropriate access to open space and recreational facilities as expected of a high density neighbourhood.

4) Sustainability

Good design combines positive environmental, social and economic outcomes. Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.

The Moore Point Masterplan outlines broad places where many sustainable processes and infrastructure may be integrated. These include:

- Water sensitive urban design systems such as street swales and raingardens which capture, store, filter and transport water to larger ponds integrated in the public domain
- Good access to public transport such as bus interchange on-site and Liverpool Train Station
- Focus on walking and cycling using waterfront recreational paths as well as cycling paths on streets and around precinct edge.
- Significant proportion of site open space (21%) for deep soil which in combination with street trees can provide dense canopy cover.
- A Sustainability Strategy has been provided as part of the planning proposal.

5) Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.

The Moore Point site has a total open space network which is 21% of the site area. The landscape approach was developed in tandem with Realm Landscape Architects who explored a range of water sensitive urban design elements. Other key landscape components include:

- Several spaces with different characters outlined in the structure plans (chapter 4).
- A contiguous connection of waterfront spaces wraps the precinct edge making an accessible recreational asset for residents as well as local biodiversity.
- Careful design of riparian interfaces can accommodate natural processes of flooding alongside boardwalks, sports facilities and leisure spaces.
- Water sensitive urban design elements such as rain gardens, swales, temporary ponds and dikes to control and harness rain and riverwater movement.
- New open spaces in addition to landscape setbacks allow for significant canopy to be established to reduce urban heat island effects associated with climate change and intensification of our urban environment.
- Landscaped areas within the streetscape (much of which is deep soil), and private spaces on podium and roof levels across each development site also create spaces for planting and mature trees to contribute to canopy cover and the amenity of both private and public spaces
- Improvement and embellishment of the landscape character and community facilities of existing surrounding open spaces including Haigh Park and Lake Moore Foreshore.

6) Amenity

Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being. Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.

Moore Point has a range of approaches for good amenity for both public spaces and built form including:

- Groundplane streetwall-to-street ratio on primary north-south streets of 1:1.
- Street grid oriented to provide good solar access to north-south streets between 10 and midday.
- Arranging program and positioning residential landuses in places which receive good solar access.
- Block dimensions have been designed to accommodate efficient sleeved podia with with naturally ventilated carparks and efficient masses for flexible floorplate design to achieve ADG requirements such as solar access and cross ventilation.
- Unifying desired character with solar access throughout the day. Haigh Park receives excellent solar access in the morning through to the early afternoon while the Georges Riverfront Centre receives good solar access in the afternoon.

Recommendations & Appraisal

7.3 Appraisal

7) Safety

Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety. A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.

Positive residential, retail and commercial frontages have been located to face public spaces and streets where possible to ensure good public surveillance of the public domain. Site specific strategies such as evening lighting, timed entry, clear viewlines and vehicular exposure should be explored in detailed design phase for each lot and public space.

8) Housing diversity and social interaction

Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets. Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix. Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.

Social interaction refers to the opportunities provided for people to meet, interact, spend time formally or informally - all of these can be accommodated across the site, in addition to the provision of a school, public open space, community infra, and various retail spaces.

The Moore Point masterplan outlines the approach to the Apartment Design Guidelines in chapter 6. It is envisaged that each development would contain appropriate:

- communal spaces for residents with good amenity such as podia rooftops
- deep soil for mature landscape
- naturally ventilated circulation spaces with appropriate solar access where possible
- other requirements specified in the ADG

Envisioned residential typologies which could be integrated include:

- single aspect sleeved podia apartments
- integrated podia terraces (maisonettes)
- low and midrise single and double loaded residential flat buildings
- double and single loaded residential towers

9) Aesthetics

Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures. The visual appearance of a well designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.

The Moore Point masterplan lays the foundation for this principle in the precinct plans chapter (5) which defines seven areas with different characters. It is envisaged that future studies would integrate this place-oriented approach to establish compositional approaches, material textural and colour palettes which are in a guideline such as a DCP.

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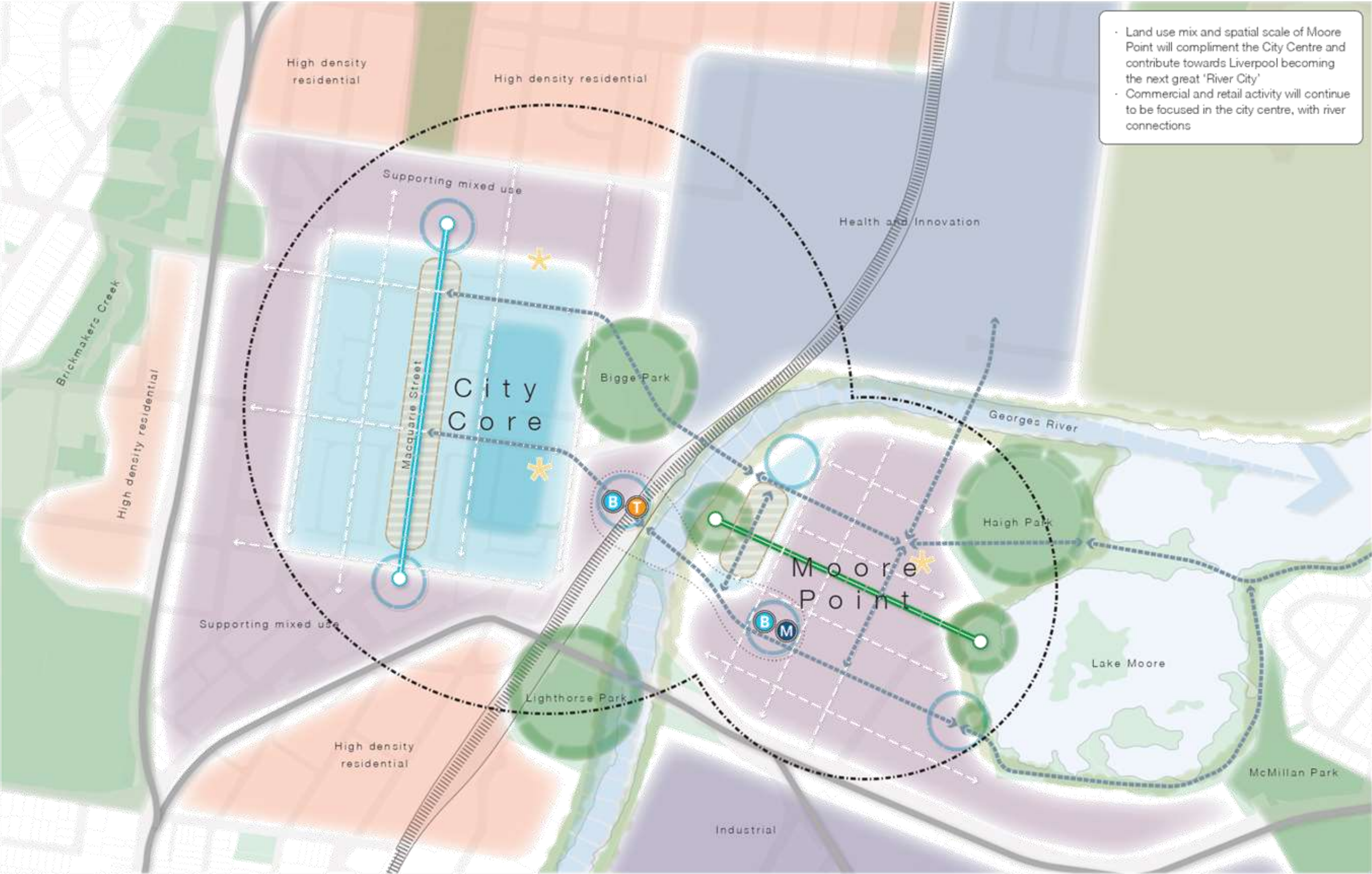
Moore Point Masterplan Urban Design Study

Prepared for
Coronation and Leamac

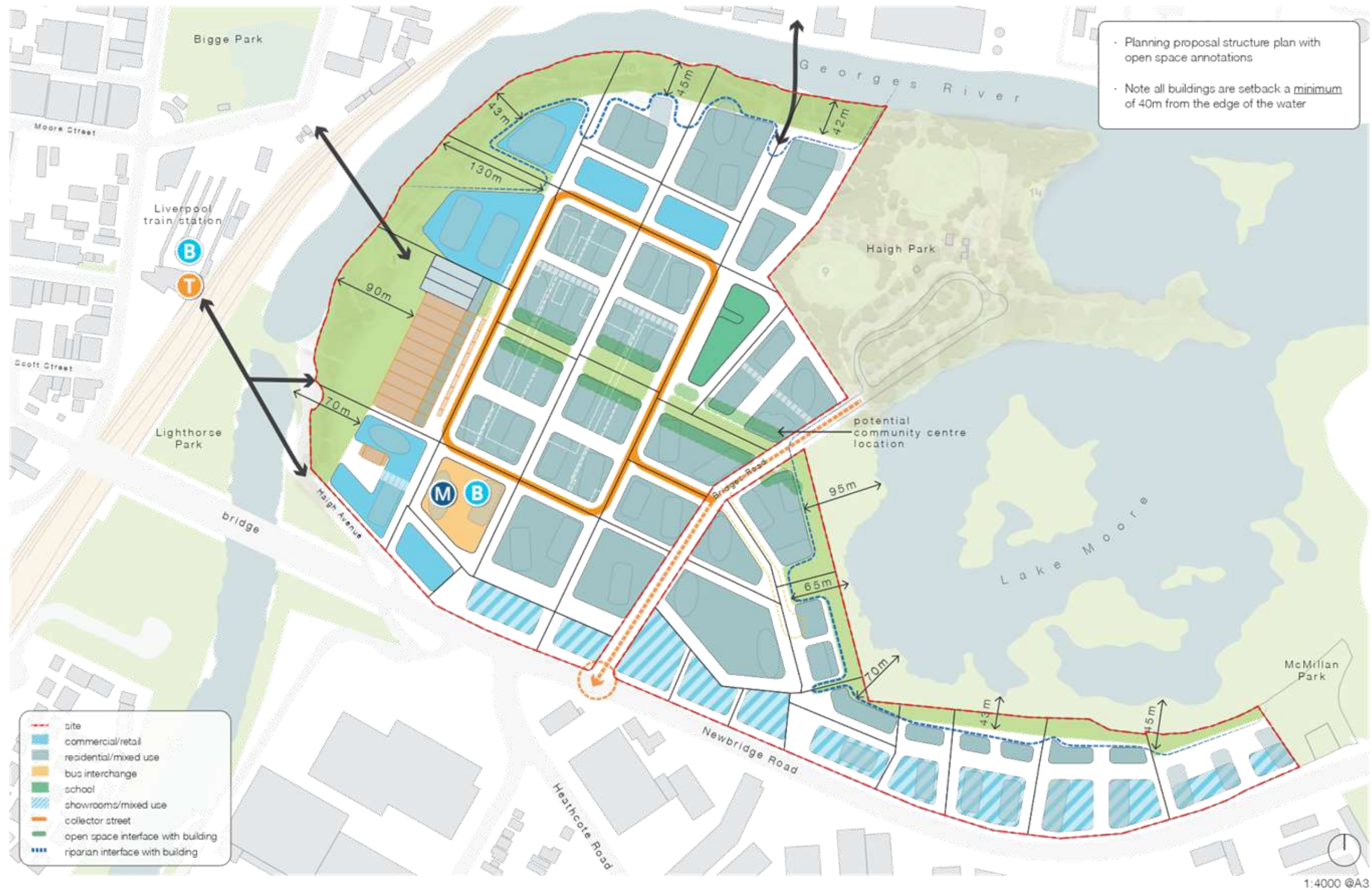
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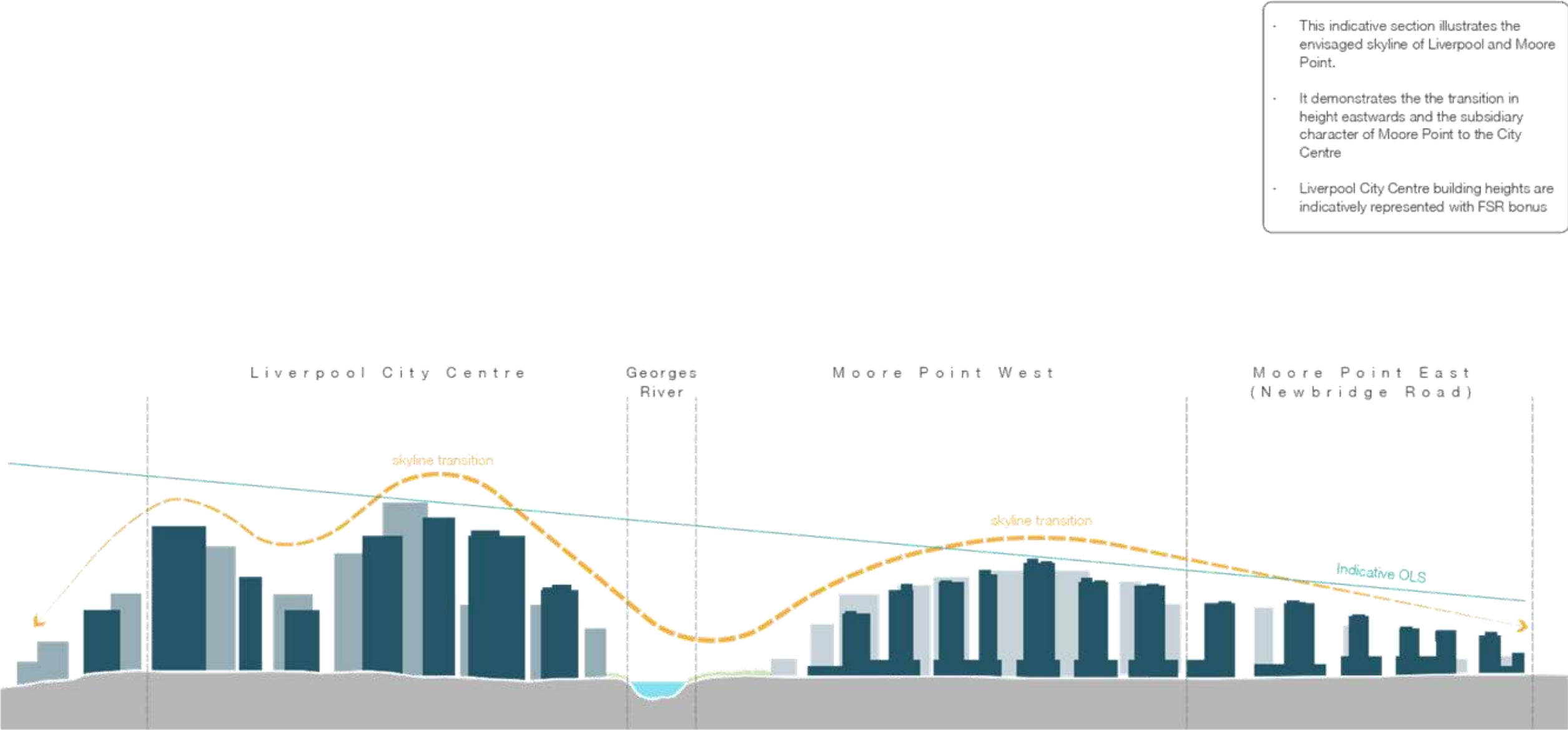
1.1 Liverpool City Centre and Moore Point



1.2 Structure plan



1.4 Indicative section

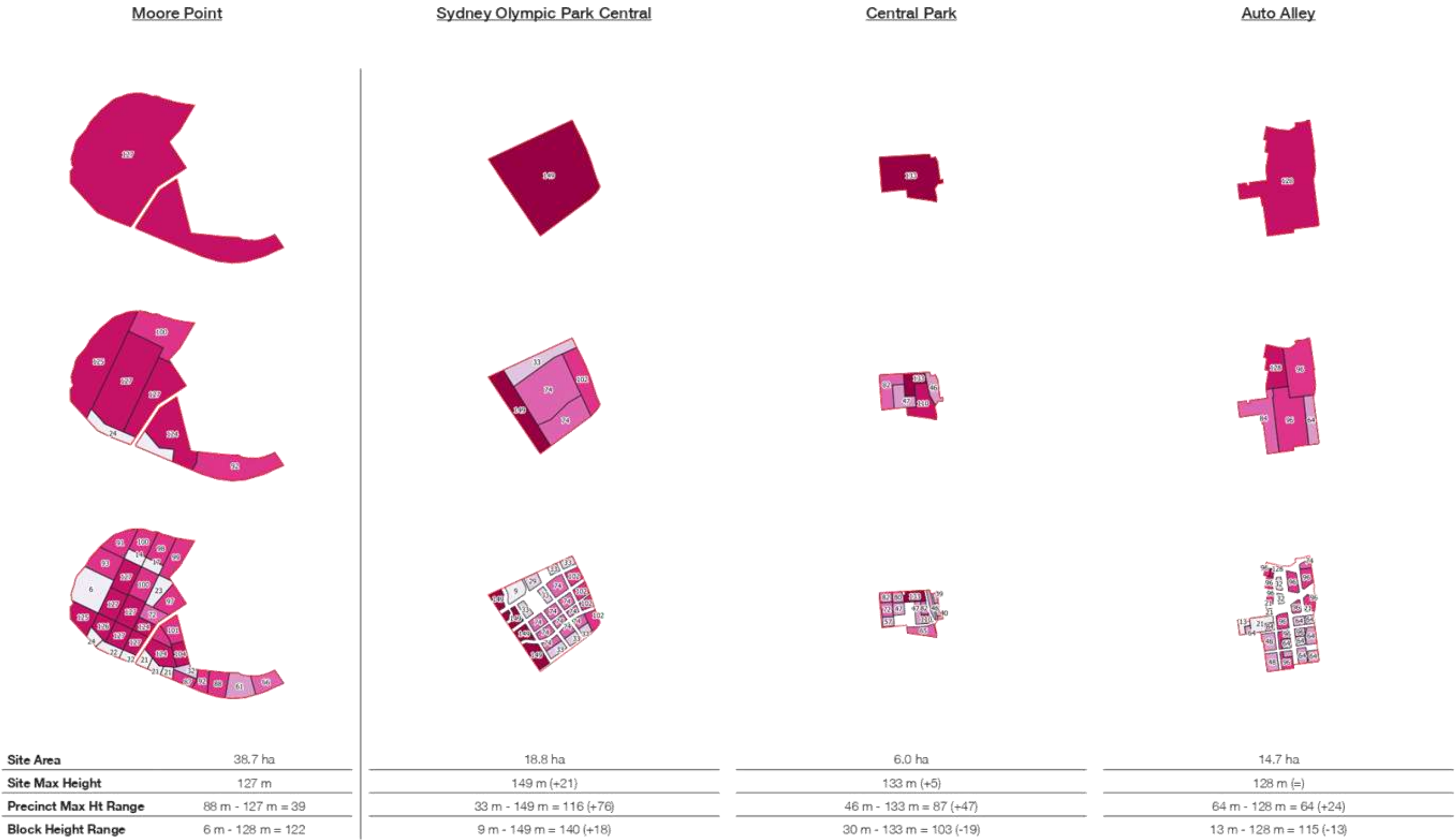


1.5 Density comparison

The diagrams below illustrate FSRs at three scales; precinct, character areas, and blocks for Moore Point and three other dense urban areas (>10Ha) across Sydney. The comparison includes FSR bonuses and also benchmarks population densities when considering both residential and employment land uses.



1.6 Building heights



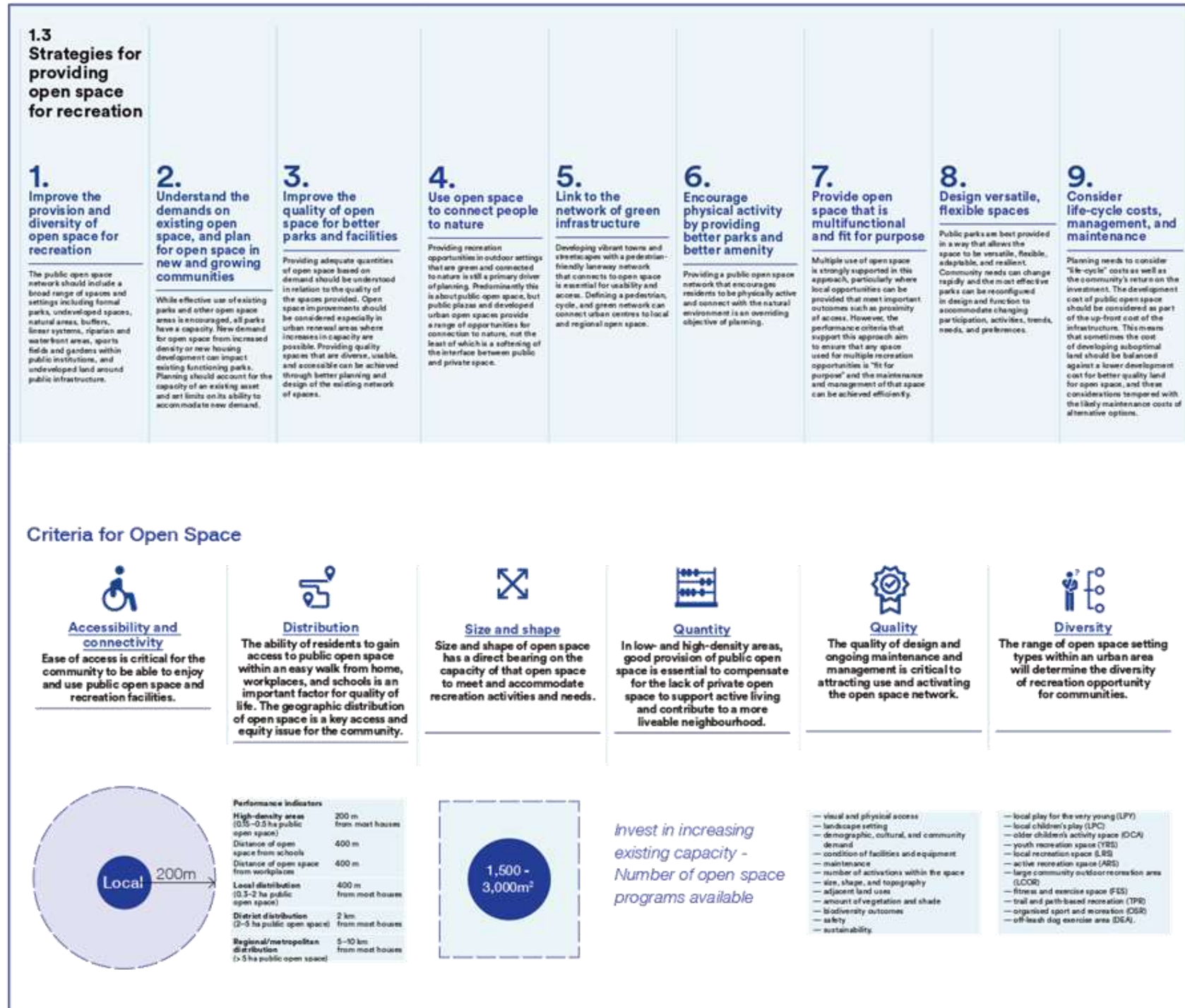
1.7 Open space provision & benchmarking




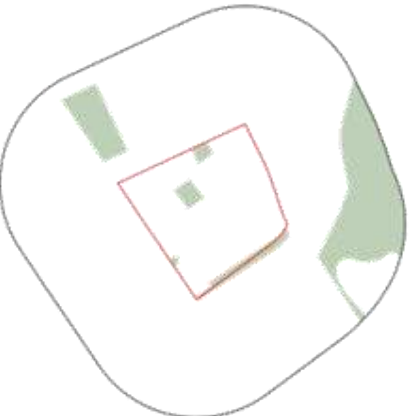

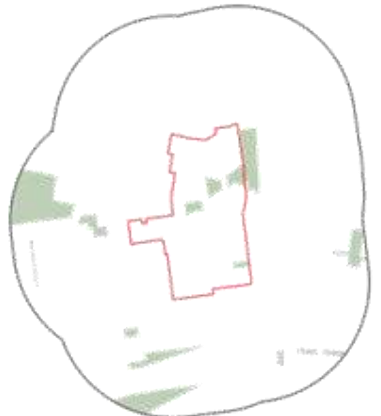
The Draft Greener Places Design Guide was released for public comment in June 2020. It addresses the provision of public open spaces that supports outdoor recreation, climate change and urban heat mitigation through tree canopy and ecological sustainability through bushland and waterways preservation and enhancement.

The draft guide indicates that State Government Policy is moving towards a performance based approach to address the provision of open space in opposition to specifying a rigid metric of land. The guide outlines evidence which shows built environments connected to public open space, recreational areas, green streets, and walking and cycling infrastructure have improved economic, social and physical outcomes for people.

The draft guide identifies 9 key strategies for providing open space for recreation that are supported by 6 core criteria that can help guide the performance outcomes which drive the planning outcomes for open space. The diagrams on the following pages demonstrate how the core criteria at Moore Point can be satisfied with the proposed open space network that is proposed as part of the Planning Proposal.



1.8 Open space benchmarking

Moore Point	Sydney Olympic Park Central	Central Park	Auto Alley
			
Site Area 38.7 ha	18.8 ha	6.0 ha	14.7 ha
Open Space 414,000 sqm	152,800 sqm	77,100 sqm	79,100 sqm
Residential Persons 30,760	7,434	5,071	4,719
Commercial Persons 23,617	18,401	4,269	34,734
Combined Population 54,377 (1,409 ppl/Ha)	25,835 (1,374 ppl/Ha)	9,340 (1,361 ppl/Ha)	39,453 (2,683 ppl/Ha)
Open Space per Person 7.6 sqm	5.9 sqm	8.3 sqm	2.0 sqm
Open Space per Person (50% exterior) 4.5 sqm	3.4 sqm	4.6 sqm	1.1 sqm

The Draft Greener Places Design Guideline suggests that every home should be within 200m from local space in high density areas. The analysis above benchmarks the available open space within a 200m walking catchment from each precinct boundary to understand the quantum of open space available to the future population that the existing planning controls accommodate. It is understood that open space outside of the precinct is shared with other communities so two calculations have been provided, the first is the open space p/ person including all open space outside of the precinct, and open space people/person if only 50% of the area all parks outside of the precinct is considered. In both instances the quantum of open space at more point is comparable to other high density precincts across Sydney. It should also be noted that an additional 47,228 sqm will be delivered as communal open space.

note: the guide suggesting moving away from this measure of open space but the exercise has been undertaken to understand how the proposed planning controls relate to other recently planned precincts across Sydney

1.9 Public domain and landscape structure plan

Moore Point is defined by the Georges River, Haigh Park and Lake Moore. Thus the landscape and public domain network of the site aims to connect these unique assets while reinforcing the urban grid of the site. Key open spaces include:

①	Georges riverfront park A	19,850m ²
②	Georges riverfront park B	33,651m ²
③	Linear park A	1,671m ²
④	Linear park B	2,672m ²
⑤	Linear park C	2,720m ²
⑥	Lakefront park A	8,151m ²
⑦	Lakefront park B	8,419m ²

It is envisaged that Moore Point uses and embellishes Haigh Park (approximately 8.6ha) for active open space for the following reasons:

- The vision for Moore Point as outlined in Liverpool LSPS is for an extension to the CBD with no mention of additional need for new large active open spaces
- Open Space and recreation needs study summary by CRED can be flexibly accommodated within proposed open space
- Haigh Park is currently underutilised and isolated from Liverpool City Centre with no easy pedestrian access
- Proposed open space network greatly improves connectivity to Haigh Park along Georges River
- As stated in the GANSW draft greener places design guide Haigh Park is a 'district open space' and Moore Point is well within the nominated 2km catchment

- site
- active Georges riverfront park
- passive Georges riverfront park
- linear park
- lakefront park
- riparian interface with building
- open space interface with building
- major east-west swale
- north-south swale
- key recreational paths (walking and cycling)
- surrounding open space (RE1)
- sun access protection area
- proposed pedestrian bridge
- potential vehicular bridge



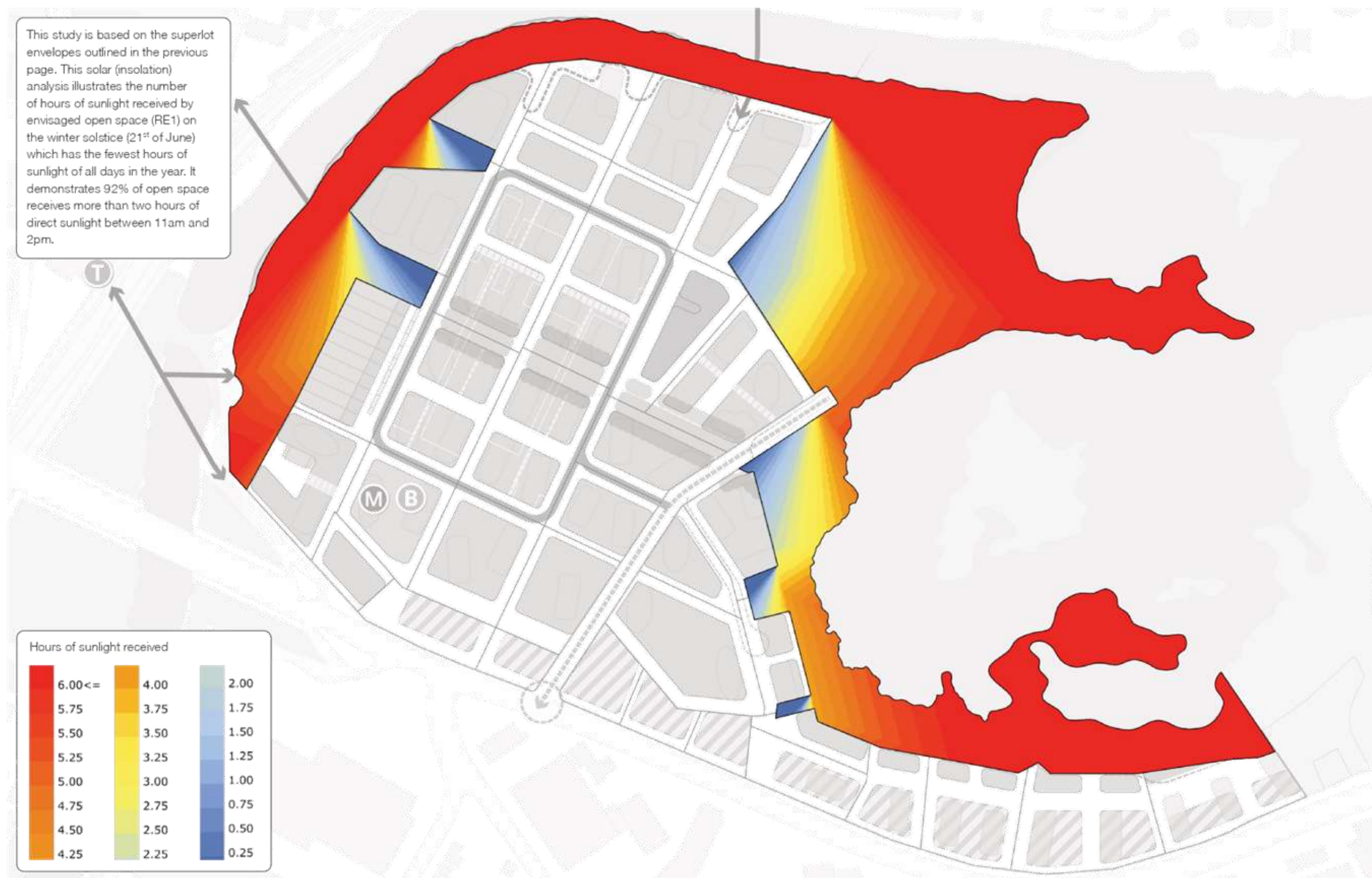
The points below outline how the structure plan conforms to the nine open space strategies specified in the Draft Greener Places Design Guide (p.12).

- The overall quantity of open space is significantly increased (7.6ha) with a diversity of spaces such as riverfront walks, hardscaped plazas and embellished Haigh Park.
- Existing surrounding open spaces (currently underutilised) will be embellished and green connections to them will be improved (i.e. riverfront walk to Haigh park).
- A variety of program is envisaged for the open spaces such as outdoor gyms, shared paths, playgrounds and public plazas.
- The east-west linear park and riverfront/lakefront parks connect broader adjacent open spaces.
- The proposed network of open space links into the broader Georges River recreational greenspace system.
- Walking/cycling paths, outdoor gyms and recreational facilities on the water will encourage physical activity.
- Open spaces will be flexibly designed and have been nominally programmed according to community needs analysis by CRED social planners.
- Designated open spaces are large enough to accommodate changes in societal needs and be resilient to the impacts of climate change.
- Passive facilities and systems with minimal maintenance should drive the program and design of every open space.

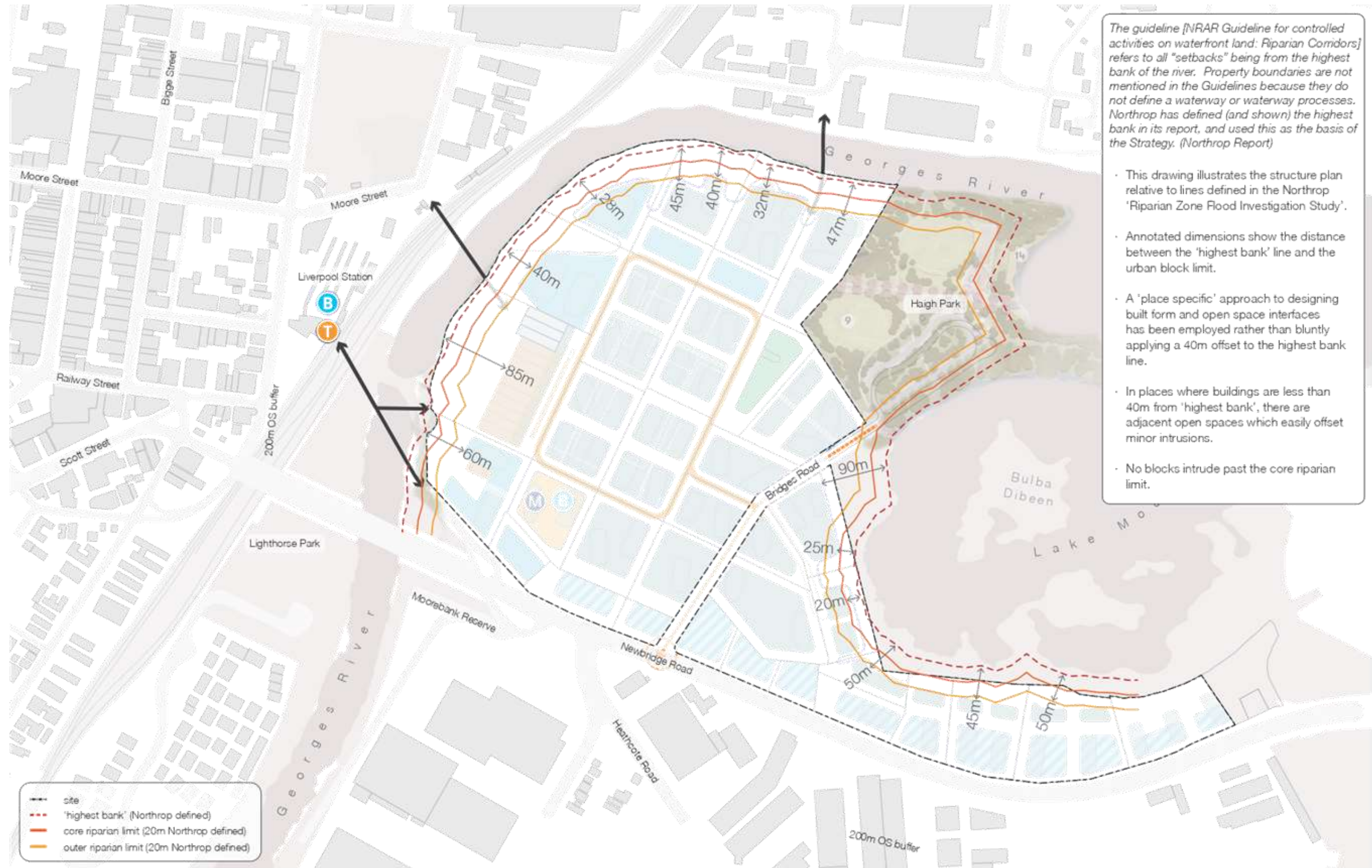
1.10 Open space design criteria and performance indicators - GPDG



1.11 Open space solar analysis



1.12 Riparian zone study



1.13 Movement and access structure plan

The proposed movement network of Moore Point is defined by an internal loop road which provides access from Newbridge Road. Several smaller primary streets also offer access to the site including the existing underpass access to the east of the site, existing entrance on Bridges Road and other access points along the lakefront portion of the site.

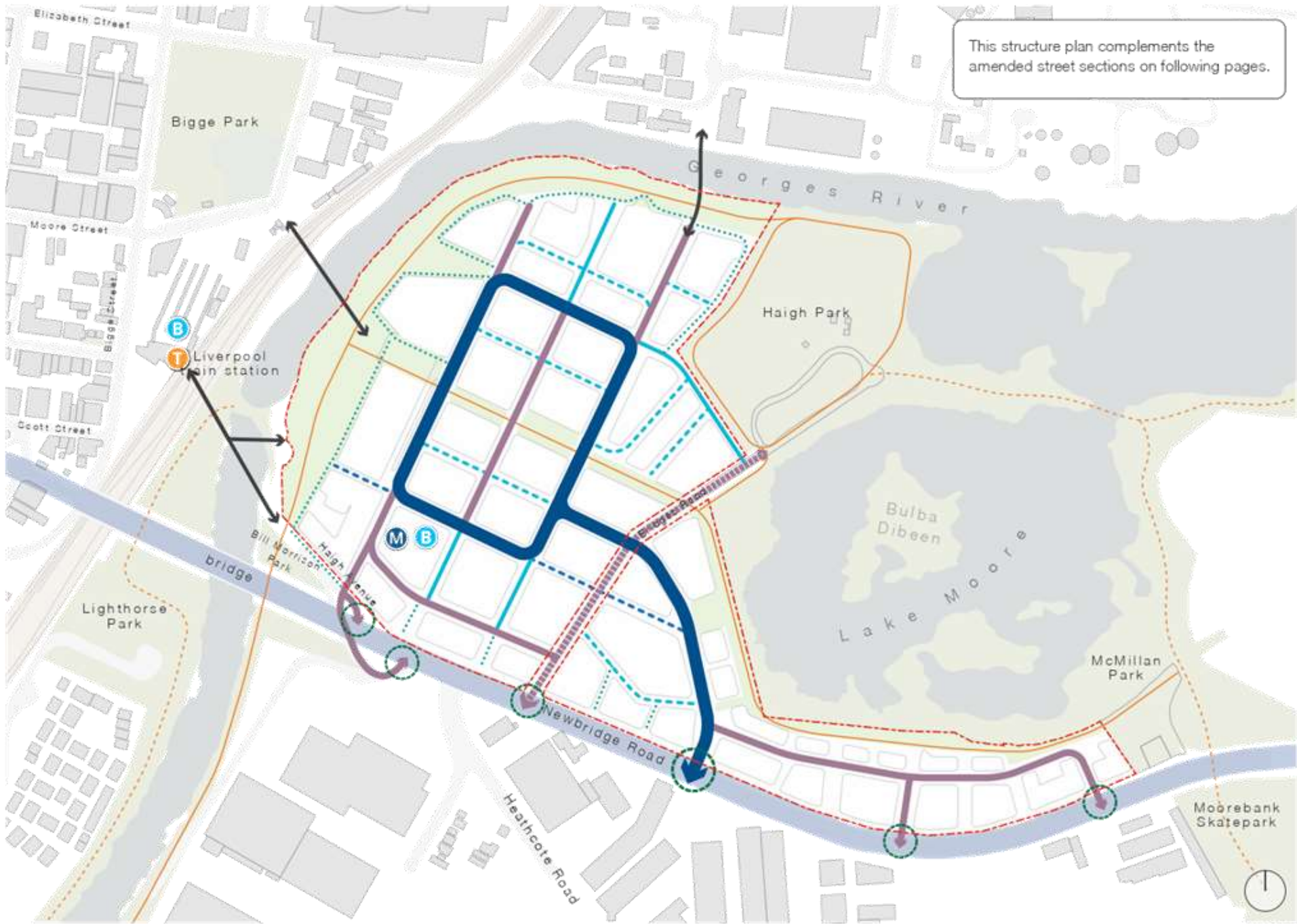
The central urban grid has north-south primary streets with smaller east-west oriented tertiary streets providing pedestrian through-site links, servicing and parking entrance access. Smaller shared serviceways are located along sensitive edges between open spaces to provide servicing access at slow speeds and can be opened at specific times of the day.

Two pedestrian bridges connect the western riverfront to Liverpool train Station and Bigge Park respectively. Another potential bridge connects over the Georges River subject to further study. Key recreational paths along the waterfront, park and lakefront link to the broader pathway network through Moorebank and Liverpool.

Every street has a 2m setback to accommodate a range of uses and activities, ensure adequate separation between buildings to maximise solar access, provide space for landscaping and privacy. The street hierarchy includes the following street types:

- Main road width is minimum 20m
- Primary street width is minimum 16m
- Secondary street width is minimum 16m
- Tertiary street width is minimum 12m (up to 16m)
- Shared serviceway width is variable

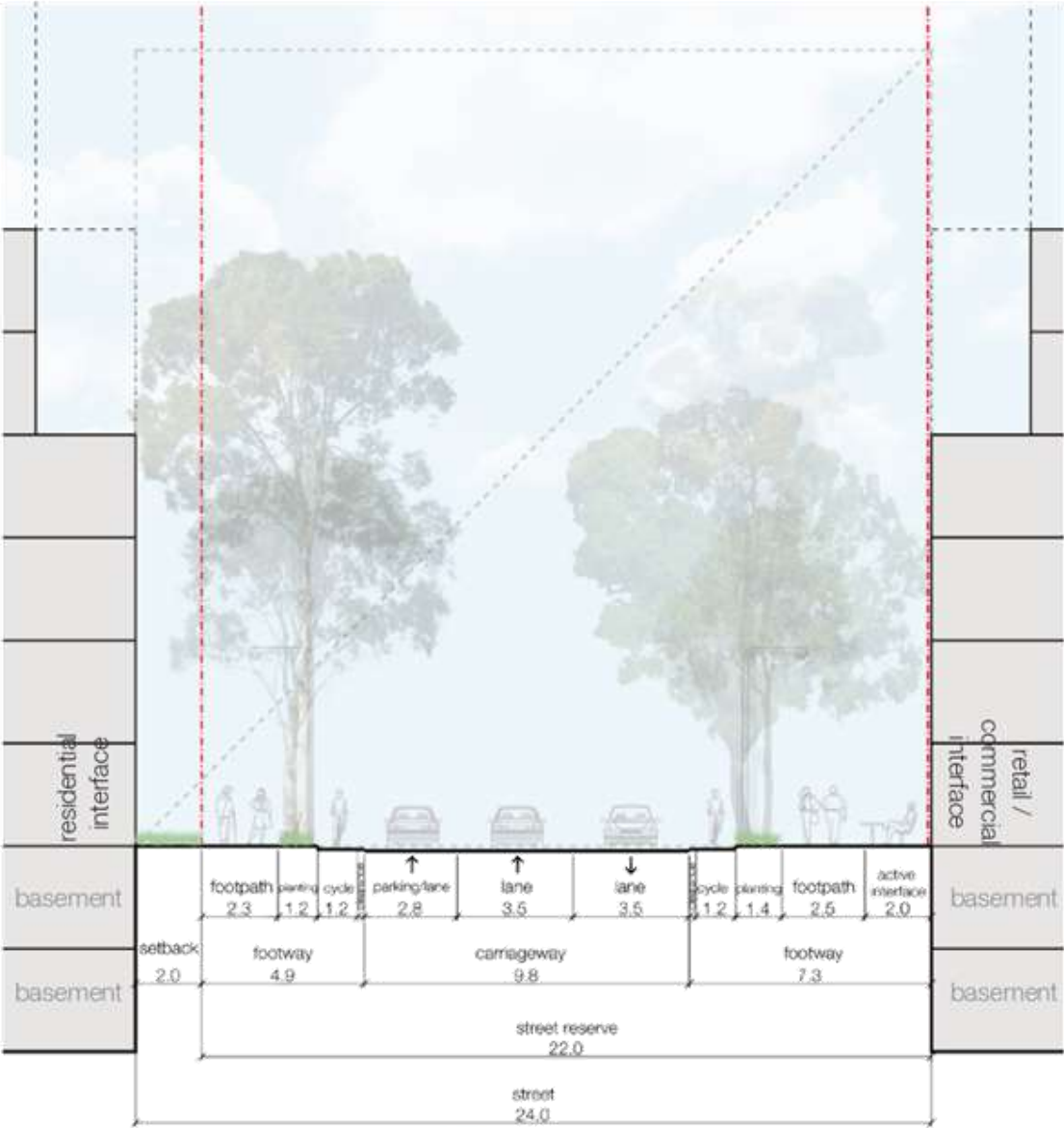
- site
- == main road
- == primary street
- == secondary street
- - - tertiary street (public)
- - - tertiary street (private)
- shared serviceway
- key recreational paths (walking and cycling)
- > site access
- traffic light junction
- bus terminus (layover and stops)
- train station
- potential future metro



1:6000 @A3

1.13.1 Street types 1

These sections have been amended to ensure a minimum of 4m for each footway. The left side of the section illustrates the typical residential interface while the right side of the section illustrates the typical retail/commercial interface



● Main road
0.6 : 1 : 0.6

The main collector road for the precinct provides access from Newbridge road and carries the most vehicular traffic. the streetwall height is proportionally smaller than the perceptual street width.

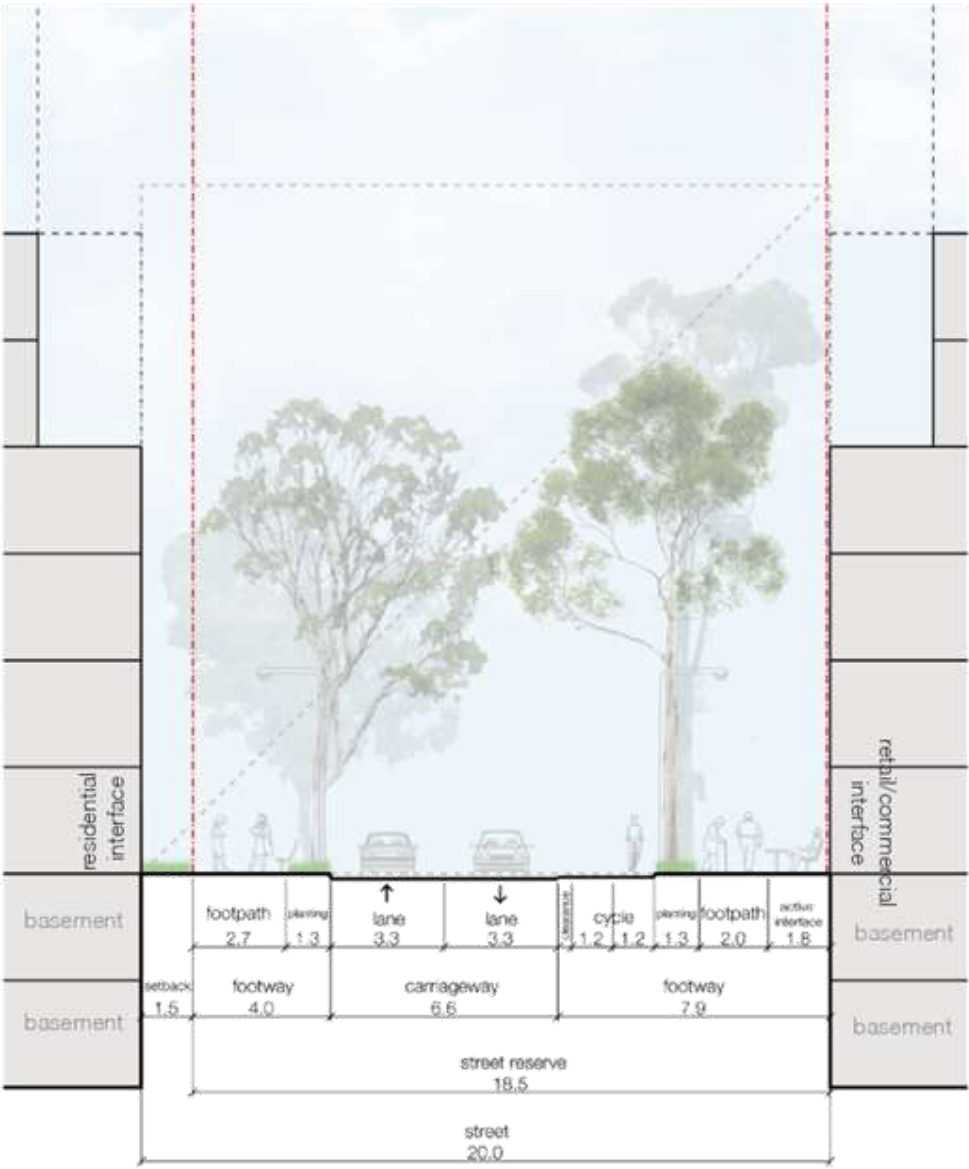


● Primary street (two way)
0.6 : 1 : 0.6

Primary two way streets are typical for the core of the precinct. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.

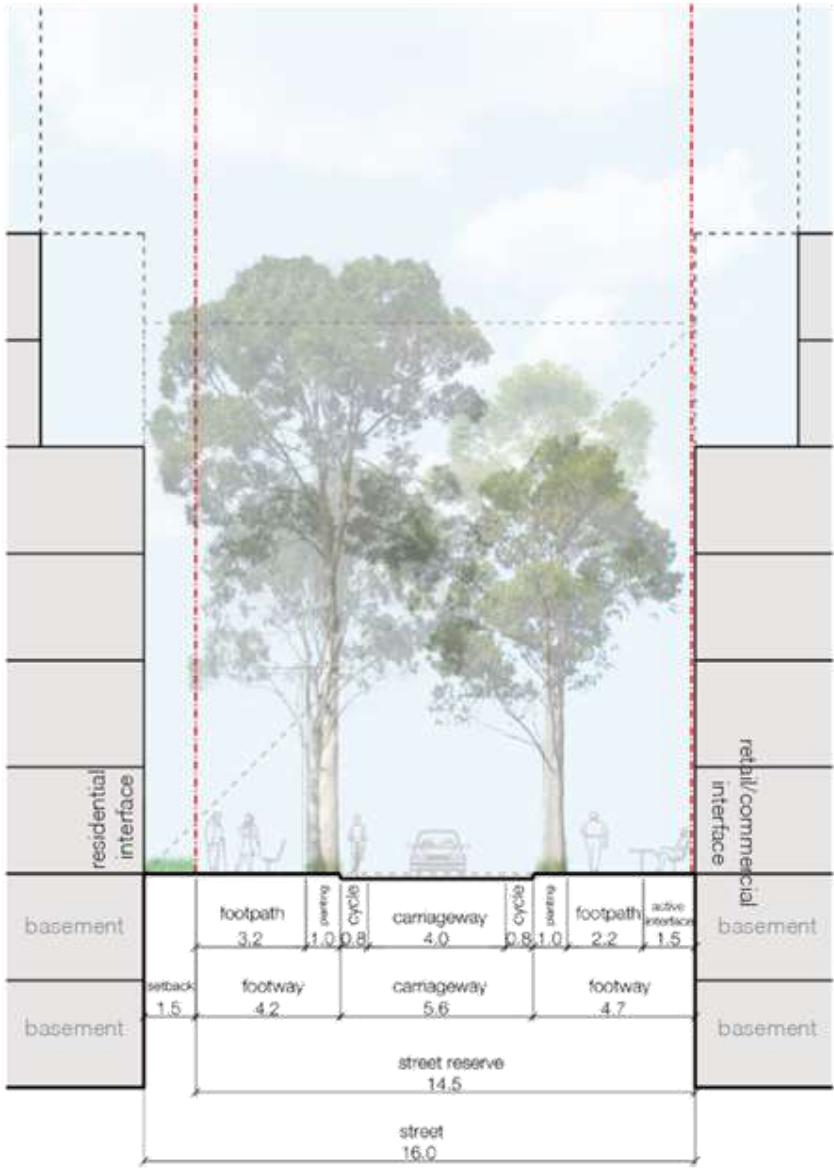
1.13.2 Street types 2

These sections have been amended to ensure a minimum of 4m for each footway. The left side of the section illustrates the typical residential interface while the right side of the section illustrates the typical retail/commercial interface



● Primary street (one way)
0.6 : 1 : 0.6

This is a one way version for some primary streets which are intended to be more pedestrian and cyclist oriented. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.

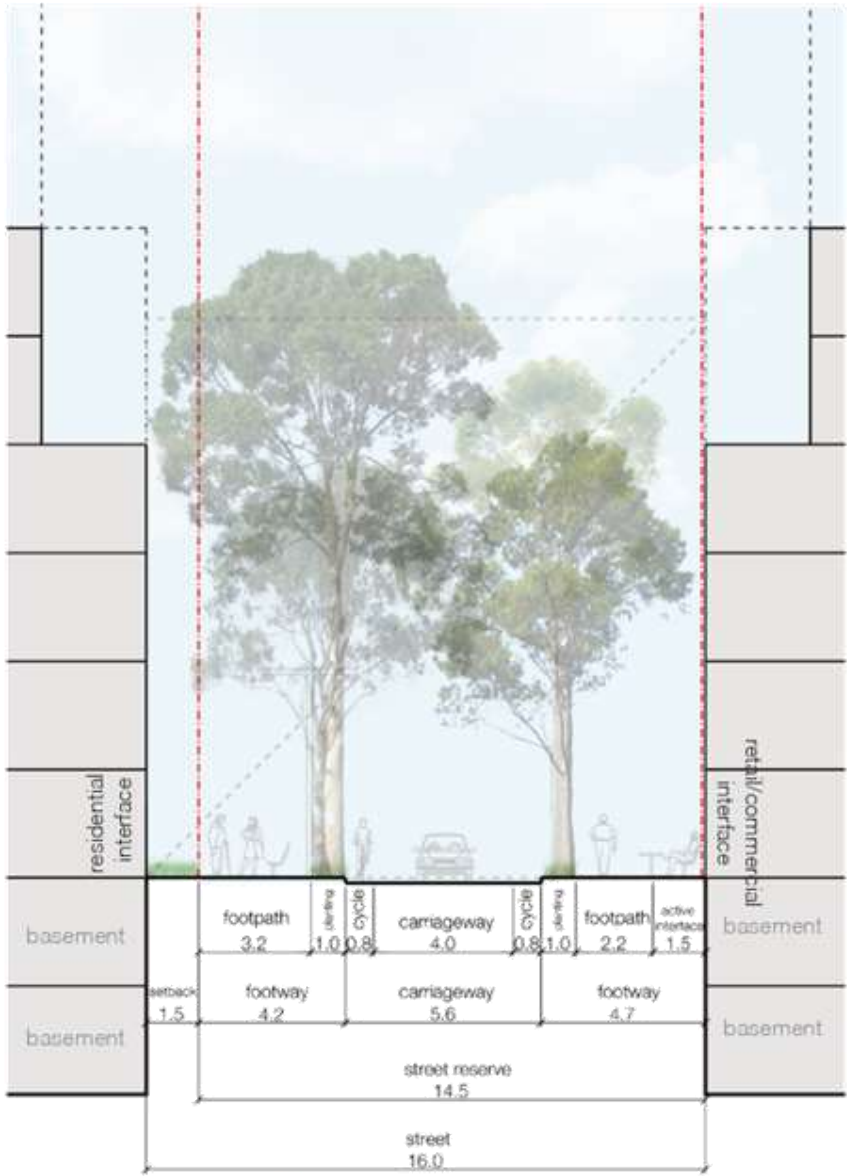


● Secondary street
0.6 : 1 : 0.6

Secondary streets are typical for the core of the precinct especially at streets which terminate at open space. The streetwall height is approximately equal to the perceptual street width which is common throughout Sydney.

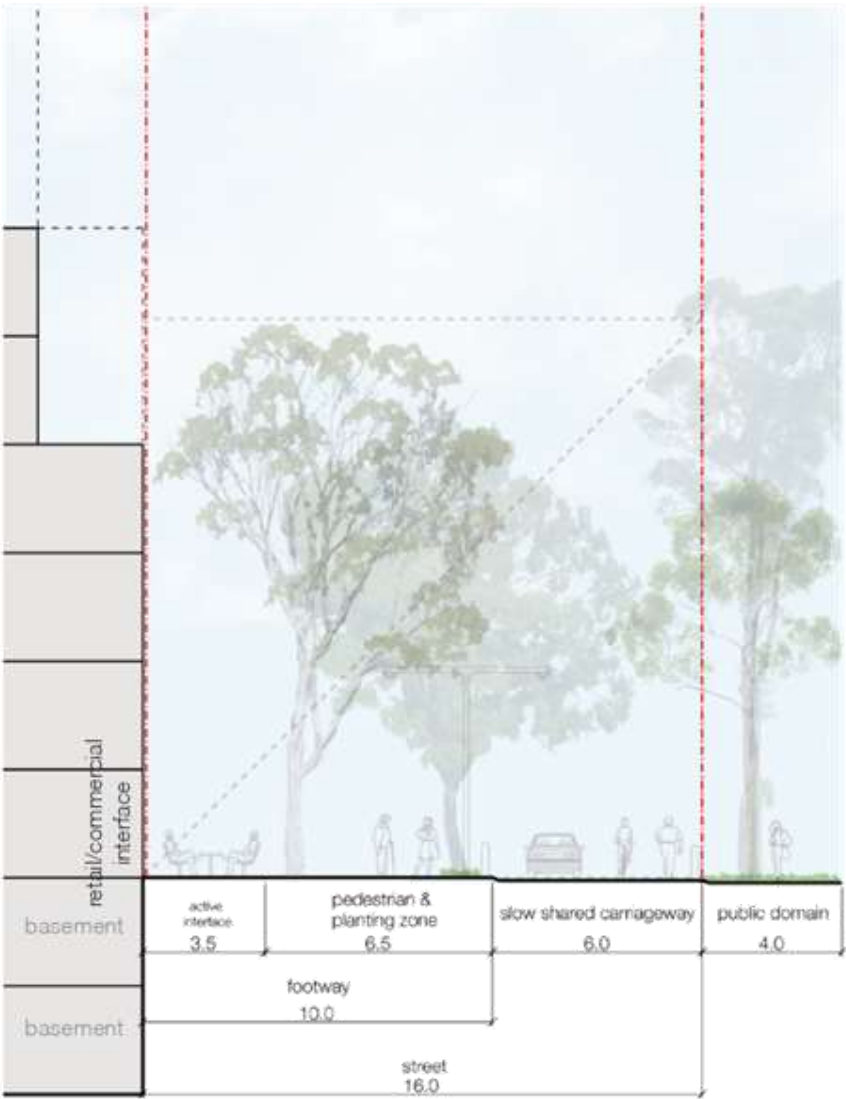
1.13.3 Street types 3

These sections have been amended to ensure a minimum of 4m for each footway. The left side of the section illustrates the typical residential interface while the right side of the section illustrates the typical retail/commercial interface



● Tertiary street (often private)
0.8 : 1 : 0.8

Tertiary streets range in width from 12m to 16m in the plan and are often private through-block links. They provide a range of functions such as serviceways, pedestrian laneways or combinations of both. Often the south side of the street is screened podium parking.

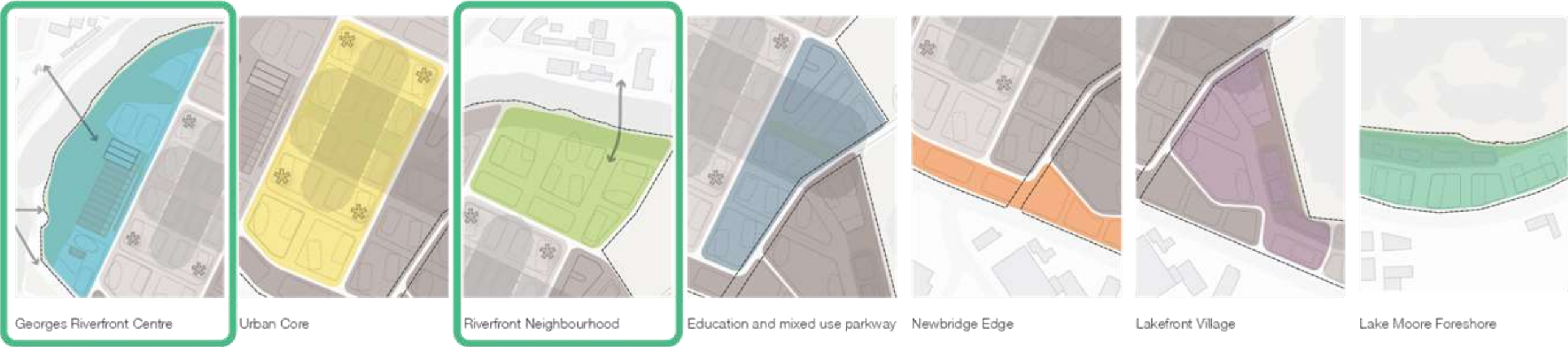


● Shared street serviceway

Shared street serviceways are along public space interfaces. They allow timed and managed access for vehicles but are predominantly pedestrian oriented throughout the day.

1.14 Character areas overview

Moore Point is structured around seven unique character areas. They build on existing environmental features and the relationships between The Georges River, Lake Moore, Haigh Park and Newbridge Road. Where heritage fabric is retained, opportunities to integrate built form and reinterpret the history of the site have been embedded. These character areas will be further refined in parallel with the precinct vision through a Placemaking Working Group who will collaboratively explore and assess place-led opportunities, ensuring the precinct vision is delivered based on world's best practice. The Georges Riverfront Centre and Riverfront Neighbourhood have been selected for analysis because these two character areas of the overall precinct are the most critical to delivering on Council's vision for Liverpool as a true river city. They are vital to deliver a connected green and blue grid with substantial open space and pathways as well as built form and land uses which complement the Liverpool CBD.



1.15 Georges Riverfront Centre precinct plan

The Georges Riverfront Centre will complement the Liverpool City Centre and be a key employment area for Moore Point. It will capitalise on new bridge connections and access to public transport. A new large riverfront park will host opportunities for recreation, events community gatherings and fitness. The industrial history of Moore Point will be showcased through the adaptive reuse of heritage fabric and warehouse buildings for markets, arts, culture and community events. New buildings will connect through to this existing built form, referencing their scale and seeking to activate shared edges.

- site
- bus interchange
- train station
- residential/mixed use
- retail/commercial
- landscape/open space
- open market
- transport interchange
- heritage items
- gateway
- cross-river connection
- green link
- trees
- flooding impact
- landscape buffer
- foreshore building line
- active frontage
- urban marker

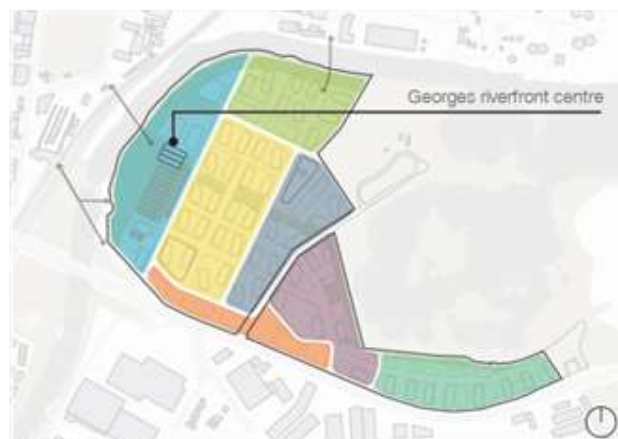


Figure 04: key plan



Figure 05: precinct plan

1.16 Built form

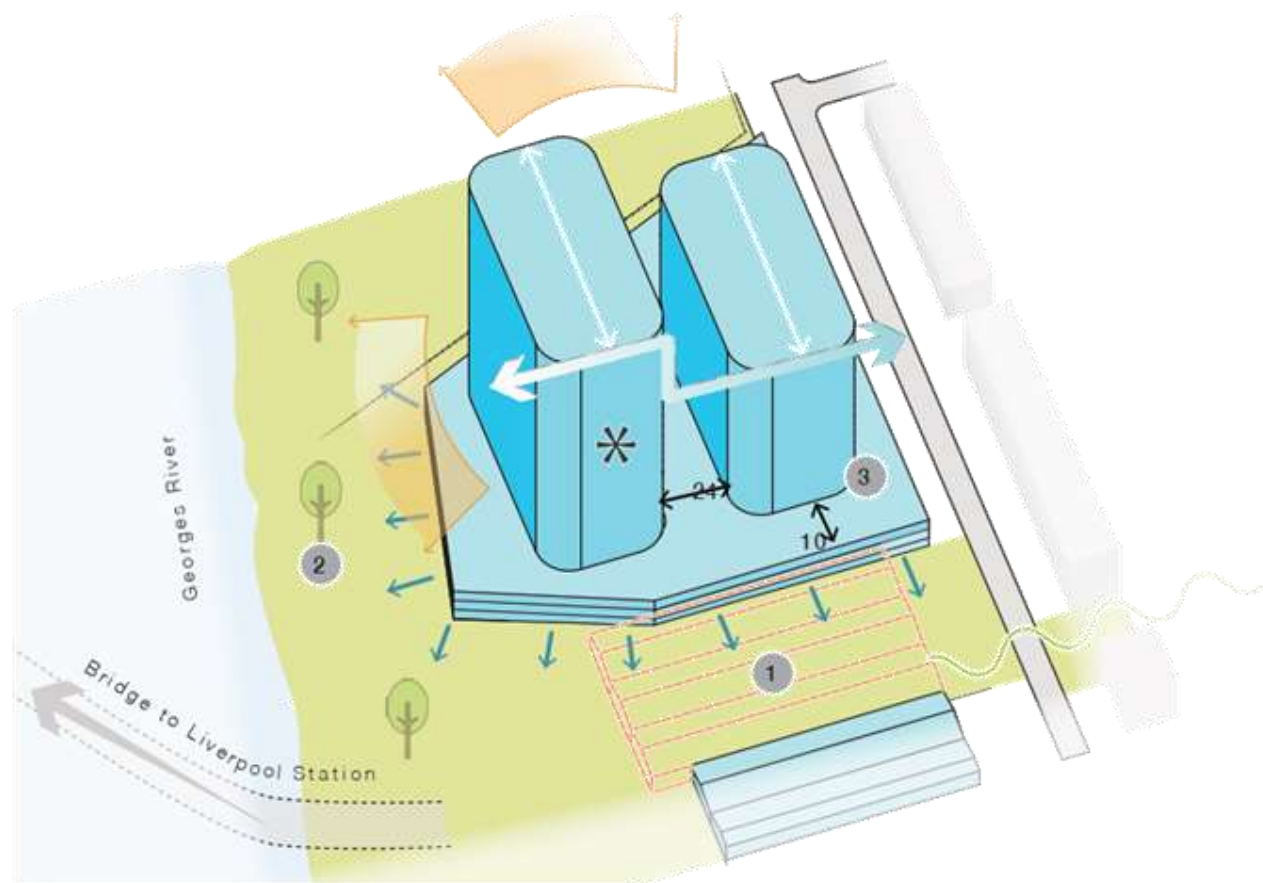


Figure 06: example block

Key objectives

- The key objectives for this precinct include:
- unlocking public access to the Georges River
 - adaptive reuse of existing heritage buildings and incorporation of heritage interpretation
 - deliver commercial and retail uses in areas well connected to Liverpool City Centre
 - seek opportunities for activation along the edges of open space and streets
 - locate and orient buildings to take advantage of regional views

- site
- retail/commercial
- landscape/riparian zone
- heritage item
- Georges river
- adjacent built form
- active frontage
- green corridor
- urban marker
- views
- foreshore building line



Riverfront Park

The Riverfront Park will be Moore Point's pre-eminent park and contribute to increased community accessibility to the Georges River. Pedestrian and cycle paths established here will connect through to Liverpool City Centre in the west through new cross-river connections. This park will also be connected to a new foreshore park in the north, Haigh Park and Lake Moore to the east. Tree canopy and soft landscaping across the park will be key in creating cool and comfortable spaces for the public to enjoy.

The riverfront park will support a range of uses from community events, playgrounds, barbeques and seating for picnics and gatherings and fitness stations. Areas adjacent to buildings will support opportunities for outdoor dining.



Adaptive Reuse

Warehouse buildings in the south of the Precinct will house markets, retail and community events. The existing large spans and generous ceiling heights make these structures perfect for large gatherings. To enable the extension of the east-west green connection through to the riverfront, public access is proposed to continue through part of the existing buildings. This will also increase accessibility to new cross-river connections from Moore Point to Liverpool City Centre.

Heritage interpretation integrated into the design of buildings and the public domain will offer a window into the history of the site.

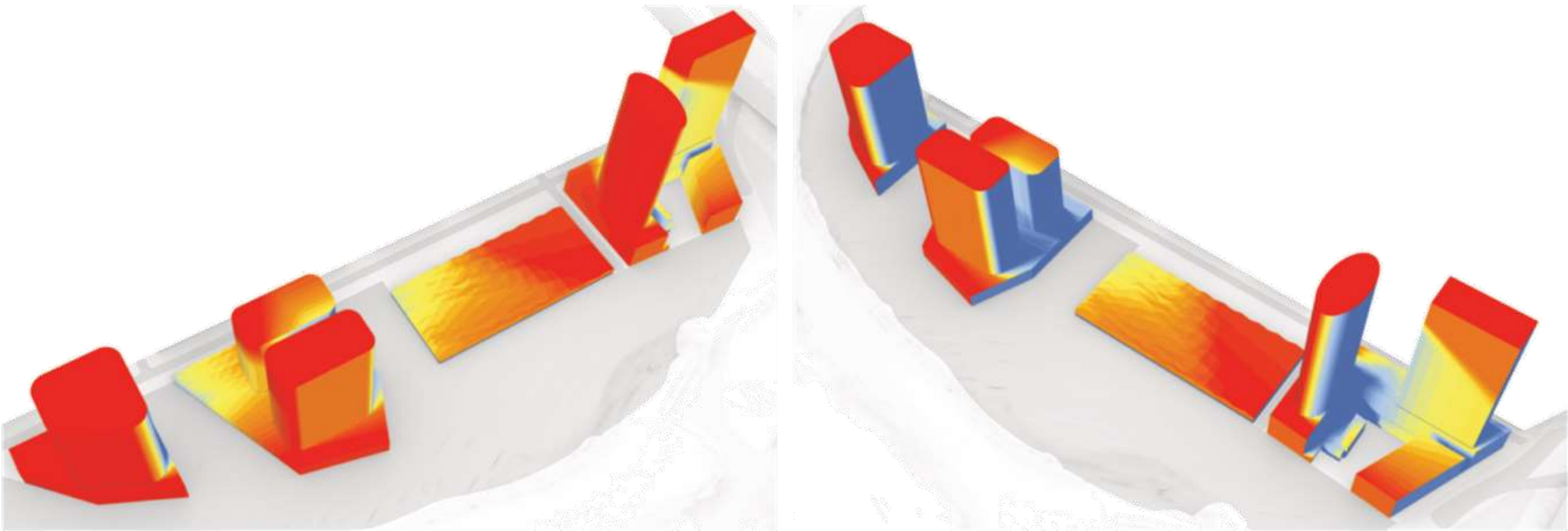


Built Form

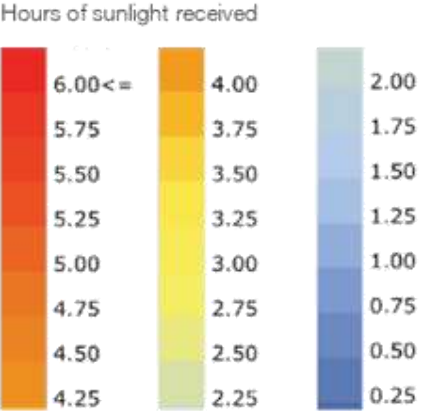
The precinct will include a range of building typologies supporting predominantly commercial and retail uses. Some residential towers will be located in the south of the precinct. Buildings within this precinct have been located and oriented to maximise solar and daylight access to building façades as well as the public domain. Height variation has been used to reduce the visible bulk of tower forms across the landscape.

Buildings will be designed to address the street and provide active frontages to adjacent open spaces and streets. Podium heights connecting onto existing warehouse structures will seek to remain generally consistent with the street wall established by those buildings.

1.17 Built form solar analysis



This solar (insolation) analysis is for the Georges Riverfront Centre character area. It illustrates the number of hours of sunlight received by building facades on the winter solstice (21st of June) which has the fewest hours of sunlight of all days in the year.

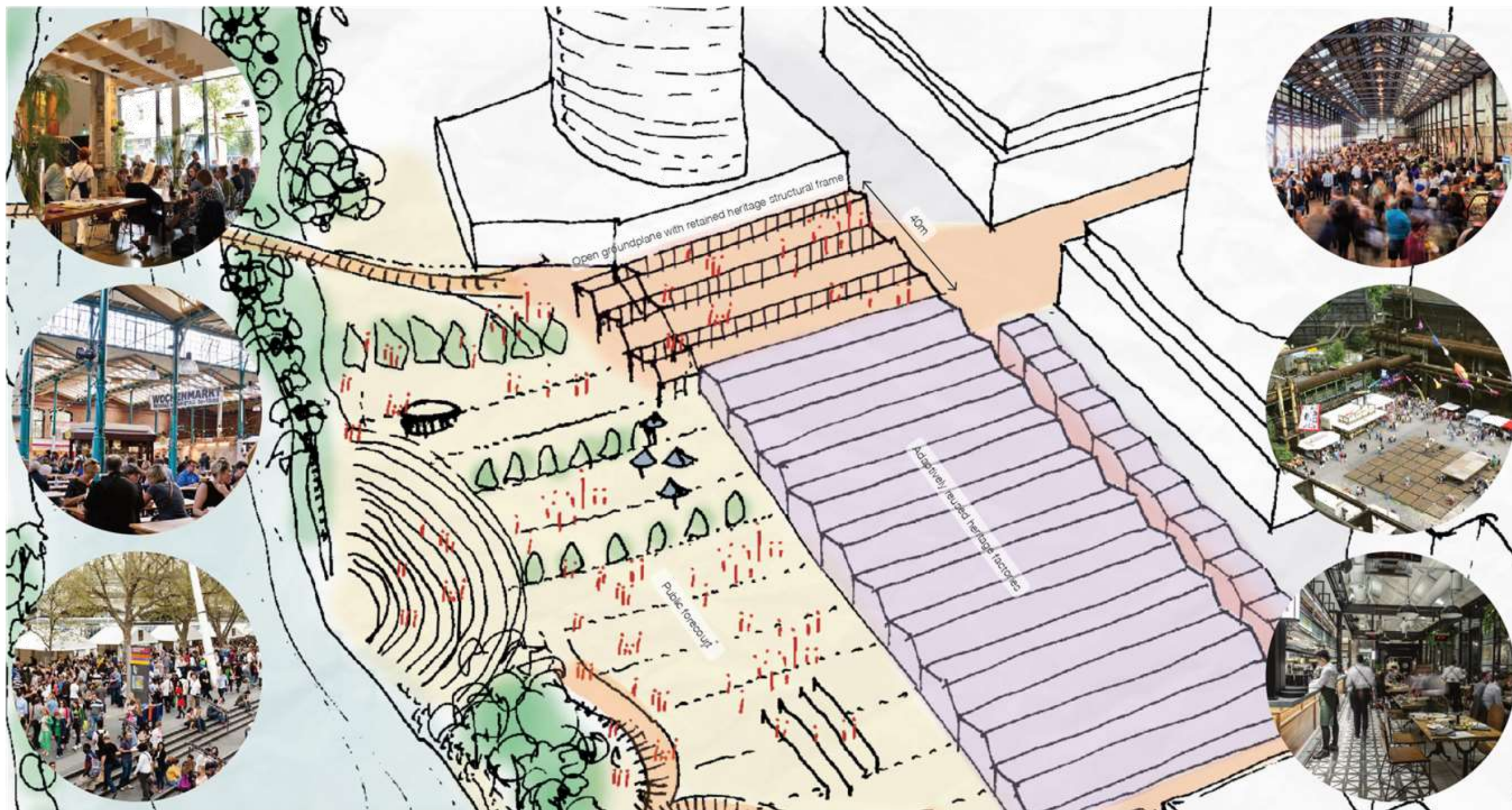


1.18 Open space solar analysis



1.19 Georges River waterfront and adaptively reused heritage factories

This sketch and accompanying precedent photos clarifies the indicative character of the heritage factories. The northern section of the heritage factories is a 40m wide open groundplane with retained structural heritage elements. This allows people to walk through the remnant industrial fabric along the east-west linear park.



1.20 Daytime Georges River waterfront



1.21 Nighttime Georges River waterfront



1.22 Riverfront Neighbourhood precinct plan

This precinct is characterised by its unique landscape setting with direct access to the Georges River foreshore and Haigh Park. Built form lined at ground with active edges along open space, will takes advantage of sweeping regional views and solar access afforded by its location. Areas in the south of the Precinct feature smaller scale commercial buildings which are less reliant of direct solar access. Diversity in land use and typology in this precinct will support opportunities for diverse engagement

- site
- residential/mixed use
- retail/commercial
- landscape/riparian zone
- gateway
- green link
- cross-river connections
- new tree planting
- flooded impact
- landscape buffer
- foreshore building line
- active frontage
- urban marker



Figure 07: key plan



Figure 08: precinct plan

1.23 Built form

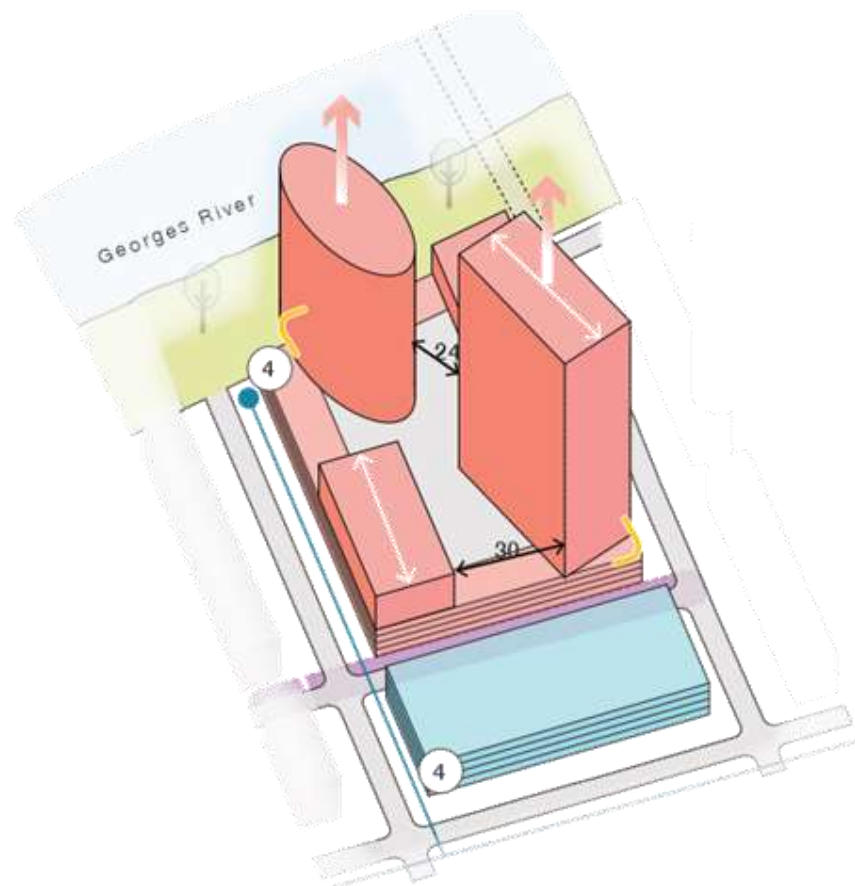


Figure 09: example block

Key objectives

The key objectives for the precinct include:

- shape built form and height to maximise solar access to the public domain and buildings to the south
- take advantage of regional views
- engage with interfaces to public open space by activating frontages at key locations
- deliver a diversity of land use and residential typologies
- manage flooding from the Georges River through integrated water sensitive urban design and landscape features

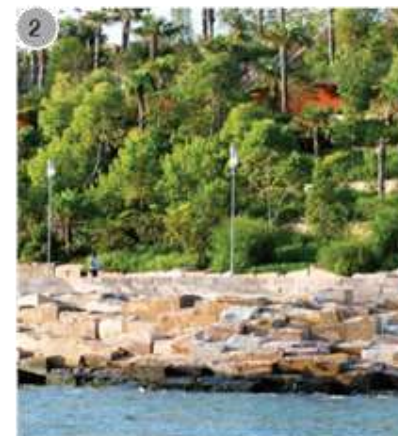
- site
- residential
- retail/commercial
- landscape/riparian zone
- pedestrian focused street
- adjacent built form
- proposed WSUD element
- variation in height



Streets

Streets will undertake a myriad of functions including supporting movement, spaces for the public to dwell, servicing and managing the effects of flooding and stormwater on the precinct. Opportunities for water sensitive urban design will be integrated into key streets to enable stormwater filtration and water retention during flood events.

A pedestrian focussed street will be established between residential buildings in the north and commercial buildings in the south of the precinct. This street will prioritise pedestrian movement through the provision of a shared surface, soft landscaping and seating which promotes use across the day.



Foreshore Park

The foreshore park will be important in mediating the effects of flooding and providing important recreation space to support residents, workers and visitors. It will include pedestrian and cycle paths that connect into the Riverfront Park to the south-west and Haigh Park to the east.

The park will include significant tree canopy to ameliorate the intensity of direct solar access provided by the park's northern aspect. Soft landscaping will also contribute to creating a cool and comfortable space for the public.

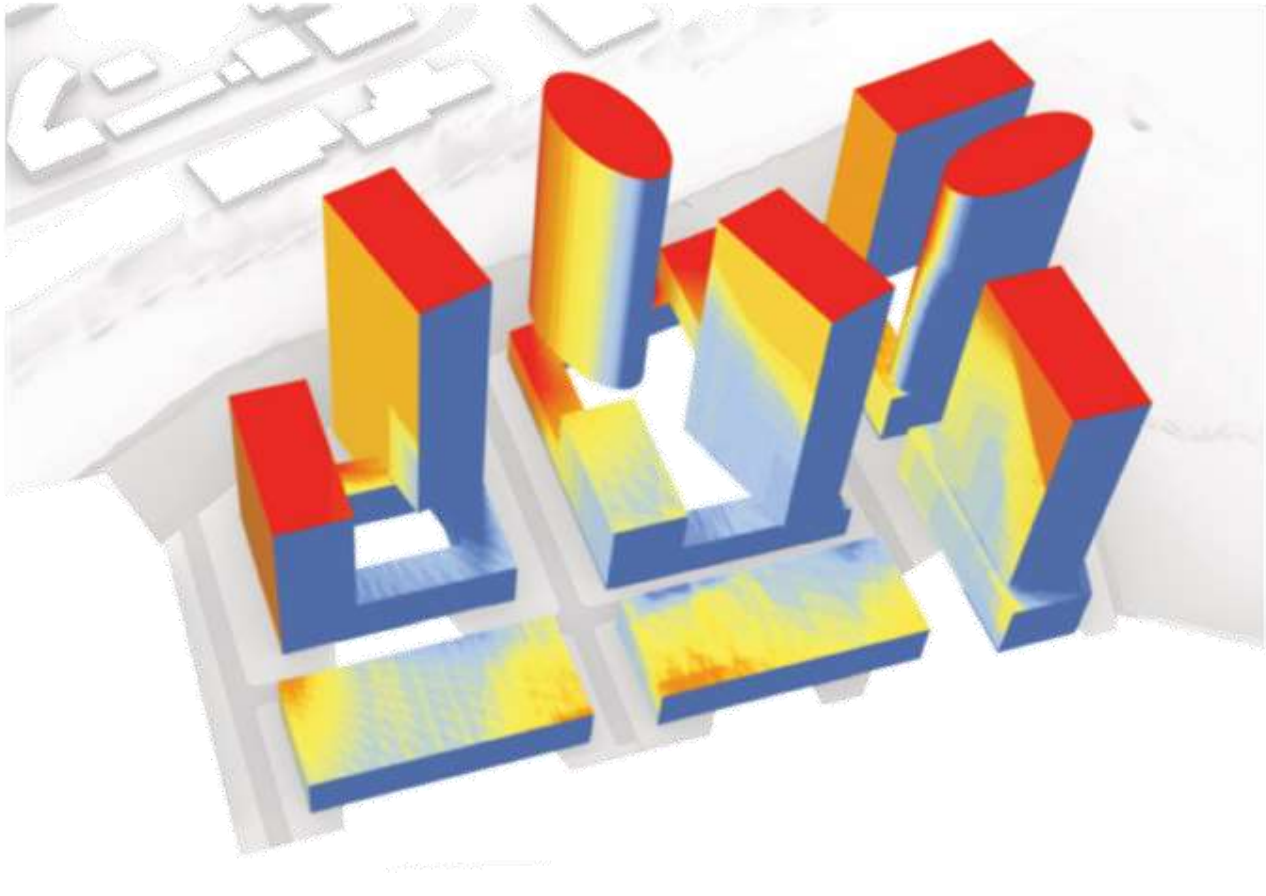


Built Form

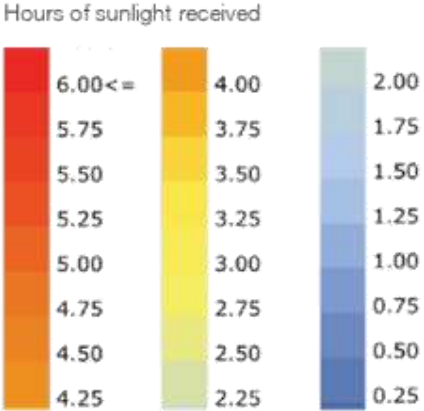
A diversity of building typologies are proposed for this precinct to attract a range of residents and businesses. This includes residential towers of varying heights, residential uses skinning parking podiums and a smaller-scale commercial building in the precinct's south.

Smaller commercial buildings in the south of the precinct will attract more commercial tenants seeking a more "boutique" offering with smaller buildings and a closer relationship to the ground plane.

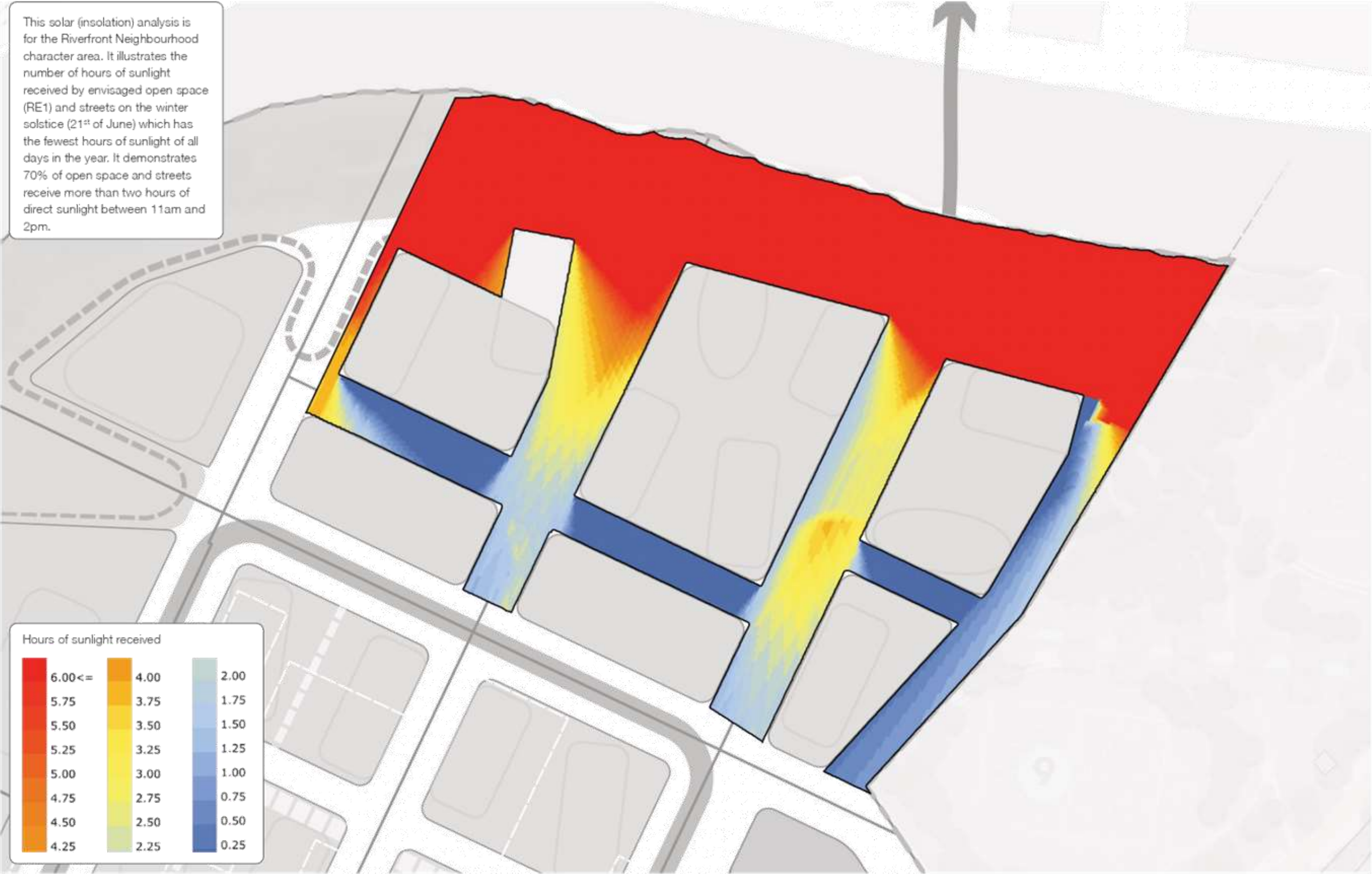
1.24 Built form solar analysis



This solar (insolation) analysis is for the Riverfront Neighbourhood character area. It illustrates the number of hours of sunlight received by building facades on the winter solstice (21st of June) which has the fewest hours of sunlight of all days in the year.



1.25 Open space solar analysis



1.26 Riverfront Neighbourhood indicative massing



Figure 10: artistic impression of the Georges Riverfront park with Haigh Park in the distance (SJB)

SJB Urban

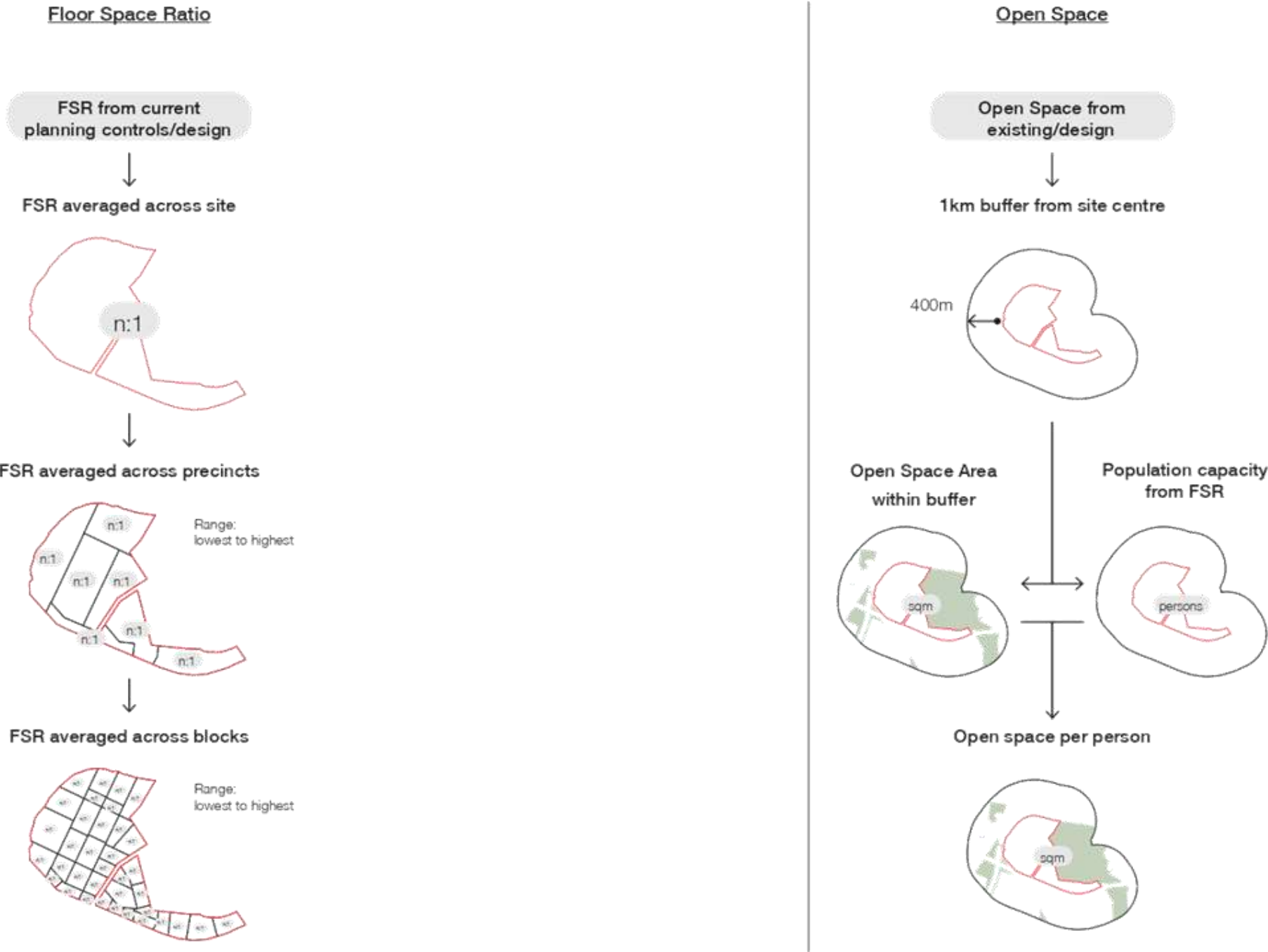
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1.27 Density Benchmarking - Methodology



A stylized topographic map graphic with concentric contour lines, rendered in a light grey color, positioned on the left side of the page.

Moore Point Precinct Plan - Aboriginal Heritage Due Diligence Assessment

Moore Point Landowners Group

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Template 2.8.1

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1. Project context

The following section has been provided by Leamac and Coronation Property Group.

1.1 Background

This Biodiversity Report has been prepared by Eco Logical Australia on behalf of Leamac and Coronation to assess the biodiversity values of the study area in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. There is nothing contained within this report to preclude rezoning.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure 1:– Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'



Figure 2:— A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with Transport for NSW (TfNSW) to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

1.1.1 Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

1.1.2 Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

1.1.3 Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptative re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

1.1.4 Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Moore Point Precinct Plan - Aboriginal Heritage Due Diligence Assessment | Moore Point Landowners Group

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

2. Introduction

The Moore Point Landowners Group engaged Eco Logical Australia Pty Ltd (ELA) to undertake an Aboriginal Heritage Due Diligence Assessment of the proposed Moore Point precinct (hereafter referred to as 'the study area'; Figure 3) to identify if Aboriginal objects are likely to be located within the area of the proposed works and, if so, whether the proposed works have the potential to harm those objects.

A map of the proposed precinct layout has been provided by the Moore Point Landowners Group (Figure 4).

This assessment outlines the findings of the Aboriginal Heritage Due Diligence Assessment of the study area, in accordance with the Department of Planning, Industry and Environment (DPIE) *Due Diligence Code of Practice for the protection of Aboriginal Objects in New South Wales* (DECCW 2010a).

2.1 Assessment process

The methodology of this archaeological due diligence assessment includes :

- Undertake a search of the Aboriginal Heritage Information Management System (AHIMS) register maintained by the DPIE to establish if there are any previously recorded Aboriginal objects or places within the study area;
- Undertake a search of the NSW State Heritage Inventory, the Australian Heritage Database, the Liverpool Local Environment Plan (LEP) 2008 Schedule 5 (Environmental Heritage) in order to determine if there are any sites of archaeological significance or sensitivity located within the study area;
- Review of the relevant Development Control Plan (DCP) for any development controls concerning heritage in the area;
- Undertake a desktop review of relevant previous archaeological assessments to understand the local archaeological context and assist in predicting the likely occurrence of unrecorded archaeological sites or objects;
- Undertake a site inspection to identify any Aboriginal sites and areas of sensitive landforms;
- Prepare an archaeological due diligence assessment determining if known objects or additional unrecorded objects are present within the study area, as well as indicate whether further assessment and/or an Aboriginal Heritage Impact Permit is required.

The DPIE process involves *"taking reasonable and practical measures to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm"* (DECCW 2010a:4).

If an AHIP application is required, the DPIE necessitate that it is supported by an Aboriginal Cultural Heritage Assessment (ACHA) prepared in line with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales* (DECCW 2010b), and a copy of the approval for the development or infrastructure under Part 4 or Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act, New South Wales).

An archaeologically sensitive landscape is an area that has the potential for archaeological material to be present within it. According to the *Due Diligence Code of Practice* (DECCW 2010a), archaeologically sensitive landscapes can include areas:

- Within 200m of waters;
- Located within a sand dune system;
- Located on a ridge top, ridge line, headland;
- Located within 200m below or above a cliff face;
- Within 20m of or in a cave, rock shelter, or a cave mouth; and
- Is on land that is not disturbed land

The Due Diligence Code of Practice (DECCW 2010a:18) defines disturbed land as areas that have any land that:

"Has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks."

2.2 Due diligence assessment summary

ELA has undertaken an extensive search of the AHIMS database maintained by the DPIE which identified one (1) registered Aboriginal heritage site within 1 km of the study area, located on the opposite side of the Georges River from the study area. Zero (0) registered AHIMS sites are located within the study area. ELA has also reviewed past Aboriginal archaeological studies located within and nearby the study area, which have demonstrated the Georges River as an area of high archaeological potential and a focal point of Aboriginal activity in Western Sydney in the past.

A pedestrian survey was conducted of the proposed development area by ELA Archaeologist Daniel Claggett. The site survey identified almost all areas as having been significantly disturbed by past land use, such as agriculture, construction, cutting and mounding of soils, modifications to Georges River, reclamation and the placement of fill material across much of the study area. One portion of the study area, in the north western riparian corridor of the Georges River, has moderate archaeological potential due to the proximity of Georges River and lack of development in the area.

However, development is not proposed in this area, with the retention of the riparian corridor planned. The remainder of the study area possesses low archaeological potential and no further assessment is necessary.

Moore Point Precinct Plan - Aboriginal Heritage Due Diligence Assessment | Moore Point Landowners Group



Figure 3: The Study Area



Figure 4: Plan of Proposed Moore Point precinct (Source: SJB Architects)



Figure 5: Proposed landscape layout for the Moore Point precinct, highlighting the areas of riparian corridor that will be maintained in the area (Source: SJIS Architects)

3. Basis for cultural heritage management

Places of cultural significance enrich people's lives, often providing a deep and inspirational sense of connection to community and landscape, to the past, and to lived experiences ... they are irreplaceable and precious (Australia ICOMOS Burra Charter 2013:1).

Traditionally, heritage and archaeological assessments have focused on the significance of the tangible elements of cultural heritage (Brown 2008). Items such as structures and archaeological artefacts have been considered predominantly in terms of their scientific/research potential and representativeness (New South Wales Heritage Office 2015:20-24). By focusing on the scientific qualities of heritage, many of the intangible qualities of heritage were not considered. This is especially crucial when participating in the management and protection of Aboriginal cultural heritage. By nature, Aboriginal cultural heritage is multi-faceted: it consists not only of tangible structures and objects of value for scientific investigations, but also of a deeply complex array of intangible expressions, such as stories, memories, and traditions. Many of the rights and interests of Aboriginal communities in their own heritage is formed on the basis of this intangibility. It stems from their spirituality, customary law, original ownership, and continuing custodianship (Australian Heritage Commission 2002:5). These intangible expressions often share a strong link with the landscape. Byrne *et al.* (2003:3) describe this connection in the form of a map, where individuals:

Carry around in [their] heads a map of the landscape which has all these places and their meanings detailed on it. When we walk through our landscapes the sight of a place will often trigger the memories and the feelings [that] go with them ... it is the landscape talking to us.

Crucially, those who are not connected to the landscape in question will not be able to discern these intangible meanings embedded in the landscape; they can only come to recognise the significance by consulting with local knowledge holders (Byrne *et al.* 2003:3). And, even so, they may vary between individuals, reflecting unique experiences.

By recognising the rights and interests of Aboriginal knowledge holders and community members in their cultural heritage, all parties involved in the identification, conservation, and management of this cultural heritage must acknowledge that Aboriginal people (Australian Heritage Commission 2002:6):

- Are the primary source of information on the value of their heritage and how this is best conserved;
- Must have an active role in any heritage planning processes;
- Must have input into primary decision-making in relation to their heritage so that they can continue to fulfil their obligations towards this heritage; and
- Must control the intellectual property and other information relating specifically to their heritage, as this may be an integral aspect of its heritage value.

As such, cultural heritage sites and objects are fundamental elements of Aboriginal peoples' identities, connections, and belonging to their communities. The careful protection and management of this heritage is essential for the preservation of connection between past, present, and future.

4. Assessment process

4.1 Identify if the proposed activity will disturb the ground surface

The first stage of the due diligence process is to identify if the activity will disturb the ground surface or any culturally modified trees. Although this due diligence assessment has been prepared at the planning proposal stage of this project, which does not involve any development, any future development within the Moore Point precinct would require disturbance of the ground surface for the construction of buildings and associated infrastructure. Therefore, the due diligence process moves to the next stage.

4.2 Database searches and known information sources

Searches of the Australian Heritage Database, State Heritage Register (SHR) and the Liverpool LEP 2008 Schedule 5 (Environmental Heritage) was conducted on 14 May 2019.

There are no Aboriginal items in the study listed on the Australian Heritage Database.

There is one Aboriginal Place listed on the SHR within one kilometre south of the study area, known as Collingwood Precinct. Collingwood Precinct is a significant part of the landscape for Dharawal, Gandangara and Dharug people. The hilltop and ridge line were meeting places for Aboriginal groups and also a vantage point during the pre-contact era, enabling Country to be observed and monitored. The lookout provided views across the landscape, which allowed for observations of weather patterns, movements, threats from fire and changes in seasonal vegetation.

The search of the State Heritage Register (SHR) also located the following historical heritage items in the vicinity, but not within, the study area:

- Liverpool Weir (SHR listing 01804)
- Liverpool Train Station (SHR listing 01181).

Schedule 5 of the Liverpool LEP 2008 did not list any Aboriginal sites within the study area but identified a large portion of the study area at 1 Bridges Road as a heritage item listed as the former Pirelli Power Cables and Systems Building, now known as Prysmian Cables and Systems (item no. 76). The study area is also located in close proximity to several other heritage items including:

- Pylons (former Liverpool Bridge), Georges River near Haigh Avenue (item no. 86)
- Liverpool Weir, Georges River near Haigh Avenue (item no. 87)
- Liverpool Railway Station Group, including station building, goods shed and jib crane (item no. 72)
- Light Horse Park, Atkinson Street (item no. 70).

A separate historical heritage assessment that addresses the heritage items that will be impacted by the proposed works has been prepared by ELA and accompanies this report (ELA 2020).

4.2.1 AHIMS search

The Aboriginal Heritage Information Management System (AHIMS) is a database maintained by the DPIE and regulated under Section 90Q of the *National Parks and Wildlife Act 1974*. AHIMS holds information and records regarding the registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places that exist in NSW.

An extensive search of the AHIMS database was conducted on 17 May 2019 to identify if any registered Aboriginal sites were present within, or adjacent to, the study area (**Appendix A**).

The AHIMS database search was conducted using the following search parameters:

Datum: GDA94, Zone 56

Lot/DP: Lot 200, DP1009044

Buffer: 1 km.

The AHIMS search result showed that one registered Aboriginal site and one registered Aboriginal place were located within 1 km of the study area (Figure 6).

No Aboriginal sites were identified within the study area on the AHIMS database. The one identified AHIMS site is located on the banks of the Georges River associated with the weir to the north of the study area.

The registered Aboriginal place is "Collingwood Precinct" (AHIMS ID: 57), a traditional meeting place for the Dharawal, Gandangara and Dharug Aboriginal people and a vantage point from which to observe Country (State Heritage Register 2015). It is located approximately 900 m to the south (Figure 6).

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Figure 6: AHIMS registered sites in/within the vicinity of the study area

4.2.2 Previous archaeological investigations

There have been a number of archaeological investigations conducted within the local region over the past 30 years as a response to the planning and rapid development of the Sydney Southwest Growth Centre. Archaeological investigations within and nearby the Liverpool City Centre are primarily related to historical archaeology, due to the early urban development of the area, reducing the likelihood of subsurface artefacts surviving. However, a number of Aboriginal sites have been registered along the Georges River, a major waterway that runs adjacent the Liverpool City centre and current study area.

An early predictive model for the region was developed during a large study of 2,262 hectares of land proposed for release in the Liverpool Area (Smith 1989). Almost three-quarters of Aboriginal sites identified in the study (74%) were associated with water sources including permanent creeks and swamp margins (Smith 1989: 2, 28).

McDonald (2001) undertook a preliminary archaeological study of the Hoxton Park Aerodrome, a large parcel of land west of Liverpool City Centre. McDonald noted that almost one third of the sites in the study area were located at low elevations of less than 30 m above sea level (ASL) and more than half of the sites were below 40 m ASL. This data seemed to support Smith's (1998) suggestion that sites would be in low-lying areas close to water resources (McDonald CHM 2001: 7).

The results of some of the regionally and locally significant Aboriginal heritage studies within the area are presented below.

Australian Museum Business Services, 2003. Edmondson Park Composite Site Master Plan Aboriginal Heritage Management Plan. Prepared for Liverpool City Council & Campbelltown City Council.

Australian Museum Business Services (AMBS) was previously engaged by Liverpool Council and Campbelltown Council to prepare an Aboriginal Heritage Management Plan (AHMP) for the Edmondson Park Composite Site (EPCS), a large, planned precinct in Edmondson Park, NSW, located approximately 8 km from the current study area and associated with the Georges River.

AMBS undertook surveys across the EPCS and identified 13 previously registered artefact scatters and five previously registered isolated artefacts, totalling 276 artefacts. Additionally, the surveys identified 15 new stone artefact sites which comprised a total of 32 artefacts. It was noted that a majority of the previously and newly registered Aboriginal sites identified by AMBS were in landscapes of low to moderate disturbance and located along tributaries of Maxwell's Creek on alluvial flats or associated, gently sloping rises above the tributary water ways.

AMBS's report identified several areas of archaeological sensitivity across the EPCS precinct that would warrant further investigation. Most areas of sensitivity were associated with areas previously identified as containing surface artefact scatters or in landscapes that had experienced low levels of disturbance and were located in a landscape conducive to Aboriginal occupation, such as being located adjacent a creek line.

Mary Dallas Consulting Archaeologists, 2010. *Aboriginal Archaeological Assessment and Management Plan: Proposed Industrial / Commercial Development, Former Hoxton Park Airport Site, Hoxton Park, NSW.* Prepared for MIRVAC.

Mary Dallas Consulting Archaeologists (MDCA) was previously engaged by Mirvac Group to prepare an Aboriginal Archaeological Assessment for the proposed development of the former Hoxton Park Aerodrome into an industrial and commercial precinct, located approximately 7 km west study area and associated with a number of waterways including Cabramatta Creek which feeds into the Georges River.

Background research identified 80 previously registered Aboriginal sites as being located within or immediately adjacent to the study area. Almost all of the previously registered sites identified were either open campsites, isolated artefacts or potential archaeological deposits (PADs). Site survey by MDCA identified a majority of the study area as having been stripped of all original topsoil and replaced with fill in order to raise the level of the former airstrip. The field survey did not result in the location of any previously unrecorded Aboriginal artefacts. However, a large area adjacent Hinchinbrook Creek located on elevated terrain in the east of the study area was considered a PAD and was recommended for test excavation prior to any proposed works take place within this area.

4.2.3 Previous archaeological investigations within the study area

Eco Logical Australia, 2016. *Prysmian Site, Bridges Road, Moorebank – Aboriginal Heritage Assessment.* Prepared for LAC JV Pty Ltd.

ELA was previously engaged by LAC JV Pty Ltd to prepare an Aboriginal Heritage Assessment to support a planning proposal for the redevelopment of the former industrial Prysmian Site at Bridges Road, Moorebank, which encompassed a majority of the current study area (Figure 7).

Background research identified the Prysmian Site as having been used primarily for agricultural / pastoral purposes in the 19th and early 20th centuries. In the late 1940s the area began transitioning into an industrial centre. The areas of the Prysmian Site adjacent to the Georges River underwent extensive modification, with lakes in the north and west expanded and mined for the surrounding rich topsoil. These works left the riverbanks of the Prysmian Site heavily eroded and hazardous and a process of rehabilitation was begun in 1977 to restore the former riverbanks.

Field survey confirmed that significant disturbance had occurred to the subsurface, with the south western part of the study area having been filled and levelled adjacent to Liverpool Weir. The southern portion of the site comprised of a cable factory site, large bitumen carpark and a vacant grassed area in which the topsoil appeared to have been removed and now consists of fill. The only area assessed as possessing archaeological potential within the Prysmian Site was 11 Bridges Road, located directly adjacent the bend of Georges River and which had only been exposed to low-moderate level disturbance activities such as land clearance, possible cropping and rubbish dumping (Figure 7).

Based on the low-moderate levels of disturbance that have taken place there in the past, ELA's report concluded that future test excavation would only be required if development was proposed to take place at 11 Bridges Road that included works that would excavate below any existing fill to the natural soil horizon.

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Figure 7: Study area for ELA's 2016 assessment of part of the Moore Point precinct (Six Maps LPI)

4.3 Landscape assessment

The study area is located within the Cumberland Plain physiographic region. The Cumberland Plain is characterised by gently undulating low hills and plains. Topography within study area is characterised by a largely flat landform with a gentle slope to the west and northwest.

The local geology comprises Wianamatta Group Ashfield Shale of laminate and dark grey siltstone, Bringelly Shale and Minchinbury Sandstone consisting of fine to medium-grained quartz lithic sandstone. The geomorphology is gently undulating rises on Wianamatta Group shales with local relief to 30 m and slopes usually less than 5% (Bannerman & Hazelton 1990:29).

The dominant soil landscape within the study area is the Blacktown Residual Soil (REbt) landscape, with a smaller portion of the Richmond Alluvial Soil (ALri) landscape within the southeast portion of the study area adjacent Newbridge Road (Figure 8).

The Blacktown soil landscape consists of shallow to moderately deep soil with relatively low susceptibility to erosion. In general, the soil profile of this landscape is comprised of a friable brownish black loam (A1 horizon) typically to 30 cm depth, followed in turn by hard setting brown clay loam (A2 horizon), strongly pedal, mottled brown light clay (B horizon) and grey plastic mottled clay (B3 or C horizon). Blacktown soils are conducive to artefact survivability, however the acidity within in these soils quickly removes organics. In addition, the tendency of these soils to deflate often result in a temporal collapse where archaeological objects from multiple time periods can accumulate within a single cultural layer.

The Richmond soil landscape consists of deep, acidic, non-calcic brown soils, and red, podzolic, earthy soils. The dominant soil types within this landscape include a loose reddish-brown loamy sand (A horizon), a brown sandy clay loam (A horizon), a brown mottled light clay (B horizon) and a brown, mottled, stiff medium-heavy clay (B horizon). Soils within this landscape are highly acidic. Additionally, surface soils within this landscape are moderately erodible, which subsoils are highly erodible, increasing the potential for a temporal collapse where archaeological objects from multiple time periods can accumulate within a single cultural layer.

In addition to these two soil landscapes, areas of reclaimed land surrounding Lake Moore are labelled as "disturbed terrain".

The study area is surrounded to the west and north by the Georges River and the east by Lake Moore. These water courses have shaped and defined the landscape and soils of the study area. The source of the Georges River is the upland swamps of the O'Hares Creek catchment, in the Illawarra Escarpment. The river travels for approximately 96 kilometres in a generally north easterly direction to its mouth at Botany Bay. The upper reaches of the river narrow considerably south of Chipping Norton Lake and the riverbanks become steeper.

The 1943 aerial imagery of the subject area (Figure 9) demonstrates the area has been heavily modified and disturbed by landscaping / levelling, agriculture and construction of industrial facilities / factories. Additionally, both Lake Moore and the portion of the Georges River that runs adjacent the study area have been heavily modified in order to provide a better connection between the two bodies of water.

4.4 Predictive model

Based on the material evidence and range of archaeological sites across the region, it is clear that Aboriginal people have been utilising the land and resources within the Cumberland Plain for thousands of years. The predictive model outlined in Table 1 below has been developed for the study area based on the AHIMS search results, landscape assessment and regional and local Aboriginal archaeological context outlined above.

Table 1: Predictive Model

Site Type	Description
Open camp sites / stone artefact scatters / isolated finds	Open camp sites represent past Aboriginal subsistence and stone knapping activities and include archaeological remains such as stone artefacts and hearths. This site type usually appears as surface scatters of stone artefacts in areas where vegetation is limited, and ground surface visibility increases. Isolated finds may represent a single item discard event or be the result of limited stone knapping activity. The presence of such isolated artefacts may indicate the presence of a more extensive, in situ buried archaeological deposit, or a larger deposit obscured by low ground visibility. Based on nearby AHIMS sites, the adjacent Georges River and the heavy disturbance that has taken place across the subject area, it is unlikely this site type will occur. The only area with at least moderate potential to contain this site type is within the riparian corridor.
Potential Archaeological Deposit	Potential Archaeological Deposits (or PADs) are areas where there is no surface expression of stone artefacts, but due to a landscape feature there is a strong likelihood that the area will contain buried deposits of stone artefacts. Based on nearby AHIMS sites, the adjacent Georges River and the heavy disturbance that has taken place across the subject area, it is unlikely this site type will occur. The only area with at least moderate potential to contain this site type is within the riparian corridor.

Site Type	Description
Scarred or carved trees	<p>Tree bark was utilised by Aboriginal people for various purposes, including the construction of shelters (huts), canoes, paddles, shields, baskets and bowls, fishing lines, cloaks, torches and bedding, as well as being beaten into fibre for string bags or ornaments (sources cited in Attenbrow 2002: 113). Trees may also have been scarred in order to gain access to food resources (e.g. cutting toe-holds so as to climb the tree and catch possums or birds), or to mark locations such as tribal territories. Such scars, when they occur, are typically described as scarred trees.</p> <p>The study area has been cleared of mature growth vegetation, making this site type unlikely to occur.</p>

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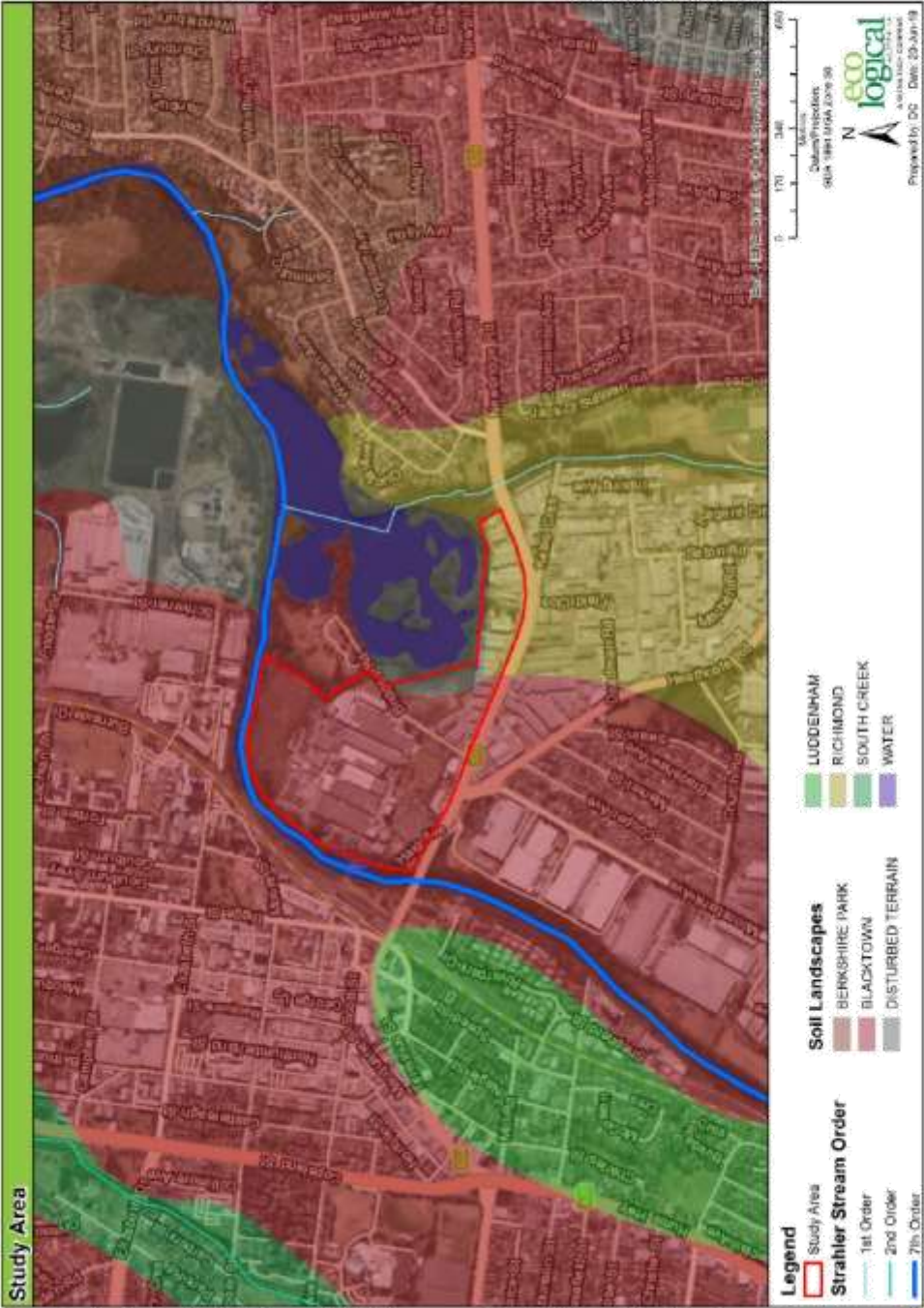


Figure 8: Soil landscapes and hydrology of the study area

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Figure 9: 1943 aerial imagery of the study area (Six Maps LPI)

4.5 Impact avoidance assessment

No previously recorded Aboriginal archaeological sites, Aboriginal objects or items of Aboriginal heritage significance exist within the study area. However, due to the proximity of Georges River and the planning proposal allowing for activities that would disturb the ground surface; Therefore, site survey was required to determine the likelihood of the Aboriginal sites occurring within the study area.

4.6 Visual inspection

A visual inspection of the study area was undertaken by ELA Archaeologist Daniel Claggett on 21 June 2019. Visual inspection aimed to identify Aboriginal objects if present and assess the archaeological potential of the study area. The study area was divided into four survey units based on distinct landscape features. The area covered by each survey unit is present in Figure 27 below.

Survey Unit 1 – Prysmian and Joyce Factories

Survey Unit 1 contains the Prysmian Cable Factory and the Joyce Foam Factory (Figure 10, Figure 11). Both industrial estates have significantly altered the existing landscape due to the construction factory buildings, roadways, and infrastructure (Figure 12, Figure 13). Areas of exposed soil in this survey unit are heavily disturbed and is made up of fill material in order to create a flat landscape and build the factory sites up from the Georges River (Figure 14). Additionally, deposits of waste material, including asbestos, are also present within the subsurface (Figure 15).

Survey Unit 1 also possesses a large portion of the riparian corridor located along the eastern bank of Georges River (Figure 16). This area is heavily vegetated and contains both native vegetation and noxious weeds (Figure 17). There is zero ground visibility in the corridor, but this area has likely been modified from alterations to the banks of the Georges River to create a flat landscape where the factory sites now stand. Additionally, an underground drainage line running between Georges River and the corridor further suggests modification. The riparian corridor would be retained and regenerated by the proposed precinct plan.



Figure 10: Part of the Prysmian Cable Factory, facing northeast



Figure 11: Part of the Joyce Foam Factory, facing west

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Figure 12: Pysmian Factory buildings and roadways, facing south



Figure 13: Pysmian Factory storage yards. The storage yards back directly onto Survey Unit 2 (11 Bridges Road)



Figure 14: Exposed and altered soil profile adjacent the riparian corridor in the Pysmian factory site, facing north



Figure 15: Exposed and altered soil profile adjacent the riparian corridor, facing northwest



Figure 16: Concrete weir associated with the Riparian corridor between the Georges River and the Pysmian Cable Factory, facing north



Figure 17: Concrete weir and a mixture of weeds and native vegetation in the riparian corridor, facing east

Survey Unit 2 – 11 Bridges Road

Survey Unit 2 consists of the vacant lot directly north of the Pysmian Cable Factory. This area was previously used as a landfill site and contains dumped rubbish (Figure 18) and a gravel access road (Figure 19). There is large-scale mounding across this survey unit, likely associated with the use of the area as a landfill (Figure 20).

This survey unit also contains the remainder of the riparian corridor located in the study area, which consists of both native and exotic vegetation (Figure 21). ELA's 2016 Aboriginal heritage assessment of this area concluded that moderate archaeological potential existed in a section of the riparian corridor located in the north west of survey unit 3 and that a natural soil profile may still exist beneath fill material. However, the riparian corridor in this section of the study area has been proposed to be retained and regenerated rather than developed. Disturbance in this area would be associated with past land clearance and agricultural activities, as seen in 1943 imagery of the area.



Figure 18: Dumped rubbish and mounding in survey unit 2



Figure 19: The gravel access track leading to the rubbish dump



Figure 20: Overview image of survey unit 2, showing mounding, rubbish and weed growth across the area



Figure 21: Weeds and native vegetation across survey unit 2

Survey Unit 3 – Lake Moore Cul de Sac

Survey Unit 3 consists of a vacant property located directly adjacent Lake Moore. The only built up section of this survey unit is a small road that leads to a cul de sac that runs through the centre of the survey unit (Figure 22). Some ground disturbance is visible in the southern portion of the study area (Figure 23) and there is heavy mounding of soil in the northern portion of the survey unit, possibly associated with the expansion of Lake Moore (Figure 24). Comparison between the existing landscape and 1943 aerial imagery (Figure 9) of the survey unit suggests that past land use included construction of buildings, farming and soil movement which has altered the landscape in this unit.

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Figure 22: Road that runs through survey unit 3, facing east



Figure 23: Ground disturbance in the southern portion of survey unit 3



Figure 24: The northern portion of survey unit 3 adjacent the road. The gradual rise in the landscape is due to soil mounding

Survey Unit 4 – Newbridge Road

Survey Unit 4 consists of the commercial structures located along Newbridge Road. These properties front Newbridge Road and back onto either Lake Moore or area that makes up Survey Unit 3. This survey unit has been significantly disturbed by past land use and the construction of the commercial buildings that currently occupy the area (Figure 25) as well as the placement of underground infrastructure along the frontage of these buildings (Figure 26).



Figure 25: Commercial buildings along Newbridge Road, facing east



Figure 26: Underground infrastructure adjacent Newbridge Road, facing east

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Figure 27: Survey units described above

5. Statutory requirements

Aboriginal objects and places in New South Wales are afforded protection under the NPW Act irrespective of whether they are registered on AHIMS. Strict penalties apply for engaging in activities that inflict harm to an Aboriginal cultural heritage site or object without consent for activities under the NPW Act. Under Part 6 of the NPW Act, consent or authorisation for harmful activities may be given under an AHIP. Should harm be inflicted upon an Aboriginal site or object, there are five defences:

- The harm was authorised under an AHIP;
- The proponent exercised due diligence prior to causing the harm and is able to demonstrate this;
- The harm was caused during activities that complied with a code of practice as described in Part 6A of the *National Parks and Wildlife Regulation 2009* (New South Wales). For example, undertaking archaeological test excavations in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010c);
- The harm was caused as part of a low-impact activity or omission under the regulation, and the proponent was not aware of the presence of Aboriginal cultural material; or
- The harm caused during activities that are exempted under Section 87A of the NPW Act. For example, emergency fire-fighting or bushfire hazard reduction work, as defined by the *Rural Fires Act 1997* (New South Wales).

To assess the requirement of an AHIP, the DPIE necessitates that an ACHA is prepared in accordance with the *Guide to Investigating, Assessing, and Reporting on Aboriginal Cultural Heritage in New South Wales* (DECCW 2010b) and the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a). These two guides establish a set of guidelines to aid land users in being aware of how their activities could damage Aboriginal cultural heritage sites and archaeologists in the requirements that must be followed during the investigation of Aboriginal cultural heritage sites. If an AHIP is required, the DPIE necessitates that it is further supported by a copy of the approval for the development or infrastructure issued under Part 4 or Part 5 of the EP&A Act.

6. Conclusions

The purpose of the Aboriginal heritage due diligence is to identify if there are registered Aboriginal sites and/or sensitive landforms which may indicate the presence of Aboriginal sites and may therefore require further assessment and approval under Part 6 of the *National Parks and Wildlife Act 1974*.

ELA has undertaken an extensive search of the Aboriginal Heritage Information Management System (AHIMS) database maintained by the Department of Planning, Industry and Environment (DPIE) which identified 1 registered Aboriginal heritage site within 1 km of the study area, located on the other side of Georges River. Zero registered AHIMS sites are located within the study area.

A pedestrian survey was conducted of the proposed development area by ELA Archaeologist Daniel Claggett on 21 June 2019. Site survey identified all areas as having been significantly disturbed by past land use, such as land cultivation, as well as construction, cutting and mounding of soils, modifications to Georges River and the placement of fill material across the study area. A small portion of survey unit 3, located in the north western riparian corridor adjacent Georges River, has moderate archaeological potential due to the proximity of Georges River and lack of development in the area. However, development is not proposed in this area (Figure 5). The remainder of the study area possesses low archaeological potential and no further assessment is necessary. An AHIP application is therefore not required. Nothing contained within this report precludes rezoning of the study area.

6.1 Recommendations

Based on the findings of this due diligence and the requirement of the NP&W Act the following is recommended.

Recommendation 1 – Areas set aside for conservation

Any potential modification to the proposed development area for the Moore Point precinct should avoid the north western riparian corridor area identified as possessing archaeological potential. If any development were proposed in this area and could not be avoided, subsurface test excavation is recommended to determine whether presence of Aboriginal objects are present. If objects are present and an impact is proposed, an Aboriginal Heritage Impact Permit would be required.

Recommendation 2 - General measures

Aboriginal objects are protected under the NPW Act regardless if they are registered on AHIMS or not. If suspected Aboriginal objects, such as stone artefacts are located during future works, works must cease in the affected area and an archaeologist called in to assess the finds. If the finds are found to be Aboriginal objects, the DPIE must be notified under section 89A of the NPW Act. Appropriate management and avoidance or approval under a section 90 AHIP should then be sought if Aboriginal objects are to be moved or harmed.

In the extremely unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, the DPIE may also be contacted at this time to assist in determining appropriate management.

References

Australian Heritage Commission, 2002. *Ask First: A Guide to Respecting Indigenous Heritage Places and Values*.

Bannerman, S.M. and Hazelton, P.A., 1990. *Soil Landscapes of the Penrith 1:100,000 Sheet*. Soil Conservation Service of NSW, Sydney.

Brown, S. 2008. 'Mute or mutable? Archaeological significance, research, and cultural heritage management in Australia'. *Australian Archaeology*, 67:19-30.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013.

Byrne, D., Brayshaw, H. and Ireland, T. 2003. *Social Significance: A Discussion Paper*. Hurstville, Australia: New South Wales National Parks and Wildlife Service. The Department of Climate Change and Water, 2010a. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

Department of Environment, Climate Change and Water, 2010a. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

The Department of Climate Change and Water, 2010b. *Guide to Investigating, Assessing, and Reporting on Aboriginal Cultural Heritage in New South Wales*.

The Department of Climate Change and Water, 2010c. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*.

Eco Logical Australia, 2016. *Prysmian Site, Bridges Road, Moorebank – Aboriginal Heritage Assessment*. Prepared for LAC JV Pty Ltd.

GBA Heritage, 2018. *Strategic Heritage Report: 3 Bridges Road, Liverpool*. Prepared for LAC JV Pty Ltd.

Mary Dallas Consulting Archaeologists, 2010. *Aboriginal Archaeological Assessment and Management Plan: Proposed Industrial / Commercial Development, Former Hoxton Park Airport Site, Hoxton Park, NSW*. Prepared for MIRVAC.

McDonald, CHM, 2001, Southern Hoxton park Aerodrome Master Plan: Preliminary archaeological assessment of Indigenous heritage sites. Report to SMEC Pty Ltd, Annand & Alcock and Liverpool City Council.

New South Wales Heritage Office. 2015. *Assessing Heritage Significance*.

Smith, L.J., 1989. *Liverpool Release Areas: Archaeological Site Survey and Planning Study*. Prepared for Liverpool Council.

Appendix A AHIMS Search Results

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 12008

Client Service ID : 421604

Eco Logical Australia Pty Ltd - Sydney
PO Box 12 568 Old Princes Hwy
Sutherland New South Wales 1499
Attention: Daniel Claggett
Email: daniel.claggett@ecolau.com.au

Date: 17 May 2019

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot: 200, DP-DP1099044 with a Buffer of 1000 meters, conducted by Daniel Claggett on 17 May 2019.

The content area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

1 Aboriginal sites are recorded in or near the above location.

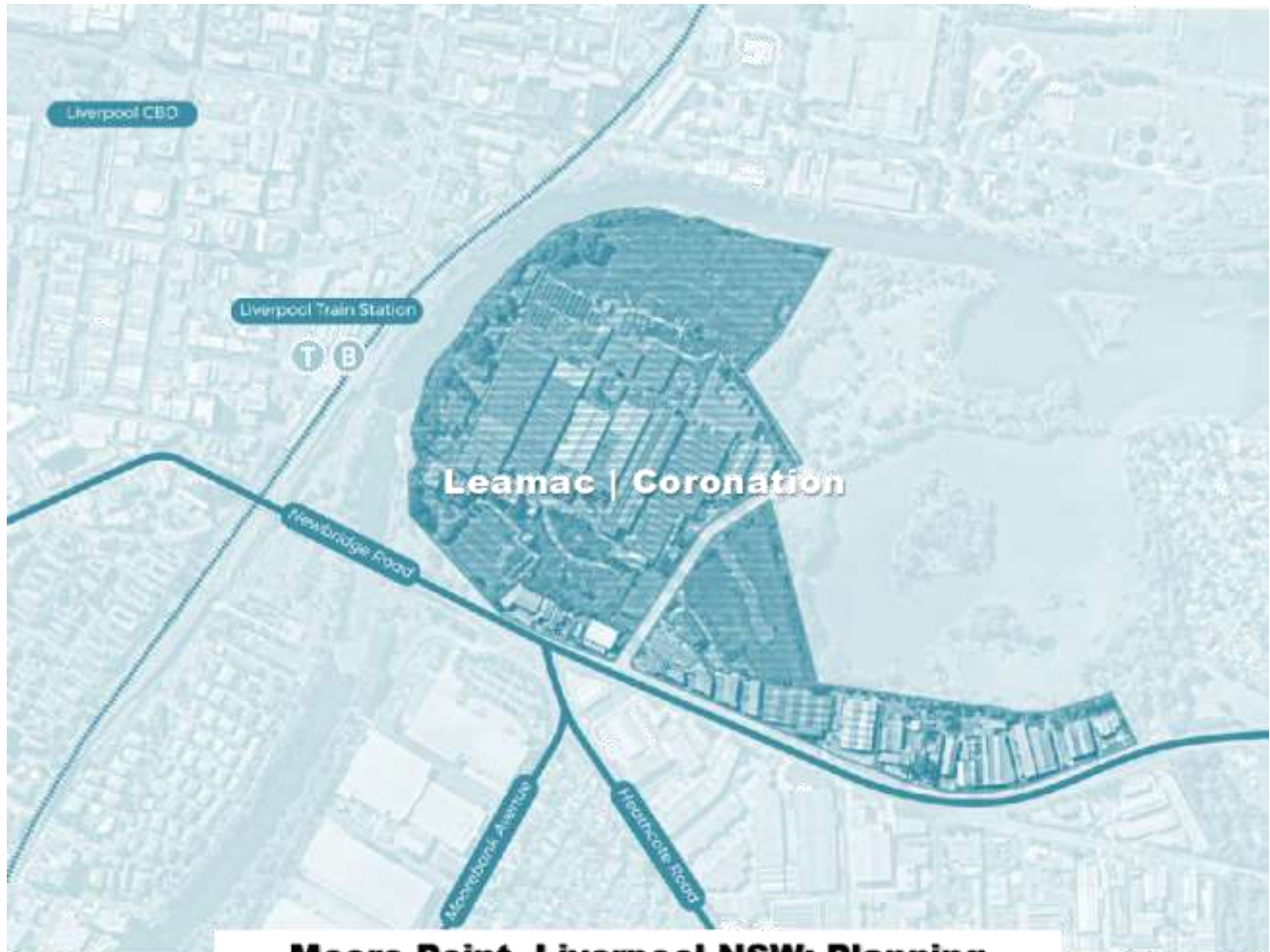
1 Aboriginal places have been declared in or near the above location. *

ID	Aboriginal Place Name
57	Collingwood Precinct

[illegible]

Report generated by ARLIS Web Service on 17/09/2010 for Unesco Catalogue for the following area at left: 200, 100108 10000044 with a buffer of 1000 meters. Additional info: Use-Intelligence agreement. Number of Aboriginal sites and Aboriginal objects found is 3.





Moore Point, Liverpool NSW: Planning Proposal — Aeronautical Impact Assessment

Version 1.1

6 April 2020

**strategic
airspace**

Prepared by Consultants:



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Client:

Leamac | Coronation

Document Control

Document Number: **19.005-01-001**

Version: **1.1**

Document Title: **Moore Point, Liverpool NSW: Planning Proposal — Aeronautical Impact Assessment**

Purpose / Abstract: *This Aeronautical Assessment Report has been prepared by Strategic Airspace (StratAir) on behalf of Leamac and Coronation to address the aviation-related airspace height constraints and impacts in relation to a Planning Proposal at Moore Point, Liverpool (the site).*

The Moore Point site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018.

The objective of this aeronautical impact report is to inform the strategic development of the ongoing planning process. The heights used for assessment against the aviation-related airspace height protection surfaces are based on the top RLs of the proposed building envelopes.

Given the site location — approximately 5km to the west of Bankstown Airport — the Planning Proposal is subject to the Prescribed Airspace of the airport.

The low-rise buildings are unlikely to infringe the prescribed airspace of the airport and would therefore not require any specific height approvals. The mid-rise and taller buildings are likely to infringe the airport's Obstacle Limitation Surface (OLS) heights and would therefore need to be referred for an airspace approval under the Airports (Protection of Airspace) Regulations 1996 (APAR) prior to construction. Applications can be submitted at any time; and at the latest would be submitted at the time of DA submission and are usually a condition of DA approval. Height approvals are not required for rezoning applications.

Whilst applications are submitted to the airport, the authority responsible for making final determinations of such applications is the Commonwealth Department of Infrastructure, Transport, Regional Development and Communication (DITRDC).

Based on current airspace constraints, the maximum permissible heights for buildings across the site fall into two categories: 108m Australian Height Datum (AHD) in the eastern portion of the site; and 136m AHD in the western portion of the site. Furthermore, it is highly likely that the same height constraint would be applicable to cranes required for the construction of buildings, except where the applicant can demonstrate that taller cranes can be operated safely and within likely operational approval conditions. The absolute maximum height up to which cranes would potentially be approved for any building is considered as part of a 'feasibility test' when assessing a building height application, when detail design drawings denoting the construction methodology can be assessed. Therefore, this must be considered an important factor as part of the ongoing planning of building heights, and the construction and delivery of Moore Point.

In summary, the maximum heights of building envelopes in the Planning Proposal do not exceed the PANS-OPS height limits, the maximum permissible building heights in the relevant areas, and so are considered technically approvable under the APAR.

Nothing in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes, based on the findings of this aeronautical assessment.

Contract: -

StratAir Ref: 19.005
(ref also 17.001.02 & 18.030)

Change History

Version	Versn Date	Version By	QA By	Version / Change Description
1.0	26-Mar-2020	C. Pak-Poy	J. McCarthy	Initial version
1.1	06-Apr-2020	C. Pak-Poy	J. McCarthy	Minor amendments to Structure Plan

Distribution Control

Legend:	Uncont Uncontrolled Document	SMA Sydney Metro Airports (Bankstown)
	Client Leamac Coronation	StratAir Strategic Airspace
	APT Sydney Airport	AsA Airservices, Airservices Australia
	CASA Civil Aviation Safety Authority	DITRDC Department of Infrastructure, Transport, Regional Development & Communications

Issue Version	Issue Date	Issue Purpose / Description	Copy No	Copy Recipient
1.0	27-Mar-2020	Distribution to client	Uncont	StratAir internal, Client
1.1	06-Apr-2020	Distribution to client	Uncont	StratAir internal, Client

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In the event of translation for this purpose and any discrepancies between the translated and original versions, this original text will prevail.

For: Leamac | Coronation

Moore Point Liverpool — Aeronautical Assessment for Planning
Report by Strategic Airspace

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For: Leamac | Coronation

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Executive Summary

This Aeronautical Assessment Report has been prepared by Strategic Airspace (StratAir) on behalf of Leamac and Coronation to address the aviation-related airspace height constraints and impacts in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The Moore Point site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the precinct and site map inset in Figure 1 below.

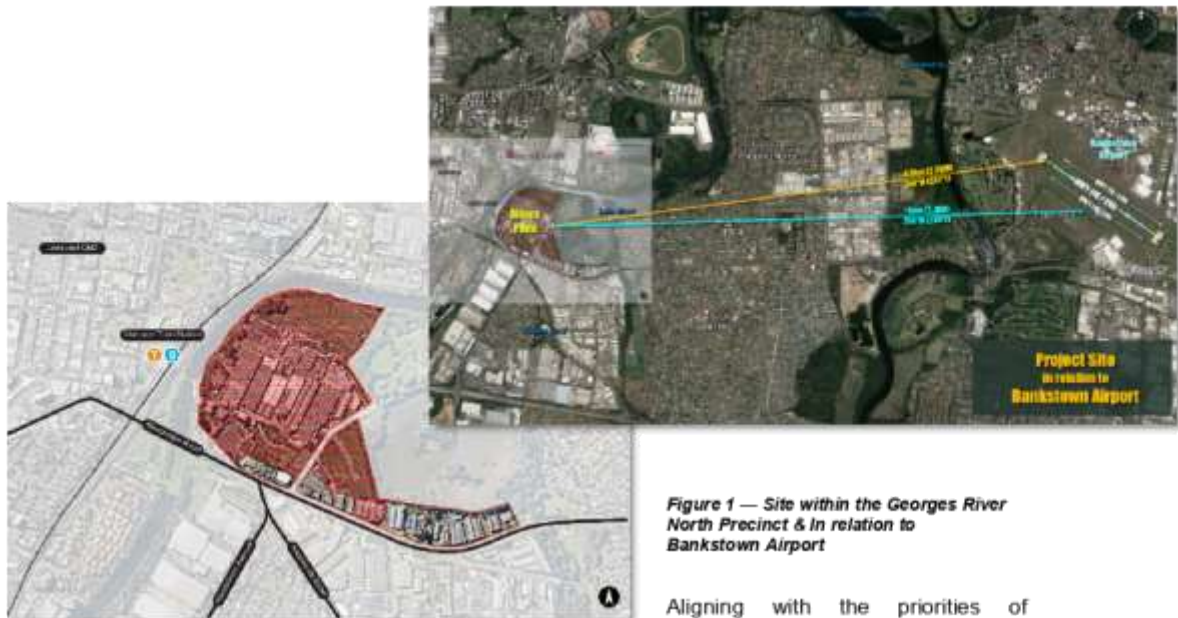


Figure 1 — Site within the Georges River North Precinct & In relation to Bankstown Airport

Aligning with the priorities of Government and implementation phase of the Place Strategy, the Planning Proposal involves the creation of a mixed use precinct, providing new homes and open space adjoining the Georges River and connecting to the Liverpool CBD.

The site lies to the west of Bankstown Airport, approximately 4.95 km (2.67 Nautical Miles, NM) from the aerodrome reference point (ARP). In this location it is subject to the Prescribed Airspace of the airport, making any future building development airport subject to the maximum permissible height constraints of that airspace under the Airports (Protection of Airspace) Regulations 1996 (APAR), which are administered by the Commonwealth Department of Infrastructure, Transport, Regional Development and Communications (DITRDC).

The Planning Proposal comprises a mix of low-rise, mid-rise and taller buildings, distributed across the site so as to satisfy planning objectives. The proposal has also been designed so that no building envelope would exceed the maximum permissible airspace height limits.

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Table 1 — Study Requirements

Ref No	Study Requirement	Addressed at
SR.1	Review relevant background information, including the 'Bankstown Airport Master Plan' to understand the current and proposed future operations of the airport, as relevant to the precinct.	Sections 2.2.2 (p14) & 2.3 (p16)
SR.2	Identify and clearly map the OLS, PANS OPS and any other relevant airport height limitation layers and surfaces.	The whole of Section 3 (p18)
SR.3	Translate these layers into a maximum height for permanent (e.g. buildings) and temporary (e.g. cranes) structures include a building methodology specialist to translate this information into maximum building envelope height planes.	<i>Summary:</i> Section 3.1 (p18) and 4 (p26) <i>Buildings:</i> Sections 2.2.5 (p16) and 3.3 (p21) <i>Cranes:</i> Section 3.5 (p25)
SR.4	Advise on other measures, if necessary, to ensure the precinct does not have an adverse impact on the operations of the airport — eg, lighting, reflective surfaces, etc).	Sections 3.4 (p24)
SR.5	Advise on the pathway required to secure approval from relevant bodies — eg, Airservices Australia, as part of subsequent development application processes, including for temporary structures such as cranes.	Section 2.2.4 (p15)
SR.6	Certify that subject to any recommended measures, the precinct proposal will not have an adverse impact on the operations of the airport.	Executive Summary (p4) & Section 4 (p26)

Pursuant to the Study Requirements (Table 1), this report has been prepared having regard to Prescribed Airspace for Bankstown Airport. It examines the current and forecast regulated airspace height constraints overhead the site that are related to aviation airspace protection requirements which would:

- Trigger the requirement to apply for an airspace height approval — the Obstacle Limitation Surfaces (OLS).
- Constrain the maximum permissible building envelope heights — the PANS-OPS surfaces heights.
- Potentially constrain the maximum permissible heights for cranes that would be required to enable construction of the proposed development (although approvals for cranes are only necessary after DA and prior to construction).

1.1 Constraints Affecting the Precinct

The relevant airspace constraints overhead the Planning Proposal study area are summarised in the following table.

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Table 2 — Summary of Key Airspace Height Constraints

Height Limits (AHD)	Height Limit Detail	Comment
~76m – 108m	OLS Conical Surface	<p>Threshold Heights for Airspace Height Applications — as depicted in Figure 8 (p20).</p> <p>Any development that would exceed the relevant limiting OLS height would require an 'airspace height' approval from the Department of Infrastructure, Transport, Regional Development and Communication (DITRDC) under the Airports (Protection of Airspace) Regulations (or APAR) prior to construction. Applications are usually made at the time of DA; and if the airspace approval may be subject of a DA consent condition if the airspace application is still under evaluation at the time of DA approval.</p> <p>A height application can be made for each building separately, a block or Superlot containing a number of buildings to be developed at the same time, or a single application can be made for the entire Moore Point precinct.</p> <p>The mid-rise and tall buildings proposed would infringe the OLS and would thus require airspace approvals — see Figure 9 (p21)</p>
108.1m 136m	<p>PANS-OPS CIRCLING Surface ...for Category B Aircraft — Eastern portion of the study area</p> <p>... for Category C Aircraft — Eastern portion of the study area</p>	<p>These constraint are the current maximum permissible building heights that would be approved today by the aviation authorities (see Figure 10, p22).</p> <p>None of the proposed building envelopes in the relative Circling coverage areas exceed these heights, and so could be considered technically approvable under the APARs.</p> <p>It is likely also to be the maximum height that would be considered approvable for cranes without necessarily requiring operating duration constraints (refer also section 3.5, p25)</p> <p>See Figure 10 (p22) and Figure 11 (p22)</p>

1.2 Assessment Conclusions

The airspace constraints affecting Waterloo South have been examined in relation to the maximum proposed building envelope heights, which are depicted in Figure 1 above.

The site is:

- Subject to Obstacle Limitation Surface (OLS) height limits which slope up from ~76m Australian Height Datum (AHD) at the north-eastern corner to around 108m AHD at the western edge of the study area.
OLS heights can be considered threshold heights; any building or crane which would exceed the relevant height would need to gain airspace height approvals from the Commonwealth Department of Infrastructure, Transport, Regional Development and Communication (DITRDC), under the Airports (Protection of Airspace) Regulations (APAR) prior to construction or erection.
 - The low-rise buildings will not require prior airspace approvals as they do not exceed the relevant OLS heights.
- Buildings ultimately constrained by the PANS-OPS Circling surface heights: at the Category B surface height of ~108m AHD in the east and at the Category C surface height of 136m in the west.
PANS-OPS surface heights are based on the heights related to the protection requirements of the various PANS-OPS Instrument Flight Procedures for Bankstown Airport. These define the maximum permissible heights for buildings (including all overruns) under the APAR, except where another aviation safety-related airspace constraint is lower.

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- No building envelope in the Planning Proposal exceeds these heights, and so all could be considered technically approvable under the APAR. Cranes up to this height would be approved without operating duration constraints.
- Ultimately limited by the Radar Terrain Clearance Chart (RTCC) / surfaces, at a fixed attitude of 152.4m AHD, across the entire site. This will most likely be the absolute maximum height limit for future cranes. Cranes which would exceed the relevant PANS-OPS surface height limit would be subject to 3-month durations and may also be required to be lowered to the PANS-OPS heights at night. This is the general principle. Applications for buildings are usually submitted at the time of a DA, and for cranes prior to construction.

The structure of the Superlots and the distribution of the taller buildings in the Planning Proposal already take into account the maximum permissible building heights related to the PANS-OPS height constraints imposed by the circling surface heights. As such, all building envelopes would remain below the relevant PANS-OPS surface height limit overhead, and as such are considered technically approvable under the Airports (Protection of Airspace) Regulations.

It is considered that that future applications for buildings in the Planning Proposal, under the Airports (Protection of Airspace) Regulations, supported by a full aeronautical assessment and safety case would be approved by the Department of Infrastructure, Transport, Regional Development and Communications.

Thus, nothing in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes based on the findings of this aeronautical assessment.

1 Introduction

This Aeronautical Assessment Report has been prepared by Strategic Airspace (StratAir) on behalf of Leamac and Coronation to address the aviation-related airspace height constraints and impacts in relation to a Planning Proposal at Moore Point, Liverpool (the site).

1.1 The Moore Point Planning Proposal

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. There is nothing contained within this report to preclude rezoning.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Source: Neamap, modified by Mecone

Figure 2 — Site Aerial

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

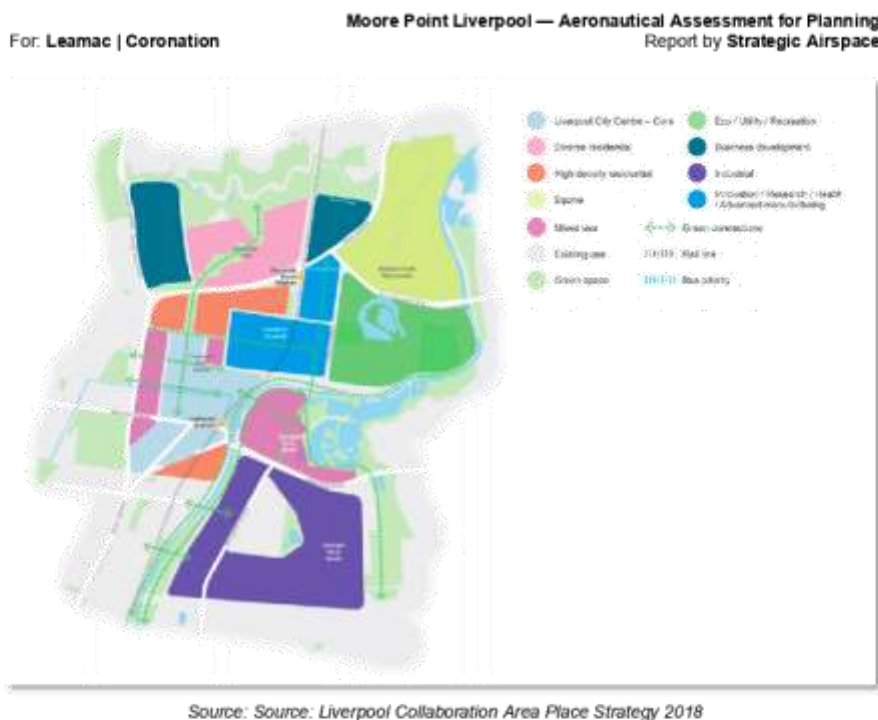


Figure 3 — A Place Strategy for Liverpool

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The draft LSPS provides the following short term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 Amend LEP to rezone Georges River Precinct north of Newbridge Road as a mixed-zone to support the Liverpool CBD and innovation Precinct, with an extensive open space system and cross-river linkages (short term).

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

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The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

1.1.1 Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

1.1.2 Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

1.1.3 Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

1.1.4 Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

1.2 Purpose of This Report

This report relates to the Moore Point Planning Proposal, with the report being focussed on the proposal's height impact in relation to the airspace required for the continuing safe operation of air traffic to and from Bankstown Airport especially (as the closest airport) and other airports in the greater Sydney Basin.

1.2.1 Study Requirements

The key matters addressed as part of this study are described in Table 3.

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Table 3 — Study Requirements

Ref No	Study Requirement	Addressed at
SR.1	Review relevant background information, including the 'Bankstown Airport Master Plan' to understand the current and proposed future operations of the airport, as relevant to the precinct.	Sections 2.2.2 (p14) & 2.3 (p16)
SR.2	Identify and clearly map the OLS, PANS OPS and any other relevant airport height limitation layers and surfaces.	The whole of Section 3 (p18)
SR.3	Translate these layers into a maximum height for permanent (e.g. buildings) and temporary (e.g. cranes) structures include a building methodology specialist to translate this information into maximum building envelope height planes.	<i>Summary:</i> Section 3.1 (p18) and 4 (p26) <i>Buildings:</i> Sections 2.2.5 (p16) and 3.3 (p21) <i>Cranes:</i> Section 3.5 (p25)
SR.4	Advise on other measures, if necessary, to ensure the precinct does not have an adverse impact on the operations of the airport — eg, lighting, reflective surfaces, etc).	Sections 3.4 (p24)
SR.5	Advise on the pathway required to secure approval from relevant bodies — eg, Airservices Australia, as part of subsequent development application processes, including for temporary structures such as cranes.	Section 2.2.4 (p15)
SR.6	Certify that subject to any recommended measures, the precinct proposal will not have an adverse impact on the operations of the airport.	Executive Summary (p4) & Section 4 (p26)



Source: SJB

Figure 4 — Indicative Concept Proposal

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1.3 Maximum Planned Building Envelope Heights & Assessment Elevations

The maximum heights of each building in the Planning Proposal have been designed to remain below the maximum permissible building heights defined by the PANS-OPS protection surfaces related to Bankstown Airport.

The relative levels (RLs) of the top of each building envelope are the equivalent of elevation in metres Australian Height Datum (AHD). The maximum RLs are based on the surveyed ground elevations, the number of storeys planned, design floor-floor heights and where relevant additional allowances for roof top features.

Table 4 below includes the maximum envelope elevations for the tallest building envelopes in each Superlot (which themselves are identified in Figure 5). Those Superlots shaded in grey have already been pre-assessed as containing building envelopes which are so low as to not have any impact on the Bankstown airspace.



Source: SJB

Figure 5— Moore Point Structure Plan (with Superlot References shown)

Table 4— Planned Maximum Heights of the Proposed Building Envelopes as per the Structure Plan

Superlot*	Building Hgt AGL (m)	Maximum Elevation (m AHD)	Potentially Subject to Height Assessment
A	127	135	Y
B	24	32	N

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Superlot*	Building Hgt AGL (m)	Maximum Elevation (m AHD)	Potentially Subject to Height Assessment
C	126	134	Y
D	125	134	Y
E	6	14	-
F	127	135	Y
G	127	135	Y
H	100	108	Y
I	17	23	-
J	14	23	-
K	128	136	Y
L	93	101	Y
M	91	99	Y
N	100	108	Y
O	98	106	Y
P	99	106	Y
Q	23	32	-
R	97	106	Y
S	72	80	Y
T	124	132	Y
U	127	135	Y
V	100	107	Y
W	95	100	Y
X	95	97	Y
Y	26	34	-
Z	99	106	Y
AA	83	91	Y

* For Superlot references, refer to Figure 5 above

Nothing contained in the body of this report would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes, based on the aeronautical impact assessment of the Moore Point structure plan design and maximum building heights proposed.

2 Aeronautical Impact Context

2.1 Location of the Proposed Development

2.1.1 Location in relation to Bankstown Airport

The site lies to the west of Bankstown Airport, approximately 4.95 km (2.67 Nautical Miles, NM) from the aerodrome reference point (ARP) at a bearing of 256° Magnetic (M) or 268.4° True (T) — as indicated in Figure 5 below.

The measurement point used is the edge of the closest tall building to the airport — the eastern edge of the tower building proposed for Superlot R (see Figure 5 above). The coordinates of the measurement point are:

WGS84 Latitude & Longitude	33° 55' 32.06" S	150° 56' 05.54" E
MGA94 Easting & Northing (Z56)	309107.967 E	6244175.946 N

The western border of the precinct is ~5.5 km (~3 NM) from the ARP.



Figure 6 — Site in relation to Bankstown Airport

There are three runways at the airport:

- **The Northern runway (RWY) 11L/29R** — the main (most used) runway, servicing flying training and general aviation arrivals and departures.
- **The centre runway, RWY 11C/29C** — the longest (and the only Code C) runway. This takes overflow traffic from the northern runway and is used for larger aircraft and those departing into controlled airspace. This runway and the instrument flight procedures for the airport are the primary basis of the PANS-OPS surfaces which define the maximum permissible development heights at the site.
- **The Southern runway, RWY 11R/29L** — the least used runway, typically used for flying circuit training.

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In relation to the central runway, RWY 11C/29C, the closest end of the runway is the northern end, the landing threshold identified as RWY 11C. The measurement point is ~4.63 km (2.5 NM) at 250°M (262.5°T) from the threshold of RWY 11C.

Although not under the direct flight paths in and out of the airport, the precinct still lies under the protection surfaces which define the height limits of the airport's Prescribed Airspace.

2.1.2 Location in relation to Other Airports in the Sydney Basin

The other airports in the Sydney Basin are too distant from the study area to have any impact on the airspace above it — with the exception of the minimum vector altitude (MVA) sectors used by the air traffic controllers, which are charted on Sydney Airport's Radar Terrain Clearance Chart (RTCC) surfaces plan.

2.1.3 Location in relation to Helicopter Landing Sites & Defined Chopper Flight Routes

The proximity of the site to nearby Liverpool Hospital's helicopter landing facilities, which are used for Emergency Medical Services (EMS) helicopter traffic, is also worth noting.

Whilst helicopter routes are not part of the prescribed airspace, there is an accepted requirement that new developments not interfere with helicopter emergency management services (HEMS) flights to/from hospital helipads serviced by the NSW Ambulance helicopter service. This requirement was set out in Guideline H of the National Airports Safeguarding Framework (NASF) in 2018. As such, the potential impact of new developments is now included as part of the set of key factors to be considered when evaluating airspace approvability under the APAR.

The north-west corner of the precinct is approximately 270m from the helipads¹ at Liverpool Hospital. However, the normal final approach and initial take-off flight paths for the hospital's helicopter landing pads do not cross the precinct area: they are north of and almost parallel to the section of the Georges River which defines the northern border of the precinct, as highlighted in the inset to Figure 7 below. The elevation of the HLS is 130 ft (39.6m AHD)², which is approximately 32m above ground level, and flights to/from the HLS would start/end at hover heights above that. Furthermore, all flights to/from the HLS must be made using Visual Flight Rules (VFR³), which means that the pilots must visually scan to stay clear of obstacles on the ground as well as other air traffic.

The precinct is well away from the standard northern and southern 'Chopper' routes to be used for helicopter arrivals to and departures from Bankstown Airport (which are defined by fixed arrival/departure locations in the Australian Aeronautical Information Publication (AIP), published by Airservices Australia). These are also depicted in the figure below.

1 Only the primary helipad (helipad East) is in operation. The old circular helipad (helipad West, the secondary helipad) at Liverpool Hospital closed in Q3 2019 and is not expected to be operational again until upgraded; the upgrade program is anticipated to occur sometime in the next 3-5 years.

2 Source: <https://www.ozrunways.com/helipads/view/helipad.jsp?code=OZHJM>

3 There are no PANS-OPS instrument flight procedures (IFR) to the Liverpool Hospital primary helipad.



Figure 7 — Site in relation to Liverpool Hospital and Standard Helicopter Routes

The site is too far from the Westmead Hospital Strategic Helicopter Landing Site (SHLS) — approximately 14 km (7.6 NM) 189°M (202°T) — to have any impact on the helicopter EMS (HEMS) traffic to/from that site.

2.2 Methodology

The methodology used to determine the maximum permissible building heights is based on an orderly assessment of the potential impact against the various elements described in this section.

2.2.1 Airspace Regulations

The proposed development site is subject to the Airports (Protection of Airspace) Regulations (APAR), under the Commonwealth's Airports Act, 1996), because of its proximity to Bankstown Airport and because of its proposed height. These regulations define both: how building height limitations due to airspace safety can be determined; and the process for gaining approval of the proposed development under the regulations.

The Prescribed Airspace Regulations, and their impact upon building height limitations, are described below.

2.2.2 Prescribed Airspace

Prescribed airspace, under these regulations, includes at minimum:

■ Obstacle Limitation Surfaces (OLS)

- The OLS surfaces are used to identify buildings and other structures that may have an impact upon the safety or regularity of aircraft operations at an airport. This impact depends upon both the type of operations at the aerodrome and which OLS surfaces are penetrated by a (proposed) building or structure.
- The OLS are flat and rising (invisible) surfaces around the airport. They are based on the geometry of the airport and its runways and therefore they rarely change.
- If a permanent building development (or temporary crane) that is proposed at a height that will penetrate (exceed) the height limit of an OLS surface, then an application must be made to the Commonwealth Department of Infrastructure, Transport, Regional Development and Communication (DITRDC) — via the closest airport, and with copies to any other potentially affected airport — for an airspace height approval prior to construction of the permanent development &/or erection of the temporary crane obstacle. Such applications should demonstrate that the proposed building development does not penetrate or adversely affect surfaces protecting: instrument flight procedures (PANS-OPS surfaces); radar vectoring; navigation infrastructure; and anything else that might affect the safety, efficiency or regularity of current and future air transport operations at the airport.

■ PANS-OPS* Surfaces

- PANS-OPS surfaces represent the protection surfaces for published instrument flight procedures to and from the airport. These surfaces comprise flat, sloping and complex surface components.
 - * PANS-OPS is the abbreviation of the international regulations related to the design to instrument flight procedures, a document published by the International Civil Aviation Organisation (ICAO), Doc 8168, Vol 2, Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS). In Australia, PANS OPS rules are adopted and codified in the Civil Aviation Safety Regulations Manual of Standards (CASR MOS) Part 173, which is maintained by the Civil Aviation Safety Authority (CASA).
- PANS-OPS surfaces must not be penetrated by either permanent or temporary buildings or structures. However, for a variety of reasons, PANS-OPS surfaces can and do change over time.
- As flight procedures are changed from time to time (usually by Airservices), the PANS-OPS Surface Plan published by an airport may not reflect the current situation — which is why we not only reference the airport's plans but also review the published charts for current (or pending) instrument flight procedures and evaluate the associated PANS-OPS height limits. The regulations also make a provision for any factor which may be deemed to adversely affect the safety, regularity or efficiency of aircraft operations at an airport. In light of this, it is necessary to consider the following factors.

■ Other Considerations

- **Bankstown & Sydney Airport's Declared Airspace Plans** additionally include:
 - Sydney Airport's Radar Terrain Clearance Charts (RTCC), which depict the areas and height limits related to the Minimum Vector Altitudes (MVAs) used by Air Traffic Controllers when vectoring aircraft.
 - Lighting and visual guidance protection plans — used for approach guidance by aircraft, especially at night and in times of poor visibility.
 - Navaid and radar evaluation / protection surface plans.
- **Other Factors**
 - Protection for other Instrument Flight Procedure surfaces, where the procedures are not classified as PANS-OPS and/or have been omitted from Bankstown Airport's declared PANS-OPS surfaces charts.
 - Airline Engine-Out (Contingency) Take-Off Splays (as per Civil Aviation Order 20.7 1b)
 These are generally assessed independently by the airlines as part of their own evaluations of any given airspace height application, but it is prudent to evaluate any potential impact in advance.
 - Other miscellaneous factors that may be considered as potential safety issues by any of the key stakeholders, and the Civil Aviation Safety Authority (CASA) in particular. This may also include protection of critical airspace for visual

flight procedures used for emergency management service (EMS) helicopter landing sites (HLS).

Note: Airspace that is approved by the Department of Infrastructure, Transport, Regional Development and Communication (DITRDC) as Declared Airspace is considered part of an airport's Prescribed Airspace.

2.2.3 Note about Heights: Australian Height Datum (AHD) vs Above Ground Level (AGL)

All "heights" provided in this document are elevations expressed in metres in the Australian Height Datum (AHD) — and thus they are true elevations, and NOT heights above ground level (AGL).

For estimating maximum development heights AGL, the ground elevation^{AHD} should be subtracted from the airspace height limits^{AHD}.

Note also for aviation-related airspace height limits, any building height approval under the Airports (Protection of Airspace) Regulations is regarded as inclusive of the building itself plus all rooftop furniture and overruns (plant buildings, lift risers, etc).

For the purposes of this Planning Proposal it is assumed that the building envelopes in the concept masterplan are inclusive of such overruns.

2.2.4 The Application Pathway for Airspace Height Approvals

All applications for permanent structure (called *controlled activities*) and temporary (*short-term controlled activities*) under APAR must be submitted to DITRDC, at the appropriate time, through the closest relevant airport. At the latest, approvals for buildings must be gained prior to construction, but are usually required as a condition of approval of Development Applications by most Councils, including the Liverpool City Council.

Note that prior airspace approval is not required for rezoning.

Applications should include aeronautical impact assessment reports that are based on the most current plans for the proposed development available at the time. For major developments, such reports should include consideration of cranes that will be required for construction: this information will be used for assessment of the feasibility of constructing the buildings if approved at the maximum heights sought. Separate applications for cranes will also be required at the appropriate times during the construction period, prior to their erection.

There are a number of factors and considerations that would influence a decision on when to make an APAR application for a building. Common decision criteria are outlined below.

- The need for early certainty of approval, versus the effort entailed in preparing documentation and supporting details required to prepare and justify an APAR application that can be approved.
- Application assessment lead time: under the APAR, the minimum processing time for evaluation is 49 days, but it may be substantially longer before a determination is made if additional information and/or clarifications are required.
- Approvals are sometimes not required prior to submitting a development application (DA) but in other cases planning assessment requires a level of certainty that an APAR application would be approved in the event that the Planning Proposal or DA is approved.
 - Some DAs are granted with the requirement to secure an airspace height approval as a consent condition.
 - Bankstown Airport, CASA and DITRDC prefer to process applications that already have DA approval for several reasons:

- Because applications based on advanced development plans and designs (eg, to DA level or beyond) will have enough associated information — eg, a Construction Management Plan which includes preliminary crane plans — that will help to support and justify the feasibility of construction in the event of an APAR approval; and
 - To reduce the likelihood that they will have to re-evaluate the sites for amended applications in the future due to changed designs (for example, following DA resolution).
 - That said, the airport has a formal process for applications as a result of DA referrals by councils, and applications will be accepted at any time even well before submissions of applications for DAs or similar.
- In the event that changes to a design or construction events are likely to exceed an approval already granted for the site, an application for an amendment to the pre-existing approval would need to be made. The documentation requirements and assessment periods for amendments are usually the same as for an initial application.

2.2.5 Applications for Buildings

For proposed developments that would penetrate the OLS, the airport would seek consultation from Airservices Australia, CASA and other key stakeholders (such as major airlines), and then within 3 weeks from the date of receipt forward the application to DITRDC. Upon final receipt of technical calculations and agency and stakeholder feedback, DITRDC would make a determination and advise the referring airport and the applicant. Whilst the APAR provide a 4-week response timeframe for the DITRDC response, there are provisions whereby this timeframe can be extended, especially where DITRDC seeks clarification or further information to help in the assessment of complex cases.

A successful application would be given approval under Regulation 14 of the APAR as a controlled activity.

2.2.6 Applications for Cranes

For proposed cranes and temporary structures that would penetrate the OLS but not infringe the PANS-OPS constraint overhead, the airport may grant approval of applications under delegation. If an application seeks approval for cranes that would penetrate the PANS-OPS height constraint, permission may be granted by DITRDC subject to operational and safety assessments, as well as the agreement of the airport. In such cases, a crane which infringes the PANS-OPS would be approved for a maximum duration of 3 contiguous months as a short-term controlled activity under Regulation 14(5) of the APAR.

See also section 3.5 Considerations re Max Building Heights & Future Cranes (p25) regarding future crane implications for buildings in the Planning Proposal.

2.3 Airport Plans & Aeronautical Data References for the Study

2.3.1 Bankstown Airport Master Plan 2019

The current plan in effect, the Bankstown Airport Master Plan 2019, has two planning timeframes: a shorter-term planning period to 2024 and a longer-term forecast period from 2024 to 2039.

The master plan continues the provision for an extension of the main instrument flight runway, RWY 11C/29C. This will have no adverse effect on the existing airspace constraints overhead the site because the planned

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extension is at the RWY29C (south-eastern) end of the runway. The master plan does not forecast any other potential changes to the aerodrome infrastructure or flight paths which would cause any additional impact on the airspace protection constraints overhead the site.

Similarly, the master plan indicates that even up to 2039 there would be no effective change in the ANEF noise contour overhead the site.

2.3.2 Bankstown Airport Prescribed Airspace Plans

The currently available plans comprise the OLS and PANS-OPS surfaces charts. The 2013 OLS chart (Declared 2016) is based on the planned extension to the east of the centre runway RWY 11C/29C. The OLS contours over the site are the same as those shown in section 3.2 below (p19).

The Bankstown Airport PANS-OPS surfaces chart, titled the Critical Surfaces (2018), was recently updated: this 12-Mar-2020 update includes some updates to take into account currently published PANS-OPS instrument flight procedures, but still appears to contain some inaccuracies due to reference of outdated PANS-OPS standards. Nevertheless, the height constraints over the site are consistent with those analysed by StratAir and documented in section 3.3 (p21).

2.3.3 Procedure & Airspace Charts published by Airservices Australia

These charts are regularly updated every three months and the updates are published on Airservices Australia's website six weeks prior to implementation. These charts reflect changes in the international standards for PANS-OPS procedures, changes in the navigation infrastructure used and other changes implemented as a result of air traffic management demands and practices from time to time.

The PANS-OPS instrument flight procedures published in these charts are the procedures pilots are obliged to follow. Hence, they are the best source of information in deriving current airspace restrictions. The height limitations identified in this report are based on the most recent version of these and other relevant charts published by Airservices Australia. The charts referenced are listed in Appendix 2 — PANS-OPS Procedures.

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3 Analysis

3.1 Analysis Summary

The impact of the various building height limitations, from lowest to highest, is summarised in the following table.

Table 5 — Analysis Summary — Airspace Height Constraints

Height Limits (AHD)	Height Limit Detail	Comment
~76m – 108m	OLS Conical Surface	<p>Threshold Heights for Airspace Height Applications — as depicted in Figure 8 (p20).</p> <p>Any development that would exceed the relevant limiting OLS height would require an 'airspace height' approval from the Department of Infrastructure, Transport, Regional Development and Communication (DITRDC) under the Airports (Protection of Airspace) Regulations (or APAR) prior to construction. Applications are usually made at the time of DA; and if the airspace approval may be subject of a DA consent condition if the airspace application is still under evaluation at the time of DA approval.</p> <p>A height application can be made for each building separately, a block or Superlot containing a number of buildings to be developed at the same time, or a single application can be made for the entire Moore Point precinct.</p> <p>The mid-rise and tall buildings proposed would infringe the OLS and would thus require airspace approvals — see Figure 9 (p21)</p>
108.1m	<p>PANS-OPS CIRCLING Surface for Category B Aircraft</p> <p>— Eastern portion of the study area</p>	<p>This constraint is the current maximum permissible building height for buildings under this coverage area that would be approved today by the aviation authorities (see Figure 10, p22).</p> <p>None of the proposed building envelopes exceed this height, and so could be considered technically approvable under the APARs.</p> <p>It is likely also to be the maximum height that would be considered approvable for cranes without necessarily requiring operating duration constraints (refer also section 3.5, p25)</p>
136m	<p>PANS-OPS CIRCLING Surface for Category C Aircraft</p> <p>— Western portion of the study area</p>	<p>This constraint is the current maximum permissible building height for buildings under this coverage area (west of the Cat B circling area) that would be approved today by the aviation authorities (see Figure 10, p22).</p> <p>None of the proposed building envelopes exceed this height, and so could be considered technically approvable under the APARs.</p> <p>It is likely also to be the maximum height that would be considered approvable for cranes without necessarily requiring operating duration constraints (refer also section 3.5, p25)</p>

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Height Limits (AHD)	Height Limit Detail	Comment
152.4m	Radar Terrain Clearance Chart (RTCC) Surface — Entirety of the study area	This constraint is the likely maximum permissible height that may potentially be considered approvable for cranes. Where cranes are approved at heights that exceed the relevant PANS-OPS surface height, there would be strict operational conditions (refer also section 3.5, p25). Note that applications for cranes are only required prior to construction, typically not until after approval of DA.
N/A	PANS-OPS Approaches & Departures Surfaces	The study area is outside the extent of the protection areas of PANS-OPS Approach Surfaces for Sydney Airport. Where PANS-OPS Missed Approach and Departure Procedure Surfaces do overlay the study area, the limiting heights are higher than those of the Circling Surface height limits — and so are not applicable to the approvability of the building envelopes included in this Planning Proposal.
NA	Other Surfaces	The study area is outside any airspace protection requirements related to Bankstown Airport's Navigation and Airport Lighting and Visual Guidance facilities. It is also clear of the primary flight paths used by emergency services helicopters to and from the nearest hospital (Liverpool Hospital).

3.2 OLS Analysis

The precinct is under Bankstown Airport's OLS Conical Surface, which rises at a gradient of 5%. As illustrated in Figure 8 below, the OLS height limits range:

- from approximately 76m AHD above the north-eastern corner of the site;
- to approximately 108m AHD at the south-western corner of the precinct.

Any of the buildings in the precinct, as well as cranes used for construction (when applicable), where their maximum heights would penetrate the relevant OLS height constraint overhead would need to be included in 'airspace height' applications under the Airports (Protection of Airspace) Regulations, for consideration and explicit approval prior to construction. APAR height applications for buildings would not be required until the submission of DAs at the earliest.

Proposed buildings with maximum heights that would be lower than the relevant OLS height constraint do not need such 'airspace height' approvals.



Figure 8 — Indicative OLS Conical Surface Height Contours over the Site

Figure 9 below illustrates which building envelopes — based on the Planning Proposal masterplan and the maximum heights indicated in Table 4 above (p9) — would infringe the OLS Conical Surface. The 3D view depicts the extent of penetration.

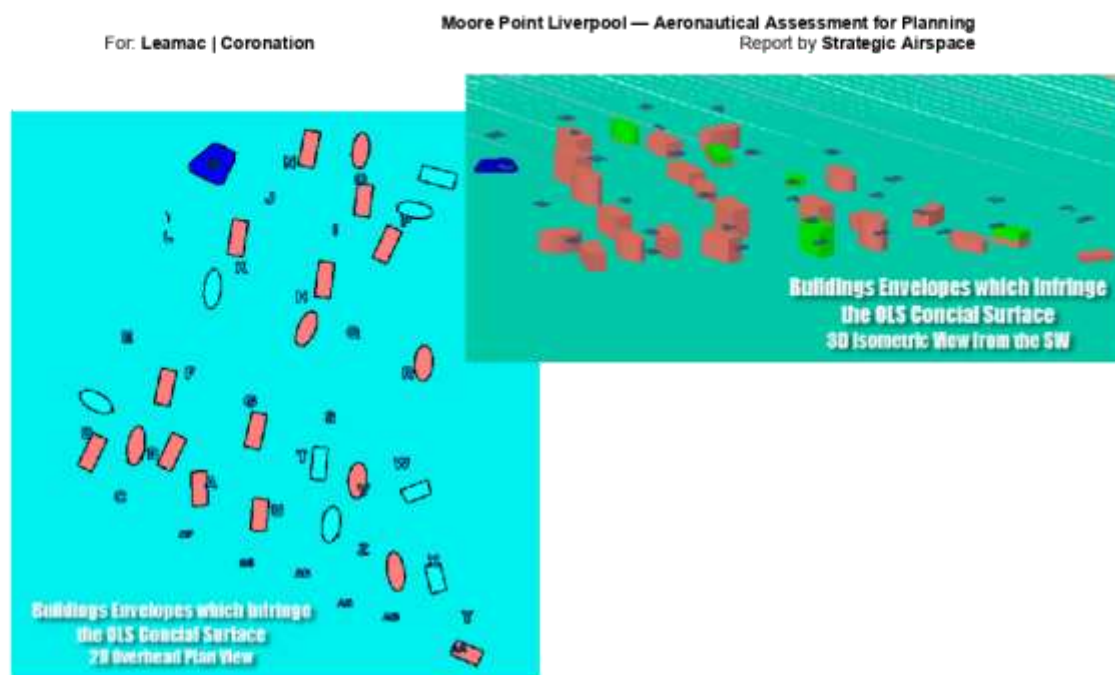


Figure 9 — Building Envelopes which would infringe the OLS Conical Surface — in 2D and 3D

Buildings that ultimately gain height approvals may be required (as part of the approval conditions) to install and operate obstacle lights on the sides and/or tops of the buildings, subject to recommendations made by CASA during their assessment of a height application and based on the specifications in the Civil Aviation Safety Regulations (CASR) Manual of Standards (MOS) Part 139.

3.3 PANS-OPS Analysis

None of proposed buildings in the precinct would penetrate the limiting PANS-OPS surfaces shown in Bankstown Airport's Prescribed Airspace. Therefore, all such buildings could be considered approvable under the Airports (Protection of Airspace) Regulations — subject to other safety considerations that CASA might consider relevant.

In this particular case, the consultants believe that all such buildings would be granted 'airspace height' approvals by DITCRD. The taller buildings may be approved with conditions such as need to install obstacle lighting.

In addition to reviewing the PANS-OPS Surfaces chart of Bankstown Airport's PANS-OPS Critical Surfaces (2018, updated 12-Mar-020) plan, assessment was conducted of the following instrument (non-visual) procedure types for Bankstown Airport, as published by Airservices Australia in the Australian Aeronautical Information Publication (AIP) Departure and Approach Procedures (DAP), up to the current Amendment 162 (effective 27-Feb-2020 to 20-May-2020).

- The Circling Minima and Minimum Sector Altitudes (MSAs) for existing PANS-OPS procedures
"Area" procedures, which provide protection for aircraft manoeuvring or circling within defined areas above the airport and surrounds
- The discrete minima for the Instrument Approach Procedures.
- Missed Approaches — as part of the evaluation of Approach Procedures
- The existing Standard Instrument Departure Procedures (SIDs)

Analysis of these procedures confirms that the precinct is constrained by the circling minima for Category B and Category C aircraft — as depicted in the figures below.

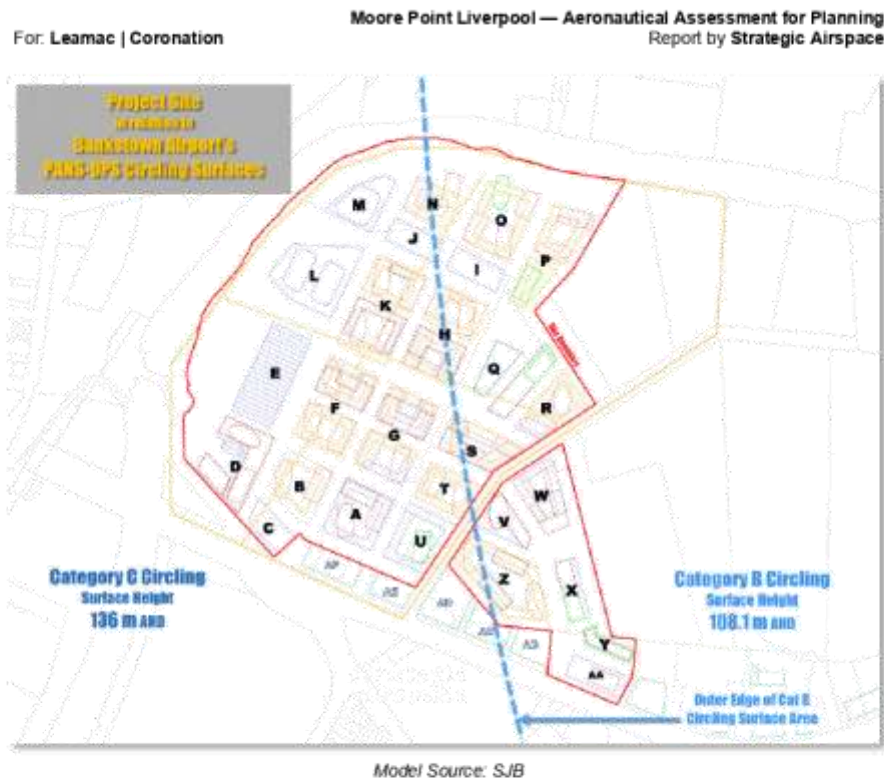


Figure 10 — PANS-OPS Cat B & Cat C Constraining Surfaces over the Site

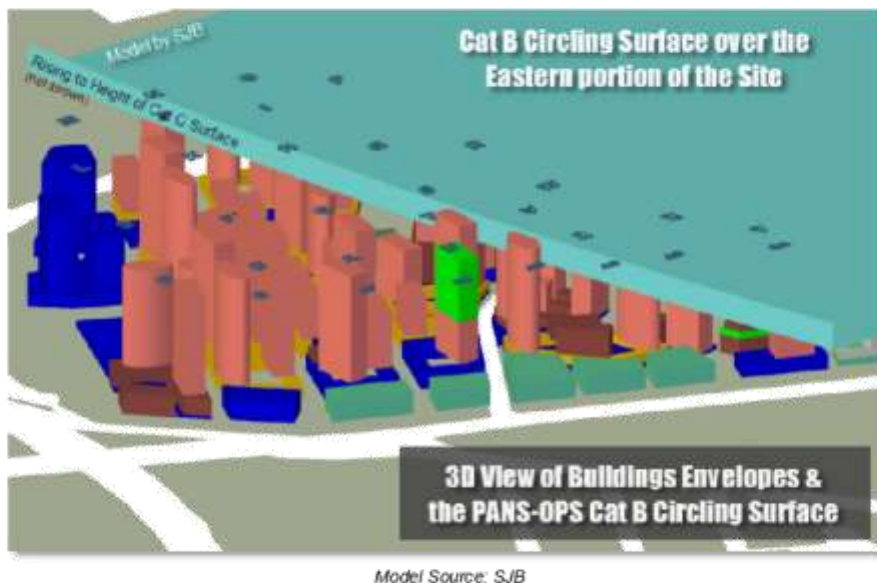


Figure 11 — 3D View of Planning Proposal Building Model relative to the PANS-OPS Circling Surfaces

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Table 6 — PANS-OPS Height Limit Summary

Procedure	Height Limit (m AHD)	Description
Circling — Cat B	108.1	<p>Category B Circling — The 108.12m Cat B circling surface height constraint covers the area closer to the airport and extends out to approximately 40% of the eastern portion of the site. Refer Figure 10 and Figure 11 above.</p> <p>The calculated height limit is marginally more conservative in height than that published on the Bankstown Airport PANS-OPS chart.</p> <p>This height is considered the maximum permissible building height over the coverage area.</p> <p>None of the building envelopes in the Planning Proposal which are under the coverage area of this surface exceed this limiting height, and so can be considered technically approvable under the APARs.</p>
Circling — Cat C	136	<p>Category C Circling — Covers the area over the site outside of the area already covered by the Cat B circling. Refer Figure 10 and Figure 11 above.</p> <p>The calculated height limit of 136.032m (which is marginally higher than the 135.9m height published on the Bankstown Airport PANS-OPS chart) results applying the from standards in the ICAO PANS-OPS document to the published circling minima.</p> <p>This height is considered the maximum permissible building height over the coverage area.</p> <p>None of the building envelopes in the Planning Proposal which are under the coverage area of this surface exceed this limiting height, and so can be considered technically approvable under the APARs.</p>
Approaches and Missed Approaches to all Runways	N/A	Outside the lateral protection areas of many procedures. Where protection surfaces overlay the study area, the lowest limits are higher than the circling surface height constraints.
Departures	N/A	Where protection surfaces overlay the study area, the lowest limit is higher than the circling surface height constraints.
Minimum Sector Altitude (MSA)	457.2	10NM Inner MSA of 2500ft.

Further details are provided in the following sections.

3.3.1 “Area” Procedures

3.3.1.1 Minimum Sector Altitudes (MSAs)

The height restrictions imposed by Minimum Sector Altitudes are higher than the limits imposed by other procedures.

3.3.1.2 Circling Minima

These are areas that define where and how low aircraft are allowed to circle the airport before landing. They apply to the published landing procedures: the Cat B minima for smaller category A and B aircraft; and the Cat C minima for the larger and/or faster category C aircraft.

As noted Table 6 above and as illustrated in the figures above, the eastern portion of the site is constrained by the Cat B circling surface height and the

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western portion of the site is constrained by the higher height related to the Cat C circling surface.

3.3.2 Instrument Approaches & Missed Approaches, and Standard Instrument Departures (SIDs)

The site is outside the lateral extent of the protection surfaces for some of the published instrument flight procedures (IFPs), and thus presents no impact to those procedures.

Where the site is under the coverage area of other IFPs, the limiting heights of the PANS-OPS protection surfaces for those procedures are higher than the Circling surface height constraints.

3.4 Other Assessment Considerations

The following table provides a brief assessment of other considerations.

Table 7 — Other Assessable Height Limitations — including the RTCC Surface Limit

Procedure	Height Limit (m AHD)	Description
Radar Terrain Clearance Chart (RTCC)	152.4	This height constraint is applicable over the entire site. This is the limit related to the Minimum Vectoring Altitude (MVA), which is used by air traffic controllers. This information is sourced from the RTCC published as part of Sydney Airport's Prescribed Airspace Plans. This would be regarded as the absolute maximum permissible height for cranes, noting that the preference of the airport and aviation agencies would be for cranes to operate at maximum heights which would not infringe the relevant PANS-OPS surface height constraints.
Navigation Infrastructure	N/A	Based on the site location and maximum height, we believe that the proposed development will not adversely affect the NDB navigation aid at Bankstown Airport, and it will not adversely affect the radars used for monitoring aircraft operations in the Sydney Basin.
Airlines Engine Out Procedures	N/A	The location of the proposed development is outside any areas that would be assessed for impact or required for use under One-Engine Inoperative operations by relevant passenger transport aircraft operators that use Bankstown Airport.
Strategic Helicopter Landing Sites (SHLS)	N/A	The precinct location lies just to the south of the main final approach and initial take-off/departure flight path for EMS helicopter traffic to and from the Liverpool Hospital helipads. Further, even if helicopter traffic were to fly over the Georges River along the northern border of the precinct, the proposed buildings are buffered firstly by green space and then by lower buildings which would be well below the critical height of the helicopters at those locations. The precinct is also well clear of the published arrival and departure routes required to be used by helicopters using the helipad at Bankstown Airport. Refer also to section 2.1.3 (p12) and Figure 7 (p13).

There are no other known considerations that are considered relevant and which would constrain the maximum height of the proposed development.

3.5 Considerations re Max Building Heights & Future Cranes

As previously noted in section 2.2.4 The Application Pathway for Airspace Height Approvals and section 2.2.6 Applications for Cranes (p16), height applications for cranes are usually made only when required, prior to construction.

All buildings in this Planning Proposal which have maximum RLs less than say 70m AHD in the Cat B circling area of coverage and those less than say 100m AHD under the Cat C circling area height constraint would most likely be able to be constructed using cranes that would not infringe the relevant PANS-OPS height constraints. Not only does this mean that height applications for the buildings themselves would be simpler to process, it also means that cranes for such buildings could be approved without operating duration restrictions.

For the taller buildings, airspace height applications may require supporting information to confirm that cranes which would exceed the PANS-OPS height limit could be safely operated at heights that would be below the next highest PANS-OPS or the RTCC surface height limit — which in this case is probable because there is sufficient vertical clearance between the maximum building heights proposed and the limiting RTCC height of 152.4m AHD — and that the applicant is aware that any associated cranes approvals would be to strict conditions. Such approval conditions would include a strict 3-month operating duration, and other operating conditions. This was the case for the height application of the tallest buildings for the nearby Green Square development itself, and later applications for cranes that exceeded the PANS-OPS circling height limit.

These are not conditions that are applicable to approval of a rezoning application per se, but are mentioned here as information that would pertain to developers at the time of preparation of DAs and height applications for buildings.

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4 Conclusion

The Planning Proposal contains a number of buildings which would infringe the OLS conical surface which rise across the site — from approximately 76m AHD in the east to 108m AHD at the western edge. The masterplan contains buildings of different types and heights dispersed across the site, following the planning concepts and objective. The low-rise buildings would not infringe the OLS and so would not require any aviation-related airspace height approvals. Those buildings that ultimately would infringe the relevant OLS height constraint would require airspace height approvals under the APAR prior to construction (and most likely at the time of a DA).

The structure of the Superlots and the distribution of the taller buildings in the Planning Proposal already take into account the maximum permissible building heights related to the PANS-OPS height constraints imposed by the circling surface heights. As such, all building envelopes would remain below the relevant PANS-OPS surface height limit overhead, and as such are considered technically approvable under the Airports (Protection of Airspace) Regulations.

In conclusion:

- **There is no technical impediment to approval of the development of the Moore Point Planning Proposal, and**
- **It is considered that that future applications for buildings in the Indicative Concept Proposal, under the Airports (Protection of Airspace) Regulations, supported by a full aeronautical assessment and safety case would be approved by the Department of Infrastructure, Transport, Regional Development and Communications.**

Thus, nothing in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes based on the findings of this aeronautical assessment.

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APPENDICES

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APPENDIX 1 — ABBREVIATIONS

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Abbreviations used in this report and/or associated reference documents, and the meanings assigned to them for the purposes of this report are detailed in the following table:

Abbreviation	Meaning
AC	Advisory Circular (document supporting CAR 1998)
ACFT	Aircraft
AD	Aerodrome
ADS-B	Automatic Dependent Surveillance – Broadcast: an aircraft location identification and tracking service facilitated by satellite signals and ground tracking stations, similar to (but more accurate than) radar
AGL	Above Ground Level (Height)
AHD	Australian Height Datum
AHT	Aircraft Height
AIP	Aeronautical Information Publication
Airports Act	Airports Act 1996, as amended
AIS	Aeronautical Information Services
ALARP	As Low As Reasonably Practicable
ALC	Airport Lease Company
Alt	Altitude
AMAC	Australian Mayoral Aviation Council
AMSL	Above Minimum Sea Level
ANEF	Australian Noise Exposure Forecast
ANSP	Airspace and Navigation Service Provider
APACL	Australia Pacific Airports Corporation Limited, owner of Melbourne and Launceston Airports
APCH	Approach
APARs, or A(PoA)R	Airports (Protection of Airspace) Regulations, 1996 as amended
ARP	Aerodrome Reference Point
AsA	Airservices Australia
ASDA	Accelerated Stop Distance Available
ATC	Air Traffic Control(ler)
ATM	Air Traffic Management
BA (Planning)	Building Application or Building Approval (Planning)
BAC	Brisbane Airport Corporation
BCC	Brisbane City Council
CAO	Civil Aviation Order
CAR	Civil Aviation Regulation
CASA	Civil Aviation Safety Authority
CASR	Civil Aviation Safety Regulation
Cat	Category
CBD	Central Business District
CG	Climb Gradient
CNS/ATM	Communications, Navigation, Surveillance / Air Traffic Management
CPA	Cairns Port Authority, Operators Of Cairns Airport
DA (Aviation)	Decision Altitude (Aviation)
DA (Planning)	Development Application or Development Approval (Planning)
DAH	Designated Airspace Handbook
DAP	Departure and Approach Procedures (published by AsA)

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Abbreviation	Meaning
DEP	Departure
DER	Departure End (of the) Runway
DEVELMT	Development
DH	Decision Height
DITRDC / DITRDC / DIRD	Department of Infrastructure, Transport, Regional Development & Communications (since Dec-2019) Formerly the Department of Infrastructure, Regional Development (& Cities) (sometimes also abbreviated as Infrastructure)
DME	Distance Measuring Equipment
Doc nn	ICAO Document Number nn
DoD	Department of Defence
DODPROPS	Dependent Opposite Direction Parallel Runway Operations
DPIE	NSW Department of Planning, Industry & Environment
EIS	Environmental Impact Study
ELEV	Elevation (above mean sea level)
ENE	East North East
ERSA	EnRoute Supplement Australia
ESE	East South East
FACS	NSW Family & Community Services — formerly part of LaHC, but since July 2019 part of the NSW Department of Communities & Justice (DCJ)
FAF	Final Approach Fix
FAP	Final Approach Point
Ft	Feet
GBAS	Ground-Based Augmentation System, a GNSS augmentation system to provide vertical guidance and additional precision to non-precision approaches — permits GLS Approaches
GDA94	GDA is the Geocentric Datum of Australia. It has been implemented as the standard datum since 1994.
GLS	GNSS Landing System — a precision landing system like ILS but based on augmented GNSS using ground and satellite systems.
GNSS	Global Navigation Satellite System
GP	Glide Path
HIAL	High Intensity Approach Light
HLS	Helicopter Landing Site
IAS	Indicated Air Speed
ICAO	International Civil Aviation Organisation
IFR	Instrument Flight Rules
IHS	Inner Horizontal Surface, an Obstacle Limitation Surface
ILS	Instrument Landing System, a precision approach landing system
IMC	Instrument Meteorological Conditions
IPA	Integrated Planning Act 1997, Queensland State Government
ISA	International Standard Atmosphere
IVA	Independent Visual Approach
Km	Kilometres
Kt	Knot (one nautical mile per hour)
LaHC	NSW Land and Housing Corporation, part of the NSW DPIE
LAT	Latitude
LDA	Landing Distance Available

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Abbreviation	Meaning
LEP	Local Environment Plan (Planning)
LLZ	Localizer
LNAV	Lateral Navigation
LONG	Longitude
LSALT	Lowest Safe ALTitude
M	Metres
MAPt	Missed Approach Point
MDA	Minimum Descent Altitude
MDH	Minimum Descent Height
MDP	Major Development Plan
MGA94	Map Grid Australia 1994
MOC	Minimum Obstacle Clearance
MOCA	Minimum Obstacle Clearance Altitude
MOS	Manual Of Standards, published by CASA
MP	Master Plan
MSA	Minimum Sector Altitude
MVA	Minimum Vector Altitude
NASF	National Airports Safeguarding Framework
NDB	Non-Directional Beacon
NE	North East
NM	Nautical Mile (= 1.852 km)
nmDME	Distance from the DME (in Nautical Miles)
NNE	North North East
NNW	North North West
NOTAM	NOTice to AirMen
NPR	New Parallel Runway (Project, Brisbane Airport)
OAR	Office of Airspace Regulation
OCA	Obstacle Clearance Altitude (in this case, in AMSL)
OCH	Obstacle Clearance Height
ODPROPS	Opposite Direction Parallel Runway OPerations
OHS	Outer Horizontal Surface, an Obstacle Limitation Surface
OLS	Obstacle Limitation Surface, defined by ICAO Annex 14; refer also CASA MOS Part 139
PANS-OPS	Procedures for Air Navigation – Operations, ICAO Doc 8168; refer also CASA MOS Part 173
PAPI	Precision Approach Path Indicator (a form of VGSI)
PBN	Performance Based Navigation
PRM	Precision Runway Monitor
RAAF	Royal Australian Air Force
RAPAC	Regional AirSpace users Advisory Committee
REF	Reference
RL	Relative Level
RNAV	aRea NAVigation
RNP	Required Navigation Performance
RPA	Rules and Practices for Aerodromes — replaced by the MOS Part 139 — Aerodromes

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Abbreviation	Meaning
RPT	Regular Public Transport
RTCC	Radar Terrain Clearance Chart (refer also MVA)
RWY	Runway
SACL	Sydney Airport Corporation Limited
SID	Standard Instrument Departure
SODPROPS	(Independent) Simultaneous Opposite Direction Parallel Runway Operations
SPP	State Planning Policy, Queensland (specifically SPP 1/02: Development in the Vicinity of Certain Airports and Aviation Facilities)
SSDA	State Significant Development Application
SSP	State Significant Precinct
SSR	Secondary Surveillance Radar
STAR	Standard Arrival
STODA	Supplementary Take-Off Distance Available
TAR	Terminal Approach Radar
TAS	True Airspeed
THR	THReshold (of Runway)
TMA	TerMinal Area
TNA	Turn Altitude
TODA	Take-off Distance Available
TORA	Take-Off Runway Available
VFR	Visual Flight Rules
VIS	Visual
VMC	Visual Meteorological Conditions
V _c	Aircraft critical velocity reference
VNAV	Vertical Navigation
VOR	Very high frequency Omni-directional Range
VSS	Visual Segment Surface
WAC	Westralia Airports Corporation, operators of Perth Airport
WAM	Wide-Area Multilateration
WNW	West North West
WSW	West South West
WGS84	World Geodetic System 1984
WSA	Western Sydney Airport – the proposed second international airport for the Sydney Basin

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APPENDIX 2 — PANS-OPS PROCEDURES

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The latest versions of the IFPs consulted were from the current AIP Amendment 162 (effective from 27-Feb-2020 to 20-May-2020) — as indicated in Table 8 below.

The charts and procedures that are new or updates in the relevant amendment are highlighted in **deep red** text.

Table 8 — All PANS-OPS Instrument Flight Procedure Charts for Sydney Airport
 (AIP Amendment 162 – WEF 20200227 – 20200520)

SYDNEY/BANKSTOWN (YSBK)

Name of Chart	Effective Date	(Amendment No)
AERODROME CHART PAGE 1	27-Feb-2020	(Am 162)
AERODROME CHART PAGE 2	7-Nov-2019	(Am 161)
SID BANKSTOWN EIGHT DEP - RWY 11C/29C	9-Nov-2017	(Am 153)
NDB RWY 11C	8-Nov-2018	(Am 157)
NDB-A	8-Nov-2018	(Am 157)
RNAV-Z (GNSS) RWY 11C	8-Nov-2018	(Am 157)

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AIR QUALITY SUITABILITY STUDY MOORE POINT PRECINCT

Moore Point Landowners Group

6 April 2020

Job Number 19070994A

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Air Quality Suitability Study

Moore Point Precinct

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1 INTRODUCTION

This desktop air quality study has been prepared by Todoroski Air Sciences on behalf of Leamac and Coronation to qualitatively assess any likely constraints on air quality in relation to a Planning Proposal at Moore Point, Liverpool (the Site).

The Site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. Nothing contained in the body of this report would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

2 PROJECT SETTING AND DESCRIPTION

The Site proposes to develop the land at Moore Point to allow for uses including commercial, retail, mixed use (including residential), heritage, transport interchange, a school and open space. A number of air emissions sources, including various industrial operations, a sewage treatment plant and emissions from road traffic exist in the general area, and have been considered in this study.

Figure 2-1 presents the location of the Site. The Site is currently used for industrial purposes. Areas to the north and south of the Site are similarly zoned for industrial use.

Figure 2-2 presents the Moore Point Precinct concept masterplan and indicates the locations of the various proposed land uses.

The Site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018.

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- + Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- + Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone Georges River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- + Adaptive re-use of existing heritage;

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- + Foreshore embellishments and new open spaces;
- + Educational and cultural facilities;
- + Connections to Liverpool CBD and Train Station; and
- + Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy (refer to **Figure 2-3**) by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptative re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.



Figure 2-1: Site aerial (Source: Nearmap modified by Mecone)



Figure 2-2: Moore Point Precinct concept masterplan



Figure 2-3: A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

3 EXISTING ENVIRONMENT

3.1 Local meteorological conditions

The Department of Planning, Industry and Environment (DPIE) Liverpool monitoring station has been used to represent local meteorological conditions that would be experienced at the Site. The DPIE Liverpool station is located approximately 2km southwest of the Site. Annual and seasonal windroses prepared from data collected for the 2015 to 2019 year period are presented in **Figure 3-1**.

Analysis of the Liverpool DPIE windroses shows that on an annual basis, winds are predominately from the southwest to west. The autumn, winter and spring distributions are similar to the annual distribution with winds predominately from the southwest to west. During summer winds are predominately from the east.

The data show that there is relatively little air movement north and south, as might be expected given the general east-west alignment of the shallow drainage basin.

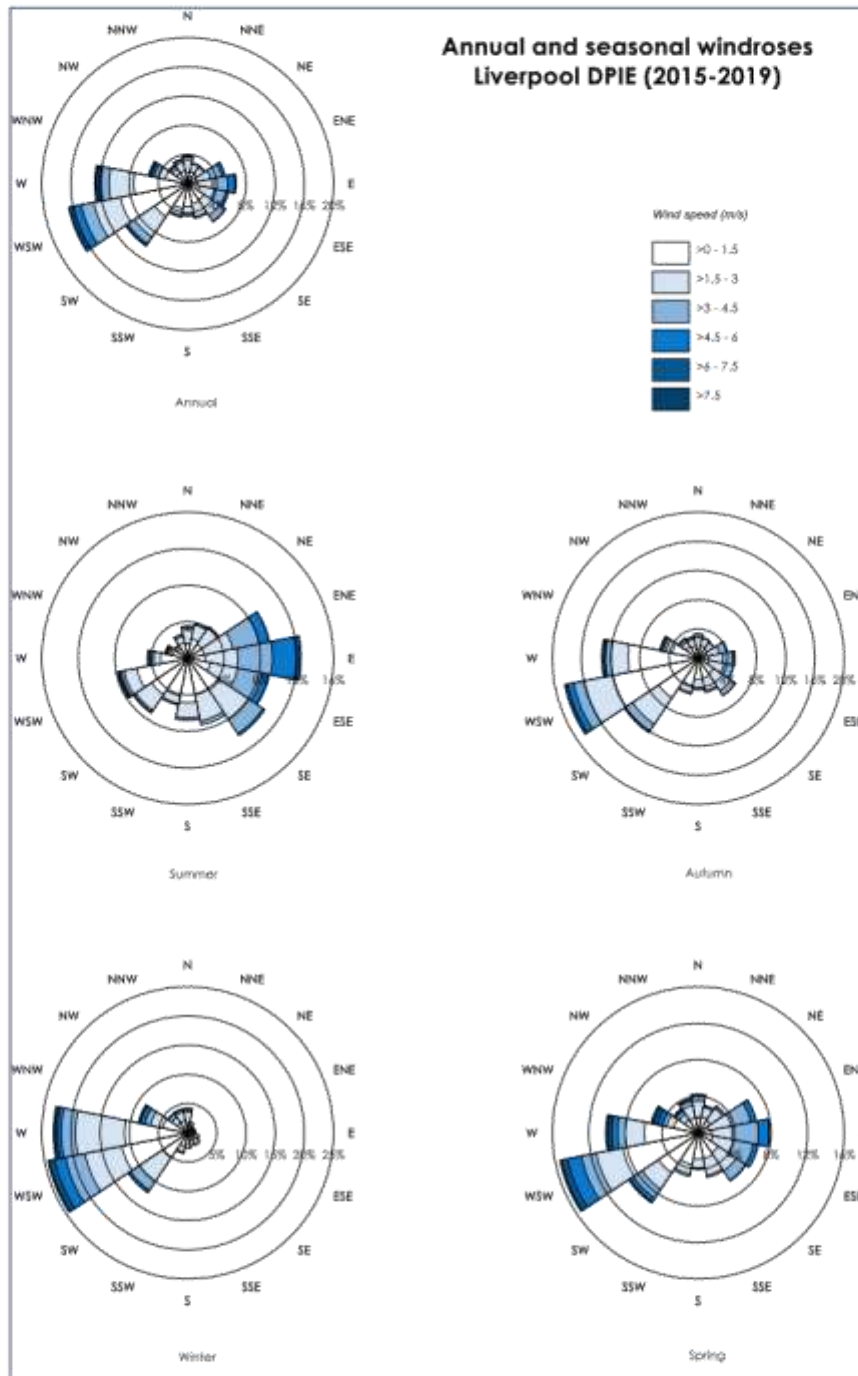


Figure 3-1: Annual and seasonal windroses for Liverpool DPIE (2015 to 2019)

3.2 Ambient air quality

The main sources of air pollutants in the area surrounding the Site include emissions from local anthropogenic activities (such as motor vehicle exhaust) and industrial activities.

The available PM₁₀ and PM_{2.5} monitoring data from the Liverpool DPIE monitoring station have been reviewed and are summarised in **Table 1**.

A review of **Table 1** indicates that the annual average PM₁₀ concentrations were below the relevant criterion of 25µg/m³, except in 2019, which would be due to extensive dust storms and bushfires which affected all NSW monitoring stations. Annual average PM_{2.5} levels were above the 8µg/m³ criterion for all years in the review period.

The maximum recorded 24-hour average PM₁₀ and PM_{2.5} concentrations exceed the relevant criterion of 50µg/m³ and 25µg/m³ respectively at times during the review period. This is relatively common for most monitoring stations in NSW. The sharp increase in frequency of exceedances during 2019 is associated with dust and smoke from the 2019/2020 dust storms and bushfires.

Table 1: Summary of particulate levels from Liverpool DPIE (µg/m³)

Year	PM ₁₀	PM _{2.5}
Annual average		
2015	18.4	8.5
2016	19.5	8.7
2017	20.6	8.9
2018	24.2	10.1
2019	27.7	12.8
Maximum 24-hour average		
2015	68.6	32.2
2016	68.7	50.8
2017	74.0	56.4
2018	101.5	45.4
2019	178.9	156.0
Number of days above criterion - 24-hour average		
2015	1	2
2016	3	4
2017	2	3
2018	13	8
2019	28	32

Table 2 presents a summary of the available SO₂ monitoring data from the Liverpool DPIE monitoring station. The data indicate that the annual, 24-hour and 1-hour average SO₂ concentrations at Liverpool were below the relevant criteria of 60µg/m³, 228µg/m³ and 570µg/m³ respectively for the review period.

Table 2: Summary of SO₂ levels from Liverpool DPIE (µg/m³)

Year	SO ₂
Annual	
2015	-
2016	-
2017	2.6
2018	2.6
2019	2.6
Maximum 24-hour average	
2015	-
2016	5.2
2017	7.9
2018	10.5
2019	10.5
Maximum 1-hour average	
2015	-
2016	18.3
2017	28.8
2018	52.4
2019	41.9

Table 3 presents a summary of the available NO₂ monitoring data from the Liverpool DPIE monitoring station. The data indicate that the annual average NO₂ concentrations at Liverpool were below the relevant criterion of 62µg/m³ and 1-hour average concentrations were below the relevant criterion of 246µg/m³ for the review period.

Table 3: Summary of NO₂ levels from Liverpool DPIE (µg/m³)

Year	NO ₂
Annual	
2015	18.8
2016	22.6
2017	22.6
2018	22.6
2019	22.6
Maximum 1-hour average	
2015	112.8
2016	88.4
2017	120.3
2018	116.6
2019	94.0

4 POTENTIAL SOURCES OF AIR POLLUTION

A site visit was conducted on 9 March 2020 to identify potential sources of air pollution in the vicinity of the Site. **Table 4** summarises the activities in the general area with any tangible potential for air emissions, and outlines the likely risk of impact arising at the Site.

Table 4: Industries with most scope for air quality effects at the site

Activity	Approximate distance from nearest receptors at the Site	Potential air emissions	Likelihood of impacts at the Site
Water recycling plant	400m	Odour	Low - The Site would not be downwind of the plant for the majority of the time at the times of likely peak impacts/ poor dispersion (i.e. winter and shoulder spring and autumn seasons), when inversions can prevent good dispersion. Existing residences are located closer to the odour sources (than the Site receptors) and are generally downwind at times of poor air dispersion.
Paper recycling	250m	Odour	Very low - the site is located too far from the Site, and has too low emissions to cause any tangible impact.
Food suppliers	60m	Odour	Low , activities appear to occur within enclosed buildings and are unlikely to cause any impacts.
Pet food	360m	Odour	Nil - the site is enclosed and is located too far from the Site to have any tangible impact.
Foam packaging and injection moulding	275m	VOC	Low - a stack was identified and appears to be suitably located for the dispersion of emissions to minimise impact on the surrounding environment. Existing multistorey residences are much closer to the source than the Site. The Site would experience far less winds from the direction of this source than existing, closer residences.
Plastics fabrication	90m	VOC	Low - activities appear to occur within an enclosed building and are unlikely to impact beyond the boundary.
Steel fabrication	150m	Welding fumes	Low - activities appear to occur within an enclosed building and are unlikely to impact beyond very much past the fabricator's boundary.
Auto/smash repair	130m	Dust and paint odours	Low - the site is located too far from the Site to have any tangible impact at that distance, also the site is not on the predominant downwind axis from this source.
Spray painting	100m	Dust and paint odours	Low - the site is located too far from the Site to have any tangible impact at that distance, also the site is not on the predominant downwind axis from this source.
Masonry products	130m	Dust	Low - the site is located too far from the Site to have any tangible impact at that distance, also the site is not on the predominant downwind axis from this source.
Concrete products	140m	Dust	Low - the site is located too far from the Site to have any tangible impact at that distance, also the site is not on the predominant downwind axis from this source.

5 EXISTING ELEVATED PARTICULATE LEVELS

While 24-hour exceedances of particulate criteria are common, the annual PM_{2.5} levels in the vicinity of the Site are generally higher than many areas and generally exceed the relevant criteria. However, there are numerous existing air quality sensitive land uses in the locality, including residences, schools and health facilities in the area.

In our view, the proposal proposes to remove industrial activities and to replace them with commercial and residential activities which are likely to have lower particulate emissions. Generally our expectation is that it is likely that the redevelopment of the existing industrial land for the Moore Point precinct would lead to a net reduction in particulate levels in the vicinity of the Site as industrial activities are removed from the area.

The proposed residential dwellings nearest the major roads would be located on top of commercial facilities, which adds to the setback. These appear to have adequate setback in terms of plan and height from existing major roads.

6 SUMMARY AND CONCLUSIONS

This desktop study has evaluated the general site suitability of the Moore Point Precinct development in terms of air quality by identifying potential sources of air pollution in the vicinity of the Site and making a qualitative assessment of the potential for these sources to impact sensitive land use within the Site.

The key potential source of air quality impact at the proposed site would be the existing water treatment facility, however the closest potential sources of odour are located a significant 400m from the nearest proposed new receptors and are generally downwind of the proposal. There are many existing receptors that are closer to and also generally downwind of the water treatment facility, thus significantly lower odour levels than at any existing receptors can be expected at the proposed site.

There is only low potential for impacts from other existing facilities, given that the existing industries are generally a good distance away and are not on the prevailing wind axes to the site.

In terms of existing elevated levels of particulates, the site would replace existing industry with commercial and residential activities, and it is reasonable to expect some reduction in existing pollutant levels. The residential dwellings also appear to have a good setback from existing major roads in terms of plan and height.

Overall, a more detailed assessment of air emissions in the vicinity of the Site would be required at the DA stage as part of the normal approval process. Such a study would be able to quantify the most significant potential impacts (odour from the water treatment facility, and PM_{2.5} effects from traffic on the main roads), however based on our investigation there is no reasonable indication of any likely air quality impacts that may prevent development of the Site. Nothing contained in the body of this assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Please feel free to contact us in relation to any aspect of this report.

Yours faithfully,

Todoroski Air Sciences



Katie Trahair



Alek Todoroski

A stylized topographic map graphic with concentric contour lines, rendered in a light grey color, positioned on the left side of the page.

Moore Point Planning Proposal Biodiversity Assessment Report

Moore Point Landowners Group

DOCUMENT TRACKING

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This document has been prepared by Eco Logical Australia Pty Ltd on behalf of Moore point Landowners Group.

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Template 2.5.1

Executive Summary

Eco Logical Australia Pty Ltd (ELA) was engaged by the Moore Point Landowners Group via Leamac Property Group and Coronation Property Group to prepare a Biodiversity Assessment Report for the proposed Masterplan of Moore Point, NSW (referred to as the 'study area' in this report). A Planning Proposal is to be submitted to the Gateway process seeking rezoning from IN2 Light Industrial to Mixed Use under Liverpool LEP 2008. Development of the site in accordance with the Precinct Plan would then proceed via a State Significant Development (SSD) application. This Biodiversity Assessment Report describes the biodiversity values within the site and assess the impacts of the proposed Masterplan on the biodiversity values. Nothing contained within this report precludes rezoning.

This report assumes that the built form will require significant earthworks and therefore any biodiversity values within this area will be removed. Biodiversity in the open space area along the Georges River will generally be retained and rehabilitated other than along a section of the western foreshore which will be subject to a more formal landscaped approach. As the detailed landscape plan has not yet been prepared, impacts within the open space area have not been assessed. The vegetated riparian zone is generally in poor condition with significant weed invasion. The development of the study area will provide an opportunity to invest in the rehabilitation of this vegetation.

A Biodiversity Development Assessment Report (BDAR) will be required for the SSD application in accordance with the Biodiversity Assessment Method 2016 (BAM) established under Section 6.7 of the *NSW Biodiversity Conservation Act 2016* (BC Act). The BDAR will include assessment of impacts across the entire site and will include results of targeted threatened species survey that will be undertaken post-Gateway.

The study area is approximately 38.5 ha in size. The study area has been subject to considerable vegetation disturbance and does not contain remnant native vegetation.

One threatened ecological community, *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* listed as an endangered ecological community (EEC) under the BC Act has been mapped as occurring in the study area (OEH 2016). The vegetation has been established through revegetation works. It contains high weed blooms and is in poor condition. Therefore, it did not satisfy listing criteria under the EPBC Act, which is currently nominated for listing under the EPBC Act.

One Matter of National Environmental Significance was identified as having potential to be affected by the proposed works. *Pteropus poliocephalus* (Grey-headed Flying-fox) is listed as vulnerable under the EPBC Act and it is considered that this species is likely to use some of the study area for seasonal foraging. An assessment of the Commonwealth Significant Impact Criteria is required for species listed under the EPBC Act and submitted with the BDAR.

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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	NSW Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically Endangered Ecological Community
DCP	Development Control Plan
DNG	Derived Native Grassland
DoEE	Commonwealth Department of Environment and Energy
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
ELA	Eco Logical Australia Pty Ltd
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
FM Act	NSW Fisheries Management Act 1994
GHFF	Grey-headed Flying Fox
GIS	Geographic Information System
GPS	Global Positioning System
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
LLS	Local Land Service
MNES	Matters of National Environmental Significance
NSW	New South Wales
NOW	NSW Office of Water
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
SSD	State Significant Development
SSI	State Significant Infrastructure
TEC	Threatened Ecological Community
VIS	Vegetation Information System
WM Act	NSW Water Management Act 2000

1. Project context

The following section has been provided by Leamac and Coronation Property Group.

1.1 Background

This Biodiversity Report has been prepared by Eco Logical Australia on behalf of Leamac and Coronation to assess the biodiversity values of the study area in relation to a Planning Proposal at Moore Point, Liverpool (the site).

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Figure 1:~ Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

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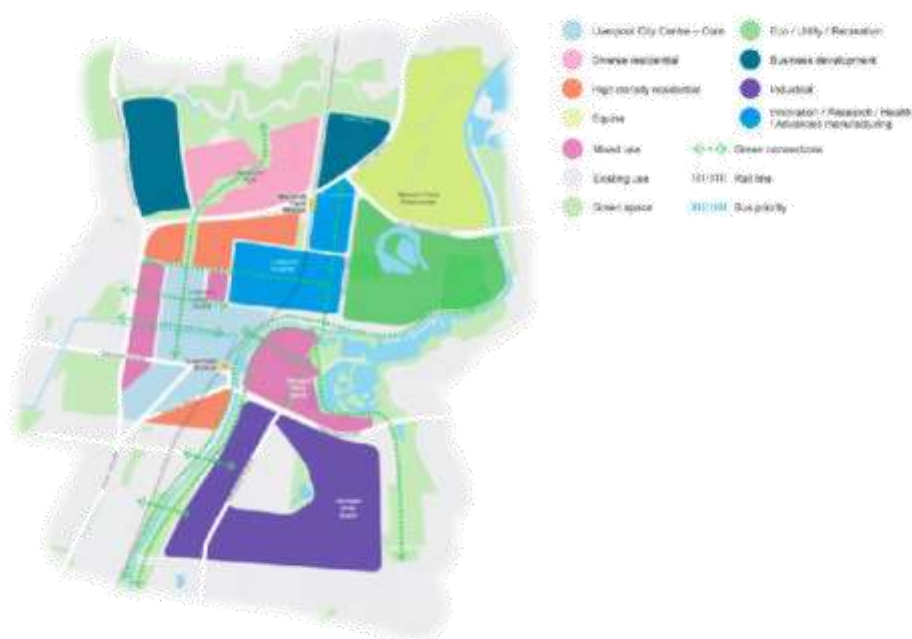


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Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

2. Stage 1: Biodiversity assessment

2.1 Introduction

This Biodiversity Assessment Report has been prepared by Belinda Failes, an accredited person (BAAS 18159) under the *Biodiversity Conservation Act 2016* (BC Act) with field and reporting assistance from Carolina Mora. The report was peer reviewed by Nicole McVicar (BAAS 18077) who is also an accredited person under the BC Act.

Definitions for terminology used throughout this report are presented in Appendix A.

2.1.1 Planning approval

The Moore Point Landowner Group seek an amendment to Liverpool LEP 2008 by rezoning the site from IN2 to B4. A Development Control Plan will be established to give effect to the masterplan shown in Figure 3.

2.1.2 General description of the study area

The proposed development (i.e. the 'study area'), defined as the area of land that is subject to the proposed development application, comprises the following addresses and lots within the Liverpool City Council LGA (and shown in Figure 5):

- 2 Bridges Road, Moorebank (Lot 1 DP 229494)
- 3 Bridges Road, Moorebank (Lot 200 DP 1009044)
- 4 Bridges Road, Moorebank (Lot 2 DP 229494)
- 5 Bridges Road, Moorebank (Lot 100 DP 775780)
- 6 Bridges Road, Moorebank (Lot 10 DP 875626)
- 8 Bridges Road, Moorebank (Lot 111 DP 1133744)
- 11 Bridges Road, Moorebank (Lot 201 DP 1009044)
- 317 Newbridge Road, Chipping Norton (Lot 2 DP 562025)
- 323 Newbridge Road, Chipping Norton (Lot 3 DP 562025)
- 331 Newbridge Road, Chipping Norton (Lot 4 DP 562025)
- 333 Newbridge Road, Chipping Norton (Lot 32 DP 535604)
- 337 Newbridge Road, Moorebank (Lot 201 DP 584561)
- 351 Newbridge Road, Moorebank (Lot B1 DP 392696)
- 353 Newbridge Road, Moorebank (Lot 1 DP 235294)
- 355 Newbridge Road, Moorebank (Lot 102 DP 827141)
- 361 Newbridge Road, Moorebank (Lot 101 DP 827141)
- 377 Newbridge Road, Moorebank (Lot 6 SP 38170)
- 391 Newbridge Road, Moorebank (Lot 45 DP 867545)
- 397 Newbridge Road, Moorebank (Lot 4 DP 11948)
- 399 Newbridge Road, Moorebank (Lot 5 DP 11948)
- 401 Newbridge Road, Moorebank (Lot 6 DP 654427)
- 403 Newbridge Road, Moorebank (Lot 7 DP 11948)
- 405 Newbridge Road, Moorebank (Lot 1 SP 49163)

The study area is currently zoned as IN2: Light Industrial under the Liverpool *Local Environmental Plan* (LEP) 2008 and has an area of approximately 38.5 ha.

The study area abuts Georges River along the western and northern boundaries. Haigh Park, a large open space, is located adjacent to the north-eastern corner and Lake Moore is located directly east of the study area. Newbridge Road, a major arterial road, forms the southern boundary of the study area.

The study area currently accommodates large industrial and commercial development. The study area has been subject to considerable vegetation disturbance. Aerial photography from 1943 shows remnant vegetation has been historically cleared within the study area. The landscape has been raised with fill material and flattened as part of historical clearing and development (ACS Environmental 2015).

Revegetation work has occurred along the riparian buffer along Georges River and Lake Moore. Revegetation includes planted native trees, shrubs and ground cover species along the north, east and western riparian buffer along the perimeter of the study area. Planted native vegetation within horticultural gardens and open grassland with opportunistic weeds were also recorded within the study area.

The general description of the study area is displayed on the following maps:

- Masterplan Concept Design (Figure 3)
- Development footprint (Figure 4)
- Site Map (Figure 5)
- Location Map (Figure 6).

2.1.3 Masterplan footprint

The planning proposal seeks approval to rezone the site to Mixed Use under the Liverpool LEP 2008.

The Masterplan (provided in Figure 3) proposes a mix of public open green space, commercial development, mixed use development, retail space, transport interchange, school and a heritage interpretation area.

For the purposes of this assessment ELA have defined two areas as shown in Figure 3.

- Development area which includes the commercial development, mixed use development, retail space, transport interchange and school; and
- open space which includes the riparian corridor and recreation areas

The development area is assumed to require significant earthworks such that all vegetation from this area would be cleared. Within the open space, vegetation will largely be retained and rehabilitated, however detailed designs for this area are not yet available and therefore this report does not include impacts within the open space area. Some vegetation may be removed to provide open space infrastructure.

Detailed assessment of all development and landscape impacts will be undertaken post-gateway and prior to the submission of BDAR.

2.1.4 Sources of information used

The following data sources were reviewed as part of this report:

- BioNet Vegetation Classification System
- BioNet / Atlas of NSW Wildlife 5 km database search (Department Planning Industry and Environment (DPIE) March 2020a)
- *Environment Protection and Biodiversity Conservation Act 1999* EPBC Act Protected Matters Search Tool 5 km database search (Department of Environment and Energy (DoEE) March 2020a)
- Threatened Biodiversity Data Collection
- NSW Government Biodiversity Values Map (accessed on 2 March 2020)
- The Native Vegetation of the Sydney Metropolitan Area (Office of Environment and Heritage (OEH) 2016)
- Biodiversity values map and threshold tool (accessed on 2 March 2020)
- Aerial mapping (SIXMaps, including 1943 historic maps)
- Additional Geographic Information System (GIS) datasets including soil, topography, geology and drainage
- Existing ecological reports.



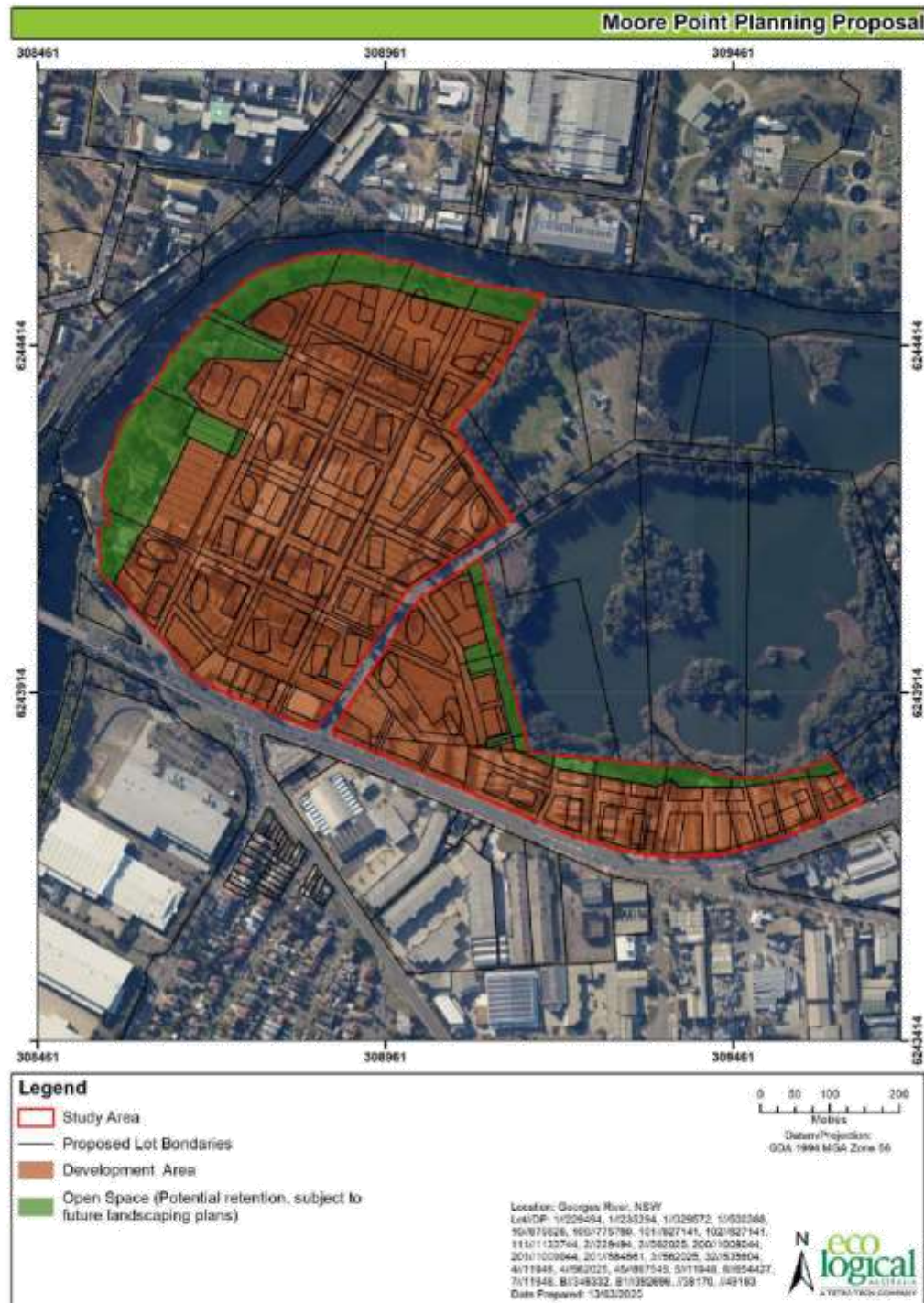
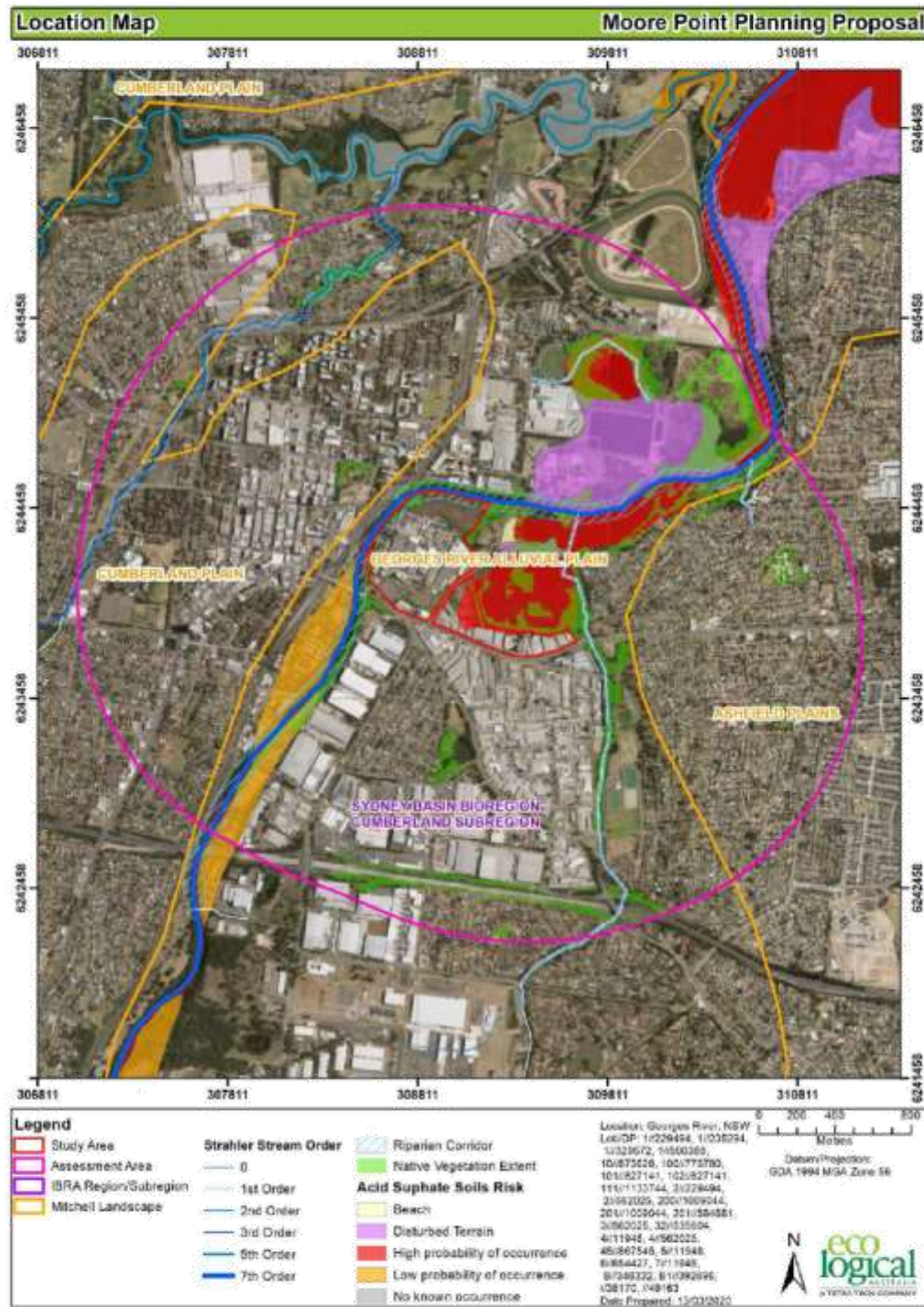


Figure 4: Development footprint showing impact areas and open space



Figure 5: Site Map



2.2 Legislative context

Table 1: Legislative context

Name	Relevance to the project
Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	Matters of National Environmental Significance (MNES) have been identified on or near the study area. An Assessment of Significance under the EPBC Act is required for species listed under the EPBC Act with potential to be impacted by the proposed Masterplan.
State	
<i>Biodiversity Conservation Act 2016</i> (BC Act)	The BC Act 2016 does not have specific controls relating to Planning Proposals. At the development application stage, the development will need to be assessed in accordance with the BC Act 2016. As this development will be assessed as an SSD the proposed development requires the submission of a BDAR under the BC Act.
<i>Environmental Planning and Assessment Act 1979</i> (EP&A Act)	The proposed masterplan will require consent under the EP&A Act.
<i>Fisheries Management Act 1994</i> (FM Act)	<p>The FM Act 1994 governs the management of fish and their habitat in NSW. The Schedules of the Act list key threatening processes and threatened species. The FM Act regulates the provision of permits required in relation to harm to protected marine vegetation (seagrass, macroalgae, mangroves and saltmarsh), dredging, reclamation or obstruction of fish passage on or adjacent to Key Fish Habitat (KFH). This includes direct and indirect impacts, whether temporary or permanent.</p> <p>KFH has been mapped within the study area along Georges River along the northern and western boundary and Lake Moore (outside of the study area).</p>
<i>Local Land Services Amendment Act 2016</i> (LLS Act)	The LLS Act does not apply to areas of the state to which the Vegetation SEPP applies. The Vegetation SEPP applies to the City of Liverpool LGA.
State and Local Planning Instruments	
State Environmental Planning Policy (SEPP) (Vegetation in Non-Rural Areas) 2017	The study area is located on land to which the Vegetation in Non-Rural Areas SEPP applies. The SEPP applies to development that does not require consent. This report is part of a planning proposal and therefore, matters relating to this SEPP do not apply.
State Environmental Planning Policy No. 19 Bushland in Urban Areas	This SEPP applies to the study area. However, as the planning proposal does not provide approval to clear vegetation, this SEPP does not apply to this report.
State Environmental Planning Policy 2018 (Coastal Management SEPP)	<p>The Planning Proposal affects land identified in this SEPP</p> <p>The aim of this Policy is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016, including the management objectives for each coastal management area, by:</p> <ol style="list-style-type: none"> managing development in the coastal zone and protecting the environmental assets of the coast, and establishing a framework for land use planning to guide decision-making in the coastal zone, and mapping the four coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the Coastal Management Act 2016.

Name	Relevance to the project
<p>State Environmental Planning Policy (Koala Habitat Protection) 2019 (Koala Habitat Protection SEPP) (effective 1 March 2020)</p>	<p>The study area has mapped areas of Coastal Environment Area Map, Coastal Use Area Map and is located within the boundary for the Land Application Map (Figure 7). The study area is also mapped within Coastal Wetland and Coastal Wetland Proximity Area.</p> <p>This SEPP and the accompanying Koala Habitat Protection Guideline applies to land within the Liverpool LGA. Under the SEPP, further assessment is required for the following reasons:</p> <ul style="list-style-type: none"> • The study area is on the Koala Development Application Map (accessed 9 March 2020). • The study area is at least 1 ha. • The study area is not located on land to which an approved Koala Plan of Management applies. <p>Based on the Guideline, future development applications relating to the site are likely to trigger the Tier 2 (Development applications impacting koalas and/or habitat) process for the following reasons:</p> <ul style="list-style-type: none"> • The proposed development includes clearing of native vegetation within koala habitat (as mapped under the SEPP). • As a State Significant Development, the proposed development enters the Biodiversity Offsets scheme. <p>As a Tier 2 development application under the SEPP, the preparation of a Koala Assessment Report by a suitably qualified and experienced person is required. However, a flora and fauna survey (consistent with the method described in the Guideline) may be conducted by a suitably qualified person (as defined by the SEPP) to determine whether a site contains core koala habitat prior to the preparation of a Koala Assessment Report. Confirmation of this interpretation with the NSW Government is recommended prior to preparation of SSD documentation.</p>
<p>Liverpool Local Environmental Plan (LEP) 2008</p>	<p>The study area is wholly zoned as IN2: Light Industrial under the Liverpool LEP. Rezoning of the study area is required to support the Masterplan.</p> <p>The site is not subject to the Biodiversity or Riparian overlay under the LEP. However, Georges River and Lake Moore and their land buffer are included in Environmentally Sensitive Land under Additional Local Provisions of the LEP. The area mapped as Environmentally Significant Land will be rezoned Open Space and should be protected from development as shown in the Concept Masterplan (Figure 3).</p> <p>The study area contains class 5 Acid Sulfate Soils and requires the implementation of an acid sulfate soils management plan. This is not required as part of the planning proposal, however, will be required as part of the SSD application.</p>
<p>Greater Metropolitan Regional Environmental Plan No. 2, 2009 Georges River Catchment</p>	<p>General aims of the Greater Metropolitan Regional Environmental Plan (GMREP) include:</p> <ul style="list-style-type: none"> • to maintain and improve the water quality and river flows of the Georges River and its tributaries and ensure that development is managed in a manner that is in keeping with the national, State, regional and local significance of the Catchment; • to protect and enhance the environmental quality of the Catchment for the benefit of all users through the management and use of the resources in the Catchment in an ecologically sustainable manner; and; • to preserve and protect and to encourage the restoration or rehabilitation of regionally significant sensitive natural environments such as wetlands, bushland and open space corridors within the Catchment. <p>The final approved Masterplan should take the aims and objectives of this regional environmental plan into consideration.</p>

2.3 Landscape features

2.3.1 Interim Biogeographic Regionalisation for Australia (IBRA) regions and subregions

The study area has an area of 38.5 ha and falls wholly within the Sydney Basin IBRA region and Cumberland IBRA subregion (Figure 6). The assessment area, defined as the area within a 1,500 m buffer of the study area, also falls wholly within the Sydney Basin IBRA region and Cumberland IBRA subregion (Figure 6).

2.3.2 Mitchell Landscapes

The study area falls within the Georges River Alluvial Plain Mitchell Landscapes (DECC 2002) as outlined in Table 2 as shown in Figure 6.

Table 2: Mitchell Landscapes

Mitchell Landscape	Description	Area within study area (ha)
Georges River Alluvial Plain	Channel, floodplain and terraces of the Georges River on Quaternary and Tertiary alluvial sediments. Mostly clayey sand and sand with limited gravel on the highest terrace, general elevation 0 to 30m, local relief 10m. Massive uniform or gradational profiles on yellow brown to orange clayey sand. Podzols with well-developed double pans on limited areas of deep quartz sand, stony, harsh, yellow, texture-contrast soils on higher terraces. Forest and woodland of <i>Eucalyptus amplifolia</i> , <i>Angophora floribunda</i> , <i>Eucalyptus fibrosa</i> , <i>Eucalyptus sclerophylla</i> and <i>Angophora bakeri</i> . Extensive <i>Casuarina glauca</i> along the riverbanks and in low-lying areas often with <i>Melaleuca styphelioides</i> , these extend to brackish estuarine swamps with grey mangrove (<i>Avicennia marina</i>) and limited saltmarsh.	38.76

2.3.3 Rivers and streams

The study area does not contain any rivers or streams; however, it does contain riparian buffers. For the purpose of this assessment, it is noted that rivers and streams have been mapped within the 1,500m assessment area.

Georges River is a 4th Strahler order stream and is located within 20 m of the northern and western boundary of the study area (Figure 6). Lake Moore is also located within 20 m of the south-eastern boundary of the study area. The study area contains areas mapped under the Coastal Management SEPP buffer (Figure 7).

2.3.4 Wetlands

The study area does not contain mapped wetlands. However, the assessment area contains one local wetlands (Lake Moore) (Figure 7) which is not identified as an important wetland under the BAM (see definition in Appendix A). Lake Moore is also mapped under the Coastal Management SEPP.

2.3.5 Connectivity features

The study area contains the connectivity features outlined in Table 3 and shown in Figure 6.

Connectivity to large tracts of native vegetation has been fragmented by the formation of Newbridge Road to the south and waterbodies to the north, west and east of the study area. A narrow riparian

corridor is located either side of Georges River and provides some connectivity for highly mobile species such as birds and bats. This includes flyways for migratory birds and bat species moving through the landscape.

Table 3: Connectivity features

Connectivity feature name	Feature type
Georges River	Vegetated riparian corridor

2.3.6 Areas of geological significance and soil hazard features

The study area does not contain areas of geological significance.

The study area is mapped as having Class 5 Acid Sulfate Soils. Acid sulfate soils are listed as soil hazard features.

2.3.7 Site context

2.3.7.1 Method applied

The site based method has been applied to this development.

2.3.7.2 Percent native vegetation cover in the landscape

The current percent native vegetation cover in the landscape was assessed in a Geographic Information System (GIS) using aerial imagery sourced from NearMap) using increments of 5%. The percent native vegetation cover within the 1,500 m buffer area is 6 % (73.74 ha).

2.3.7.3 Patch size

Patch size was calculated using available vegetation mapping for all patches of intact native vegetation on and adjoining the study area. The patch size area is 101 ha.



Figure 7: SEPP Coastal Management 2008 mapping and adjacent wetlands

2.4 Native vegetation

2.4.1 Literature review

Prior to field surveys previous vegetation mapping conducted by Sydney Metropolitan Catchment Management Authority (OEH 2016) identified the following vegetation communities:

- Cumberland River-flat Forest which is a component of *River-flat Eucalypt Forest on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions* listed as an endangered ecological community under the BC Act and nominated for listing under the EPBC Act
- Estuarine Swamp Oak Forest which is a component of *Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions* listed as an endangered ecological community under the BC Act
- Coastal Freshwater Wetlands which is a component of *Sydney Freshwater wetlands in the Sydney Basin Bioregion* listed as an endangered ecological community under the BC Act.

2.4.2 Previous ecological reports

Previous ecological surveys have been undertaken by ELA (2016), ELA (2019) and ACS Environmental Pty Ltd (2015) within the study area. A summary of the ecological surveys and results are provided in Table 4.

A review of BioNet records identified that two threatened fauna species have previously been recorded within the study area. *Miniopterus australis* (Little Bent-winged Bat) and *Daphoenositta chrysoptera* (Varied Sittella) were recorded in 2013. Both species are recorded as vulnerable under the BC Act and are listed as ecosystem credit species under the BAM (see Section 2.5.1).

It should be noted that during the literature review it was identified there was a data gap between areas survey by ELA in 2016 and 2019 and the boundary of the study area. Access was restricted during ELA 2019 surveys and assumptions have been provided in the following text regarding potential data gaps. Data gaps will be address as part of the BDAR at DA stage.

Table 4: Summary of previous ecological surveys conducted within the study area

Report, company and date	Survey methodology	Results
Flora & Fauna survey and riparian zone impact assessment ACS Environmental 2015	ACS conducted an assessment of 6-16 Bridges Road and 361 Newbridge road, Moorebank. Located in the southern portion of the study area which adjoins Lake Moore. Survey involved random meander (Cropper 1993) method to identify floristics and vegetation boundaries. Habitat assessment was also conducted. Targeted searches were conducted for threatened species including <i>Acacia pubescens</i> and <i>Meridolum corneovirens</i> (Cumberland Plain Land Snail).	The field surveys validated the presence of Swamp Oak Forest which has been established from revegetation works from the late 1970-early 1980s. This vegetation community was identified during the 2015 assessment as part of a threatened ecological community (TEC). The field survey also recorded revegetation works which includes Alluvial Woodland and Cumberland Plain Woodland species but was not recorded as part of a TEC. No threatened flora species were recorded or were deemed likely to occur within the study area.

Report, company and date	Survey methodology	Results
		<p>No threatened fauna species were recorded within the study area; however, the Varied Sittella was recorded within Haigh Park. The vegetation within the study area was identified as unsuitable for Cumberland Plain Land Snail.</p> <p>Potential foraging habitat was identified for:</p> <ul style="list-style-type: none"> • <i>Miniopterus orianae oceanensis</i> (Large Bent-winged bat) • <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox).
<p>Prysmian Liverpool Flora and Fauna Assessment report ELA 2016</p>	<p>ELA conducted a Flora and Fauna Assessment for the western portion of the study area.</p> <p>The field survey was conducted on 21 June 2016 to validate vegetation communities and presence of threatened flora and fauna species.</p> <p>Targeted surveys were conducted for <i>Meridolum carneovirens</i> (Cumberland Plain Land Snail).</p>	<p>The literature review identified one threatened species has previously recorded within the study area (<i>Daphoenositta chrysoptera</i> (Varied Sittella)).</p> <p>The field survey confirmed the presence of two TECs and a planted vegetation community:</p> <ul style="list-style-type: none"> • River-flat Eucalypt Forest • Swamp Oak Floodplain Forest • Planted native and urban vegetation which does not respond to a native vegetation community <p>No threatened flora species were recorded within the study area or having potential to occur.</p> <p>No Cumberland Plain Land Snails were recorded or were considered likely to occur within the study area.</p> <p>Hollow-bearing trees (HBTs) were identified within the study area which may provide habitat for threatened tree-roosting microbats such as:</p> <ul style="list-style-type: none"> • <i>Mormopterus norfolkensis</i> (Eastern Freetail-bat) • <i>Saccolaimus flaviventris</i> (Yellow-bellied Sheath-tail-bat) • <i>Myotis macropus</i> (Southern Myotis) <p>Other threatened species which may utilise the study area occasional include:</p> <ul style="list-style-type: none"> • <i>Daphoenositta chrysoptera</i> (Varied Sittella) • <i>Hieraaetus morphnoides</i> (Little Eagle) • <i>Glossopsitta pusilla</i> (Little Lorikeet) • <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox).
<p>Strategic Vision 335 – 349 Newbridge Road Moorebank – Ecological Constraints letter</p>	<p>ELA conducted a desktop assessment and field validation of the south-eastern portion of the study area for Moore Lake Pty Ltd.</p>	<p>The field survey confirmed the presence of TECs:</p> <ul style="list-style-type: none"> • River-flat Eucalypt Forest • Swamp Oak Floodplain Forest

Report, company and date	Survey methodology	Results
ELA 2019		The constraints assessment identified that the vegetation was highly disturbed and is unlikely to contain habitat for threatened flora species. Foraging habitat for microbats, Grey-headed Flying-fox and <i>Litoria aurea</i> (Green and Golden Bell Frog) was noted within the site.
ELA 2020 data gap analysis	A desktop assessment was conducted as part of this assessment to determine the extent of areas survey by ELA in 2019 in accordance with the BAM and compare with areas with restricted access (Figure 8).	It was estimated that 7.8 ha was located within areas where access was not provided. This area requires validation for the BDAR. Additional BAM plots are unlikely to be required as impacts to areas mapped as open space are likely to be minimal and therefore will not result in more than 2 ha of disturbance.

2.4.3 Survey effort

Vegetation survey was undertaken within the study area by ecologists Belinda Failes and Carolina Mora on 20 June 2019. A total of four (4) full-floristic and vegetation integrity plots were undertaken to identify Plant Community Types (PCTs) and TECs on the study area in accordance with the BAM (Table 5). A summary table of the extend of each PCT recorded within the study area and the amount impacted by the development footprint is provided in Table 6 and shown in Figure 8. Plot locations are displayed in Figure 9.

A modified version of the BAM integrity plot was undertaken to account for the narrow linear vegetation zone in PCT 849_planted. The integrity plot was modified into a 10 m x 40 m plot and the transect into 10 m x 100 m configuration.

The site visit also involved vegetation mapping of the remaining study area, assessment of habitat and mapping of habitat features, namely hollow-bearing trees (HBTs) and habitat for amphibians (i.e. drainage line and soaks). The location of these trees is displayed in Figure 8.

All field data collected, photos, and full-floristic and vegetation integrity plots are included in Appendix B, C and D.

Table 5: Full-floristic and vegetation integrity plots

Veg Zone	PCT ID	PCT Name	Ancillary code	Area (ha)*	Plots required	Plots surveyed
1	835	Cumberland Riverflat Forest	Weedy	1.48	1	2
2	835	Cumberland Riverflat Forest	Revegetation	0.44	1	1
3	849	Cumberland Shale Plains Woodland	Planted	0.57	1	1

*THE AREA IN HECTARES MAY CHANGES FOLLOWING CONFIRMATION OF UNVALIDED VEGETATION.

Table 6: Summary of the PCTs and non-PCTs mapped within the study area and within the Masterplan

PCT and Veg Zone	Impact for development (ha)	Open Space* (ha)	TOTAL (ha)
PCT 835 Zone 1_Weedy	0.14	1.35	1.48
PCT 835 Zone 2_Revegetation	0.02	0.42	0.44
PCT 849 Zone 3_Planted	0.49	0.08	0.57
Sub-total	0.65	1.85	2.49
Exotic	7.49	2.03	9.62
Cleared**	23.56	2.80	26.36
Unvalidated vegetation	0.61	0.32	0.93
TOTAL	31.75	7.01	38.75

*NOTE SOME AREAS WITHIN THE OPEN SPACE WILL BE SUBJECT TO LANDSCAPING WORKS AND MAY RESULT IN REMOVAL OF NATIVE VEGETATION. THESE IMPACTS WILL BE FINALISED IN THE BDAR

** CLEARED AREAS INCLUDES BUILD ENVIRONMENTS AND EXOTIC GRASSLANDS

2.4.4 Plant Community Types present

Two PCTs were identified within the study area (Table 7, Figure 8). One PCT (835) is listed as a TEC under the BC Act and/ or EPBC Act (Table 9, Figure 10). PCT 835 varied in condition and mapped as two vegetation zones, weedy (Photo 1) and revegetated (Photo 2). Both vegetation zones for PCT 835 has been established through plantings and does not satisfy listing under the BC and / or Act. More information is provided in Section 1.4.4.1 below.

The study area also contains planted native canopy, shrubs and occasionally ground cover species which are native to NSW, however these were not considered locally indigenous to the PCTs. Under the BAM, planted vegetation native to NSW requires consideration as to the 'best fit' PCT. Based on the soil landscape, elevation and locality it was determined that planted native vegetation 'best-fit' PCT was *PCT 849 Cumberland Shale Plains Woodland* (Photo 3). Justification for the selection of PCTs occurring on the study area is based on a quantitative analysis of full-floristic plot data and a summary is provided in Table 10.

PCT 1234 Swamp Oak Floodplain Forest was recorded adjacent to Moorebank and was located outside of the study area. The study area will not impact upon PCT 1234 and therefore, is not part of this assessment.

Table 7: Plant Community Types (PCTs) recoded within the study area

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Area (ha)	Percent cleared of original extent
835	Cumberland Riverflat Forest	Coastal Floodplain Wetlands	Forested Wetlands	1.92	93
849	Cumberland Shale Plains Woodland	Coastal Valley Grassy Woodlands	Grassy Woodlands	0.57	93



Photo 1: PCT 835_Cumberland Riverflat Forest Weedy, vegetation zone 1 (TEC)



Photo 2: Plot 4 located in PCT 835 revegetation, vegetation zone 2 (TEC)



Photo 3: Plot 2 located in PCT 849__planted, vegetation zone 3 (non-TEC)



Photo 4: Exotic grasslands mapped within the study area and does not conform to a PCT

2.4.4.1 PCT selection justification

Justification for the selection of PCTs occurring on the study area is provided in Table 10.

Aerial photography interpretation of 1943 imagery identified that the study area has been substantially modified and contains limited remnant vegetation. Additionally, the 1943 imagery also indicates substantial vegetation clearing within the broader landscape surrounding the study area.

A review of literature and field survey confirmed that the vegetation has been established through revegetation works both recent and over 20 years old. Opportunistic native colonisers and weeds have also established.

Two forms of PCT 835 *Cumberland Riverflat Forest* were mapped within the study area (Figure 9). Patchy clusters of vegetation mapped as PCT 835_weedy were recorded around the western and northern perimeter of the study area. PCT 835_weedy was generally represented by *Eucalyptus tereticornis* (Forest Red Gum), *Alphitonia excelsa* (Red Ash), *Casuarina glauca* (Swamp Oak), *Backhousia myrtifolia* (Grey Myrtle) and *Acacia binervata* (Two-veined Hickory). The ground layer and midstorey were mixed with native and exotic species and generally contained a high percentage of High Threat Weeds (HTW), namely *Cardiospermum grandiflorum* (Balloon Vine).

The eastern perimeter has been established through recent revegetation works. This patch of PCT 835_revegetation contains immature plantings such as *Eucalyptus tereticornis*, *E. amplifolia*, *Acacia decurrens* (Black Wattle) and *Casuarina glauca*. Several large *Eucalyptus baueriana* (Blue Box) were also present in the south eastern corner which extends outside of the study area boundary. The vegetation intergrades with another vegetation community, *Swamp Oak Floodplain Forest* along the foreshores of Lake Moore, outside of the study area. This threatened ecological community occurs outside of the study area and therefore was not included as part of this assessment.

PCT 849 *Cumberland Shale Plain Woodland* was assigned to the planted native vegetation located away from the alluvial floodplain. This included native planted gardens including non-locally indigenous species such as *Livistona australis* (Cabbage Tree Palm), *Westringia fruticosa* (Coastal Westringia) and *Ceratopetalum gummiferum* (NSW Christmas Bush). Several mature *Ficus rubiginosa* (Port Jackson Fig) and scattered trees, *Eucalyptus tereticornis*, were recorded within the study area. *Eucalyptus tereticornis* is listed as a characteristic species of PCT 849; however, these trees are likely to be planted due to the substantial soil disturbance, absence of remnant vegetation, isolation of vegetation patches and its location within horticultural landscape gardens within the study area.

A review of available vegetation database mapping within the broader landscape of the study area recorded PCT 849 at higher elevations to the south of the study area. There is no connectivity with the site and vegetation mapped as PCT 849 outside of the study area. Additionally, areas mapped within the study area have not been mapped as native vegetation by previous mapping datasets (OEH 2016).

In the absence of suitable pre-European vegetation data, a description of the soil landscape and the location within the study area was used to assign a suitable PCT. A description of the Mitchells Landscape is provided in Table 2 and indicates the presence of alluvium vegetation communities which does not fit the current description of this vegetation zone.

A review of soil landscape datasets identified that the majority of the study area is mapped with the Blacktown soil landscape and a small portion of Richmond soil landscape located in the south-east of the study area. Blacktown soil landscapes are associated with the Cumberland Plain on Wianamatta shale which includes ecological communities such as PCT 849. However, since the soil profile has been significantly altered it is highly unlikely the vegetation would be considered part of a remnant patch of PCT 849.

It is likely that the study area would have had similar vegetation as the remnant patch located to the south, prior to European settlement. Additionally, the study area shares similar location in the landscape and same soil types to the remnant patch. In light of the above, PCT 849 was considered suitable PCT for the planted vegetation.

Table 8: PCT selection justification

PCT ID	PCT Name	Selection criteria	Species relied upon for identification of vegetation type and relative abundance
835	Cumberland Riverflat Forest	IBRA region, subregion, soil landscape, elevation and results of floristic plot analysis including the presence of positive diagnostic canopy species	Presence of <i>Eucalyptus tereticornis</i> , <i>E. baueriana</i> , <i>Angophora floribunda</i> and <i>Casuarina glauca</i> .
849	Cumberland Shale Plains Woodland	IBRA region, subregion, soil landscape, elevation, vegetation mapping outside of the study area and planting of canopy species <i>Eucalyptus tereticornis</i> .	This PCT has been accepted as the best fit for planted vegetation native based on review of existing vegetation mapping adjacent to the study area and presence of planted <i>Eucalyptus tereticornis</i> .

2.4.4.2 Threatened Ecological Communities Justification

The BioNet Vegetation Classification lists PCT 835 as conforming to *River-flat Eucalypt Forest* which is listed as endangered under the BC Act and nominated for listing as endangered under the EPBC Act. PCT 835 was mapped within the study area and has been re-established through revegetation works. Section 3.2.2 of the nominated EPBC Act listing, states that revegetated areas may be listed under the Act provided they meet the key diagnostic characteristics and condition thresholds under the EPBC Act. This PCT was categorised as a poor condition vegetation zone based on the presence of weeds, small patch size and absence of large trees. The vegetation did not satisfy listing criteria under the EPBC Act.

The BioNet Vegetation Classification lists PCT 849 as a component of Cumberland Plain Woodland which is listed as a critically endangered ecological community (CEEC) under the BC Act and EPBC Act. However, the vegetation present in the study area contains scattered native planted eucalypt and other non-indigenous species. There is no evidence of remnant vegetation within the study area. Additionally, the soil profile has been substantially modified and does not represent original profile. Therefore, the

vegetation mapped as PCT 849 within the study area does not form part of the Cumberland Plain Woodland TEC listed under the BC or EPBC Act.

Table 9: Threatened Ecological Communities within study area

PCT ID	BC Act			EPBC Act		
	Listing status	Name	Area (ha)	Listing status	Name	Area (ha)
835	EEC	River-flat Eucalyptus Forest	1.92	*	-	-
849	**	-	-	**	-	-

EEC – ENDANGERED ECOLOGICAL COMMUNITY

* NOTE THAT PCT 835 EEC DID NOT SATISFY THE REQUIREMENTS FOR LISTING UNDER THE EPBC ACT CRITERIA.

** NOTE THAT PCT849 NON-TEC PLANTED DID NOT SATISFY THE REQUIREMENTS FOR LISTING UNDER THE BC ACT OR EPBC ACT CRITERIA.

2.4.5 Vegetation integrity assessment

A vegetation integrity assessment using the Biodiversity Assessment Method Credit Calculator (BAMC) was undertaken and the results are outlined in Table 10.

Table 10: Vegetation integrity

Veg Zone	PCT ID	Ancillary code	Area (ha)*	Composition Condition Score	Structure Condition Score	Function Condition Score	Current vegetation integrity score
1	835	Weedy	1.48	18.1	18.1	67.9	28.2
2	835	Revegetation	0.44	48.2	17.9	26.4	28.3
3	849	Planted	0.57	20.1	30.4	38.4	28.6

*ASSUMES TOTAL AMOUNT OF VEGETATION WITHIN THE STUDY AREA IS IMPACTED THIS WILL BE UPDATED AFTER LANDSCAPE DESIGNS HAVE BEEN FINALISED

2.4.6 Use of local data

The use of local data is not proposed for this assessment.



Figure 8: Plant Community Types and native vegetation extent



Figure 9: Plot locations



Figure 10: Threatened Ecological Communities

2.5 Threatened species

2.5.1 Ecosystem credit species

Ecosystem credit species predicted to occur at the study area, their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 11. Ecosystem credit species which have been excluded from the assessment and relevant justification is also included in Table 11. Three threatened fauna species were added into the BAMC list of candidate ecosystem credit species. *Daphoenositta chrysoptera* (Varied sittella), *Hieraaetus morphnoides* (Little Eagle) and *Ninox strenua* (Powerful Owl) were not listed as candidate ecosystem species associated with PCT 849 or PCT 835. However, there are recent BioNet recorded for these species recorded within or adjacent to the study area. Therefore, it was determined that these species should be considered part of the assessment.

Table 11: Justification for exclusion of predicted ecosystem credit species

Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Anthochaera phrygia</i>	Regent Honeyeater (Foraging)	N/A	High	CE	CE	<u>Excluded</u> Habitat features for this species are not present at this site. The study area does not comprise key plant species required for foraging.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow		Moderate	V	Not Listed	<u>Excluded</u> The study area contains degraded vegetation and is unlikely to support habitat for this species.
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Waterbodies Brackish or freshwater wetlands	Moderate	E	E	<u>Included</u> The study area contains fringing vegetation and open grasslands which may represent suitable but degraded habitat for this species.
<i>Chthonicola sagittata</i>	Speckled Warbler	-	High	V	Not Listed	<u>Excluded</u> Habitat present does not contain suitable habitat features for this species such as abundance of fallen logs. The vegetation within the study area is substantially degraded.
<i>Climacteris picumnus</i>	Brown Treecreeper (eastern subspecies)	-	High	V	Not Listed	<u>Excluded</u> Habitat present does not contain suitable habitat features for this species such as abundance of fallen logs. The vegetation within the study area is substantially degraded.

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Daphoenositta chrysoptera</i>	Varied Sittella	-	Moderate	V	Not Listed	<u>Included</u> This species was added to the BAMC as this species has been previously recorded within the study area boundary.
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	N/A	High	V	E	<u>Excluded</u> Habitat features for this species are not present at this site. This species requires habitat features such as maternal den sites, an abundance of food (birds and small mammals) and large areas of relatively intact vegetation to forage.
<i>Glossopsitta pusilla</i>	Little Lorikeet	N/A	High	V	Not Listed	<u>Included</u> There are 42 BioNet records for this species within a 5 km radius of the study area including several recent records in close proximity to the study area. This species may utilise the flowering species within the study area for seasonal foraging. This species was included in this assessment.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Foraging)	Waterbodies Within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines	High	V	Not Listed	<u>Included</u> There are 18 BioNet records for this species within a 5 km radius of the study area including several recent records in close proximity to the study area. This species may utilise habitat features within the study area for foraging.
<i>Hieraaetus morphnoides</i>	Little Eagle (Foraging)	N/A	Moderate	V	Not Listed	<u>Included</u> This species was added to the BAMC as this species has been previously recorded north of the study area boundary.
<i>Lathamus discolor</i>	Swift Parrot (Foraging)	N/A	Moderate	E	CE	<u>Excluded</u> Habitat features associated with this species are not present in the study area. There are no habitat features such as the favoured feed trees or lerp infestations.

Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	N/A	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present on the study area. This species requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses which the study area does not contain. No individuals have been recorded within 5 km of the study area.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	N/A	High	V	Not Listed	<u>Included</u> Foraging habitat was identified in this assessment.
<i>Miniopterus australis</i>	Little Bent-winged Bat (Foraging)	N/A	High	V	Not Listed	<u>Included</u> Seasonal foraging habitat was identified in this assessment. This species has previously been recorded within the study area
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Foraging)	N/A	High	V	Not Listed	<u>Included</u> Seasonal foraging habitat was identified in this assessment.
<i>Ninox strenua</i>	Powerful Owl (Foraging)	N/A	High	V	Not Listed	<u>Included</u> This species was added to the BAMC as this species has been previously recorded north of the study area boundary.
<i>Pandion cristatus</i>	Eastern Osprey (Foraging)	-	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species which includes open water was not recorded within the study area.
<i>Petroica boodang</i>	Scarlet Robin	N/A	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species includes an abundance of logs and fallen timber, these features were not present in the study area.

Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Petroica phoenicea</i>	Flame Robin	N/A	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the study area. This species requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses which the study area does not contain. No individuals have been recorded within 10 km of the study area.
<i>Phascolarctos cinereus</i>	Koala (Foraging)	N/A	High	V	V	<u>Included</u> A recent BioNet record from 2017 approximately 200 m south of the study area. Although the habitat present is substantially degraded, and highly fragmented feed trees were recorded within the study area. Targeted surveys for this species will be conducted as part of the BDAR in accordance with the BAM and Koala Habitat Protection SEPP guidelines.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox (Foraging)	N/A	High	V	V	<u>Included</u> Seasonal foraging habitat was identified in the study area.
<i>Stagonopleura guttata</i>	Diamond Firetail	N/A	Moderate	V	Not Listed	<u>Excluded</u> Habitat present is substantially degraded and highly fragmented such that this species is unlikely to utilise the study area.

CE = Critically Endangered; E = Endangered; E2 = Endangered Population; V = Vulnerable

2.6 Species credit species

Species credit species predicted to occur at the study area (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 12.

Species credit species which have been excluded from the assessment and relevant justification are also included in Table 12.

Habitat assessments were undertaken during the field surveys on 20 June 2019 to determine the likelihood of threatened species occurring within the study area on an intermittent or permanent basis.

Habitat assessments involved a search of all possible hollow-bearing trees (HBTs) within the study area, and a search for evidence of fauna foraging such as chewed cones, sap trees or roosting habitat in the

form of white wash/pellets, plus inspection of structures to determine of suitable roosting/breeding habitat for threatened microbats.

Tree hollows were inspected with binoculars to identify evidence of fauna use and record the dimension of the hollow entrance. Six HBTs were recorded within the study area. No hollows inspected displayed any apparent visual evidence of microbat occupation. Microbat scats and/or markings were not observed around any of the entrances, nor were any microbats observed when inspecting inside the accessible hollows. Some threatened microbat species are known to utilise human made structures regularly or on occasion. Access to conduct on ground inspections was limited to accessible areas. On ground inspections were conducted using binoculars looking at roof cavities for possible entrance for microbats, and evidence of fauna (such as scats or scratch marks) use within the study area. Additional targeted surveys may be required at the DA stage as impacts to human made structures that contain habitat for threatened species is a prescribed impact under section 6.1 of the Biodiversity Conservation Regulation 2017.

Although the vegetation within the study area contains limited native vegetation and has been substantially modified, the vegetation is located adjacent to waterbodies and provides connectivity to patches of native vegetation. The vegetation within the study area contains potential habitat for some threatened species. Additional targeted surveys are required as part of the SSD application of the precinct. This may include surveys for Koala (*Phascolarctos cinereus*) in accordance with the new SEPP (Koala Habitat Protection), *Myotis macropus* (Southern Myotis) and *Litoria aurea* (Green and Golden Bell Frog).

Table 12: Candidate species credit species

Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listin g status	Justification if species excluded
<i>Acacia bynoeana</i>	Bynoe's Wattle	N/A	High	E	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Acacia pubescens</i>	Downy Wattle	N/A	High	V	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Anthochaera phrygia</i>	Regent Honeyeater (Breeding)	Other As per mapped areas	High	CE	CE	<u>Excluded</u> This is a dual credit species, and only a species credit species when specific habitat constraints are present for breeding. The study area is not within

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
						the mapped areas accessed on the BOAMS (17 March 2020).
<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	N/A	Moderate	E	V	<u>Excluded</u> Habitat for this species was not considered suitable in the study area. The site is substantially degraded, and this species occurs in grassy sclerophyll woodlands which were not recorded within the study area. Furthermore, this species is only known from old records in Sydney area.
<i>Callistemon linearifolius</i>	Netted Bottle	N/A	Moderate	V	Not Listed	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Cynanchum elegans</i>	White-flowered Wax Plant	N/A	Moderate	V	Not Listed	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Dillwynia tenuifolia</i>	Dillwynia tenuifolia	N/A	Moderate	V	Not Listed	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Dillwynia tenuifolia</i> endangered population	Dillwynia tenuifolia Kemps Creek	The area bounded by Western Road, Elizabeth Drive, Devonshire Road and Cross Street Kemps Creek	High	E2	Not Listed	<u>Excluded</u> The study area is not located within the geographic distribution for this species. This species is not considered a candidate species for this assessment.
<i>Eucalyptus benthamii</i>	Camden White Gum	N/A	High	V	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
						species is unlikely to occur within the study area.
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	N/A	High	V	Not Listed	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle (Breeding)	Other Living or dead mature trees within suitable vegetation within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines	High	V	Not Listed	<u>Excluded</u> The vegetation within the study area does not contain suitable living or dead mature trees for this species. The vegetation contains revegetated and planted species. The field survey did not record large stick nests which represents breeding habitat for this species.
<i>Hibbertia</i> sp. <i>Bankstown</i>	Hibbertia sp. Bankstown	N/A	High	E	Not Listed	<u>Excluded</u> The presence of this species was not identified, and it was determined that the habitat features associated with this species are not present within the study area. The site is substantially degraded such that this species is unlikely to occur within the study area.
<i>Lathamus discolor</i>	Swift Parrot (Breeding)	Other As per mapped areas	Moderate	E	CE	<u>Excluded</u> The study area does not contain suitable habitat for this species.
<i>Litoria aurea</i>	Green and Golden Bell Frog	Semi-permanent/ephemeral wet areas Within 1km of wet areas, swamps Within 1km of swamp, waterbodies Within 1km of waterbody	High	E	V	<u>Included</u> Habitat features associated with this species include soaks and fringing vegetation was recorded within the study area which may contain suitable habitat for this species. Targeted surveys may be required for this species during survey period.
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	Marsdenia viridiflora R. Br. subsp. viridiflora	Those in LGAs named in the populations	Moderate	E2	Not Listed	<u>Excluded</u> The presence of this species was not identified, and it was determined that the habitat features associated with

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
endangered population	population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas					this species are not present within the study area. The site is substantially degraded such that this species is unlikely to occur within the study area.
<i>Meridolum carneovirens</i>	Cumberland Plain Land Snail	N/A	High	E	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the study area. This species occurs within Cumberland Plain Woodland and associated shale vegetation communities. The study area has been substantially modified and does not support these habitat features.
<i>Miniopterus australis</i>	Little Bent-winged Bat (Breeding)	Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species recorded in BioNet with microhabitat Observation type code 'E nest-roost' with numbers of individuals >500	Very High	V	Not Listed	<u>Excluded</u> This is a dual credit species, and only a species credit species when specific habitat constraints are present for breeding. The study area does not contain breeding habitat such as caves that are suitable for the species to utilise the site.
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat (Breeding)	Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species recorded in	Very High	V	Not Listed	<u>Excluded</u> This is a dual credit species, and only a species credit species when specific habitat constraints are present for breeding. The study area does not contain breeding habitat such as caves, tunnels, mines or culverts.

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
		BioNet with microhabitat Observation type code 'E nest-roost' with numbers of individuals >500				
<i>Myotis macropus</i>	Southern Myotis	Hollow bearing trees Within 200 m of riparian zone, other bridges, caves or artificial structures within 200 m of riparian zone	High	V	Not Listed	<u>Included</u> Habitat present is substantially degraded however, hollow bearing trees were identified within the study area, the nearest tree is within 200 m of the drainage line within the study area. Targeted surveys will be required for this species.
<i>Pandion cristatus</i>	Eastern Osprey (Breeding)	Other Presence of stick-nests in living and dead trees (>15m) or artificial structures within 100m of a floodplain for nesting	Moderate	V	Not Listed	<u>Excluded</u> The vegetation within the study area does not contain suitable mature trees for this species. The vegetation contains revegetated and planted species. The field survey did not record stick nests which represents breeding habitat for this species.
<i>Persicaria elatior</i>	Tall Knotweed	Semi-permanent / ephemeral wet areas or within 50m Swamps or within 50m waterbodies including wetlands or within 50m	High	V	V	<u>Excluded</u> The presence of this species was not identified, and it was determined that the habitat features associated with this species are not present within the study area. The site is substantially degraded such that this species is unlikely to occur within the study area.
<i>Persoonia bargoensis</i>	Bargo Geebung	N/A	High	E	V	<u>Excluded</u> The presence of this species was not identified, and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Persoonia hirsuta</i>	Hairy Geebung	N/A	High	E	E	<u>Excluded</u> The presence of this species was not identified, and it was determined that

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
						the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Petaurus norfolkensis</i>	Squirrel Glider	N/G	High	V	Not Listed	<u>Excluded</u> Habitat present is substantially degraded such that this species is unlikely to utilise the study area. Habitat in the study area is isolated and disturbed with a higher likelihood of this species more suitable habitat within the locality. Additionally, this species has a strong preference for old growth forests which does not include the study area. Additionally, there are no BioNet records for this species within a 5 km radius of the study area.
<i>Phascolarctos cinereus</i>	Koala (Breeding)	Other Areas identified via surveys as important habitat	High	V	V	<u>Included</u> The study area is located within the mapped area under the Koala Habitat Protection map. Therefore, targeted surveys will be conducted as part of the BDAR.
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	N/A	High	E	Not Listed	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to utilise the study area.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	Pimelea curviflora var. curviflora	N/A	High	V	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to utilise the study area.
<i>Pimelea spicata</i>	Spiked Rice-flower	N/A	High	E	E	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to utilise the study area.
<i>Pomaderris brunnea</i>	Brown Pomaderris	N/A	High	E	V	<u>Excluded</u>

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Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
						The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Pommerhelix duralensis</i>	Dural Woodland Snail	Other Leaf litter and shed bark or within 50m of litter or bark, Rocky areas Rocks or within 50m of rocks, Fallen/standing dead timber including logs Including logs and bark or within 50m of logs or bark	High	E	E	<u>Excluded</u> Habitat present is substantially degraded such that this species is unlikely to utilise the study area. Habitat in the study area is isolated and disturbed. Habitat requirements were not recorded within the study area.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox (Breeding)	Other Breeding camps	High	V	V	<u>Excluded</u> This is a dual credit species, and only a species credit species when specific habitat constraints are present for breeding. The study area does not contain any breeding sites that are suitable for the species to utilise.
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	N/A	Moderate	E	E	<u>Excluded</u> The vegetation within the study area has been substantially modified and does not represent suitable habitat features for this cryptic species. Furthermore, there are no records for this species within 5 km of the study area.
<i>Pultenaea pedunculata</i>	Matted Bush-pea	N/A	Moderate	V	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is substantially degraded such that this species is unlikely to occur within the study area.
<i>Thesium australe</i>	Austral Toadflax	N/A	Moderate	V	V	<u>Excluded</u> The presence of this species was not identified (conspicuous species) and it was determined that the habitat is

Species	Common Name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
						substantially degraded such that this species is unlikely to occur within the study area.
<i>Wahlenbergia multicaulis</i> – endangered population	Tadgell's Bluebell in the LGAs of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	Other	High	E2	Not Listed	<u>Excluded</u> The study area is not located within the geographic LGA distribution for this species.

CE = Critically Endangered; E = Endangered; E2 = Endangered Population; V = Vulnerable

2.6.1 Targeted surveys

Due to the high level of modification of vegetation within the study area and lack of potential habitat, targeted surveys will not be required for many species credit species. Justification for the exclusion of species credit species is provided above in Table 12.

Some microbat species are dual credit species with only breeding habitat considered for species credits. None of the dual credit species are known to breed in man-made structures such as roof cavities. However, under Section 9.2.1 of the BAM, the assessor must take into consideration Prescribed Biodiversity Impacts including any man-made structures which may be roosting habitat for the following threatened microbat species:

- *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Miniopterus australis* (Little Bentwing-bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat).

Targeted surveys for threatened microbats listed above will be conducted for the BDAR as part of the SSD application. Targeted surveys are also required for Koala, Green and Golden Bell Frog and Southern Myotis.

3. Stage 2: Preliminary impact assessment (biodiversity values)

3.1.1 Prescribed biodiversity impacts

The study area has the prescribed biodiversity impacts as outlined below.

The list of potential prescribed biodiversity impacts as per the BAM is provided below:

- Occurrences of karst, caves, crevices and cliffs - none occur within the study area
- Occurrences of rock - no rock outcrops or scattered rocks occur within the study area
- Occurrences of human made structures and non-native vegetation – **Yes, see section below.**
- Hydrological processes that sustain and interact with the rivers, streams and wetlands - **Yes, see section below**
- Proposed development for a wind farm and use by species as a flyway or migration route - the project does not involve any wind farm development.

The study area contains human made structures and non-native vegetation. The study area also contains hydrological processes that sustain and interact with rivers (Georges River) and wetlands (Lake Moore) as mapped on Figure 7. Additional information regarding these processes will be conducted following a review of the riparian assessment and provided in the BDAR.

Additional information regarding consideration of human made structures is provided below. Non-native vegetation was identified and assessed for any potential to provide habitat for threatened flora and fauna species, including presence of hollow bearing trees.

A literature review was conducted to identify if buildings or structures could potentially be utilised as a roosting resource by microbats, including BioNet records within the study area and surrounding landscape. Visual surveys were conducted to visually determine if the buildings within the study area contain potential openings, possibly utilised by microbats. Possible threatened microbats surveyed for include:

- *Saccolaimus flaviventris* (Yellow-bellied Sheath-tail Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Miniopterus australis* (Little Bentwing-bat)
- *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat).

Existing buildings in the study area include a variety of potential microbat habitats. Areas of open, noisy industrial sheds were not considered potential habitat. Additional surveys within the survey seasonal requirements are required for microbats as part of the BDAR.

Prescribed Impacts will be assessed in accordance with the BAM and submitted with the BDAR.

3.1.2 Direct impacts

The direct impacts of the planning proposal on:

- native vegetation are outlined in Table 13
- threatened ecological communities are outlined in Table 14

- prescribed biodiversity impacts will be assessed as per Section 3.1.1.

The Masterplan has provided a development footprint to be assessed in the following sections. A detailed landscape design has yet to be finalised. It is assumed that some minor impacts are likely to occur within areas mapped as Open Space. As such, these need to be included in the impact assessment and impacts to biodiversity values are to be offset in accordance with the BAM.

The development area will result in the removal of approximately 0.16 ha of PCT 835 which includes 0.14 ha of PCT 835_weedy condition and 0.02 ha of PCT 835_revegetation. These vegetation zones are also listed as part of TEC (see Table 14).

The development footprint will also result in the removal of 0.49 ha of vegetation mapped as PCT 849_planted. This vegetation community is not considered part of a TEC.

Up to 0.61 ha of unvalidated vegetation will also be impacted. Any native vegetation within the unvalidated vegetation areas will be assigned into a vegetation zone for the BDAR.

Table 13: Impacts to vegetation for the development footprint and Open Space areas

PCT and Veg Zone	Impact for development (ha)	Open Space* (ha)	Total area within study area (ha)
PCT 835 Zone 1_Weedy	0.14	1.35	1.48
PCT 835 Zone 2_Revegetation	0.02	0.42	0.44
PCT 849 Zone 3_Planted	0.49	0.08	0.57
Exotic	7.49	2.03	9.62
Cleared**	23.56	2.80	26.36
Unvalidated vegetation	0.61	0.32	0.93
TOTAL	31.75	7.01	38.75

*NOTE SOME AREAS WITHIN THE OPEN SPACE WILL BE SUBJECT TO LANDSCAPING WORKS AND MAY RESULT IN REMOVAL OF NATIVE VEGETATION. THESE IMPACTS WILL BE FINALISED IN THE BDAR

** CLEARED AREAS INCLUDES BUILD ENVIRONMENTS AND EXOTIC GRASSLANDS

The proposed development footprint will result in the removal of 0.14 ha of PCT 835_weedy and 0.02 ha of PCT 835_revegetation which is listed as part of the endangered ecological community (River-flat Eucalypt Forest) under the NSW BC Act. The development footprint does not contain threatened ecological communities which satisfy listing criteria under the EPBC Act.

Table 14: Direct impacts on threatened ecological communities

PCT ID	BC Act				EPBC Act
	Listing status	Name	Development impact (ha)	Open Space* (ha)	Listing status
PCT 835 Zone 1_Weedy	EEC	River-flat Eucalypt Forest	0.14	1.35	N/A
PCT 835 Zone 2_Revegetation	EEC	River-flat Eucalypt Forest	0.02	0.42	N/A
PCT 849 Zone 3_Planted	-	-	-	-	N/A
TOTAL			0.16	1.77	

*NOTE SOME AREAS WITHIN THE OPEN SPACE WILL BE SUBJECT TO LANDSCAPING WORKS AND MAY RESULT IN REMOVAL OF NATIVE VEGETATION. THESE IMPACTS WILL BE FINALISED IN THE BDAR

3.2 Impact summary

3.2.1 Serious and Irreversible Impacts (SII)

The development is unlikely to contain Serious and Irreversible Impacts (SII) entities. The study area does not contain vegetation communities which are candidate entities for SII. Additionally, the development footprint is unlikely to impact upon threatened species which are considered a candidate species for SII.

3.2.2 Impacts requiring offsets

The impacts of the development footprint requiring offsets for native vegetation are outlined in Table 15. Impacts from development within Open Space will be updated to the table below once finalised.

Table 15: Impacts to native vegetation that require offsets

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Direct impact (ha)
PCT 835 Zone 1_Weedy	Cumberland Riverflat Forest	Coastal Wetlands	Floodplain Forested Wetlands	0.14
PCT 835 Zone 2_Revegetation	Cumberland Riverflat Forest	Coastal Wetlands	Floodplain Forested Wetlands	0.02
PCT 849 Zone 3_Planted	Cumberland Shale Plains Woodland	Coastal Valley Woodlands	Grassy Grassy Woodlands	0.49

3.2.3 Impacts not requiring offsets

All native vegetation within the study area which will be removed requires offsets.

3.2.4 Areas not requiring assessment

Areas not requiring assessment include existing buildings, carparks, paths, exotic grassland and exotic vegetation which does not provide habitat for threatened species. The study area contains build/cleared areas, exotic grassland and exotic vegetation as shown in Figure 9. These areas were not consistent with any listed PCT, nor did they contain any threatened species. An assessment of Prescribed Impacts will be undertaken, hence further assessment under the BAM was not required.

3.2.5 Credit summary

An indicative summary of the number of ecosystem credits required for the development are outlined in Table 16. These calculations will be updated following the submission of the final Masterplan design to include the Open Space impacts.

Targeted surveys for threatened species will be required and may require offsets for species credit species at the DA stage.

Table 16: Ecosystem credits required for development impacts (this excludes open space impacts)

PCT ID	PCT Name	Vegetation Formation	Direct impact (ha)	Credits /ha	Est. credits required
PCT 835 1_Weedy	Zone Cumberland Riverflat Forest	Forested Wetlands	0.14	14	2
PCT 835 2_Revegetation	Zone Cumberland Riverflat Forest	Forested Wetlands	0.02	14	1
PCT 849 3_Planted	Zone Cumberland Shale Plains Woodland	Grassy Woodlands	0.49	18	9
TOTAL			0.65	-	12

4. References

ACS Environmental P/L 2015. *Flora and Fauna Survey and Riparian Zone Impact Assessment for proposed rezoning of land at 6-16 Bridges Road and 361 Newbridge Road, Moorebank.*

Chapman, G.A and Murphy, C.L. 1989. *Soil Landscapes of the Sydney 1:100 000 sheet*. Soil Conservation Service of NSW, Sydney.

Churchill, S. 2009. *Australian Bats*. Allen & Unwin. 2nd Edition.

Department of Environment and Climate Change. 2002, *'Descriptions for NSW (Mitchell) Landscapes Version 2'*. Accessed 8 May 2019 from:
<http://www.environment.nsw.gov.au/resources/conservation/landscapesdescriptions.pdf>

Department of Environment, Climate Change and Water NSW (DECCW) 2009. *Draft National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*. Prepared by Dr Peggy Eby. Department of Environment, Climate Change and Water NSW, Sydney.

Department of the Environment and Energy (DotEE) 2019c. *National Flying-fox monitoring viewer*. Australian Government. Available: <http://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf> (Accessed: 8 May 2019)

Department of the Environment and Energy (DotEE) 2019d. Protected Matters Search Tool [online]. Available: <http://www.environment.gov.au/epbc/protect/index.html> (Accessed: May 2019).

Department of the Environment and Energy (DotEE) 2019e. Species Profile and Threats Database. Available <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

Eco Logical Australia (ELA) 2016. *Prysmian Liverpool Flora and Fauna Assessment*. Prepared for LAC JV Pty Ltd.'

Office of Environment and Heritage 2016. *NSW Guide of Surveying Threatened Plants*. Available: <http://www.environment.nsw.gov.au/resources/threatenedspecies/160129-threatened-plants-survey-guide.pdf>

Office of Environment and Heritage 2016. *The Native Vegetation of the Sydney Metropolitan Area. Volume 2: Vegetation Community Profiles*. Version 3.0. NSW Office of Environment and Heritage, Sydney.

Appendix A Definitions

Terminology	Definition
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a study area, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.
BioNet Atlas	The BioNet Atlas (formerly known as the NSW Wildlife Atlas) is the OEH database of flora and fauna records. The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails) and some fish.
Broad condition state:	Areas of the same PCT that are in relatively homogenous condition. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score.
Connectivity	The measure of the degree to which an area(s) of native vegetation is linked with other areas of vegetation.
Credit Calculator	The computer program that provides decision support to assessors and proponents by applying the BAM, and which calculates the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.
Development	Has the same meaning as development at section 4 of the EP&A Act, or an activity in Part 5 of the EP&A Act. It also includes development as defined in section 115T of the EP&A Act.
Development footprint	The area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials.
Study area	An area of land that is subject to a proposed development that is under the EP&A Act.
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a study area and the gain in biodiversity values at a biodiversity stewardship site.
High threat exotic plant cover	Plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species.
Hollow bearing tree	A living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1 m above the ground. Trees must be examined from all angles.
Important wetland	A wetland that is listed in the Directory of Important Wetlands of Australia (DIWA) and SEPP 14 Coastal Wetlands.
Linear shaped development	Development that is generally narrow in width and extends across the landscape for a distance greater than 3.5 kilometres in length.
Local population	The population that occurs in the study area. In cases where multiple populations occur in the study area or a population occupies part of the study area, impacts on each subpopulation must be assessed separately.
Local wetland	Any wetland that is not identified as an important wetland (refer to definition of Important wetland).
Mitchell landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.

Terminology	Definition
Multiple fragmentation impact development	Developments such as wind farms and coal seam gas extraction that require multiple extraction points (wells) or turbines and a network of associated development including roads, tracks, gathering systems/flow lines, transmission lines
Operational Manual	The Operational Manual published from time to time by OEH, which is a guide to assist assessors when using the BAM
Patch size	An area of intact native vegetation that: a) occurs on the study area or biodiversity stewardship site, and b) includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the study area or stewardship site.
Proponent	A person who intends to apply for consent to carry out development or for approval for an activity.
Reference sites	The relatively unmodified sites that are assessed to obtain local benchmark information when benchmarks in the Vegetation Benchmarks Database are too broad or otherwise incorrect for the PCT and/or local situation. Benchmarks can also be obtained from published sources.
Regeneration	The proportion of over-storey species characteristic of the PCT that are naturally regenerating and have a diameter at breast height <5 cm within a vegetation zone.
Remaining impact	An impact on biodiversity values after all reasonable measures have been taken to avoid and minimise the impacts of development. Under the BAM, an offset requirement is calculated for the remaining impacts on biodiversity values.
Retirement of credits	The purchase and retirement of biodiversity credits from an already-established biobank site or a biodiversity stewardship site secured by a biodiversity stewardship agreement.
Riparian buffer	Riparian buffers applied to water bodies in accordance with the BAM
Sensitive biodiversity values land map	Development within an area identified on the map requires assessment using the BAM.
Site attributes	The matters assessed to determine vegetation integrity. They include: native plant species richness, native over-storey cover, native mid-storey cover, native ground cover (grasses), native ground cover (shrubs), native ground cover (other), exotic plant cover (as a percentage of total ground and mid-storey cover), number of trees with hollows, proportion of over-storey species occurring as regeneration, and total length of fallen logs.
Site-based development	a development other than a linear shaped development, or a multiple fragmentation impact development
Species credits	The class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject land	Is land to which the BAM is applied in Stage 1 to assess the biodiversity values of the land. It includes land that may be a study area, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.
Threatened Biodiversity Data Collection	Part of the BioNet database, published by OEH and accessible from the BioNet website.
Threatened species	Critically Endangered, Endangered or Vulnerable threatened species as defined by Schedule 1 of the BC Act, or any additional threatened species listed under Part 13 of the EPBC Act as Critically Endangered, Endangered or Vulnerable.

Terminology	Definition
Vegetation Benchmarks Database	A database of benchmarks for vegetation classes and some PCTs. The Vegetation Benchmarks Database is published by OEH and is part of the BioNet Vegetation Classification.
Vegetation zone	A relatively homogenous area of native vegetation on a study area, land to be biodiversity certified or a biodiversity stewardship site that is the same PCT and broad condition state.
Wetland	An area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water
Woody native vegetation	Native vegetation that contains an over-storey and/or mid-storey that predominantly consists of trees and/or shrubs

Appendix B Vegetation plot data

Table 17: Vegetation integrity data (Composition, Structure and function)

Plot location data							
Plot no.	PCT	Vegetation Zone	Condition	Zone	Eastings	Northings	Bearing
1	835	1	Weedy	56	308829	6244493	257
2	849	3	Planted	56	309008	6244087	430
3	835	2	Revegetation	56	309126	6243980	147
4	835	1	Weedy	56	309010	6244514	30

Composition (number of species)						
Plot no.	Tree	Shrub	Grass	Forb	Fern	Other
1	4	0	2	1	0	0
2	3	4	1	2	0	1
3	8	5	2	2	0	2
4	4	4	3	0	0	0

Structure (Total cover %)						
Plot no.	Tree	Shrub	Grass	Forb	Fern	Other
1	35.2	0	70.1	0.1	0	0
2	31	20.7	0.3	20	0	0.5
3	39.9	2.1	0.7	0.2	0	0.2
4	27	5.6	10.1	0	0	0

Function												
Plot no.	Large Trees	Hollow trees	Litter Cover (%)	Length Fallen Logs (m)	Tree Stem 5-9 cm	Tree Stem 10-19 cm	Tree Stem 20-29 cm	Tree Stem 30-49 cm	Tree Stem 50-79 cm	Tree Stem 80+ cm	Tree Regen	High Threat Weed Cover (%)
1	1	0	45.8	0	0	0	1	1	1	0	0	16.5
2	1	0	51.6	0	1	0	1	1	1	0	0	0.9
3	0	0	15.8	4	1	1	1	1	0	0	0	27.6
4	2	0	80.2	2	1	0	1	0	1	1	1	94.5

For stem size classes: 0 = Absence, 1 = Presence.

Table 18: Species matrix (species recorded by plot)

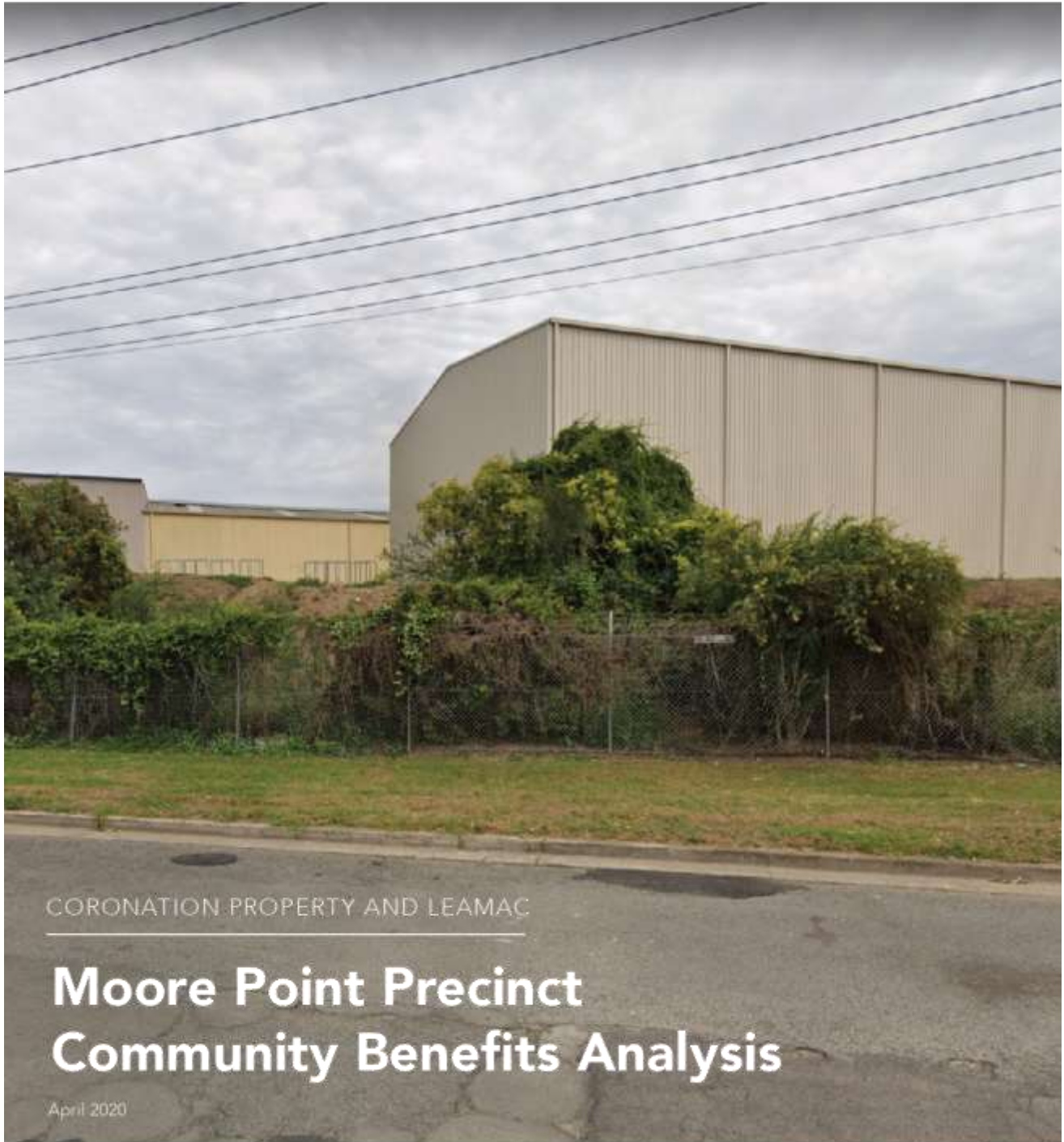
Stratum	Form	Species name	Exotic (*)	High Threat Weed (*)	Cover (%) Plot 1	Cover (%) Plot 2	Cover (%) Plot 3	Cover (%) Plot 4
U	TG	<i>Acacia binervata</i>						10
M	TG	<i>Acacia decurrens</i>			0.1		0.2	
M	SG	<i>Acacia falcata</i>						0.5
M		<i>Acacia saligna</i>	*				0.3	
G		<i>Acetosa sagittata</i>	*	*	0.1		0.1	
M	TG	<i>Alphitonia excelsa</i>			0.1			2
G		<i>Anagallis spp.</i>	*			0.1		
U	TG	<i>Angophora floribunda</i>					0.5	
G		<i>Araujia sericifera</i>	*	*	1		0.1	
M		<i>Araujia sericifera</i>	*	*		0.1		
G		<i>Asparagus asparagoides</i>	*	*	0.1		0.1	0.1
U	SG	<i>Backhausia myrtifolia</i>						3
M	TG	<i>Banksia serrata</i>				0.5		
M		<i>Bidens spp.</i>	*		0.5			
G		<i>Bidens spp.</i>	*			0.5	5	0.1
G		<i>Brassica spp.</i>	*				1	
G		<i>Bromus catharticus</i>	*			0.1	0.1	
M	SG	<i>Bursaria spinosa subsp. spinosa</i>					0.2	2
M	SG	<i>Callistemon citrinus</i>				20		
M	SG	<i>Callistemon salignus</i>					0.2	
M		<i>Cardiospermum grandiflorum</i>	*	*	10			30
G	GG	<i>Carex inversa</i>			0.1			
U	TG	<i>Casuarina glauca</i>					20	
M	TG	<i>Ceratopetalum gummiferum</i>				0.5		
G	TG	<i>Ceratopetalum gummiferum</i>					7	
M		<i>Cestrum parqui</i>	*	*	0.1	0.1		
M		<i>Cinnamomum camphora</i>	*	*		0.5		
U		<i>Cinnamomum camphora</i>	*	*				3
G		<i>Cirsium vulgare</i>	*		0.1		0.1	

Stratum	Form	Species name	Exotic (*)	High Threat Weed (*)	Cover (%) Plot 1	Cover (%) Plot 2	Cover (%) Plot 3	Cover (%) Plot 4
G		<i>Canyza bonariensis</i>	*				0.1	
U	TG	<i>Corymbia maculata</i>			20			
G	GG	<i>Cotula australis</i>				5		
G	GG	<i>Cynodon dactylon</i>						0.1
G	GG	<i>Desmodium brachypodium</i>					0.1	
G	GG	<i>Dichondra repens</i>					0.1	
G		<i>Ehrharta erecta</i>	*	*	1	0.1	20	10
G	GG	<i>Einadia nutans</i> subsp. <i>nutans</i>			0.1			
G		<i>Eleusine indica</i>	*			0.1		
M	TG	<i>Eucalyptus elata</i>					0.1	
U	TG	<i>Eucalyptus eugenioides</i>						10
U	TG	<i>Eucalyptus robusta</i>					2	
U	TG	<i>Eucalyptus tereticornis</i>			15	30	10	5
M		<i>Foeniculum vulgare</i>	*		5			5
G		<i>Foeniculum vulgare</i>	*				0.1	
M		<i>Genista linifolia</i>	*	*	2			
G	OG	<i>Glycine tabacina</i>					0.1	
M		<i>Gomphocarpus fruticosus</i>	*				0.1	
M	SG	<i>Grevillea</i> spp.				0.1		
G	OG	<i>Hardenbergia violacea</i>					0.1	
G		<i>Hypochaeris radicata</i>	*			0.2		
M	SG	<i>Indigofera</i> spp.					0.5	
M	SG	<i>Kunzea ambigua</i>						0.1
M		<i>Lantana camara</i>	*	*	2		7	10
M		<i>Ligustrum sinense</i>	*	*		0.1		1
G		<i>Ligustrum sinense</i>	*	2			0.1	
U	OG	<i>Livistona australis</i>				0.5		
G	GG	<i>Lomandra longifolia</i>					0.2	
M		<i>Lycium ferocissimum</i>	*	*				0.2
M	SG	<i>Melaleuca ericifolia</i>					0.2	
M	TG	<i>Melia azedarach</i>					0.1	

Stratum	Form	Species name	Exotic (*)	High Threat Weed (*)	Cover (%) Plot 1	Cover (%) Plot 2	Cover (%) Plot 3	Cover (%) Plot 4
G	GG	<i>Microlaena stipoides</i> var. <i>stipoides</i>						5
G		<i>Modiola caroliniana</i>	*			0.5	0.2	
M		<i>Nerium oleander</i>	*					1
G		<i>Nothoscordum</i> spp. (Onion Weed)			0.1			
M		<i>Ochna serrulata</i>	*	*	0.1			0.1
M		<i>Olea europaea</i> subsp. <i>cuspidata</i>	*		0.5	0.1		
G	GG	<i>Oplismenus aemulus</i>					0.5	
G		<i>Opuntia stricta</i> var. <i>stricta</i>	*	*				0.1
G		<i>Oxalis articulata</i>	*				0.1	
G		<i>Paspalum dilatatum</i>	*	*			0.1	
G	GG	<i>Pennisetum</i> spp.			70	0.3		5
M	SG	<i>Pittosporum undulatum</i>				0.5	1	
G		<i>Plantago lanceolata</i>	*				0.1	
G		<i>Senna pendula</i> var. <i>glabrata</i>	*	*			0.1	
G		<i>Setaria palmifolia</i>	*				5	0.5
M		<i>Sida rhombifolia</i>	*		0.5			
M		<i>Solanum nigrum</i>	*		0.1		0.2	
M		<i>Solanum pseudocapsicum</i>	*				0.1	
G	GG	<i>Sonchus asper</i>				15		
G		<i>Tephrosia glomeruliflora</i>	*				0.1	
G		<i>Tradescantia fluminensis</i>	*	*	0.1			40
G		<i>Trifolium repens</i>	*				0.1	
M		<i>Verbena bonariensis</i>	*		0.1			
M		<i>Verbena officinalis</i>	*				0.5	
M	SG	<i>Westringia fruticosa</i>				0.1		

G = Ground, M = Midstorey, U = Understorey TG = Tree, SG = Shrub, GG = Grass & Grasslike, FG = Forb, EG = Fern, OG = Other







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Analysis Moore Point Precinct

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Executive summary

BACKGROUND

This Community Benefits Analysis report has been prepared by Cred Consulting on behalf of Leamac and Coronation in relation to a Planning Proposal at Moore Point, Liverpool (the site). It aims to understand the potential community benefits that could be delivered within the site itself to support the incoming and neighbouring communities, but also recommends enhancement or embellishments to existing social infrastructure and open space nearby the site to ensure that there is an integrated and strategic approach to delivering community outcomes for the entire area. It aims to deliver social sustainability and resilience outcomes for the existing and future community of Moore Point Precinct and Moorebank suburb.

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018 (see Figure 2).

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing

residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council (Council).

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation



Figure 1 - Site aerial (Source: Nearmap modified by Mecone)

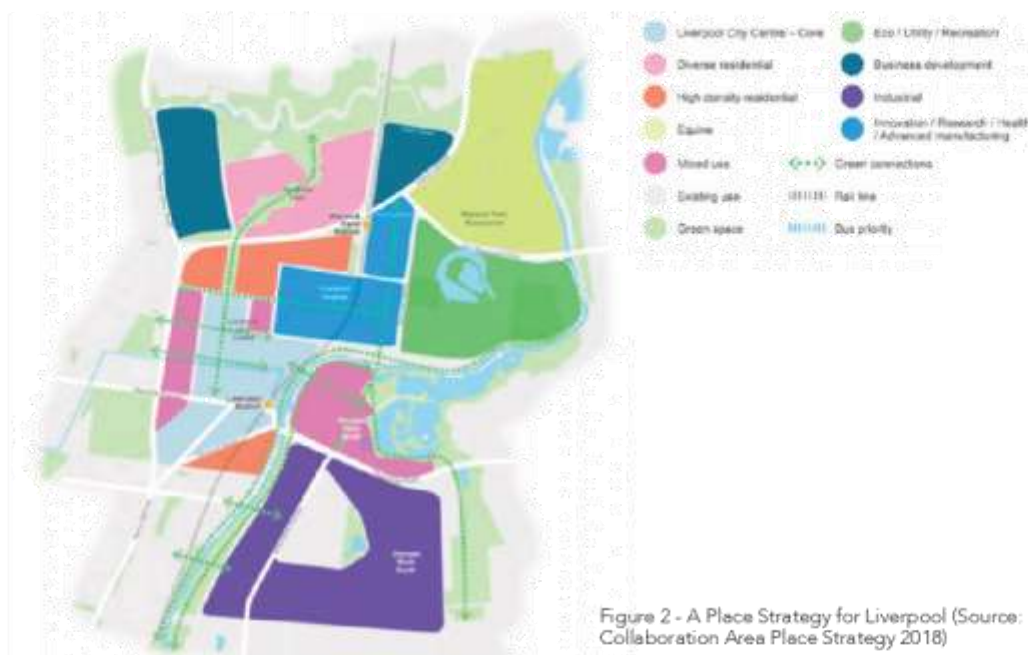


Figure 2 - A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new

transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

STRATEGIC CONTEXT

The site is strategically located next to the Liverpool CBD. Future community benefits including social infrastructure and open space will be driven by strategic plans such as Liverpool's Local Strategic Planning Statement, Liverpool Place Plan, GSC's Western District Plan, Liverpool Council's Community Strategic Plan, Community Facilities Strategy, and Recreation, Open Space and Sports Strategy. Strategic directions include:

- Increase visual and physical connections between the Georges River and the Liverpool City Centre.
- Reinstall the Lighthorse Bridge and connect the rail concourse to the river.
- Create improved public places and open space network for people to engage and connect including increased local parks, green grids, and multipurpose spaces.
- Support access to accessible and affordable housing
- Include place making and community activities to support the activation of public spaces.

POPULATION CONTEXT

By 2051 there will be an additional 46,000 people living in the suburb of Moorebank, with 32,489 of these living in the high density Moore Point precinct. The forecast population for the site will be a young population, home to young professionals aged 25 to 34, and new home builders aged 35 to 49.

Given these age characteristics and high density living it's important that the site offers unique social, retail and dining options, health and wellbeing features such as indoor/outdoor gym equipment, open space as a backyard, community and cultural centres for programs, services and family gatherings, as well as places for children and young people to play and be cared for as these groups start families and continue to work.

COMMUNITY BENEFIT ANALYSIS

The following community and place benefits are recommended to support the delivery of a sustainable and resilient place and community post proposal. They are based on an analysis of current and forecast strategic, people and place context, open space and social infrastructure needs analysis, and consideration of social sustainability and resilience outcomes. They recognise the benefits that this proposal can deliver for the incoming community but also to the existing community (whether it be onsite, neighbouring etc.) and include community benefits that can be delivered onsite and through embellishment or contribution offsite. Further detail including case studies and rationale is provided at Chapter 8.

COMMUNITY BENEFIT OPPORTUNITIES INCLUDE:

New multipurpose community hub

- The precinct could deliver 1 new district level multipurpose community centre of around 2,000m² (ideally located within a town centre). This centre could include cultural/performance space to meet demand for cultural space for participation, exhibition and performance (at a local and district level) across Western Sydney.
- Deliver by 2041 to support population growth and increasing demand for spaces for community and cultural activities.

New local community facility

- The precinct could deliver 1 new local facility with indoor and outdoor space (of around 400m²) connected to a park and used for birthday parties, gatherings etc.
- Deliver in the early stages of the development to support community development programs and services.

Contribution to improved library facility

- Applying Liverpool Council benchmarks of 42m² of library floor space per 1,000 people, 598m² (2036) and 1,365m² (2051) of new library floor space would be required to service the Moore Point precinct alone. This could be realised through a contribution toward repurposing Moorebank Library and Community Centre to a district level multipurpose library facility. Alternatively contribute to a larger new Liverpool CBD library.
- A mobile library service onsite.

New and improved schools

- 1 new primary school would be required within the precinct.
- The new primary school should include 1 Out of School Hours Care purpose built facility at any new school.
- Opportunities to share sportsfield, pools, library and community space should be explored.
- Investigate potential for a redeveloped Liverpool High (replacing Boys High and Girls High) school onsite or contribute to improvements to Moorebank High to increase capacity.

New Early Childhood Education and Care

- Encourage the provision of quality early education

and care centres that meet best practice provisions including not over 90 places, and access to natural outdoor areas which will be priority for all the children living in high density communities.

- Dependent on the benchmark up to 10 new long day care centres could be required by 2051.
- Encourage the inclusion of a quality Out of School Hours Care service with capacity for up to 150 children as part of the future primary school.

New open space for informal recreation

- Deliver a total of at least 7.7ha new quality open space. This should be delivered as 6.2ha of new local parks of a minimum size of 0.3ha-0.5ha. The parks should be located so that all residents in high density can access a usable open space within 200m of their homes. 1 district level open space (1.5ha) should also be provided and could include informal sports space.
- To support the areas cultural diversity, and high working population, the parks should be designed to support daytime and night time walks, large family gatherings and culturally appropriate recreation activities such as tai chi, dance, badminton and group gatherings.
- Recreational green links could be provided as part of the 7.7ha including links to existing large open space areas such as Haigh Park, Bill Morrison Park, Lighthorse Park and Bigge Park.

New sports space

- Deliver up to 3 new (or embellished) district sports-fields including: 1 new sports-field space within the precinct delivered by 2051.
- Embellishments to Haigh Park to deliver additional sports-fields for informal team sports delivered by 2036. These sports spaces should respond to the increasing demand for informal and unstructured team sports rather than being controlled by one team or sports type.
- Protection and enhancement of the Satyam Ghat.

Recreation and play

- Up to 4 5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051. These should be located throughout the precinct within new open spaces and through embellishments to neighbouring open spaces.
- Up to 1 regional/district level outdoor youth recreation precinct (see case study in section 8.1). This could be provided through embellishment of the existing Kelso Skate Park or through a new youth focused outdoor recreation space along the lake

and could include provision of required outdoor multipurpose courts, parkour, skate elements, outdoor study space, and seating.

- 2 outdoor fitness stations throughout the precincts (more could be provided as these provide free fitness equipment for a range of age groups).

New indoor leisure

- 1 indoor recreation centre providing up to 4 indoor courts that support a range of culturally appropriate sports such as futsal, indoor volleyball, badminton and table tennis. This could be privately operated, communal or dedicated to Council.

Water recreation facilities at Lake Moore

- There is opportunity to leverage the Lake Moore foreshore through the provision of a water launch point for passive boating (e.g. Kayaks, canoes) and viewing decks for passive recreation and fishing.

Communal pools

- There is an opportunity to provide communal pools to support the significant density of residents on site, and lessen the pressure on public pools.
- Consider contribution to improving facilities at the Whitlam Centre.

Communal facilities

- Provision of communal facilities within residential towers including green roofs with community gardens, dog runs, bbq facilities, and connected to internal rooms with study space for student, or music practice rooms, or maker spaces/community share shed.
- Deliver at least 5% affordable housing for key workers.

DELIVERY AND FUNDING

A site specific s7.11 contributions plan will be prepared following gateway determination of the planning proposal. It is anticipated that a number of items in this report will be considered in the preparation of the contributions plan in collaboration with Council.

The proponents are working with Council to establish a Placemaking Working Group to ensure that over the next 40 years Moore Point delivers on the vision for Liverpool as Sydney's third City Centre. The aim of the Working Group is to collaboratively explore and assess place-led opportunities to ensure the precinct is delivered based on world's best practice for placemaking, river interface, and sustainability. Through this Group, Council and the proponents will collaboratively refine the community benefit opportunities for Moore Point.

1. Introduction

Cred Consulting was engaged by Coronation Property and Leamac to prepare a Community Benefits Analysis (CBA) to support a planning proposal for a new mixed used development known as the "the Moore Point Precinct" within the Liverpool Local Government Area (LGA). This CBA assesses the community benefits that could be delivered through the proposal to support a socially sustainable, resilient and connected community and place.

1.1. BACKGROUND

Coronation and Leamac are together seeking to rezone a 38.5ha site in the Bridges Road Precinct, Moorebank, from industrial to allow a mix of uses including commercial and residential uses.

The subject site located in a currently industrial area, in proximity to, but disconnected from Liverpool City Centre, Liverpool Station Concourse and existing open space and community facilities in the suburb of Moorebank.

Cred Consulting was engaged by Coronation Property and Leamac to prepare a CBA to support this planning proposal. This CBA aims to understand the potential community benefits that could be delivered within the site itself to support the incoming and neighbouring communities, but also recommends enhancement or embellishments to existing social infrastructure and open space nearby the site to ensure that there is an integrated and strategic approach to delivering community outcomes for the entire area.

This report provides a detailed social infrastructure and open space needs assessment which identifies the additional social infrastructure and open space generated by the proposed development (both local and district) and takes into account the availability and capacity of surrounding infrastructure and services to accommodate the demand created by the significant forecast population increase and change of the proposed development. This report provides makes recommendations on how the development can achieve social sustainability, create its own sense of place, and respect the existing character of the site and surrounding Moorebank community, and deliver public benefits for the broader Liverpool LGA. Social sustainability can be broadly defined as the maintenance and improvement of well-being for both current and future generations.

1.2. METHODOLOGY

This CBA is informed by recognised approaches for social infrastructure and open space needs analysis using the following methodology:

- Review and analysis of site and proposal.
- Strategic context review of existing Council and Greater Sydney Commission strategic plans and policies and implications for social infrastructure and open space and other community and place benefit outcomes.
- Population context and analysis including:
 - Community profile (2016) of existing resident population of Moorebank and implications for social sustainability outcomes.
 - Population forecasts of the proposal and the local area and forecast population characteristics including population, age profile, income, cultural diversity and implications relating to social sustainability outcomes.
- Place context and analysis including what is there now and what is nearby
- Social infrastructure and open space needs analysis including:
 - Audit and mapping of existing social infrastructure and open space within 200m (high density proximity benchmark) 400metres and 2km (for regional and district facilities) of the site and implications relating to the proposed development.
 - Population benchmarking of social infrastructure and open space needs resulting from the proposed development, and broader local social infrastructure and open space needs that could be delivered through the site.
- Identification of community benefit needs and opportunities that could be delivered through the proposal either within the site, or through a contribution toward embellishments or connections to existing places and spaces offsite/nearby. Assessment against our Community and place benefits matrix.

At the time of writing this CBA, the assumptions for the newly rezoned precinct, is that approximately 530 dwellings will be completed each year beginning in mid-2023. This yields approximately 6,900 dwellings completed by mid-2036. The precinct is being designed for an ultimate capacity of 14,800 dwellings, which would be reached by 2051 if the rate of 530 dwellings/year continues. All new dwellings are assumed to be apartments or flats, from one to multi-storey buildings.



2. Social sustainability and resilience

This CBA aims to deliver social sustainability and resilience outcomes for the existing and future community of Moore Point precinct and Moorebank suburb.

2.1. WHAT IS SOCIAL SUSTAINABILITY?

Social sustainability refers to the ability of a social system to support the capacity of current and future generations to maintain a high level of wellbeing. Social sustainability also recognises that individual and community wellbeing are linked, and that by addressing the needs of the most disadvantaged, the whole community benefits.

A community is socially sustainable when “the formal and informal processes, systems, structures and relationships actively support the capacity of current and future generations to create healthy and liveable communities. Socially sustainable communities are equitable, diverse, connected and provide a good quality of life.” (Social Sustainability Parramatta Framework, 2017)

A socially sustainable community is one that has good access to amenities, social infrastructure and open space that supports their needs, has a vibrant social and cultural life and provides opportunities to have a voice and influence the place they care for. Integrating these principles into the master plan will ensure a more resilient community, and create a great place to live.

WHAT IS RESILIENCE?

Urban resilience is referred to by the 100 Resilient Cities initiative as:

“The capacity of individuals, communities, institutions,

businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience.”

Chronic stresses are long-term systemic disruptions that weaken the fabric of a city. Examples include ongoing issues such as inequality, loss of housing affordability and lack of social cohesion. Acute shocks are short-term disruptions that threaten a city. Examples include sudden incidents such as heatwaves, bushfires, floods, disease outbreaks and terror attacks.

Resilient cities are reflective, resourceful, robust, have built in redundancy, are flexible, inclusive, and integrated. The facets of resilience that are particularly related to social capital are:

- Robust (well-conceived, constructed and managed systems)
- Inclusive (prioritise broad consultation to create a sense of shared ownership in decision making), and
- Integrated (bring together a range of distinct systems and institutions) 19.
- Increase visual and physical connections between the Georges River and the Liverpool City Centre
- Reinstate the Lighthouse Bridge
- Connect the rail concourse to the river
- Create improved public places for people to engage and connect
- Foster social inclusion and improve outcomes for disadvantaged residents
- Create a more integrated open space network, and
- Create social sustainability within Liverpool communities.

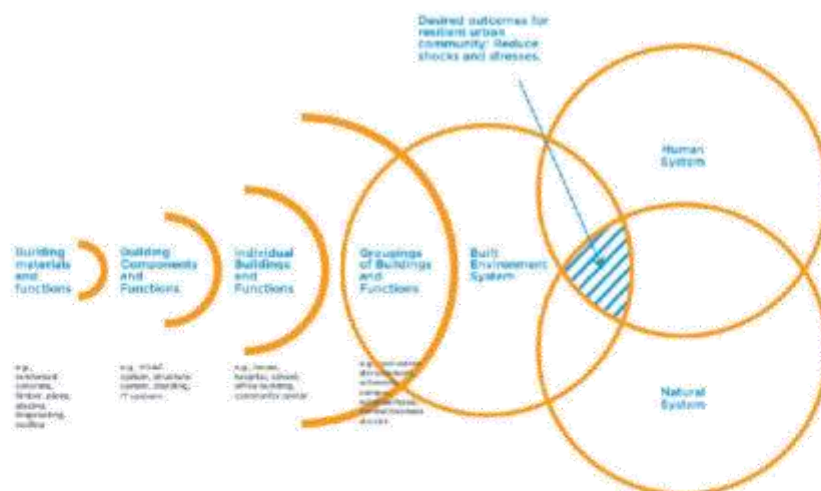


Figure 4 - Systems and subsystems of the built environment contributing to urban resilience. Source: 100 Resilient cities

3. Strategic context

This section provides a summary of the strategic plans and policies that relate to supply and demand of social infrastructure, open space other community benefits that could be delivered as part of the proposal.

3.1. STATE GOVERNMENT

Greater Sydney Commission District Plan - A Metropolis of Three Cities

The Metropolitan Plan sets an inclusionary zoning target for affordable housing on rezoned land of 5-10% "in defined precincts prior to rezoning" to capture some of the windfall gains, and directing it towards affordable rental housing for very low and low-income households.

Greater Sydney Commission District Plan - Western District

The study area is located within the Western City District as defined by the Greater Sydney Commission. The Western City District covers the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly local government areas.

Over the next 20 years the Western Parkland City will transform, drawing on the strength of the new Western Sydney Airport and Badgerys Creek Aerotropolis, and the first stage of a North South Rail Link that will create the opportunity for a Western Economic Corridor. The Western Parkland City will capitalise on the established centres of Liverpool, Greater Penrith and Campbelltown-Macarthur, which form a metropolitan cluster.

Greater Sydney Commission - Liverpool Collaboration Area Place Strategy

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018.

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community

uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

3.2. LIVERPOOL CITY LGA

Connected Liverpool 2050 Local Strategic Planning Statement A Land Use Vision to 2050

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:



Figure 5 - Liverpool City Centre Structure Plan. Source: Liverpool LSPS

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badger's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazetting for residential/mixed use purposes.

Liverpool City Council Community Strategic Plan - Our Home, Liverpool 2027

Liverpool City Council's 10-year Community Strategic Plan sets out the following vision: "Liverpool - An inclusive place to live, learn and grow." The Plan is structured around four directions:

- Creating connection
- Strengthening and protecting our environment
- Generating opportunity, and
- Leading through collaboration.

Recreation, Open Space and Sports Strategy, 2017

The Strategy identifies the following principles intended to be used as a guiding tool for Council and developers building facilities on Council's behalf:

- Planning for the future
- Creating a 'sense of place'
- Equity and access
- Multi-purpose
- Connections
- Promoting social capital
- Going green
- Safety and security
- Commercial development, and
- Building partnerships.

The Strategy identifies there is an existing shortage of open space in areas such as the city centre that will only be exacerbated by increasing density and strong population growth. The Strategy notes that strong growth in medium and high-density living, including in Warwick Farm, will further require meeting spaces for people to connect, and greater consideration of multi-purpose facilities.

The Strategy identified trends impacting open space,

including:

- The shrinking backyard
- The rise of unstructured recreation, and
- Shared space.

Women may face many personal, social and environmental barriers to participating. Opportunities exist to inspire women to re-engage with physical activity and sports if issues are considered holistically and within the context of their everyday lives.

With one of the largest concentrations of people from a refugee background in Australia living in Liverpool, considerations of a wider range of recreational and social interests reflecting these cultural groups, as well as facilitation of targeted programs to meet their needs. The design and feel of our open space and recreational facilities should also reflect this strong cultural identity.

Liverpool Community facilities strategy, a blueprint for a modern network of community facilities 2018

The Liverpool community facilities strategy offers a blueprint for how Council will deliver a modern network of facilities that meet community needs. The principles include:

1. Planning for the future

As Liverpool's population continues to grow, more pressure will be placed on Council's existing community facilities. This increased demand necessitates that Council deliver an efficient and flexible network of facilities that meet current and future community need and can be delivered in a financially sustainable manner.

2. A coordinated network of facilities

Community facilities will be considered as a broader network of facilities that function together to meet a broad range of community needs. A hierarchy of facilities including larger and specialist, higher order facilities is required to serve an LGA-wide catchment whilst local facilities will meet the day to day needs of their immediate surrounding communities.

3. Equity and access

Community facilities should be central and accessible to the communities they are intending to serve. Facilities will be located in urban centres, easily accessible by public transport and active transport modes, and co-located with other activity-generating land uses such as shops, services or schools.

The design of premises will promote the principles of universal design by facilitating physical access for all abilities. Design treatments will be both aesthetically

pleasing and functional.

4. Inclusive

Facilities will be welcoming and accessible to all people regardless of cultural background, gender, sexual orientation, age, ability, or socioeconomic status. This will be achieved through effective programming and services that provide for the needs of a broad range of people.

5. Multi-purpose and adaptable

Multi-use spaces are more dynamic, responsive and adaptable to evolving community needs and preferences. Multi-purpose spaces enable a wide range of activities, programs and services that ensure maximum use and optimisation of space. Buildings will be designed to allow for future modification and extension.

6. Promoting social capital

Community facilities will become key focal points and will act as key meeting spaces for the community that they service. Programming of activities and services that respond to identified community need and interests will facilitate both organised and chance meetings, promoting social cohesion and connection amongst the Liverpool community.

7. Building a 'sense of place'

Community facilities will contribute to the vitality of Liverpool's urban centres and local identity. Facilities will be ideally situated on landmark sites and have distinctive architecture and quality design. Local stories and culture will be ingrained in the building fabric to assist in fostering community identity and ownership.

8. Going Green

Community facilities will lead by example in reducing ongoing operational costs. Current facilities will employ environmental savings technology to minimise water and energy use. New facilities will make use of natural light and ventilation, as well as aspire to operate as carbon neutral, and produce zero waste. Future community facilities may also provide opportunities for sustainable learning and environmental education.

9. Safety and security

Facilities will provide a high degree of personal safety. Locating facilities in well activated areas (preferably on a main street with ground floor frontage) ensures higher levels of passive surveillance whilst incorporating crime prevention through environmental design principles (CPTED) during the design process to minimise vandalism and opportunities for anti-social behaviour.

Some key directions from the Strategy includes:

- Investigate recycling of stand-alone facilities and consolidating uses into district level community hubs;
- Implement a place making approach to ensure facilities promote community ownership and usage, and reflect the unique local characters; and
- Ensure new facilities incorporate best practice design elements to reflect the Guiding Principles outlined in this Strategy.

Draft Georges River Precinct Plan, 2016

The Draft Georges River Precinct Plan proposes a long-term vision for the potential urban renewal of the Georges River Precinct and was exhibited between October and December 2016. Key strategies of the Draft Precinct Plan relating to this SIA include:

- Strategy 3, Public Waterfront: Making the river synonymous with Liverpool.
 - The riverfront is rehabilitated and transformed into an inclusive public space that brings the regenerated Moorebank Precinct and the Liverpool CBD together into one city.
 - Opening up the Georges River to the city brings new amenity to its citizens and redefines Liverpool's identity and sense of place as a River City
- Strategy 7, Open Space: A network of diverse and multi-functional open space
 - A connected open space network that opens up the Georges River and provides future populations with easy access to plentiful and diverse leisure opportunities is essential to the liveability of the Precinct.

- Strategy 8, Community Infrastructure: Community amenity that sustains future populations
 - Regeneration that delivers density accompanied by social infrastructure; integrated with open space assets and precinct planning to maximise the utility of land and establish a liveable Precinct.

Social infrastructure

The Draft Precinct Plan acknowledges that there is a need for additional social infrastructure in the Georges River Precinct, but does not provide recommendations on the type or location of this infrastructure.

The Draft Precinct Plan recommends further detailed assessment of the levels of community infrastructure required to support the future precinct population, taking on board the community facilities provision in the wider context, as well as the determination of the preferred overall density for the precinct.

Open space

The Draft Precinct Plan provides some guidance to open space planning in the precinct, in particular suggesting the provision of two waterfront park typologies in the Bridges Rd Precinct: Town Park and Residential Interface areas.

- The Town Park, in the western edge of the Bridges Rd precinct, will provide a "transition to the CBD, encouraging CBD workers to 'escape to the river'. The park will be a meeting place with a mix of hard and soft finishes, and be able to hold community events."
- The Residential Interface, to the north of the Bridges Rd precinct, will have an "active public park adjacent to northern residential zone, incorporating Haigh Park. Capable of holding large numbers or diverse visitors, the



Figure 6 - Draft Georges River Master Plan open space

park will include a large playground, a choice of picnic/BBQ areas & open space for informal recreation. The park shall be tiered to allow for flood storage in lower sections while protecting assets such as playgrounds."

The Draft Precinct Plan also suggests, for the Bridges Precinct (Figure 2):

- A district park at waterfront (the Residential Interface)
- A Town Park, and
- Local neighbourhood parks throughout the site.

The Draft Precinct Plan principles for future open space provision include:

- Access to open space in close proximity for all residents
- Local neighbourhood parks provided/funded by developers (large sites to provide publicly accessible communal open space in addition to funding)
- Georges River frontage provides majority of large area open space and functions as a key connector in the open space system
- Open space throughout Precinct must be varied and provide different scales and offerings/experiences
- Parks should be shared use (cater to more than one user group), and
- Supporting functions within open space may include:
- Waterfront enhancements

- Remediation and ecological restoration (including possible education facilities / learning opportunities), and
- Stormwater and flooding management.

The Draft Precinct Plan identifies that there is a need for further detailed assessment of the provision of sportsgrounds in the area to understand whether a new sportsground is required.

With regards to the design of open space, the Draft Precinct Plan principles include:

- Consider activation through commercial activities on edges such as cafes, restaurants and kiosks
- Encourage a sense of community ownership by enabling social gatherings and establishment of land care groups, park committees and/or specialist social networks
- Provide spaces for community gardens throughout high density areas. Ensure size is adequate to achieve 'critical mass'
- A hierarchy of open space including district, neighbourhood and local spaces linked to private and communal open space, and
- Parks designed in relation to overall context to cater to a variety of recreation, social and nature-based needs.

STRATEGIC CONTEXT ANALYSIS

The GSC Liverpool Place Plan and Liverpool LSPS indicate the suitability of residential and employment uses on the subject site. Other directions include:

- Increase visual and physical connections between the Georges River and the Liverpool City Centre,
- Reinstate the Lighthorse Bridge and connect the rail concourse to the river
- Create improved public places for people to engage and connect including increased local parks, green grids, and multipurpose spaces.
- Foster social inclusion and improve outcomes for disadvantaged residents including through networked and multipurpose community facilities, programs and services; accessible design for people with disability and older people; spaces that are welcoming to young people; spaces that are welcoming to people from culturally and linguistically diverse communities.
- Create a more integrated open space network. Opportunities to enhance existing open space should be considered, particularly waterfront space and including with accessible play spaces, accessible pathways and separate cycleways, and spaces for young people.
- There are opportunities for the proposed development to support access to accessible and affordable housing in Liverpool, including increasing the diversity of dwelling types, and housing for older people and people with disability.
- The proposed development should include place making and community activities to support the activation of public spaces, and the design of public spaces and dwellings should follow Crime Prevention Through Environmental Design guidelines including lighting and natural surveillance.

4. Population context & analysis

This section summarises the current community profile of the Moorebank suburb area and Liverpool City, and provides a forecast of the estimated future population of the precinct and their characteristics, utilising data from the 2016 ABS Census obtained from [profile.id](#) and [atlas.id](#). Population forecasts for the precinct have been sourced from Mecone & Astrolabe for Coronation Property.

LIVERPOOL LGA CHARACTERISTICS

Total population in 2016: 217,736

Compared to Greater Sydney, Liverpool City has:

- A younger median age (33 compared to 36)
- A higher percentage of couples with children (46% compared to 35%)
- A lower median weekly household income of \$1,548 compared to \$1,745
- A higher percentage of people who speak a language other than English at home (52% compared to 36%). The most common languages other than English spoken at home were: Arabic (11.4%), Vietnamese (4.9%) and Hindi (4%).
- A similar proportion of Aboriginal and Torres Strait Islander residents (both 1.5%)
- A lower percentage of households renting (30% compared to 33%)
- A much lower percentage of medium and high density housing (25% compared to 44%)
- 41% of residents were born overseas in a non-English speaking country (compared to 37% in Greater Sydney), and
- Higher levels of disadvantaged (SEIFA index of 952 compared to 1,020 in Greater Sydney).

Emerging groups

From 2011 to 2016, Liverpool City's population increased by 24,144 people (13%).

The largest changes in the age structure in this area between 2011 and 2016 were in the age groups:

- Older workers and pre-retirees (50 to 59) (+4,022 people)
- Young workforce (25 to 34) (+3,370 people)
- Parents and homebuilders (35 to 49) (+3,310 people), and
- Empty nesters and retirees (60 to 69) (+3,213 people).

Diversity

Liverpool LGA has one of the largest concentrations of people from a refugee background in Australia. Over 11,500 migrants settled in Liverpool LGA between 2008 and 2014; a third of whom arrived through the Humanitarian Stream making Liverpool LGA the 5th highest local government area in Australia for settling humanitarian migrants (Recreation, Open Space and Sports Strategy, 2017).

Dwelling types

"Separate house" is the most common dwelling structure in the Liverpool City (73.7% in 2016, compared to 20.3% for Greater Sydney). 25.5% of dwellings were medium to high density in 2016, a similar proportion to 2011 (low compared to Greater Sydney at 43.8%).

4.1. MOOREBANK SUBURB CHARACTERISTICS

Age Profile

As shown in Table 1, compared to Liverpool LGA in 2016, Moorebank had:

- A higher proportion of residents aged 35 to 49 years (23.0% compared to 21.3%)
- A higher proportion of seniors aged 70 to 84 years (7.1% compared to 5.7%)
- A higher proportion of young workforce 25 to 34 years (15.9% compared to 14.6%)
- A significantly higher proportion of children aged 0 to 4 (9.5% compared to 7.6%), and a lower proportion of children aged 12 to 17 years (7.6% compared to 8.8%)

Between 2011 and 2016 in Moorebank, the age groups with the greatest percentage increase were:

- Parents and homebuilders (35 to 49) (+812 people or 50.7%)
- Young workforce (25 to 34) (+382 people or 31.7%)
- Babies and pre-schoolers (0 to 4) (+352 people or 54.8%), and
- Primary schoolers (5 to 11) (+343 people or 45.1%).

Population Density

At 8.28 persons per hectare, the 2016 residential population density of Moorebank is low but slightly higher compared to Liverpool City (at 6.69 persons per hectare), given its small residential population and large areas of industrial land and open space. This compares to the Liverpool suburb (with 53.2% high density dwellings) which has a population density of around 43.13 persons per hectare.

Cultural Diversity

Aboriginal and Torres Strait Islander population

In 2016, 1.1% or 119 people living in Moorebank identified as Aboriginal or Torres Strait Islander, a slightly lower proportion compared to Liverpool City (1.5%).

Recent arrivals

In 2016, Moorebank had a lower proportion of recent arrivals in Liverpool City, with 3.1% of the total population, or 319 people arrived within the last five years compared to Liverpool City's 5.6%.

Residents born overseas

In 2016, almost one third of the population of Moorebank (32.0%) was born overseas, however this is a significantly lower proportion compared to Liverpool City (40.7%).

Languages other than English spoken at home

There is a lower proportion of people who speak a language other than English in Moorebank (39.1%) compared to Liverpool City (51.9%). The most common languages other than English are Arabic (6.5%), Greek (4.6%) and Vietnamese (4.1%).

Income and wellbeing

Need for assistance and unpaid carers

4.1% of the Moorebank population reported a need for assistance with daily activities, which is a slightly lower proportion compared to Liverpool City (6.3%). 12.0% of the Moorebank population provided unpaid assistance to people with disability, long term illness or old age, which is similar to Liverpool City (11.9%).

Median household income

In 2016, Moorebank had a higher median household income than Liverpool City (\$1,926 compared to \$1,548). This is also significantly higher than the Greater Sydney median household income of \$1,745 per week.

Low income households

Moorebank (10.2%) has a significantly lower proportion of low income households compared to Liverpool City (15.9%) and Greater Sydney (15.1%).

SEIFA Score

Moorebank has a higher SEIFA index than Liverpool City (1,039.8 compared to 952.0), indicating relatively lower levels of disadvantage. This is also higher compared to Greater Sydney (1,018.0).

Table 1 - Moorebank Age Profile (Source: Profile.id)

Age group	2016			2011			Change 2011 to 2016
	#	%	Liverpool City %	#	%	Liverpool City %	
0 to 4	994	9.5	7.6	642	8.5	7.8	+352
5 to 11	1,103	10.5	10.6	760	10.0	11.0	+343
12 to 17	796	7.6	8.8	553	7.3	9.3	+243
18 to 24	764	7.3	10.0	632	8.3	9.9	+132
25 to 34	1,588	15.1	14.6	1,206	15.9	14.6	+382
35 to 49	2,415	23.0	21.3	1,603	21.1	22.3	+812
50 to 59	1,059	10.1	12.2	798	10.5	11.6	+261
60 to 69	909	8.7	8.1	882	11.6	7.4	+27
70 - 84	749	7.1	5.7	423	5.6	5.2	+326
85+	115	1.1	1.1	89	1.2	0.9	+26
Total:	10,492	100.0	100.0	7,588	100.0	100.0	+2,904

Education and Employment

Educational attainment

Moorebank has a significantly higher proportion of residents with a university qualification than Liverpool City (20.1% compared to 15.7%). However, this is a significantly lower proportion compared to Greater Sydney (28.2%).

Students

5.2% of the Moorebank population attend university or TAFE, which is a slightly lower proportion compared to Liverpool City (6.6%).

Employment

In Moorebank, 4.8% of the population is unemployed, which is a lower proportion compared to Liverpool City (7.5%) and Greater Sydney (6.0%).

The largest industries that residents work in were the similar to Liverpool City:

- Health Care and Social Assistance (10.2%)
- Retail Trade (9.3%), and
- Construction (8.8%).

Method of travel to work

In Moorebank, more than half of residents (70.9%) travel to work by car, either as a driver or passenger, as the main mode of travel to work. This is followed by residents who travel by train (13.6%), bus (1.5%) or by walking only (1.0%).

2.7% of the Moorebank population worked from home, a slightly lower proportion compared to Liverpool City (3.0%).

Young people not in employment or education

In 2016, 8.9% of young people were disengaged, meaning they were not engaged in study or employment. This was a lower proportion compared to Liverpool City (10.5%), however a slightly higher proportion compared to Greater Sydney (7.6%).

4.2. POPULATION FORECAST POST DEVELOPMENT

Forecast population Moore Point precinct

Mecone and Astrolabe Group jointly undertook a high level demographics analysis to inform planning for the proposed redevelopment of the Moore Point Precinct. This included a study of comparable precincts within Liverpool and elsewhere across Sydney to determine the appropriate parameters for population growth. The baseline assumption informing results was a dwelling completion rate of 530 dwellings per year in the precinct, resulting in approximately 6,900 dwellings by 2036 and an ultimate capacity of 14,840 by 2051.

In the Moore Point precinct, average household size is expected to begin at 1.9 persons/household for the initial residents, then slowly increase to 2.2 persons/household by 2051. Based on the dwelling completion rate, this yields a 2036 population of 14,236 persons living in 6,890 dwellings. At ultimate capacity, the precinct would be home to 32,489 persons.

Annual population growth is forecast to range from 1,000 persons/year at the inception of the precinct to 1,200-1,250 persons/year after 2040.

Table 2 - Forecast population of proposed development. Source: Mecone and Astrolabe Group, 2019

YEAR ENDING 30 JUNE	AVERAGE HOUSEHOLD SIZE (EXCL NEW DWELLINGS)	CUMULATIVE DWELLING COUNT	CUMULATIVE POPULATION GROWTH
2024	1.9 persons	530	1,007 people
2036	2.08 persons	4,240	14,236 people
2051	2.2 persons	14,840	32,489 people

Change to Moorebank suburb population

As shown in Table 3, the forecast population of Moorebank would increase from an estimated population of 10,814 in 2016 to 33,129 in 2036 and 56,906 in 2051. (Moore Point population forecast + Moorebank suburb forecasts - forecast id- by 2051).

Table 3 - Change to the population of the suburb of Moorebank post development (Forecast.id)

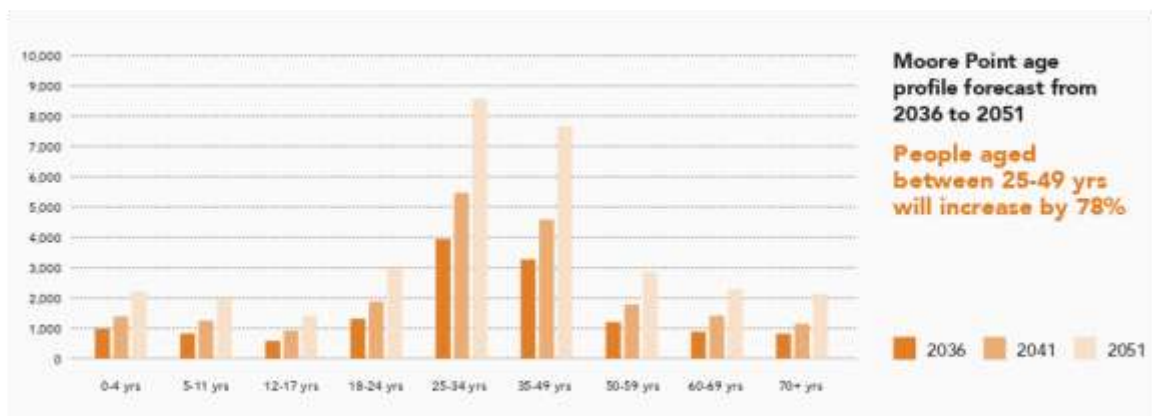
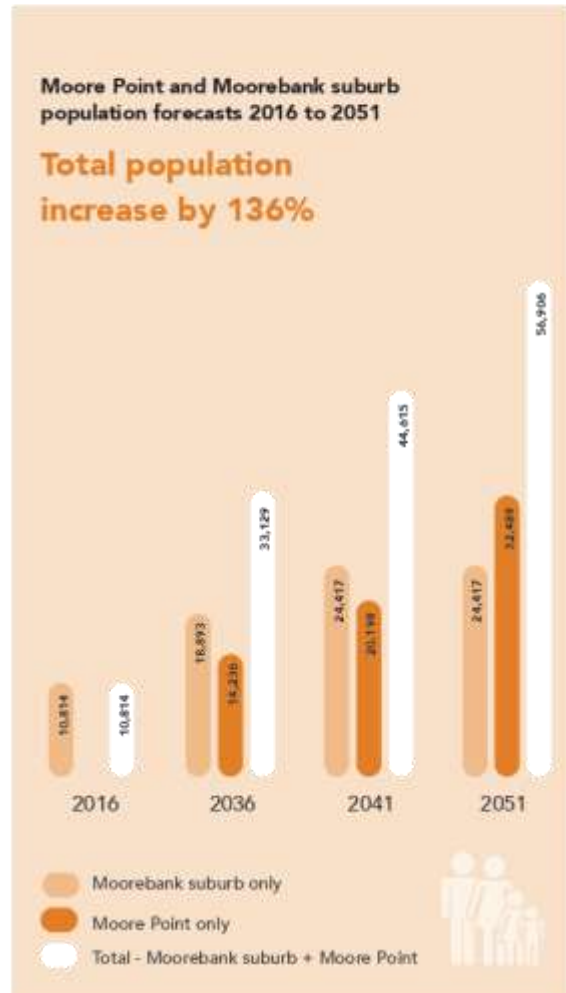
FORECAST YEAR	MOOREBANK SUBURB (FORECAST.ID FOR LIVERPOOL COUNCIL)	MOORE POINT PRECINCT ONLY	MOORE POINT + MOOREBANK SUBURB
2016	10,814	0	10,814
2036	18,993	14,236	33,129
2041	24,417	20,198	44,615
2051	24,417	32,489	56,906

Estimated forecast age profile

The forecast age profile of the development is based on the demographic analysis provided by Mecon/Astrolabe Group and demonstrates a young forecast population with a high proportion of working aged residents.

Table 5 - Forecast population of proposed development. Source: Meccone and Astrolabe Group, 2019

Service age group (years)	MOOREBANK 2036		MOOREBANK 2051	
0 to 4	1,007	7.1%	2,244	6.9%
5 to 11	879	6.2%	1,990	6.1%
12 to 17	638	4.5%	1,447	4.5%
18 to 24	1,361	9.6%	2,963	9.1%
25 to 34	3,936	27.6%	8,650	26.6%
35 to 49	3,291	23.1%	7,788	24.0%
50 to 59	1,301	9.1%	2,874	8.8%
60 to 69	977	6.9%	2,349	7.2%
70 - 84	650	4.6%	1,646	5.1%
85+	197	1.4%	538	1.7%
Total	14,237	100%	32,489	100%



Changes to population density

Density can be determined as a net density (the site only), or gross density (the Statistical Area or suburb where the site is located). At completion, the gross density of the suburb would be around around 35.7 persons per hectare. The net density of the site itself will be around 369 persons per hectare in 2036, 524 persons by 2041 and 843 persons by 2051.

As a comparison, the population density of Green Square in the City of Sydney, is forecast to be 211 persons per hectare at completion.

Table 4 - Forecast gross population density

	MOOREBANK 2036	MOOREBANK 2051
	Suburb	Suburb
Area (ha)	1,250	1,250
Population	33,129	59,609
Population Density Gross	26.5	35.7

POPULATION CONTEXT ANALYSIS

- By 2051 there will an additional 46,000 people living in the suburb of Moorebank, with 32,489 of these living in the high density Moore Point precinct.
- The forecast population for the site indicates a high density community, and young population, home to young professionals aged 25 to 34, and new home builders aged 35 to 49.
- Given these age characteristics, it's important that the site offers unique social, retail and dining options, health and wellbeing features such as indoor/outdoor gym equipment as well as places for children and young people to play and be cared for as these groups start families and continue to work.
- Given the density of the site, there will be a need for access to social and recreational spaces outside of the home, providing "a backyard" for those without one including quality local parks close to dwellings, social space to study, learn and gather, larger spaces for parties and gatherings, and communal spaces within developments for music practice, study and recreation.
- There is a high need for affordable key worker housing in the Liverpool CBD to support people working in the area on lower incomes, or in key industries such as Health. The subject site, with close proximity to public transport, is an ideal location for this type of housing.
- Almost one third of Moorebank residents were born overseas. As the site redevelops to accommodate housing, it is expected that the cultural diversity of the area will increase as has occurred in the Liverpool CBD. Opportunities for social connection as well as celebration of cultural diversity will support these groups.
- With more than 4,000 children aged 0 to 11 and 4,500 young people aged 12 to 24 living within the precinct, free, informal and engaging places for children and young people to play, recreate, and learn in the outdoors will be a high priority to support a safe, and healthy living environment.

5. Place context and analysis

This sections summarises the current place context.

5.1. CURRENT SITE CONTEXT & CHARACTER

- The site is currently unoccupied by residents and is primarily surrounded by light industrial uses.
- The site is disconnected from the Liverpool City Centre and Liverpool Station, both visually with the dense riparian vegetation and the Newbridge Rd bridge access, and physically with poor pedestrian amenity particularly when crossing the bridge
- The site is disconnected from other residential areas in Moorebank by busy Newbridge Rd and the industrial uses to the East
- Where there are no street trees it the urban environment is harsh and can feel very hot and uncomfortable
- Haigh Park is disconnected from the street with a narrow, car-focused entrance leading to a carpark
- Lake Moore however offers future potential amenity.



Lake Moore

Figure 7 - Site aerial (Source: Nearmap modified by Mecone)





Haigh Park



Lake Moore walk



Haigh Park entrance



Locals fishing at Lake Moore

Haigh Park includes the Satyam Ghat. This is a place, located in Haigh Park, to conduct the sacred death rituals among the people with religious backgrounds of Sikhs, Hindus and Buddhists, mostly in relation to the disposal of ashes after burning. This is the only place in Sydney and was dedicated as such by the Liverpool Council.

5.2. NEIGHBOURING AREAS

Moore Point is located across the river from the Liverpool CBD, a fast growing CBD that is a major regional centre and Sydney's third CBD due to its location at the gateway of the Western Sydney Aerotropolis. The urban fabric of Liverpool is rapidly changing with greater investment in public domain and open spaces, night time economy and growing retail and hospitality options.

Neighbouring developments including 'the Paper Mill' provide a good indication of the unique social and cultural offerings development at Moore Point can offer to build a socially sustainable and resilient community.

5.2.1. HOUSING

There is no housing on the current site. Surrounding housing type in Liverpool CBD is primarily high density, with the increasing construction of 20+ storey towers.

5.2.2. JOBS AND EMPLOYMENT

While Moore Point is currently entirely light industrial, it is expected that with future redevelopment, residents will be accessing the jobs in neighbouring Liverpool City Centre. Liverpool CBD has a significant cluster of jobs including in the retail, community services, education and health sectors.

The growing focus on education, medical and allied health services to significant and ongoing investments, including the redevelopment of Liverpool Hospital, Wollongong University Campus, Western Sydney University, Campus and TAFE. As a regional centre Liverpool is also a major community services centre, with many NFP organisations based in the CBD. Westfields is also a major retail anchor.

Due to Liverpool's cluster of health and community services there will also be demand for housing for key workers, students as well as housing for vulnerable people who need regular access to these services.

5.2.3. ENVIRONMENT AND CLIMATE

New South Wales Department of Planning and Environment aimed for a target of 5 Million Trees across Greater Sydney by 2030. The 5MT program was created to expand the tree canopy "across all 33 Local Government Areas (LGAs) within Greater Sydney" (NSWDPE 2018). Currently, Moorebank has been identified to have a 16-25% tree canopy cover range, which is still progressing towards the NSWDPE 2030 goal of 40% coverage for suburbs that form the Western City District.

Located beside the river, Moore Point benefits from the cooling effect of the water, and riparian natural corridors that the environment provides.



Public art in Liverpool CBD



Westfields, a major retail anchor and new Western Sydney University Campus



New major dining precinct at the Paper Mill Development, Photo source: Paper Mill Food

6. Social infrastructure needs analysis

This section provides an audit and mapping of existing social infrastructure. It is driven by Council's Community Facilities vision:

"To build a world-class 21st century network of multi-purpose community facilities that inspire and connect residents, and act as focal points for community life"

6.1. DEFINING SOCIAL INFRASTRUCTURE

For the purposes of this study social infrastructure refers to public and communal/semi-private community facilities and services.

Community facilities are those indoor (built form) spaces for individuals and organisations to conduct and engage in a range of community development, recreational, social and cultural activities that enhance the community's wellbeing.

Public community facilities are those facilities that are accessible by the general public including community centres and childcare centres.

Communal or semi-private community facilities are those facilities located within medium and high-density buildings and are specifically created for the private use of those tenants.

6.2. WHY IS SOCIAL INFRASTRUCTURE IMPORTANT?

For a healthy, liveable and sustainable community, housing should be within walking, cycling, or close public transport distance to employment, education, good parks, shops, and community services and facilities. Quality social infrastructure and services play an important role in supporting and facilitating community harmony and connectedness, and open space provides opportunities for play, exercise, connection to nature and a space to build social connections. In high density areas, a hierarchy and diversity of connected, quality open spaces is needed, including private, semi-private, and public open space, and local parks as well as access to regional and district spaces. There is a need for social infrastructure that provides space to build community within the development, as well as connection to the broader community, and that is adaptable to diverse uses.

"Evidence from around the world indicates that social infrastructure (including community facilities) needs to be in place before new residents move in". Liverpool Council Community Facilities Strategy



Dr James Prie Community Centre (hall)



TAFE NSW South Western Sydney Campus

6.3. AUDIT OF SOCIAL INFRASTRUCTURE

The complete social infrastructure and open space audit is shown by Figure 8 and shows all social infrastructure available within 400m walking distance, 800m and 2km of the site.

Due to the location and size of the site, an approximate 'centre' was chosen to easily quantify the proximity of certain social infrastructure sites around the subject site.

The Coronation and Leamac Moore Point site is bounded by the Georges River along the northern riverbank, a factor which affects accessibility of sites on the opposite side of the river. However, some services were still deemed by Cred to be accessible within 800m to potential residents on the western and north-western sectors of the subject site, which will be explored below.

Community centres and libraries

There are three Council owned and operated community facilities within approximately 800 metres (or walking distance) of the site:

- 2 community centres– Dr James Pirie Community Centre, Hilda M Davis Citizens Centre
- 1 community hall - Seton Recreation Hall
- 1 library - Liverpool Library.

The Council owned Moorebank Community Centre and Library located around 1.7km from the site. Council's Community Facilities Strategy indicates that the Moorebank Community Centre/Library is ageing but in a good location with the potential to contribute to embellishment of this facility. Council's community facility strategy identified that this facility should be upgraded to a district facility. Council identified that Seton Hall could be retained or re-purposed.

Other community facilities (non-Council) within 2km of the site include:

- Chipping Norton Community Program a community program formed by Afford

Early education and care

There are five long day care centres within 2km of the proposed development, however none are within 800m of the site and are all situated north-east and south-east of the development. Of these centres, the majority have been rated as "Exceeding the NQS", that is, they provide high quality care.

Two YMCA services are within 2km of the development, one at Newbridge Heights Public School Out of School Hours Care (OSHC), and the other at Nuwarra Public School OSHC.

Schools

There is one public primary school within 800m of the site, Liverpool Public School

The site is currently in no distinct catchment area for secondary schools in the area, however residents living in the future development would have eligibility to apply for Liverpool Girls High School (2.5km away), Liverpool Boys High School (2.8km away), and Moorebank High School (3.5km away).

Health

There is one public hospital within 800m of the site, Liverpool Hospital.

There are two bulk billing medical centres within 2km of the site, both to the south-east.

Youth

Street University is located within the Liverpool CBD and will be relocating to Newbridge Road in the future. The Street University is a youth development project created by the Ted Noffs Foundation which provides various community based services and interactive spaces for people aged 12 – 25.

Faith and culture

Satyam Ghat is a place to conduct the sacred death rituals for people with religious backgrounds of Sikhs, Hindus and Buddhists, mostly in relation to the disposal of ashes after burning. This place was allocated by Liverpool City Council in Haigh Park.



C1	Dr James Pirie Community Centre	S1	Liverpool Public School
C2	Chipping Norton Community Program	S2	Nuwarra Public School
C3	Hilda M Davis Citizens Centre	S3	Newbridge Heights Public School
C4	Seton Recreation Hall	S4	Liverpool Girls High School
L1	Liverpool Library	S5	All Saints Catholic College
L2	Moorebank Library / Community Centre / Community Health	S6	St Josephs Catholic Public School
O1	YMCA Newbridge Heights OSHC	S7	Moorebank High School
O2	YMCA Moorebank @ Nuwarra OSHC	S8	University of Wollongong, South Western Sydney Campus
B1	Your Kids Our Kids Childcare Centre, Moorebank	S9	Australian Careers Business College (ACBC), Liverpool Campus
B2	Your Kids Our Kids Childcare Centre, Chipping Norton	A1	Scalabrini Village
B3	The Heights Preschool	F1	Skyview Reception Function Centre
B4	Poppy's Learning Daycare Centre	F2	Macquarie Paradiso Function Centre
B5	Poppy's Early Learning Daycare	X1	Moorebank Shopping Centre
M1	Moorebank Family Practice Centre	X2	Westfield Liverpool
M2	Prime Medical Centre	T1	Liverpool Station
M3	Liverpool Hospital	T2	Warwick Farm Station
X1	Satyam Ghat	Y1	Street University

6.4. SOCIAL INFRASTRUCTURE NEEDS ANALYSIS

By 2050, the Moore Point Precinct, and the Moorebank suburb will have a population of the size that will require access to a range of local, district and regional community facilities. While the site is located in proximity to the Liverpool CBD, facilities located here cannot be depended on to service the future Moore Point community given the demand that will be placed on them by the increasing residential populations living in the CBD and nearby. The Moore Point precinct will be a high-density place and social infrastructure is a vital part of supporting residents living in apartments to have a good quality of life. In these neighbourhoods, libraries are places to study and met and community meeting rooms are living rooms to places to host social functions that apartments can not accommodate.

The provision of social infrastructure that responds to the needs of the existing and future communities can play a positive and enabling role via welcoming places to gather and meet, spaces and support providing necessary services and helping to redefine a new identity of an area undergoing change without losing the past and present.

The following analysis is based on demand for the forecast population of the Moore Point Precinct, and the population of Moorebank (post development) for the years 2036, 2041 and 2051. Population forecasts are shown in Section 4.2

Multipurpose community centre

Two benchmarks can be applied to determine future multipurpose community centre needs. Given that multipurpose community centres can services a local and district need (wider than the precinct or site only), benchmarking has been applied to forecast population of the precinct only and the future Moorebank suburb post development.

M2 per person

Many councils set a benchmark of 80m² per 1,000 people for community floor space. Based on this benchmark the following floor space would be required to be delivered:

Table 6 - Community facility floorspace benchmarking needs

YEAR	MOORE POINT PRECINCT	MOOREBANK + MOORE POINT PRECINCT
2036	1,139m ²	2,650m ²
2041	1,615m ²	3,569m ²
2051	2,599m ²	4,552m ²

Number of facilities

There are currently no community centres on the site, and no multipurpose purpose built community facilities within 2km. Best practice would indicate delivery of a new multipurpose community centre as part of a future town centre within the precinct.

However, if this was not feasible, Council owns the ageing, but well located Moorebank Community Centre and Library (around 2km from the site) and the Seton Recreation Hall - both of which present opportunities to be embellished (although a new purpose built facility on-site would be preferable). Liverpool Council sets a benchmark of 1 multipurpose community facility for between 10,000 and 20,000 people. Based on this the following community centres would be required.

Table 7 - Number of community facility benchmarking needs

YEAR	MOORE POINT PRECINCT	MOOREBANK + MOORE POINT PRECINCT
2036	0.7	2.2
2041	1.6	3
2051	2.2	4

Cultural facilities

Liverpool Council does not have benchmarks for determining provision of future cultural facilities. However, there is high demand in Liverpool and other areas of Western Sydney for spaces for performance, participation and exhibition of arts and culture at a local and district level. There are opportunities to co-locate a cultural facility for cultural practice, exhibition and performance within the multipurpose community centres.

Libraries

The site is located in proximity to two libraries. The Liverpool CBD (central) (800m) and the Moorebank Library (branch) around 2km from the site. Council has an approach toward future central or district libraries not branch libraries, and the development presents the opportunity to contribute to an improved district library on the site of the existing Moorebank Library or increased floor space at the future Liverpool CBD library. Applying Liverpool Council benchmarks of 42m² of library floor space per 1,000 people, the following library floor space would be required:

Table 8 - Library floorspace benchmarking needs

YEAR	MOORE POINT PRECINCT	MOOREBANK + MOORE POINT PRECINCT
2036	598m ²	1,391m ²
2041	848m ²	1,873m ²
2051	1,365m ²	2,390m ²

Council also has a benchmark for mobile library services of 2,500 people. So a mobile library service would be required for the precinct.

Youth facilities

Youth facilities are generally provided as part of multipurpose community centres. The nearest youth centre is located in the Liverpool CBD (Street University) but will be locating within the precinct in Newbridge Road, servicing the local youth community.

Early childhood education and care (children aged 0 to 4)

Liverpool Council sets a benchmark for Long Day Care of 1 place for every 8 children aged 0 to years. Applying this benchmark results in the following early childhood education and care needs resulting from the forecast population of the site only. This benchmark may be low, as (by comparison) City of Parramatta sets a benchmark of 1 place for every 2.48 children, as applied below.

Table 9 - Early Childhood education and care (children aged 0 to 4) benchmarking needs

YEAR	MOORE POINT PRECINCT LIVERPOOL COUNCIL BENCHMARK	MOORE POINT PRECINCT PARRAMATTA COUNCIL BENCHMARK
2036	126	406
2041	179	578
2051	281	905

Co-located centres or community hubs are increasingly being developed to meet the needs of the diverse community with a range of services for all ages provided at a single location. Co-locating ECEC services with infrastructure such as libraries and community centres provides suitable spaces to deliver services, programs and activities to meet the social needs of the community and build community capacity. It can also increase the convenience and attractiveness of accessing other complementary community and social programs and activities. Further, for operators such as Council, it builds efficiencies.

Early childhood education and care (children aged 5 to 11 years)

Council's benchmark for out of school hours care is 1 Out of School Hours Care (OSHC) facility for every 5,000 people. By comparison, City of Parramatta sets a benchmark of 1 OSHC place for every 2.7 children aged 5 to 11 years.

Table 10 - OSHC benchmarking needs

YEAR	MOORE POINT PRECINCT LIVERPOOL COUNCIL BENCHMARK	MOORE POINT PRECINCT PARRAMATTA COUNCIL BENCHMARK
2036	3	325 places
2041	4	437 places
2051	6	831 places

As OSHC centres are generally located within primary schools, the provision of future OSHC places will be largely dependent on provision of a new primary school, or a standalone OSHC facility will need to be provided.

Council should seek to advocate with the NSW Department of Education (DOE) for provision of adequate floor space for OSHC services to operate onsite in schools, especially for any new school or significant school site re- development in the LGA and Moore Point precinct.

Schools

NSW Department of Education bases demand for new schools on capacity and proximity of existing schools and forecast growth. There is already one public primary school within 800m of the site, but it will not have the capacity to support a potential additional 1,991 children aged 5 to 11 years by 2051. Liverpool Girls High is within 2km of the site, and Moorebank High School is more than 2km from the site.

Liverpool Council sets a benchmark of:

- 1 primary school for every 2,000 to 2,500 dwellings
- 1 secondary school for every 6,000 to 7,500 dwellings

Applying these benchmarks, results in the following for the new population of the precinct:

Table 11 - School benchmarking needs

YEAR	MOORE POINT PRECINCT PRIMARY SCHOOL	MOORE POINT PRECINCT SECONDARY SCHOOL
2036	3	1
2041	4	1.5
2051	6.6	2

At least one new primary school will be required for the precinct.

1 new high school may also be required - or upgrades may be required to existing public high schools to accommodate 1,447 high school aged children by 2051.

Consultation completed with school in 2018 indicated the following:

Consultation with Reg Corney, Principal Nuwarra Public School (2018):

- Nuwarra Public School currently has 355 students enrolled.
- There are currently two empty classrooms, with a third empty classroom used as a computer lab. There is available space for additional classrooms.
- The proposed development is at the border of the catchment area.
- Nuwarra Road, which leads to the M5, is a busy street located close to the school and as such additional traffic in the area may impact on the school, particular with regards to parking on the narrow streets nearby.

Consultation with Liverpool Public School:

- Liverpool Public School has "not a lot of space for growth"
- According to the Liverpool Public School annual report, enrolments have been increasing each year and 726 students were enrolled in 2014.
- Consultation with David Hargrave, Principal Liverpool Girls' High School
- Liverpool Girls High School has expected enrollment of 1,040 in 2016, and capacity for 1100 students.
- The school is in high demand and already has a large number of demountable classrooms, and so cannot expand more.
- Other schools in the area such as Ashcroft High School have falling enrollments and some empty classrooms.
- The Principal expects that the Georges River Precinct will be of a different socio-economic and cultural group to the area around Liverpool Girls' High School.
- The Principal expects that a large number of refugees from Syria will be resettled in the area, which will create additional demand for the school.

Health

South Western Sydney Local Health District and Liverpool Hospital planning show that there is insufficient infrastructure in SWSLHD to meet current and future demand. Liverpool Hospital is in the midst of planning for a \$740 million upgrade.

The Liverpool area faces challenging healthcare issues, with lower health status than the NSW average. 25% of Liverpool

Hospital staff live within 5 km and 47% within 10 kilometres of the hospital.

An additional 44 hospital beds will be required by 2036 and 97 by 2051 to support the forecast population of the Moore Point precinct.

Affordable housing

There is an identified high need for affordable housing in the Liverpool LGA and in Moorebank subub. While the proportion of private market rental housing that is affordable for low to moderate income households is higher than in Greater Sydney, increasing rental prices, high numbers of low-income residents, very tight vacancy rates, a lack of diversity of dwelling types and loss of affordable rental properties indicate a high need for affordable housing.

Moorebank, and particularly the Moore Point precinct, is ideally located near to public transport and employment opportunities for key workers, including Liverpool Hospital, and has been identified as an appropriate location for affordable housing. In particular, the subject site is located within 2km of Liverpool Hospital, and 25% of Liverpool Hospital staff live within 5 km and 47% within 10 kilometres of the hospital.

There is a severe under-supply of private rental properties in the South West Sydney region, with vacancy rates below 2%.

There is a need to provide a diversity of housing types in Moorebank and the Liverpool LGA to provide for local needs, including one and two bedroom dwellings.

Liverpool City Council does not currently have any targets for the provision of affordable housing. The Greater Sydney Commission District Plan for the Western City District suggests a target of 5% to 10% of new floorspace in urban renewal areas.

Social infrastructure needs summary

SOCIAL INFRASTRUCTURE NEEDS ANALYSIS

The following social infrastructure community benefits could be delivered to support a socially sustainable and resilient Moore Point precinct. The provision of social infrastructure that responds to the needs of the existing and future communities can play a positive and enabling role via welcoming places to gather and meet, spaces and support providing necessary services and helping to redefine a new identity of an area undergoing change without losing the past and present.

Multipurpose Community Centre

There are currently no quality multipurpose community centres in Moorebank. Council's existing Moorebank Community Centre and Library (2km from the site) and Seton Recreation Hall (500m from site) are both ageing and single purpose.

The precinct could deliver 1 new district level multipurpose community centre of around 2,000m². This centre could include cultural/performance space to meet demand for cultural space for participation, exhibition and performance (at a local and district level) across Western Sydney.

Local community centre

The precinct could deliver 1 new local facility with indoor and outdoor space (of around 400m²) connected to a park and used for birthday parties, gatherings etc.

Benchmarking indicates that the site population alone would require 1,138m² by 2036 and 2,599m² by 2051.

Library

The site is located in proximity to two libraries. The Liverpool CBD (central) (800m) and the Moorebank Library (branch) around 2km from the site. Council has an approach toward future central or district libraries not branch libraries, and the development presents the opportunity to contribute to an improved district library on the site of the existing Moorebank Library or increased floor space at the future Liverpool CBD library. Applying Liverpool Council benchmarks of 42m² of library floor space per 1,000 people, 598m² (2036) and 1,365m² (2051) of new library floor space would be required to service the Moore Point precinct alone.

A mobile library service will be required if not library services - which you could fund.

Primary school

There is already one public primary school within 800m of the site, but it will not have the capacity to support a potential additional 1,991 children aged 5 to 11 years by 2051. Liverpool Girls High is within 2km of the site, and Moorebank High School is more than 2km from the site.

At least 1 new primary school would be required within the precinct. There should be 1 Out of School Hours Care purpose built facility at any new school - up to 800 places may be required by 2051 for the site population alone. Opportunities to share sportsfield, pools, library and community space should be explored.

1 new high school may also be required - or upgrades may be required to existing public high schools to accommodate 1,447 high school aged children by 2051.

Early Childhood Education and Care

Based on Council's benchmarks between 126 (2036) and 281 (2051) new long day care places will be required for the Moore Point precinct. Applying the higher City of Parramatta benchmark between 406 (2036) and 905 (2051) long day care places would be required. Long day care will most likely be delivered by the market, but requires enough space to meet legislated requirements.

For Out of School Hours Care, any new primary school should deliver a high quality Out of School Hours Care service within the school grounds and could require a license for up to 150 children each day.

Health

An additional 44 hospital beds will be required by 2036 and 97 by 2051.

Affordable housing

Moore Point precinct is an ideal location for future affordable housing for key workers particularly for workers at nearby Liverpool hospital.

7. Open space and recreation facilities needs analysis

This section provides an audit and mapping of existing open space.

7.1. DEFINING OPEN SPACE

Public open space includes parks, outdoor courts, and play spaces. It is open space, which is publicly owned, accessible to all members of the public, and can be planned and managed by local, state or federal government.

Communal open space (semi-private) is open to all residents of a development, or within a particular high density building. Examples of communal (semi-private) open space include communal gardens and green spaces on rooftop parks, swimming pools, or gyms only accessible to residents of that development.

7.2. WHY IS OPEN SPACE IMPORTANT?

The provision of public open space within neighbourhoods provides many benefits to a community. These include:

- Personal - improved physical and psychological health
- Social and community - strengthened family and community ties, and reduction of crime and anti-social behavior
- Environmental - contrast to urban development, access to natural settings, improved visual landscape, and improved air quality from presence of trees, and
- Economic - attracts new residents to an area, property prices are higher adjacent to parks, and savings in health costs from increased physical exercise.



Lighthorse Park, Liverpool

7.3. PARTICIPATION TRENDS

Key trends and changes

Participation in recreation (both sport and non-sport physical activities) is changing as our lifestyles, communities and urban environments change. The most significant trend in recreation participation in Australia in recent years is a move to informal, unstructured recreation activities rather than traditional organised sport (i.e. mid-week training session and weekend match games with a formal club).

"Today more than ever Australians are time poor, have limited budgets, are being inundated by new forms of entertainment and face increasing barriers to participation. As society changes new preferences are emerging, Australians desire greater flexibility, more tailored products and sports that work for them." – Australian Sports Commission

The future Moore Point precinct will be a highly culturally diverse, young area, with residents who may be traveling out of the area to work or study. It will be important to have open space and recreation facilities that support a range of informal and formal recreational opportunities, both day and night and that respond to this cultural diversity including sheltered hard surfaces, indoor courts and night time lighting.

Greater Sydney Outdoors survey, 2019

The Greater Sydney Outdoors survey 2019 asked the people of Greater Sydney about their personal outdoor recreation needs and interests outside of sport. It found that Sydney-siders:

- Prefer to enjoy experiences on foot, visiting destinations, exercising and exploring
- Prefer spaces that require no membership or schedule for use. This provides flexibility for people to organise activities as they please
- They look for spaces that provide opportunity for diverse recreation activities
- Need places where everyone can collectively enjoy the outdoors, regardless of age, cultural background or physical ability, and
- Need to know when opportunity for recreation arises.

POPULARITY OF WALKING ON THE RISE

Activities done on paths and trails are popular such as walking, bushwalking and running is the top recreation activity in Greater Sydney.

INDIVIDUALISATION OF SPORTS AND FITNESS



Increasing individualised sport and fitness activities, with increasing participation in aerobics, running, walking and gym membership. People are fitting fitness activities into their busy lives rather than committing to regular organised sport.

8 INCREASING DEMAND FOR INDOOR RECREATION

Demand for indoor recreation is increasing for a number of reasons. One of those is increasing multi cultural communities and their sporting preferences that often can be catered for in indoor recreation facilities (e.g. basketball, badminton, table tennis, futsal). Other reasons include climate comfort, safety at night and co-location with other facilities.



INCREASINGLY TIME POOR

People are generally spending less time recreating, but they are expecting more from their physical activity.

CASUALISATION OF SPORTS AND RECREATION

Personal choice: Popular recreation activities include walking, going to a play space, relaxing in parks and casual ball sports – all activities performed solo or in small social groups.

IMPACT OF CLIMATE ON OUTDOOR RECREATION

Climate change and increased days of extreme weather conditions is also driving up demand for indoor recreation facilities. On hot days, the use of outdoor sport and recreation facilities is limited.

Whereas indoor facilities are often air conditioned, and can still support participation in sports and recreation regardless of weather (heat and rain).



7.4. AUDIT OF OPEN SPACE & RECREATION FACILITIES

Open spaces

Most open spaces around the Moorebank development site are found south of the site. As shown in Figure 6, there are ten Council parks within 800m of the proposed development including:

- 2 district/regional park:
 - Haigh Park
 - Ernie Smith Reserve
- 7 local parks,
- 1 coastline beach
- Lake Moore providing opportunities for a range of future water sports and currently where fishing and cultural activities take place

There is continuous green open space along the lake and river foreshore and Lake Moore is also located in the precinct, offering opportunities for water based recreation activities.

Sports/recreation spaces

Other recreation facilities close to the site (within 800m) include:

- 1 regional level skate park (Kelso Skate Park).
- 1 district hockey club, and
- 1 district level sports space (within Ernie Smith Recreation Reserve). Ernie Smith Reserve has 1 synthetic cricket wicket, 2 senior soccer fields, 3 synthetic and 2 grass hockey fields.

Indoor recreation

The site is located within 2km of the Whitlam Leisure Centre. The Whitlam Leisure Centre has 5 pools - both indoor and outdoor heated and sauna, a 3 court stadium as well as a multipurpose gymnastics hall.



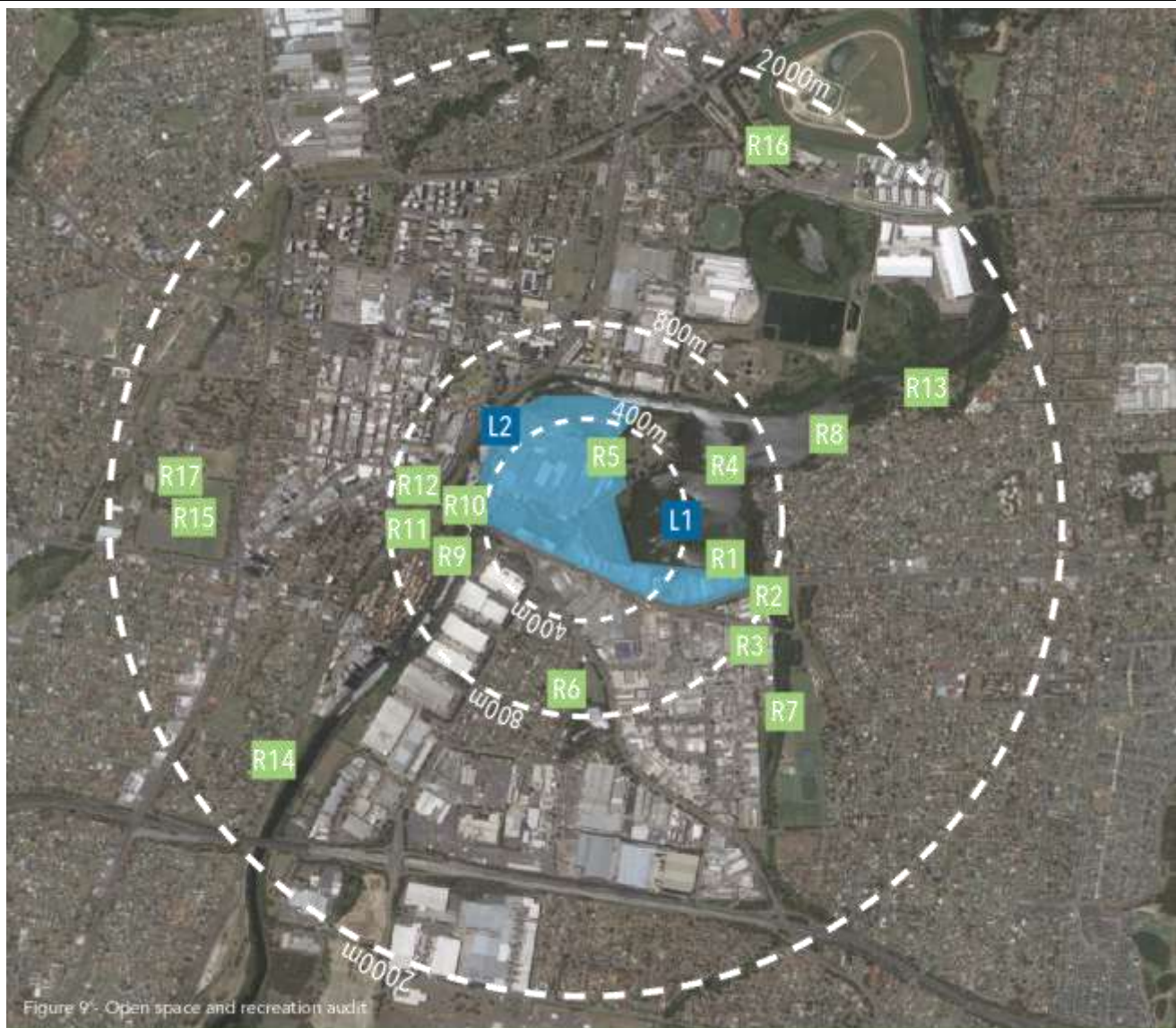
Haigh Park



Fishing on Lake Moore



Biggie Park Playground



Map Code	Park Name	Map Code	Park Name
R1	Mcmillan Park	R10	Bill Morrison Park
R2	Moorebank Skate Park	R11	Lighthorse Park
R3	Kelso Park	R12	Bigge Park
R4	Lake Moore Walk	R13	Chauvel Park
R5	Haigh Park	R14	Helles Park
R6	Clinches Pond Reserve	R15	Hillier Oval
R7	Ernie Smith Recreation Reserve	R16	Warwick Farm Racecourse
R8	Thomas Moore Park	R17	Whitlam Leisure Centre
R9	Moorebank Reserve	L1	Lake Moore
		L2	Georges River

7.5. BEST PRACTICE APPROACHES TO PLANNING FOR OPEN SPACE

Whilst in the past the amount of public open space per person has been used as a guide for the provision of open space, recent trends focus on the provision of quality public open space rather than quantity. An over-provision of open space can mean that it is underutilised and empty, contributing to a sense of insecurity in the space.

The quality of open space is determined by its design, management/maintenance, sustainability, safety, amenity and comfort. A variety of quality open spaces offers the new residents opportunities to build local networks and friendships and provides places for people to plant a tree, create an artwork, grow some vegetables and contributes to building strong ownership of a new place.

In high density areas, residents should have access to both semi-private, communal and local level open space that can function as a "backyard", as well as access to activity and play opportunities and district and regional level open space. Open space should be connected with walking and cycling paths, to encourage use and provide opportunities for physical activity.

7.6. BENCHMARKING STANDARDS

There are a number of different benchmarks and planning standards that are currently being used to determine open space needs for new developments. Demand for open space required to support a new community at the subject site has been determined by looking at these different standards.

Liverpool Council

Liverpool Council sets a target to deliver 2.8 ha of open space per 1,000 people split between 2ha of open space and 0.8ha of sport-fields. However in urban renewal areas, this historical target is unrealistic and would result in open space targets larger than the precinct itself. This target can be hard to meet given that this provision could result in open space larger than the site itself. A more commonly applied best practice benchmark applied for site based planning is to deliver at least 20% of the site as open space. The NSW Government sets targets that open space area provision should consider a range of quantity, quality and proximity indicators including population/ density and demographic

profile, open space distribution, barriers, size, connectivity, and quality of visitor experience also need to be considered to ensure local open space provision and recreation needs are identified.

Liverpool Council also sets a benchmark of delivery of new open space as 80% local and 20% district.

Government Architect NSW and Greater Sydney Commission

The Government Architect NSW Draft Open Space for Recreation Guidelines provide benchmarks for the proximity of open space to dwellings and focus on the quality and function of spaces provided. The Greater Sydney Commissions' planning documents include a benchmark that all dwellings should be within 500m of quality local open space of at least 0.5ha, and that high density dwellings should also be within 200m of high quality open space of at least 0.1ha. The subject site meets these benchmarks given the proximity of Trumper Park to the subject site (140m).

Sports spaces

Office of Sport sets a benchmark of a district sports space of 2 double playing fields (so 4 fields in total) for every 10,000 people.

7.7. BENCHMARKING AGAINST STANDARDS

Open space quantity

The precinct is 38.5ha in total. Applying a benchmark of 20% of the site being public open space the precinct should deliver at least 7.7ha of new and quality open space delivered through a number of district and local level parks.

Given the cultural diversity of the area the open space should be designed to be used day and night, could include walking circuits, hard surfaces for dance/tai chi and sheltered spaces for family gatherings.

This open space should be delivered through the following breakdown including:

- 80% local open space or 6.2ha. Including local parks of a minimum 0.3ha to 0.5ha accessible within 200m of all high density dwellings.
- 20% of district space or 1.5ha which could be made up of sports or recreational space potentially through provision of informal playing fields.
- The Lake Moore foreshore also presents significant opportunity to create a significant regional park, and build opportunities for water-based recreation. A large portion of the open space demand generated from the site can be met through the activation of this space.

Proximity and Linkage

Given the large amount of green space along the waterways connected to the precinct, most areas of the precinct have access within 200m of public open space. However, there are opportunities to provide local parks connected to high density dwellings and Existing public open space in the area is mostly unembellished local and district parks and

native bushland, with poor access including for pedestrians particularly older people, people with prams, and people with disability. Some opportunities to provide additional public benefits and support social sustainability in the proposed development include:

- Green linkage parks connected through the site to large open space areas such as Haigh Park, Bill Morrison Park, Lighthouse Park and Bigge Park.
- Universally design pedestrian and cycle access to local parks including McMillan Park, Kelso Park, and Ernie Smith Recreation Reserve, and link the proposed new open space onsite into the existing network of open space
- Embellishment of the Lake Moore Walk including extending the path to the subject site to provide public access to the lake front, play opportunities including nature play, exercise stations, and shaded seating along the walk, and
- Embellishment of local parks including opportunities for play that caters to a range of age groups including older children, opportunities for physical activity including in the evenings for the working age population, and opportunities for local small-scale events and gathering.

This aligns with Council's direction to increase local parks and improve connectivity to district and regional spaces. Benchmarking standards

Sport and recreational facilities

The following sport and recreation facilities are required to support the future population of the Moore Point Precinct.

Table 12 shows that for the Moore Point precinct alone, the following may be required based on benchmarks:

- Up to 3 new (or embellished) district sports-fields which could be delivered within Haigh Park or contribution to

Table 12 - Recreation benchmarking needs

YEAR	BENCHMARK	2036	2041	2051
Youth recreation precinct (see Case Study of Geelong Youth Precinct section 8.1)	Regional/district 1:50,000 people	-	-	1
Multipurpose outdoor courts	Local 1:10,000 people	1.4	2	3
Young playground	1 for every 500 children aged 0 to 4 years	2	3	4.5
Older playground	1 for every 500 aged 5 to 11 years	2	2	4
District sportsfield (2 double playing fields - 4 fields)	1:10,000 people	1.4	2	3
Outdoor fitness	1 station for every 15,000 people	1	1.3	2
Indoor leisure centre	Regional/district 1:50,000 to 100,000	-	-	Up to 1
Indoor courts	District 1:20,000 people	1	1	2
Indoor leisure centre wet/dry	Regional/district 1:30,000 to 60,000 people	-	-	1

offsite playing fields.

- Up to 3 outdoor multipurpose courts by 2051. Provision of multipurpose courts is a priority for Council within its Open Space Strategy
- Up to 4.5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051. These should be located throughout the precinct within new open spaces and through embellishments to neighboring open spaces
- Up to 1 regional/district level outdoor youth recreation precinct (see case study in section 8.1). There are no youth focused outdoor recreation facilities in the LGA and the proximity to the waterway offers an opportunity to fill this gap and could include provision of required outdoor multipurpose courts, parkour, skate elements, outdoor study space, and seating.
- 2 outdoor fitness stations throughout the precincts (more could be provided as these provide free fitness equipment for a range of age groups).
- 1 indoor recreation centre providing indoor courts. Indoor courts are in high demand in increasingly hot and culturally diverse places across Sydney.
- A new regional or district indoor leisure centre is not required given the proximity to the Whitlam Leisure Centre (which has 5 pools) however given the forecast population a pool could be shared with a new school or learn to swim pools provided within residential towers.

Open space & recreation needs summary

OPEN SPACE & RECREATION NEEDS ANALYSIS

The Moore Point precinct could deliver the following open space and recreation community benefits. These benefits would ideally be provided on site where possible, or by contributing to delivery nearby:

Public Open space

A total of at least 7.7ha of new quality open space across the precinct (which can include a range of types including district, local, linkage and civic). This should be delivered as mostly 6.2ha of new local parks of a minimum size of 0.3ha-0.5ha. The parks should be located so that all residents in high density can access a usable open space within 200m of their homes. 1 district level open space (1.5ha) should also be provided and could include informal sports space.

To support the areas cultural diversity, and high working population, the parks should be designed to support daytime and night time walks, large family gatherings and culturally appropriate recreation activities such as tai chi, dance, badminton and group gatherings.

Recreational green links could be provided as part of the 7.7ha including links to existing large open space areas such as Haigh Park, Bill Morrison Park, Lighthouse Park and Bigge Park.

Sports spaces

Up to 3 new (or embellished) district sports-fields. 1 new sports-field space could be provided within the precinct and embellishments to Haigh Park could deliver additional sports-fields. These sports spaces should respond to the increasing demand for informal and unstructured team sports rather than being controlled by one team or sports type.

Indoor leisure

1 indoor recreation centre providing indoor courts. Indoor courts are in high demand in increasingly hot and culturally diverse places across Sydney.

A new regional or district indoor leisure centre is not required given the proximity to the Whitlam Leisure Centre (which has 5 pools) however given the forecast population a pool could be shared with a new school or learn to swim pools provided within residential towers.

Outdoor courts

Up to 3 outdoor multipurpose courts by 2051. Provision of multipurpose courts is a priority for Council within its Open Space Strategy.

Recreational & play facilities

Up to 4.5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051. These should be located throughout the precinct within new open spaces and through embellishments to neighbouring open spaces.

Up to 1 regional/district level outdoor youth recreation precinct (see case study in section 8.1). This could be provided through embellishment of the existing Kelso Skate Park or through a new youth focused outdoor recreation space along the lake and could include provision of required outdoor multipurpose courts, parkour, skate elements, outdoor study space, and seating.

2 outdoor fitness stations throughout the precincts (more could be provided as these provide free fitness equipment for a range of age groups).

Leveraging the foreshore

The sites location on Lake Moore offers the unique opportunity to provide water-based recreation through the provision of a water launch point for passive boating activities, as well as a canoe/kayak shed for storage.

Communal open space

Communal open space, such as the proposed rooftop open space, can provide local parks, community gardens and places for passive and active recreation for tenants of buildings, including play and dog walking. This is becoming a common trend in many cities around the world including in Sydney and Melbourne and includes passive green spaces, kick-about spaces, and community fruit, vegetable and herb gardens. Learn to swim and communal pools will also take pressure of the Whitlam Leisure Centre.

Case studies are provided in Section 8 of what can be provided to support socially sustainable communities through access to open space on roof tops, including for families with children to dig in the dirt (in community garden plots), friends and family to gather for a BBQ or function, quiet places for residents to relax outside of

8. Community benefits opportunities analysis

Based on the findings from sections 1-7, this section outlines opportunities for the proposed development to enhance the character of the area, address identified community needs, and support community cohesion, social sustainability and resilience through this proposal. It also provides a series of best practice case studies that illustrate how these opportunities have been delivered elsewhere.

8.1. COMMUNITY BENEFITS OPPORTUNITIES ANALYSIS

Table 3 - Opportunities to provide community benefits

OPPORTUNITY	RATIONALE
QUALITY SOCIAL AND CULTURAL INFRASTRUCTURE	
<p>New multipurpose community hub</p> <p>The precinct could deliver:</p> <ul style="list-style-type: none"> 1 new district level multipurpose community centre of around 2,000m². This centre could include cultural/ performance space to meet demand for cultural space for participation, exhibition and performance (at a local and district level) across Western Sydney. Deliver by 2041 to support population growth and increasing demand for spaces for community and cultural activities. 	<ul style="list-style-type: none"> There are currently no quality multipurpose community centres in Moorebank. Council's existing Moorebank Community Centre and Library (2km from the site) and Seton Recreation Hal (500m from site) are both ageing and single purpose and Council has identified opportunities to refurbish/rationalise these. High proportion of people living in apartments will require space away from home to socialise, learn, participate in arts and culture and access services and programs.
<p>New local community facility</p> <p>The precinct could deliver:</p> <ul style="list-style-type: none"> 1 new local facility with indoor and outdoor space (of around 400m²) connected to a park and used for birthday parties, gatherings etc. Deliver in the early stages of the development to support community development programs and services. 	<ul style="list-style-type: none"> Benchmarking indicates that the site population alone would require 1,138m² by 2036 and 2,599m² by 2051 and between and 2 community centres. High demand from families in apartments to access indoor/outdoor space for birthday parties, meetings, gatherings. Location in parks supports children, young people to play also. Council's policy is that community infrastructure should be provided when people move into new areas - this is also best practice.
<p>Contribution to improved library facility</p> <ul style="list-style-type: none"> Contribute toward re-purposing Moorebank Library and Community Centre to a district level multipurpose library facility. Applying Liverpool Council benchmarks of 42m² of library floor space per 1,000 people, 598m² (2036) and 1,365m² (2051) of new library floor space would be required to service the Moore Point precinct alone. (preference) Alternatively contribute to a larger new Liverpool CBD library. A mobile library service onsite will be required based on Council benchmarks 	<ul style="list-style-type: none"> The site is located in proximity to two libraries. The Liverpool CBD (central) (800m) and the Moorebank Library (branch) around 2km from the site. Council has an approach toward future central or district libraries not branch libraries, and the development presents the opportunity to contribute to an improved district library on the site of the existing Moorebank Library or increased floor space at the future Liverpool CBD library. Existing Moorebank library is well located and has potential to become a district level library servicing the future Moorebank suburb and surrounding areas - of more than 50,000 people.

OPPORTUNITY	RATIONALE
New and improved schools <ul style="list-style-type: none"> 1 new primary school would be required as a result of the precinct. The new primary school should include 1 Out of School Hours Care purpose built facility at any new school Opportunities to share sports-field, pools, library and community space should be explored Investigate potential for a combined primary/high school on-site or contribute to improvements to Moorebank High to increase capacity. 	<ul style="list-style-type: none"> There is already one public primary school within 800m of the site, but it does not have the capacity to support a potential additional 1,991 children aged 5 to 11 years by 2051. Liverpool Girls High is within 2km of the site, and Moorebank High School is more than 2km from the site and both have limited growth capacity to service an additional 900 young people aged 12 to 17 years by 2051.
New Early Childhood Education and Care <ul style="list-style-type: none"> Encourage the provision of quality early education and care centres that meet best practice provisions including not over 90 places, and access to natural outdoor areas which will be priority for all the children living in high density communities. Dependent on the benchmark up to 10 new long day care centres could be required by 2051. Encourage the inclusion of a quality Out of School Hours Care service with capacity for up to 150 children as part of the future primary school. 	<ul style="list-style-type: none"> Based on Council's benchmarks between 126 (2036) and 281 (2051) new long day care places will be required for the Moore Point precinct. Applying the higher City of Parramatta benchmark between 406 (2036) and 905 (2051) long day care places would be required. Long day care will most likely be delivered by the market, but requires enough space to meet legislated requirements. For Out of School Hours Care, any new primary school should deliver a high quality Out of School Hours Care service within the school grounds and could require a license for up to 150 children each day.
QUALITY AND CONNECTED OPEN SPACE	
New open space for informal recreation <ul style="list-style-type: none"> Deliver a total of at least 7.7ha of new quality open space. This should be delivered as 6.2ha of new local parks of a minimum size of 0.3ha-0.5ha. The parks should be located so that all residents in high density can access a usable open space within 200m of their homes. 1 district level open space (1.5ha) should also be provided and could include informal sports space. To support the areas cultural diversity, and high working population, the parks should be designed to support daytime and night time walks, large family gatherings and culturally appropriate recreation activities such as tai chi, dance, badminton and group gatherings. Recreational green links could be provided as part of the 7.7ha including links to existing large open space areas such as Haigh Park, Bill Morrison Park, Lighthouse Park and Bigge Park. 	<ul style="list-style-type: none"> Open space should be delivered at a minimum of 20% of the site area While there is existing open space (Haigh Park, Bigge Park) it's not high quality Informal recreation is the preferred recreational participation for residents across Sydney Day and night activation is important for culturally diverse groups. Families and children living in high density apartments need open space that acts as a "backyard".

OPPORTUNITY	RATIONALE
New sports space <ul style="list-style-type: none"> Deliver up to 3 new (or embellished) district sports-fields including: <ul style="list-style-type: none"> 1 new sports-field space within the precinct delivered by 2051. Embellishments to Haigh Park to deliver additional sports-fields for informal team sports delivered by 2036. These sports spaces should respond to the increasing demand for informal and unstructured team sports rather than being controlled by one team or sports type. Protection and enhancement of the Satyam Ghat. 	<ul style="list-style-type: none"> Culturally diverse groups are more likely to participate in informal team sports, and need spaces to hold large gatherings. Office of Sport sets a benchmark of 1 district level sportspace for every 10,000 people. The Satyam Ghat in Haigh Park is the only one in Sydney and highly culturally significant.
RECREATION AND PLAY	
<ul style="list-style-type: none"> Up to 4.5/5 playgrounds for young children (0 to 4) by 2051 and up to 4 playgrounds for older children (5 to 11) by 2051. These should be located throughout the precinct within new open spaces and through embellishments to neighbouring open spaces Up to 1 regional/district level outdoor youth recreation precinct (see case study in section 8.1). This could be provided through embellishment of the existing Kelso Skate Park or through a new youth focused outdoor recreation space along the lake and could include provision of required outdoor multipurpose courts, parkour, skate elements, outdoor study space, and seating. 2 outdoor fitness stations throughout the precincts (more could be provided as these provide free fitness equipment for a range of age groups). 	<ul style="list-style-type: none"> Existing play facilities in Moorebank are generic and for younger children There will be a high number of children and young people living within the precinct and the access to the waterway opens opportunities for innovative recreational facilities Responds to benchmarks set local and State Government Fitness stations are a priority recreation facility for Liverpool Council.
New indoor leisure <ul style="list-style-type: none"> 1 indoor recreation centre providing up to 4 indoor courts that support a range of culturally appropriate sports such as futsal, indoor volleyball, badminton and table tennis. This could be privately operated, communal or dedicated to Council 	<ul style="list-style-type: none"> An increasingly culturally diverse community means that there will be high demand for indoor recreation on site. Indoor courts are in high demand in increasingly hot and culturally diverse places across Sydney.
Water recreation facilities at Lake Moore <ul style="list-style-type: none"> There is opportunity to leverage the Lake Moore foreshore through the provision of a water launch point for passive boating (e.g. Kayaks, canoes) and viewing decks for passive recreation and fishing. 	<ul style="list-style-type: none"> There is high demand for water based recreation in Western Sydney and increasingly hot Sydney suburbs.

OPPORTUNITY	RATIONALE
Communal pools <ul style="list-style-type: none"> There is an opportunity to provide communal pools to support the significant density of residents on site, and lessen the pressure on public pools Consider contribution to improving facilities at the Whitlam Centre. 	<ul style="list-style-type: none"> Western Sydney is getting hotter resulting in greater need for places to cool such as pools Significant population with demand for pools including new residents from overseas who need "learn to swim" classes With such significant population growth, communal pools will be needed to take pressure off Council's facilities such as Whitlam Leisure centre
Communal facilities <ul style="list-style-type: none"> Provision of communal facilities within residential towers including green roofs with community gardens, dog runs, bbq facilities; and connected to internal rooms with study space for student, or music practice rooms, or maker spaces/community share shed. 	<ul style="list-style-type: none"> Given that 100% of people will be living in high-density apartments, there will be demand for communal space (e.g. music practice rooms, meeting rooms, places for parties) within some residential buildings for residents to meet, participate in local programs, create local events, hold playgroups or store equipment. Best practice is to locate these facilities close to open space and close to high activity areas. As the proposed development is likely to be one of the first in an area of significant planned development, community space that provides a place for the existing and incoming community to connect at the early stages of development, and to deliver community programs, will be important.
HOUSING DIVERSITY AND MIX	
<ul style="list-style-type: none"> Deliver affordable housing for key workers. 	<ul style="list-style-type: none"> There will be significant demand for key workers due to proximity to Liverpool Hospital and cluster of community services

COOL AND COMFORTABLE CONNECTED PLACE

New bridges across the Georges river

Connecting Moore Point to Liverpool CBD will be critical for access to jobs, regional facilities, services and activities. Given the heat of the area, it should be sheltered for cool access.

8.2. HOW THESE RECOMMENDATIONS CAN BE DELIVERED AND FUNDED

A site specific s7.11 contributions plan will be prepared following gateway determination of the planning proposal. It is anticipated that a number of items in this report will be considered in the preparation of the contributions plan in collaboration with Council.

The proponents are working with Council to establish a Placemaking Working Group to ensure that over the next 40 years Moore Point delivers on the vision for Liverpool as Sydney's third City Centre. The aim of the Working Group is to collaboratively explore and assess place-led opportunities

to ensure the precinct is delivered based on world's best practice for placemaking, river interface, and sustainability. Through this Group, Council and the proponents will collaboratively refine the community benefit opportunities for Moore Point.

8.3. BEST PRACTICE CASE STUDIES

Community infrastructure

There is an identified need for a public district level multi-purpose community hub, inclusive of indoor recreation and cultural space, connected to event ready outdoor space. Some ideas of how this can be delivered are provided in the following case studies:

Multi-purpose community and recreation space (with rooftop recreation)

Case study: Ultimo Community Centre

Ultimo Community Centre is a multi-purpose venue for sports, recreation, learning and arts and craft. The centre includes:

- 2 independent child care centres
- Sydney's Ultimo Library branch and the Jessie Street National Women's Library
- 15x10m community hall with 100 people capacity (frequently used for cultural uses such as performance and dancing)
- Indoor court (3/4 basketball court, suitable also for volleyball, futsal, and badminton)
- Multipurpose rooftop outdoor courts (2 basketball courts/2 futsal spaces/2 tennis courts/1 netball court)
- Two community rooms 8x6m, capacity of 20 people. These can be hired with the courtyard
- Art and craft room for up to 20 people
- Shopfront space in the building is leased through the accommodation grants program to Vibewire, a "skills gym" for young people focused on building young people's entrepreneurship skills.



Indoor courts are also used for community programs



Rooftop courts with programs such as 'lunchtime sport'

Multi-purpose community services and cultural space, connected to outdoor event-ready space

Case study: Boyd Community Hub

Opened in 2012, Boyd is the City of Melbourne's first integrated community service space, on the heritage listed site of the former JH Boyd Girl's High School. It includes:

- Southbank Library, with collection, reading spaces, and lounge
- Artist's studios
- Café
- Family support, parenting, and maternal and child health services with office space, consulting and counselling rooms
- Playgroup with internal and external area, and
- Two bookable spaces. These spaces are used for: Celebrations and cultural events; Education and training programs; Exhibitions; Meetings, seminars and conferences; Passive recreational activities, and; Performances

The draft concept plan for the co-located park includes lawns, a forest garden, picnic and toddler play areas. Council is investigating nearby areas to provide multipurpose courts and an off leash dog park.



Community hub connected to outdoor open space



Ground floor programming

Multi-purpose community and learning space (connected to outdoor, event ready space)

Case study: The Connection, Rhodes

The Connection in Rhodes, provides a range of indoor and outdoor spaces for the whole community to participate in a range of activities, programs and events. The facility operates 7 days per week with the Meeting and Event Spaces available to hire on a demand basis from 6am to Midnight daily.

The Meeting Space

- Four small to medium sized meeting rooms ideal for privately-run activities. These can be combined to create larger spaces able to cater for 150 people.

The Event Space

- Multi purpose function hall
- 2 x smaller rooms can be combined to make a 440 m² room suitable for events both large and small.

The Learning Space

- Open daily from 8am to 10pm with scheduled programing taking place at various times throughout the day.
- 3D printer, A0 plotter, die cutter, sound recording and rehearsal studios, photography and video equipment
- Open Space – facilitating informal meetings, collaboration with neighbours and our digital technology experts
- Studio 1 – facilitating classroom-style programs and learning
- Studio 2 – facilitating photography, video and music creation
- Digital Classroom – private Study groups needing dedicated AV facilities.

The Digital Space

Sydney's newest exhibition space for video, sound, and digital art.

Bare Witness restaurant and bar

- 500m² internal + outdoor dining

Outdoor space

- Flexible outdoor spaces and amphitheater for performance
- Hard stand areas next to reflective glass (used for dancing)
- Water play
- Large scale Public Artwork by Brook Andrew, connecting internal and external spaces.
- Bicycle parking, seating, trees, bubbler, and public toilets.



Co-located cultural and community space

Case study: Bankstown Learning and Knowledge Centre

Bankstown Learning and Knowledge Centre consists of a theatre, community space and library located within the same building. While a library isn't within scope for Moorebank, a similar performance space would be appropriate to meet local cultural needs.

- | | |
|---|--|
| Library | <ul style="list-style-type: none"> - 5000m² new library over 3 stories - interactive community information wall and public domain improvements. - meeting rooms - exhibition space |
| Theatre | <ul style="list-style-type: none"> - 300 seat theatre - Bryan Brown Theatre |
| Conference | <p>COMMUNITY ROOM 1</p> <ul style="list-style-type: none"> - CAPACITY: 145 theatre style, 35 u-shape style, 45 cabaret style (5-7 per table) - Function space with a SmartBoard, tables and chairs provided by the venue. <p>COMMUNITY ROOM 2</p> <ul style="list-style-type: none"> - CAPACITY: 90 theatre style, 25 u-shape style, 30 cabaret style (5-7 per table) - Function space with a SmartBoard, tables and chairs provided by the venue. <p>LANSLOWNE ROOM 1</p> <ul style="list-style-type: none"> - CAPACITY: 55 theatre style, 20 u-shape style, 30 cabaret style (5-7 per table) - Function space with a projector and screen, tables and chairs provided by the venue. <p>LANSLOWNE ROOM 2</p> <ul style="list-style-type: none"> - CAPACITY: 55 theatre style, 20 u-shape style, 30 cabaret style (5-7 per table) - Function space with a projector and screen, tables and chairs provided by the venue. |
| Cafe | <ul style="list-style-type: none"> - BLaKC |
| Outdoor / public domain improvements | <ul style="list-style-type: none"> - Paul Keating Park, a new aquatic sculpture garden, new street trees and landscape, upgraded and new accessible amenities, all-weather accessible bus drop-off zone, bicycle parking and upgraded off-street car parking facilities. |



Image via Christian Murbanko



Image via streensensing.com



350 person theatre

Creative library spaces

Case study: Magdenburg Outdoor Library

KARO Architekten in collaboration with the Magdenburg community built a 1:1 outdoor library using beer crates to suit their limited budget. The library itself is in fact a wall which defines the corner of a section of concrete now occupied by readers and passers-by. The wall itself houses nooks for sitting and shelves for books, bridging the divide between indoor and outdoor public space. The library's bookshelves are cared for by the community and open to all, 24/7.



High rise primary school with shared community facilities

Case study: South Melbourne Primary School

South Melbourne Primary school is Victoria's first vertical public school. Six storeys in height, it is one of the first times shared school and community facilities have been integrated on site.

In addition to its use as a primary school for 525 students, it includes an early childhood and learning centre, maternal and child health centre, multi-purpose community rooms and indoor and outdoor multi-purpose courts. It also includes a forecourt with outdoor amphitheater, secure bicycle storage, concourse, and art courtyard.



High-rise childcare/co-located with primary school



School meeting space



Early childhood learning and care



Rooftop courts

Communal community spaces

Communal space for residents

Case study: Signature Apartments

Signature Apartments in Redfern is a great example of communal spaces helping to build community. A group of residents converted the rooftop garden beds into a community garden, which has since expanded into common areas on the lower levels. The Strata runs events like Christmas parties and Each Hour boardgames by candlelight on the roof, and a community swap room has been set up in the bin room.



Community program space

Case study: Bathurst Street Creative Hub

Located in what is set to be Sydney's tallest residential tower on Bathurst St in Sydney's CBD, the City of Sydney is building a new creative hub. Spanning over 2,000m² over 5 storeys, the facilities will include:

- Sound proofed rooms for music rehearsals.
- Studios with sprung timber floors for dancers and actors.
- Media and editing suites for filmmakers and new media artists, and
- Wet dry studios for artists.

The City has a 99 year lease on the creative hub through a voluntary planning agreement.



Makerspaces

Case study: Makerspace & Company

MakerSpace & Company is a large, not for profit maker space located in Marrickville with wood working, pottery, metalworking and other equipment. There is space for classes, coworking space for creatives, and "machinery that is too expensive, specialised, or just too big for people to have in their homes"



Case study: Foley Street Creative Spaces

The City of Sydney upgraded 5 shopfronts on Foley Street, Darlinghurst to foster creative production in Sydney. Artists, creatives and community organisations were invited to submit expressions of interest to occupy the spaces over 3-year leases. The spaces provide tenants room to create as well as showcase their wares and interact with the public. Tenants can also host community workshops, talks and events in their space, for example Enti Studio hosts ceramics classes.



Communal and community space and housing for older people

Case study: Kampung Admiralty

Located in the north of Singapore, Kampung Admiralty is a public housing development targeted at senior residents that integrates, healthcare, public facilities, community space and commercial amenities in a vertical format. There are four distinct components of the project: the lower levels contain the People's Plaza, a "community living room" with shops, eateries, and access to a tropical garden. The medical centre is located in the middle floors, while the topmost layer contains studio apartments, as well as the green spaces.

"The close proximity to healthcare, social, commercial and other amenities support inter-generational bonding and promote active ageing in place."

The amount of green space on the building greater than the building's overall footprint. This includes small farm plots for residents to tend to, organised as part of a "village green" at the centre of the 11 housing blocks, containing 104 homes for elderly singles and couples.

"Buddy benches", designed to encourage residents to sit together and socialise, are strategically placed at entrance points.



Open space

The development of this scale offers opportunity to support local high need groups, through the development of social enterprise. Ideas and case studies are provided below:

Rooftop recreation

Case study: Park 'n' play, Nordhavn, Denmark

A new playground called 'Park 'n' Play' has been built above Copenhagen's harbour scenery in bright red. It is located 24m above sea level on the roof of a car park and it has set new standards in the way people think about designing public spaces. This project's challenge was to create centrally located parking facilities that would optimally integrate into the surroundings of the modern Nordhavn city district. Nordhavn is a rapidly growing urban city which will have thousands of new residents. Such an ambitious urban renewal required ambitious approaches to recreation spaces addressed by this playground.



Figure 10 - Playspace on a carpark rooftop in Copenhagen
(Image source: JAJA Architects)

Small park with regional pull and catering for high density and diverse communities

Case study: Burwood Park

Located in the Burwood town centre, Burwood Park is one of Sydney's most busy and successful parks in terms of its diverse facilities and functions that support culturally and socially diverse communities.

Daily the park is used by children and families, working aged residents, older residents, and young people for sport, social gathering, dance, tai chi, board games, learning and other activities.

The park's facilities include:

- The Burwood Park Community Centre and Pavilion, which is an indoor/outdoor space popular for local events, but also for local Chinese groups for dance and performance.
- Shaded, multi-purpose hard surfaces, that can be used for games, but also group dancing and exercise
- Tables and chairs for gatherings and games
- Walking paths for exercises
- Sporting facilities including tennis and a sportsfield
- Trees and shaded areas for get togethers and relaxation
- Power outlets for events.

The park is a great model for "working harder" in high dense, culturally diverse areas.



Youth precinct

Case study: Geelong youth activities area

The Geelong Youth Activities Area is a dedicated outdoor plaza-style park, located at the high value Waterfront in Geelong. Containing an array of cutting edge design features, young people can participate in a range of physical activities or relax at this award-winning arena. One of the main objectives of the project was to help young people feel more connected and involved in the community and an important part of achieving this is to provide them with quality activity areas and facilities throughout the region, not just in the outer suburbs where land is cheap and plentiful.

Facilities include:

- Open-air performance areas
- Artworks
- Stages for performance
- Basketball hoop practice area
- Skate/BMX/Scooter areas
- Bench seating
- Stereo music
- Interactive media, and
- Wireless internet

Size:

- The YAA covers an area of around 4,000m² on the waters edge



Water play

Case study: Darling Quarter Playground, Darling Harbour

Interactive water play is a central feature of the Darling Quarter playground by Aspect Studios, with 1,000m² of the 4,000m² playground dedicated to a man-made river environment, featuring sand a pumping station, sluice gates, water switches, a water wheel and a large water jet area. The technically complex system makes the playground engaging for both younger and older children as they either control the flow and route of the water, or simply splash away. Another key feature of the playground is the lighting scheme that creates ambiance in the evening, attracting teenagers and young adults and allowing for intergenerational play. In the context of Fairfield Place, water play will be an important feature to ensure children can still play for longer periods in the heat, and are encouraged to go outside to cool off and play throughout summer, rather than stay indoors.



Pedestrian friendly public domain, public plazas

Case study: Lonsdale Street, Dandenong

Lonsdale St, Dandenong was redesigned as a grand boulevard with a pedestrian focus. Key elements are street trees and lush planting, a strong paving design for pedestrian areas, custom lighting and seating throughout. Through traffic was concentrated into a central band defined by four rows of trees. The project won the 2014 National Landscape Architecture Award for Urban Design.



Communal open space ideas

Off Leash dog parks

Case study: Gardenhill Apartments, Doncaster

Developer Beulah International has created an exclusive dog park in its new Gardenhill apartment complex in Doncaster Victoria. Home to 136 one and two bedroom apartments, Gardenhill will feature an enclosed ground floor garden that will permit dogs to be off lead in a secure and user friendly environment. The private off lead area will be equipped with secure fencing, seating, a clean-up station and a drinking station.



Case study: Nic of Fifth, Minneapolis

Nic of Fifth in Minneapolis is a residential apartment building with extensive community spaces, including an outdoor dog run.



Jobs and employment

The development of this scale offers opportunity to support local high need groups, through the development of social enterprise. Ideas and case studies are provided below:

Social enterprise

Case study: Nana Community Cafe, London

The Nana Cafe, winner of the NESTA Ageing Well Challenge, is a comfort food cafe in Clapton, London. The cafe recruits women aged mainly over 60 and who are at risk of being socially isolated. Each Nana works a set shift each week and after three months each will take a small share in the profits. Among the teapots and cake stands, soups and stews, plans are also afoot to host craft classes in knitting, crocheting, embroidery and sewing. To make the social enterprise financially sustainable, Nana transforms at night into a bar called the Convenience serving craft beers and wines. For 62-year-old Lyn Cornwall volunteering at the cafe is about reconnecting with people of all ages. "A mother's work is never done, and when my children flew the nest I missed my caring role. The cafe is challenging as well as being socially rewarding. It's not about money, it's about benefiting everyone."



Generating local employment

Case study: Kickstart Cafe, PAYCE

- Kickstart cafe is a joint social enterprise initiative of the PAYCE Foundation and the Riverwood Community Centre, aimed at addressing youth unemployment in the Riverwood area.
- In 2009 PAYCE won the tender to redevelop a portion of the Riverwood social housing estate. As part of PAYCE's strong commitment to community engagement and in response to the high rate of youth unemployment in the local area, PAYCE took on management of an existing canteen, rebranding it as Kickstart cafe. It was positioned next to the construction site to service construction workers as well as the local community, while training and employing disengaged young people from the area.
- An implementation of similar ideas to the Kickstart cafe concept in Moore Point would provide a positive impact of the development, especially for local disengaged youth.

Place and identity

As a large site that will undergo redevelopment in multiple stages, there are opportunities to provide both long, and short term place activation projects that reflect local identity.

Reflecting diverse communities

Case study: Afghan Bazaar cultural precinct, Dandenong

Through extensive consultation with a range of precinct stakeholders, the City of Dandenong with Hassell Studios designed one of Melbourne's prominent cultural precincts, highlighting the cultural, social and economic contribution of Afghan communities in Australia.

The project involved street improvements, including the installation of public art, unique landscape reflective of cultural themes and motifs, as well as a business signage improvement program. The project has led to positive relationships between the community and Council, elevated the precinct's visitor appeal and contributed to attracting additional business for the town centre through high profile food editors and events.

In addition, the project recognises the importance of positively facilitating integration among the community, and the importance socio-cultural symbols can play in the complex and gradual process of people integrating locally and finding a place in their new home. This is the key lesson that can be drawn from the Afghan Bazaar Cultural Precinct when approaching public domain design in a place as culturally rich and unique as Liverpool.



Figure 11 – Public domain treatment reflecting the diverse character of Dandenong. Source: Hassell

Activating place during construction

Case study: *City of Sydney Art on Hoardings*

- The City of Sydney council's hoarding and scaffolding policy and guidelines require the use of creative graphics on temporary structure in high traffic areas.
- These artworks are displayed on hoardings and scaffolding of construction work sites, which create a more appealing environment for pedestrians and passerbys
- An opportunity for this concept to be implemented during the Moore Point development progress to better activate the precinct during construction of the project. However, costs of the art work may be shared with Liverpool City Council and outsourced to the broader community to involve more artistic collaboration between the community, council, and developers.



Community building and partnership

As a large site that will undergo redevelopment in multiple stages, there are opportunities to provide both long, and short term place activation projects that reflect local identity.

Activating place with the community

Case study: *Pause Pods*

- As a development with a long development horizon, it's important that the community can be part of the development process. Pause Pods are an example of a project that enables community participation in place activation.
- Pause Pods are crafted concrete masonry blocks that invite us to stop a while and be part of our community. By providing places to meet, socialise, gather and watch the world go by, they help to build local social and cultural capital.
- Pause Pods are created together with the community and continue to evolve from a concrete block to a bright and colourful canvas with the help of local artists. Anyone can use a Pause Pod in any way they like: talk, dance, perform, watch.
- Pause Pods can play an active role in encouraging community connection, sharing and engagement. For example, the pilot project on the streets of Bankstown included street library and umbrella post pods, which are still in active use today.
- Pause Pods are also programmable and can provide a space for local community programs or events.





ADDENDUM TO MOORE POINT CBA

Date: 22 October, 2020
Project: Moore Point Community Benefit Analysis (6 April, 2020)
Subject: Sportsfield needs- Moore Point Precinct
Author: Sarah Reilly, Director, Cred Consulting

Cred Consulting provided a Community Benefits Analysis (CBA) on behalf of Leamac and Coronation in relation to a Planning Proposal at Moore Point, Liverpool in April, 2020. The CBA aimed to understand the potential community benefits that could be delivered within the site itself to support the incoming and neighbouring communities, but also recommended enhancements or embellishments to existing social infrastructure and open space nearby the site to deliver an integrated and strategic approach to community outcomes for the entire area.

This letter provides an addendum to this report, providing updated advice on the recommended provision of sportsfields to service the Precinct up to 2051.

Population context

By 2051 there will be an additional 46,000 people living in the suburb of Moorebank, with 32,489 of these living in the high density Moore Point Precinct. The forecast population for the site will be a young population, home to young professionals aged 25 to 34, and new home builders aged 35 to 49 years and their children. The population is expected to be culturally diverse in line with the current cultural profile of the Liverpool CBD, and Moorebank area.

Open space and sportsfield needs

Based on benchmarks, the CBA identified that for the future population of the Moore Point Precinct, there would be a need to deliver:

- ⑩ Around 7.7ha of new/embellished quality open space including 1 district level park of 1.5ha that could include an informal sports space. It should be noted that the revitalisation of the river foreshore, Haigh Park and Lake Moore are the priority for this precinct, to service the new community, but also to provide improved access for the broader community to quality open space for informal recreation (which is the highest demand use of open space across Greater Sydney).
- ⑩ 3 new (or embellished) sports fields.
- ⑩ The CBA noted the forecast cultural diversity of the Precinct, and current trends indicating a high demand for sports space for informal team sports by culturally diverse communities and also a high demand for indoor recreation spaces (courts).

Greener Places Design Guide

The Government Architect NSW has released the Greener Places Design Guide (Draft) which identifies the following distinctions between local and district sports spaces. In terms of access (for a future high density place such as Moore Point precinct):

- ⑩ Local access – 2 to 3 minute walk (200m2) for a local park



- ⑩ District access – 25 minutes walk/2km proximity to a district park. District parks also provide local access.
- ⑪ Regional access – Up to 30 minutes travel time on public transport or by vehicle to a regional open space.

It defines a **local sports space** (or local active recreation space) is an informal open space for sports. Local sports spaces are accessible open space areas with elements or facilities that encourage individual and group-based active recreation such as a social sporting activity. Suitable areas including larger parks exceeding 1ha, sports parks, multiple-use destinations, riverside and foreshore open space areas wider than 40m, and with community access to outdoor courts or fields. Spaces such as Haigh Park, on the waterfront, and near the town centre, are suitable locations for local sports spaces (for social games), given that these spaces have limited parking requirements, and will be activated by local residents on a daily basis for gatherings, fitness and local events.

A **district sports space** provides sportsfields and facilities for organised sports and recreation activities. These spaces have more spatial and locational needs. District-level sporting and organised recreation activities typically require large flat areas of public open space which is relatively flood-free. For a district sports precinct/fields, this would include provision of formal, developed playing areas for field and court sports and built sporting facilities.

The Roberts Day Moore Point Precinct Benchmarking Study indicated that:

"Analysis of successful benchmarks indicates that large community outdoor recreation areas such as sports fields are located outside vibrant, city-centre precincts".

Recommendations for Moore Point Precinct

Based on current provision, forecast demand, and spatial needs and opportunities, it is recommended that the following is delivered through the Moore Point proposal:

- ⑩ 7+ha of new or embellished open space, including a prioritisation of open space for informal recreation, activation and revitalisation of the river foreshore, Haigh Park and Lake Moore.
- ⑪ 1 sportsfield for social sports and part of a multi-use recreation area, potentially as part of improvements to Haigh Park. This would enable the sportsfield to be used casually by the future community for local social games, but also for events, family gatherings and other local community activities to occur here.
- ⑫ Contribution toward delivery of 2 new sportsfields either through provision of new sports space or embellishment, and improved access to, existing sportsfields which could include:
 - Improve the quality of active open space such as astro turf, improved amenity facilities, flood lighting etc.
 - Improve access to facilities such as pedestrian crossings, paths, cycleways to district level facilities.
- ⑬ There are opportunities for contributions to be provided for investment in Council's existing sports precincts, like Woodward Park and Helles Park. This may include all-weather pitches, flood-lighting and additional amenities to support increased usage by the growing community.
- ⑭ Additionally, the CBA indicated that the future community would create demand for new indoor courts for indoor sports. Indoor courts are increasingly popular in high density areas and in culturally diverse communities, particularly as our climate continues to get hotter. Opportunities to locate an indoor recreation facility with indoor courts for social and team sports should be considered.



1 September 2020

Memo

To: Coronation Property
Subject: Moore Point – Demographics Research

Executive Summary

Mecone and Astrolabe Group jointly undertook a high level demographics analysis to inform planning for the proposed redevelopment of the Moore Point Precinct. This included a study of comparable precincts within Liverpool and elsewhere across Sydney to determine the appropriate parameters for population growth. The baseline assumption informing results was a dwelling completion rate of 530 dwellings per year in the precinct to 2036 and a declining rate thereafter, resulting in approximately 6,900 dwellings by 2036 and an ultimate capacity of 14,054 dwellings by 2051.

In the Moore Point precinct, average household size is expected to begin at 1.9 persons/household for the initial residents, then slowly increase to 2.2 persons/household by 2051. Based on the dwelling completion rate, this yields a 2036 population of 14,236 persons living in 6,890 dwellings. At ultimate capacity, the precinct would be home to 30,760 persons in 14,054 dwellings. Annual population growth is forecast to range from 1,000-1,200 persons per year across the life of the project.

Being a high density area, the precinct is likely to have a higher proportion of young adults and lower proportions of children and elderly persons. Although some young couples will have children while living in the precinct, the proportion of children is not expected to increase significantly over time. It is expected that most residents of the precinct will move in from and out to the surrounding Liverpool LGA.

Household types in the Moore Point precinct are expected to be similar to other high-density residential areas across central Sydney, with only about half of households having children. There will be a larger proportion of lone person and group households as compared to other areas of Sydney or Liverpool LGA. The household type splits will be maintained over time as new residents move in while existing residents evolve to different household types.

Full forecast data for population, age groups, and household type is in tables throughout this report.

Background

The Moore Point precinct will be the subject of a Planning Proposal enabling the redevelopment of approximately 40 hectares of land into a high-density mixed-use extension of the Liverpool CBD.

The Planning Proposal will be aligned with the strategic directions of:

- the Western City District Plan, which envisions Liverpool as a Metropolitan Cluster within the Western Parkland City;

- the Draft Liverpool Local Strategic Planning Statement, which identifies Moore Point as a short-medium term redevelopment opportunity; and
- the Liverpool Place Strategy, which supports the Liverpool Collaboration Area and identifies targeted dwelling growth in the Moore Point precinct.

At present, the land within the precinct is entirely used for employment purposes, hosting approximately 1,100 jobs. Portions of the Liverpool area outside the precinct, particularly in and near the CBD, are rapidly renewing to become high-density mixed-use and residential areas. These areas provide a preview of what the Moore Point precinct may become.

The working assumption for the newly rezoned precinct, is that approximately 530 dwellings will be completed each year from mid-2023 to mid-2036 and a slowing rate thereafter. This yields approximately 6,900 dwellings completed by mid-2036. The precinct is being designed for an ultimate capacity of 14,054 dwellings, which is assumed to be reached in 2051. All new dwellings are assumed to be apartments or flats, from one to multi-storey buildings.

This Document

A wide variety of technical reports are being prepared as part of the Planning Proposal to help establish the evidence base for land use outcomes in the precinct. This memo establishes a single reference view for the anticipated demographics of the precinct to 2036 and beyond.

The demographic data contained herein can be used in studies dealing with a variety of infrastructure needs including open space, traffic and transport, health and education, and social infrastructure. It may also interact with economic and market take-up analysis.

Population forecasts for the Moore Point Master Plan have been informed by assumptions based on analysis of key aspects of population change:

- Rate of population change
- Likely future age profile of the population
- Migration patterns (by age and proximity of place)
- Changing household types
- Changing average household size by dwelling types

Source Data

A comparative analysis was undertaken with the following selected SA2 areas as they are likely to provide insights into how Moore Point will change as dwellings in the development are completed:

- Chipping Norton – Moorebank (where the Moore Point development is located)
- Liverpool (with the new Paper Mill development and other high density residential around the CBD)
- Homebush Bay – Silverwater (Sydney Olympic Park where there's been long-term growth)
- North Parramatta (mature medium to high density residential adjacent to CBD, health, and education)
- Concord West- North Strathfield (location for Rhodes West development).

The last three SA2s on this list are considered the best comparisons for the future Moore Point precinct, so they have been used to inform age distributions and household type distributions in this analysis.

The Parramatta CBD and Westmead health precincts are considered an important reference point for the future of the Liverpool area. In order to obtain quantitative comparisons, the North Parramatta SA2 was chosen as the most similar to the high-density residential nature of the

future Moore Point precinct. North Parramatta is immediately adjacent to both Parramatta CBD and Westmead, and has extensive areas of mature medium-high density residential areas.

SA2s were introduced in 2011 and some changes between 2011 and 2016 were analysed to inform the population assumptions. The main data source used for analysis was the Census of Population and Housing.

Two other data sets used were:

- Estimated Resident Populations, released annually by the ABS.
- Population, Household and Dwelling forecasts for the Moorebank suburb prepared by id.profile on behalf of Liverpool City Council.

Paper Mill

One of the major landowners for the Moore Point precinct, Coronation Property, is also developing the Paper Mill, a similar density but much smaller precinct in the Liverpool area. Coronation has provided the following data on purchasers in the Paper Mill precinct:

Table 1. Paper Mill purchaser demographics

Age	Number	%
18-24	23	6.8%
25-34	160	47.2%
35-44	77	22.7%
45-54	51	15.0%
55+	28	8.3%
Total	339	100.0%
Unknown	312	

Source: Coronation

The Paper Mill purchasers have a high proportion of owner occupiers – around 80%. Also, 61 purchasers are single person households, which equates to over 9% based on 651 buyers. 51 of these are owner occupiers. 312 buyers are 'unknown' meaning single person households are likely to actually be far higher.

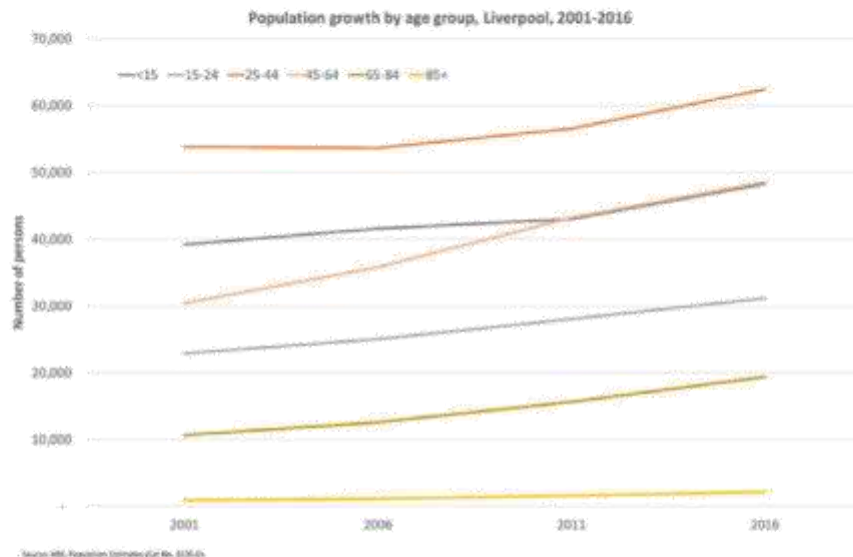
Liverpool's Population Future

Liverpool has grown rapidly over the past 10 years, driven by natural increase and migration, both internal and international. Internal migration is driven by movements between Liverpool and the neighbouring LGAs. A focus on the SA2 of Chipping Norton-Moorebank also shows that most moves in and out of the area are to adjacent suburbs. This means future residents of Moore Point are likely to be sourced locally. This is an internal migration pattern seen throughout Sydney and the rest of Australia.

Overseas migration has been a key factor influencing Liverpool's growth, with both new migrants calling Liverpool home, as well as those who have lived in Australia for a long time. This is a key factor that will continue to affect Liverpool into the future.

Liverpool has a young age profile, particularly when compared to Metropolitan Sydney as a whole. This relative youth means Liverpool's population will continue to grow as these young people create new households and have children. The biggest age group in Liverpool has been and continues to be in the 25-44-year age group, the peak age for having children.

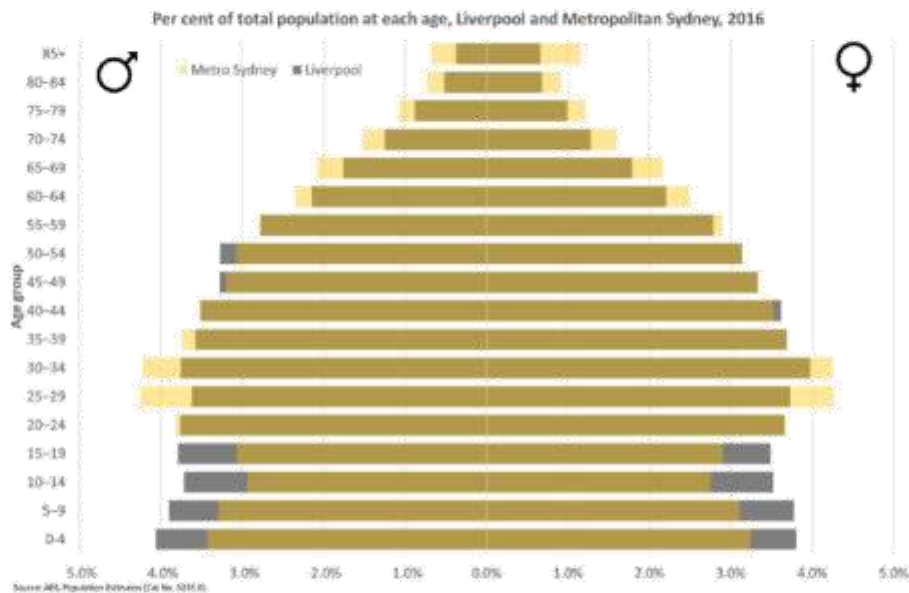
Figure 1. Liverpool LGA recent growth by age group



The relatively young age profile of Liverpool is projected to remain relatively stable into the future, with large increases in the key ages 20-39 (seen in projections by id. profile, NSW Department of Planning, Infrastructure and Environment and unpublished scenario projections prepared by Astrolabe Group for Liverpool City Council in 2018). These ages dominate the couple only and couple with children household types, as well as group households.

This young population means significant demand for housing, locally-based jobs, transport links, essential services as well as leisure opportunities. This is a key group likely to be living at Moore Point in the future. The relatively higher share of the children within the population also means for young adults, competition for detached housing will be higher, making it more likely that they will seek attached dwelling forms.

Figure 2. Liverpool vs Sydney metro age groups



Using the LGA population as a basis for determining supply within the smaller geographic area is supported by the data for the relevant SA2, as shown in Table 2.

Table 2. Age groups in Moore Point area in 2016

AGE GROUPS	CHIPPING NORTON-	
	MOOREBANK SA2	LIVERPOOL LGA
UNDER 15	22%	23%
15-24	12%	15%
25-44	30%	29%
45-64	22%	23%
65-84	13%	9%
85+	1%	1%

Source: ABS Estimated Resident Population 2018.

Unpublished population projection scenarios for Liverpool show that even with different overseas migration policy settings by the Australian Government, Liverpool will continue to grow driven by natural increase (see Figure 3). Growth from natural increase is unlikely to change given continued improvements in life expectancy and the young population age profile contributing to relatively higher numbers of births (see Figure 4).

Figure 3. Current and future Liverpool LGA age groups

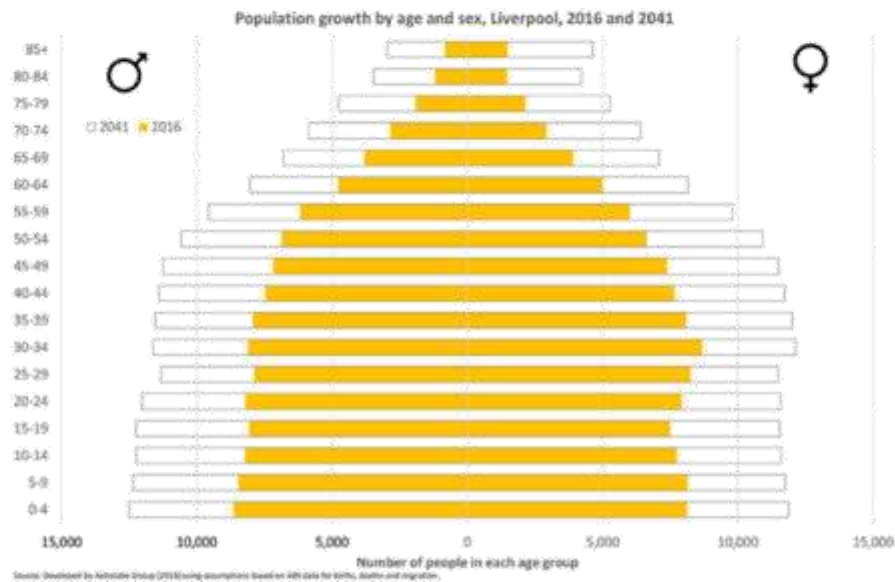
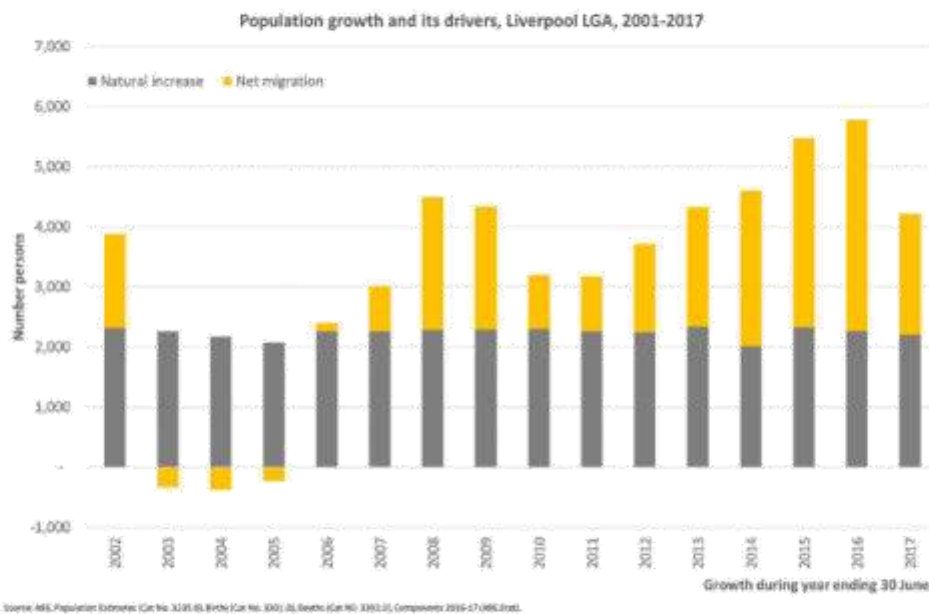


Figure 4. Population growth drivers in Liverpool LGA



Household Size

The main assumption driving population forecasts for Moore Point is the average household size for each new dwelling. This average is assumed to change over time, rising from 1.90 persons per dwelling initially to 2.1 persons per dwelling after 15 years and an ultimate figure of 2.2 persons per dwellings by 2051.

These averages represent a change whereby new apartment dwellers at Moore Point initially reflect the characteristics of current apartment residents in Liverpool, moving over time to a higher household size typically seen in more established areas, and recognising that single persons will form couple households, some will have children and remain living in apartments, and rental by group households will become more common as more dwellings are available.

Average household size represents a mix of different households within available dwellings. This means even when the average household size is larger, there is a share of lone person households and has an implicit assumption that initial residents will remain when they partner, and that couples are likely to move in. This assumption is underpinned by the expected age profile seen within Liverpool City Council and neighbouring Councils as the sources of in-migration to Moore Point.

Those currently living in apartments within the Chipping Norton-Moorebank SA2 have an average household size of 1.9. This is consistent with first movers into the Moore Point precinct being similar to persons already in apartments in the area. It is also consistent with preliminary data on persons who have bought apartments in the Paper Mill development.

An average household size of 2.15 reflects apartment household size in Homebush Bay-Silverwater SA2 (where Sydney Olympic Park is located). This reflects entry of current primary school age children living in the area reaching their late 20s and likely to be leaving home and forming new couple relationships.

Apartment dwellers in North Parramatta SA2 have an average household size of 2.25, representing a similar proximity to Parramatta CBD as Moore Point will have to Liverpool CBD. North Parramatta has a large number of apartments mostly in established neighbourhoods, in contrast to Homebush Bay-Silverwater. Because of its maturity as a residential precinct, North Parramatta SA2 has a similar age profile as Liverpool but with slightly more 25-39 year olds. This is considered a strong comparison for the ultimate evolution of the Moore Point precinct.

An average household size of 2.4 reflects a higher average household size that is in line with SA2s in central Sydney such as Concord West-North Strathfield (where Rhodes West is located) where apartments have a higher average number of inhabitants. This reflects some of those couples who were early movers into apartments having children, as well as growth of group households as seen in Sydney Olympic Park and Concord West-North Strathfield. Larger households in apartments there do not have other nearby affordable choices for larger dwellings and so are willing to stay in smaller dwellings.

Because of the relative affordability of other housing options around Liverpool LGA, the average household size in Moore Point is not expected to grow as high as in Concord West-North Strathfield. Households with higher numbers of persons will likely choose a larger dwelling elsewhere in Liverpool LGA rather than stay in an apartment in the Moore Point precinct.

Population Forecasts

Numerical forecasts have been prepared applying the assumptions about average household size over time to the cumulative dwelling count each year in the precinct. New dwellings in each year are assumed to have an average household size of 1.9 for their first year, due to the types of initial occupiers.

Table 3. Population forecasts for Moore Point precinct

YEAR ENDING 30 JUNE	CUMULATIVE DWELLINGS	HH SIZE (EXCL NEW DWELLINGS)	ANNUAL POPULATION GROWTH	CUMULATIVE POPULATION GROWTH
2024	530	1.900	1,007	1,007
2025	1,060	1.915	1,015	2,022
2026	1,590	1.930	1,031	3,053
2027	2,120	1.945	1,047	4,100
2028	2,650	1.960	1,063	5,162
2029	3,180	1.975	1,079	6,241
2030	3,710	1.990	1,094	7,335
2031	4,240	2.005	1,110	8,446
2032	4,770	2.020	1,126	9,572
2033	5,300	2.035	1,142	10,714
2034	5,830	2.050	1,158	11,872
2035	6,360	2.065	1,174	13,046
2036	6,890	2.080	1,190	14,236
2037	7,414	2.090	1,158	15,394
2038	7,931	2.100	1,155	16,548
2039	8,441	2.110	1,151	17,699
2040	8,945	2.120	1,148	18,847
2041	9,443	2.130	1,144	19,991
2042	9,934	2.138	1,121	21,112
2043	10,418	2.146	1,115	22,227
2044	10,896	2.154	1,109	23,335
2045	11,368	2.162	1,102	24,438
2046	11,833	2.170	1,096	25,533
2047	12,291	2.176	1,066	26,599
2048	12,743	2.182	1,057	27,656
2049	13,189	2.188	1,048	28,704
2050	13,628	2.194	1,039	29,743
2051 (ULTIMATE)	14,054	2.200	1,017	30,760

Source: Mecone and Astrolabe

Age Profile

Given the concentration of attached dwellings in the Moore Point Master Plan new development is likely to deliver a different age profile to that seen elsewhere in Liverpool, more similar to other areas where there are concentrations of apartments. This means an initial age profile similar to that seen in Homebush Bay-Silverwater, where apartments dominate the housing typology, can be expected at Moore Point. This suggests almost one third of residents in the early adult ages (15-34 years) and almost another third aged 35-54 years.

While there are only a small number of apartment residents in Liverpool at the moment, those who do live there tend to be younger and live in smaller households. Apartments therefore are

age-selective in some ways, attracting younger residents, particularly when they are first built and likely to be a cheaper alternative to younger people wanting to enter the housing market.

It is expected that few children will be resident in the new development initially due to predominance of lone person and couple only households made up of people in their late 20s and early 30s. Almost 20 years data from Homebush Bay-Silverwater shows that while the number of children has increased over time, year on year, the share of the total population has stayed about the same and the increase in new children under five years has been about the same every year. This has two implications, it means there is likely to be small but stable demand for services associated with younger children, but that the main residents will be adults of working ages.

The dominance of people at adult working ages in apartment dwellings also means the development itself may experience much slower rates of population ageing. In Homebush Bay-Silverwater for example the share of the population aged 65 and older has only increased from 5 to 6 per cent over 20 years. The number of older people will increase as people move in and stay there as they get older. Liverpool more broadly is affected less by structural ageing than other parts of Sydney and NSW because of the relatively young age profile.

The forecast split across 5-year age groups for the Moore Point precinct is provided in Table 4 below. These have been estimated applying age group propensities based on an average of the SA2s of Homebush Bay-Silverwater, Concord West-North Strathfield, and North Parramatta, with changes in distribution over time based on the rate of change as indicated by the 2019 NSW Population Projections for Liverpool LGA.

Table 4. Age group forecasts for Moore Point precinct

	2036		2051	
0-4 YEARS	1,007	7.1%	2,124	6.9%
5-9 YEARS	675	4.7%	1,449	4.7%
10-14 YEARS	512	3.6%	1,088	3.5%
15-19 YEARS	551	3.9%	1,195	3.9%
20-24 YEARS	1,141	8.0%	2,327	7.6%
25-29 YEARS	1,852	13.0%	3,706	12.0%
30-34 YEARS	2,084	14.6%	4,484	14.6%
35-39 YEARS	1,544	10.8%	3,369	11.0%
40-44 YEARS	982	6.9%	2,378	7.7%
45-49 YEARS	765	5.4%	1,626	5.3%
50-54 YEARS	661	4.6%	1,415	4.6%
55-59 YEARS	640	4.5%	1,306	4.2%
60-64 YEARS	580	4.1%	1,275	4.1%
65-69 YEARS	397	2.8%	949	3.1%
70-74 YEARS	304	2.1%	685	2.2%
75-79 YEARS	187	1.3%	483	1.6%
80-84 YEARS	159	1.1%	391	1.3%
85+	197	1.4%	509	1.7%

Source: Mecone and Astrolabe

Household Type

Assessing the longer term future of household types in Moore Point has also been informed by looking at areas where apartment developments are not new, and there is some data to indicate what may happen into the future. In Homebush Bay – Silverwater SA2 (where Sydney Olympic Park is located) there was rapid growth from 2001 to 2006, which slowed until 2012 when growth accelerated again. This SA2 now has no single dominant household type, and major contributors include both households with and without children plus lone person and group households. A similar pattern is seen in Concord West-North Strathfield and North Parramatta SA2s.

Table 5. Household type in 2016

	HOME BUSH BAY – SILVERWATER SA2	CONCORD WEST - NORTH STRATHFIELD SA2	NORTH PARRAMATTA SA2
COUPLE ONLY	25%	25%	23%
COUPLE WITH CHILDREN	26%	27%	26%
ONE PARENT FAMILY	6%	6%	7%
OTHER AND MULTI- GENERATION FAMILIES	19%	15%	17%
LONE PERSON	20%	17%	20%
GROUP HOUSEHOLDS	5%	10%	7%

Source: 2016 Census of Population and Housing

The above SA2s represent clear examples of what Moore Park will grow into beyond 2036. There are likely to continue to be households with children living at Moore Point, but a smaller share than would be seen in separate houses. Based on patterns seen in Homebush Bay-Silverwater, North Parramatta and Concord-West, where apartments dominate the housing stock, couple only and lone person households are likely to continue to be the most common type. There will be increases in the number of households with children, still requiring support for over 4,000 dwellings with children in residence by 2051.

Census data show that the population in Moore Point is likely to come from in-migration from neighbouring areas (e.g. those persons already living in Liverpool). There is a large cohort of children currently in Liverpool enrolled in primary school. By 2036 these children will be in their late 20s, reflecting the key migration ages in the areas looked at to support this analysis. These persons will become a source of new residents forming couple, group, and lone person households in the higher-density Moore Point precinct, maintaining the household type splits even as other households evolve to have children or multi-generation families.

Table 6. Household type forecast for Moore Point precinct

	2036-2051	2036	2051
COUPLE ONLY	23.1%	1,591	3,421
COUPLE WITH CHILDREN	26.0%	1,796	3,862
ONE PARENT FAMILY	7.1%	492	1,058
OTHER AND MULTI-GENERATION FAMILIES	17.2%	1,187	2,552
LONE PERSON	19.7%	1,360	2,926
GROUP HOUSEHOLDS	6.8%	468	1,006

Source: Mecone and Astrolabe



MOORE POINT

Economic Impact Assessment



Prepared for Leamac and Coronation

April 2020



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Executive Summary

This economic impact assessment (the study) has been prepared by HillPDA on behalf of Leamac and Coronation. The study aims to quantify the economic impact or benefits in relation to a Planning Proposal at Moore Point (referred to as the Planning Proposal).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

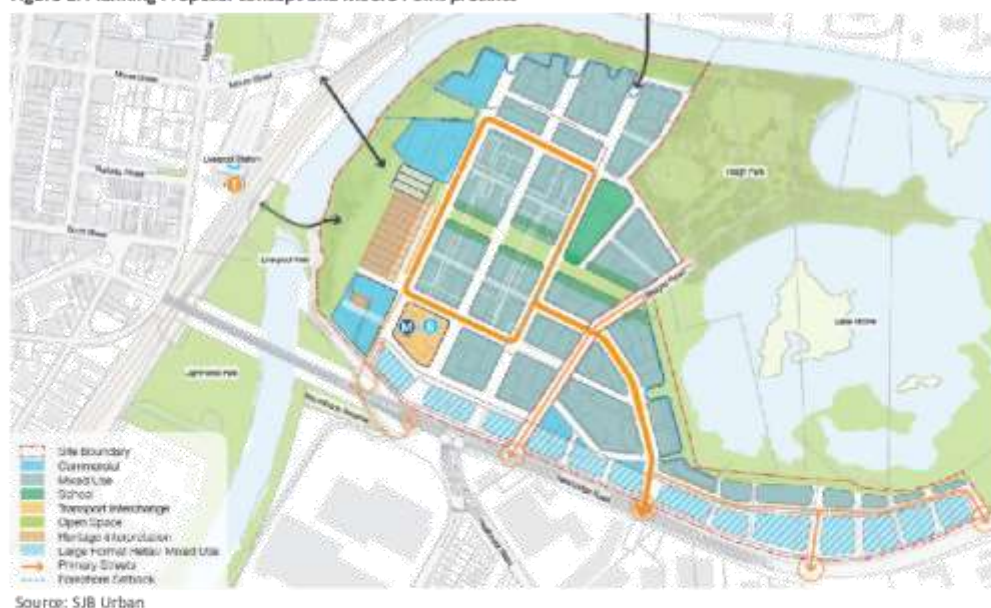
Although the Planning Proposal is in the early stages of development, it is proposed to provide a mixture of land uses including commercial, community, entertainment, medical, retail, social and residential. In total, around 1,601,058sqm of mixed-use gross floor area (GFA) is proposed to be provided being comprised of:

- 344,499sqm of mixed-use employment GFA
- 1,256,559sqm of residential GFA, equating to around 14,783 dwellings.

Upon completion, three new connections across the river would significantly increase connectivity of the Moore Point precinct to Liverpool railway station, CBD and the health and education precinct to the north. This improved connectivity would allow future residents and employees easy access to Liverpool while also complementing the CBD and supporting its various innovation precincts (refer to Figure 6).

Owing to the large scale of the Planning Proposal it is expected that its development would be staged over a 30-40-year period. Staging of the Planning Proposal over this period would further increase its positive economic benefits including; rising Liverpool's profile to further investment and development which has been lacking in recent years; complementing and supporting the further development of surrounding specialist precincts; contribute to Liverpool capitalising of its strategic location; contribute to Liverpool exceed its employment targets and provide adequate time for industrial and urban services to relocate either elsewhere in the LGA or Moore Point precinct.

Figure 1: Planning Proposal concept and Moore Point precinct



State and local planning context

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:

Figure 2: Site aerial



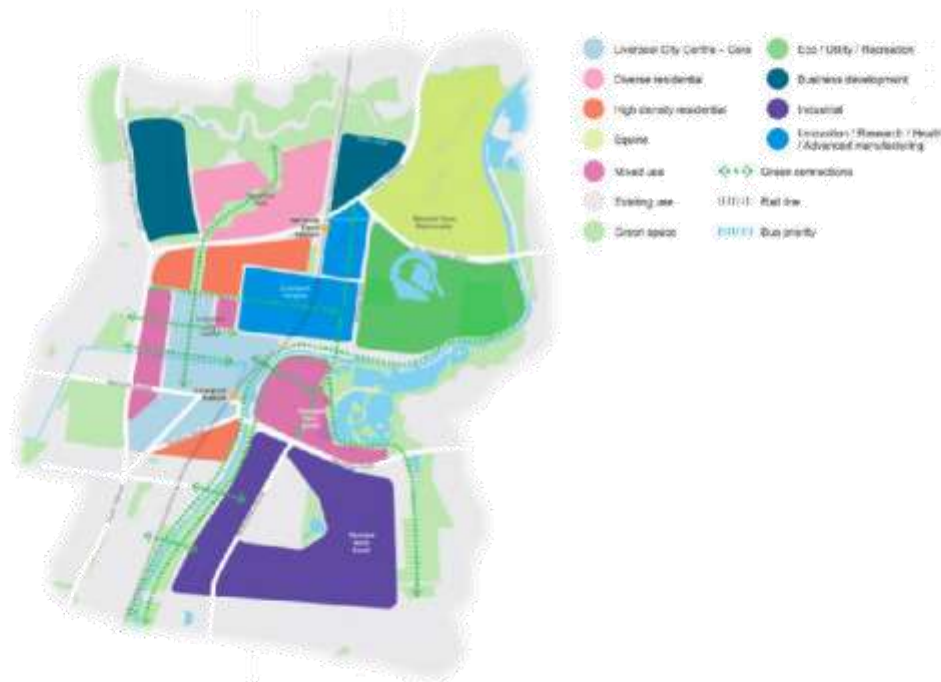
Source: Nearmap modified by Mecore

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

Figure 3: A Place Strategy for Liverpool



Source: Liverpool Collaboration Area Place Strategy 2018

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;



- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Liverpool Council is also completing an employment lands strategy (ELS) which will guide the development and management of its industrial lands over the next few decades. The Moore Point precinct is currently zoned for industrial purposes, and as such, the impact from the possible loss of Moore Point precinct would have been assessed within the ELS. The executive summary of the ELS was recently released and its relevance to this study was identified in the following recommendation/statement:

Retain and protect all existing industrial precincts in the LGA that is not identified as required as part of the Collaboration Area Place Strategy. This implies that the ELS also endorses the transition of the Moore Point precinct from its current industrial nature to a residential and mixed-use precinct. Furthermore, the Planning Proposal proposes to provide an enterprise corridor zoning. This will allow urban services and other low impact industrial and population supporting uses to relocate in the Moore Point precinct. This would reduce any long-term impact that relocation or loss of these uses would have.

Direction 1.1 of the Ministerial Directions relate to business and industrial zones. Direction 1.1 applies when a relevant planning authority prepares a planning proposal that will affect land within an existing or proposed business or industrial zone (including the alteration of any existing business or industrial zone boundary).

The objectives of this Direction are to:



- Encourage employment growth in suitable locations
- Protect employment land in business and industrial zones
- Support the viability of identified centres.

Consistency of the Moore Point Planning Proposal against the objectives of this Direction have been assessed (refer to Table 1). From an economic perspective the outcomes of the Planning Proposal are considered to be consistent with the objectives of Direction 1.1.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS, ELS, Ministerial Directions and The Pulse of Greater Sydney.

The role of the Moore Street Planning Proposal

The Planning Proposal would provide three additional connections points across the Georges River into Liverpool CBD, increasing the connectivity between the two areas and various innovation precincts in the CBD, such as its health and education precinct.

The commercial market in Liverpool CBB over recent years has been reflective of a struggling market, evident in the low amounts of new supply, retraction of existing commercial space to other uses, high vacancy rates and rezoning its commercial core to a mixed-use zoning. Despite this, infrastructure investments in and around Liverpool LGA, including, the Western Sydney Airport and public transport links are likely to significantly increase the attractiveness of Liverpool and its CBD to commercial, investment occupiers and development.

The Planning Proposal could provide a high amenity and quality commercial precinct, supplementing Liverpool's existing CBD. The Planning Proposal would help and attract/retain companies and workers which see benefits being located close to these infrastructure projects. In short, the Planning Proposal would raise Liverpool's market profile as an emerging employment area, increasing its attractiveness for investment and providing stimulus to the commercial market, while also helping Liverpool exceed its current employment forecasts. Of which, current employment forecast do not account for the Planning Proposal.

The health and education sectors also play a significant role in Liverpool CBD with Liverpool Hospital, Ingham Institute of Applied Medical Research, the University of NSW (UNSW), Western Sydney University (WSU), University of Wollongong (UOW), South West Private Hospital and TAFE NSW all located in Liverpool.

Specifically, the draft LSPS states:

Liverpool (CBD) has significant advantages that could reinforce its position as a health leader and help it to become world-class health, education, research and innovation precinct based around Liverpool Hospital. This includes close access to a train line, a river providing significant amenity potential, availability of commercial land and a diverse population.

Liverpool will capitalise on these advantages, and grow its Innovation Precinct to cater for significant growth in health and knowledge workers expected over the next 20 years and become a global leader in collaboration in health, education and research.

The location of the Moore Point precinct directly to the south of these health and education assets coupled with proposed new connections across the river, improving connectivity between the two areas, provides a significant opportunity for the Moore Point precinct to provide a supportive and stimulus role to the creation of this Innovation Precinct as detailed in the GSC vision for this area.

In short, the location and linkages proposed in the Planning Proposal provide the opportunity to provide a high amenity and quality mixed-use precinct which complements and supports Liverpool's other specialist precincts while also contributing to Liverpool becoming Sydney's third CBD and Western Sydney's economic focal point.



The potential loss of industrial land

The Planning Proposal site covers around 38.5 hectares of existing developed industrial land. In 2019, Liverpool LGA contained around 1,109 hectares of zoned industrial land. This represented a 151 hectare or 16% increase over that recorded in 2015.

The amount of undeveloped zoned employment land within Liverpool significantly increased over this four-year period with an additional 69 hectares or 33% over the period, reaching a total of 278 hectares in 2019. In addition to these zoned industrial precincts, Liverpool has another 586 hectares of land identified as potential future industrial land stocks. With the inclusion of these lands, Liverpool's undeveloped industrial land stocks increase to around 864 hectares.

These lands have the potential to accommodate between 2.59 to 8.64 million square metres of industrial related floorspace¹. This additional capacity coupled with redevelopment and intensification of uses on its currently zoned but developed industrial lands is likely enough to meet the needs of the LGA over the coming decades, even with the withdrawal of the Moore Point precinct.

The potential loss and impact that Planning Proposal would have upon the LGAs ability to meet its future industrial lands needs would have been explored in detail on the preparation of the draft Liverpool ELS and subsequent LSPS. **Both documents support the transformation of the Moore Point precinct to a residential and mixed-use precinct.**

The endorsement from these strategies implies that any negative impacts resulting from the transformation of the Moore Point precinct into mixed-use precinct are outweighed by the positive benefits.

Furthermore, the development of the Moorebank Terminal and Western Sydney Airport are key economic drivers for the LGA. It is important that Liverpool CBD undergo an appropriate transformation and densification to capitalise on any potential investment interest resulting from these investments. This would be achieved by providing high-quality commercial space for the potential knowledge, research, education workers that will be attracted to the area. As such, the Planning Proposal would contribute to Liverpool capitalising off these infrastructure assets, raising its profile to further investment and exceeding its current employment targets.

Lastly, the Planning Proposal would provide some land zoned as enterprise corridor. This land has the potential to provide upwards of 47,570sqm of non-commercial office space, providing an opportunity for urban services and other typically low impact industrial land occupiers to be located.

The potential relocation of urban services

As stated above, the Planning Proposal proposes to provide an enterprise corridor zoning extending to the east of Bridges Road along Newbridge Road (on the northern side). This area has the potential to provide upwards of 47,570sqm of employment space, providing an opportunity for urban services and other typically low impact industrial land occupiers to be located in the precinct. As such, any temporary loss of urban services during construction has the potential to be relocated back in or in proximity to the Moore Point precinct upon completion, reducing any long-term negative impact.

However, assuming a worst-case scenario we have had a closer review of industrial land stocks that intersects with a 5-kilometre radius of the Moore Point precinct. This review highlights around 235 hectares² of currently zoned and undeveloped industrial land. With a further 154 additional hectares of industrial land to be zoned in the Moorebank Defence Lands precinct just around 2 kilometres south of the precinct. This significant amount of current and potential industrial land stocks available for development would provide an opportunity for urban services to

¹ High level developable FSR range of 0.3:1 to 1:1

² Includes Chipping Norton, Moorebank, Orange Grove, Priddle/Scriveners St, Sappho Road, Warwick Farm Racecourse and Yarunga/Prestons



relocate within proximity of the precinct significantly reducing any negative impacts that the proposed rezoning of the Moore Point precinct may have upon some services.

Once more, the potential relocation of urban service resulting from the loss and impact of the Planning Proposal would have been explored in detail on the preparation of the draft Liverpool ELS and subsequent LSPS. Both documents support the transformation of the Moore Point precinct to a residential and mixed-use precinct. As such, the endorsement from these strategies implies that the negative impact resulting from the transformation of this location into mixed-use precinct are far outweighed from the positive benefits and that appropriate land stocks exist to accommodate any relocation of urban services.

The need for increased residential provision

The State government acknowledges that Sydney's housing prices are high compared to other Australian capital cities. It was highlighted that the governments can *"help to put downward pressure on prices (by) accelerating the supply and the variety of housing across Sydney, such as apartments and townhouses, will make it easier for people to find homes to suit their lifestyle and budget"*³.

Strata dwellings in Liverpool provide a more affordable option for its residents and key workers. This is evident in the median strata price being 65% lower than the median price of non-strata dwellings in the LGA. Additional supply and variety of apartments in the LGA would continue to provide a more affordable product for current and future residents. Increased supply would help to place downward pressure on detached housing and apartment prices which have both witnessed significant growth in recent years.

The growth in sale prices is partly a result of there currently being a shortage in supply, estimated at around 2,625 dwellings. Liverpool LGA is forecast to require between 43,452 to 69,776 additional dwellings over the next few decades. This can be partly achieved through accelerating housing supply within the LGA in appropriate locations like that proposed in the Planning Proposal.

In 2016, only 13% of Liverpool's dwelling stock were apartments. Despite this low representation, most of the household types have increasingly sought to reside within apartment type dwellings, including couples with children, likely owing to their comparative affordability and location attributes.

Of the 61,075 new households forecast to reside within the LGA over the next 20 years, 34,474 households or 56% will be attributed to lone persons, couples without dependents and single parents. The Planning Proposal would assist in providing dwelling types and mixture that would provide a more affordable option. While also catering to the changing preferences of the local community and projected change in household types.

Furthermore, analysis of rental affordability in the LGA highlights that households on very low and low incomes are unable to afford market rent for a one, two and three-bedroom apartments in the LGA. If left unabated the housing affordability gap will continue to widen. As identified by the State government, increased residential supply can place downward pressure on housing prices and rents. Advancement of the Planning Proposal would increase dwelling supply and capacity in the LGA and hopefully place downward pressure on new and existing dwelling stock values to benefit housing affordability across the fully household income spectrum.

³ A Plan for Growing Sydney



Economic impact

Economic impacts of the Planning Proposal are generated both during the and post-construction.

Economic benefits during construction

Based on a construction cost of \$8.72 billion and a construction life span of 30 to 40 years, the economic benefits resulting from the construction of the Planning Proposal are estimated at:

1. \$11.2 billion of activity in production induced effects.
2. \$7.9 billion in consumption induced effects.
3. Total economic activity generated by the construction of the Planning Proposal of around \$27.8 billion.
4. Directly generate 21,762 job years, equating to between 544 and 725 jobs generated directly per annum.
5. A total of around 87,403 job years, directly and indirectly, created equating to between 2,185 and 2,913 jobs generated per annum.
6. Around \$50 million of additional retail expenditure from construction workers on-site during the period of construction. This equates to around \$1.3 to \$1.7 million per annum over the construction period. The majority of this would be captured by local retailers.

Economic benefits post-construction

To assess the potential benefits resulting from the development of the Planning Proposal, firstly the current economic contribution of the Moore Point precinct's land uses needs to be determined, this is referred to as the "base case". The base case is then compared to the economic potential as generated by the development of the Planning Proposal.

Upon completion, the Planning Proposal would provide approximately 344,499sqm GFA of employment space and 14,789 residential dwellings. The provision of these land uses onsite would potentially increase the economic output of the Moore Point precinct, Liverpool and wider District.

The table below estimates economic outputs that would result from the development of Planning Proposal compared to that currently estimated to be generated on-site (base case).

Category	Base case	Planning Proposal	Benefits of Planning Proposal
Potential jobs	770	23,617	+ 22,847
Wages (\$m)	49.57	\$1,935.70	+ 1,886.1
GVA (\$m)	82.94	\$4,646.11	+ 4,563.2
Retail spend (\$m)	1.9	471.5	+469.6
Retail floorspace demand (sqm)	0	72,237	+72,237

Specifically, over that already generated under the base case the Planning Proposal would generate an additional 22,847 jobs; \$1.89 billion per annum in wages; and contribute \$4.56 billion per annum to local economy or GDP.

Non-resident workers onsite would also generate an estimated \$108.6 million per annum in retail expenditure that would be captured by local retailers. This is around \$106.7 million greater than that already estimated to be generated under the base case.

In addition, the planning proposal would generate economic benefits resulting from the resident's onsite (estimated at 32,686 persons). These economic benefits primarily relate to increased residential expenditure which could be captured by retailers in the locality, including those in Liverpool city centre. This is estimated at an additional \$377.5 million per annum. The population would also increase the demand for retail space by around 72,237sqm, the majority of this would likely be directed towards surrounding retail centres, such as Liverpool, further increasing their vibrancy, viability and attractiveness to investors.



The Planning Proposal would also have additional economic benefits, these being:

- Providing a catalyst for further investment in the locality
- Contributing to increasing housing diversity and affordability in the LGA and District
- Providing jobs closer to home and contributing to the LGAs employment targets
- Contribute to transit orientated development objectives by concentrating more people near the train station and commercial services, thereby reducing the reliance on private motor vehicle travel and increasing the use of public transport
- Contributing to Sydney achieving the 30-minute city concept.

The above has assessed the economic merits of the Moore Point Planning Proposal. From this assessment, it is concluded that rezoning of the Moore Point precinct for residential/mixed-use purposes is strongly supported from an economic perspective.

INTRODUCTION

1.0 INTRODUCTION

HillPDA was commissioned by Leamac and Coronation to undertake an economic impact assessment (the study) for the Moore Point Planning Proposal (referred to as the Planning Proposal). The Planning Proposal is located in the suburb of Moorebank and is bounded by Georges River to the north, east and west and Newbridge Road to the south (Figure 4), this area is referred to as the precinct.

In line with State planning directions, the Planning Proposal explores the potential that a rezoning of the Moore Point precinct, to allow a greater diversity of land uses would have upon improved connectivity to the CBD, the provision of community facilities, employment generation, dwelling supply/choice and improved open space.

The purpose of this study is to quantify the economic impact or benefits that the Planning Proposal would provide over that already generated on the site under its current industrial zoning and uses.

Figure 4: Moore Point precinct



Source: HillPDA

This study assesses the economic impact and potential of the Planning Proposal. Although the study assesses State and local planning documents/strategies it does not include any specific planning or policy recommendations which would require consideration of a range of other factors which will be explored in other specialist studies being undertaken in the preparation Planning Proposal for the Moore Point precinct.

1.1 Moore Point Planning Proposal

The Planning Proposal would provide a mixture of land uses including commercial, community, entertainment, medical, retail, social and residential. In total, around 1,601,058sqm mixed-use gross floor area (GFA) would be developed, this would be comprised of:

- 344,499sqm of mixed-use employment GFA
- 1,256,559sqm of residential GFA, equating to around 14,783 dwellings.

Owing to the large scale of the Planning Proposal it is expected that its development would be staged over a 30-40-year period.

Figure 5: Planning Proposal concept



1.2 Purpose and study structure

The purpose of this study is to quantify the potential economic benefits (negative and positive) of the Planning Proposal's proposed land uses over that currently generated in the Moore Point precinct (Figure 4).

To meet the requirements of the project brief, the study is set out in the following manner:

- **Chapter 2** | undertakes an assessment of State and local planning policies of relevance to the Planning Proposal
- **Chapter 3** | explores what role the Planning Proposal can provide in Liverpool and what impact rezoning of the Moore Point precinct would have upon Liverpool meeting its industrial needs.
- **Chapter 4** | undertakes a review and analysis of the demographic and housing characteristics within Liverpool LGA with the intent of providing justification for the provision of additional residential supply within the LGA to meet the current and future needs of the resident population and dwelling targets
- **Chapter 5** | Examines the economic contribution that the Moore Point precinct referred to as the "base case"
- **Chapter 6** | Examines the economic implication that development of Planning Proposal would have during the construction phase and post-construction. The economic implications are compared to those already generated in the Moore Point precinct (estimated in Chapter 5).



2.0 POLICY CONTEXT

This Chapter analyses State and local planning strategies, it further identifies areas where the Planning Proposal assists in achieving the intent of these strategies from a housing and economic perspective.

2.1 Greater Sydney Region Plan

The Greater Sydney Region Plan – *A Metropolis of Three Cities* (Region Plan) was finalised in March 2018 by the Greater Sydney Commission. The vision of the Region Plan is to create a metropolis of three cities, specifically the Western Parkland City, Central River City and the Eastern Harbour City. The Moore Point precinct is located within the Western Parkland City.

A core intent of the Region Plan is to give people greater housing choice and establish more jobs closer to where people live, to develop a more accessible and walkable city and create the conditions for a stronger economy. The Plan prioritises providing greater housing supply, stating 'providing ongoing housing supply and a range of housing types in the right locations will create more liveable neighbourhoods and support Greater Sydney's growing population.' The NSW Government has identified that Greater Sydney would require additional 725,000 homes by 2036 to meet its population projections.

Key to delivering this supply of homes is providing a range of housing types, tenures and price points to meet demand, including houses, apartments, terraces and villas; dwellings owned outright, mortgaged or rented; and homes occupied by single people, families and groups. A range of housing types provides for the needs of community members at all stages of life. People can age in place as they move into smaller homes in their own neighbourhoods, while young adults leaving home can stay close to their families and communities.

Specifically, The Planning Proposal would be addressing the following objectives in the Plan:

Objective 10 - Greater housing supply

This objective emphasises providing increased dwelling supply with a range of housing types in the right locations to create more liveable neighbourhoods and support Greater Sydney's growing population.

The objective aims to achieve this through providing dwellings where development is feasible; where existing or proposed infrastructure is present; and in targeting areas that are in proximity to employment and recreation areas. The development of a mixed-use development with a residential component is in accordance with this objective. The Planning Proposal would provide around 14,783 new dwellings with a range of sizes and configurations. As such, the Planning Proposal would be contributing to Liverpool achieving this objective.

Furthermore, increased housing supply would be more appropriate within centres with high connectivity through public transport. The Moore Point precinct is within walking distance to the public transport hub of Liverpool Station with proposed additional connections to the Station; the health and education precinct, making it an ideal urban renewal site.

Objective 11 - Housing is more diverse and affordable

The Planning Proposal would provide a mixture of apartments of varying sizes and bedroom numbers, this would increase dwelling diversity in the locality, providing a range of housing options and price points for persons downsizing or entering the market. As such, the Planning Proposal is in accordance with this objective.

Objective 12 - Great Places that bring people together

This objective emphasises that well-designed places bring the community together enhancing social cohesion and overall enjoyment. Great places focus on the public realm and open spaces that attract residents, workers, visitors, enterprise and investment. They recognise and celebrate the local character of the place, its people, and include the green infrastructure that supports the sustainability of the region and people's wellbeing.



Council has an opportunity to work collaboratively early in the planning process to create a distinctive precinct that takes advantage of its unique position on the Georges River to deliver public benefits for its community.

Objective 14 - A Metropolis of Three Cities – integrated land use and transport creates walkable and 30-minute cities

This objective emphasises the development of a diverse economy across Greater Sydney and the 30-minute city concept. The Planning Proposal would provide upwards of 344,499sqm of employment space which would generate approximately 23,617 jobs. This would significantly increase the economic output and employment diversity within Liverpool.

A recent study has found Sydney commuters on average spend 70 minutes commuting to work each day. This objective aims to reduce this commute time to 30 minutes by providing increased employment opportunities, housing and transport options in close proximity to each other. The Planning Proposal will provide increased employment and housing options in close proximity to the CBD and existing transport options, as such, it is in accordance with this objective.

Objective 15 - (the) Western Economic Corridor (is) better connected and more competitive

This objective aims to capitalise on the development of the Badgerys Creek Aerotropolis and other proposed transport links to better connect and increase jobs diversity within the Western Parkland City. The Planning Proposal would provide generate around 23,617 jobs increasing both the number and diversity of jobs within Liverpool. The Planning Proposal would also make Liverpool more attractive for increased investment helping it capitalise on the development of the Western Sydney Airport.

Objective 20 - Western Sydney Airport and Badgerys Creek Aerotropolis are economic catalysts for Western Parkland City

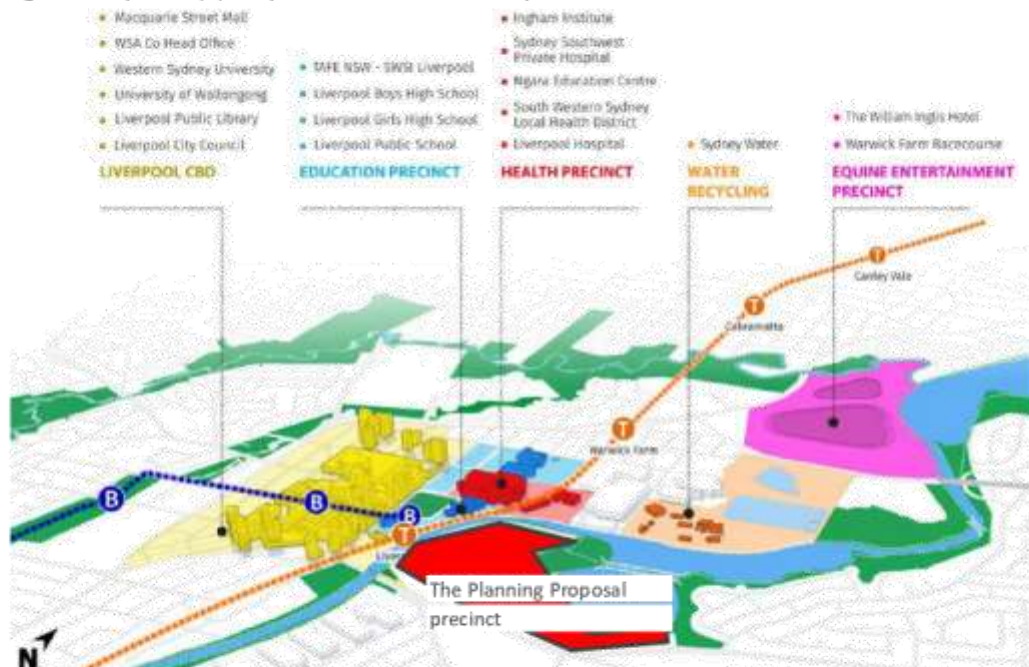
The objective states that the existing centres of Liverpool, Greater Penrith and Campbelltown-Macarthur and their commercial, health and education assets will support the growing communities. These centres form part of the metropolitan cluster serving the Western Parkland City. Their importance in providing a focus for commercial activities and population services as the Western Parkland City develops over the next 20 years cannot be overstated.

The Planning Proposal provides an opportunity to complement the role for Liverpool CBD providing significant employment space to increase its employment base, diversity and economic growth while also providing increased dwelling opportunities for its workforce to live and work in proximity to the CBD.

Objective 21 - Internationally competitive health, education, research and innovation precincts

Universities, hospitals, medical research institutions and tertiary education facilities are significant contributors to Liverpool and Greater Sydney's economy. As seen in the figure below Precinct is in proximity to all these assets in Liverpool. With the proposed connections across Georges River, the Planning Proposal provides an opportunity to complete Liverpool's CBD and expand its various health, education and research precincts. The Planning Proposal would also provide increased dwelling options for future students of the University, Hospitals and TAFE further increasing its competitiveness and attractiveness to future students.

Figure 6: Liverpool CBD, special precincts and the Moore Point precinct



Source: Greater Sydney Region Plan 2018, HillPOA

2.2 Western City District Plan

The Western City District Plan maps out the 20-year vision for the Western District of Greater Sydney. The Western District encompasses the local government areas (LGAs) of the Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Liverpool, Penrith and Wollondilly.

By 2036 it is projected that the District will have a population of 1.5 million, representing an additional 464,450 persons over the 20-year period from 2016; of which 98,750 people or 21% are projected to reside in the Liverpool LGA.

To house this growth an additional 184,500 dwellings are required over a 20-year period to 2036, representing an average annual target of 9,225 dwellings. Specifically, the District Plan targets an additional 39,850 dwellings to be provided over the next five years. The Liverpool target over this period is 8,250 dwellings or 1,650 per annum (2016-2021).

Planning priority W5 of the District Plan seeks to provide housing supply, choice and affordability, with access to jobs, services and public transport. The Planning Proposal achieves the District Plan's intent in the following ways:

- The Plan states that great places are walkable – this means they are designed, built and managed to encourage people of all ages and abilities to walk or cycle for leisure, transport or exercise. The 30-minute city aspiration will guide decision making on locations for new jobs and housing and the prioritisation of transport, health, schools and social infrastructure investments.

The Planning Proposal would provide upwards of 344,499sqm of employment space and 14,783 dwellings creating opportunities for current and future residents to live and work in close proximity, contouring to the 30-minute concept.



- Research into housing preferences in Greater Sydney shows that people generally prefer to remain within their local area, with 83% of residents moving into a new home within 15 kilometres of their former residence⁴. The Planning Proposal will provide 14,783 dwellings which will allow young residents to remain in the LGA and older residents to age in place.
- The Plan has identified that existing housing stock in the District continues to be dominated by detached dwellings; and that multi-unit dwellings provide transitional housing for seniors, homes for single people and more affordable homes for young people and young families. The Planning Proposal proposes a diverse mix of multi-unit dwellings which would increase the diversity of housing options in the District.

The District Plan notes that accommodating homes needs to be linked to local infrastructure – both to optimise existing infrastructure and to maximise investment in new infrastructure. Opportunities for capacity that aligns with infrastructure can be realised by urban renewal, local infill developments and land release areas. The Moore Point precinct is adjacent to the Liverpool metropolitan centre which will assist the CBD in ‘growing and strengthening the metropolitan cluster’.

2.3 Liverpool Collaboration Area Place Strategy

The Greater Sydney Commission document A Metropolis of Three Cities coupled with the Greater Sydney Regional Plan and Western City District Plan identifies Liverpool as a Collaboration Area. Collaboration Areas are a place-based, multi-stakeholder approach to solving complex urban issues, that the Commission conducts over 12 months. The Place Strategy sets a pathway to realising Liverpool’s metropolitan role. The Strategy identifies the proposed Planning Proposal site as a future mixed-used area, which is a combination of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core.

The Planning Proposal is in accordance with this direction as it proposes the rezoning of industrial land, which is forecast to decline in employment, and that is in proximity to the city centre to allow higher-order uses that complement the city centre and provide the opportunity to leverage of the Western City Airport and other major infrastructure developments. It also can contribute to the growth and strengthening of Liverpool’s various innovation precincts.

Priority one of the Strategy is to reduce congestion in and around the centre, through improving accessibility and walkability. The proposed Planning Proposal would enable future residents to walk to the city centre in 5-10 minutes reducing congestion, through improved walkability.

Priority four is to create and renew great places for people, through quality mixed-use development. Making Liverpool a desirable place to live and work, as well as a healthy and walkable city, focused on the river; with housing options suit a range of lifestyle needs, household types and incomes, within walking distance of major employment precincts and rail stations. The Planning Proposal will assist the Council in achieving this priority, as it will provide a high-quality mixed-use area, as well as providing housing options to suit a range of household types, incomes and lifestyles.

As seen in the figure below, the Moore Point precinct is identified as transitioning from its current industrial status to a high amenity mixed-use precinct which complements the city centre and health and education precinct. As such, the Planning Proposal is in accordance with the objectives and vision of this Strategy.

⁴ City Futures Research Centre 2013, Implementing metropolitan planning strategies: taking into account local housing demand – Technical Report, City Futures Research Centre, UNSW, Sydney.

Figure 7: Liverpool Collaboration Area opportunities and assets



Source: Liverpool Collaboration Area Place Strategy 2018

2.4 Section 9.1 Ministerial Directions

Direction 1.1 of the Ministerial Directions relate to business and industrial zones. Direction 1.1 applies when a relevant planning authority prepares a planning proposal that will affect land within an existing or proposed business or industrial zone (including the alteration of any existing business or industrial zone boundary).

The objectives of this Direction are to:

- Encourage employment growth in suitable locations
- Protect employment land in business and industrial zones
- Support the viability of identified centres.

A planning proposal may be inconsistent with the terms of this direction only if the relevant planning authority can satisfy the Secretary of the Department of Planning and Environment (or an officer of the Department nominated by the Secretary) that the provisions of the planning proposal that are inconsistent are:

- a. justified by a strategy which:
 - (i) gives consideration to the objective of this direction (refer to Table 1), and
 - (ii) identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), and
 - (iii) is approved by the Secretary of the Department of Planning and Environment, or
- b. justified by a study (prepared in support of the planning proposal) which gives consideration to the objective of this direction (refer to Table 1), or



- c. in accordance with the relevant Regional Strategy, Regional Plan or Sub-Regional Strategy prepared by the Department of Planning and Environment which gives consideration to the objective of this direction (refer to Table 1), or
- d. of minor significance.

The following table assesses the consistency of the Moore Point Planning Proposal against the five key requirements of the Direction for strategies concerning employment lands. As stated, this study assesses the economic impact and potential of the Planning Proposal. Although the study assesses the economic merit of the Planning Proposal against the objectives of this Direction, it does not include any specific planning or policy recommendations which would require consideration of a range of other factors which will be explored in other specialist studies being undertaken in the preparation Planning Proposal for the Moore Point precinct.

Table 1: Consistency with Ministerial Direction 1.1 business & industrial zones objectives

Objective	Consistency of Moore Point Planning Proposal
Encourage employment growth in suitable locations	<p>The Planning Proposal has the potential to generate around 23,617 jobs upon completion. This is around 22,847 additional jobs over that already generated on-site.</p> <p>These jobs would be provided in proximity to Liverpool CBD and its innovation precincts. The Planning Proposal also proposes to improve the connectivity between these areas through the provision of three new connection points across the river. This would:</p> <ol style="list-style-type: none"> 1. Provide an opportunity for Liverpool CBD and its innovation precincts to expand on to the site 2. Provide the opportunity for employment uses on-site to complement and support Liverpool CBD and its innovation precincts 3. Increase connectivity for future residents and workers between the site, Liverpool CBD and surrounding innovation precincts. <p>These improved connection points coupled with Moore Point's proximity to Liverpool CBD, innovation precincts and existing transport infrastructure the site is considered to be a suitable location for increased employment opportunities.</p>
Protect employment land in business and industrial zones	<p>The Planning Proposal proposes to rezone the site from its current industrial zoning to primarily a mixed-use and enterprise corridor zoning (B4 and B6). This would provide the opportunity for the site to generate around 23,617 jobs upon completion, an additional 22,847 jobs over that already generated on-site.</p> <p>Development of the Planning Proposal would result in the loss of industrial zoned land in proximity to Liverpool CBD. However, it would be rezoning this industrial land to another type of business/employment zoning (B4 and B6) which would result in a higher economic output for the site. this trend has already been occurring.</p> <p>The Planning Proposal proposes part of the site is to be an enterprise corridor zoning. This provides the potential for any urban services or other low-impact industrial uses displaced during construction to be relocated back on-site. Potentially reducing any long-term impacts Planning Proposal may have upon these services and the overall impact on the amount of employment land close to the CBD.</p>
Support the viability of identified centres	<p>Where a significant property investment decision has been made, it is generally viewed as a strong positive commitment for the local area. Such an investment can, in turn, stimulate and attract further investment. Development of the Planning Proposal would support a wide range of economic multipliers which would, in turn, support investment in associated industries. It would also raise the profile of Liverpool to potential investors. This increased developer interest coupled with its employment and other economic multipliers would support the viability of Liverpool.</p>

Objective	Consistency of Moore Point Planning Proposal
Is in accordance with the relevant Regional Strategy, Regional Plan or Sub-Regional Strategy prepared by the Department of Planning and Environment which gives consideration to the objective of this direction.	<p>Although this is not an objective of the Direction it must be noted that the transition of the site from its current industrial uses to a mixed-use precinct containing both employment and residential uses is supported by a number of State and local strategies including:</p> <ul style="list-style-type: none"> ■ Greater Sydney Region Plan ■ Liverpool Collaboration Area Place Strategy ■ Draft Liverpool Local Strategic Planning Statement ■ Draft Liverpool Employment Lands Study (executive summary). <p>All the above strategies and policies would have given consideration to the objectives of this Direction.</p>

2.5 Draft Liverpool Local Strategic Planning Statement (LSPS)

The draft Liverpool Local Strategic Planning Statement (LSPS) sets Liverpool City Council's strategic planning vision for the next 30 years (2050). It lists the Council's planning priorities across four areas: connectivity, productivity, liveability and sustainability. The proposed Planning Proposal addresses the Council's priorities in the area of liveability.

Planning priority five aims to create a vibrant, mixed-use and walkable 24-hour City Centre with the Georges River at its heart. The Planning Proposal would reinvigorate the Georges river, increasing walkability throughout, provide thousands of potential customers for shops within the Liverpool CBD and workers that would also increase the areas vibrancy and 24-hour activation.

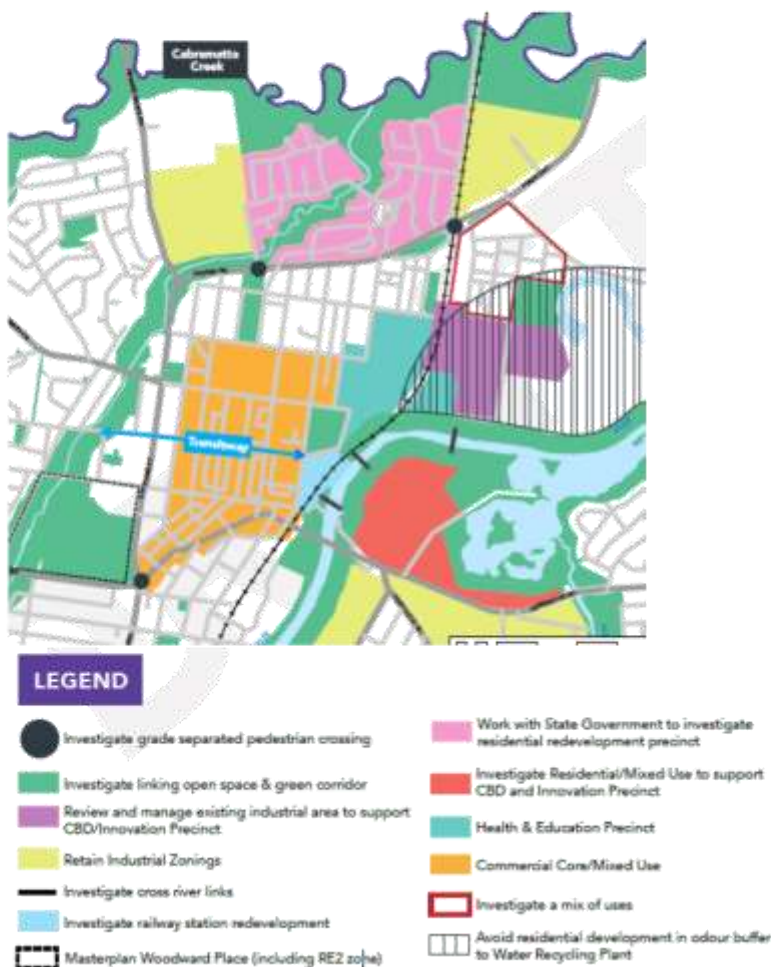
Planning priority seven intends to provide housing choice for different needs, with density focused in the city centre and centres well serviced by public transport. The Planning Proposal would provide approximately 14,783 dwellings and increased density adjacent to the City Centre, which is within a ten-minute walk to the Liverpool train station and CBD.

Planning priority nine seeks to create healthy places, through ensuring new urban centres are compact and transit-oriented, to maximise opportunities for walking and active transport. Residents of the Planning Proposal will be able to walk to the city centre, employment precincts and public transport hubs.

Priority 11 seeks to make Liverpool an attractive environment for local jobs, business, tourism and investment. The Planning Proposal would provide approximately 344,499sqm of mixed employment space, which would accommodate approximately 23,617 workers. These development outcomes both Liverpool's economic and employment generation while also raising its profile to further investment.

Importantly, the Moore Point precinct is identified in the draft LSPS as an area for investigation to become a residential/mixed-use precinct which supports the CBD and innovation precincts.

Figure 8: Liverpool Structure Plan



Source: Liverpool LSPS 2019

2.6 Draft Liverpool Employment Lands Strategy

Liverpool has recently released its draft employment lands strategy 2018. Of key consideration for this study is the recommendation to:

Retain and protect all existing industrial precincts in the LGA that is not identified as required as part of the Collaboration Area Place Strategy

Council's employment lands strategy is therefore supportive in exploring alternative use for the Moore Point precinct such as, the transformation into a mixed-use precinct that complements Liverpool CBD and its health and education precinct. The proposed mixture and land use outcome of the Planning Proposal is in line with this vision.



3.0 EMPLOYMENT GROWTH AND INDUSTRIAL LAND SUPPLY

The following is a high-level assessment of State employment projections for Liverpool CBD and the wider LGA. The purpose is to determine what role the Planning Proposal can provide in Liverpool and what impact rezoning of the Moore Point precinct would have upon Liverpool meeting its industrial needs.

As identified in the Western City District Plan, Liverpool CBD includes Liverpool Hospital, the Ingham Institute of Applied Medical Research and the clinical schools of the University of NSW and Western Sydney University, South West Private Hospital and South Western Sydney TAFE. For our analysis, we have adopted the Transport Performance and Analytics (TPA) geographical boundaries known as a Destination Zones and a Travel Zones (TZs) have been used to analyse the employment characteristics of Liverpool CBD and the Moore Point precinct (Figure 9).

In line with the Greater Sydney Commissions (GSC) employment categories, we have aggregated the 19 Australian and New Zealand Standard Industrial Classification (ANZSIC) 1-digit employment industries into four broad employment sectors. These four broad job sectors are as follows:

- **Knowledge-intensive:** Information, Media and Telecommunications; Financial and Insurance Services; Rental, Hiring and Real Estate Services; Professional, Scientific and Technical Services; and Public Administration and Safety
- **Health and education:** Education; Health Care; and Social Assistance
- **Population serving:** Retail Trade; Accommodation and Food Services; Arts and Recreation Services; Construction; Administrative and Support Services and Other Services
- **Industrial:** Agriculture; Forestry and Fishing; Mining; Manufacturing; Electricity, Gas, Water and Waste Services; Wholesale Trade; and Transport, Postal and Warehousing.

Figure 9: Liverpool CBD and Moore Point precinct



Source: HillPDA

3.1 Employment projections

Over a 31-year period from 2019, employment within the Precinct is projected to experience a slight increase of around 65 jobs. Of this employment, a significant proportion (94%) is related to “non-traditional” industrial employment. That is, not classified as industrial employment.

The growth in non-industrial employment highlights Moore Point precinct’s transition away from a traditional industrial precinct into a more mixed-use location which is the intent of the Planning Proposal.

Liverpool CBD’s employment is projected to increase by around 10,263 jobs over the period while across the LGA employment is projected to increase by around 85,877 jobs over the period. Refer to Table 2 below.

Table 2: Net employment growth 2019-2050

Industry category	Precinct	Liverpool CBD	Liverpool LGA
Health and education	3	6,123	21,372
Population serving	31	1,264	23,349
Knowledge intensive	27	2,828	19,024
Industrial	4	48	22,133
Total	65	10,263	85,877

Source: TPA 2016 employment projections V1.51 updated in 2019

These projections highlight that the Moore Point precinct and CBD locations are projected to increasingly transition to higher-order uses and employment, such as knowledge-intensive and health/education businesses. Industrial related employment within the Moore Point precinct and CBD is being directed and concentrated to other locations in the LGA such as the Moorebank intermodal terminal and the Aerotropolis.

Construction of the Aerotropolis coupled with Moorebank intermodal has led to international corporations including Scentre Group and Amazon showing interest to invest in Liverpool. This trend would increase employment demand in the CBD and LGA over that projected.



3.2 What role can the Moore Point precinct provide

The Planning Proposal would provide three additional connections points across the Georges River into Liverpool CBD, increasing the connectivity between the two areas and various sub-precincts in the CBD, such as its health and education precinct.

These additional connection points coupled with existing road connections and its proximity development of the Planning Proposal would constitute an expansion of Liverpool CBD which has previously been contained by the Georges River.

Figure 10: Moore Point precinct possible connection routes to Liverpool CBD



Source: HillPDA

The Planning Proposal would provide upwards of 344,499sqm of employment space over a likely 30-40-year period. As such, the Planning Proposal could contribute to Liverpool CBD and LGA in attaining their employment targets over the next 31 years.

Given the Planning Proposal is expected to be staged over a 30-40-year period it would be able to contribute to these floorspace targets without creating an oversupply and negatively impacting further re/development potential within the locality.

3.2.1 The Planning Proposal and the health, education and research innovation precinct

Liverpool Council's recently released Local Strategic Planning Statement (LSPS) recognises the significant role that the health and education sector plays in Liverpool CBD with Liverpool Hospital, Ingham Institute of Applied Medical Research, the University of NSW (UNSW), Western Sydney University (WSU), University of Wollongong (UOW), South West Private Hospital and TAFE NSW in the local area.

Currently, more than 15,000 health and knowledge workers are located in the LGA, accounting for about 20% of all workers, with this forecast to increase to 30,000 by 2036.

Specifically, the LSPS states:



Liverpool (CBD) has significant advantages that could reinforce its position as a health leader and help it to become a world-class health, education, research and innovation precinct based around Liverpool Hospital. This includes close access to a train line, a river providing significant amenity potential, availability of commercial land and a diverse population.

Liverpool will capitalise on these advantages, and grow its Innovation Precinct to cater for significant growth in health and knowledge workers expected over the next 20 years, and become a global leader in collaboration in health, education and research.

The location of the Moore Point precinct directly to the south of these health and education assets. The proposed new connections across the river, improving connectivity between the two areas, provides a significant opportunity for the Moore Point precinct to provide a supportive and stimulus role to the creation of this *Innovation Precinct*.

Not only could the commercial space proposed in the Planning Proposal provide direct space for health, education and research uses, it could also provide other supportive uses that could assist in the development of a successful innovation precinct. This includes providing housing for future workers, improved amenity, retail services, community and open space, other worker supportive services like childcare centres.

3.2.2 Feasibility of commercial development within Liverpool CBD

Liverpool has the potential to become Sydney's third central business district (CBD) after Sydney and Parramatta. The development and connection to Sydney's second airport at Badgerys Creek will further raise Liverpool's profile. However, recent studies by AEC Group undertook generic feasibility testing in Liverpool CBD, the reports generally concluded that:

analysis shows that sites in the core of the CBD (focused around Westfield) are unlikely to experience large scale development owing to the challenges of site assembly underpinned by fine lot patterns, fragmented ownership, high land values and varying retail/commercial leases. In order for existing uses to be displaced, in some core locations higher FSR controls are required. That said, landowner objectives are not always financial in nature and may not necessarily align with development imperatives.

Sites in fringe areas of the CBD (along Macquarie Street south of the core) face similar challenges as sites in the core, characterised by fine lot patterns, fragmented ownership and high land values (although marginally lower than those in the core).

In order for existing uses to be displaced, higher FSR controls are required. Large scale development is also unlikely to occur due to the fragmented nature of lot patterns and ownership.

Fringe locations where existing-use values are considerably lower than core/prime areas lend themselves more favourably to re-development. This is affirmed by the greater levels of development approved and proposed in fringe locations⁵.

This is further evident in only 11,760sqm of new commercial office space being added to Liverpool CBD between 2010 and 2016⁶. While over the next year there was a net loss of around 13,655sqm of commercial space between 2016 to 2017 in the CBD⁷.

Currently, the overall commercial vacancy rate in Liverpool CBD is around 16.8% compared to just 2.7% in Parramatta and 3.7% in Macquarie Park. The high vacancy rate further indicates a struggling commercial market decreasing the viability and attractiveness of development in Liverpool⁸.

⁵ 11 Bridges Road, Moorebank EIA, AEC Group 2017 also stated in the 5-9 Bridges Road, Moorebank EIA AEC Group 2016 study

⁶ Employment Outcome Assessment Liverpool Waterfront, Moorebank, MacroPlanDimasi 2016 and PCA 2019

⁷ PCA Office report 2019

⁸ PCA Office report 2019



A review of the development pipeline has identified that there is around 112,500sqm of commercial space within the development pipeline due for completion between 2020 and 2026. It is noted that "commercial space" in some of these early concept developments is a very fluidic term which may also apply to accommodation, community, education, retail, and civic space.

Despite the historic trends and high vacancy rate in Liverpool, the significant amount of space within the development pipeline highlights the growing attractiveness of Liverpool to investors and developers. It also highlights that Liverpool, with the right kind of levers, is on track to exceed its employment projections as projected by NSW Transport, Performance and Analytics (TPA) in their 2016 employment forecasts (updated in 2019). Hence Liverpool would require additional space over and above that estimated in Table 2.

Despite this increased developer interest, most of the proposals are for mixed-use developments indicating that the feasibility of standalone commercial developments remains appears to be not to be viable unless cross-subsidised by residential dwellings.

The Liverpool CBD commercial core zoning has been significantly reduced in favour of a mixed-use zoning to stimulate viable redevelopment more broadly across the CBD. This may benefit residential development, but it will likely reduce the potential for standalone commercial developments, reducing its ability to capitalise of its strategic location and meeting its commercial floorspace targets.

The successful development of the subject Planning Proposal will raise Liverpool's investment profile, with a style of development that meets the demand of the new economy with a mix of uses in an integrated Planning Proposal of high-quality built form and public space. The Planning Proposal should be viewed as an expansion of Liverpool's commercial zone contributing to Liverpool's employment targets and commercial floorspace requirements negating any potential impact the mixed-use rezoning in Liverpool CBD. A similar parallel can be made with Barangaroo and the Sydney CBD. Barangaroo is a standalone Planning Proposal community that serves and supports the surrounding Sydney CBD.

In summary, despite Liverpool CBD being a sluggish commercial market over the last couple of decades, we believe there is potential for revitalisation with the correct response to market demand and increased investment in infrastructure in roads, rail and the Western Sydney Airport. The Planning Proposal with its integrated planned approach to built-form and public space is designed to capitalise on this potential demand and growth.

Table 3: Commercial development pipeline 2019-2026

Project name	Address	Commercial space (sqm)	Commencement year	Completion year
Castlereagh St mixed development	30 Castlereagh St	216	2020	2021
Speed St mixed development	1-5 Speed St	2,145	2020	2022
Forbes St shop top housing	41-43 Forbes St	350	2020	2022
Norfolk St mixed development	7-13 Norfolk St	908	2020	2022
Bigge St commercial tower	277 Bigge St	24,234	2020	2022
Elizabeth Dr mixed-use development	181 Elizabeth Dr	530	2020	2023
Westfield commercial tower	25 & 33-125 George St	11,174	2021	2023
Northumberland mixed development	203-209 Northumberland	1,610	2020	2023
Bigge St mixed development	133 Bigge St	38,800	2020	2023
Liverpool civic place	52 Scott St	13,000	2020	2024
Elizabeth St mixed use development	22-26 Elizabeth St	4,804	2020	2024
The Macquarie	402 Macquarie St	460	2020	2025
Macquarie St commercial development	431 Macquarie St	14,300	2021	2026
Total		112,531		

Source: CordellsConnect and Liverpool Council DA tracker



3.3 Industrial land analysis

Over a four-year period from January 2015, employment zoned⁹ land in the Western City District increased by around 286 hectares or 6% to a total of 5,470 hectares. In total, the Western District represented 40% of all employment zoned land across Greater Sydney (2019). Of the total net increase of employment land in the Western District, around 151 hectares or 53% was located within Liverpool LGA. Which over the period increased its total amount of zoned employment land by 16%, to a total of around 1,109 hectares by 2019.

The amount of undeveloped zoned employment land within Liverpool has also significantly increased over the period with an additional 69 hectares or 33%, reaching a total of 278 hectares in 2019. In addition to these zoned employment precincts, Liverpool has another 586 hectares of land identified as potential future industrial land stock. With the inclusion of these lands increases Liverpool's undeveloped industrial land stocks up to around 864 hectares.

This significant amount of undeveloped zoned and potentially zoned industrial land has the potential to accommodate between 2.59 to 8.64 million square metres of industrial related floorspace¹⁰. Coupled with redevelopment and intensification of uses on currently but develop industrial land, this additional capacity is likely sufficient to meet the needs of the LGA over the coming decades.

Table 4: Western District zoned employment land 2015-2019

LGA	Jan-15 (Ha)			Jan-19 (Ha)		
	Undeveloped	Developed	Total	Undeveloped	Developed	Total
Blue Mountains	34.0	66.9	100.9	44.9	71.8	116.7
Camden	188.6	178.4	367.0	153.2	204.2	357.4
Campbelltown	73.0	656.5	729.5	114.0	672.8	786.8
Fairfield	113.9	929.5	1,043.4	105.6	973.4	1,079.0
Hawkesbury	24.0	164.9	188.9	29.2	160.0	189.2
Liverpool	209.4	749.0	958.4	278.1	831.3	1,109.4
Penrith	663.6	833.3	1,496.9	598.9	945.3	1,544.1
Wollondilly	125.8	172.5	298.3	166.7	120.4	287.1
Total	1,432.3	3,751.0	5,183.3	1,490.6	3,979.2	5,469.7

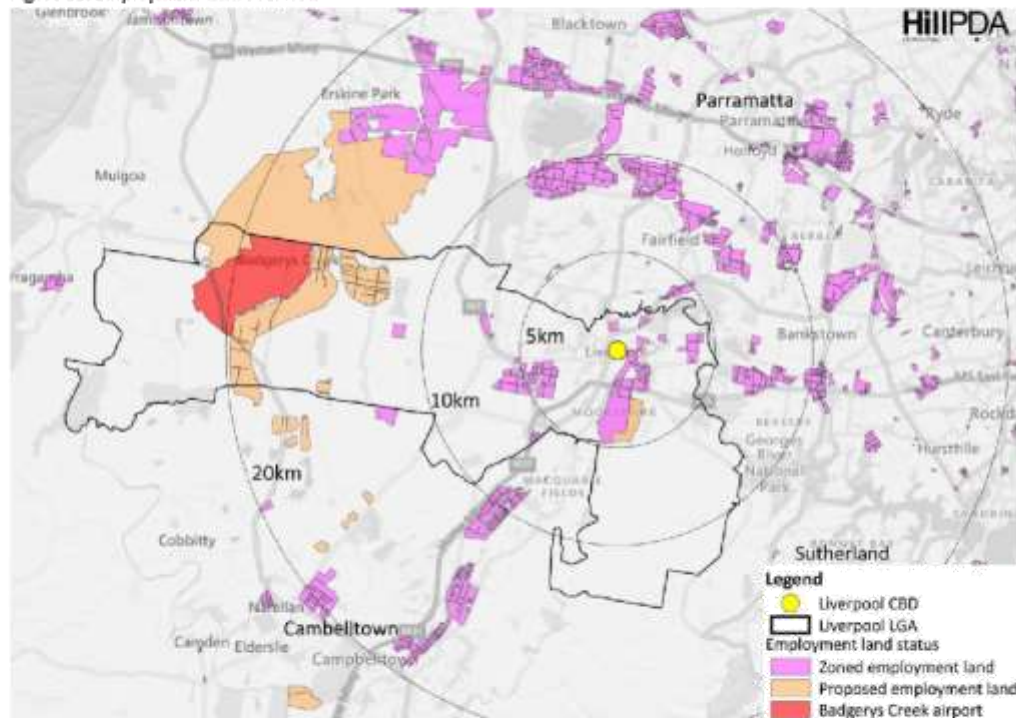
Source: Department of Planning Infrastructure and Environment's Employment Lands Development Monitor (ELDM) 2018/2019

As seen in the figure below, there is also a significant amount of zoned employment land within the five to 20 kilometres of Liverpool CBD in the surrounding LGAs of Canterbury-Bankstown, Fairfield, Parramatta and Blacktown. The proximity and services within these industrial precincts could provide additional employment opportunities and urban services for future residents in Liverpool CBD and the Moore Point precinct over that already provided the LGA.

⁹ Employment Lands: Land that is zoned for industry and/or warehouse uses including manufacturing; transport and warehousing; service and repair trades and industries; integrated enterprises with a mix of administration, production, warehousing, research and development; and urban services and utilities.

¹⁰ High level developable FSR range of 0.3:1 to 1:1

Figure 11: Employment land overview



Source: HillPDA

3.3.1 Potential further industrial land to be zoned

As previously discussed, Liverpool LGA and, more specifically, the Western District is the only district identified that has the potential to significantly increase the amount of employment land. According to the ELDM, The Western District has the potential for an additional 6,529 hectares of zoned employment land. If all this potential land was realised it would increase Greater Sydney's employment land supply by over 47%.

Table 5: Potential future employment land by LGA

Precinct	LGA	Area (Ha)
Catherine Fields	73.2	73.2
Future Industrial	87.6	87.6
Future Industrial	1,124.9	1,124.9
Kemps Creek	446.8	446.8
Lowes Creek	87.7	87.7
Lowes Creek/Marylands	63.7	63.7
Marylands	25.5	25.5
Rossmore	40.2	40.2
Moorebank Defence Lands	154.0	154.0
Glen Lee	45.4	45.4
Glen Lee	14.6	14.6
Western Sydney Employment Area Extension	3,973.4	3,973.4
Western Sydney Employment Area Extension	391.9	391.9
Greater Sydney Total		6,528.9

Source: ELDM 2018

The majority of this potential employment land is in proximity to the Western Sydney's airport at Badgerys Creek while some is also located around Moorebank Intermodal Precinct. These two nationally significant infrastructure



developments are game changers for Liverpool, significantly increasing its employment, economic and liveability profile.

For example, the 11,200-hectare aerotropolis will be Greater Sydney's newest economic hub in close proximity to Liverpool CBD. It has the potential to create upwards of 200,000 new jobs for Western Sydney by establishing a new high-skill jobs hub across aerospace and defence, manufacturing, healthcare, freight and logistics, agribusiness, education and research industries.

While the Moorebank Intermodal Precinct is expected to generate 7,000 jobs and over \$9 billion in economic benefits to Western Sydney and Liverpool and provide up to 850,000sqm of high specification warehousing where containers can be unpacked before delivery of their contents to its final destinations¹¹.

These two developments are key drivers for the LGA attracting various businesses, investors and workers. It is important that Liverpool CBD undergo an appropriate transformation and densification to capitalise on any potential investment interest resulting from these investments. This would be achieved by providing high-quality accommodation and office space for the potential knowledge, research, education workers that will be attracted to the area.

The Planning Proposal would contribute to Liverpool capitalising off these infrastructure assets and contribute to Liverpool becoming Sydney's third CBD.

3.3.2 The loss of employment land in the Moore Point precinct

Moore Point precinct provides around 38.5 hectares of developed industrial land. Over the period to 2050, industrial related employment is forecast to shift towards more "non-traditional" industrial employment which is compatible with the land uses proposed in the Planning Proposal. This projected employment transformation coupled with its proximity to Liverpool CBD and proposed connections across the Georges River, provide the opportunity to expand Liverpool CBD, creating a high-quality mixed-use precinct that complements the existing CBD and health/education precinct.

This vision is also identified and proposed within various State and local planning strategies including the Western Sydney District Plan, Liverpool Collaboration Area Place Strategy, Liverpool draft Local Strategic Planning Statement and Liverpool Draft Employment Lands Study.

The potential loss and impact that Planning Proposal would have upon the LGAs ability to meet its future industrial lands needs would have been explored in detail on the preparation of the draft Liverpool ELS and subsequent LSPS. Both documents support the transformation of the Moore Point precinct to a residential and mixed-use precinct. As such, the endorsement from these strategies implies that the negative impact resulting from the transformation of this location into mixed-use precinct is far outweighed from the positive benefits.

3.3.3 Relocation of urban services

The Greater Sydney Commission in their 2018 *A Metropolis That Works*, has defined urban services to be "a wide range of industries that enable the city to develop and its businesses and residents to operate."

This encompasses an eclectic landscape of panel beaters, home renovation services, glass makers, small-scale manufacturing companies, redistribution centres, kids indoor play zones, food preparation and catering facilities, repair workshops, gyms and the like. Not all urban services need to be in dedicated industrial precincts, but many clearly do."

The wide range of uses under this definition makes it difficult to entirely understand how all possible urban service these uses would adapt to a more mixed-use land zoning across the Moore Point precinct. Some uses such as

¹¹ Moorebank intermodal company annual report 2018



childcare, indoor play zones, gyms, education and the alike would benefit from the improved amenity and residential catchment.

There are also many examples of other urban services, such as car repair services being co-located in mixed-use areas with other employment or residential uses. While improvements in technology have made machinery more compact, efficient and quieter allowing better integration of urban services in mixed-use precincts which previously would have required separation from more sensitive land uses.

The Planning Proposal proposes an enterprise corridor zoning that extends from Bridges Road to the east and Newbridge Road on the northern side. This area has the potential to provide upwards of 47,570sqm of employment space, providing the opportunity for urban services and other typically industrial land occupiers to be located.

In addition to the potential supply of urban service floorspace within Planning Proposal's enterprise corridor precinct, we have reviewed the amount of zoned but undeveloped employment land within a 5-kilometre radius of the Moore Point precinct.

This review highlights that there is currently around 235 hectares²² of zoned but undeveloped industrial land with the potential for an additional 154 hectares in the Moorebank Defence Lands precinct, just around 2 kilometres south of the Moore Point precinct. This significant amount of current and potential industrial land stocks available for development would provide an opportunity for urban services to relocate within proximity of the Moore Point precinct. This would significantly reduce any potential negative impacts that the proposed rezoning may have upon some services.

We also note the draft Liverpool ELS and subsequent LSPS both support the transformation of the Moore Point precinct to a residential and mixed-use precinct. The impact upon urban services resulting from this rezoning would have been explored in detail in the development of these strategies. As such, the endorsement and acknowledgement of the Moore Point precinct to transition into a mixed-use precinct, in these strategies, implies any short-term negative impacts upon urban services are negated by its positive outcomes.

²² Includes Chipping Norton, Moorebank, Orange Grove, Priddle/Scriveners St, Sappho Road, Warwick Farm Racecourse and Yarunga/Prestons



4.0 INCREASE RESIDENTIAL JUSTIFICATION

The following Chapter undertakes a review and analysis of the demographic and housing characteristics within Liverpool LGA. The Chapter intends to justify the provision of additional residential supply within the LGA to meet the current and future needs of the resident population.

The basis for this justification is partly sourced from the *Greater Sydney Region Plan* which emphasises:

- Accelerating housing supply across Sydney
- Accelerating urban renewal across Sydney
- Improve housing choice to suit different needs and lifestyles.

4.1 Dwelling price growth

The former *A Plan for Growing Sydney* acknowledged that Sydney's housing prices are high compared to other Australian capital cities. The Plan highlights that governments can "help to put downward pressure on prices (by) accelerating the supply and the variety of housing across Sydney, such as apartments and townhouses, will make it easier for people to find homes to suit their lifestyle and budget".

Delivering houses in greenfield and urban renewal locations will help people to live closer to family and friends, to workplaces and schools, and to the services they use on a daily or weekly basis".

In March of 2018, the median sale price for strata dwellings in Liverpool LGA reached almost \$497,000. This was \$328,000 or 66% lower than the median strata dwelling recorded in Greater Sydney (\$825,000).

In comparison, the median sale price for non-strata dwellings was around \$821,000. This was \$395,000 or 48% higher than that recorded for Greater Sydney (\$900,000) and \$280,000 or 54% higher than strata dwellings in the LGA.

As such, strata dwellings provide a more affordable option for residents and key workers within the LGA. This is evident with strata dwellings having a median value 65% lower than the median price of non-strata dwellings.

Furthermore, the median values of both strata and non-strata dwellings have significantly increased over the last 18 years from 2000. These proportional increases were both above that experienced across Greater Sydney. This highlights the growing attractiveness of Western Sydney with its recent infrastructure investments only increasing this attractiveness. As such, increased dwelling supply is one lever that could help place downward pressure on dwelling prices maintaining its affordability competitive to more inner/coastal Sydney locations.

Table 6: Median sale price (\$'000)

	2000	2018	Growth (\$)	Growth (%)
Liverpool LGA (non-strata)	232	821	589	253.9%
Liverpool LGA (strata)	130	497	367	282.3%
Greater Sydney (non-strata)	285	1,216	931	326.7%
Greater Sydney (strata)	270	825	555	205.6%

Source: NSW Rent and Sales Report – March 2000 to 2018

4.2 Need for increased capacity

Comparing the increase in housing supply against the population increase within Liverpool LGA over ten-year period from 2006, reveals that housing supply has remained below demand.

Our analysis indicates that the high-level implied dwelling undersupply in the LGA is estimated at around 2,623 dwellings. Housing undersupply undermines housing affordability and diversity within the locality.



Table 7: Estimated accumulated dwelling undersupply

Supply	
Housing stock, 2011	58,834
Housing stock, 2016	63,888
Change 2011-2016	5,054
Implied demand	
Average number of persons per dwelling	3.15
Population, 2011	180,143
Population, 2016	204,326
Population growth	24,183
Implied dwelling demand	7,677
Accumulated dwelling undersupply (supply less demand)	2,623

Source: ABS 2006 and 2016, HillPDA

4.2.1 Dwelling projections

Over 20 years from 2016, Liverpool would require between an additional 43,452 and 54,449 dwellings to accommodate the projected increase in population. This represents an annual increase or target of between 2,173 and 3,489 dwellings.

Table 8: Liverpool 20-year net housing demand

Forecast source	Net demand	Annual increase
DPIE - 2016-2036	69,776	3,489
Forecast id - 2016-2036	54,449	2,722
Liverpool draft LSPS - 2016-2036	43,452	2,173

Source: NSW DPIE 2019 forecasts, Forecast id and Liverpool draft LSPS

4.2.2 Residential dwelling pipeline

As discussed previously, the LGA would need to provide between 2,173 and 3,489 dwellings per annum over the next 20 years to meet its various population forecasts.

After allowing for dwellings that were completed in 2016-19 and dwellings in the development pipeline²³, Liverpool without increased supply is forecast to be short of its housing targets over the period to 2026, by between 9,015 and 15,065 dwellings.

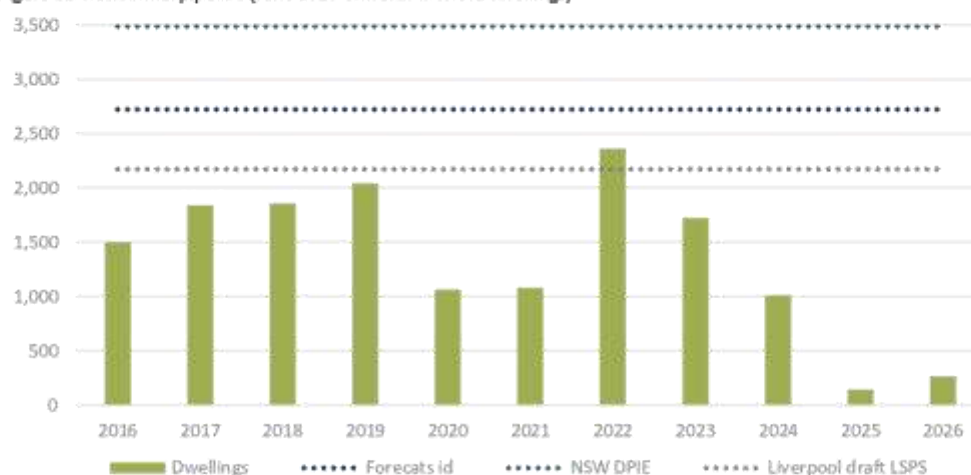
This projected undersupply coupled with our estimated existing latent demand further increases the need for additional residential supply in order for the LGA to meet these dwelling targets and increase local affordability.

This can be achieved through accelerating housing supply within the LGA in appropriate locations like that proposed in the Planning Proposal

²³ Developments included are those which have a status of Building Application; Building Approval; Construction; Development Application; Development Approval; Rezoning Application; Rezoning Approval; or Site Preparation in Progress



Figure 12: Residential pipeline (June 2019 onwards is strata dwellings)



Source: Greater Sydney Regional Housing Activity (2016 to May 2019), CordellConnect (development to be completed from June 2019>)

4.3 Housing diversity and affordability

4.3.1 Housing stress and affordability

Housing stress is a metric used to describe a situation where the cost of housing is high relative to the household income. As a rule of thumb, housing stress is defined as where housing costs (rent or mortgage repayments) are 30% or more of gross household income²⁴.

While this figure provides a useful benchmark of housing affordability, the definition of affordability varies according to a household's individual circumstances.

As seen in the table below, housing stress within the Liverpool LGA has decreased from 37% in 2006 to 32% in 2016. As of 2016, the median mortgage repayment was 32% of the median household income. This demonstrates that a large portion of households within the LGA are experiencing housing stress.

The rent to income ratio within the rental market has increased from 18% in 2006 to 24% in 2016. This shows an increase of 6%, however, it is still below the 30% benchmark.

Table 9: Rental and mortgage stress

	2006	2016
LGA median household income	\$56,264	\$80,600
LGA median mortgage repayment	\$20,796	\$25,476
LGA mortgage repayment as a proportion of income	37%	32%
Greater Sydney median mortgage repayment as % of income	35%	29%
LGA median rent	\$10,140	\$19,240
Median rent repayment as a proportion of median household income	18%	24%

Source: 2016 ABS time series

²⁴ NSW Affordable Housing Ministerial Guidelines 2016-2017



4.3.2 Rental affordability

NSW Family and Community Services outline the eligibility criteria for affordable housing in their 2018/19 NSW Affordable Housing Ministerial Guidelines. In this document household income is the defining criteria for affordable housing eligibility, with the median income for Greater Sydney used as a benchmark.

The 2018/19 Guidelines define affordable housing for very low, low, and moderate income households. These categories have been applied to this analysis and are as follows:

- Very low-income household is less than 50% of Greater Sydney median household income
- Low-income household is more than 50% but less than 80% of Greater Sydney median household income
- Moderate income household is between 80% and 120% of Greater Sydney median household income.

The median household income for the Liverpool LGA was approximately \$80,600 in 2016. Based on household income the affordable housing thresholds have been calculated as follows.

Table 10: Household income and affordability Liverpool LGA

Category	Household Income	
	Weekly	Yearly
Median income	\$1,550	\$80,600
Very low household income (50% of median household income)	\$775	\$40,300
Low household income (80% of median household income)	\$1,240	\$64,480
Moderate income household (120% of median household income)	\$1,860	\$96,720

Source: 2016 ABS Census, HillPDA

To assess the ability of very low income and low income households to meet the median rental repayment for the LGA, we applied the following methodology:

- Multiplied household incomes by 30%¹⁵ and divide by 52 to calculate the weekly rent that household can reasonably afford to pay without experiencing housing stress and
- Compared Step 1 to the LGA market rent in that year.

4.3.2.1 Very low income household rental affordability

A very low income household within North Sydney LGA, that is, a household that earns 50% of the median household income could afford to pay \$233/week on rental repayments in 2016.

This was only 69% of the median market rent for a one-bedroom apartment, 60% of market rent for a two bedroom apartment and 49% of market rent for a three-bedroom apartment within the LGA.

4.3.2.2 Low income household rental affordability

A low income household, that is, a household that earns 80% of the household median income could afford to pay \$372/week on rental repayments.

This was 109% of the median market rent for a one-bedroom apartment, 95% of market rent for a two bedroom apartment and 78% of market rent for a three-bedroom apartment within the LGA.

¹⁵ 30% of annual income directed towards rental repayment



Table 11: Rental affordability against Liverpool LGA median household income - 2016

Year	Very low household income at 50% of median household income	Low household income at 80% of median household income
Median household income (2016)	\$80,600	\$80,600
Median household at affordability category	\$40,300	\$64,480
Rental affordability at 30% of median income	\$233	\$372
1-bedroom apartment market rent	\$340	\$340
Rental affordability as a proportion of market rent	69%	109%
2-bedroom apartment market rent	\$390	\$390
Rental affordability as a proportion of market rent	60%	95%
3-bedroom apartment market rent	\$480	\$480
Rental affordability as a proportion of market rent	49%	78%

Source: 2016 ABS, NSW Department of Housing rent tables, HillPDA *30% of household income directed towards rental repayment

If left unabated the housing affordability gap will continue to widen. Increased residential supply can place downward pressure on housing prices and rents as acknowledged in the former *A Plan for Growing Sydney*. Advancement of the planning proposal would increase dwelling supply and capacity within the LGA helping to alleviate the housing affordability gap and rental stress.

4.3.3 Apartment dwellings by household type

Detached houses have remained the dominant dwelling type within the LGA over the ten-year period from 2006. In 2016 of the 58,773 occupied private dwellings, only 7,772 dwellings or 13% were apartments.

Table 12 below illustrates that an increased proportion of group households and couples without dependants have chosen to live in apartments over the last 10 years. The Planning Proposal would be providing a dwelling type and mixture that would cater to the changing preferences of the local community.

Table 12: Proportion of households living in apartments by household type

Household type	2006	2016
Couple families with dependents	6%	7%
Couples without dependents	9%	13%
Group households	23%	30%
Lone person households	31%	29%
One parent family	12%	14%
Other families	18%	18%

Source: 2016 ABS time series

4.3.4 Household type projections

The NSW Department of Planning, Infrastructure and Environment (DPIE) projects the LGA will accommodate an additional 61,075 households by 2036. Of this, around 34,475 households or 56% was attributed to lone persons, couples without dependents and single parents, while 12,242 households or 20% are couple with children. The Planning Proposal would increase housing affordability and provide alternatives to detached housing for smaller households, as housing preferences change.

Table 13: Liverpool household projections 2016-36

Household type	2016	2021	2026	2031	2036	Growth #	Growth %
Couple only	11,161	14,138	17,059	19,681	23,403	12,242	110%
Couple with children	31,191	36,670	42,259	47,397	54,229	23,038	74%
Single parent	9,813	11,867	13,995	16,073	18,799	8,986	92%
Other & Multiple-family households	3,160	3,787	4,412	4,982	5,824	2,664	84%
Lone person	10,126	12,959	16,037	19,135	23,372	13,246	131%
Group	986	1,205	1,413	1,589	1,883	897	91%
Total	66,436	80,626	95,176	108,857	127,510	61,074	92%

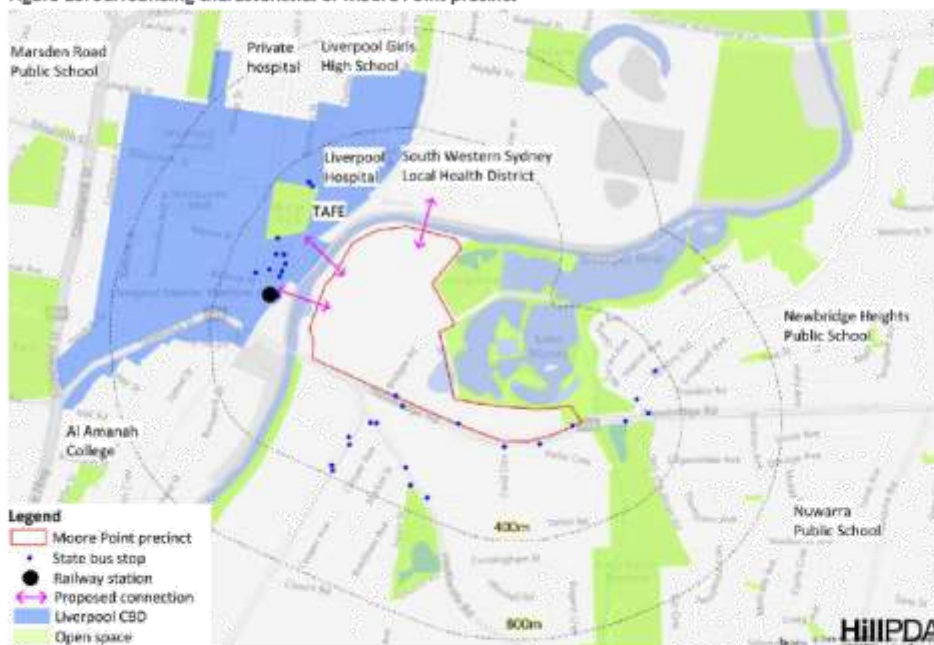
Source: NSW DPIE 2016 Dwelling Projections 2019

4.4 Other locational attributes

In providing justification for the provision of residential dwellings in the Moore Point precinct, there are a few other locational factors for consideration. These include the following:

- The Moore Point precinct is located in close proximity to existing transport infrastructure and is within 400 metres of 41 State bus stops. The Moore Point precinct near Liverpool railway station with proposed connection further increasing its connectivity to this transport node.
- The connectivity of the Moore Point precinct through existing transport infrastructure and planning connections allows future residents increased accessibility to employment, retail facilities and public infrastructure surrounding the area and throughout Sydney
- The Moore Point precinct is within 800 metres of a number of public and private schools
- The Moore Point precinct is near several public and private recreation areas.

Figure 13: Surrounding characteristics of Moore Point precinct



Source: HillPDA



5.0 MOORE POINT PRECINCT'S CURRENT ECONOMIC CONTRIBUTION

The following Chapter undertakes an assessment of the current economic contribution of the Moore Point precinct. Economic implications include employment generation, wages and Gross Value Added (GVA). The current estimated economic contribution of the Moore Point precinct is referred to as the "base case" and will be used to assess the economic implications of the Planning Proposal (Chapter 6).

5.1 Employment generation

It is estimated that Moore Point precinct currently generates around **770 jobs**. Although manufacturing comprises around 66% of the jobs currently generated, there is a wide mixture of industries currently present the precinct.

This implies that the precinct is already transitioning away from a traditional industrial precinct to one more reflective of a mixed-use precinct.

A breakdown of employment by ANZSIC 1-digit industries is provided below.

Table 14: Moore Point precinct employment generation

Industry	Employment
Manufacturing	505
Electricity, Gas, Water and Waste Services	4
Construction	13
Wholesale Trade	35
Retail Trade	34
Accommodation and Food Services	5
Transport, Postal and Warehousing	24
Rental, Hiring and Real Estate Services	3
Professional, Scientific and Technical Services	10
Administrative and Support Services	72
Public Administration and Safety	14
Health Care and Social Assistance	4
Other Services	46
Total	770

Source: ABS 2016 JTW, HillPDA

5.2 Salaries generation

It is estimated that the 770 employees on-site generate a total of around **\$49.6 million** in salaries. A breakdown of salary generation for each industry is provided below.



Table 15: Base case estimated salaries (\$2018)

Industry	Employment	Average wage	Total wages \$/m
Manufacturing	505	67,399	34.0
Electricity, Gas, Water and Waste Services	4	90,999	0.4
Construction	13	69,178	0.9
Wholesale Trade	35	70,721	2.5
Retail Trade	34	35,727	1.2
Accommodation and Food Services	5	28,255	0.1
Transport, Postal and Warehousing	24	79,061	1.9
Rental, Hiring and Real Estate Services	3	54,652	0.2
Professional, Scientific and Technical Services	10	78,158	0.8
Administrative and Support Services	72	53,988	3.9
Public Administration and Safety	14	112,726	1.6
Health Care and Social Assistance	4	71,526	0.3
Other Services	46	40,198	1.8
Total	770		49.6

Source: IBIS 2018 World Reports, ABS industry tables, ABS 2016 JTW, HillPDA

5.3 Gross Value Added

Gross value added (GVA) of an industry refers to the value of outputs less the costs of inputs. It measures the contribution that the industry makes to the country's wealth or gross domestic product (GDP).

HillPDA has estimated the combined GVA from the current land uses on-site at approximately **\$82.9 million** per annum.

Table 16: Base case Estimated Gross Value Added

Industry	Employment	GVA/worker	Total GVA \$/m
Manufacturing	505	116,336	58.7
Electricity, Gas, Water and Waste Services	4	348,164	1.4
Construction	13	109,493	1.4
Wholesale Trade	35	113,550	4.0
Retail Trade	34	54,336	1.8
Accommodation and Food Services	5	38,918	0.2
Transport, Postal and Warehousing	24	139,882	3.4
Rental, Hiring and Real Estate Services	3	251,350	0.8
Professional, Scientific and Technical Services	10	113,334	1.1
Administrative and Support Services	72	66,050	4.8
Public Administration and Safety	14	147,395	2.1
Health Care and Social Assistance	4	89,293	0.4
Other Services	46	63,751	2.9
Total	770		82.9

Source: Source: IBIS World Industry Reports 2018, HillPDA

5.4 Retail expenditure

A survey conducted by URBIS found that commercial workers nationally spent an average of \$10,500 per annum on retail goods and services close to their place of work.

Current retail offering in and around the Moore Point precinct is limited compared to that in Liverpool CBD. As such, for the purpose of the assessment, HillPDA has applied a more conservative weekly expenditure of \$50 per employee per week for the workers on site which equates to an annual spend of \$2,400 (based on 48 working weeks). With 770 workers on-site, this amounts to **\$1.9 million** per annum.



6.0 ECONOMIC IMPACT ASSESSMENT

This Chapter examines the economic implications that development of Planning Proposal would have within the Moore Point precinct and wider locality. Economic impacts are assessed during and post-construction with comparisons made against the “base case” to identify any positive or negative impacts.

Economic impacts include employment generation, wages and Gross Value Added, increased retail spend from residents and workers and increased demand for retail floorspace

6.1 Construction economic benefits

6.1.1 Estimated construction cost

We have estimated the construction cost of the planning proposal at around \$8.7 billion. This has been based on the following project elements.

Table 17: Estimated construction cost

Component	No.	Units	\$/unit	\$m
Demolition and clearing	394,505	sqm	150	59
Site decontamination	38.5	ha	1,000,000	39
Employment space	344,499	sqm	3,000	1033
Residential dwellings	14,783	Units	450,000	6652
Car Parking*	19,363	spaces	45,000	871
Land Development and other costs	39.5	ha	1,500,000	59
Total				8,715

Source: HillPDA, Rawlinson's 2018, RLB 2018 - *estimated using Liverpool LEP and DCP

6.1.2 Construction multiplier effects

The construction industry is a significant component of the economy accounting for 8% of Gross Domestic Product (GDP) and employing almost one million workers across Australia²⁶. The industry has strong linkages with other sectors, so its impacts on the economy go further than the direct contribution of construction. Multipliers refer to the level of additional economic activity generated by a source industry.

There are two types of multipliers:

- **Production induced:** which is made up of:
 - First round effect: which is all outputs and employment required to produce the inputs for construction
 - An industrial support effect: which is the induced extra output and employment from all industries to support the production of the first round effect
- **Consumption induced:** which relates to the demand for additional goods and services due to increased spending by the wage and salary earners across all industries arising from employment.

The source of the multipliers adopted in this report is ABS Australian National Accounts: Input-Output Tables 2014-15 (ABS Pub: 5209.0). From these tables HillPDA identified first round effects, industrial support effects and consumption induced multiplier effects at rates of \$0.62, \$0.66 and \$0.91 respectively to every dollar of construction. The table below quantifies associated economic multipliers resulting from the construction process.

²⁶ 5206.0 Australian National Accounts: National Income, Expenditure and Product 2018



Table 18: Construction multipliers (\$m)

	Direct Effects	Production Induced Effects		Consumption Induced Effects	Total
		First Round Effects	Industrial Support Effects		
Output multipliers	1	0.6200	0.6610	0.9050	3.1860
Output (\$million)	\$8,715	\$5,403	\$5,761	\$7,887	\$27,766

Source: HillPDA Estimate from ABS Australian National Accounts: Input-Output Tables 2017-18

The estimated direct construction cost of \$8.7 billion would generate a further \$11.2 billion of activity in production induced effects and \$7.9 billion in consumption induced effects. Total economic activity generated by construction of the Planning Proposal would be around \$27.8 billion.

Note that the multiplier effects are national, and not necessarily local. The ABS states that:

"Care is needed in interpreting multiplier effects; their theoretical basis produces estimates which somewhat overstate the actual impacts in terms of output and employment. Nevertheless, the estimates illustrate the high flow-on effects of construction activity to the rest of the economy. Clearly, through its multipliers, construction activity has a high impact on the economy."

In particular, the multiplier impacts can leave the impression that resources would not have been used elsewhere in the economy had the development not proceeded. In reality, many of these resources would have been employed elsewhere. Note that the NSW Treasury guidelines state:

*"Direct or flow on jobs will not necessarily occur in the immediate vicinity of the project – they may be located in head office of the supplier or in a factory in another region or State that supplies the project"*²⁷.

Nevertheless, economic multiplier impacts represent considerable added value to the Australian economy.

6.1.3 Construction related employment

Every one million dollars of construction work undertaken generates 2.50 job years directly in construction²⁸. Based on an estimated construction cost of \$9.1 billion the proposal would directly generate 21,762 job years²⁹ directly in construction. Assuming a construction would be staged over a 30 to 40-year period, this equates to between 544 and 725 jobs generated directly per annum.

Table 19: Construction employment

	Direct Effects	Production Induced Effects		Consumption Induced Effects	Total
		First Round Effects	Industrial Support Effects		
Multipliers	1	0.731	0.851	1.434	4.016
Employment No. per \$million *	2.497	1.826	2.125	3.581	10.029
Total job years created	21,762	15,917	18,518	31,206	87,403

Source: HillPDA Estimate using data from ABS Australian National Accounts: Input-Output Tables 2017-18

From the ABS Australian National Accounts: Input-Output Tables 2017-18 HillPDA identified employment multipliers for first round, industrial support and consumption induced effects of 0.73, 0.85 and 1.43 respectively for every job year in direct construction. Including the multiplier impacts, the proposal would generate a total of 87,403 job years directly and indirectly. This equates to between 2,185 and 2,913 jobs being directly and indirectly created per year.

²⁷ Source: Office of Financial Management Policy & Guidelines Paper: Policy & Guidelines: Guidelines for estimating employment supported by the actions, programs and policies of the NSW Government (TPP 09-7) NSW Treasury

²⁸ Source: ABS Australian National Accounts: Input – Output Tables 2015-16 (ABS Pub: 5209.0) adjusted to 2018 dollars

²⁹ Note: One job year equals one full-time job for one year



6.1.4 Retail expenditure from construction workers

Construction workers on site would generate additional sources of retail expenditure. This would be spent predominately on convenience-related items such as lunches, coffees, snacks and so on. A recent survey conducted by URBIS found that workers in Sydney CBD on average spent \$230 per week on retail items. This average spend encompasses clothing, internet and supermarket purchases. For construction workers HillPDA has applied a more conservative spend of \$50 a week for 46 working weeks generated by each worker during the construction period.

On this basis, existing retailers in the local area of the site would enjoy around \$50 million in additional retail expenditure from construction workers on-site during the period of construction. This equates to around \$1.3 to \$1.7 million per annum over the construction period.

6.1.5 Other construction impacts

The construction process may lead to short-term negative impacts in the locality such as increased traffic, noise, dust and so on. We have assumed that the development would take the necessary steps to mitigate the extent of these impacts.

6.2 Post-construction economic benefits

6.2.1 Employment generation

Following construction, the Planning Proposal would provide 344,499sqm of mixed-use employment space. HillPDA has been provided with a more detailed proposed breakdown of this space for part of the Planning Proposal. The indicative uses are as follows:

Table 20: Indicative employment space composition

Land use	GFA
Commercial office	176,331sqm
Tertiary education	24,000sqm
School	9,033sqm
Entertainment precinct	20,000sqm
Medical uses	20,000sqm
Remaining precinct space	95,135sqm
Total	344,449sqm

Land use assumptions

1. It is intended by design and market research that the commercial office space in the Moore Point precinct should be premium A-grade space, resulting in a highly efficient use of net floorspace. Currently, open planned employment densities in Sydney LGA are around 10sqm per employee²⁰. Given market trends for open planned employment, we anticipate the planned office design to move to similar densities over the next 30 years in this location.

Furthermore, given the growth of knowledge worker sector and demand for more flexible working hours, it has been assumed that around 15% of commercial space be attributed to communal shared space such as WeWork style operators. An inspection of WeWork offices at Daramu House in Barangaroo revealed they had an employment density of around 8sqm per employee, which they were aiming to reduce to 5sqm per employee over the coming years. We have applied a more conservative 5sqm GFA/employee. Given the 30-40-year

²⁰ City of Sydney 2017 floor space survey



timeframe of the Project and the trend towards increasingly efficient commercial working spaces, we have applied the 5sqm/worker rate.

2. The entertainment precinct is assumed to be comprised of bars, cafes, restaurants and other food retailing.
3. Given the Planning Proposal is in the early planning stages, the remaining 95,135sqm of Planning Proposal's space composition is unknown. This is likely to be a mixed-use area with some enterprise corridor zoning. As such it is assumed to be comprised of a range of uses including commercial and urban services/lower employment generating uses.
4. We have assumed a 5% vacancy rate for the commercial, entertainment, medical uses and enterprise space.

Based on industry standard employment densities and the type of land uses proposed, we have estimated that following construction and occupation the Planning Proposal has the potential to generate around **23,617 jobs**. This represents an increase of around **22,847 jobs** over the base case.

Table 21: Estimated employment generation

Land use	Floorspace (GFA)	Sqm/employee	Potential employment
Commercial office (open plan)	180,798*	12	15,067
Commercial (shared space)	31,906*	5	6,381
Tertiary education	24,000	65	369
School	9,033	80	113
Entertainment precinct	19,000*	22	864
Medical uses	19,000*	65	292
Enterprise corridor	45,189*	85	532
Total Employment	328,926		23,617

Source: City Of Sydney 2017 floorspace survey, HillPDA, *5% vacancy rate factored in

6.2.2 Salaries generation

Based on IBIS World Industry Reports, HillPDA has estimated a combined annual remuneration at approximately **\$1.94 billion** for workers on site.

This represents an increase of around **\$1.89 billion** over that currently generated by workers on-site.

Table 22: Estimated salaries (\$2018)

Land use	No. of Workers	Average wage	Total wage generation (\$m)
Commercial office	21,447	\$83,510	\$1,791.1
Tertiary education	369	\$131,011	\$48.4
School	113	\$92,970	\$10.5
Entertainment precinct	864	\$33,178	\$28.7
Medical uses	292	\$71,526	\$20.9
Enterprise corridor	532	\$68,049	\$36.2
Total	23,617		\$1,935.7

Source: IBIS World Industry Reports 2018, HillPDA

6.2.3 Gross value added

Based on IBIS World Industry Reports, HillPDA has estimated the combined GVA from land uses proposed on-site at approximately **\$4.65 billion** million per annum. This represents an increase of around **\$4.56 billion** over the base case.



Table 23: Estimated Industry Value Add of planning proposal (\$2018)

Land use	No. of workers	GVA / worker	GVA (\$m)
Commercial office	21,447	\$206,550	\$4,430.0
Tertiary education	369	\$159,392	\$58.9
School	113	\$99,597	\$11.2
Entertainment precinct*	864	\$49,077	\$42.4
Medical uses	292	\$89,293	\$26.1
Enterprise corridor	532	\$145,814	\$77.5
Total	23,617		\$4,646.1

Source: IBIS World Industry Reports 2018, HillPDA

6.2.4 Expenditure from workers

HillPDA has assumed that workers on-site will spend an average of \$20 per day on retail goods and services in the locality. This totals around **\$108.6 million** each year to be captured by retail services in the locality. This represents an additional \$106.8 million over and above the base case.

6.2.5 Expenditure from residents

The Planning Proposal would benefit Liverpool Strategic Centre and its existing retailers by increasing the resident population and hence retail expenditure. HillPDA estimates that the Planning Proposal could have a resident population of around 32,686 residents based on an average occupancy of 2.33²¹ and a 5% vacancy rate.

Assuming an average spend of around \$19,250²² total retail spend generated by residents on-site would be around \$629 million (\$2019).

Of course, not all of this expenditure will be captured by existing retailers in Liverpool, but HillPDA would expect a rate of around 60% would be captured in the local area (\$377.5 million).

When combined with workers on site, the Planning Proposal would provide sources for an increase in retail sales captured by Liverpool retailers likely in the order of between \$486.2 million per annum, an **increase of around \$484.3 million per annum over the base case.**

The resident population would also increase the demand for local retail services to be provided locally. It is estimated that the residents on-site would generate demand for retail floorspace in the order of around **72,237sqm**²³. Given that Liverpool is a Strategic Centre the majority of this floorspace would likely be directed towards the centre, further increasing its vibrancy and viability.

6.3 Other economic benefits

6.3.1 Investment stimulus

Where a significant property investment decision has been made, it is generally viewed as a strong positive commitment for the local area. Such an investment can, in turn, stimulate and attract further investment. Development of the Planning Proposal would support a wide range of economic multipliers which would, in turn, support investment in associated industries. It would also raise the profile of Liverpool to potential investors.

²¹ ABS 2016 Liverpool LGA community profile – average number of persons in occupied apartments

²² MarketInfo data 2018 – 2050 impact year

²³ Calculated at a per capita provision of 2.21sqm/person as identified in the GSC report Sydney Retail Demand and Supply Stage 2 Deep End Services – South West sub-region



The Planning Proposal would create additional business opportunities in this locality associated with future residents and employment floorspace on site. It would increase the profile of this area and, in so doing, increase the financial feasibility of mixed-use developments, potentially acting as a catalyst on surrounding sites.

6.3.2 Jobs closer to home

The Planning Proposal would provide additional employment opportunities for residents living both within Liverpool LGA and the wider Western District.

There are many benefits associated with providing jobs closer to home, most notably a reduced need to travel and the knock-on benefits associated with this in terms of reduced pressure on infrastructure.

A reduction in the number and length of journeys made, in particular, those made in private vehicles, has environmental benefits. There are also lifestyle benefits related to increased free time, reduced travel-related stress and a reduced likelihood of road related accidents.

This concept forms the basis of the 30-minute city a clear objective of State planning policies. The Planning Proposal would be helping achieve this planning objective.

6.3.3 Activation

The construction of a large-scale mixed-use development comprising uses such as commercial, urban services, education, retail and residential located in the Moore Point Precinct would create increased pedestrian traffic having the effect of further activating the local area. This street activation would have the benefits of increasing passive security, increasing trade for retailers through increased passing trade; increased use of natural (passive) areas or space to the current and future community and increase investment within the local area.

6.3.4 Replacing old with new

The redevelopment of the Moore Point precinct would be replacing older style industrial buildings, which provide an estimated 770 jobs with high amenity and quality urban outcomes. This will significantly increase the economic output of the precinct while also contributing Liverpool attain various State and local planning and economic objectives. This transformation is identified and supported by both levels of Government and will contribute to Liverpool achieving its status as Sydney's third CBD providing a focal point for Western Sydney.

6.3.5 Transit Orientated Development (TOD)

High-density mixed-use development close to major transport nodes meets urban consolidation objectives. It results in improved efficiencies, reduces dependency on private motor vehicle usage and encourages the use of public transport. The Planning Proposal meets this objective of Stage Government planning objective being within proximity to Liverpool CBD and railways station. This connectivity is proposed to be further improved through three connection points across the river. One of these connections being directly focused into Liverpool railway station, providing easy access to future workers in the Moore Point precinct and conversely residents to the CBD, other parts of the LGA and Sydney.

6.3.6 Housing supply

With a rapidly growing residential population, the supply of housing (and particularly of low cost housing) is under pressure. The impact of Sydney's well documented low housing supply and high market demand has been to drive the cost of housing upwards.

The Planning Proposal would deliver 14,783 new residential apartments in the locality, creating additional housing supply in an appropriate location close to an existing strategic centre and transport nodes.



The Planning Proposal would also contribute to housing supply by introducing another provider in the Western District market. Multiple producers will ensure the market is not monopolised, encouraging greater competition and a healthy rate of supply.

Liverpool will need around 43,450 to 69,775 additional dwellings over the next 20 years from 2016. This equates The Planning Proposal would contribute to the LGA in meeting these targets and beyond.

6.3.7 Housing choice

Providing a diverse range of housing options suiting a wide variety of household types, including apartment living will also promote a more diverse community which is arguably more sustainable in the long term, as they are able to maintain a range of services and facilities useful to all age groups. Apartments also offer a more affordable housing alternative to detached houses. The changing demographic, profile and household composition also support the provision of more affordable apartment-style dwelling near essential services. The Planning Proposal can provide this.

Furthermore, the introduction of high-density residential uses on a largely under-utilised site will also create activity after work hours and on weekends. This activity improves passive surveillance increasing the sense of security and also encourages local businesses to extend trading hours to capture the additional expenditure generated in the locality.

6.4 Conclusion

The Planning Proposal would provide approximately 344,499sqm GFA of employment space and 14,783 residential dwellings. The provision of these land uses onsite would increase the economic output of the Precinct, Liverpool and wider District.

Specifically, over that already generated under the base case the Planning Proposal would generate an additional 22,847 jobs; \$1.89 billion per annum in wages; and contribute \$4.56 billion per annum to local economy or GDP.

Non-resident workers onsite would also generate an estimated \$108.6 million per annum in retail expenditure that would be captured by local retailers. This is around \$106.8 million greater than that already estimated to be generated under the base case.

In addition, the planning proposal would generate economic benefits resulting from the resident's onsite (estimated at 32,686 persons). These economic benefits primarily relate to increased residential expenditure which could be captured by retailers in the locality, including those in Liverpool city centre. This is estimated at an additional \$377.5 million per annum. The population would also increase the demand for retail space by around 72,237sqm, the majority of this would likely be directed towards surrounding retail centres, such as Liverpool, further increasing their vibrancy, viability and attractiveness to investors.

The Planning Proposal would have additional economic benefits, these being:

- Providing a catalyst for further investment in the locality
- Contributing to increasing housing diversity and affordability in the LGA and District
- Providing jobs closer to home and contributing to the LGAs employment targets
- Contribute to transit orientated development objectives by concentrating more people near the train station and commercial services, thereby reducing the reliance on private motor vehicle travel and increasing the use of public transport
- Contributing to Sydney achieving the 30-minute city concept.

The above has assessed the economic merits of the Moore Point Planning Proposal. From this assessment, it is concluded that rezoning of the Moore Point precinct for residential/mixed-use purposes is strongly supported from an economic perspective.



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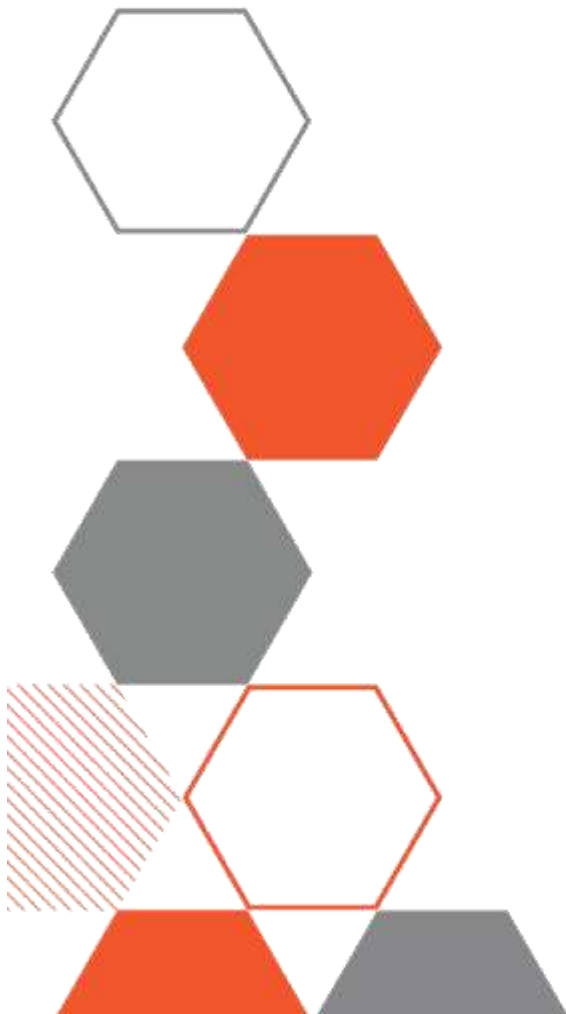
REPORT

Leamac Property Group &
Coronation Property Co. Pty Ltd

Moore Point Precinct

Flood Evacuation Strategy

April 2020




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Appendix A Flood Mapping Figures

1. EXECUTIVE SUMMARY

This Flood Evacuation Strategy Report has been prepared by J. Wyndham Prince on behalf of Leamac Property Group & Coronation Property Co. Pty Ltd to understand the flood evacuation plan of the development in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. It's important to note that there is nothing contained within this report to preclude rezoning of the site to its intended land uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises: 'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'.

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD.

Key features of the proposal include:

- Adaptive re-use of existing heritage item;
- Connections to Liverpool CBD and Train Station; and
- Foreshore embellishments and new open spaces;
- Transport, intersection and collector road improvements
- Educational and cultural facilities

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces, including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Over recent years a total of nine (9) flood studies have been completed which all ascertain that the Precinct can be made suitable for development with minor adjustment through controlled cut and fill that have no adverse impacts of the surrounding flood regime. All NSW and Federal Floodplain guidelines have been adhered to the preparation of this study. All future studies can be completed at Development Consent stage with controls implemented through the consent conditions to reflect any outcomes required.

The Flood evacuation Strategy developed for the Precinct will ensure the safety of the future residents and has been an integral part of the flood impact assessment.

Flood Evacuation

The safe evacuation of people from flood affected areas during a Probable Maximum Flood (PMF) event is a vital consideration of the Flood Management strategy and for the planning of the development. Flood evacuation routes are identified to ensure a 'continuous rising grade' can be maintained to a level above the PMF for all evacuees, with connections to Newbridge Road to the south of the Precinct. In addition, use of the proposed pedestrian bridges linking the Moore Point Precinct to the Liverpool CBD will provide additional early flood evacuation options during a PMF event for this Precinct.

The proposed Flood Evacuation Strategy for the developed Precinct, therefore, provides a basis for the detailed design and development of the Precinct to ensure that the environmental, urban amenity, engineering and economic objectives for stormwater management are achieved.

2. THE EXISTING ENVIRONMENT

2.1. Overview

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. The site location is shown in **Plate 2-1**.

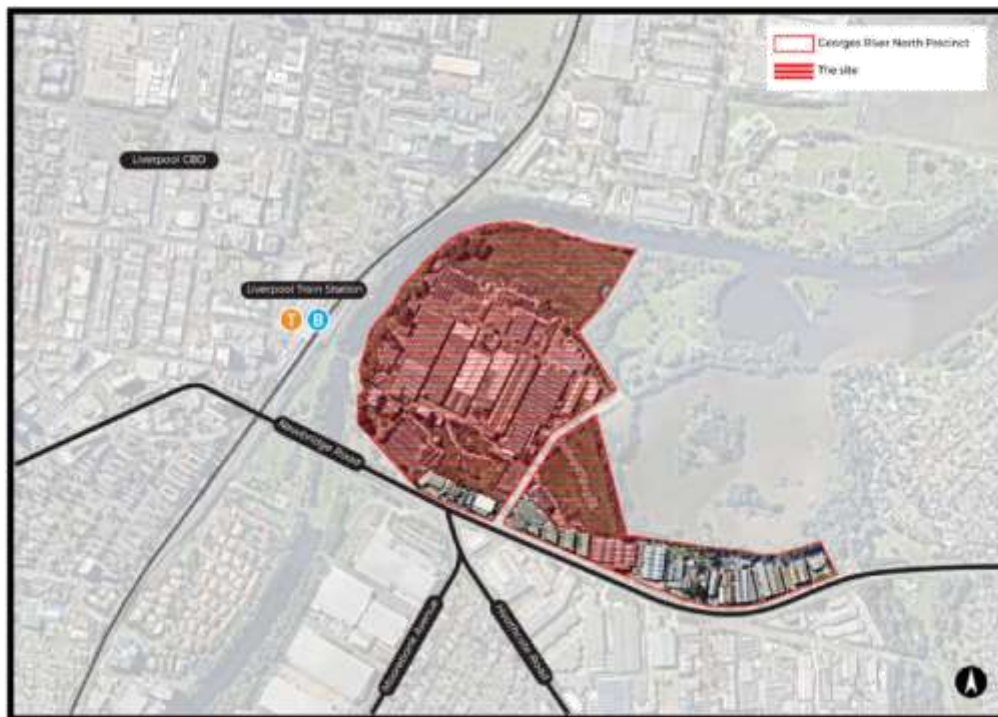


Plate 2-1 – Precinct Locality Map

The Precinct is currently zoned as IN2 – Light Industrial and is primarily used for industrial/commercial purposes, with open space located throughout the Precinct. The current industrial land use results in an overall percentage imperviousness of approximately 90%. The Precinct is relatively flat, with grading towards Georges River and Lake Moore at approximately 0.7%.

During the 1% AEP event, the Precinct is partially inundated by mainstream flooding, which breach the banks of the Georges River. Current flood modelling for the area has determined that during the 1% AEP event the depth of small ponding occurs within the Precinct with pockets of depth up to 2 m. For details of the existing flood constraints on the Precinct, refer to Flood Impact Assessment Report (JWP, April 2020).

3. THE PROPOSED DEVELOPMENT

3.1. The site

A planning proposal is to be submitted to Council in support of an amendment to the Liverpool Local Environmental Plan (LEP) 2008. The proposal is to rezone approximately 38.5 ha parcel of land to accommodate a new integrated mixed-use development. The precinct master plan is shown in **Plate 3-1**.

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.



Plate 3-1 – Precinct masterplan

3.2. Regional context

The Liverpool Collaboration Area considers multiple stakeholders and is organised by the Greater Sydney Commission. The purpose of this area is to solve the complex urban issues that are anticipated with the future growth of the Liverpool LGA in order to achieve better outcomes for the area. The area is shown below on **Plate 3-2**.

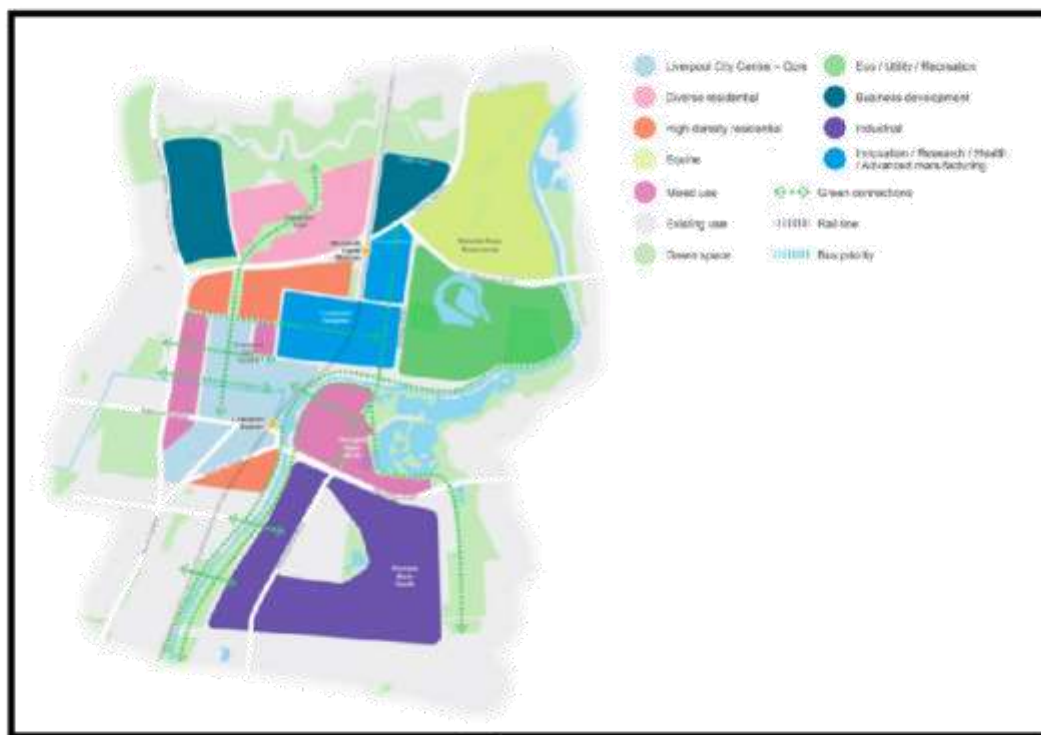


Plate 3-2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The Liverpool Place Strategy identifies 10 key priorities for the Liverpool Collaboration Area to address the issues of connectivity, liveability, productivity, sustainability and governance. Priority eight (8) is to "Develop a network of high-quality open space linked by the Greater Sydney Green Grid and invest in improvements to the Georges River and its foreshores".

As part of addressing the sustainability priorities and actions, the report highlights that future development close to the Georges River must address flooding challenges. Action item 24 is to "Prepare a floodplain constraints categorisation study (led by Council) and a flood evacuation study (led by State Emergency Service)". Currently, Council is undertaking the flood constraint study, and the State Emergency Service will be undertaking the flood evacuation study in the near future. An important consideration for the redevelopment of the Moore Point precinct will be to consider the following regional constraints:

- Localised flood impact; and
- Precinct flood evacuation strategy.

4. FLOOD EVACUATION STRATEGY

J. Wyndham Prince has assessed the flood behaviour for the 1% AEP and PMF storm events under developed conditions. The detail on developed condition flood modelling and results refer to the Flood Impact Assessment Report (JWP, April 2020).

4.1. Flood behaviour under developed conditions

The 1% AEP storm event result for the developed condition shows that the peak flood level at the Georges River is 9.2 m AHD with no breach of the riverbank; leaving the Moore Point precinct unaffected from flood event up to 1% AEP. The proposed development cut and fill within the Precinct prevented the breakout flows from entering the Precinct along the western precinct boundary. In addition, the provision of the proposed flood control/levee to the south of Newbridge Road restricts mainstream flows from breaching the banks of the Georges River during the 1% AEP event. This management measure prevents the Georges River from breaching its banks and removes the existing flood impact of properties south of the Newbridge Road in 1% AEP storm event.

However, during the PMF event, the level of flood affectation on the Precinct is similar to 'existing' conditions of 12.4 m AHD, with mainstream flows breaching the banks of the Georges River and inundating the Precinct.

The flood level and extent mapping for developed conditions 1% AEP and PMF storm events are shown in **Figures 4.1 – 4.2 in Appendix A**.

4.2. Flood Warning Time

The Precinct is inundated by mainstream flows from the Georges River during the PMF event which is a long duration event of up to 36-hours that will occur and recede reasonably slowly (over a number of days).

Due to the catchment size and developed nature of the catchment, sufficient flood warning time is available for the Precinct. Given that all development will be required to be above the 9.7 m AHD Flood planning level (i.e. 1% AEP level plus 0.5 m freeboard) there will be approximately 8.5 hours before the flood water would reach this flood planning level during a PMF event and start to impact the residential component of this Precinct. **Plate 4-1** shows the rate of rise of floodwaters upstream of Liverpool Weir for the 1% AEP flood and the PMF events. The PMF event is used emergency response planning, and the 1% AEP flood is provided as a comparison.

The rate of rise of floodwaters is approximately 0.9 m/hr to the Liverpool weir. Given the furthest distance that residents will need to travel, by foot, from the Georges River waterfront to land above the PMF level is approximately 1.8 km and using an average walking pace of 3 km/hr, all residents would only need to **36 min** to exit the Precinct during a flood evacuation operation.

Assuming that mobilisation of the SES will be take approximately one (1) hour after the commencement of the PMF event and it would take a further (2) hours period for localised door knocking, an hour for the resident to prepare for an evacuation and the 36 min to travel to high ground, this would leave approximately 4.9 hr spare evacuation time for this Precinct.

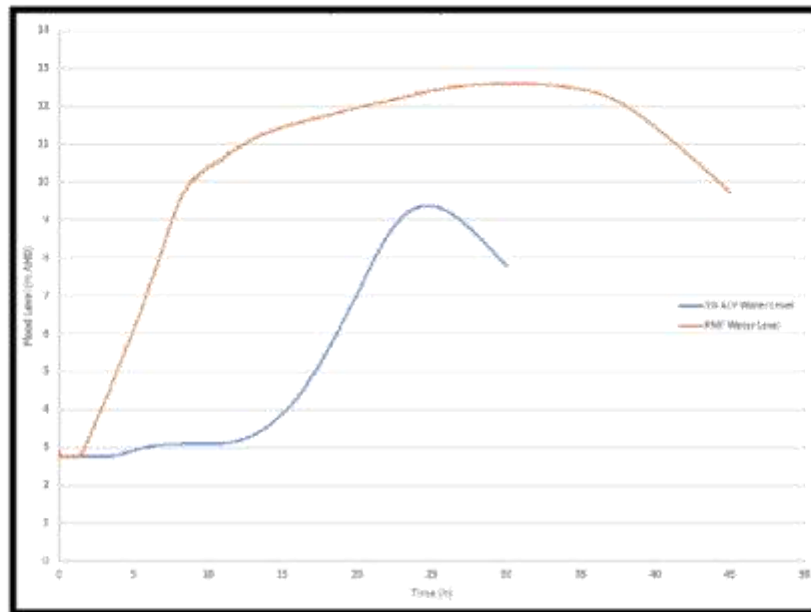


Plate 4-1 – Rate of Rise of Floodwaters upstream of Liverpool Weir

4.3. Flood Evacuation Plan

The Precinct is inundated by mainstream flows from the Georges River during the PMF event. Furthermore, the PMF is a long duration event of up to 36-hours that will occur and recede reasonably slowly (over a number of days). Therefore, flood evacuation will be necessary to ensure the safety of the future population that use/reside within the Precinct.

The safe evacuation of people from flood-affected areas during a PMF storm event is a key consideration of the Flood Management strategy and for the planning of the development. Flood evacuation routes are to be identified to ensure a 'continuous rising grade' is provided to a land level above the PMF. This is shown in **Figure 4.3 in Appendix A**.

The following key items have been identified to inform the rezoning of the Precinct:

- All new roads are to be used for flood evacuation purposes, with a constantly rising grade towards Newbridge Road or towards the major evacuation route within the Precinct. This will ensure every residential property has the ability to evacuate towards land above the regional PMF level;
- The land east and west of the site is above the regional PMF level, and flood evacuation should, therefore, be directed to this area via Newbridge Road;
- Ensure all the habitable floor levels within the Precinct have minimum floor levels, including garage floor levels are above the 1% AEP flood level plus approach freeboard and that vehicular access from the buildings to the local road is above these requirements; and
- The proposed pedestrian footbridges connecting the development to the western side of the Georges River (Liverpool CBD side) could be used for early flood evacuation but would not be the primary flood evacuation route for the Precinct.

The flood evacuation strategy will ultimately need to be considered and adopted by the State Emergency Services (as applicable) and by Council. The flood evacuation strategy will be further developed as part of the staged construction of the Moore Point precinct to ensure compliance with the required guidelines and statutory agencies (i.e. SES).

These preliminary assessments for the site (from a flood evacuation perspective) demonstrate that development of the Moore Point precinct can be effectively managed and ensures suitable flood evacuation can occur in the event of a major flood incident.

5. GLOSSARY

Term	Definition
Airborne Laser Survey (ALS)	Is a technique for obtaining a definition of the surface elevation (ground, buildings, power lines, trees, etc.) by pulsing a laser beam at the ground from an airborne vehicle (generally a plane) and measuring the time taken for the laser beam to return to a scanning device fixed to the plane. The time taken is a measure of the distance which, when ground-truthed, is generally accurate to $\pm 150\text{mm}$.
Annual Exceedance Probability (AEP)	The chance or probability of a natural hazard event (usually a rainfall or flooding event) occurring annually. Normally expressed as a percentage.
Australian Rainfall and Runoff (AR&R)	Refers to the current edition of Australian Rainfall and Runoff published by the Institution of Engineers, Australia.
Dam Crest Flood (DCF)	The flood event where a dam embankment is first overtopped.
Dam Safety Committee (DSC)	A NSW statutory body aligned with Department of Primary Industries. Its function is to ensure the safety of dams within NSW.
Digital Terrain Model (DTM)	Is a spatially referenced three-dimensional (3D) representation of the ground surface represented as discrete point elevations where each cell in the grid represents an elevation above an established datum.
Exceedances per Year (EY)	The number of times a year that statistically a storm flow is exceeded.
Floodplain Planning Level (FPL)	The FPL is a height used to set floor levels for property development in flood-prone areas. It is generally defined as the 1% AEP flood level plus 0.5m freeboard.
Floodplain Development Manual (FDM) and Guidelines (April 2005)	<p>The FDM is a document issued by the Department of Environment Climate Change and Water (DECCW) that provides a strategic approach to floodplain management. The guidelines have been issued by the NSW Department of Planning (DoP) to clarify issues regarding the setting of FPL's.</p> <p>This document is also the framework for the development of Floodplain Risk Management Studies and Plans.</p>
Floodplain Storage Areas	Parts of a floodplain that are important for the temporary storage of floodwaters during the passage of a flood. Loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.
Floodway	The areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood levels.
Hyetograph	The distribution of rainfall over time.
Hydrograph	Is a graph that shows how the stormwater discharge changes with time at any particular location.

Term	Definition
Hydrology	The term given to the study of the rainfall and runoff process as it relates to the derivation of hydrographs for given floods.
J. Wyndham Prince Pty Ltd (JWP)	Consulting Civil Infrastructure Engineers and Project Managers undertaking these investigations
MUSIC	A modelling package designed to help urban stormwater professionals visualise possible strategies to tackle urban stormwater hydrology and pollution impacts. MUSIC stands for Model for Urban Stormwater Improvement Conceptualisation and has been developed by the Cooperative Research Centre (CRC),
Peak Discharge	Is the maximum stormwater runoff that occurs during a flood event
Potential Loss of Life (PLL)	Potential Loss of Life assessment
Population at Risk (PAR)	Population at risk assessment
Probable Maximum Flood (PMF)	The greatest depth of precipitation for a given duration meteorologically possible for a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends.
Triangular Irregular Network (TIN)	A technique used in the created DTM by developing a mass of interconnected triangles. For each triangle, the ground level is defined at each of the three vertices, thereby defining a plane surface over the area of the triangle
TUFLOW	A computer program that provides two-dimensional (2D) and one dimensional (1D) solutions of the free surface flow equations to simulate flood and tidal wave propagation. It is specifically beneficial where the hydrodynamic behaviour, estuaries, rivers, floodplains and urban drainage environments have complex 2D flow patterns that would be awkward to represent using traditional 1D network models.
XP-RAFTS	Is a runoff routing model that uses the Laurensen non-linear runoff routing procedure to develop a sub catchment stormwater runoff hydrograph from either an actual event (recorded rainfall time series) or a design storm utilising Intensity-Frequency-Duration data together with dimensionless storm temporal patterns as well as standard AR&R 1987 data.

6. REFERENCES

University of New South Wales, 1991, *"Georges River Flood Study"*, prepared for the NSW Department of Public Works.

Bewsher Consulting, 2004, *"Georges River Floodplain Risk Management Study and Plan"*, prepared for the Georges River Floodplain Management Committee.

GHD, 2007, *"Liverpool CBD Floodplain Management Study Report"*, prepared for Liverpool City Council.

Liverpool City Council, 2008, *"Liverpool Development Control Plan 2008"*, amended 10 June 2016.

Worley Parsons, 2015, *"Updated South Creek Flood Study"*, prepared for Penrith City Council, Liverpool City Council, Blacktown City Council and Fairfield City Council.

Calibre Consulting, 2016, *"Moorebank Georges River Precinct Investigation – Flood Constraints Advice"*, prepared for Liverpool City Council.

Eco Logical Australia, 2016, *"Liverpool Waterfront, Liverpool – Flora and Fauna Assessment"*, prepared for LAC JV Pty Ltd.

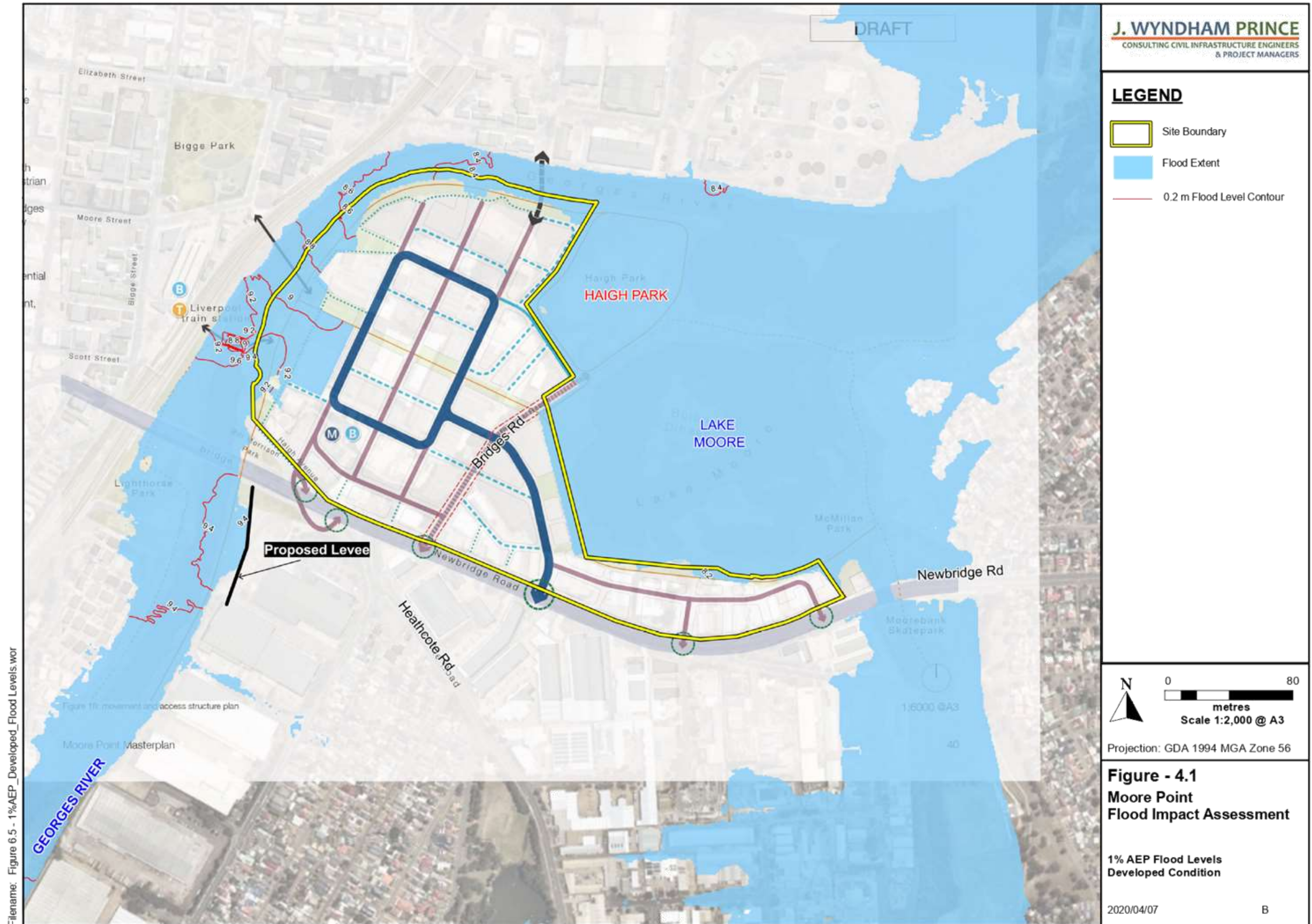
J. Wyndham Prince, 2016 *"1 Heathcote Road, Moorebank Desktop Flood Study"*, prepared for LAC JV Pty Ltd.

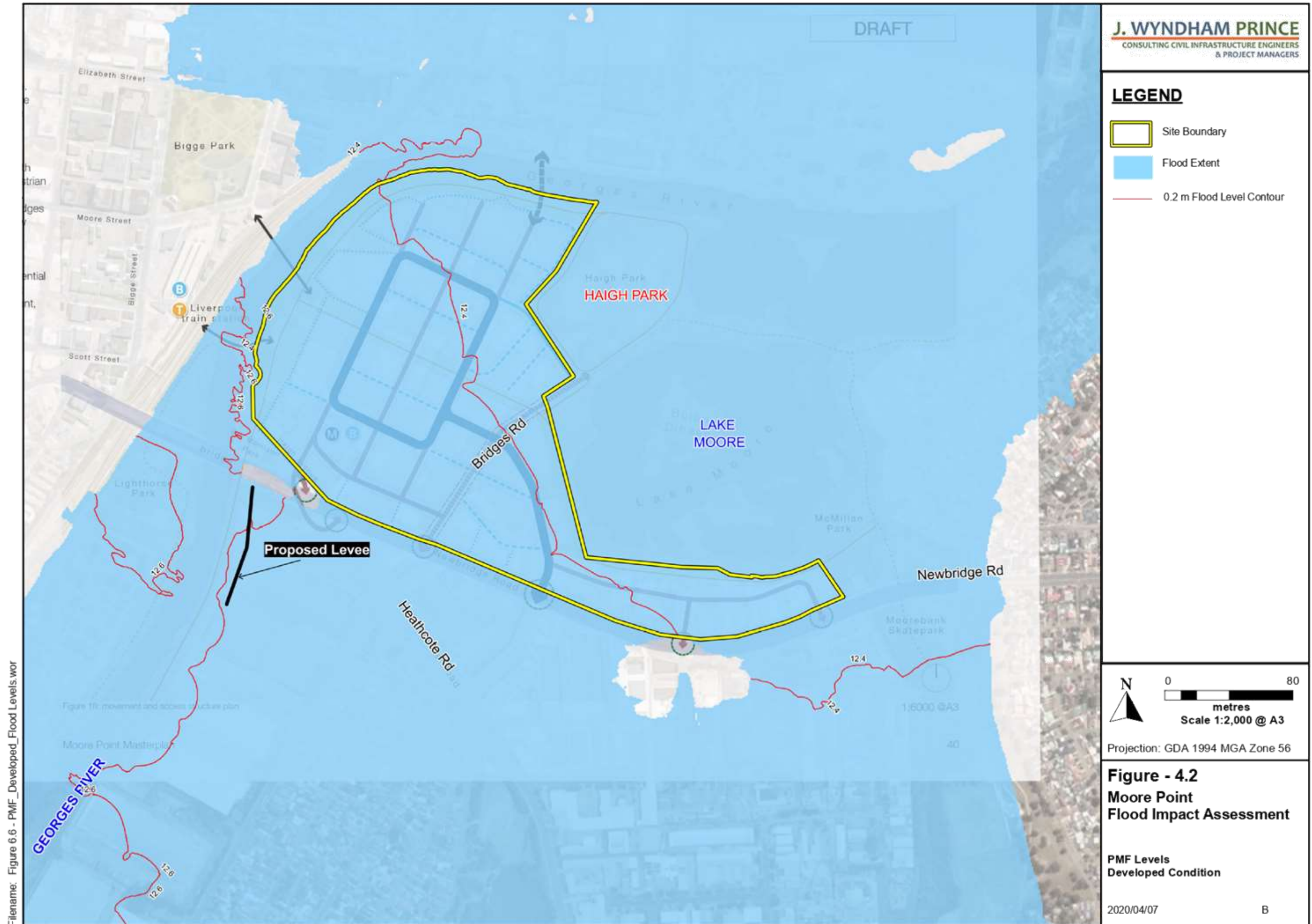
J. Wyndham Prince, 2016 *"Liverpool Waterfront Water Cycle and Flood Management Strategy"*, prepared for LAC JV Pty Ltd.

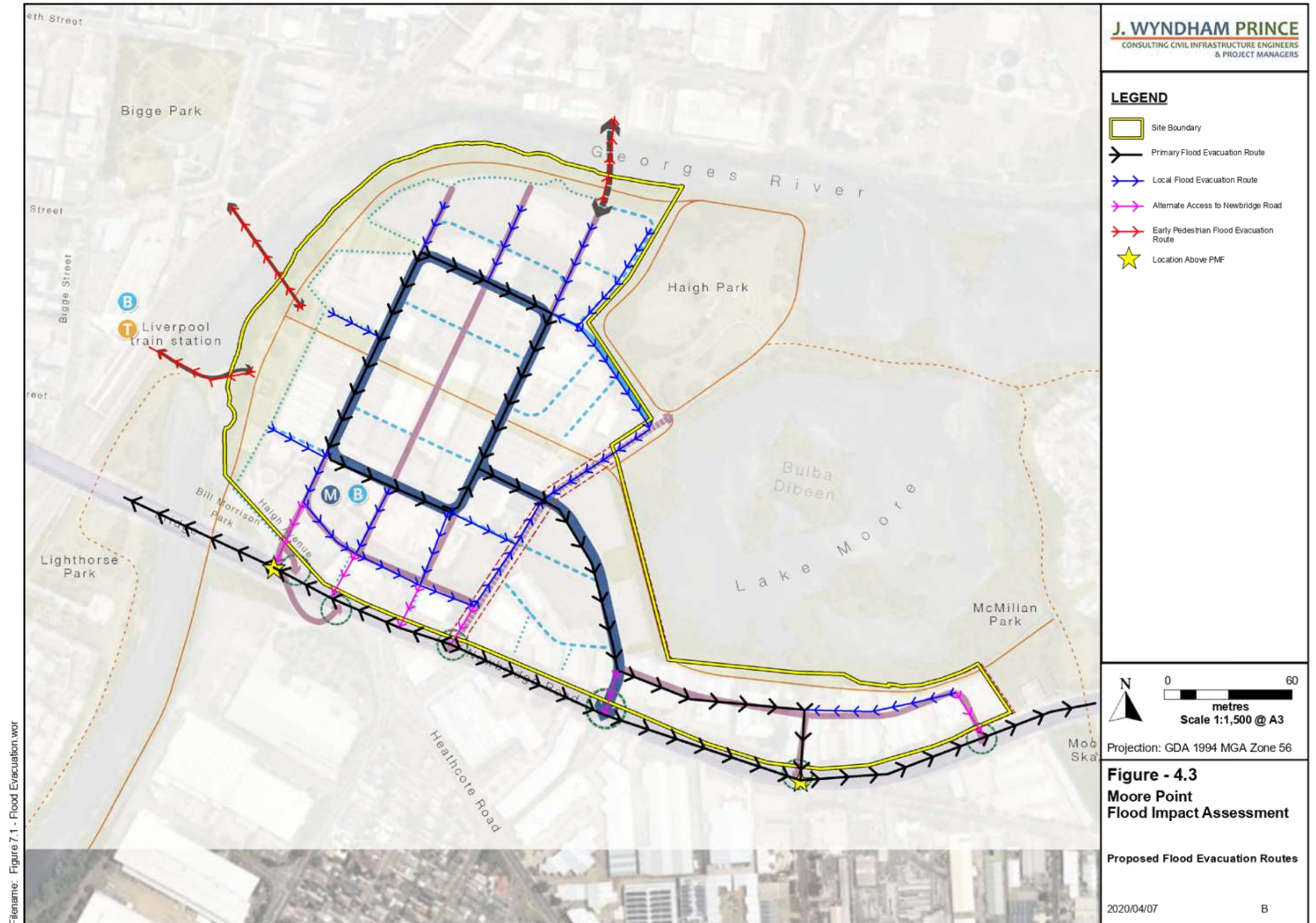
BMT, 2019 *"Georges River Flood Study"*, prepared for Canterbury Bankstown and Liverpool City Council.

APPENDIX A

FLOOD MAPPING FIGURES







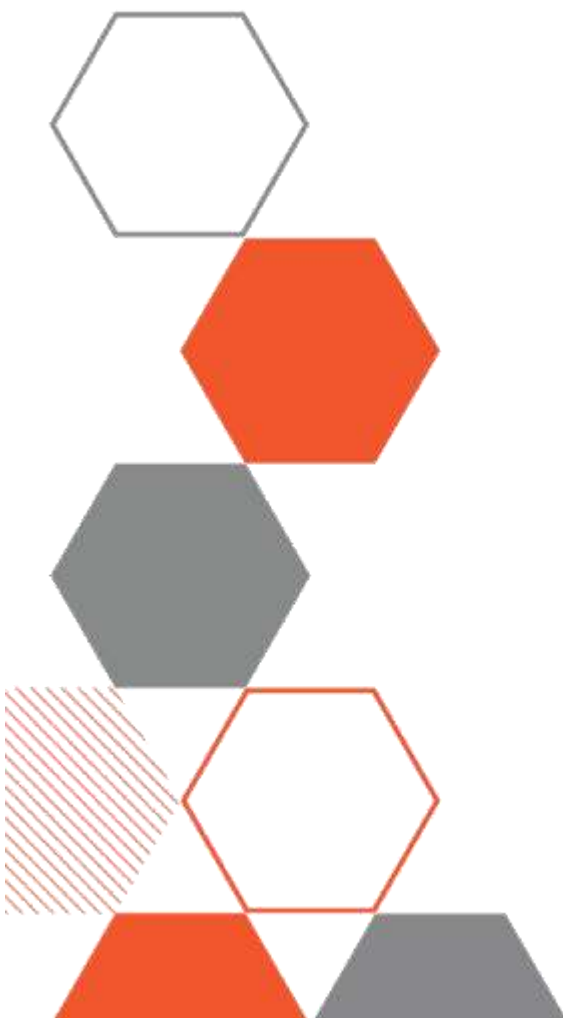
REPORT

Leamac Property Group &
Coronation Property Co. Pty Ltd

Moore Point Precinct

Flood Impact Assessment

April 2020



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CONSULTING CIVIL INFRASTRUCTURE ENGINEERS
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1. EXECUTIVE SUMMARY

This Flood Impact Assessment Report has been prepared by J. Wyndham Prince on behalf of Leamac Property Group & Coronation Property Co. Pty Ltd to understand the impact of the development in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. It's important to note that there is nothing contained within this report to preclude rezoning of the site to its intended land uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises: 'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'.

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD.

Key features of the proposal include:

- Adaptive re-use of existing heritage item;
- Connections to Liverpool CBD and Train Station; and
- Foreshore embellishments and new open spaces;
- Transport, intersection and collector road improvements
- Educational and cultural facilities

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptative re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Over recent years a total of nine (9) flood studies have been completed which all ascertain that the precinct can be made suitable for development with minor adjustment through controlled cut and fill that have no adverse impacts of the surrounding flood regime. All NSW and Federal Floodplain guidelines have been adhered to the preparation of this study. All future studies can be completed at Development Consent stage with controls implemented through the consent conditions to reflect any outcomes required.

The conclusion of this assessment are categorised into appropriate Flood management and consider water quantity management.

Flood Management

As part of these investigations, the current floodplain storage during the 1% AEP event has considered the proposed development landform and regional floodplain reclamation strategy. The proposed implementation of the two (2) flood storages and on the banks of the George River adjacent to the western motorway will result in an increase in the available floodplain storage by 31,980 m³. Notwithstanding, the detailed flood assessment completed for the strategy has demonstrated that, with the Moore Point Precinct, peak flood levels in surrounding properties and within the Georges River will not increase as compared to 'existing' conditions in the catchment in the 1% AEP events. Importantly, provision of the proposed flood levee to the south of Newbridge Road will also reduce the extent of flooding within the Moorebank area, which is therefore considered to be an improvement upon current "existing" conditions.

Water Quantity Management

Peak flow results determined as part of the hydrologic modelling demonstrate that the precinct provides only 0.1% increase on the total peak flow in the Georges River and therefore, any changes to the characteristics of the precinct as a result of the Moore Point Precinct will unlikely impact the flow regime of the Georges River. Thus, the provision of onsite detention is not considered necessary for the Moore Point Precinct. Further assessments will be undertaken to confirm that detention is not required as part of the future development application process.

2. THE EXISTING ENVIRONMENT

2.1. Overview

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. The site location is shown in **Plate 2-1**.

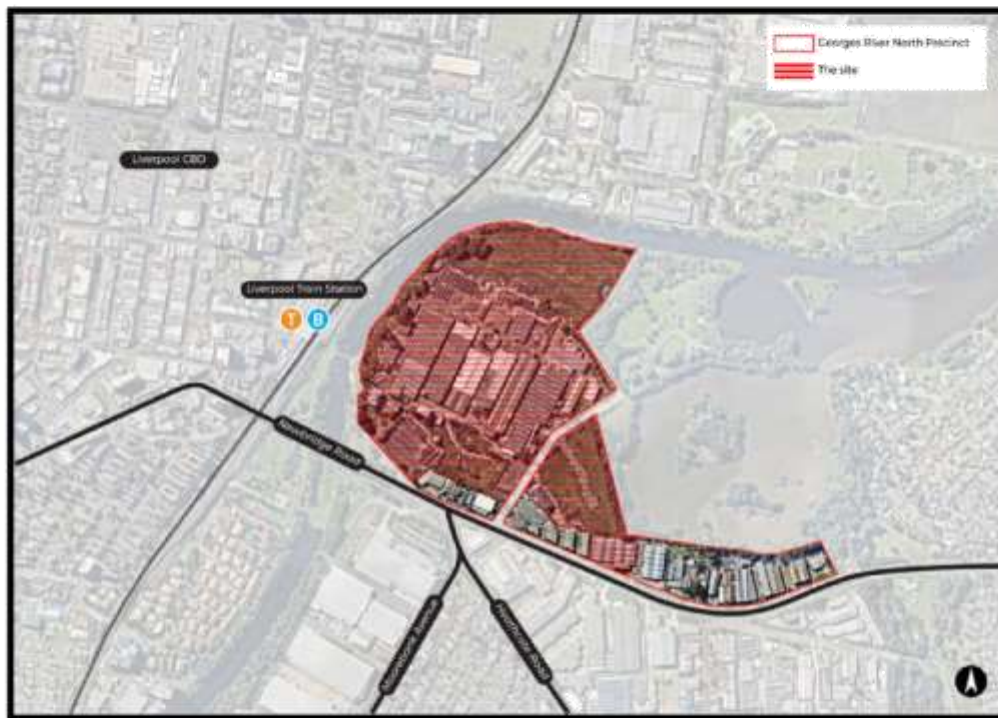


Plate 2-1 – Precinct Locality Map

The precinct is currently zoned as IN2 – Light Industrial and is primarily used for industrial/commercial purposes, with open space located throughout the precinct. The current industrial land use results in an overall percentage imperviousness of approximately 90%. The precinct is relatively flat, with grading towards Georges River and Lake Moore at approximately 0.7%.

Key precinct constraints have been identified, including the following:

- Existing Endangered Ecological Communities were recorded along riparian zones within the study area;
- An existing building within the precinct, which is currently being used as part of a cable manufacturing facility, is proposed to be retained to increase the historical and cultural offerings;

During the 1% AEP event, the precinct is partially inundated by mainstream flooding, which breach the banks of the Georges River. Current flood modelling for the area has determined that during the 1% AEP event the depth of small ponding occurs within the precinct with pockets of depth up to 2 m. For details of the existing flood constraints on the precinct, refer to **Section 6**.

2.2. Heritage items

Eco Logical Australia (ELA) have undertaken an Aboriginal Heritage and Historical Heritage Assessment for the Moore Point precinct in 2016 for LAC JV Pty Ltd. The assessment concluded that a portion of the precinct at 1 Bridges Road is identified as a heritage item under Schedule 5 of the Liverpool LEP 2008 and is known as the former Pirelli Power Cables and Systems Building, now known as Liverpool Waterfront Cables and Systems (item no. 76).

The Moore Point precinct site has the potential to impact on the Pirelli Power Cable and Systems Buildings. The study concluded that the current listing of the Pirelli site is vague in that it applies to the entire site, as shown in **Plate 2-2**, whilst the information on the State Heritage Inventory mainly describes the two-story brick administration building. The study has recommended undertaking a further assessment of the heritage values of the site so that the listing on the LEP Heritage Schedule be clarified as significant parts of the site have very little to no heritage value.



*Plate 2-2 – Heritage item and conservation area in or in the vicinity of the study area
(Source: Historical Heritage Assessment, ELA 2016)*

It is noted that the early cable factory as seen in aerial 1943 is retained in its natural state in the Moore Point precinct development. The **Plate 2-3** shows majority of the precinct under cultivation and cable factory adjacent to the Georges River.



*Plate 2-3 – 1943 Aerial Image of the Liverpool Waterfront Precinct
(Source: Historical Heritage Assessment, ELA 2016)*

3. THE PROPOSED DEVELOPMENT

3.1. The site

A planning proposal is to be submitted to Council in support of an amendment to the Liverpool Local Environmental Plan (LEP) 2008. The proposal is to rezone approximately 38.5 ha parcel of land to accommodate a new integrated mixed-use development. The precinct master plan is shown in **Plate 3-1**.

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.



Plate 3-1 –Precinct masterplan

3.2. Regional context

The Liverpool Collaboration Area considers multiple stakeholders and is organised by the Greater Sydney Commission. The purpose of this area is to solve the complex urban issues that are anticipated with the future growth of the Liverpool LGA in order to achieve better outcomes for the area. The area is shown below on **Plate 3-2**.



Plate 3-2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The Liverpool Place Strategy identifies 10 key priorities for the Liverpool Collaboration Area to address the issues of connectivity, liveability, productivity, sustainability and governance. Priority eight (8) is to "Develop a network of high-quality open space linked by the Greater Sydney Green Grid and invest in improvements to the Georges River and its foreshores".

As part of addressing the sustainability priorities and actions, the report highlights that future development close to the Georges River must address flooding challenges. Action item 24 is to "Prepare a floodplain constraints categorisation study (led by Council) and a flood evacuation study (led by State Emergency Service)". Currently, Council is undertaking the flood constraint study and the State Emergency Service will be undertaking the flood evacuation study in the near future. An important consideration for the redevelopment of the Moore Point precinct will be to consider the following regional constraints:

- Localised flood impact; and
- Precinct flood evacuation strategy.

4. DEVELOPMENT CONTROLS AND PREVIOUS STUDIES

The following guidelines were considered in developing the Flood Management Strategy for the Moore Point precinct.

4.1. Liverpool City Council (LCC) Development Control Plan (2008)

The Liverpool Development Control Plan (LCC, 2008) identifies the following objectives for consideration with regard to Water Cycle Management, development near a watercourse and flood risk:

4.1.1 Water cycle management

- To ensure that development does not adversely impact on flow patterns from that of an undeveloped natural catchment;
- Prevent bed and bank erosion and instability of waterways; and
- Provide sufficient environmental flows to support aquatic environments and ecological processes.

4.1.2 Development near a watercourse

- To protect, restore and maintain ecological processes, natural systems and biodiversity in wetlands and waterfront areas;
- To maintain watercourse bed and bank stability;
- To minimise sedimentation and pollution of watercourses and wetlands;
- Ensure conservation and long-term maintenance of existing native vegetation in waterfront areas;
- To maintain lateral connectivity between waterways and riparian vegetation; and
- To protect the visual amenity of the water and land interface.

4.1.3 Flooding risk

- To minimise the potential impact of development and other activity upon the aesthetic, recreational and ecological value of the waterway corridors;
- To ensure essential services and land uses are planned in recognition of all potential floods;
- To reduce the risk to human life and damage to property caused by flooding through controlling development on land affected by potential floods;
- To ensure that the economic and social costs which may arise from damage to property due to flooding is minimised and is not greater than that which can be reasonably managed by the property owner and general community;
- To limit developments with high sensitivity to flood risk (e.g. critical public utilities) to land with minimal risk from flooding;
- To prevent intensification of inappropriate use of land within high flood risk areas or floodways;
- To permit development with a lower sensitivity to the flood hazard to be located within the floodplain, subject to appropriate design and siting controls;
- To ensure that development should not detrimentally increase the potential flood affectation on other development or properties either individually or in combination with the cumulative impact of development that is likely to occur in the same floodplain; and
- To ensure that development does not prejudice the economic viability of any Voluntary Acquisition Scheme.

4.2. Previous studies

Several previous studies and assessments have been completed in support of a number of developments on adjacent to the subject site and the Georges River. A summary of the scope and findings of these assessments is provided below.

4.2.1 Georges River Flood Study (UNSW, 1991)

In 1991, the Water Research Laboratory of the University of New South Wales (UNSW) completed the *Georges River Flood Study* (Flood Study) on behalf of the NSW Department of Public Works.

This Flood Study (UNSW, 1991) investigated flood levels for a number of design flood events at locations along the Georges River between Liverpool Weir, the Hume Highway and Picnic Point. As part of the flood study, hydrologic and hydraulic modelling was completed to define the floodplain and level of flood affectation in the catchment. A physical model was prepared to determine peak flood height data throughout the study area.

As part of the Flood Study (UNSW, 1991), an assessment of an Extreme Flood Event was completed to determine the impacts generated during a potential 'worst case' flood. It is noted that at the time, a generalised procedure for estimating an Extreme Flood Event (EFE) was not available for the Georges River catchment. As such, the temporal pattern and procedure adopted for the EFE estimation were based on generalised tropical storms for Queensland.

Results of the hydraulic modelling completed as part of the Flood Study (UNSW, 1991) indicated that the tropical storm EFE was highly uniform, resembling a pulse input. Furthermore, peak flows at the Liverpool weir during a 12-hour and 36-hour EFE were 4,807 m³/s and 3,407 m³/s respectively. Results indicated that the larger volume of runoff generated in the 36-hour event provided maximum flood levels and therefore, the 36-hour EFE was adopted as the peak flood event for the catchment.

4.2.2 Georges River Floodplain Risk Management Study and Plan (Bewsher Consulting, 2004)

In 2004, Bewsher Consulting completed the *Georges River Floodplain Risk Management Study and Plan* (FRMSP), which investigated the flood behaviour within the Georges River to inform potential floodplain management measures and recommended planning controls to manage flood risk within the catchment.

The Georges River FRMSP built upon the modelling, findings and recommendations of the Georges River Flood Study (UNSW, 1991) to incorporate a larger study area and to upgrade the Georges River hydraulic model from a physical model to a one-dimensional hydraulic computer model (MIKE-11).

The Georges River MIKE-11 model consolidated various separate MIKE-11 models, which were previously developed for different segments of the Georges River into a single model for the catchment. It is noted that at the Liverpool Weir, the peak flow during the 5% AEP and 1% AEP events in the MIKE-11 model is 1,330 m³/s and 1,740 m³/s respectively.

4.2.3 Liverpool CBD Floodplain Management Study Report (GHD, 2007)

In 2007, GHD completed the *Liverpool CBD Floodplain Management Study* on behalf of Council. This study investigated the behaviour of overland flooding within the Liverpool Central Business District and the capacity of the existing drainage network within the catchment.

As part of the study, *DRAINS* modelling was completed of the drainage network and overland flowpaths within the catchment to identify high hazard areas where properties or individuals are at greatest risk of overland flooding. Importantly, the drainage network within the Liverpool CBD discharges at two (2) locations into the Georges River near the northern boundary of the Moore Point precinct. Refer to **Plate 4-1**.

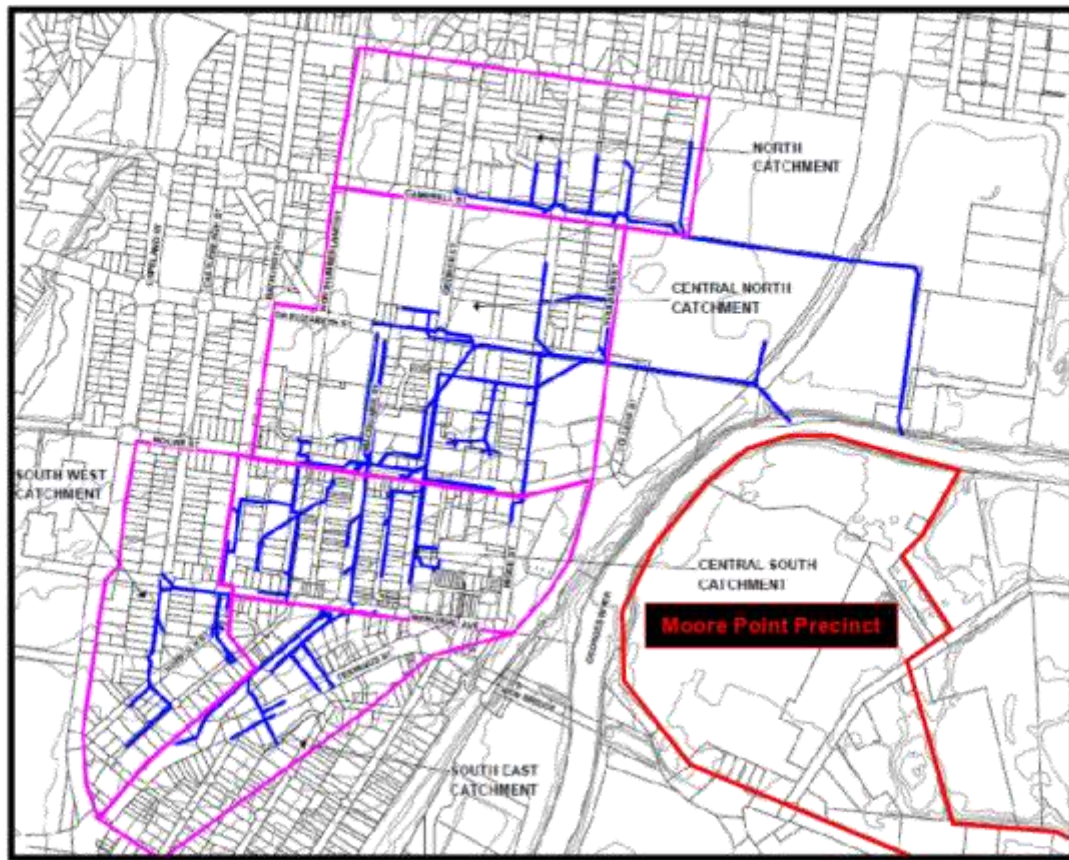


Plate 4-1 Drainage network (GHD, 2007)

4.2.4 Moorebank Georges River precinct investigation – Flood constraints advice (Calibre Consulting, 2016)

In 2016, Calibre Consulting completed the *Moorebank Georges River Precinct Investigation – Flood Constraints Advice* on behalf of Council. This investigation was prepared to inform the master planning processes for the urban renewal of the 'Moorebank precinct' which includes the Moore Point precinct.

As part of the investigation, a high-level floodplain reclamation strategy was developed to determine areas where earthworks may be suitable to accommodate future development in the area while providing a balance in floodplain storage. Based on the high-level calculations, 140,000 m³ of additional flood storage would be available if this strategy was implemented. Refer to **Plate 4-2**.

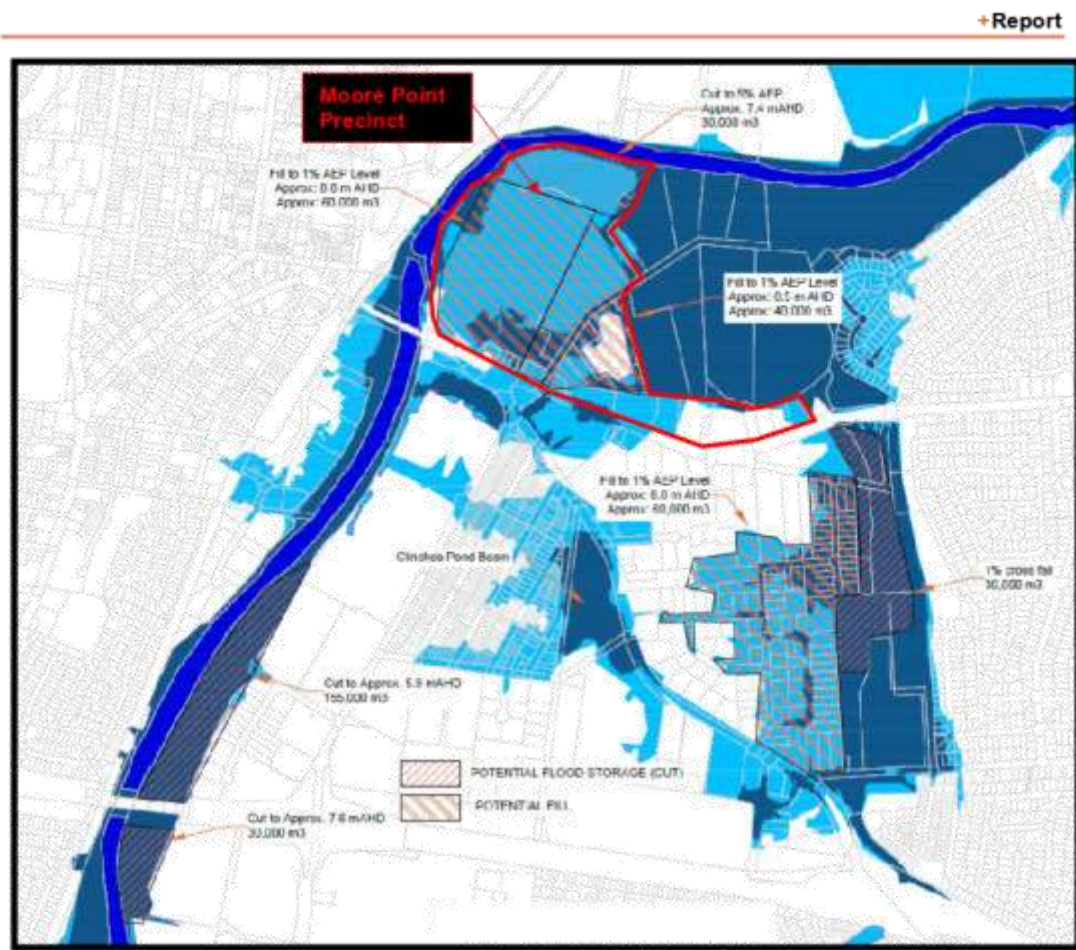


Plate 4-2 Moorebank Precinct Regional Floodplain Reclamation Strategy

In addition, a concept basin strategy was prepared that identified potential locations for detention storage and water quality treatment for the Moorebank precinct. This strategy proposed for detention storage to be provided in conjunction with water quality treatment at strategic locations throughout the Moorebank precinct. Indicative sizes of the proposed stormwater management measures were prepared based on a rate of 330 m³/ha (for detention storage) and 1% of the catchment area (bio-retention raingarden filter area). Refer to **Plate 4-3** for the indicative sizes and locations of the stormwater management measures proposed in the regional strategy.

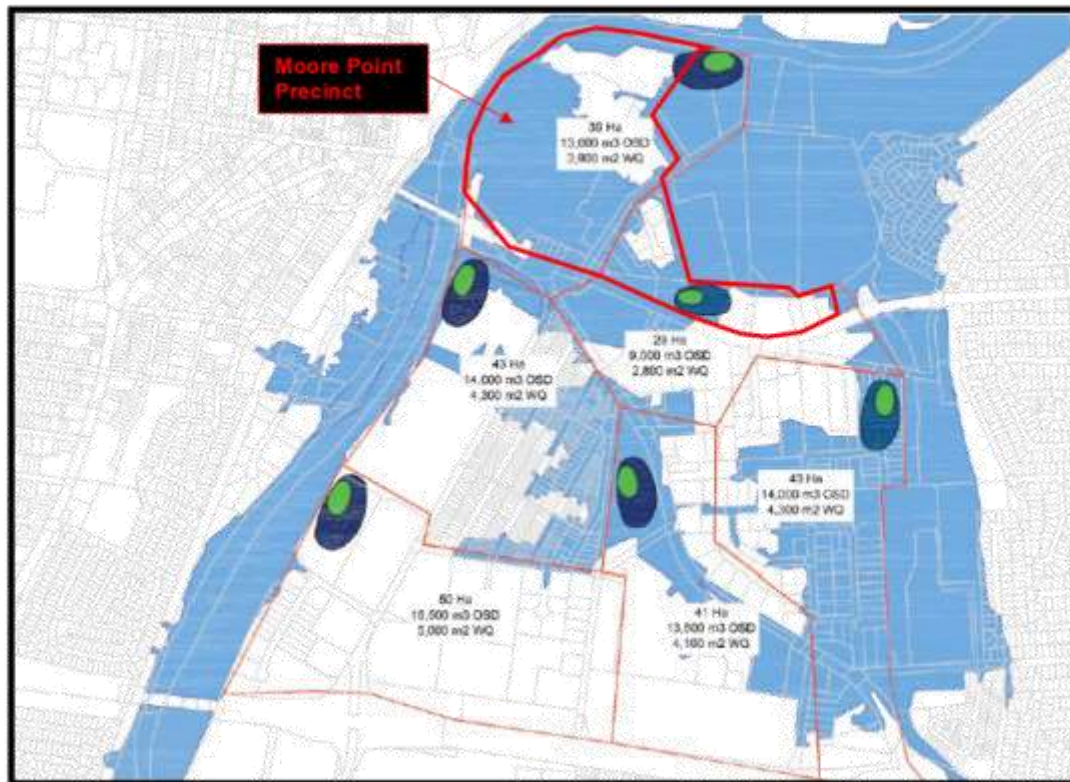


Plate 4-3 Moorebank precinct regional basin strategy

4.2.5 Assessment of regional floodplain reclamation strategy (J. Wyndham Prince, 2016)

To inform an early planning proposal for the Moore Point precinct, J. Wyndham Prince completed a preliminary flood assessment that included the proposed reclamation strategy for the Moorebank precinct detailed in the Calibre report (refer to **Section 4.3.4**).

Results of the preliminary flood assessment indicated that with the proposed fill areas within the Moore Point precinct, flood levels within the Georges River increased by up to 70 mm in the vicinity of the Liverpool Weir due to reduced waterway area. Notwithstanding, the proposed cut areas located along the Georges River did provide additional floodplain storage, with flood levels in the vicinity of these areas reducing by up to 20 mm.

Given the focus of this 2016 assessment was the Moore Point precinct, the regional floodplain reclamation strategy has not been assessed. Local cut and fill assessment have formed part of this assessment with further details in **Section 6.4**.

4.2.6 Liverpool Waterfront, Liverpool – Flora and Fauna Assessment (ELA, 2016)

In 2016, ELA completed the *Liverpool Waterfront, Liverpool Flora and Fauna Assessment*.

The findings and recommendations of the assessment are as follows:

- Two (2) native vegetation communities listed as Endangered Ecological Communities (EEC's) under the *Threatened Species Conservation Act 1999* were identified on the precinct;
- Based on the proposed masterplan, the majority of potential habitat for threatened species of fauna will be avoided;

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- Assessments of significance of a number of fauna species may be required at the Development Application stage. However, it is unlikely that the impacts of the proposed development will be deemed significant;
- Upon completion of the masterplan, a formal impact assessment will be required which will include the mitigation measures that are to be adopted as part of the proposed development; and
- The Georges River is a 4th order stream and therefore a controlled activity approval will be required by the Department of Primary Industries Water should works be proposed within 40 m of the riverbanks.

4.2.7 Proposed development – 6-8 & 16 Bridges Road, 361 Newbridge Road Moorebank Stormwater Management Strategy and Flood Impact Assessment (Northrop, 2015)

In 2015, Northrop prepared a proposed stormwater management strategy and flood impact assessment/management report for Coronation Property Co. The report describes the considerations that have been made as a part of the flood impact assessment to supplement the rezoning application and respond to Council's requirements for stormwater management.

The report addressed the NSW Department of Planning and Environment Section 117 Direction, Clause 4.3 Flood Prone Land. It demonstrated that development of the land can proceed in a manner which will not cause increased flooding either on or off the site. It also demonstrated that residents of the proposed development will be protected from the effects of flooding and can safely remain on site during a flood or evacuate along Anchor Place through 361 Newbridge Road. The flood impact study was undertaken by Hydrostorm Consulting for Coronation Property Co/Northrop. This study was mentioned in the report stating that a neutral to positive flood impact resulted from the proposed development.

The report states that on-site stormwater detention is not deemed necessary for the proposed development and the stormwater system within the development site would be sized for a 0.2 EY (Exceedance Year) storm frequency, with overland flows catering for a 1% AEP storm.

4.2.8 Anzac Creek Floodplain Risk Management Study and Plan (BMT, 2008)

BMT completed the Anzac Creek Floodplain Risk Management Study and Plan (FRMSP) in 2008 for Council. The objectives of the Anzac Creek Floodplain Risk Management Study were to identify and assess measures for the mitigation of existing flood risk, identify and assess planning and development controls to reduce future flood risks and present a recommended floodplain management plan that outlines the best possible measures to reduce flood damages in the Anzac Creek catchment. The flood risk categorisation has been adopted in this study to identify relative risk within the catchment and to guide planning controls appropriate for the different flood risk categories. The flood risk map is shown in **Plate 4-4**.

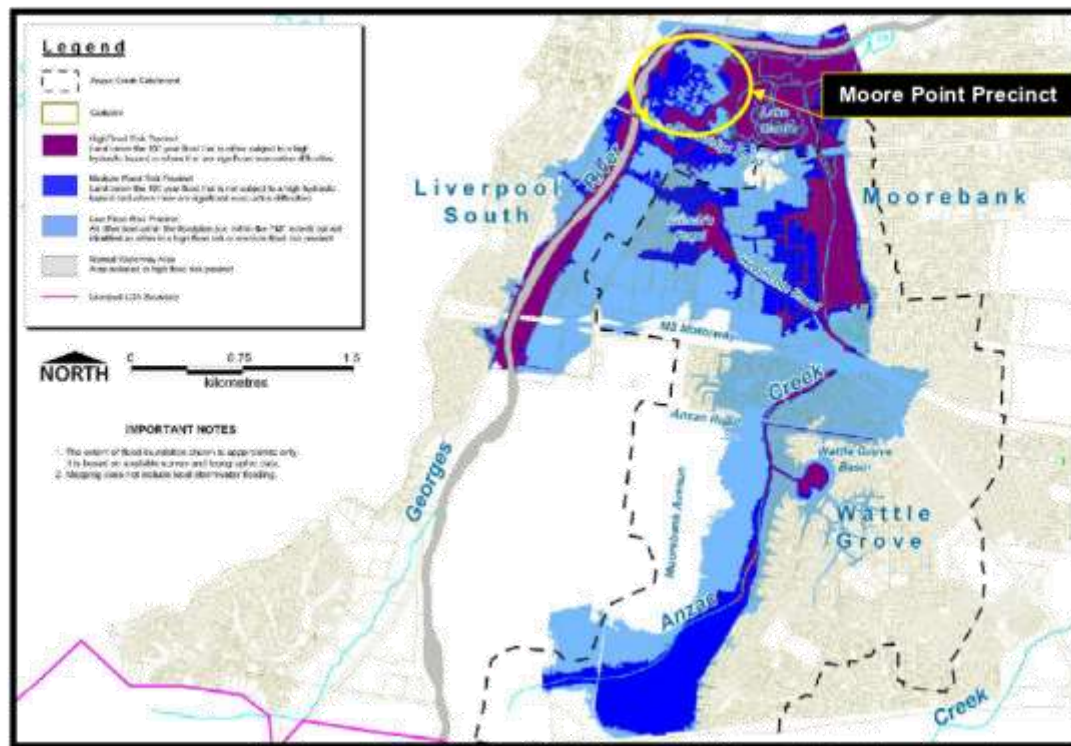


Plate 4-4 Anzac Creek Catchment Flood Risk Map (Anzac Creek FRMSP, BMT 2008)

The Anzac Creek Floodplain Management Study considered and assessed several floodplain management measures among them was Georges River Levee near the proposed Moore Point precinct. This option included levee at two (2) breakouts from the right bank of the Georges River just upstream of Newbridge Road. The results showed that levee would be effective in eliminating these spills from the Georges River in this location, however, the net effect on flood levels in the Anzac Creek catchment was negligible given the backwater influence of the Georges River on flood conditions in this lower part of the Anzac Creek catchment which resulted in this levee being not a viable mitigation option.

Nevertheless, this study incorporated the mitigation option of having levee at one breakout close to the development site from the right bank of the Georges River just upstream of Newbridge Road.

4.2.9 Liverpool Waterfront Water Cycle and Flood management Strategy (JWP, 2016)

J. Wyndham Prince prepared Water Cycle and Flood Management Strategy for Liverpool Waterfront to inform the early proposed planning and support the rezoning submission to the Council. The assessment concluded that the stormwater detention is not required for the precinct as the development site provides only 0.1% of the total peak flow in the Georges River and therefore, any changes to the characteristics of the precinct as a result of the development will unlikely impact the flow regime of the Georges River. In addition, the proposed development landform and regional floodplain reclamation strategy had resulted in an increase in the available floodplain storage by 123,500 m³ with no increase in flood level as compared to "existing" conditions in the catchment in the 5% and 1% AEP events.

The strategy recommended the stormwater quality management measures for the Liverpool Waterfront comprising treatment train that included on-lot treatment (rainwater tanks), street-level treatment (GPTs) and subdivision/development treatment measures (bio-retention raingardens).

Flood evacuation routes for the Moore Point Precinct were identified to be Newbridge Road to the south of the precinct and use of the proposed pedestrian bridges linking the precinct to the Liverpool CBD would provide additional early flood evacuation routes during an Extreme Flood Event.

4.2.10 Georges River Flood Study (BMT, 2019)

BMT Group undertook the review and updated the Georges River Flood Study for Liverpool City Council and Canterbury Bankstown Council. The objective of the study was to provide Council with accurate flood mapping and descriptions of the behaviour of floods along the Georges River, using the latest data and modelling techniques to facilitate Council's management of flood risks within the study area. The study provided a basis for flood-related development controls in relation to potential future development on the Georges River floodplain, following rigorous analysis and consultation with key stakeholders. The design flood inundation extents are shown in **Plate 4-4**.

A TUFLOW HPC hydraulic model was developed for the study area, the latest available topographical data and the most up-to-date river cross-sections. The runoff inflows to the hydraulic model were applied from previously adopted rainfall-runoff modelling utilising ARR 1987 procedures from the Georges River Floodplain Risk Management Study (Bewsher Consulting, 2004) to maintain a general consistency with existing flood planning levels.

The TUFLOW flood model was calibrated and validated to historic flood data collected in the August 1986, April 1988, April 2015 and June 2016 flood events, based on an analysis of hydrologic records and historical flows at Liverpool Weir. The model calibration results indicated that the developed TUFLOW flood model provided a reasonable representation of the catchment flood response. Hence, the model parameters adopted for the model calibration and validation events were adopted for design event simulation.

The report states that the developed 2D TUFLOW hydraulic model provides Council with a sophisticated modelling tool for flood impact assessment of potential future developments on the floodplain. As such, the flood model from this study forms the basis of the hydraulic model for the proposed Moore Point precinct at Moorebank.

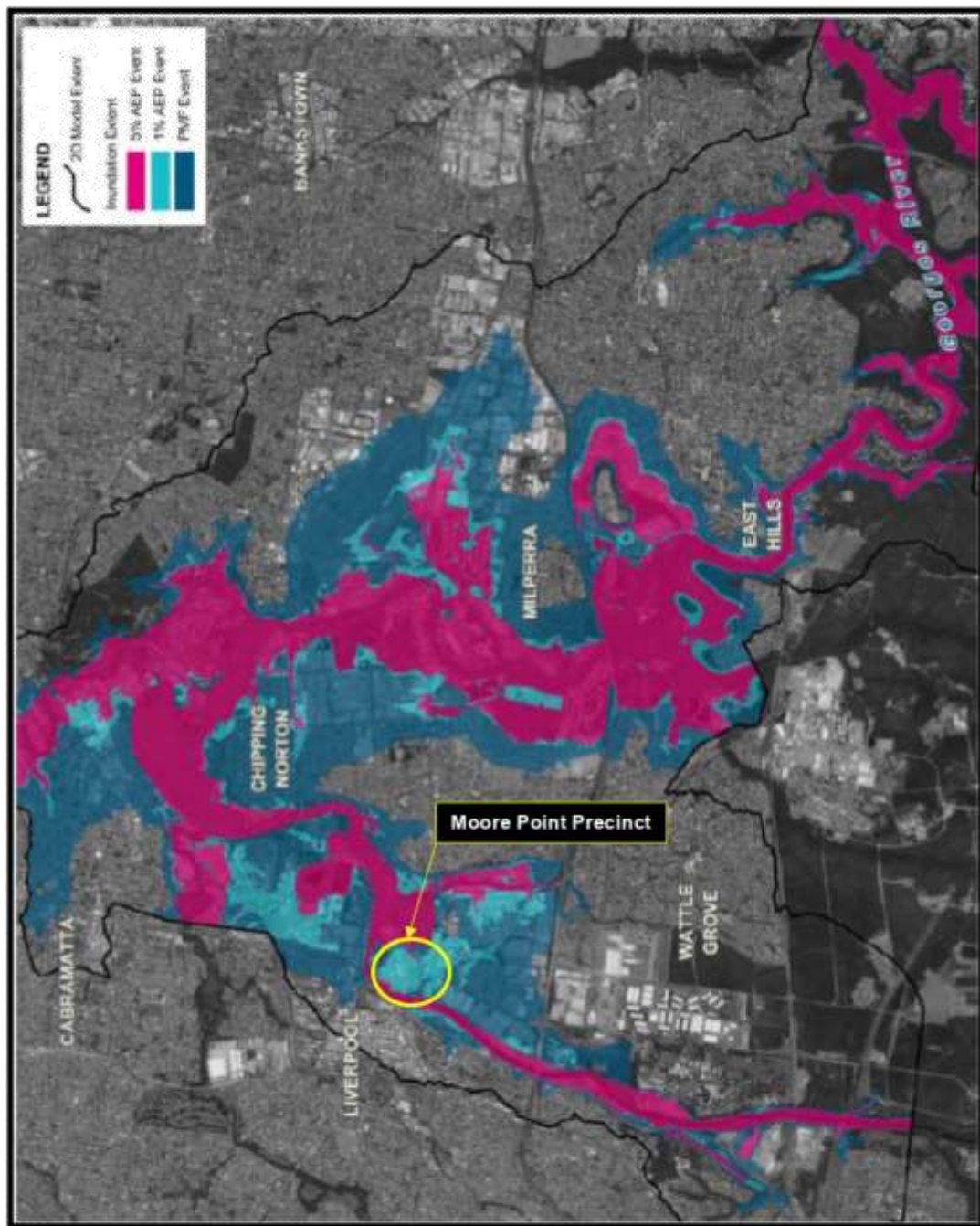


Plate 4-5 Design flood inundation extents (Georges River Flood Study BMT, 2019)

5. FLOOD MODELLING ASSESSMENT

5.1. Available data

The following data was used to inform the current hydraulic assessment:

- Hydrology/hydraulic model inputs from Councils currently adopted regional flood model for the Georges River (BMT 2019);
- Ground survey of the site; and
- Precinct masterplan.

5.2. Modelling approach

In order to assess the flood behaviour of the site, the existing TUFLOW 1D/2D floodplain model was provided by Council and developed for the Georges River Flood Study (BMT, 2019). This has been used as the basis of this assessment. All parameters have been adopted from Council's provided model unless otherwise specified.

Two (2) model scenarios for 1% AEP and Probable Maximum Flood (PMF) storm events have been assessed to represent the catchment conditions likely to have the greatest influence on flooding within the catchment. These scenarios allowed for the assessment to consider the current and future conditions of the precinct. The model scenarios are as follows:

- Current 'existing' conditions
- Future 'developed' conditions

The 'existing' conditions assessment considers the current topography of the precinct and catchment. This includes the current industrial uses on the precinct as well as the highly urbanised catchment within the Moorebank area.

The 'developed' conditions assessment considers the proposed development landform (preliminary design) and a proposed levee/restriction along the Georges River.

5.2.1 Model domain extent

The model domain for this study extends from Cambridge Avenue to Governor Macquarie Drive. The Flood Study 2019 model is cut down at Governor Macquarie Drive defining the downstream boundary of the model for this study. The upstream boundary is kept consistent with the 2019 flood model. A map showing the main features adopted in the TUFLOW model is illustrated in **Figure 5-1**.

5.2.2 Grid size

The Flood Study 2019 had adopted the cell size of 10 m which may have reduced the actual conveyance within the Georges River. Notwithstanding this possible limitation, a 10 m size for the scale of the model is appropriate. The cell sizes of 2D domains need to be appropriately sized to reproduce the hydraulic behaviour and provide accurate results in order to complete an appropriate flood impact assessment for this precinct. As such, the TUFLOW model for this study has adopted the cell size of 2.5 m x 2.5 m which is four (4) times smaller than the original model. This will ensure an accurate representation of the hydraulic behaviour surrounding the precinct as a result of the proposed works.

It is noted that TUFLOW 2020 has been released with TUFLOW HPC which now supports variable cell sizes within the same model using a quadtree mesh. The benefits include much improved hydraulic modelling outcomes and includes a major advantage in the way open channels are modelled.

This analysis could be integrated into the larger Georges River hydraulic modelling completed by Council (if required) and would deliver a single hydraulic assessment that focuses on a refined modelling outcome surrounding the Moore Point development.

5.2.3 Terrain

In addition to the underlying Digital Terrain Model (DTM) provided as part of Council's model, the following amendments have been undertaken to supplement the modelling in the vicinity of the site.

- Detail ground survey;
- Ensure representative terrain within the Georges River. The levels of the river centre line have been defined based on the available bathymetry survey; and
- Terrain modification to ensure the embankment of the Georges River adjacent to the precinct is accurately defined. The embankment levels (via a Z line) have been modified based on the level information contained in the Georges River flood model.

Under 'developed' conditions, the DTM within the Moore Point precinct was updated to incorporate proposed development cut and fill within the precinct and a levee at the right banks of the Georges River near Newbridge Road.

5.2.4 Hydrology

The majority of the precinct drains east towards Lake Moore, with a portion of the precinct to the west and north discharging directly into the Georges River. The 40 ha precinct forms 0.04% of the overall Georges River catchment of 96,000 ha.

Given the industrial nature of the existing precinct, which is effectively impervious and relatively small in size, there was no significant change in the runoff characteristics for the site between existing and developed conditions. The catchment size, slope and percentage impervious are similar enough not to cause significant impact to the peak flows within the Georges River.

5.2.5 Flows and upstream boundary conditions

Flow hydrographs extracted from the hydrological model have been applied to represent flows entering the model from both local and upstream catchments. The upstream boundary flow and local flow hydrographs were applied as a 'source area' (SA) input consistent with Council's original 2019 model.

5.2.6 Downstream boundary conditions

The water level time series (height vs time) is adopted at Governor Macquarie Drive as the downstream boundary condition for this model. The water level time series at this location is extracted from the broader 2019 George River flood model for each modelled storm event.

5.2.7 Material roughness

Material roughness parameters were refined to represent the current land use with the precinct but were generally kept consistent with Council's 2019 Model.

5.2.8 Initial water level

To account for antecedent rainfall in the catchment, the model was filled to RL 2.91 m AHD consistent with Council's model.

6. FLOOD MODELLING RESULTS

J. Wyndham Prince has assessed the flood behaviour for the 1% AEP and PMF storm events under existing and developed conditions. The flood depth, level and extent mapping for existing and developed conditions are shown in **Figures 6.1 – 6.8 in Appendix A**.

6.1.1 Flood behaviour under existing conditions

During the 1% AEP event, mainstream flows breach the eastern banks of the Georges River adjoining the western precinct boundary. These flows are then conveyed through the precinct, resulting in ponding depths of up to 2 m within the precinct (see **Figure 6.3** for details). The flood levels across the precinct range from 9.2 m AHD (in the western corner of the precinct) to 8.4 m AHD (along the eastern, northern and southern precinct boundary).

Furthermore, mainstream flows in the Georges River also breach the riverbanks to the south of the precinct, with flows conveyed east towards an existing low point near the Heathcote and Newbridge Road intersection. These flows then combine with local overland flows from the Moorebank area before being conveyed along Bridges Road towards Lake Moore. It is noted that the ponding occurring on the precinct near the intersection of Bridges Road and Newbridge Road are up to 1.2 m as a result of the combined overland and mainstream flows.

During the PMF, mainstream flows breach the banks of the Georges River adjoining both the western and northern precinct boundaries. It is noted that due to the significant flow rate in the PMF, which is approximately 3,400 m³/s, the depth of ponding on the precinct ranges up to 6 m, with the entire precinct being inundated by mainstream flooding of 12.4 m AHD.

The 1% AEP and PMF storm event existing condition flood level, extent and depth are shown in **Figures 6.1 to 6.4 in Appendix A**.

6.1.2 Flood behaviour under developed conditions

The 1% AEP storm event result for the developed condition shows that the peak flood level at the Georges River is 9.2 m AHD with no breach of the riverbank; leaving the Moore Point precinct unaffected from flood event up to 1% AEP. The proposed development cut and fill within the precinct prevented the breakout flows from entering the precinct along the western precinct boundary. In addition, the provision of the flood control/levee to the south of Newbridge Road averts mainstream flows from breaching the banks of the Georges River during the 1% AEP event. This restriction of breakout flows from breaching the Georges River prevented the flood affectation to the properties south of the Newbridge Road in 1% AEP storm event. The 'green' area on this figure provide considerable regional benefits and results in no flooding at Newbridge Road and Bridges Road intersection (see **Figure 6.9** for the flood impact assessment).

However, during the PMF event, the level of flood affectation on the precinct is similar to 'existing' conditions of 12.4 m AHD, with mainstream flows breaching the banks of the Georges River and inundating the precinct.

The 1% AEP and PMF storm event developed condition flood level, extent and depth are shown in **Figure 6.5 to 6.8 in Appendix A**.

6.2. Impact assessment

The impact of the Moore Point precinct on flooding was assessed by comparing the peak flood levels under existing and developed conditions. The assessed peak flood level differences under the 1% AEP event is shown in **Figure 6.9 in Appendix A**. As a result of the Moore Point precinct, localised increase in flood levels of up to 0.20 m occur along the northern fringe of the development during the 1% AEP event along with minor localised increase in flood level of less than 25 mm with an extent of 950 m along the Georges River in the vicinity of the proposed levee.

However, the 1% AEP flood impact results demonstrated that there are no adverse flood impacts to the neighbouring properties as a result of the Moore Point precinct. In addition, the development has provided regional flood immunity benefits to the properties south of precinct and on Newbridge and Bridges Roads.

6.3. Flood planning level

The 1% AEP peak flood level in the Georges River is 9.2 m AHD in the vicinity of the precinct in the developed condition. Council's development control plan (DCP) requires the residential and industrial/commercial development to have habitable floor level to be no lower than 1% AEP flood level plus 0.5 m freeboard. The flood planning level for the precinct would therefore be 9.7 m AHD. Hence, it is noted that as part of the development approval process, appropriate floor level controls will be adopted for each of the proposed buildings and as such will deliver Council's flood planning objective.

6.4. Floodplain storage

Current development controls outlined in the Liverpool DCP (LCC, 2008), do not permit filling within the 1% AEP flood unless compensatory excavation (cut) is proposed to ensure no net loss of floodplain storage. To determine the change in floodplain storage due to the proposed filling on the precinct, storage calculations were completed using the digital terrain models adopted in the flood modelling and the flood model results prepared for 'existing' conditions.

As the Moore Point precinct is part of the overall Moorebank precinct, compensatory cut areas are provided near Helles Park and Titalka Park nearly 1200 m and 1700 m upstream of the precinct respectively. The location of the proposed compensatory cut is provided in **Plate 6-1**. These compensatory cut areas will form part of the required works necessary to support the development of the precinct. The floodplain approach is also consistent with the regional floodplain reclamation strategy for the Georges River prepared by Calibre Consulting in 2016.



Plate 6-1 Proposed compensatory cut area location

Results of the floodplain storage calculations for the precinct are provided in **Table 6-1**.

Table 6-1 – Floodplain storage

Available storage volume:	1%AEP
Existing conditions – Site	98,000 m ³
Developed Conditions - Site	24,000 m ³
Developed Conditions – Regional Near Helles Park	39,700 m ³
Developed Conditions – Regional Near Titalka Park	66,280 m ³
Change in Floodplain storage	31,980 m ³

The floodplain storage calculations demonstrate that the proposed compensatory cut on the precinct and regional cut areas along the Georges River provides an excess of floodplain storage of 31,980 m³. Notwithstanding, the proposed development will not generate any adverse impacts on flood levels within surrounding properties or within the Georges River. Refer **Section 6.2** for further details.

It should be noted that the flood modelling for the developed condition assessment did not include the proposed regional compensatory cut areas. Thus, the flood impact is considered to be conservative while provided suitable flood outcomes. Further refinement of the floodplain storage areas and flood assessments will form part of future development applications.

6.5. Flood Prone Land

As discussed above the precinct is partially inundated by mainstream flooding in 1% AEP event, were flows breach the banks of the Georges River and enter the site. However, this assessment has shown that with the implementation of the mitigation measures, the proposed development can safely occupy the floodplain within minimal impact and be development consistent with principals outlines the NSW Government's Floodplain Development Manual 2005.

Therefore, the flood management regimes for the Moore Point development are consistent with Section 9.1 Directions issued by the NSW Government back on 1 July 2009 and specifically address the consistency requirements of Direction 4.3 – Flood Prone Land detailed in these directions as the principal of the Floodplain Development Manual 2005 have formed an integral part of all assessments.

7. GLOSSARY

Term	Definition
Airborne Laser Survey (ALS)	Is a technique for obtaining a definition of the surface elevation (ground, buildings, power lines, trees, etc.) by pulsing a laser beam at the ground from an airborne vehicle (generally a plane) and measuring the time taken for the laser beam to return to a scanning device fixed to the plane. The time taken is a measure of the distance which, when ground-truthed, is generally accurate to $\pm 150\text{mm}$.
Annual Exceedance Probability (AEP)	The chance or probability of a natural hazard event (usually a rainfall or flooding event) occurring annually. Normally expressed as a percentage.
Australian Rainfall and Runoff (AR&R)	Refers to the current edition of Australian Rainfall and Runoff published by the Institution of Engineers, Australia.
Dam Crest Flood (DCF)	The flood event where a dam embankment is first overtopped.
Dam Safety Committee (DSC)	A NSW statutory body aligned with Department of Primary Industries. Its function is to ensure the safety of dams within NSW.
Digital Terrain Model (DTM)	Is a spatially referenced three-dimensional (3D) representation of the ground surface represented as discrete point elevations where each cell in the grid represents an elevation above an established datum.
Exceedances per Year (EY)	The number of times a year that statistically a storm flow is exceeded.
Floodplain Planning Level (FPL)	The FPL is a height used to set floor levels for property development in flood-prone areas. It is generally defined as the 1% AEP flood level plus 0.5m freeboard.
Floodplain Development Manual (FDM) and Guidelines (April 2005)	<p>The FDM is a document issued by the Department of Environment Climate Change and Water (DECCW) that provides a strategic approach to floodplain management. The guidelines have been issued by the NSW Department of Planning (DoP) to clarify issues regarding the setting of FPL's.</p> <p>This document is also the framework for the development of Floodplain Risk Management Studies and Plans.</p>
Floodplain Storage Areas	Parts of a floodplain that are important for the temporary storage of floodwaters during the passage of a flood. Loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation.
Floodway	The areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood levels.
Hyetograph	The distribution of rainfall over time.
Hydrograph	Is a graph that shows how the stormwater discharge changes with time at any particular location.

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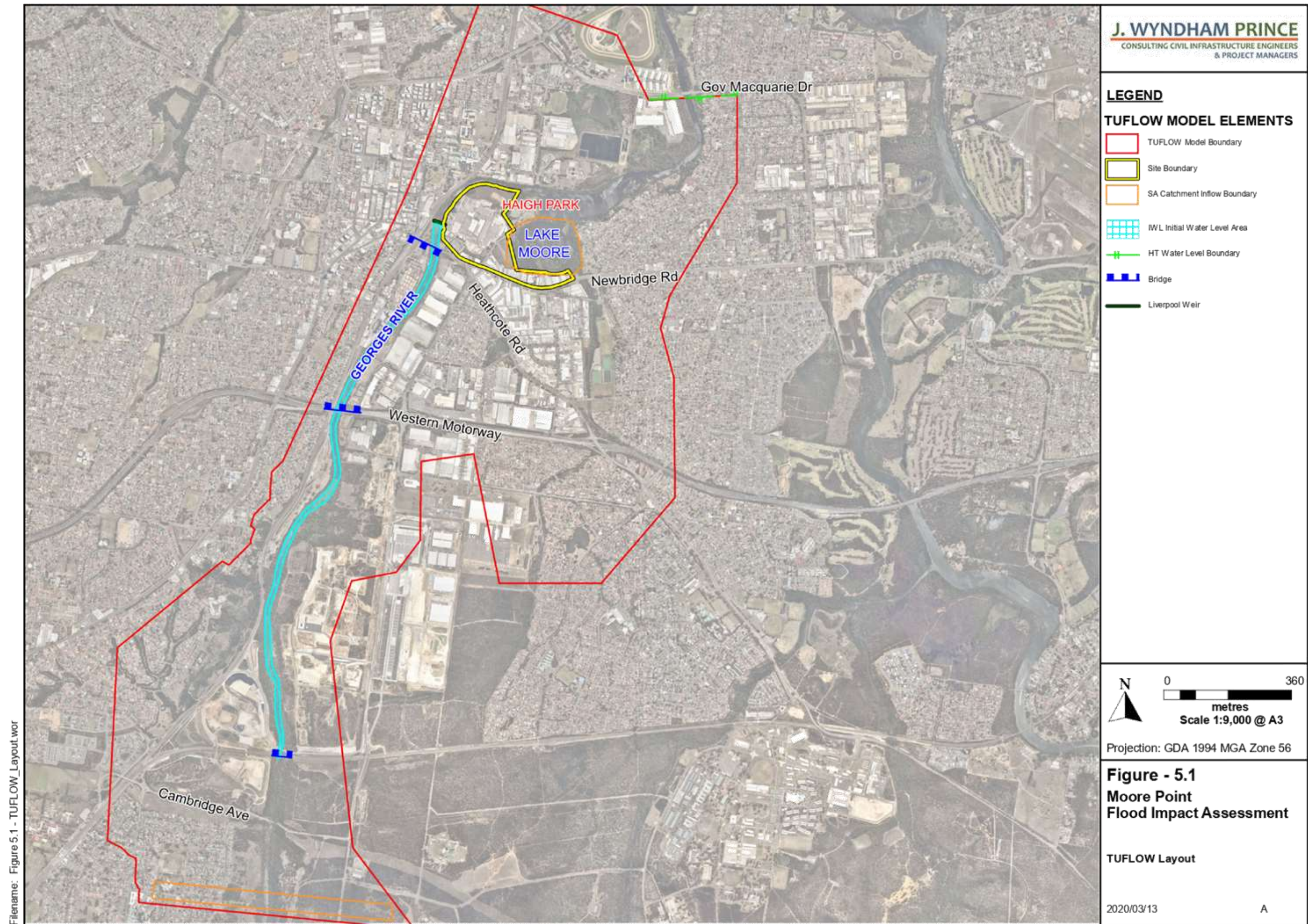
Term	Definition
Hydrology	The term given to the study of the rainfall and runoff process as it relates to the derivation of hydrographs for given floods.
J. Wyndham Prince Pty Ltd (JWP)	Consulting Civil Infrastructure Engineers and Project Managers undertaking these investigations
MUSIC	A modelling package designed to help urban stormwater professionals visualise possible strategies to tackle urban stormwater hydrology and pollution impacts. MUSIC stands for Model for Urban Stormwater Improvement Conceptualisation and has been developed by the Cooperative Research Centre (CRC),
Peak Discharge	Is the maximum stormwater runoff that occurs during a flood event
Potential Loss of Life (PLL)	Potential Loss of Life assessment
Population at Risk (PAR)	Population at risk assessment
Probable Maximum Flood (PMF)	The greatest depth of precipitation for a given duration meteorologically possible for a given size storm area at a particular location at a particular time of the year, with no allowance made for long-term climatic trends.
Triangular Irregular Network (TIN)	A technique used in the created DTM by developing a mass of interconnected triangles. For each triangle, the ground level is defined at each of the three vertices, thereby defining a plane surface over the area of the triangle
TUFLOW	A computer program that provides two-dimensional (2D) and one dimensional (1D) solutions of the free surface flow equations to simulate flood and tidal wave propagation. It is specifically beneficial where the hydrodynamic behaviour, estuaries, rivers, floodplains and urban drainage environments have complex 2D flow patterns that would be awkward to represent using traditional 1D network models.
XP-RAFTS	Is a runoff routing model that uses the Laurenson non-linear runoff routing procedure to develop a sub catchment stormwater runoff hydrograph from either an actual event (recorded rainfall time series) or a design storm utilising Intensity-Frequency-Duration data together with dimensionless storm temporal patterns as well as standard AR&R 1987 data.

8. REFERENCES

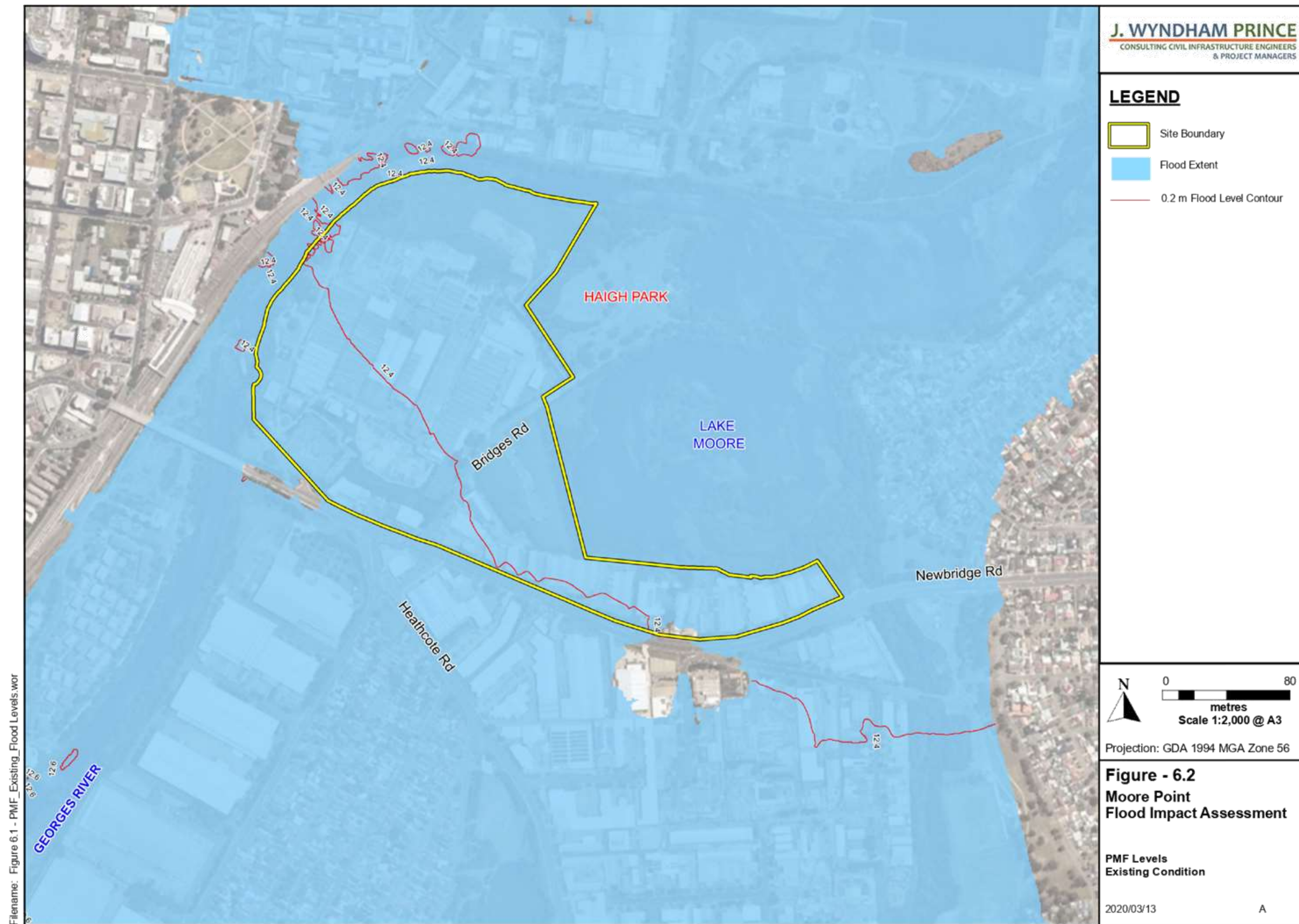
- University of New South Wales, 1991, *"Georges River Flood Study"*, prepared for the NSW Department of Public Works.
- Bewsher Consulting, 2004, *"Georges River Floodplain Risk Management Study and Plan"*, prepared for the Georges River Floodplain Management Committee.
- GHD, 2007, *"Liverpool CBD Floodplain Management Study Report"*, prepared for Liverpool City Council.
- Liverpool City Council, 2008, *"Liverpool Development Control Plan 2008"*, amended 10 June 2016.
- Worley Parsons, 2015, *"Updated South Creek Flood Study"*, prepared for Penrith City Council, Liverpool City Council, Blacktown City Council and Fairfield City Council.
- Calibre Consulting, 2016, *"Moorebank Georges River Precinct Investigation – Flood Constraints Advice"*, prepared for Liverpool City Council.
- Eco Logical Australia, 2016, *"Liverpool Waterfront, Liverpool – Flora and Fauna Assessment"*, prepared for LAC JV Pty Ltd.
- J. Wyndham Prince, 2016 *"1 Heathcote Road, Moorebank Desktop Flood Study"*, prepared for LAC JV Pty Ltd.
- J. Wyndham Prince, 2016 *"Liverpool Waterfront Water Cycle and Flood Management Strategy"*, prepared for LAC JV Pty Ltd.
- BMT, 2019 *"Georges River Flood Study"*, prepared for Canterbury Bankstown and Liverpool City Council.

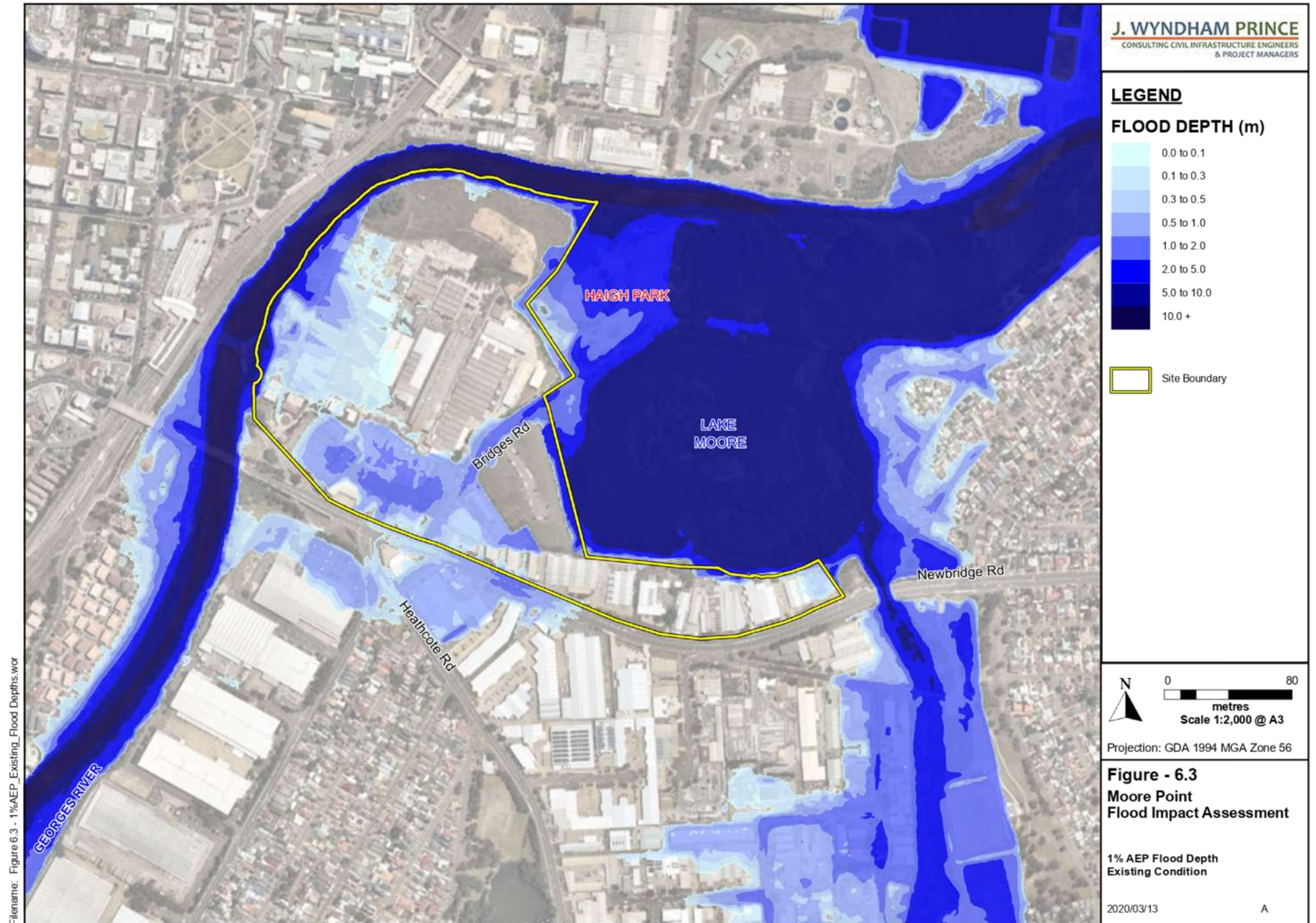
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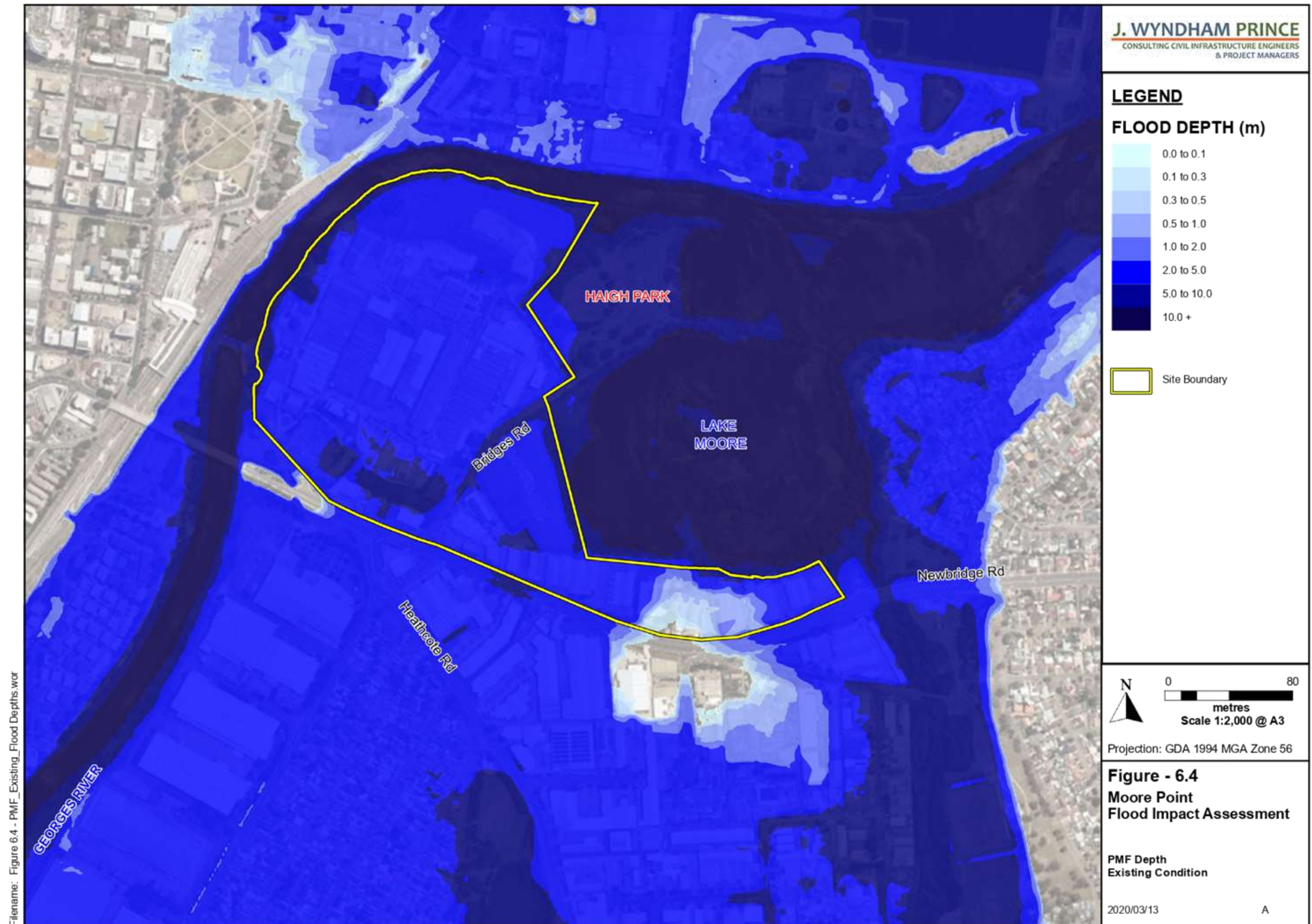
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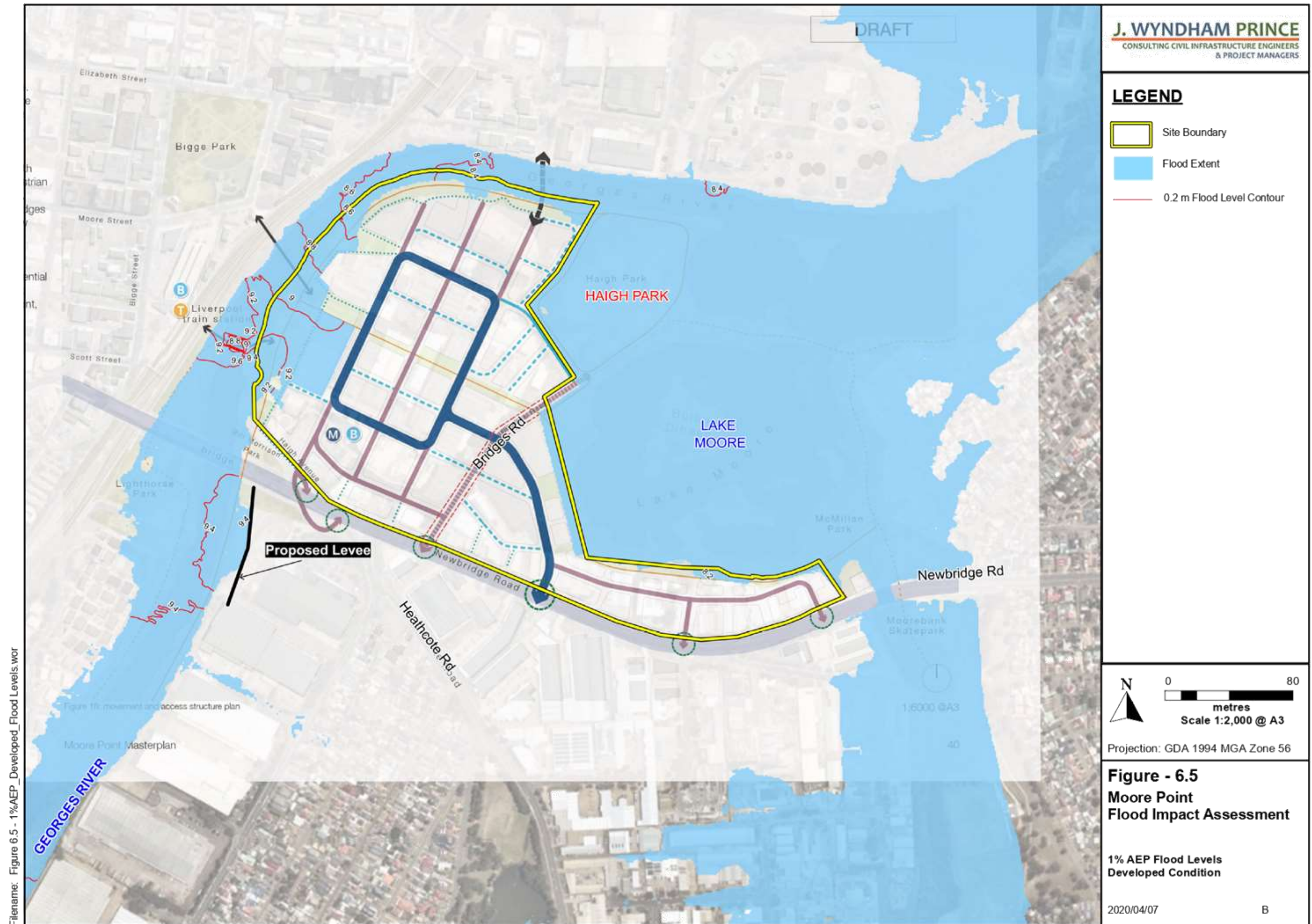


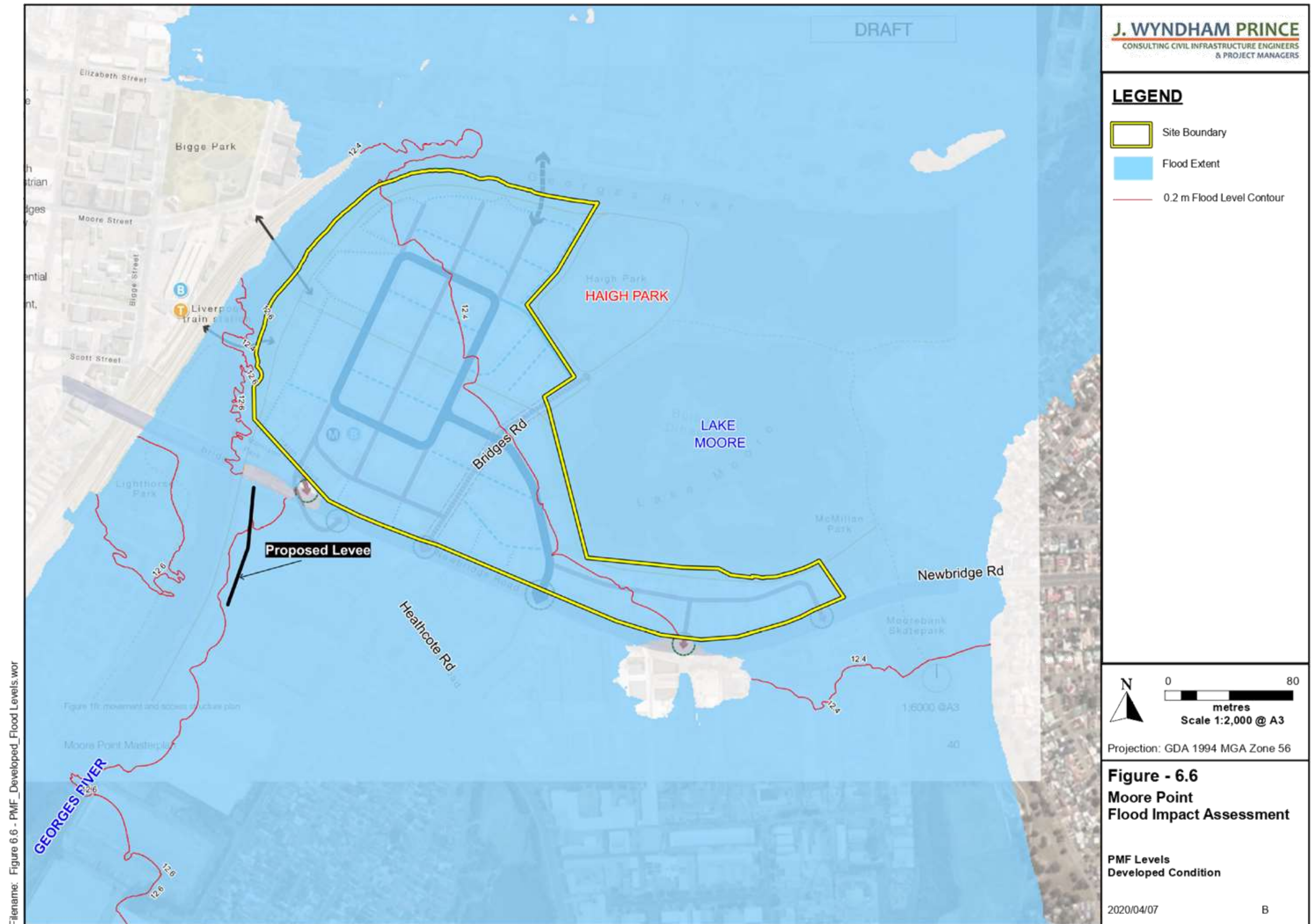


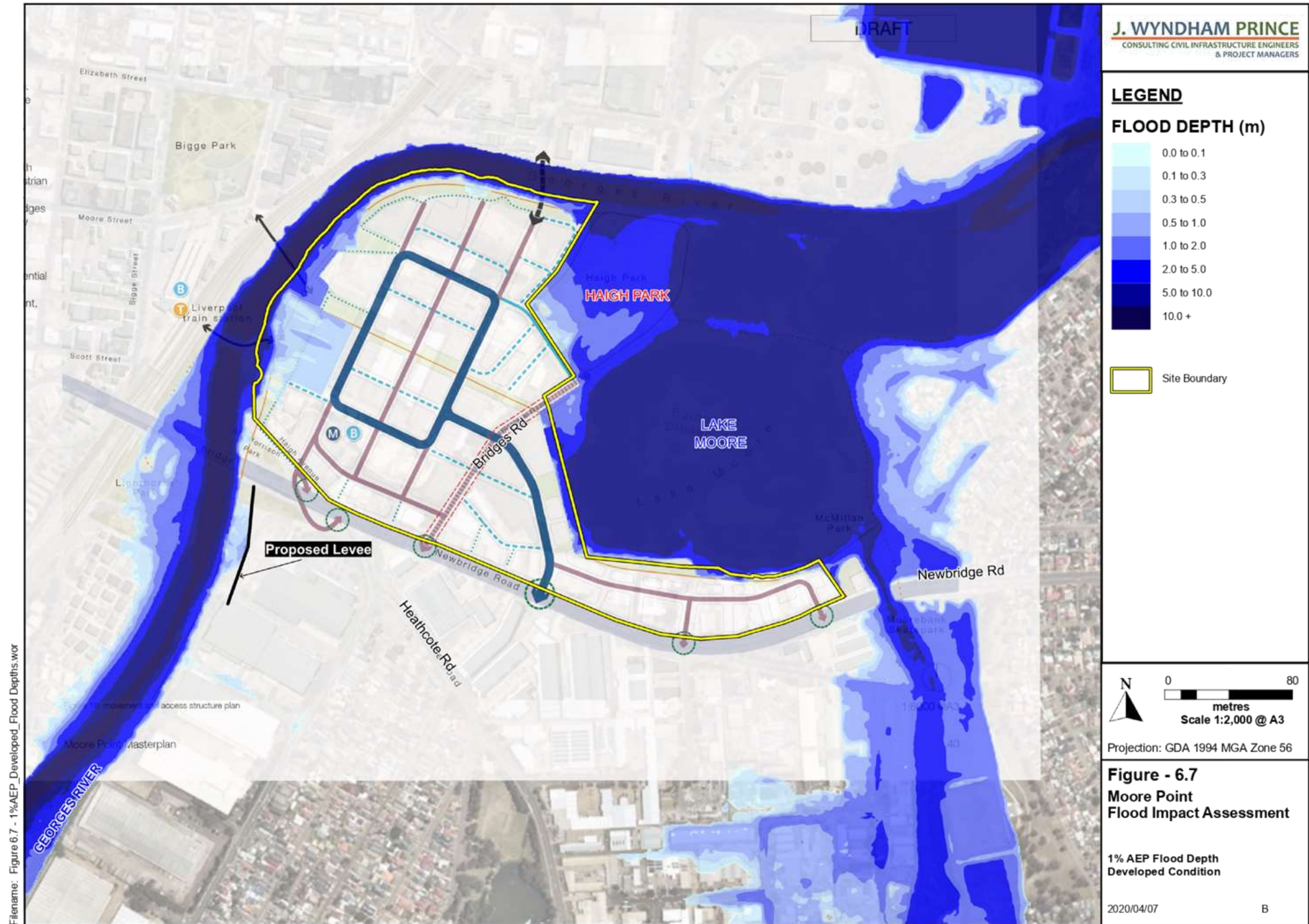


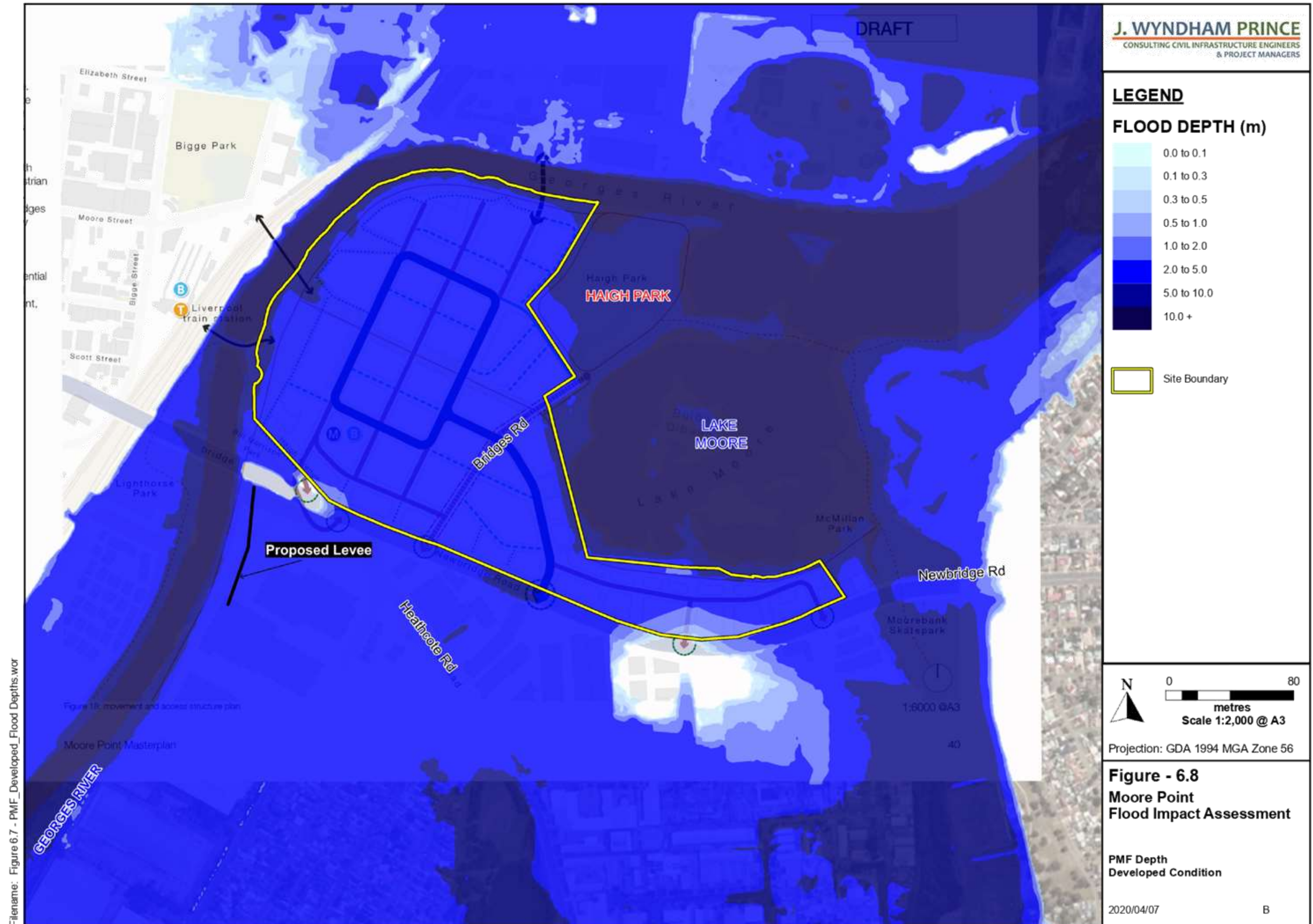


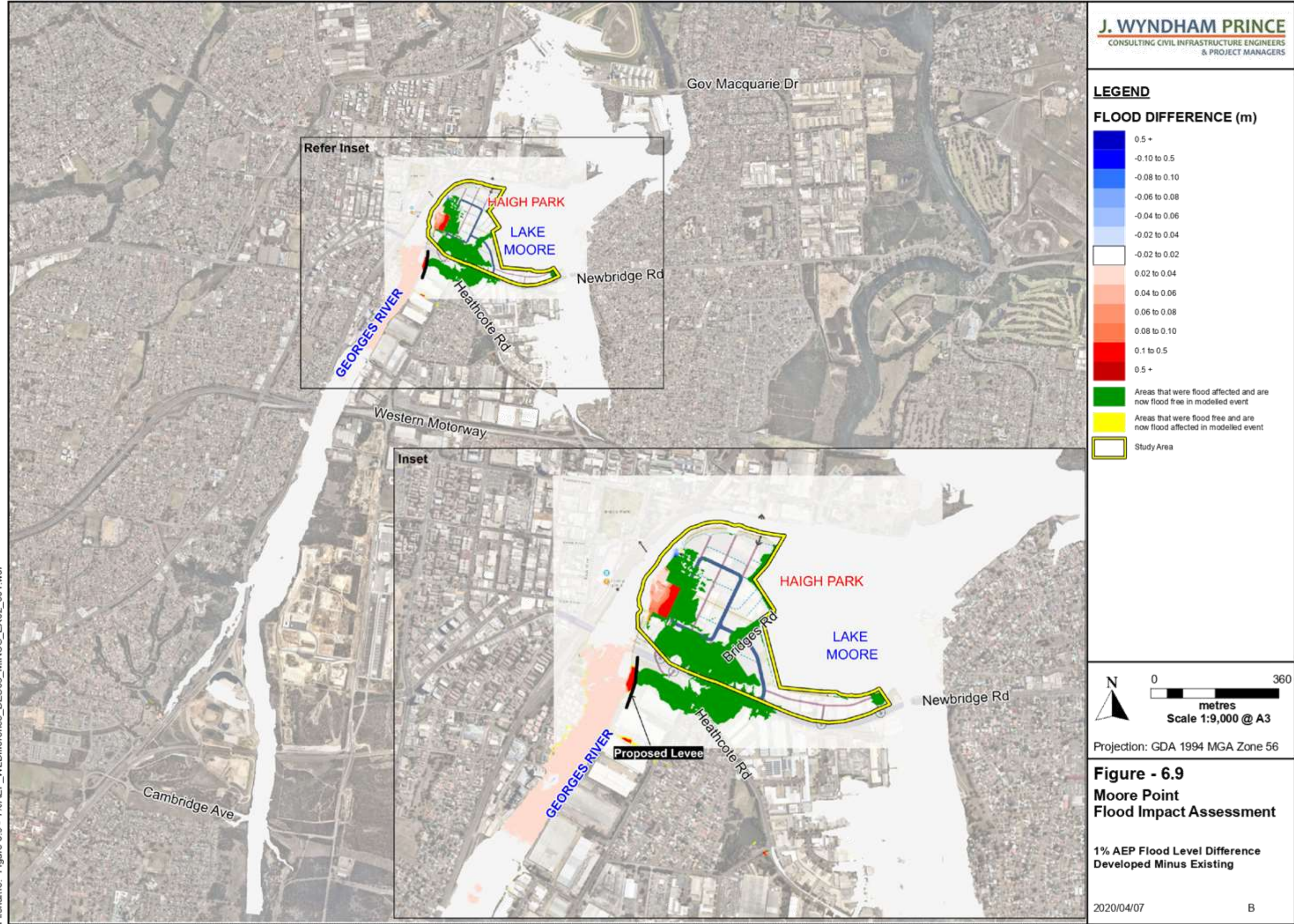














Moore Point Precinct Plan – Historical Heritage Assessment

Moore Point Landowners Group

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Template 2.8.1

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1. Project context

The following section has been provided by Leamac and Coronation Property Group.

1.1 Background

This Biodiversity Report has been prepared by Eco Logical Australia on behalf of Leamac and Coronation to assess the biodiversity values of the study area in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. There is nothing contained within this report to preclude rezoning.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure 1:– Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as ‘mixed use’, which comprises:

‘a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core’

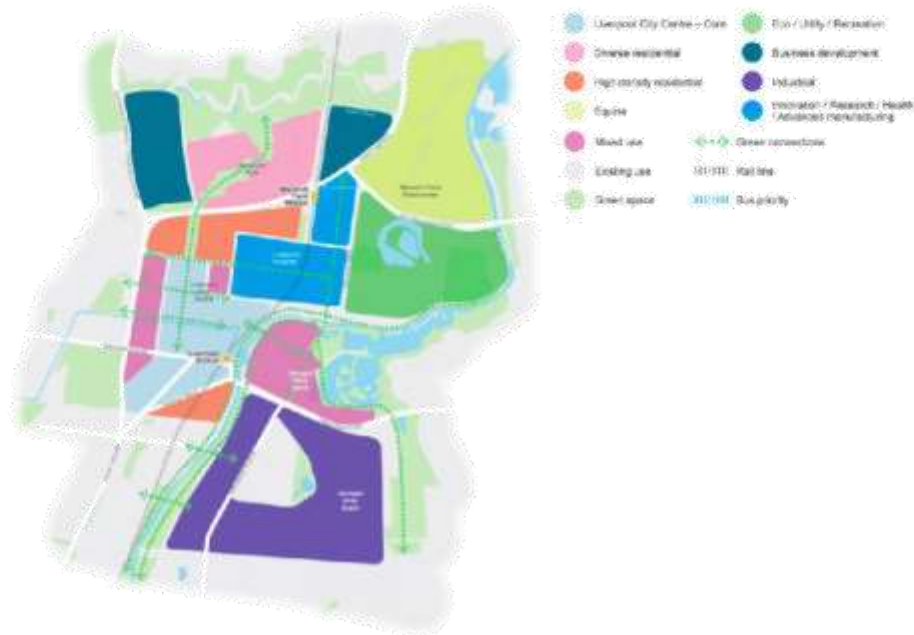


Figure 2:– A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with Transport for NSW (TfNSW) to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council’s Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

1.1.1 Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

1.1.2 Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

1.1.3 Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptative re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

1.1.4 Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

2. Introduction

2.1 Project background

Moore Point Landowners Group engaged Eco Logical Australia Pty Ltd (ELA) to undertake a Historical Heritage Assessment to form part of a comprehensive planning proposal and to identify if historical heritage items were likely to be located within the area of the proposed works, and if so, whether future development of the area had the potential to impact upon the heritage significance of those items.

2.2 Study area

The study area is located north of Newbridge Road, east of the Georges River and west of Lake Moore (Figure 3). A map of the proposed works has been provided by Moore Point Landowners Group (Figure 2). The project area consists of the following 24 individual lots:

- Lot 201 DP1009044
- Lot 4 DP11948
- Lot 1 DP235294
- Lot 200 DP1009044
- Lot 45 DP867545
- Lot B1 DP392696
- Lot 100 DP775780
- Lot 1 DP229494
- Lot B DP346332
- Lot 111 DP1133744
- Lot 2 DP229494
- Lot 201 DP584561
- Lot 1-4 SP49163
- Lot 10 DP875626
- Lot 23 DP535604
- Lot 7 DP11948
- Lots 1-11 SP38170
- Lot 4 DP562025
- Lot 6 DP654427
- Lot 101 DP827141
- Lot 3 DP562025
- Lot 5 DP11948
- Lot 102 DP827141
- Lot 2 DP562025

Part of the study area is a locally listed heritage item on Schedule 5 of the Liverpool Local Environmental Plan (LEP) 2008 known as the Pirelli Power Cables and Systems Building (Formerly MM Cables Factory; now known as Prysmian).

This report will primarily consider the potential impact the proposed development will have on the identified heritage values of the Pirelli Power Cables site and provides recommendations for the reuse and readaptation of heritage items within this area, as well as recommendations on how to mitigate any potential impacts the proposed development will have.

The heritage conservation recommendations for the management of the Pirelli Power Cables heritage item provided in this report draw heavily from previous historical heritage assessments undertaken for the site by GBA Heritage (2018).

2.3 Proposal

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approximately 398,994 m²) and is currently developed with industrial uses. The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. The Master Plan proposes the redevelopment of the former industrial land north of Newbridge Road into a mixed-use precinct for residential, commercial and recreational purposes. A strong focus on retaining public space was implemented into the master plan, which will include retaining the riparian corridor situated along the banks of Georges River. The masterplan proposes to retain significant heritage features on the site including the Administration building and parts of buildings containing the saw-tooth roof.

2.4 Authorship

This report has been prepared by Daniel Claggett, ELA Archaeologist (MA [Maritime Archaeology] Flinders University), and Karyn McLeod, ELA Principal Heritage Consultant, (BA Hons [Archaeology] University of Sydney, MA [Cultural Heritage] Deakin University).

2.5 Limitations

Access was restricted to the outside areas of the Pirelli Power Cable Factory buildings during site survey, with the exception of the Pirelli Power Cable Administration Building. Additionally, sections of the riparian corridor adjacent Georges River were unable to be fully accessed due to fencing and asbestos contamination. Access to all other allotments was possible, and further heritage investigations can take place at the Development Application (DA) stage of this project, if necessary.

Moore Point Precinct Plan – Historical Heritage Assessment |



Figure 3: The Study Area

Concept Masterplan



Figure 4: Masterplan of the Georges River North Precinct (Source: SJB Architects)

3. Database searches and historical background

3.1 Local, State and National heritage registers

Searches of the Australian Heritage Database, the NSW State Heritage Register (SHR) and the Liverpool LEP 2008 Schedule 5 (Environmental Heritage) were conducted on 14 May 2019.

The following historical heritage items located in the vicinity to, but not within, the study area are listed on the State Heritage Register (SHR):

- Liverpool Weir (SHR listing 01804)
- Liverpool Train Station (SHR listing 01181).

A large portion of the study area at 1 Bridges Road is identified as a heritage item under Schedule 5 of the Liverpool LEP 2008 and is known as the former Pirelli Power Cables and Systems Building, now known as Prysmian Cables and Systems (item no. 76). The study area is also located in close proximity to several other heritage items including:

- Pylons (former Liverpool Bridge), Georges River near Haigh Avenue (item no. 86)
- Liverpool Weir, Georges River near Haigh Avenue (item no. 87)
- Liverpool Railway Station Group, including station building, goods shed and jib crane (item no. 72)
- Light Horse Park, Atkinson Street (item no. 70).

3.2 Historical Background

The Georges River was first explored by George Bass and Matthew Flinders in 1795 on their first voyage on the 'Tom Thumb' after their arrival in New South Wales. The town of Liverpool itself was founded on high ground to avoid regular flooding in November 1810 by Governor Lachlan Macquarie. Liverpool is considered the fourth oldest town in Australia after Sydney, Parramatta and Hobart. The opening of the Liverpool railway station in 1856, and the telegraph line a few years later, resulted in the growth of Liverpool into a regional centre. Various industries, including wool processing and tanneries used the Georges River with the result that it became heavily polluted.

The study area is located within a 750-acre land grant to Thomas Moore in 1810, which he named Moorebank. Moore was a Master boat builder, sailor, farmer, philanthropist and Magistrate for Georges River. He does not appear to have lived on this property as he also owned thousands of acres to the south and east and the Georges River property was predominately used for agricultural and pastoral purposes.

A weir was constructed by David Lennox using convict labour in 1836 to provide water to Liverpool and for moderating the regularly flooding river. Land near Georges River was cleared, and wheat was the dominate crop in the region until the 1860s. Vineyards were established in the Liverpool area as early as the 1820s and by the late 19th century much of the region was producing grapes and wine (City Plan Heritage 2016). The area continued to be used for vineyards into the 20th century, as seen in 1943 aerial imagery of the study area (Figure 5).

The establishment of the Pirelli Cable Factory within the study area was brought about by the Second World War. The necessity for components such as cables as part of the war effort necessitated the expansion of industries to help support the Allied war effort (GBA Heritage 2018). Another response to the perceived threat of World War II was the placement of six-foot deep anti-aircraft trenches adjacent the Georges River (Figure 6). The riverbank has since been modified and the landform has been filled and levelled across the precinct. The industrial buildings in the area were greatly expanded by the construction of the Joyce Industries buildings in the late 1950s – early 1960s (ELA 2016).

3.3 Previous Heritage Assessments

City Plan Services, 2016. *Heritage Impact Statement: 5-9 Bridges Road, Moorebank*. Prepared for Bridges Road (Joyce) Developments Pty Ltd.

City Plan was previously engaged by Joyce Developments to undertake a heritage impact statement for 5-9 Bridges Road, Moorebank, located directly adjacent to the property containing the Pirelli Power Cables Factory. The impact statement was prepared to support the proposed rezoning of the site from IN2 (light industrial) to B4 (mixed use) and R4 (high density residential), in preparation for proposed development associated with the Georges River North Precinct plan.

The 5-9 Bridges Road site was identified as containing a variety of brick and metal warehouse / light industrial structures exhibiting no heritage value. The City Plan assessment considered the proposed rezoning as not having an impact on the adjacent Pirelli Factory or the various other heritage listed items within close proximity. However, the assessment pointed out that future development of the site would need to consider any direct or indirect impact it may have on these items, particularly the Pirelli Power Cables site.

GBA Heritage, 2018. *3 Bridges Road, Liverpool – Strategic Heritage Report*. Prepared for LAC JV Pty Ltd.

GBA Heritage were previously engaged by LAC JV Pty Ltd to prepare a heritage management document for the Pirelli Power Cables heritage item and the impact the proposed Georges River North Precinct Plan would have on the heritage significance of the item. As this is the major heritage feature of the site, the GBA (2018) report provides the main source of input for this assessment.

The GBA heritage report identified the item as being significant for its historical and aesthetic qualities as an early example of a large-scale industrial facility in the Liverpool area and a state of the art, aesthetically imposing industrial facility for its time of construction. The report then graded the different elements of the item based on their respective importance to the overall heritage significance of the item. The GBA report then considers the elements of the site based on a graded level of significance, and then proceeded to assess the impact that the proposal by LAC JV to readapt and reuse the heritage item will have and whether or not the proposed reuse of the site is considered an acceptable outcome under relevant heritage guidelines and planning controls for the area.

A detailed description and analysis of the heritage item, the grading of significance undertaken by GBA Heritage and assessment of the proposed developments impact on the item is provided in **Section 2.4** and **Section 2.5** of this report.



Figure 5: 1943 aerial imagery of the study area (Six Maps Land and Property Information)



Figure 6: The Pirelli Cable Factory in the early 1940s. Note the trenches on the shoreline (Courtesy of Pirelli Cables Management)

3.4 Visual inspection

A visual inspection of the study area was undertaken by ELA Archaeologist Daniel Claggett on 21 June 2019. Visual inspection assessed the entirety of the study area; however this survey summary will focus on the area containing the Pirelli Power Cables Factory heritage item. No other heritage items are located within the study area, and therefore no other areas of heritage value were considered to be present within the study area.

The Prysmian (Pirelli) Cable Factory consists of a large industrial estate making up a sizeable portion of the proposed Moore Point precinct area. As noted in the GBA Heritage (2018) assessment of the site, the areas of high and moderate heritage significance are the saw tooth factory buildings originally constructed in the 1940s which retain their original fabric and have not been subject to significant modifications (Figure 7) as well as the front façade of the original Administration building (Figure 8). The two saw tooth factory buildings, while maintaining their original fabric, have nonetheless had numerous, more recent additions to them that have partially impacted upon their heritage significance. Nevertheless, the two original factory buildings are still in use, albeit in a modified state. The Administration building is vacant due to water damage and lack of maintenance. The rear section of the Administration building is a more recent addition.



Figure 7: Portion of one of the two original Pirelli Cable Factory buildings



Figure 8: Frontage of the Administration building

4. Heritage Assessment

4.1 Heritage Significance

4.1.1 Statement of Significance

The following statement of significance for the Pirelli Power Cables Administration Building and Factory heritage item has been sourced from the State Heritage Inventory (SHI):

MM Cables Administration Building, as one of the first electrical cable factories in Australia, demonstrates the history of modern industrialisation in the country, State and Liverpool area. It also demonstrates the history of Australia's war efforts during World War II and the military technologies of the era. It is associated with the history of Cable Makers Australia Ltd. The factory indicates a level of technical achievement in pioneering the way for modern industrialisation in the Liverpool area. Aesthetically it exhibits architectural grandeur yet reflects a representative Functionalist architectural style. There is the potential to gain more information on the precinct from further architectural, archaeological and documentary research.

The MM Cables Administration Building is located directly east of Liverpool Railway Station, on the eastern banks of the Georges River. Access to the plant is gained by heading east of Liverpool city centre on the Newbridge Road. On crossing the Georges River, a slip road (part of Heathcote Road) branches off immediately to the left (north) and leads directly to the factory.

This Administration building is a symmetrical, two-storey rectangular face brick building with a hipped terracotta tiled roof. The building has a single-storey parapeted wings on either side. The central recessed entrance porch is sheltered by a horizontal projecting hood, and the roof is punctuated by four brick chimneys near the ridge line.

A number of the internal walls have rounded corners. Simple curved, streamline decoration is a feature of the central stairhall ceiling. This space also has a simplified Art Deco style plaster cornice. The staircase has a timber and wrought iron balustrade. The joinery is polished throughout, with etched glass panels to several doors. Principal doors have polished brass hardware.

An additional statement of significance was provided by GBA Heritage in 2018 within their strategic heritage report for both the Administration building and original factory building:

The establishment of Cable Makers Australia in 1940 has State significance for its association with a number of prominent people who played an important role in the establishment and management of national industries. Sir Alexander Stewart, Sir George Julius and PC Holmes Hunt were instrumental in the directorship of major companies, such as BHP South, and the gas industry, as well as advisory roles to the Commonwealth Government.

The original buildings of the Cable Makers Australia site are of Local significance in demonstrating an Interwar Georgian Revival style for the Administration building, and behind it, a stripped Classical Functionalist style for the factory building, arranged in a symmetrical layout, including a formal landscape entrance with roundabout.

The original factory building has a relatively unusual 'butterfly' truss structure that provides both north and south facing highlight glazing, which differs from the more common saw-tooth truss. The west elevation of the factory building displays a refined use of engaged piers, with incorporated rainwater heads, and expressed concrete lintels providing a 'string' course over the paired windows (GBA Heritage 2018).

4.1.2 Grading of Significance

The heritage listed items within the Prysmian Site and associated structures have been previously assessed by GBA Heritage (2018) for their level of significance based on a number of factors. GBA determined that a majority of the Prysmian Site possessed little heritage significance and additions to the heritage listed items were considered intrusive elements. Areas of high heritage significance encompassed the two earliest factory buildings and the original Administration building. None of the site features are considered exceptional. Grading of items as possessing heritage significance within the Prysmian Site is as follows:

High Significance:

- Original Administration building;
- Original Factory No. 1; and
- Original Factory No. 2

Moderate Significance:

- Guard house / entry building;
- Rear additions to Factory No. 2; and
- Original landscape layout to the front of the Administration building (including sides and the front gate)

Little Significance

- Rear additions to the Administration building;
- North bays to Factory No. 1 and No. 2;
- Factory No. 3, No. 4 and No. 5; and
- All other remaining structures

Intrusive

- West and South additions to Factory No. 1

A map of the Prysmian Site and different areas of heritage significance is provided in Figure 9 below:

In addition, the NSW Heritage Council have stated that neither the Administration building or the Factories are of state significance and encourages the adaptive reuse and incorporation of the buildings within the new development (letter dated 17/07/2017; **Appendix A**).

Moore Point Precinct Plan – Historical Heritage Assessment |



Figure 9: Heritage significance grading of the Prysmian Factory site by GBA Heritage (2018)

4.2 Impact Assessment

4.2.1 Development Proposal

The study area forms part of the *Liverpool Waterfront Master Plan*, which proposes the redevelopment of the former industrial land north of Newbridge Road into a mixed-use precinct for residential, commercial and recreational purposes. As part of this Master Plan, it has been proposed that sections of the existing Factory 1 and Factory 2 be readapted into a retail marketplace. The Administration building will also be retained and adapted for re-use.

Approval of the planning proposal currently sought by the proponent would allow for the implementation of this Master Plan. Development associated with the Master Plan would require the demolition of all site features determined to be of little significance and intrusive in the area.

4.2.2 Relevant Liverpool LEP 2008 Clauses

The objectives of Heritage Conservation in the Liverpool LEP 2008 are stated in section 5.10 of the LEP and include the conservation of the environmental heritage of Liverpool including the fabric, settings, views and heritage significance of heritage items and heritage conservation areas, archaeological sites, Aboriginal objects and Aboriginal places of heritage significance.

The site contains no historical archaeological sites. The site contains no recorded Aboriginal archaeological sites. The heavily vegetated banks of the Georges River prevent views to or from the site and the heritage item is not visible at all without actually entering the factory grounds.

4.2.3 Relevant Liverpool DCP 2008 (Part 4) Controls

The relevant heritage controls set out in the Liverpool DCP are as follows:

1. Where a proposal involves a heritage item, it will be necessary to lodge a Statement of Heritage Impact;
2. All development of heritage items must be designed by a Registered Architect;
3. All development of heritage items must be designed to respect the heritage significance of these places in terms of:
 - Setting;
 - Scale;
 - Form;
 - Materials and colours;
 - Fenestration;
 - Fencing;
 - Landscaping.
4. Original fabric and landscape elements that contribute to the significance of a heritage item should be retained.

The earliest factory buildings, which are the most significant elements of the site, will be retained and adaptively reused.

4.2.4 The Georges River Precinct Plan (Draft)

The Draft Georges River Precinct Plan was prepared by Group GSA and MacroPlan Dimasi and was published in August 2016. The draft plan builds on the *Liverpool City Vision 2006*. It is a precinct plan for the urban renewal of the Moorebank industrial precinct located on the east side of the Georges River, including the subject Prysmian Site. The following is the recommendation for heritage management / mitigation for the Pirelli Cable Site within the study area:

Area 1 – North of Newbridge Road

Heritage: Adaptive re-use of the historic factory, with its distinctive saw-tooth skylight roof, should be exploited as a key placemaking device. Potential uses could include markets or business start-up space, creating a unique space and amenity for the community – the focal point for a revitalised precinct.

The earliest factory buildings, which are the most significant elements of the site, will be retained and adaptively reused. The Master Plan will allow public use of and appreciation of the heritage item which is not currently possible. The masterplan complies with Draft Georges River Precinct Plan.

5. Conclusions and Recommendations

The proposed development of the Moore Point precinct would require demolition of site features identified as having moderate and little heritage significance. This proposal is made in relation to the preparation of the Liverpool Water Front Master Plan. Nothing contained within this report precludes rezoning.

The GBA (2018) assessment identified the heritage significance of structures on the site and recognised retention and reuse of the original factory buildings (No.1 and No. 2) as a priority and preferable to the retention of the Administration Building. GBA concludes that the original function of the factory buildings is a good representation of the sites function and operational history.

ELA has assessed the development proposed in the Master Plan and the heritage significance of the factory buildings and agrees with the conclusions of GBA (2018). The Administration Building, which is in very poor condition, was recommended for demolition in the GBA report, however it is proposed to be retained and adaptively reused.

No other areas of the proposed Moore Point precinct contain State or locally listed heritage items. These areas contain a mixture of mid to late 20th century commercial and industrial buildings, along with areas of vacant land that have been extensively landscaped and modified. Therefore, these areas of the Moore Point precinct were not considered to possess any heritage values and do not require further historical heritage assessment.

5.1.1 Recommendations – Historical Heritage

- Structures graded as being of Little and Intrusive heritage significance can be demolished, on the basis that the required approvals process be undertaken.
- Areas identified as being of Moderate heritage significance may be able to have their demolition justified in the context of the future overall development of the site and the necessity for certain elements of the precinct to be developed within the areas these items occupy.
- The Administration Building, identified as having High significance, will be retained and adaptively reused.
- The original factory buildings, identified as having High significance, will be retained and reused to enable reasonable use and interpretation within the context of a future major development. The retention and adaptive reuse of portions of Factories 1 & 2 within a future development scheme, if appropriately designed, will result in a positive heritage outcome for the proposed development.
- Future development of the site must consider the DCP controls for the site, as laid out in **Section 3.2.3** of this report.
- In the highly unlikely event that unexpected historical archaeological material was encountered during works, it would be necessary to stop all work in the immediate vicinity of the identified deposits. The NSW Heritage Council would be notified and a qualified archaeologist would be engaged to assess the significance of the material and recommend whether further investigation is required.

References

City Plan Heritage, 2015. *8 Bridges Road, Moorebank - Heritage Impact Statement*. Prepared for Coronation Property Group Pty Ltd.

Eco Logical Australia, 2016. *Prysmian Site, Bridges Road, Moorebank – Aboriginal Heritage Assessment*. Prepared for LAC JV Pty Ltd.

GBA Heritage, 2018. *Strategic Heritage Report: 3 Bridges Road, Liverpool*. Prepared for LAC JV Pty Ltd.

Appendix A NSW Heritage Council Letter (17/07/2017)







23 September 2020

David Smith
Manager Planning and Transport Strategy
Liverpool City Council
Locked Bag 7064
Liverpool BC 1871

Attention: Cameron Jewell

By email: SmithD@Liverpool.nsw.gov.au

Re: Interim letter of offer to deliver public benefits items – RZ-6-2015

This letter has been prepared by Mecone NSW Pty Ltd (Mecone) on behalf of Coronation Property and Leamac Property Group (Joint Landowners Group) with respect to the Planning Proposal at Moore Point (RZ-6-2015).

This letter serves as an interim letter of offer to deliver public benefit items in support of the Planning Proposal on behalf of the Joint Landowners Group. We submit this interim letter of offer for initial consideration by Liverpool City Council (Council) with the Planning Proposal prior to determining the appropriate mechanisms for delivery.

We anticipate public benefits will be largely delivered through a Section 7.11 Contributions Plan (s.7.11 Plan) for the broader precinct and may include a Voluntary Planning Agreement (VPA), where a s.7.11 Plan is not considered suitable.

We look forward to working constructively with Council and progressing discussions on this interim letter of offer, which we consider will provide significant public benefit for the existing and future community of Liverpool.

Below sets out a summary of the Planning proposal and the key items to be delivered as part of the public benefit package.

Planning Proposal

The Planning Proposal involves the creation of a mixed-use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage items;
- 21% of the site dedicated to public open space
- Rehabilitation, access and activation of the Georges River foreshore;
- Contribution to an 8km network of foreshore pedestrian and cycle paths;
- Capacity for educational and cultural facilities;
- Bridge crossings to Liverpool CBD, Train Station and Liverpool Innovation Precinct; and
- Transport, intersection and collector road improvements.

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To achieve these outcomes, the Planning Proposal seeks the following amendments to LLEP 2008:

- Rezone the site from IN2 Light Industrial to B4 Mixed Use and B6 Enterprise Corridor;
- Increase the maximum floor space ratio to 4.2:1 and 3.5:1;
- Increase the maximum height of buildings from 18m and 15m to RL 136 and RL 108; and
- Introduce Division 1A to provide site specific development controls for the site including design excellence, sun access and requirements for preparation of a development control plan.

Public benefit mechanism

The Planning Proposal presents a holistic master plan with extensive public benefits tailored to transforming Liverpool into a true river city as mandated in a suite of strategic planning policy at both a state and local level.

These public benefits will be delivered mainly through a s7.11 Plan for the broader precinct. The Joint Landowners Group are willing to enter into the VPA as necessary to cover items where the s7.11 Plan is not considered suitable.

Items that could form part of the public benefits package include:

- Dedication of foreshore open space along the Georges River;
- Multi-purpose community centres;
- Rehabilitation and embellishment of the Georges River foreshore and Lake Moore;
- Delivery of combined flood storage and recreation/playing courts near Helles Avenue;
- Pedestrian bridge from Moore Point to Liverpool CBD;
- Dedicated pedestrian and cycle paths;
- Heritage conservation and adaptive re-use of existing heritage building as a new marketplace;
- Embellishment and upgrade of existing local open spaces in the surrounding locality;
- Intersection upgrade works at Newbridge Road; and
- Creation of new local streets and collector roads.

Next Steps

This interim letter of offer is submitted for your consideration as part of the Planning Proposal at Moore Point (RZ-6-2015). We would welcome the opportunity to meet with Council to discuss the delivery of public items greater detail at the post-Gateway stage.

If you have any questions or would like to discuss the content of this letter further, please do not hesitate to contact me on 8667 8668 or bhendriks@mecone.com.au.

Regards,



Ben Hendriks
Managing Director



MOORE POINT MASTERPLAN

BEST-PRACTICE BENCHMARKING

OCTOBER, 2020



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- STREETS AS PUBLIC SPACES
- THE POWER OF 10

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INTRODUCTION

PURPOSE OF THIS REPORT

This report aims to independently benchmark the vision for Moore Point as a place that will maximise people's happiness by providing the right mix of activities, things to do and public spaces against leading research and world's best practice.

The Moore Point Masterplan is an urban renewal opportunity within the Liverpool City Centre with significant public benefits, including adaptive re-use of heritage buildings, foreshore embellishments and new open spaces, educational and cultural facilities, connections to Liverpool City Centre, transport and connector road improvements.

This report will benchmark Moore Point against world's best practice city districts to understand how it compares.

INTRODUCTION

OVERVIEW OF CASE STUDY PRECINCTS

The following precincts have population densities of between 15,000 and 35,000 people/km² and have been used as benchmarks to compare with Moore Point.

People per square kilometre is the global standard for benchmarking the urbanity of cities.

For high density urban neighbourhoods, there should be at least 15,000 people per square kilometre, that is 150 people per hectare¹.

Moore Point (39 ha) is expected to deliver up to 14,100 homes and provide 23,000 jobs.

The following pages provide an overview of case studies of a similar population density to set the scene for analysis of open space and urbanity benchmarking.

¹Page 5, Principles of Sustainable Neighbourhoods, Global Public Space Toolkit (From Global Principles to Local Policies and Practice)

Case Study 1: Potts Point / Woolloomooloo

17,600 people/km²



Potts Point / Woolloomooloo has a population density of more than 17,500 people per square kilometre. The area is a mix of residential and commercial uses, including bars, restaurants, and retail stores. Many of the hotels have been converted or rebuilt as apartment complexes.

Case Study 2: Chippendale, Sydney

19,000 people/km²



Chippendale has a population of approximately 19,000 residents. The neighbourhood blends modern high density with adaptive use of historic buildings and the provision of quality public amenity.

Case Study 3: Haymarket, Sydney

21,000 people/km²



Haymarket is a central area of Sydney's CBD, adjacent to Darling Harbour, and comprises a population density of over 21,000 people per square kilometre.

Case Study 4: Green Square, Sydney

22,600 people/km²



Green Square is a precinct in the inner-east of Sydney, located only 4km south of Sydney CBD. The area is predominantly light industrial, with a growing number of high-density residential development taking shape. Undergoing one of the largest urban renewal projects in Australia, the population density is over 22,000 people per square kilometre.

Case Study 5: Earls Court, London

25,875 people/km²



Earls Court in London has a population density of more than 25,000 people per square kilometre. The inner-city district has undergone extensive gentrification, however much of its impressive early- to mid-Victorian architecture still remains.

Case Study 6: West Village NYC

27,000 people/km²



West Village New York is a renowned urban precinct, famous for its vibrant street life and bohemian culture. It comprises a population density of approximately 27,000 people per kilometre.

Case Study 7: Fort Pienc, Barcelona

34,000 people/km²



Fort Pienc is a neighbourhood located within the district of Eixample. The area has a mix of historical and modern buildings, and an extremely high population density of over 34,000 people per square kilometre.



URBANITY WHAT IS IT?

In order to avoid a mundane urban outcome where dense urban fabric responds to projected yields and statistics, global best practice metrics must be applied to create a meaningful and identifiable urban environments.

By creating the bones of a great place, Moore Point's precincts will evolve over time to create a successful economic and functional precinct, attracting business investment whilst integrating with its surroundings over the course of its lifetime.

Whilst recognising the commercial and other influences on the planning of Moore Point today, a flexible framework must anticipate an intensification of urbanity paired with density over time as highly desirable and welcomed.

Defining Urbanity

Urbanity is the functional intensity of retail activities and other amenities people require at different population densities to have a 'liveable' city lifestyle.



URBANITY HOW DO WE MEASURE IT?

Much more than a simple clustering of people and buildings, urbanity is a concentration of intensive encounters and interconnections.

RobertsDay has utilised several tools to measure the urbanity of Moore Point, and how it can evolve over time to remain active and successful for people and business.

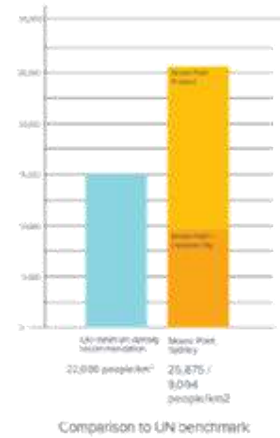
- 1 **INTENSIFYING URBANITY**
PEOPLE CREATE CITIES
- 2 **THE URBANITY INDEX**
USES FOR CITY LIFE
- 3 **HYBRID GROUND FLOOR**
ENHANCING STREET LIFE
- 4 **INTERSECTION DENSITY**
PROMOTING WALKABILITY
- 5 **OPEN SPACE**
QUANTUM AND QUALITY
- 6 **STREETS AS PUBLIC SPACES**
SPACE FOR VIBRANT URBAN LIFE
- 7 **THE POWER OF 10**
HAVING THINGS TO DO AND SEE



1

INTENSIFYING URBANITY IT IS PEOPLE THAT CREATE VIBRANT CITIES

The Moore Point Precinct will be home to over 25,000* people/km². When considered as a Precinct nested within the Liverpool CBD, there will be 9,094 people/km².



THE BENEFITS OF URBANITY



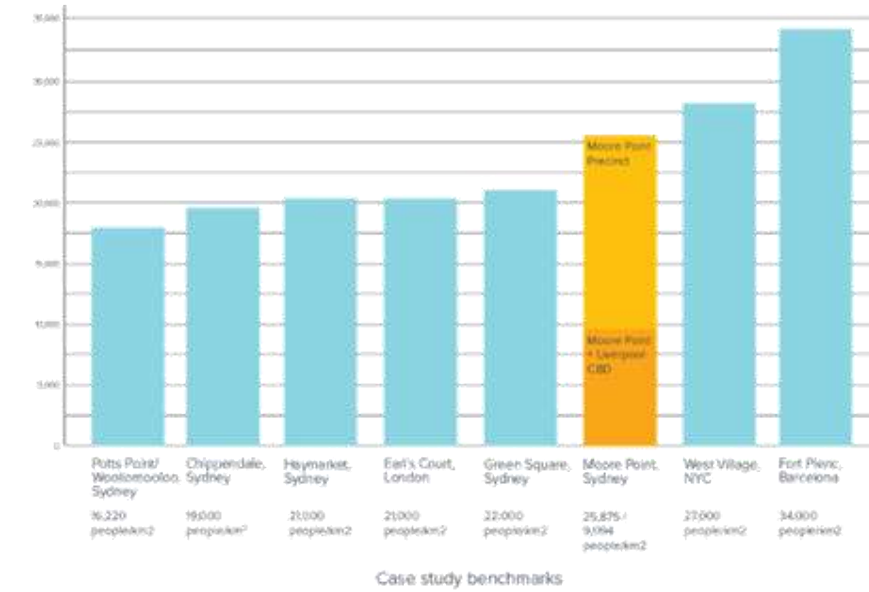
The UN recommends at least 15,000 people per square kilometre* to foster sustainable urban development.

Higher density cities encourage reduced transit through shorter trip lengths, since most amenities and public transport are more closely located. Increased density also greatly reduces driving, traffic congestion, and vast amounts of air pollution that come with it. Further, high-density urban forms are associated with larger social networks, more opportunities to make new acquaintances, higher frequency of socialising, stronger social support, and higher personal relationships satisfaction.



*Principles of Sustainable Megacities, Gohshi, Public Space Toolkit: From Global Principles to Local Practice and Practice

INTENSIFYING URBANITY HOW DOES MOORE POINT COMPARE?



2 THE URBANITY INDEX MEASURING CITY LIFE

Benchmark precincts range from .35 to 1.4 on the Urbanity Index.

The Urbanity Index summarises the research undertaken by RobertsDay into great neighbourhoods of a comparable density.

The Urbanity Index assesses the number of restaurants, bars and cafés; groceries; school and education facilities; art and community uses; entertainment facilities and healthcare within each of the case study areas per square kilometre (the 'kit-of-parts count'). These precincts were used as a benchmark to understand the provision of retail and amenities which can be offered at this density.

Case Study 1: Potts Point / Woolloomooloo



17,600
 people/km²

.74 urbanity
 score

- 139 Restaurants, cafes and bars
- 19 Groceries (everyday shops)
- 16 Art, community, Schools and educational uses
- 100 Entertainment uses
- 123 Healthcare uses

Case Study 2: Chippendale, Sydney



19,000
 people/km²

.86 urbanity
 score

- 307 Restaurants, cafes and bars
- 27 Groceries (everyday shops)
- 43 Art, community, Schools and educational uses
- 109 Entertainment uses
- 90 Healthcare uses

Case Study 3: Haymarket, Sydney



21,000
 people/km²

.89 urbanity
 score

- 492 Restaurants, cafes and bars
- 41 Groceries (everyday shops)
- 70 Art, community, Schools and educational uses
- 98 Entertainment uses
- 61 Healthcare uses

Case Study 4: Green Square, Sydney



22,600
 people/km²

.35 urbanity
 score

- 89 Restaurants, cafes and bars
- 9 Groceries (everyday shops)
- 20 Art, community, Schools and educational uses
- 1 Entertainment uses
- 12 Healthcare uses

Case Study 5: Earls Court, London



25,875
 people/km²

.99 urbanity
 score

- 143 Restaurants, cafes and bars
- 38 Groceries (everyday shops)
- 41 Art, community, Schools and educational uses
- 196 Entertainment uses
- 136 Healthcare uses

Case Study 6: West Village NYC



27,000
 people/km²

1.4 urbanity
 score

- 516 Restaurants, cafes and bars
- 44 Groceries (everyday shops)
- 292 Schools and educational uses
- 189 Entertainment uses
- 142 Healthcare uses

Case Study 7: Fort Pienc, Barcelona



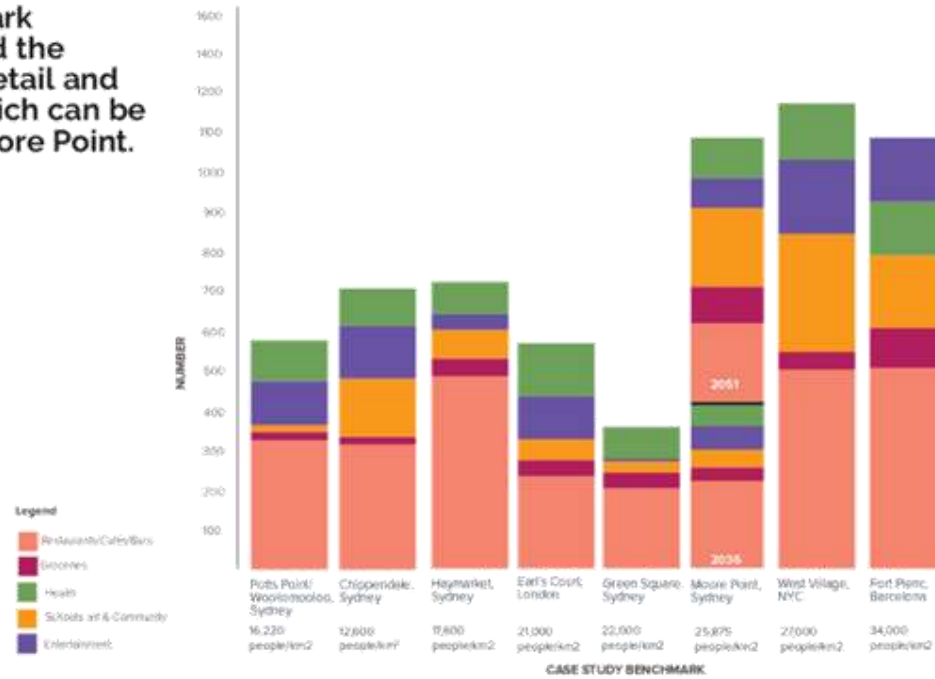
34,000
 people/km²

1.3 urbanity
 score

- 513 Restaurants, cafes and bars
- 100 Groceries (everyday shops)
- 180 Art, community, Schools and educational uses
- 130 Entertainment uses
- 120 Healthcare uses

THE URBANITY INDEX COMPARING THE BENCHMARKS

Case study precincts have been used as a benchmark to understand the provision of retail and amenities which can be offered at Moore Point.



THE URBANITY INDEX DELIVERING THE URBANITY MIX

With over 340,000 commercial floor space in the precinct, there is an opportunity to provide maximum thresholds of urbanity uses.

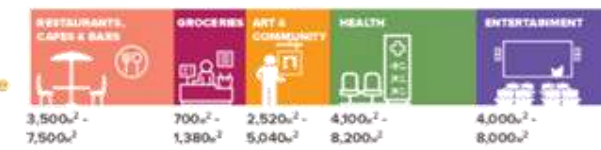


2036

57,500 - 115,000m²

SPACE DEDICATED TO RETAIL, COMMUNITY, HEALTH AND EDUCATION

.70
Urbanity Score



URBANITY PER PERSON
11m² PER PERSON

2051

144,200 - 288,000m²

SPACE DEDICATED TO RETAIL, COMMUNITY, HEALTH AND EDUCATION

1.5
Urbanity Score



URBANITY PER PERSON
13m² PER PERSON

3

HYBRID GROUND FLOOR
ENHANCING STREET LIFE

By delivering the recommended Urbanity Mix, Moore Point can create hybrid, active ground floors.

The UN recommends that at least 40 per cent of floor space should be allocated for economic use in any neighbourhood.

In a good urban neighborhood, the ground floors of the buildings work symbiotically with the surrounding sidewalks and public spaces. Together they provide a continuous network of pathways and experiences that are active, safe, comfortable and engaging.

“Principles of Sustainable Neighbourhoods: Global Public Spaces Toolkit”
From Global Principles to Local Policies and Practice

THE BENEFITS OF ECONOMIC
USES AT GROUND FLOOR



West Village, New York



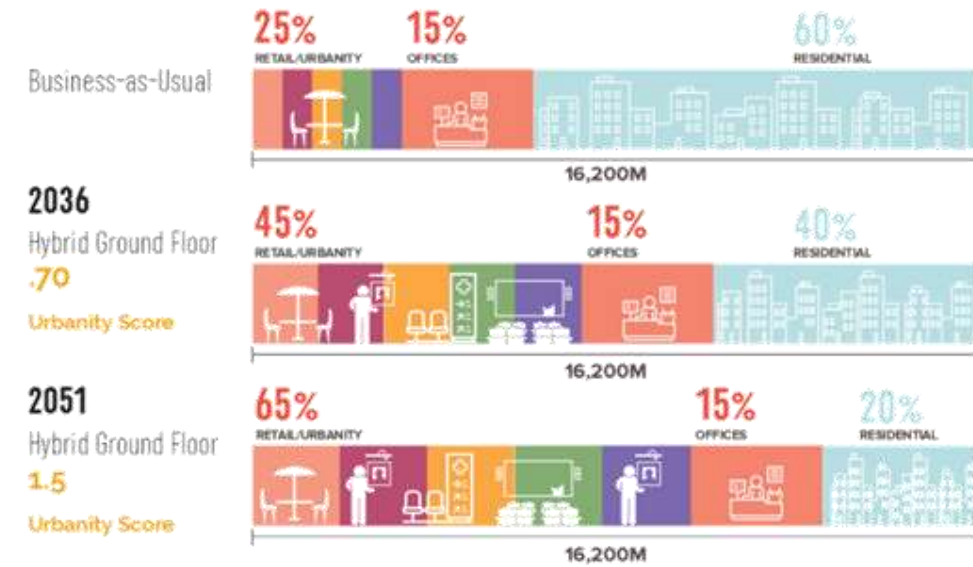
Potts Point, Sydney

Active ground-floor uses are a good way for buildings to meet the sidewalk and allows for pedestrians to reclaim our cities' streets, by enabling people to participate in street life. The foot traffic and buying power of a whole district is channelled into supporting a lively street life. Economic uses such as outdoor cafes enliven the streetscape, whilst also providing for passive surveillance of the street.

HYBRID GROUND FLOOR
HOW WILL MOORE POINT PERFORM?



The Moore Point Precinct
16,200m linear metres
of ground floor frontage.



HYBRID GROUND FLOOR WHAT WILL IT LOOK LIKE?

BUSINESS AS USUAL

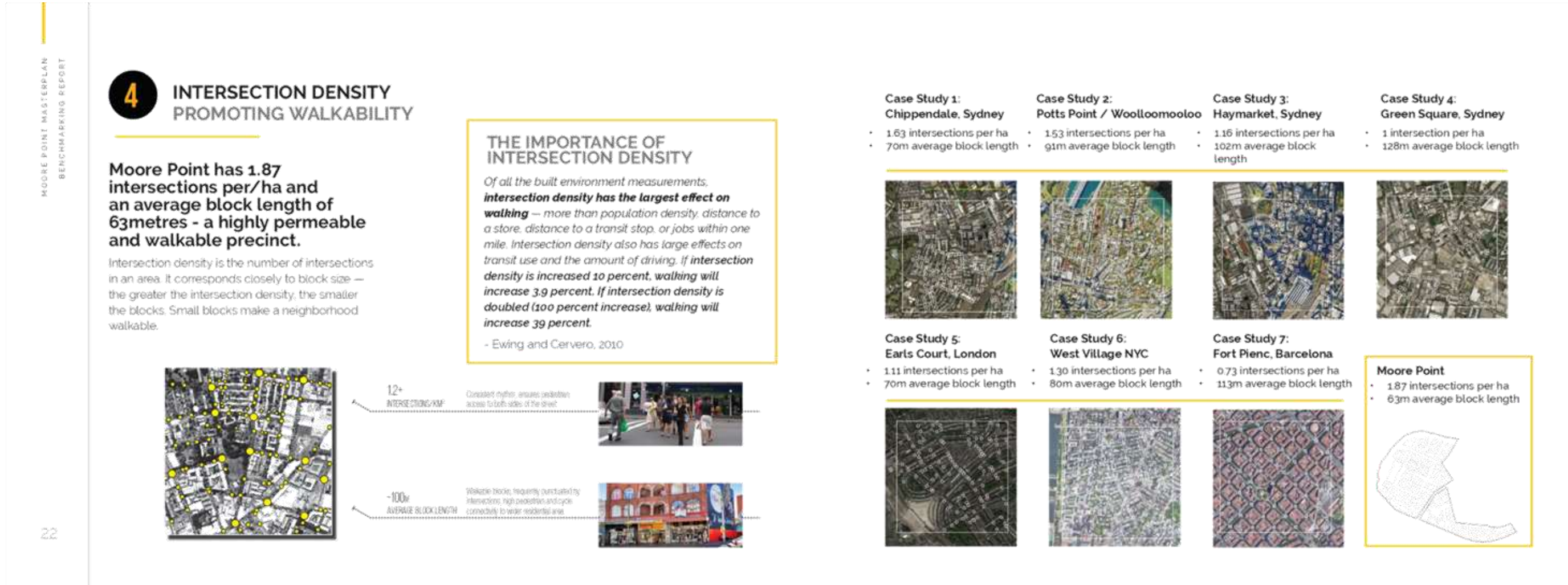


2036



2051





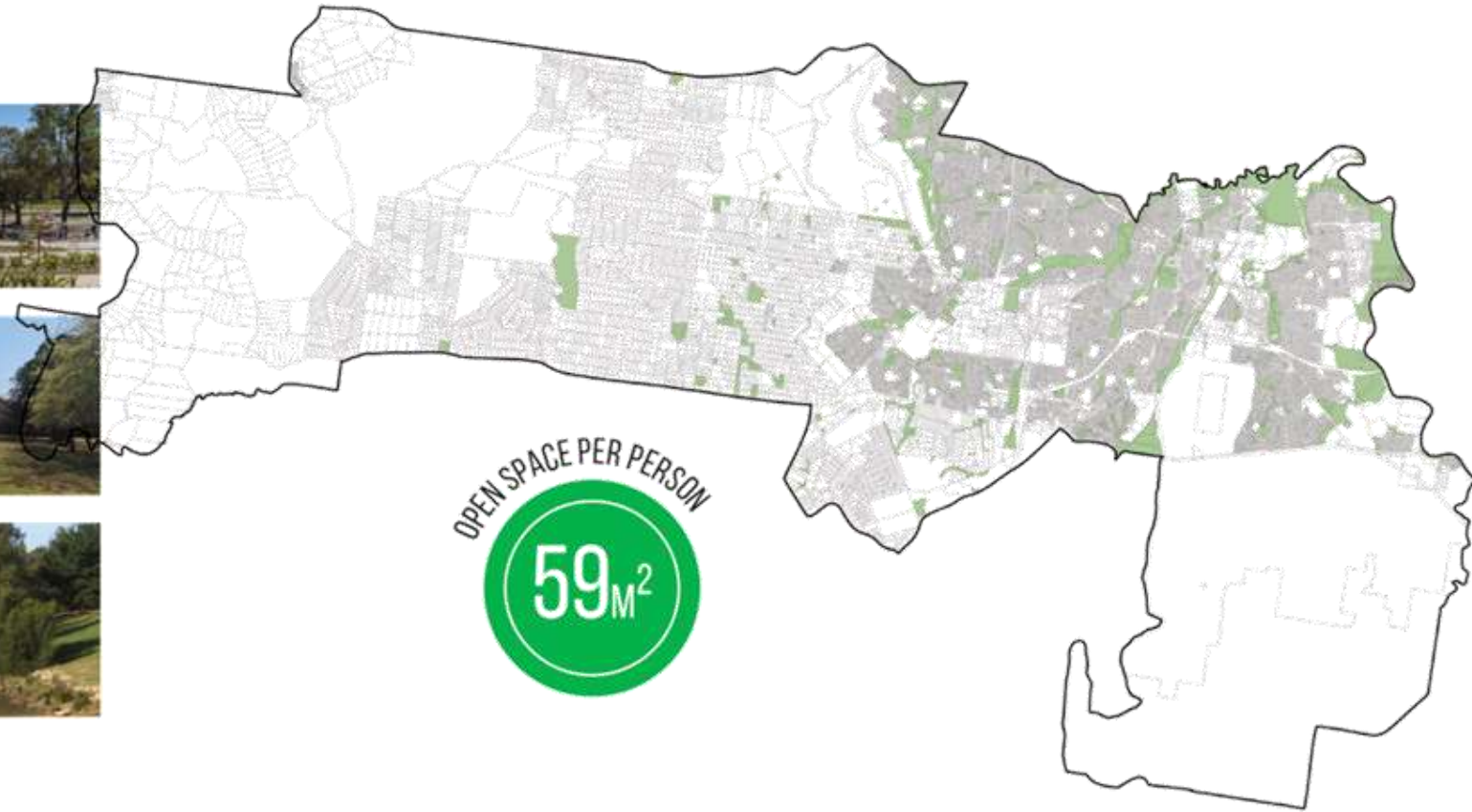
5 OPEN SPACES THE LGA SCALE

At the LGA scale Liverpool will comprise 59m² of public space per person by 2036 population estimates.

The Liverpool LGA, with the inclusion of the Moore Point Precinct Masterplan has a very generous provision of open space at 6.7 times the cited benchmark of 9m² per person, when calculated against 2036 population projections.



OPEN SPACE PER PERSON
59M²

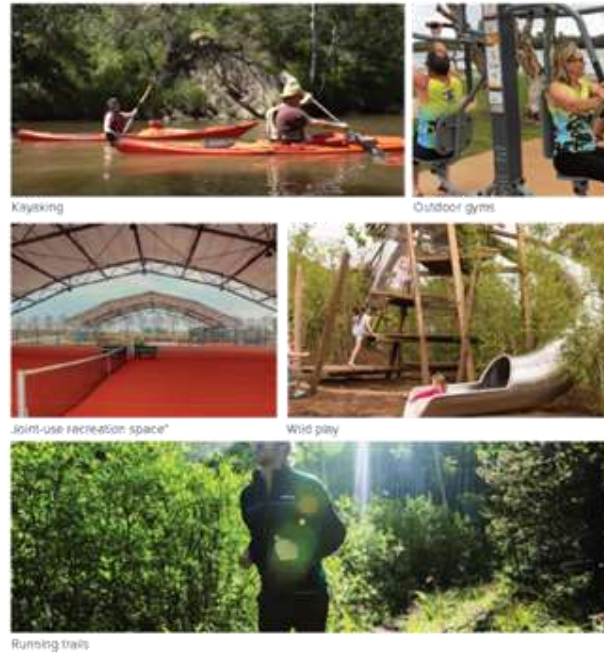






OPEN SPACE RECREATION SPACES

With over 7.5 ha of open space within the precinct, and over 40 ha in the immediate surrounds, there is an opportunity for Moore Point to improve and provide a range of spaces for active and passive recreation.



*Schöten-as-Community: Spaces Discussion Paper. May 2016 recommends the use of schools as shared community spaces.

PRECINCT OPPORTUNITIES



OPEN SPACE LARGE ORGANISED SPORT SPACES

Analysis of successful benchmarks indicates that large community outdoor recreation areas such as sports fields are located in outside vibrant, city-centre precincts.

RECREATIONAL OPEN SPACE BENCHMARK ANALYSIS

Across the benchmark precincts, sports oval are located outside the vibrant city precincts.



Eels Court, London

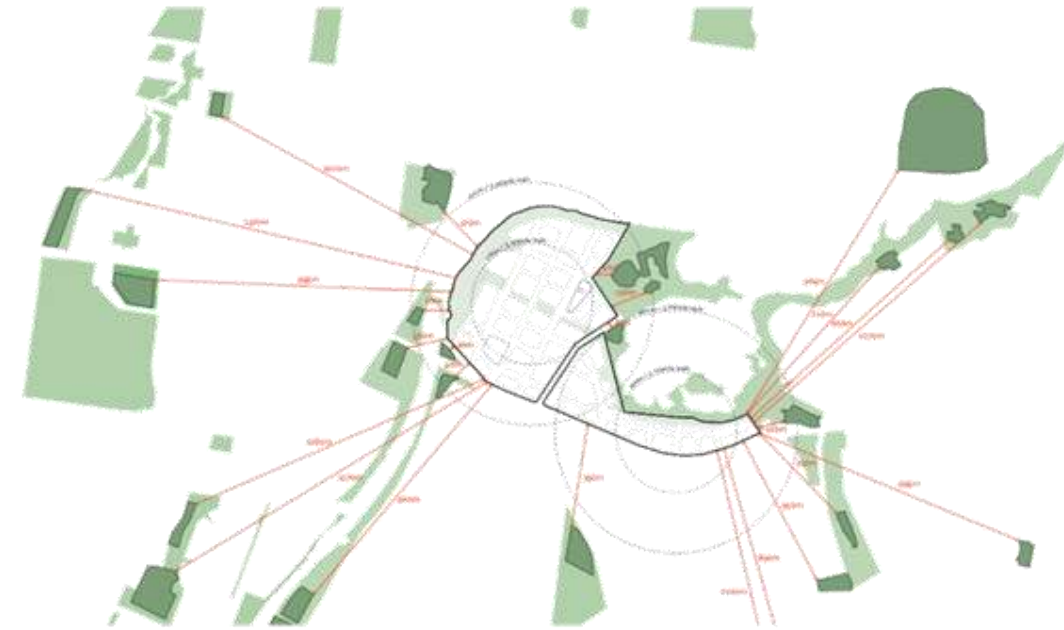


Haymarket, Sydney



Fort Pienc, Barcelona

SURROUNDING OPPORTUNITIES



Analysis of the area surrounding Moore Point indicates several possibilities for new or enhanced organised sport spaces, such as sports fields.

6 STREETS AS PUBLIC SPACES SPACE FOR VIBRANT URBAN LIFE

31% of the precinct's land area comprises of streets.

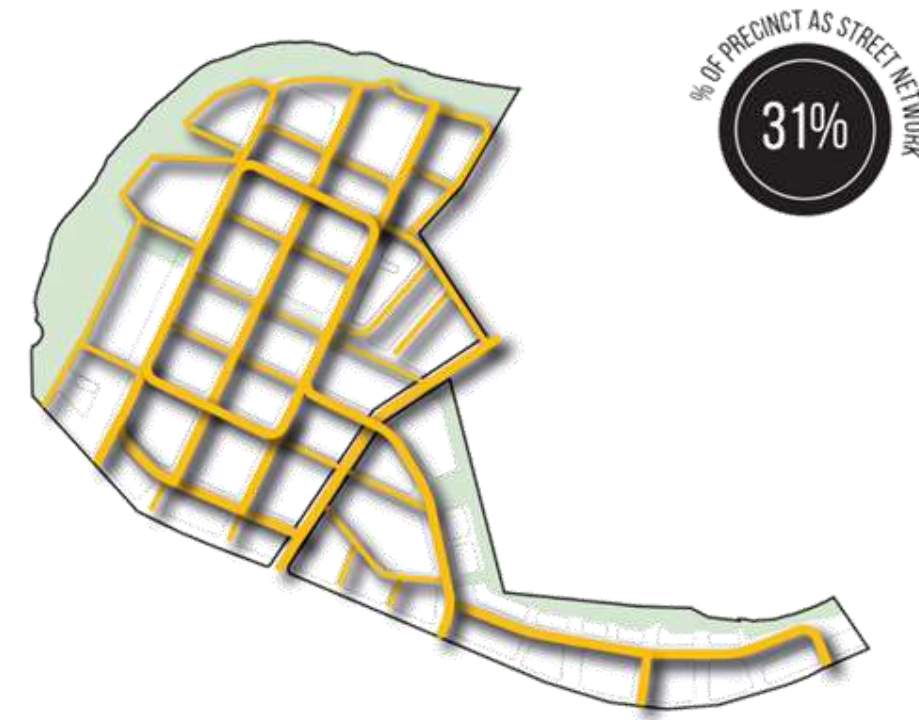
Adequate space for streets is considered one of the five key principles of sustainable urban neighbourhoods by the UN, which cites a 30% minimum of land area dedicated to a street network.

Streets are connecting elements that give vitality and purpose to cities, a place of activity and communal interaction. Having sufficient space dedicated to well-designed streets improves access to public services and enhances social capital.

UN Principles of Sustainable Neighbourhoods: Global Public Space Toolkit From Global Principles to Local Policies and Practice



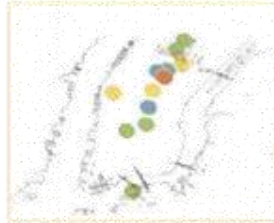
STREETS AS PUBLIC SPACES HOW DOES MOORE POINT COMPARE?



7 THE POWER OF 10 THINGS TO DO AND SEE

The Power of 10 forms the basis for the development of Precincts at Moore Point and how these can be programmed.

When a region contains at least 10 precincts for activities to occur within, their public perception begins to shift amongst both locals and tourists, and urban centres can become better equipped for generating resilience and innovation.



REGION
10 Precincts



PRECINCT
10 things to do





CONCLUSIONS

- Urbanity and density are two very different things.
- This Report has independently assessed the urbanity of the Precinct in itself, but also more importantly as a Precinct nested within the Liverpool City Centre through to Haigh Park with the overall strategic ambition for Liverpool CBD to 'citify' itself over time.
- As a Precinct in itself, 26,000 people per square kilometre supported by the urbanity offer will create the intensity of activity and dynamism highly desirable for a City Centre precinct. Indeed, liberated from the CBD's Hoodle Grid and benefitting from river and park frontages it is one of few (if not the only) opportunity to create a 'place pop'.
- As a Precinct nested within the CBD, the total population of 10,000 people per square km is at the lower end of the world's great places.
- The Precinct include a multitude of opportunities for recreational spaces, including a joint-use school hub and the enhancement of Haigh Park. Benchmark research indicates that large organised sport spaces such as sports ovals are located outside of vibrant inner city areas. Several opportunity sites have been identified surrounding Moore Point.



OCTOBER, 2020



LEAMAC & CORONATION



Moore Point Precinct Review Study Part 1: Contamination, Acid Sulfate Soils & Remedial Strategy

Newbridge & Bridges Roads, Liverpool, NSW

E22882.E09_Rev1
9 April 2020

Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils & Remedial Strategy
Report Number: E22882.E09_Rev1 | 9 April 2020

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C	Final Draft (minor updates)	11 March 2020	N. Kontos
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Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils & Remedial Strategy
Report Number: E22882.E09_Rev1 | 9 April 2020

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Executive Summary

This report has been prepared by EI Australia Pty Ltd (EI) on behalf of Leamac and Coronation to review contamination, acid-sulfate soils and precinct remediation options in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. There is nothing contained within this report to preclude rezoning.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure ES-1 – Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

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Figure ES-2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Review of Contamination, Acid-Sulfate Soils and Remedial Strategy

The purpose of this review was to provide an appreciation of how existing site contamination might affect potential land use changes and the study objective was to identify known and potentially contaminated areas that could impact on future beneficial land uses.

A secondary objective was to identify necessary data gap closure investigations, to inform feasible remediation strategies for making impacted areas suitable for the proposed land uses.

A precinct contamination summary was developed, with an outline of remedial options in the form of a remediation concept strategy and recommendations for site-specific remediation action plans, which are informed by the existing environmental data set and the proposed data gap closure investigation findings.

1. Introduction

1.1 Background and Purpose

Leamac & Coronation Property Group engaged EI Australia Pty Ltd (EI) to conduct a review study for the industrial area to be identified as the Moore Point Precinct (the precinct), which was formerly known as the Liverpool Waterfront.

With a total approximate area of 38.5 hectares, the precinct is located within a portion of the Liverpool Collaboration Area, identified as Georges River North (Area 10). It is bound by Georges River to the north and west, Newbridge Road to the south and the recreational area comprising Haigh Park, Lake Moore and associated islands to the east, as shown in the precinct locality map presented as **Figure 1-1**.

Part 1 of the Moore Point Precinct Review Study (the Study) involved a review of available land contamination and acid sulfate soil data, followed by a review of potential remedial options, with indicative costs to make the land suitable for a range of land uses. Part 2 presents a Preliminary Acid Sulfate Soil Management Plan for the precinct, and is reported under a separate cover.

The purpose of this Part 1 review was to provide high level information to the New South Wales Department of Planning & Environment (the Department), to inform the development of a Precinct Land Use and Infrastructure Strategy.

1.2 Study Purpose and Objectives

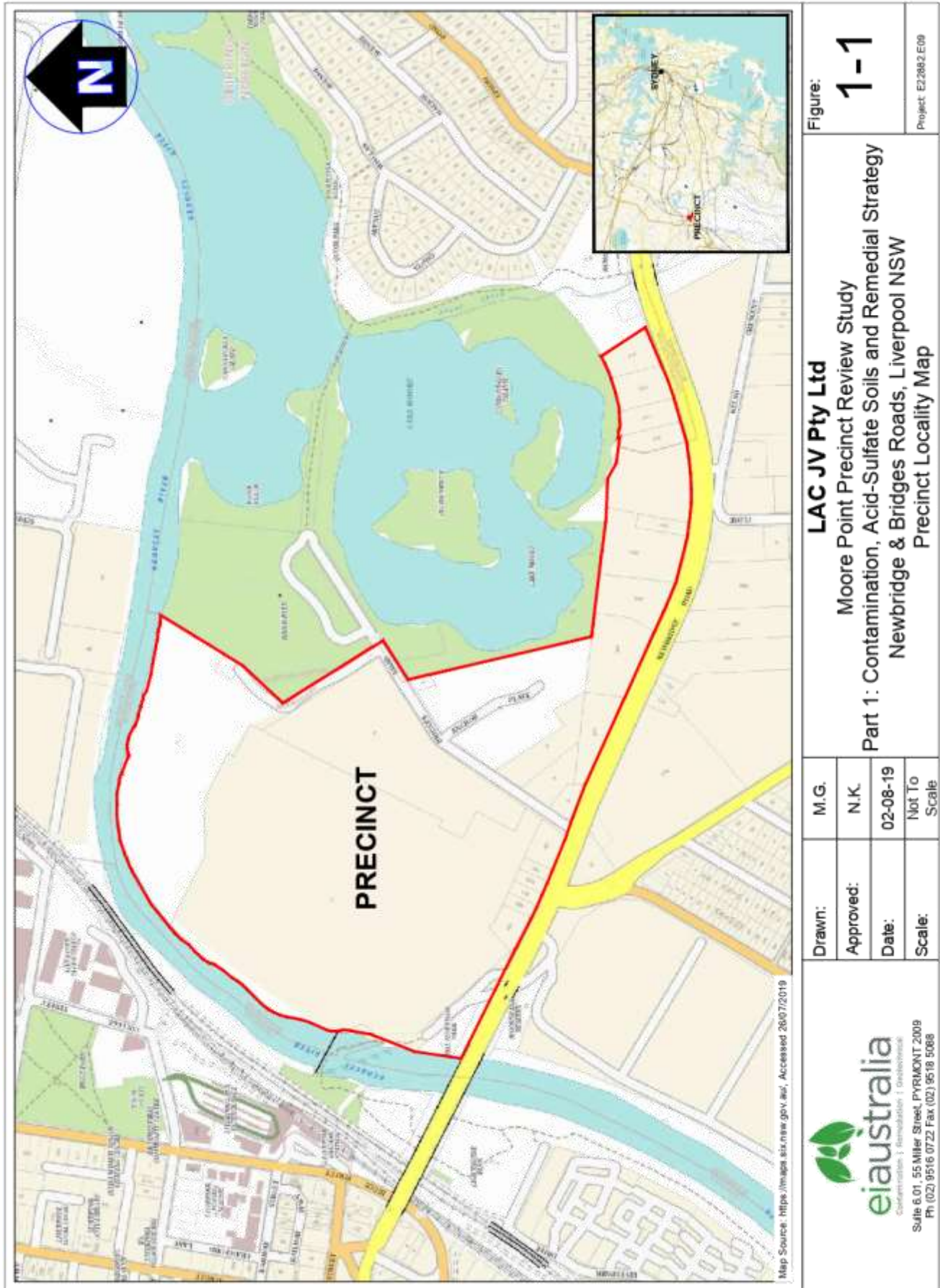
The purpose of this study was to provide an appreciation of how existing site contamination might affect potential land use changes that may be brought about by the envisaged Precinct Land Use and Infrastructure Strategy. The key objective, therefore, was to identify areas within the precinct that are contaminated, or are potentially subject to contamination to an extent that could impact on future beneficial land uses.

For areas identified as contaminated or potentially contaminated, a secondary objective was to consider remedial options and data gap closure investigations where necessary, to enable a feasible remediation strategy to be developed, with the aim of making impacted areas suitable for the proposed land uses.

1.3 Scope of Works

To achieve the Study objectives, the following scope of works was implemented:

- a) Review of publically available data and previous environmental investigation reports, provided to EI, for individual sites within the precinct;
- b) Development of a preliminary conceptual site model, with an appreciation of known and potential contamination sources, exposure pathways and potential receptors;
- c) Identification of gaps in the existing environmental data set, which are recommended for closure by further investigations for site characterisation and to inform remedial planning;
- d) Review of remedial options and methodologies, and the development of strategies to remediate contaminated areas, making them suitable for commercial and residential uses;
- e) Preparation of a contingent remedial action procedure outline to be applied for any new contamination, that may be discovered during data gap closure investigations; and
- f) Budget estimates and indicative timeframes for completion of the recommended works, provided under a separate cover.



1.4 Report Structure

The structure of this report is as follows:

- Description of the Moore Point Precinct study area, including its current land zoning and proposed uses, based on the Draft Masterplan for the precinct (**Section 2**);
- A review of the environmental setting in terms of topography, drainage, geology, soils, acid sulphate soil, groundwater conditions, landfilling and reclamation (**Section 3**);
- An appraisal of potential contamination based on Precinct history and previous environmental investigation reports, aerial photographs, searches of government-maintained public databases, including records of past and present underground petroleum storage systems (**Section 4**);
- Development of a preliminary conceptual site model for the precinct as a whole (**Section 5**);
- The identification of gaps in the precinct characterisation data set, which require closure to properly inform remedial action planning (**Section 6**); and
- Review remediation and management options for the areas of known contamination and outline a feasible remedial strategy, including a contingent remedial action procedure for new areas found to be impacted during data gap closure investigations (**Section 7**).
- Broad cost estimates for implementation of the data gap closure and site remedial strategy will be provided under a separate letter report.

1.5 Methodology

The Study involved a desktop review (Task 1), review of previous reports to identify potential / specific contamination (Tasks 2 and 3), identification of data gaps and closure requirements (Task 4) and potential remedial/management options with indicative cost estimates (Task 5). The methodology for these tasks was as follows:

1.5.1 Task 1 – Desktop Review

- Review of current land use maps of the precinct sourced from the Liverpool Local Environmental Plan 2008;
- Review of Liverpool City Council's *Draft Local Strategic Planning Statement – A Land Use Vision to 2050* to gain an appreciation on envisaged land use changes within the precinct;
- Identifying current land uses, including current occupiers across the precinct via a 'virtual drive-by' assessment and use of cadastral map boundaries and aerial photographic imagery;
- Review of the precinct's environmental setting, based on topographic, geological and soil maps, and publically available groundwater bore records;
- Review the contaminated land public registers maintained by the NSW EPA, to identify sites recognised by the EPA as potentially contaminated under Section 60 of the Contaminated Land Management Act 1997 and/or subject to regulatory notices; and
- Searches for archived SafeWork NSW records relating to the storage of dangerous goods, in particular underground petroleum storage systems.

1.5.2 Task 2 – Review of Previous Reports

A number of individual sites within the precinct have been subject to previous environmental investigations. There are other sites however, which have not yet been assessed. This task involved a review of available site environmental investigation reports to determine what are currently known to be the potential sources, nature, degree and extent of contamination.

1.5.3 Task 3 – Preliminary Conceptual Site Model

Task 1 and 2 findings were used to develop a Preliminary Conceptual Site Model (CSM) for the precinct, with the aim of summarising the sources, pathways and receptors for the contaminants of potential concern. The following factors were considered in developing the model:

- Former site use and potential contaminating activities;
- The types of chemicals likely to have been used onsite;
- Local geological and hydrogeological conditions;
- Potential land filling and land reclamation works; and
- Current site conditions as could be observed from the street frontage.

1.5.4 Task 4 – Data Gap Closure Requirements

The Preliminary CSM identified data gaps in the existing site characterisation data set. Data gap closure was deemed necessary for the purpose of properly informing any future environmental remediation works within the precinct. A summary outline of recommended data gap closure investigations was developed to be implemented in areas of the precinct where the site characterisation data set is currently limited.

1.5.5 Task 5 – Remediation/Management Options and Cost Estimation

A significant portion of the precinct area was considered as having a medium to high risk of being contaminated to some extent. Some form of remediation and management may therefore be required in localised areas on specific sites prior to redevelopment. Task 5 involved an overview of available remediation and management options for medium and high risk sites within the precinct, including a contingent remedial action procedure for new impacted areas that may be discovered by the data gap closure investigations.

1.6 Regulatory Framework and Information Sources

The sources of regulatory information for the Study are listed in **Table 1-1**.

Table 1-1 Sources of Information

Attribute	Source
Street names and locations	http://maps.six.nsw.gov.au (NSW Dept. Finance and Spatial Services Information eXchange), i.e. Spatial Services
Lot and Deposited Plan (DP)	http://maps.six.nsw.gov.au (Spatial Services digital cadastral database)
Property boundaries	http://maps.six.nsw.gov.au (Spatial Services digital cadastral database)
Aerial photo image (used in report figures)	http://maps.six.nsw.gov.au (current as at July 2019)
Historical aerial photographs	1930, 1943 - NSW Land and Property Information, hard copies of aerial photographs; 1965, 1991, 2002 - Nearmap Ltd
Current land use zoning map	Liverpool Local Environmental Plan 2008 (current version 22 March 2019)
Structure Plan and Proposed Land Uses	Liverpool City Council's Local Strategic Planning Statement: Structure plan map (pages 20-21) and Liverpool city centre and surrounding area inset map (page 22)
EPA Register of Notices issued under the CLM Act	http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx , NSW EPA website, search performed on 12 July 2019
EPA Register of contaminated sites notified to the EPA under Section 60 of the CLM Act	http://www.epa.nsw.gov.au/clm/publiclist.htm , NSW EPA website, 12 July 2019

Attribute	Source
EPA Register of sites holding Environment Protection Licences	http://www.epa.nsw.gov.au/prpoeoapp/ , NSW EPA website, 12 July 2019
Topography	http://maps.six.nsw.gov.au (current as at July 2019)
Geology	Sydney 9130 (1:100,000 scale) Geological Sheet, NSW Dept. of Mineral Resources, 1983
Soils	Sydney Soil Landscape Series Sheet 9130 (1:100,000 scale), Soil Conservation Service of New South Wales, undated
Acid Sulfate Soils	NSW Dept. of Land and Waste Conservation, (1:25,000 scale) Acid Sulfate Soils Risk Map, Edn. 2, Liverpool; and Liverpool Local Environmental Plan 2008, Acid Sulfate Soil Map, Sheets ASS-011, ASS-012 (1:5,000 scale) and ASS014 (1:20,000 scale)
Current site use	Google street view (July 2019)

The following guidelines and legislation were also referred to in completing the Study:

- *State Environmental Planning Policy (SEPP) 55 - Remediation of Land*;
- EPA (1995) *Sampling Design Guidelines*;
- EPA (2014a) *Waste Classification Guidelines*;
- EPA *Resource Recovery Orders and Resource Recovery Exemptions* (as listed at <http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm>);
- *Protection of the Environment (Underground Petroleum Storage System) Regulation 2008*;
- EPA (2017) *Contaminated Land Guidelines for the NSW Site Auditor Scheme*;
- NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999 – 2013 Amendment*; and
- OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.

2. Precinct Planning Information

2.1 Study Area and Land Parcel Identification

The Moore Point Precinct covers an area of approximately 38.5 hectares and is bound by Georges River to the north and west, Newbridge Road to the south, and a recreational area comprising Haigh Park, Lake Moore and the islands of Bulba-Dibeen and Gandandgara to the east. It comprises 26 separate land parcels, for which the Lot and Deposited Plan (DP) details are listed in the inset shown on **Figure 2-1**.

2.2 Current Land Use Zoning

In accordance with the Liverpool Local Environmental Plan 2008 (LEP), the current land use zoning for the various parts of the precinct is illustrated on **Figure 2-2**. The precinct currently comprises two land use zones as follows:

2.2.1 Zone RE1 Public Recreation

The triangular land parcel covering approximately 0.95 hectare in the southwest corner of the precinct, is currently zoned *RE1 Public Recreation*. For the purposes of this study, this area is identified as land parcel "Y" and comprises Bill Morrison Park, Haig Avenue and the northern edge of Newbridge Road to approximately 200m east of Georges River.

The key objectives of the *RE1* zone are:

- To enable land to be used for public open space or recreational purposes;
- To provide a range of recreational settings and activities and compatible land uses;
- To protect and enhance the natural environment for recreational purposes;
- To provide equitable distribution of public open space to meet the needs of residents; and
- To ensure the suitable preservation and maintenance of environmentally significant, or environmentally sensitive land.

Development permitted with consent in *RE1* zoned land includes, but is not limited to, entertainment facilities, marinas, mooring pens, indoor and outdoor recreation facilities.

2.2.2 Zone IN2 Light Industrial

The remaining 39.05 hectares (approximate) of the precinct are zoned *IN2 Light Industrial*, the objectives of which are:

- To provide a wide range of light industrial, warehouse and related land uses;
- To encourage employment opportunities and to support the viability of centres;
- To minimise any adverse effect of industry on other land uses;
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area;
- To support and protect industrial land for industrial uses; and
- To allow other land uses that are compatible with industry and that can buffer heavy industrial zones while not detracting from centres of activity.

Development permitted with consent in *IN2* zoned land includes, but is not limited to, boat building and repair facilities, industrial training facilities, light industries, liquid fuel depots, service stations, timber yards, transport and truck depots, vehicle body repair workshops and warehouse or distribution centres.

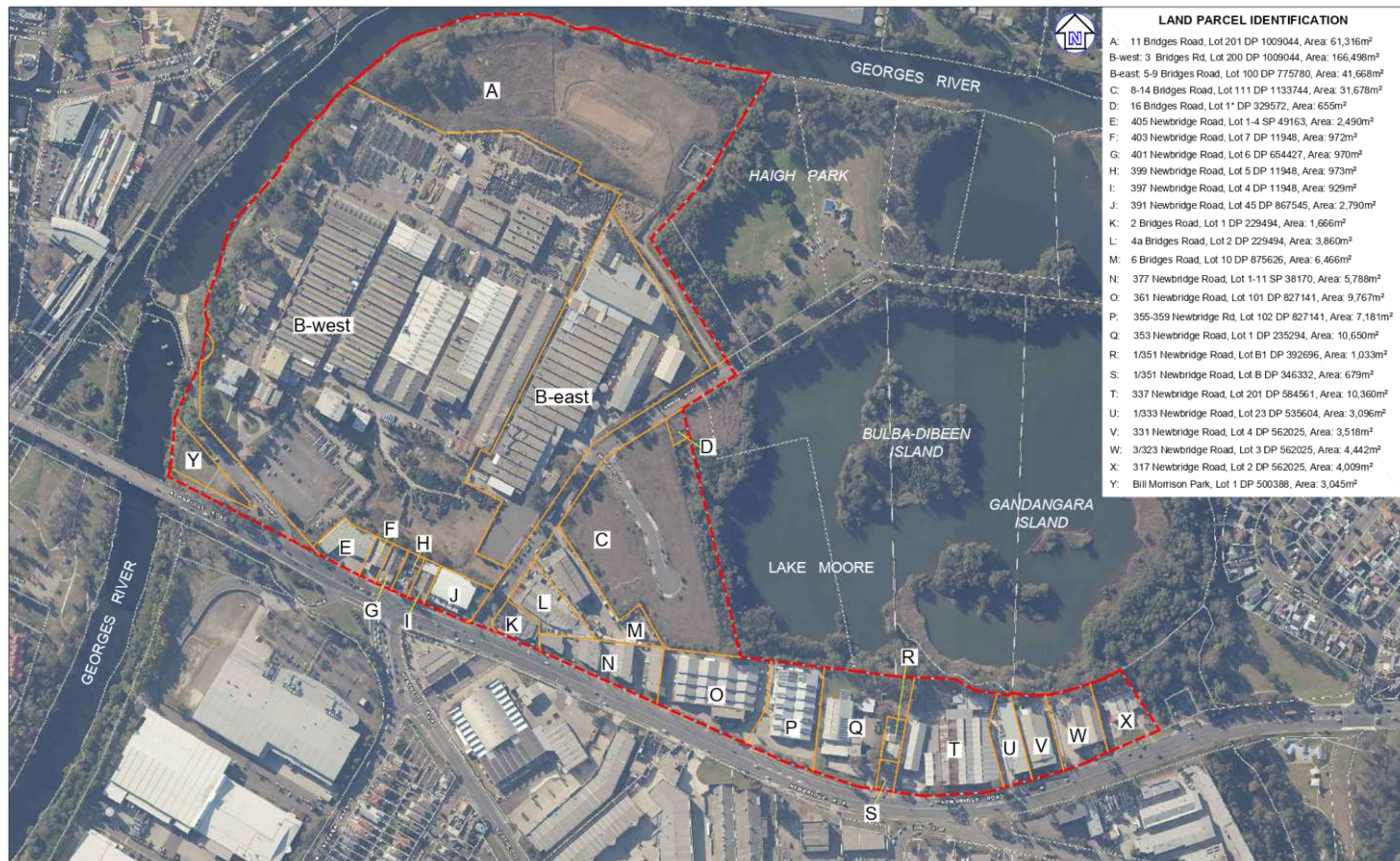
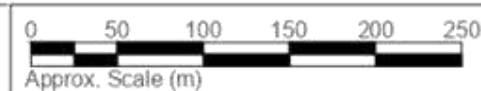


Photo Source: <https://maps.six.nsw.gov.au>, Accessed 17/07/2019

LEGEND

- Approximate precinct boundary
- Approximate lot boundaries



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Drawn: M.G.

Approved: N.K.

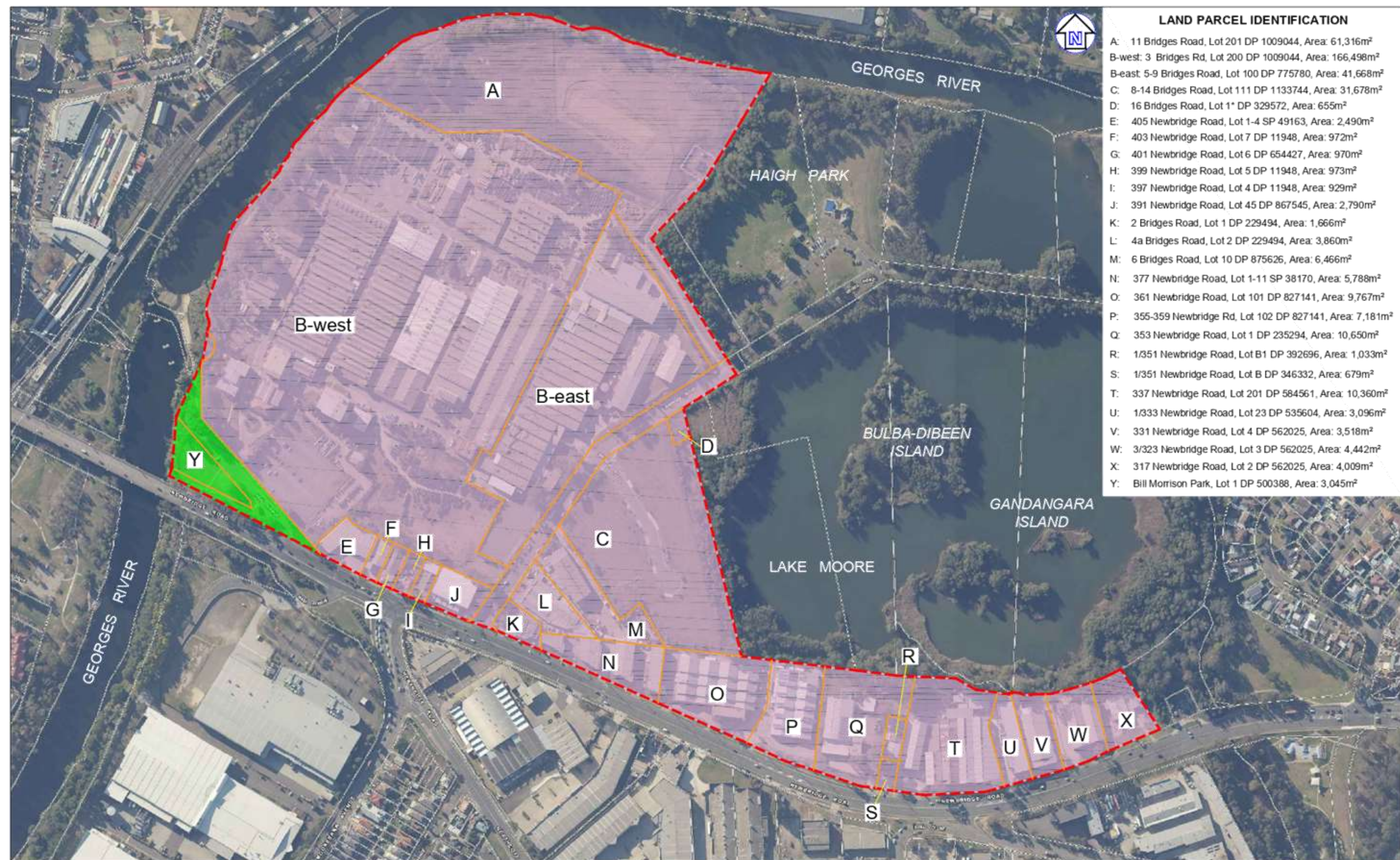
Date: 02-08-19

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 Moore Point Precinct Review Study
 Part 1: Contamination, Acid-Sulfate Soils and Remedial
 Strategy
 Newbridge & Bridges Roads, Liverpool NSW
 Land Parcel Identification

Figure:

2-1

Project E22882.E09

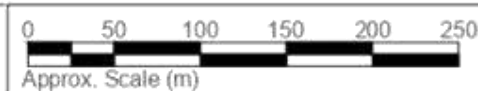


Land Zoning information is obtained from Liverpool Local Environmental Plan 2008 - Current version for 22 March 2019 to date (accessed 17 July 2019)

Photo Source: <https://maps.six.nsw.gov.au>, Accessed 17/07/2019

LEGEND

- Approximate precinct boundary
- Approximate lot boundaries
- IN2: Light Industrial zone
- RE1: Public Recreation zone



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Date: 02-08-19

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 Moore Point Precinct Review Study
 Part 1: Contamination, Acid-Sulfate Soils and Remedial
 Strategy
 Newbridge & Bridges Roads, Liverpool NSW
 Current Land Use Zoning

Figure:

2-2

Project E22882.E09

2.2.3 Current Land Uses

A virtual drive-by was conducted across the front of each land parcel within the precinct using Google Street View (dated April 2016). Observations in relation to land uses and site activities at that time are summarised in **Table 2-1**.

Table 2-1 Current land use based on street view imagery (April 2016)

Site ID ¹	Site Address	Business name	Description	Land use type
A	11 Bridges Road	Unused site	Viewing access unavailable due to private gate at driveway entrance	Vacant land
B-west	3 Bridges Road	Prismian	Cable spools in outdoor storage area, carpark adjacent to Haigh Avenue, multiple factory buildings	Industrial
B-east	5-9 Bridges Road	Joyce Foam Products	Multiple factory buildings	Industrial
C	8-14 Bridges Road	Unused site	Vegetated with grass and weeds, trees located around site perimeter	Vacant land
D	16 Bridges Road	Unused site	Vegetated with grass, weeds and small trees, green Colourbond @ fence at west and north boundaries	Vacant land
E	405 Newbridge Rd	Total Tools, Bells Carpet Court	Concrete-paved site with two retail tenants, and front carpark	Commercial
F	403 Newbridge Rd	MPE – Mura's Plastic Extrusions	2-storey office/factory building with concrete driveway, carpark and lawn	Commercial
G	401 Newbridge Rd	Gearbox Solutions	2-storey, mechanical workshop, concrete driveway and carpark	Commercial/Industrial
H	399 Newbridge Rd	Residence	1-storey, weatherboard residence with double garage, used for car parking	Residential/Commercial
I	397 Newbridge Rd	Pioneer DJ, Showtime	Show production audio, lighting, rigging, staging retailer	Commercial
J	391 Newbridge Rd	Pay Less and Carwash Cafe	Self-storage business, Auto washing and detailing business	Commercial/Industrial
K	2 Bridges Rd	Caltex	Petrol service station with 8 bowser pumps	Commercial/Industrial
L	4a Bridges Rd	Andrews Smash Repairs Pty Ltd	Auto body repairs workshop	Commercial/Industrial
M	6 Bridges Rd	Jordbellows International P/L	Manufacturer of metal expansion joints	Industrial
N	377 Newbridge Rd	Various, incl. Allstaff Australia	Four industrial buildings, 10 separate commercial light industrial units	Commercial/Industrial
O	361 Newbridge Rd	ICON Furniture	Factory building used for the manufacture and wholesale of furniture	Commercial/Industrial
P	355-359 Newbridge Rd	Seafood Warehouse & Taitung Food	Asian grocery retail and food products supplier	Commercial
Q	353 Newbridge Rd	Diesel Drive	Hino diesel engines and auto parts supplier, bitumen and concrete	Commercial
R, S	351 Newbridge Rd	Big O Tyres	Auto tyres retailer/fitter (Note: parcel R may be separate use at rear, uncertain)	Commercial

Site ID ¹	Site Address	Business name	Description	Land use type
T	337 Newbridge Rd	Wilson & Gilkes P/L	Precision metal products manufacturing and audio visual products	Commercial/Industrial
U	333-335 Newbridge Rd	Various	Commercial units: include bathroom supplies, carpet, tiles, dance/drama studio, gymnasium and offices	Commercial
V	331 Newbridge Rd	Studio Bagno, Kings Academy	Martial arts academy and yoga centre	Commercial
W	323 Newbridge Rd	Carpet Warehouse	Business liquidation warehouse and Carpet supplier	Commercial
X	317 Newbridge Rd	Carasel Towbars	Towbars and trailers workshop	Commercial
Y	Corner reserve	Bill Morrison Park	Public open space, trees and grass	Recreational

Note: (1) Lot and DP numbers for individual land parcels are shown in **Figure 2-1**.

2.3 Proposed Land Uses

Liverpool City Council's (Council's) Local Strategic Planning Statement has identified the Moore Point Precinct as an area where residential / mixed use is envisaged to support the Liverpool central business district and provide scope for innovation in land use integration.

Based on a Council Workshop presentation by SJB Urban (Architects, Planners, Urban and Interior Designers) on 24 July 2019, the draft Moore Point Masterplan encompasses six main areas of mixed land use zones as follows:

- *Vibrant Public Riverfront* adjacent to Georges River to the west;
- *Passive River and Parkfront* adjacent to Georges River to the north;
- A centrally located *Formal Grid Core and East to West Parkway*;
- An area reserved for *Education and Mixed Use* adjacent to Lake Moore at centre east;
- *Lakefront Mixed Use* adjacent to Lake Moore at south east; and
- *Newbridge Road Edge* mixed use at centre south.

Selected figures showing the preliminary masterplan concept (Ref. SJB Urban, 2019), are presented in **Appendix A**.

3. Environmental Setting

3.1 Topography and Drainage

With ground surface elevations generally between 7 and 9 metres relative to Australian Height Datum (m AHD), the topography across the precinct is generally level, grading to lower elevations with increasing proximity to the Georges River. Ground elevation at the western edge of Lake Moore is approximately 2m AHD.

A relatively steep embankment occurs at the northern boundary on parcel A (11 Bridges Rd, see **Figure 2-1**) and along the western boundary on parcel B-west (3 Bridges Rd), which continues to the river's edge.

Stormwater drainage is expected to flow in a direction that is consistent with ground surface topography, either to the municipal stormwater system or to Lake Moore, via existing storm water pit and pipe drainage systems.

3.2 Geology

The shallow soil profile is characterised by an upper layer of fill, which generally varies between 2m and 4m in thickness, but can be up to 7.5m deep in the northern part of the precinct, in the western part of land parcel A (Ref. S&G, 2007). The fill layer comprises reworked natural clay, sand, crushed shale and sandstone in the middle to northern parts of the precinct. Previous intrusive investigations on land parcels A, C and D have also identified anthropogenic inclusions of timber, concrete rubble, ash, rubber, metal, foam and organic matter.

Natural soils are dominated by Tertiary to Quaternary-aged, fluvial sediments, which consist of quartz sand, silty sand, silty clay, clay and silt associated with Georges River alluvium.

The alluvium is underlain by Mid-Triassic Wianamatta Group bedrock materials, which may comprise shale, carbonaceous claystone, laminite and lithic sandstone of the Bringelly Shale, but are more likely characterised by the black to dark-grey shale and laminite of the Ashfield Shale, east of Georges River. Shale was encountered at approximately 16m below ground level (m bgl) in an industrial water supply bore drilled at 391 Newbridge Road (land parcel J) close to the corner of Newbridge and Bridges Roads (details for this and other bores in the vicinity of the precinct are summarised in **Section 3.5.2**).

3.3 Soils and Soil Landscape

The Penrith 1:100,000 Scale Soil Landscape Sheet 9030 (Ref. NSW Soil Conservation Service, undated) shows most of the soils within the precinct west of Lake Moore as the Blacktown (bt) residual soil landscape. The "bt" landscape consists of gently undulating rises on Wianamatta Group shales. This soil landscape also exhibits local relief to 30m, slopes typically less than 5%, with broad, rounded crests and ridges.

Blacktown landscape topsoils are shallow (<100 mm) to moderately deep (50 – 150 mm) and are described as *hardsetting mottled texture contrast soils, red and brown podzolic soils on crests, grading to yellow podzolic soils on lower slopes and in drainage lines*. This area is also characterised as comprising moderately reactive, high plasticity sub soil, with low soil fertility and poor soil drainage.

The soil landscape in the south-eastern part of the precinct, to the south of Lake Moore, is characterised as the Rismetalsond (ri) fluvial soil landscape. The "ri" landscape in this area consists of Quaternary terraces of Georges River and is relatively flat and level, with slopes of less than 1%. Splays and levees provide local relief of less than 3m.

Ricmetalsond landscape soils are poorly structured, orange to red clay loams, clays and sands. Texture may increase with depth and ironstone nodules may be present. Plastic clays occur in drainage lines. Krasnozems, red earths and red podzolic soils occur on terrace surfaces, with earthy sands on terrace edges.

3.4 Acid Sulfate Soils (ASS)

The extent of ASS in the precinct was interpreted from two sources as follows:

- The Liverpool Acid Sulfate Soil Risk Map Series, Edition 2, Sheet 9030S2 at 1:25,000 scale, produced by the former Department of Land and Water Conservation (DLWC, 1997), shown for the precinct area on Map A in **Figure 3-1**; and
- The Acid Sulfate Soil Map Sheets ASS-011 and ASS-012 (at 1:5,000 scale) and Sheet ASS-014 (at 1:20,000 scale), produced by Council as part of the *Liverpool Local Environment Plan 2008*, which are shown for the precinct area on Map B in **Figure 3-1**.

3.4.1 Department of Land and Water Conservation 1997 – ASS Risk Map

According to the DLWC *Liverpool Acid Sulfate Soil Risk Map* the precinct lies within the following two class descriptions, as illustrated on Map A in **Figure 3-1**:

- *No Known Occurrence* - meaning acid sulfate soils are not known or expected to occur. Environmental risk is stated as: "land management activities are not likely to be affected by ASS materials". The majority of the precinct, including the southern parts of the land parcels located to the south of Lake Moore, falls into this ASS map class description.
- *Ep1* – meaning low alluvial and estuarine plains, with high probability of ASS occurrence within 1m of the ground surface. The typical landform is low alluvial plains, estuarine sandplains, estuarine swamps and supratidal flats. The environmental risk is stated as: "severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing". This ASS class is limited to the land parcels C, D and M, and the northern portions of parcels N, O, P, Q, T, U, V, W and X.

Although not within the precinct boundary, the Lake Moore sediments are mapped as *Em* - estuarine bottom sediments below water level, with severe environmental risk if disturbed by activities such as dredging.

3.4.2 Liverpool Local Environmental Plan 2008 - ASS Maps

According to the *Liverpool LEP Acid Sulfate Soil Maps* the precinct lies within the following two ASS class descriptions, as illustrated on Map B in **Figure 3-1**:

Class 5 – Works within 500 m of adjacent Class 1, 2, 3 or 4 land that is below 5 m AHD, assuming that redevelopment will include footings and basement construction works, which are likely to require site dewatering, lowering the water table 1m AHD on adjacent Class 1, 2, 3 or 4 land. The majority of the precinct, including the southern parts of the land parcels located to the south of Lake Moore, is covered under the ASS map Class 5 description.

Class 3 – Works more than 1 metre below the natural ground surface, and works which are likely to lower the water table more than 1 metre below the natural ground surface. ASS map Class 3 is limited to the land parcels C, D and M, and the northern portions of parcels N, O, P, Q, T, U, V, W and X.

MAP A Legend

Map Class Description	Depth to Acid sulfate Soil Materials	Environmental Risk
High Probability High probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has been suitable for the formation of acid sulfate soil materials. Acid sulfate soil materials are widespread or sporadic and may be buried by alluvium or windblown sediments.	Em Below water level	Bottom Sediments. Severe environmental risk if bottom sediments are disturbed by activities such as dredging.
	Ep0	At or near the ground surface. Severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing.
	Ep1	Within 1 metre of the ground surface. Severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing.
		Between 1 and 3 metres below the ground surface. Environmental risk if acid sulfate soil materials are disturbed by activities such as deep excavation for pipelines, dams or deep drains.
Low Probability Low probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has generally not been suitable for the formation of acid sulfate soil materials. Soil materials are often Pleistocene in age. Acid sulfate soil materials, if present, are sporadic and may be buried by alluvium or windblown sediments.		Greater than 3 metres below the ground surface.* Environmental risk if acid sulfate soil materials are disturbed by activities such as deep excavations, -e.g., large structure foundations or deep dams.
	Below water level	Bottom sediments.
		At or near the ground surface. The majority of these landforms are not expected to contain acid sulfate soil materials. Therefore, land management is generally not affected by acid sulfate soils.
		Within 1 metre of the ground surface. However, highly localized occurrences may be found, especially near boundaries with environments with a high probability of occurrence. Disturbance of these soil materials will result in an environmental risk that will vary with elevation and depth of disturbance.
No Known Occurrence Acid sulfate soils are not known or expected to occur in these environments.		Between 1 and 3 metres below the ground surface.
	Ap4	Greater than 3 metres below the ground surface.*
Disturbed Terrain	X4	No known occurrences of acid sulfate soil materials. Land management activities not likely to be affected by acid sulfate soil materials.

*Deep occurrences of acid sulfate soil materials not able to be confirmed by field inspection and sampling.

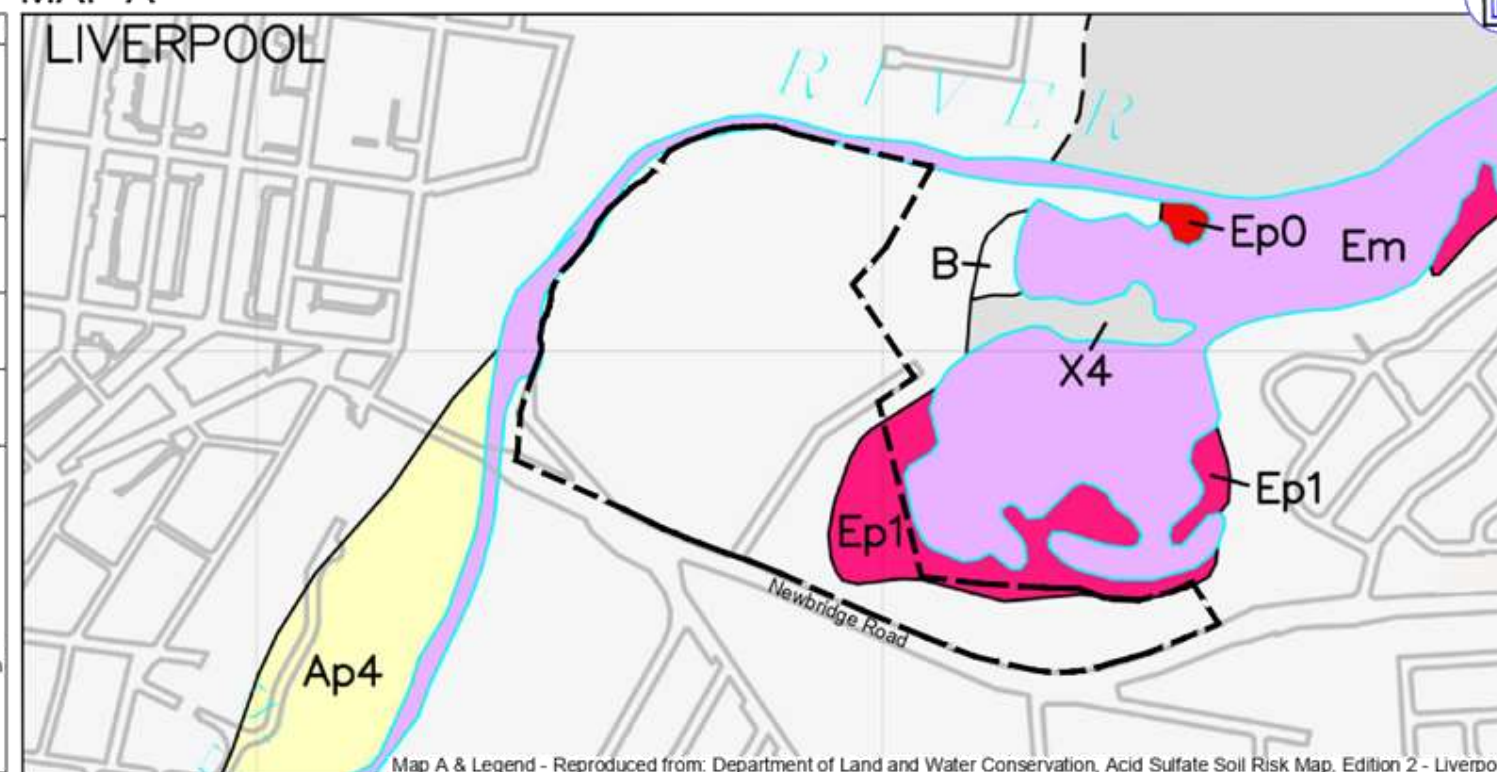
MAP B Legend

Colour Legend	Class of Land	Works
1	Class 1	Any works.
2	Class 2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Class 3	Works more than 1m below natural ground surface. Works by which the watertable is likely to be lowered more than 1m below natural ground surface.
4	Class 4	Works more than 2m below natural ground surface. Works by which the watertable is likely to be lowered more than 2m below natural ground surface.
5	Class 5	Works within 500m of adjacent Class 1, 2, 3 or 4 land that is below 5m AHD by which the water table is likely to be lowered 1m AHD on adjacent Class 1, 2, 3 or 4 land.

Cadastre

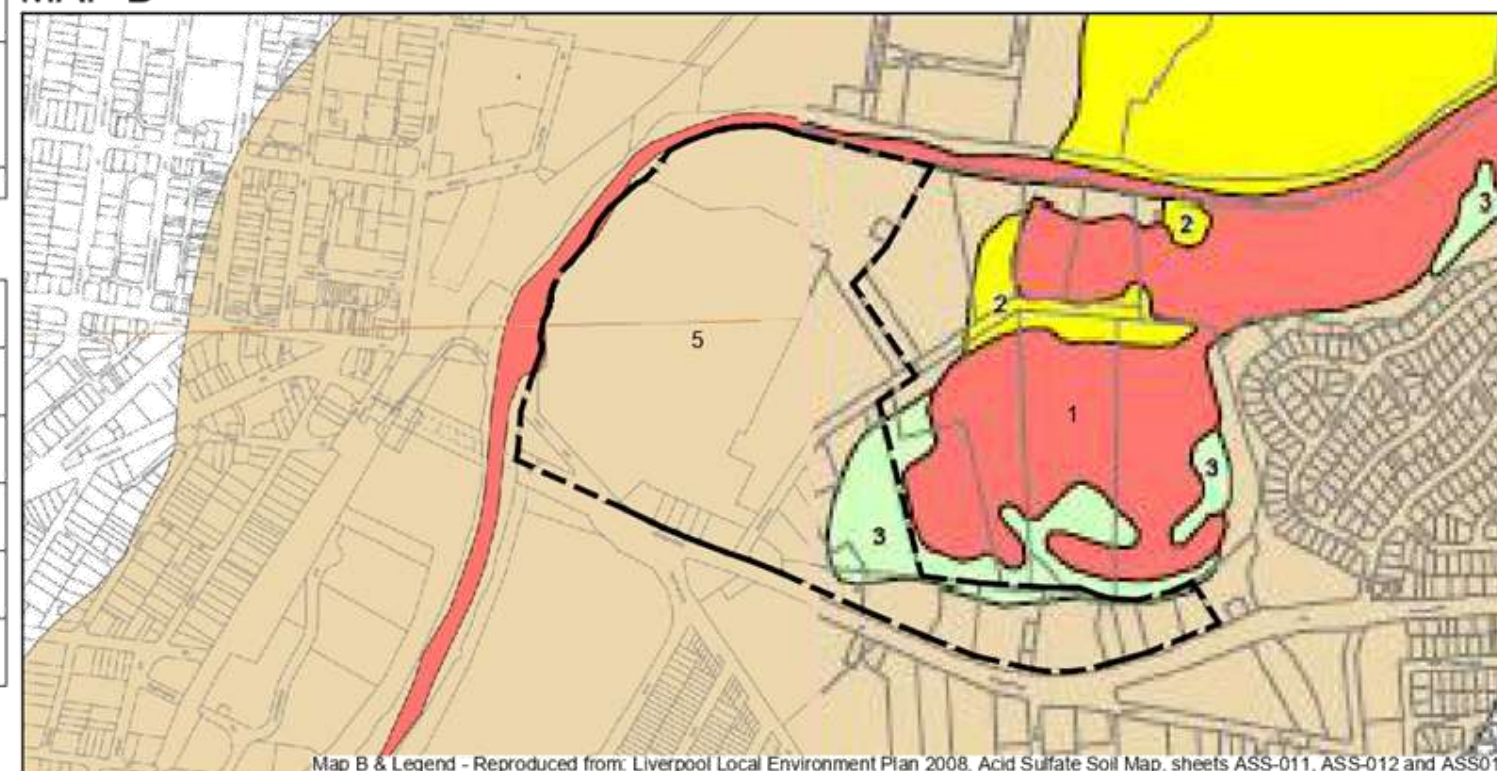
Cadastre 15/8/2008 © Dept of Lands

MAP A



Map A & Legend - Reproduced from: Department of Land and Water Conservation, Acid Sulfate Soil Risk Map, Edition 2 - Liverpool

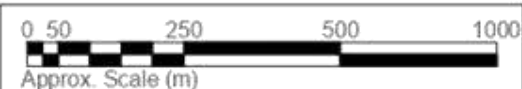
MAP B



Map B & Legend - Reproduced from: Liverpool Local Environment Plan 2008, Acid Sulfate Soil Map, sheets ASS-011, ASS-012 and ASS014

LEGEND

--- Approximate precinct boundary



Clause 7.7 of the LEP includes the following sub-clauses, which may be relevant to the envisaged Precinct redevelopment plan:

- (1) *The objective of this clause is to ensure that development does not disturb, expose or drain acid sulfate soils and cause environmental damage.*

Development consent is required for the carrying out of works described in the Table to this subclause [shown in Table 3-1] on land shown on the ASS Map as being of the class specified for those works.

Table 3-1 Acid sulfate soil land classes and works requiring development consent

Class of land	Works
1	Any works.
2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Works more than 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered more than 1 metre below the natural ground surface.
4	Works more than 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered more than 2 metres below the natural ground surface.
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Note: This table is to be used with reference to Map B on Figure 3-1.

- (2) *Development consent must not be granted under this clause for the carrying out of works unless:*
- a) *an ASSs management plan has been prepared for the proposed works in accordance with the Acid Sulfate Soils Manual and has been provided to the consent authority, and*
 - b) *a copy of the plan and a copy of the development application have been provided to the Director-General of the Department of Environment and Climate Change and the consent authority has considered any comments of the Director-General made within 21 days after those copies were provided to the Director-General.*
- (4) *Development consent is not required under this clause for the carrying out of works if:*
- a) *a preliminary assessment of the proposed works prepared in accordance with the Acid Sulfate Soils Manual indicates that an ASSs management plan need not be carried out for the works, and*
 - b) *the preliminary assessment has been provided to the consent authority and the consent authority has confirmed the assessment by notice in writing to the person proposing to carry out the works.*
- (5) *Also, development consent is not required under this clause for the carrying out of any of the following works by a public authority (including ancillary work such as excavation, construction of access ways or the supply of power):*
- a) *emergency work, being the repair or replacement of the works of the public authority required to be carried out urgently because the works have been damaged, have ceased to function or pose a risk to the environment or to public health and safety,*
 - b) *routine management work, being the periodic inspection, cleaning, repair or replacement of the works of the public authority (other than work that involves the disturbance of more than 1 tonne of soil),*
 - c) *minor work, being work that costs less than \$20,000 (other than drainage work).*

(6) Development consent is not required under this clause to carry out any works unless:

- a) the works involve the disturbance of more than 1 tonne of soil, such as occurs in carrying out agriculture, the construction or maintenance of drains, extractive industries, dredging, the construction of artificial water bodies (including canals, dams and detention basins) or foundations or flood mitigation works, or
- b) the works are likely to lower the watertable.

3.4.3 Assessment of ASS Risk

Based on the Liverpool LEP and DLWC ASS Risk Maps, it was concluded that there is a high probability of actual and/or potential ASS within the following parts of the precinct:

- The central and southern parts of land parcel C (8-14 Bridges Road);
- The southern part of land parcel D (16 Bridges Road);
- The south-eastern part of land parcel M (6 Bridges Road);
- The north-eastern part of land parcel N (2 Newbridge Road); and
- The northern part of land parcels O, P, Q, T, U, V, W and X, which are the sites at 361, 355-359, 353, 337, 1/333, 331, 3/323 and 317 Newbridge Road, respectively).

With reference to LEP Clause 7.7, Sub-clause 6 it is assumed that Precinct redevelopment will include disturbance of more than 1 tonne of soil and/or lowering of the water table for the construction of footings and basements. Such works would therefore trigger the need for development consent and an Acid Sulphate Soil Management Plan (ASSMP). This requirement has been addressed through the preparation of a Preliminary ASSMP, which forms the Part 2 report for this study, as mentioned in **Section 1.1**.

EL is not aware of any previous field investigations for ASSs on any parcel within the precinct. The lack of field investigation data in regards to ASS is considered to be a data gap. The need for characterisation of ASS conditions in high risk areas by targeted investigations is discussed in **Section 6**.

3.5 Groundwater

3.5.1 Regional Aquifer

Groundwater flows through the shallow alluvial sands and silty/clayey sands, which form the aquifer system beneath the precinct. These materials have been encountered during previous drilling investigations at between 6 to 10m bgl. The alluvial aquifer is considered to be a complex distribution of lower permeability clayey and silty sands, which interfinger with more hydraulically conductive sand and gravel lenses. This is demonstrated in the existing industrial water supply bore GW102641, located at the corner of Bridges and Newbridge Roads, which has been installed to screen gravel between depths of 14.2 and 16.1m bgl, as discussed in **Section 3.5.2**.

Previous groundwater investigations conducted in the northern part of the site (Ref. S&G, 2007) have indicated groundwater levels in the alluvium ranging between 5.8 and 9.8m bgl, with interpreted groundwater flow towards Georges River, with an estimated hydraulic gradient of between 0.1 and 0.2 m/m.

Although deeper groundwater is known to occur within the underlying fractured bedrock, which was encountered at approximately 16 m bgl close to the southern boundary of the precinct, the Ashfield Shale is not considered a viable aquifer resource due to its characteristically low hydraulic conductivity and the naturally saline groundwater moving through it.

3.5.2 Groundwater Use

An online search of registered groundwater bores was conducted by EI on the 6 August 2019 through the NSW Office of Water (Ref. <https://realtime.data.watersnsw.com.au/water.stm>). A total of nineteen (19) registered bores were identified within approximately 200m of the precinct centre. A summary of registered bores is presented in **Table 3-2**. A bore location plan and information sourced from the archived WaterNSW bore work summary forms are attached in **Appendix B**.

Table 3-2 Summary of registered water bores within 200m of the precinct boundary

Bore No.	Date Drilled	Drilled Depth (m)	SWL*/Salinity/Yield	Water-bearing unit	Bore Purpose
GW024497	01/10/1965	3.00	-	-	Waste Disposal
GW025907	01/04/1996	2.40			Waste Disposal
GW028330	01/11/1966	6.40	1.80 m / - / -	-	Waste Disposal
GW029192	01/11/1968	2.40	-	-	Waste Disposal
GW029194	01/11/1968	2.40	-	-	Waste Disposal
GW029195	01/11/1968	2.40	-	-	Waste Disposal
GW029196	01/11/1968	2.40	-	-	Waste Disposal
GW029197	01/11/1968	2.40	-	-	Waste Disposal
GW058697	01/07/1984	19.20	8.5 m / - / 0.13	Sand	Groundwater exploration
GW058698	01/07/1984	19.50	-	-	Groundwater exploration
GW102641	01/01/1998	16.70	5.13 m / - / 0.2	Gravel	Industrial
GW113068	10/07/2003	10.0	-	-	Monitoring Bore
GW113069	10/07/2003	10.0	-	-	Monitoring Bore
GW113070	10/07/2003	10.0	-	-	Monitoring Bore
GW113071	10/07/2003	10.0	-	-	Monitoring Bore
GW113072	11/07/2003	9.50	-	-	Monitoring Bore
GW113073	11/07/2003	10.0	-	-	Monitoring Bore
GW113074	11/07/2003	10.0	-	-	Monitoring Bore
GW113075	11/07/2003	9.5	-	-	Monitoring Bore

Notes: - Data not recorded; * SWL - Standing water level measured in m bgl; Salinity - units unspecified; Yield - well yield measured in L/s (litres per second).

Nine of the registered bores are located within the precinct area, comprising a low-yielding, industrial water supply bore (identified as bore GW102641) installed in 1998 on land parcel J (391 Newbridge Rd), and eight environmental monitoring bores (GW113068 to GW113075) installed in 2003 within land parcel A (11 Bridges Rd), in the northern part of the precinct.

The remaining ten bores were located outside the precinct boundary. These comprised eight shallow bores (maximum depth 6.4m bgl) registered for waste disposal uses, and two deeper bores (GW058697 and GW058698), completed to around 19m depth, located to the north of Georges River, which were registered for ground water exploration purposes.

Based on the inferred groundwater flow direction towards Georges River and Lake Moore (as described in **Section 3.5.1**), the industrial water supply bore (GW102641) at 391 Newbridge Road, is located up hydraulic gradient in relation to potential contamination sources that may have resulted from historical industrial operations within the precinct. The potential risk of exposure to contaminated groundwater pumped from this bore is therefore considered to be low.

In view of the above findings and the fact that a reticulated water supply is available in the area, it is unlikely that groundwater extraction for beneficial domestic use will be taking place within the precinct, or the surrounding areas.

3.6 Landfilling

The northern and eastern parts of the precinct have been reported as having been subject to periods of landfilling for the purpose of raising the level of the land to reduce the risk of inundation from Georges River and Lake Moore during major storm events. Previous intrusive investigations have encountered fill materials either as widespread filling, as is the case across most of the area within land parcels A, C and D, or as localised areas where industrial waste has been buried in parts of land parcels B-west and B-east.

The presence of fill has been documented for previously investigated areas, as follows:

- Parcel A (11 Bridges Road) was described as having received filling between the late 1940s until the 1990's (Ref. S&G, 2007) for site levelling purposes. The fill was described to have predominantly included inert wastes from adjacent sites and excess soils from large commercial and residential developments within the Liverpool area.
- Parcel B-west (3 Bridges Road) has been documented as having localised areas of ash fill on the western boundary, with asbestos in soil described as boiler lagging and fibro-cement fragments (Ref. URS, 2000). Limited fill has been identified in other parts of this site; however, up to six buried drums were found from trenching investigations in the area described as "north of Factory 8", located in the central-north part of this land parcel. Drum contents were not assessed, but were suspected to comprise isocyanate chemicals. It is not known if these drums were subsequently removed from the site.
- Parcels C and D (8-16 Bridges Road) were described by DP (2015) as having been filled to form a platform to raise this site around 2m to 4m above the surrounding areas to the north, south and west, and approximately 5m to 6m above Lake Moore to the east, with embankments formed to meet the surrounding land. Site inspection observations identified silty clay surficial fill, with sandstone and shale inclusions. Sporadic fragments suspected to be asbestos-containing materials (ACM) were also documented on the ground surface.

4. Contamination Appraisal

4.1 History of Moore Point

Moore Point Precinct forms the northern part of the suburb of Moorebank. The locality was named after the first British settler in the area, Thomas Moore, who arrived from England in 1792 and was appointed by Governor Macquarie to build the new town of Liverpool after it was proclaimed in 1810.

A historical land titles search performed for land parcel B-west as part of a Phase 1 environmental assessment by Woodward-Clyde (Ref. WC, 1999) found that the site was part of an original land grant to Thomas Moore. The land was consolidated and subdivided between 1918 and 1925, and subsequently relinquished as separate lots for a mixture of residential and market garden uses. This was consistent with circa-1900 maps of the area which indicated that the precinct was an amalgamation of rural paddocks and cultivated areas, as indicated by the 1899 Parish of Holsworthy Map, presented with the precinct area outlined in **Figure 4-1**.

Figure 4-1 Historic Map of Moore Point Precinct Area (circa 1899)



Various lots within the area were progressively acquired by private corporations from the time of World War II, which marked the commencement of industrial development within the area. Additional historical information, derived from aerial photographs sourced from NSW Land and Property Information and Google Earth, is provided in **Appendix C**.

4.2 Available Environmental Reports

Land parcel locations and identification details are listed in **Figure 2-1**. At the time of this review environmental reports were not available for the land parcels E to L, N and P to Y. The following environmental reports provided pertinent information in regards to site contamination, for the remaining parts of the precinct:

Area A (11 Bridges Road)

- Soil & Groundwater Consulting (2007) *Environmental Site Assessment – Phase 1 and 2, Metal Manufacturers Site, 11 Bridges Road, Moorebank, New South Wales*, Doc Ref: SG071485 RP01 Revision 1, 14 December 2007;

- The Planning Group NSW Pty Ltd (2013) *Statement of Environmental Effects, Proposed Industrial Warehouse Building, 11 Bridges Road, Moorebank, Lot 201 DP 1009044*, Report to Proactive Property (NSW) Pty Ltd, Doc Ref: 213.0176, 15 October 2013;
- JK Geotechnics (2013) *Geotechnical Investigation for Proposed Warehouse Development at 11 Bridges Road, Moorebank, NSW*, Report to Proactive Property (NSW) Pty Ltd, Doc Ref: 27021Zrpt, 2 December 2013; and
- Landpac Technologies Pty Ltd (2014) *Report Impact Compaction Trial, 11 Bridges Road, Moorebank NSW*, Report to Unit Process Consulting, Doc Ref: R1000-01 Issue A, 30 October 2014.

Area B (B-West: 3 Bridges Road / B-East: 5-9 Bridges Road)

- AGC Woodward-Clyde Pty Ltd (1999) *Phase 1 Environmental Due Diligence, 1 Heathcote Road, Liverpool NSW*, Doc Ref: A8602126\0001, 8 January 1999;
- URS Australia Pty Ltd (2000a) *Draft Phase 2 Environmental Site Assessment of Pirelli Cables Australia Ltd, 1 Heathcote Road, Liverpool NSW*, Doc Ref: A8602126\0003, August 1999;
- URS Australia Pty Ltd (2000b) *Letter Report: Additional Phase 2 Investigation – 1 Heathcote Road Liverpool*, Doc Ref: 41897\005\L010, 5 September 2000;
- Responsive Environmental Solutions (2003) *Phase Separated Hydrocarbon Delineation Investigation Final Report, Pirelli Cables, 1 Heathcote Rd, Liverpool NSW*, Doc Ref: 3013RP1, 18 September 2003;
- Responsive Environmental Solutions (2004) *Letter Report: Groundwater Sampling Results, Pirelli Cables Liverpool* (RES Ref: 4016L01, 11 May 2004);
- Responsive Environmental Solutions (2005a) *Product Recovery, 6 Monthly Report Update (January to June 2005), Pirelli Cables, 1 Heathcote Rd, Liverpool NSW* (RES Ref: 14001_RP03, 20 July 2005);
- Responsive Environmental Solutions (2005b) *Letter Report: Groundwater Sampling Results, Pirelli Cables Liverpool* (RES Ref: 5053L01, 8 August 2005);
- MJM Environmental Pty Ltd (2012) *Preliminary Pollution Incident Report and Sampling Plan May 2012, Prysmian Power Cables & Systems Australia - Liverpool* (MJM Ref: BK030412A, 16 May 2012);
- Benbow Environmental (2013) *Environmental Site Assessment Factory 2 Coolant Release, Report for Prysmian Group Liverpool NSW* (BE Ref: 121081_Rep_Final, 30 January 2013);
- Environmental Strategies (2013a) *Supplementary Soil and Groundwater Investigation, Prysmian Power Cables & Systems Australia Pty Ltd* (ES Ref: 10355RP01, 20 June 2013);
- Prysmian Power Cables & Systems Australia Pty Ltd (2013) *Remedial Action Plan for Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW 2170, Factory 2 – P1-88 Pit* (Internal Prysmian Report, 28 June 2013);
- Environmental Strategies (2013b) *Letter Report: Hydrocarbon Impacted Soil - Former Leaky In-Ground Pit, Factory 2, Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool, NSW* (ES Ref: 10355L01, 8 August 2013);
- Environmental Strategies (2013c) *Groundwater Monitoring Event (September 2013), Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW* (ES Ref: 10355aRP01, 6 November 2013);
- Environmental Strategies (2013d) *Environmental Management Plan (EMP), Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW* (ES Ref: 10355bRP01, 25 November 2013);

- Zoic Environmental Pty Ltd (2013) *Site Audit Report (SAR) and Site Audit Statement (SAS), Factory 2 Coolant Release, 1 Heathcote Road, Liverpool NSW, Prysmian Power Cables & Systems Australia Pty Ltd* (Zoic Ref: 13080 final, 20 December 2013);
- Environmental Strategies (2014a) *Groundwater Monitoring Event - December 2013, Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW* (ES Ref: 10355aRP02, 13 January 2014);
- Environmental Strategies (2014b) *Groundwater Monitoring Event - February 2014, Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW* (ES Ref: 10355aRP03, 21 March 2014);
- Environmental Strategies (2015) *Groundwater Monitoring Event - January 2015, Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool NSW* (ES Ref: 15001RP01, 11 February 2015);
- EI Australia (2015a) *Preliminary Site Investigation, 5-9 Bridges Road, Moorebank NSW* (EI Ref: E22745 AA_Rev0, 13 November 2015); which reviewed the following GDH Pty Ltd reports:
 - GHD Pty Ltd (2005) *Environmental Site Assessment, 5-9 Bridges Road, Moorebank NSW* (GDH Ref: 2113524/Moorebank_R001, April 2005);
 - GHD Pty Ltd (2006) *Annual Groundwater Monitoring, 5-9 Bridges Road, Moorebank NSW* (GDH Ref: 2114244, September 2006);
 - GHD Pty Ltd (2010) *Extract from 2010 Groundwater Monitoring, 5-9 Bridges Road, Moorebank NSW* (GDH Ref: 21/20305/167236, February 2011); and
 - GHD Pty Ltd (2014) *December 2013 Groundwater Monitoring Event, Joyce Foam Manufacturing Plant, Moorebank NSW* (GDH Ref: 21/212190/0, January 2014).
- EI Australia (2016a) *Preliminary Site Investigation with Limited Sampling, 3 Bridges Road, Moorebank NSW*, Doc Ref: E22882 AA_Rev0, 30 March 2016;
- EI Australia (2016b) *Acid Sulfate Soil Management Plan, Liverpool Waterfront, 3-11 Bridges Road, Moorebank NSW* (EI Ref: E22882 AC_Rev1, 22 November 2016);
- EI Australia (2016c) *Preliminary Site Investigation, Liverpool Waterfront, 3-11 Bridges Road, Moorebank NSW* (EI Ref: E22882 AD_Rev1, 22 November 2016); and
- EI Australia (2016d) *Geotechnical Assessment Report, 3-11 Bridges Road, Moorebank NSW* (EI Ref: E22882 GA, 13 January 2017).

Areas C + D (8-14 and 16 Bridges Road)

- Douglas Partners Pty Ltd (2015) *Report on Contamination Data Review, Proposed Residential Development, 8-16 Bridges Road, Moorebank, NSW* (DP Project: 76647.00, 2 February 2015).
- Douglas Partners Pty Ltd (2008) *Environmental Management Plan, 8 Bridges Road, Moorebank, NSW* (DP Project: 44823.05, October 2008), Referenced in DP, 2015.

Area M (6 Bridges Road)

- EI Australia (2015b) *Preliminary Site Investigation, 6 Bridges Road, Moorebank NSW* (EI Ref: E22779 AA, 13 November 2015).

Area O (361 Newbridge Road)

- EI Australia (2015c) *Preliminary Site Investigation, 361 Newbridge Road, Liverpool NSW* (EI Ref: E22746 AA, 13 November 2015).

4.3 Review of Previous Contamination Investigations

The summary presented in this section is based on a review of previous environmental reports, which particularly focussed on:

- Site land use history;
- Lithological descriptions and thicknesses of fill and underlying natural soils;
- Groundwater conditions, including depth variations and flow direction;
- Identified chemicals (contaminants) of environmental concern;
- Assessment of analytical data against the human health, ecological, groundwater and waste classification criteria currently endorsed by the NSW EPA;
- The potential degree and extent of contaminated soils, soil vapour and groundwater;
- Waste classification(s) of fill/soils that require offsite disposal; and
- Gaps in the existing site characterisation data set.

4.3.1 Area A (11 Bridges Road)

Soil & Groundwater Consulting (SGC, 2007)

Soil & Groundwater Consulting completed phase 1 and 2 environmental assessments of the Metal Manufacturers Site in 2007, on behalf of Carney's Lawyers. The objectives of the assessment were:

- To identify "contamination issues associated with the past and present site usage, which may significantly impact on future use or development of the site, or pose probable public health and/or environmental risks" (Phase 1 site history component); and
- To collate "sufficient information to characterise any soil or groundwater contamination that may present a risk to human and environmental health and thus impact on future development / use of the site" (Phase 2 soil, groundwater and landfill gas investigation component).

At the time of this assessment, the land was proposed for commercial / industrial use.

Phase 1 Site History Assessment

Area A was part of the river flat adjacent the Georges River, initially used for market gardening prior to the 1940s. Four residences were constructed along the central southern area during this period, although they were demolished in the 1950s. In the late 1940s, filling of the river flat was commenced, to provide a useable landform for the industrial operations immediately south of Area A. The filling and levelling operations intensified between the 1950s and 1970s; thereafter, only minor works were performed until the mid-1990s. The fill materials were predominantly inert industrial wastes from the adjacent manufacturing operation (Area B), along with excess soils from large commercial and residential developments in the Liverpool area.

A chain mesh fenced compound, located in the western part of the area, was used from 1982 to 1990 for administration activities and the storage of construction and electrical servicing equipment. This compound was subsequently used for storage of cable drums and redundant equipment from Area B. Grit blasting of steel fabrications was also conducted in the area for a short period during 1992.

The property was subdivided and made separate from Area B in 2000, after which use of the land ceased and the property remained vacant.

Phase 2 Soil, Groundwater and Landfill Gas Investigations

The phase 1 assessment indicated that fill (comprising industrial waste materials) was present over a large portion of the parcel A area, while various commercial activities had taken place, including market gardening and metal (steel) fabrication. The potential for land contamination was assessed as *high*, which triggered more detailed assessment by way of intrusive soil, groundwater and landfill gas investigations, the findings of which are summarised as follows:

Soils

A total of 56 test pits were constructed across the area (TP1-TP56), to depths of up to 8.2m BGL. Most test pits encountered industrial wastes comprising concrete, timber, wire, metal, bricks, plastics and/or paper cable wrapping materials. At most locations, the fill was mixed with sandy and clayey soils. The depth (layer thickness) of filling was typically 2 to 4m, with a maximum measured layer thickness of 7.5m.

No significant olfactory evidence of contamination was detected during the walkover inspection and test pit works, with only minor earthy type odours identified at some sampling locations. Similar odours were noted in examined natural soils adjacent the Georges River, suggesting they were the result of natural organic materials in the sediments. Results from the in-field screening of headspace samples for volatile organic compounds (VOCs) using a portable photo-ionisation detector (PID) were all less than 2ppm. The low VOC concentrations were consistent with the lack of any significant odours.

Soil samples were laboratory analysed for the contaminants of potential concern (COPC) identified during the Phase 1 assessment and all laboratory results were below the EPA-endorsed acceptance criteria applicable to commercial /industrial sites. A number of exceedances of the adopted ecological investigation levels (EILs) were identified for various metals; however, all average concentrations were below the corresponding thresholds.

Groundwater

Twelve groundwater monitoring wells (GW01 to GW12) were installed and sampled during the investigation, each well was installed to screen the shallow, unconfined aquifer. In addition, three existing up-gradient monitoring wells, located within the adjacent manufacturing operation (Area B), were gauged for groundwater level. Groundwater samples were collected from two of the wells for laboratory analysis.

Inferred groundwater level contours suggested that groundwater flow was from the south toward the Georges River, consistent with regional expectations (i.e. a north / north westerly hydraulic gradient). Field parameters indicated the groundwater was fresh, with electrical conductivity (EC) results typically less than 800 $\mu\text{S}/\text{cm}$, and slightly to moderately acidic (pH: 4.7-6.8).

Laboratory analytical results for the submitted groundwater samples indicated that concentrations of filterable (i.e. dissolved) metals were below the adopted investigation levels applicable to freshwater ecosystem protection, with the exceptions of zinc (all wells) and selenium (three wells). The elevated dissolved selenium concentrations also slightly exceeded the respective primary contact, aquaculture and drinking water criteria, as well as the irrigation and stock watering criteria (two locations). Given that the exceedances were relatively minor, the inferred hydraulic conductivity of the shallow aquifer was low and that there was potential for substantial dilution, risks to the environmental values of the river posed by the identified metals were considered to be low.

All ammonia results exceeded the corresponding primary contact recreational criterion, although they were well below the investigation level applicable to freshwater ecosystem protection. Two nitrate results exceeded the corresponding investigation level applicable to freshwater ecosystem protection; however, both were for wells located near the southern (up-gradient) boundary of the area. Nitrate results in all down-gradient wells and closer to the

Georges River were below this criterion, indicating that nitrate was attenuated within the boundaries of the area and unlikely to pose any significant risk to the river environment.

The concentrations for most remaining COPC were either below the laboratory reporting limits, or below adopted assessment criteria, with the exception of one petroleum hydrocarbon result at GW06, located in the central southern portion. The medium to heavy hydrocarbon fraction was identified at 0.9 mg/L, which exceeded the adopted criterion for oil of 0.6 mg/L. Again, all down gradient wells reported petroleum hydrocarbon results below the laboratory reporting limits; hence, it appeared that the contamination was attenuated prior to migrating off-site.

Landfill Gas

The SGC groundwater monitoring wells were constructed such that their screens intersected the unsaturated material above the watertable, providing an opportunity for any landfill gas to migrate into the well. The wells were subsequently sampled using a landfill gas meter, to extract stagnant air and test the presence of methane, oxygen and carbon dioxide.

All methane results were below the detection limit and it was concluded that no potentially explosive landfill gas occurred within the fill layers. The oxygen and carbon dioxide results indicated that aerobic degradation was occurring, posing a potential risk to subsurface workers in unventilated, confined spaces.

Conclusion

On the basis that no significant soil and groundwater contamination was identified, SGC concluded that the area was suitable for on-going commercial / industrial use.

The scope of this assessment did not include investigation of potential ASS, since "the proposed development is not expected to intersect these deep materials and the development is unlikely to alter their saturation status". Nevertheless, SGC stated that acid sulfate soils "may exist in the natural soils" and "if potential acid sulphate soils are to be intersected or disturbed by any works, then a management plan should be developed to mitigate and manage any risks to the environment that may arise as a result of these activities".

The Planning Group NSW Pty Ltd (TPG, 2013)

The Planning Group NSW Pty Ltd produced a Statement of Environmental Effects (SEE) on behalf of Proactive Property (NSW) Pty Ltd in support of a Development Application (DA) to Liverpool City Council for the construction of an industrial warehouse building on 11 Bridges Road. The SEE was prepared in accordance with the provisions under Section 79C of the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000* and provided the following information:

- At the time of SEE preparation Area A was vacant, undeveloped land zoned *IN2 Light Industrial*, under the Liverpool Local Environmental Plan 2008;
- Access to Area A was via an unsealed driveway; and
- The land immediately to the south (5-9 Bridges Road, Area D) was a warehouse complex, occupied by Joyce Foam Products.

Jeffery & Katauskas Pty Ltd (JKG, 2013)

This report presented the results of a geotechnical investigation, commissioned by Mr Richard Shoesmith of Proactive Property (NSW) Pty Ltd for the proposed 'lightweight' warehouse development. The purpose of the investigation was to obtain geotechnical information on subsurface conditions, as a basis for preliminary comments and recommendations in relation to the proposed development, including remediation options for the fill, footings, on-grade floor slabs and pavements.

The fieldwork was carried out using a truck-mounted rig on 13 November 2013 and comprised mechanical auger drilling of eight boreholes (BH101 to BH108) to a depth of 7.95m. The following relevant information was derived from these works:

- Area A is a battle-axe, roughly 'kidney' shaped property, approximately 400m long (east to west) by 120m wide (north to south). A 160m long access way extends northwards off Bridges Road.
- The land was gently undulating and was bounded by the southern bank of Georges River.
- The land was undeveloped, with the grass-covered ground surface sloping irregularly downwards to the north. Small trees were scattered around the site, with numerous medium and large trees located near the western end, with dense vegetation along the river foreshore.
- The foreshore was characterised by a batter of variable height. A ramp down to the river was located over the eastern end of the water frontage. The ramp was rock covered and incorporated a geofabric layer. Tension cracks up to 30mm wide were visible at the top edge.
- Fill was encountered in all boreholes, to depths between 1.5m (at bores BH101 and BH104) and 5.5m (at bores BH102 and BH103). The fill was variably compacted and generally comprised silty clay of low and medium plasticity, with bands of gravel and silty sand. Inclusions of gravel, slag, ash, concrete, timber, plastic and rubber were encountered within the fill mass.
- Natural sands were encountered below the fill in all boreholes, continuing to the termination depth at 7.95m BGL. The deposits comprised silty sand, clayey sand and sand, and varied erratically from very loose, loose and medium dense, with very loose sands often at the base of the profile.
- The groundwater level was found at approximately 7m depth in BH101 and BH106. Groundwater was not encountered within the remaining boreholes, except for some localised seepage at a depth of 2.5m, while drilling at location BH105. Water level gauging at the previously installed monitoring wells, showed groundwater levels between 7m and 8m bgl, with an inferred hydraulic gradient falling generally north towards Georges River.

Landpac Technologies Pty Ltd (2014)

This report described the impact compaction trial conducted on site filling materials within Area A. Uncontrolled fill was described to be predominantly silty clay and ranged in depth from 1.5 to 5.5m below the existing ground level.

Monitoring indicated that average compaction settlement on the *in situ* fill area had been reduced to acceptable levels with 40 surface passes using a Landpac, 3-sided Impact Compactor. The soil response monitoring indicated that the sub-grade was relatively uniform at the completion of the impact compaction works, with the exception of two weak areas.

4.3.2 Area B (3 and 5-9 Bridges Road)

Environmental reporting for Area B, also recognised as 1 Heathcote Road and the 'Prysmian Site', dated back to January 1999 and comprised phase 1 and 2 environmental assessments for due diligence purposes. In relation to pollution incidents, the works included a delineation investigation to define the extent of petroleum hydrocarbons impacts, product recovery assessment, groundwater monitoring, supplementary investigations, management planning and an audit statement by an EPA-accredited Site Auditor.

The reports were mostly commissioned by Metal Manufacturers Pty Ltd, Prysmian Power Cables & Systems Australia Pty Ltd and Coronation Property Company Pty Ltd.

The following information was reported for Area B as a whole:

- Area B was progressively built for commercial (industrial) use from the 1940s onwards, upon purchase by Cablemakers Australia Pty Ltd. Prior to that time, it was vacant land or used for farming, with small (possibly residential) structures being present.
- From 1942, Area B was used for the manufacture of electrical (overhead transmission) cables and polyurethane foam products, the latter being conducted by Joyce Australia Pty Ltd (trading as Joyce Foam Products) after 1990, upon purchasing the north eastern portion, referred to as area B-east for the purpose of this report.
- Licensing agreements with the NSW WorkCover Authority (currently SafeWork NSW) had been in place for the storage of dangerous goods on the premises, or at least sections thereof, dating back to 1995. The information included records relating to underground storage tanks (USTs).
- Licensing agreements with the EPA under the Protection of the Environment Operations Act 1999 (POEO Act) applied to identified industrial activities as described separately for the western and eastern parts of Area B, below.
- USTs had been present at several locations across Area B; however, it was understood that all USTs were removed by 2013, including eleven in the 1990s. No validation reports relating to tank and infrastructure removal, or the remediation of former UST areas, were known to be available. The absence of (active) USTs was consistent with the non-inclusion of USTs in the updated 2015 licence with the NSW WorkCover Authority (currently SafeWork NSW).
- Multiple above-ground storage tanks (ASTs) and liquid / solid waste areas were present across Area B.
- Coal fired boilers had been used on the area, although the last was decommissioned in the 1980s.
- Asbestos-containing materials (ACMs) were present within the buildings of Area B, including the roofing, external and internal walls, ceilings and floor coverings, pipe lagging, gaskets and electrical switchboards.

B-west (3 Bridges Road)

- Area B-west was subject to an EPA Environmental Protection Licence No. 818 for the identified industrial activities of 'Metal coating and metal waste generation' under the POEO Act 1999 (see also **Section 4.4**).
- By the time of the AGC Woodward-Clyde Pty Ltd (AGC-WC, 1999) phase 1 assessment, this part of Area B was being used for the production of copper power cables of varying gauges. The principal operations were as follows:
 - Factory 1: elastomer insulated cable manufacture (dispatch operations at north end);
 - Factory 2: wire drawing operations (tinning line at northern end) this activity has since been discontinued;
 - Factory 3: wire drawing and insulation operations (raw material store at southern end);
 - Factory 4: PVC compounding (continuous batch mixing) and cable insulation;
 - Factory 5: crosslinked polyethylene-insulated cable production and silane mixing;
 - Factory 8: cable testing facility; and
 - Factory 9: use not stated.
- Other activities and facilities on this part of Area B included:
 - An old administration building and newer office building, north of the car park;

- Engineering services, occupying various buildings west of Factory 1;
 - Scrap recovery buildings/area, north west of Factory 1;
 - Cable storage and despatch, north of Factory 1;
 - Flammable goods storage, south of the Raw Material Store and Factory 3;
 - Rubber compounding building, south of Factory 2; and
 - A drum storage area, north of Factory 5.
- Buried drums were reported north of Factory 8, the contents of which were unknown, but suspected to contain isocyanate.
 - Metal- (copper-, lead- and zinc-) impacted filling was identified in the northern portion, within the open, unsealed storage section.
 - Filling soils with fragments of ACM and boiler ash was identified in the western portion adjacent to the Georges River. This part of the area had been partly capped by geotextile and revegetated.
 - Petroleum hydrocarbons were identified in soil and groundwater south of Factory 4. Well WS01 contained phase separated hydrocarbon (PSH) identified as *diesel*, which may have been associated with a former UST. A hydrocarbon product recovery system was operational from 2003 until at least August 2005.
 - Petroleum hydrocarbons were identified in groundwater south-east of Factory 5. Well WS13 contained PSH (diesel), while dissolved hydrocarbons were detected in well WS14, which may have been associated with an up-gradient UST on the adjacent Joyce Australia Pty Ltd property.
 - Trichlorofluoromethane (TCFM) was identified in the groundwater from well WS16 on the south-east boundary. TCFM was used by Joyce Australia Pty Ltd as a blowing agent when manufacturing polyurethane foam, with the liquid waste stored in a UST.
 - Petroleum hydrocarbon-contaminated soils were identified to a depth of 4.5m in the south-west section of Factory 2. The contamination was due to leakage of approximately 13,000L of hydrocarbon-based, wire drawing coolant / lubricant (identified as WD4100) from the P1-88 Pit; but, was reported as not having impacted groundwater or dispersed laterally beyond the factory perimeter. The impact was managed by an Environmental Management Plan (EMP) developed by Environmental Strategies (ES, 2013d).
 - A non-statutory Site Audit conducted by Ms Kylie Lloyd of Zoic Environmental Pty Ltd (NSW EPA-accredited Site Auditor 0302; Zoic, 2013) provided "an independent review of the suitability and appropriateness of environmental works completed in the P1-88 Pit area, within Factory 2" (which had an area of approximately 1120 m²), as well as a determination on whether this part of Area B was "suitable for ongoing commercial / industrial use".
 - Following review of the reports completed by MJM Environmental Pty Ltd (MJM, 2012), Benbow Environmental (BE, 2013) and Environmental Strategies (ES, 2013a-d), the Site Auditor noted that "contamination exists at the affected part of the site from the WD4100 leak, however is suitable for the proposed land use". The WD4100 fluid had not impacted local groundwater, but "monitoring and management under a site specific environmental management plan is required". Subject to the implementation of the EMP, it was concluded in the audit statement that this part of Area B "can be made suitable for commercial / industrial use".
 - Quarterly groundwater monitoring was conducted within the area in 2005/2006, decreasing to biannual monitoring in 2007/2008, with annual groundwater monitoring thereafter. Monitoring results identified the continual presence of TCFM in the south western portion of

the site at monitoring wells DP101, W2, W3 and WS16. A very slow declining trend was reported; however, no evidence of natural attenuation was detected.

- By the time of the EI (2016a) preliminary investigation, the land uses within Area B and surrounding properties were still industrial in nature. 3 Bridges Road (Area B-west) was occupied by five large buildings (Factories 1 to 5), two smaller buildings (Factories 8 and 9), sheds and associated car parking facilities. The inventory of materials included steel and wooden cable reels (mostly in the northern portion), fourteen transformers, a water treatment plant (north-east portion), buried fill with ACMs (along the western boundary) and twenty-one ASTs, which stored plasticisers, extenders and resins; including four silos containing chemicals such as BoreSafe HE3490 and Innoplus, which were used in the cable (polyethylene) making operations.
- Fifteen investigative boreholes (BH1 to BH15) were drilled by EI across accessible parts of the area, to a maximum depth of 8.5m bgl. Groundwater monitoring wells were installed in six of these bores (BH1M, BH3M, BH7M, BH10M, BH11M and BH13M).
- Based on the combined borehole logs, the site lithology was generalised as a layer of anthropogenic filling overlying alluvial (estuarine) clays and sands.
- Except for asbestos, laboratory analytical results for identified COPCs in the tested soil samples all complied with the adopted, human health-based investigation / screening levels applicable for residential land use with minimal access to soil. An exceedance for lead above the corresponding investigation level applicable for recreational use was identified for one sample (BH5_0.2-0.3). Metals (predominantly copper, lead and zinc) exceeded adopted ecological investigation levels in fill samples from five boreholes. Asbestos (including free asbestos fibres) was identified in the fill sample BH12_2.9-3.0, collected from the western section, adjacent to the Georges River.
- Laboratory analytical results for COPCs in the tested groundwater samples were as follows:
 - Zinc exceeded the corresponding investigation level at all six (well) locations, the concentrations being similar to those reported by Responsive Environmental Solutions (RES, 2005a/b);
 - Chromium (one well), copper (four wells) and nickel (two wells) exceeded the corresponding investigation levels, although the concentrations were consistent with background conditions for urban (industrial) environments;
 - Elevated concentrations of petroleum hydrocarbons (F2 and F3 TRH fractions) were detected in well BH3M, located in the south eastern, hydraulically up-gradient corner, although they were generally lower than in previous URS (2000) and RES (2003 / 2005) investigations; and
 - TCFM contamination was detected in four monitoring wells (BH3M, BH7M, BH10M and BH11M), with groundwater concentrations at BH7M and BH10M exceeding the corresponding investigation level, suggesting that groundwater movement was causing dispersion of the contamination plume.
- EI (2016a) concluded that widespread contamination was present across this part of Area B and recommended that further investigations be performed "to ascertain the spatial extent of contamination and guide the selection of the most appropriate method for management or remediation in alignment with building footprints, landscaping and roadways of the proposed development". The recommended investigations, which are described in more detail in **Section 6**, included:
 - Further systematic soil sampling, to delineate contamination and define nominal hotspot diameters, plus determine the quality of site soils and groundwater within areas not previously investigated (e.g. building footprints, post demolition);

- Delineation investigations to define the extent of the metals- (copper-, lead-, zinc-) impacted filling within the northern portion;
 - Delineation of the extent of asbestos-impacted filling, particularly in the western section, adjacent to the Georges River;
 - Confirmation of the extent and source(s) of the TCFM groundwater contamination;
 - Confirmation of the extent and source of the petroleum hydrocarbon groundwater contamination in the south eastern corner; and
 - Implementation of a hazardous materials survey for the existing structures.
- EI (2016a) considered that this part of Area B could be made suitable for residential use, provided these recommended investigations were undertaken in accordance with an approved Remediation Action Plan (RAP), which would be developed. All tasks were to be "managed through the development application process in accordance with *State Environmental Planning Policy 55 (SEPP 55) – Remediation of Land*, with the remediation and validation incorporated into conditions of development consent".

B-east (5-9 Bridges Road)

- Area B-east was subject to an EPA Licence No. 3099 for the identified industrial activities of 'Plastic resins production' under the POEO Act 1999 (see also **Section 4.4**).
- As reported by AGC-WC (1999) factories 6 and 7 were part of the Joyce Australia Pty Ltd operation (i.e. the north eastern portion of Area B), and were used for the manufacture of polyurethane foam products.
- The site was also included on the EPA's contaminated land register and was subject to regulation in accordance with the Contaminated Land Management Act 1999, due to the presence of groundwater TCFM contamination. In accordance with Environmental Protection Licence No. 3099, a Pollution Studies and Reduction Program was in place to address this issue.
- EI (2015a) established that the use of this part of Area B was still industrial in nature, with a warehouse and several smaller buildings occupying the majority of the land. Areas of concern included multiple ASTs, chemical and liquid / solid waste storage areas, a corroded skip-bin and fill material with fragments of ACM at depth.
- Groundwater contaminated by TCFM, sourced from an underground, concrete liquid waste tank located within the south western portion of this area, had migrated to the adjacent western property (i.e. Area B-west, 3 Bridges Road), as noted above. Based on the monitoring conducted by GHD Pty Ltd, only a very slow declining trend was identified, indicating minimal natural attenuation. There was no documented information relating to the removal and validation of the underground concrete liquid waste tank.
- EI (2015a) recommended data gap closure investigations for this part of Area B, which are described in more detail in **Section 6**. These are outlined as follows:
 - Further systematic soil sampling, to delineate contamination and define hotspot diameters, and to characterise site soils and groundwater within areas not previously investigated (e.g. building footprints, post demolition);
 - Confirmation of the extent and source(s) of the TCFM groundwater contamination; and
 - Carrying out a hazardous materials survey for the existing structures.

4.3.3 Areas C and D (8-14, 16 Bridges Road)

Douglas Partners Pty Ltd (DP, 2015)

In 2015, Douglas Partners Pty Ltd (DP) completed a contamination data review (CDR) for the land identified as 8-16 Bridges Road, which comprises Areas C and D of the Moore Point Precinct area. This review was commissioned by Coronation Property Co Pty Ltd, in support of an application to Liverpool City Council for rezoning the land for residential purposes (with limited soil access). The objectives of the CDR were to:

- "Identify data gaps in the current contamination information"; and
- "Recommend requirements for further intrusive investigations", in order to assess the suitability of the land for residential use.

In addition to a walkover inspection of the area, the scope of work involved desktop studies primarily involving records searches and review of previous DP environmental reports dating back to 2002, as well as a related audit report produced by Environ Australia Pty Ltd in 2007.

The following relevant information was derived from the DP (2015) report:

- The area was zoned *IN2 Light Industrial*, under the *Liverpool Local Environmental Plan 2008*.
- Much of the land had been filled, forming a platform that was raised 2m to 4m above the surrounding ground to the north, south and west, and 5m to 6m above Lake Moore to the east. A keystone retaining wall, ranging in height from 0.5m to 5m at its northern end, was aligned along the top of the eastern embankment.
- The ground surface was mainly unsealed, except for an asphaltic concrete internal road connecting to Bridges Road to the west. Parts were grassed, with shrubs and small to medium sized trees on the embankments.
- Surface fill generally comprised silty clay with sandstone and shale inclusions. Anthropogenic materials included brick, cement and asphalt, with an occasional (sporadic) fragment of suspected ACM.
- Multiple stockpiles were present and comprising silty clay fill, asphaltic concrete, road base gravels, concrete and general building rubble. Fragments of suspected ACM were present in the stockpiles.
- Groundwater had been identified in investigation bores at depths of 4m to 12m bgl relative to the top of the fill platform, with levels at the eastern edge "likely to be influenced by fluctuations in the lake water level". The groundwater flow direction was inferred to be "generally south-south-easterly".
- DP identified that the potential contamination issues were:
 - The importation of filling materials from unknown sources; and
 - The application of herbicides and pesticides across the across the site surface.
- Except in relation to asbestos, analytical results for the COPCs in soil and groundwater samples were generally below the adopted human health and ecological investigation levels applicable for residential land use with minimal opportunities for soil access. It was noted; however, that sampling of the "Uncontrolled Refuse Fill" within the southern portion of the area had not been performed, which represented a data gap warranting further investigation.
- The Environ (2007) audit report noted that the land had been "filled over time, including uncontrolled wastes and concrete mixer wash out (slimes) that have been covered by imported silty clay and sandy clay containing some anthropogenic material. There is a risk that asbestos and other contaminants may be encountered in fill material. A UST was previously removed from the site and there is a risk that odorous soil may remain. The

auditor commented that "These risks are addressed in the Environmental Management Plan", presumably DP (2008) referenced in **Section 4.2**, "that should be implemented during redevelopment and any other subsequent excavation works".

- DP recommended that further intrusive investigations be conducted for the area, upon completion of a land survey, to determine changes in the depth of fill since the previous works. The proposed data gap closure investigations included:
 - A total of 42 soil sampling locations, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), the monocyclic aromatic hydrocarbons benzene, toluene, ethyl benzene and xylenes (BTEX), total recoverable hydrocarbons (TRHs), polycyclic aromatic hydrocarbons (PAHs), phenols, organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), herbicides and polychlorinated biphenyls (PCBs). At five locations, the sampling was to continue "to the maximum depth of fill". Five locations were to target the "Uncontrolled Refuse Fill" within the southern portion.
 - A total of 82 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - The installation of four groundwater monitoring wells, two positioned along the up-gradient boundary (to assess potential on-site migration of contamination from neighbouring sites) and two positioned along the down-gradient boundary (to assess potential off-site migration). The groundwater samples were to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX), TRHs and PAHs.

4.3.4 Area M (6 Bridges Road)

In 2015, EI completed a preliminary site investigation (PSI) of the land parcel identified as Area M at 6 Bridges Road. This investigation was commissioned by Coronation Property Co Pty Ltd, in support of an application to Liverpool City Council for rezoning the land for residential purposes, with basement car parking. The investigation objective was to appraise the potential for site contamination on the basis of historical uses, as well as anecdotal and visual evidence of possible pollutant sources. Investigation findings, as reported in EI (2015b) are summarised as follows:

- The property uses had been commercial/industrial in nature since the mid-1960s. Previously to this, it was used for farming and residential purposes.
- Since 1998 the property had been occupied by an engineering firm (Jordbellows Pty Ltd), which manufactured products such as filters, strainers and pressure vessels.
- The land was not subject to regulation by the EPA and was not listed in any of its public registers. A search of the stored chemicals database through SafeWork NSW (formerly WorkCover Authority), did not identify any records relating to the property.
- At the time of the walkover inspection, conducted 10 November 2015, the property consisted of a large metal warehouse, with corrugated fibre cement sheet roofing (likely asbestos-containing), within the north western portion. The remainder included a sealed car-park (adjacent to Bridges Road), an open, concrete/gravel area, a small corrugated metal shed and various equipment / raw material stores.
- Mechanical (hydraulic) punch forming equipment and welding bays were present within the warehouse. A wash bay was present within the western area of the warehouse.
- ASTs were located within the warehouse and on the open, concrete area. Flammable liquid stores including paints, liquefied petroleum gas (LPG) and hydraulic oil drums were located within a bunded section of the warehouse.

- Other equipment and materials, including wooden pallets, dis-used oil drums and metal wastes, were located predominantly in the south (eastern) portion.
- Based on anecdotal evidence provided by a member of Jordbellows Pty Ltd staff:
 - No USTs were present on the property;
 - Jordbellows Pty Ltd had been operating on the property for about 40 years; and
 - Surface runoff pooled in the south eastern part of the site, due to the adjoining land to the north and east having been built up.
- The conceptual site model identified multiple areas of environmental concern (i.e. potential sources of contamination), including the previous industrial activities, the chemical storage facilities (ASTs and drums), imported filling (for site levelling) and potential burial of ACM from demolished structures.
- EI concluded there was potential for contamination to be present on the land and recommended that a detailed site investigation (DSI) be conducted (including ASS assessment), to characterise site soils and groundwater and provide baseline data for determining any remedial requirements necessary to render the property suitable for the proposed rezoning.

4.3.5 Area O (361 Newbridge Road)

EI also completed a PSI of the land identified as 361 Newbridge Road, which is the land covered under Area O of the proposed Moore Point Precinct area. Similar to Area M, this investigation was also commissioned by Coronation Property Co Pty Ltd, for land rezoning to residential. The following outline summarises the reported PSI findings (Ref. EI, 2015c):

- The property was used for commercial/industrial purposes since 1965. Previous to this, it was used for farming (cropping) and residential purposes.
- Past industrial activities included plastics manufacturing (1970-1990), storage and distribution of food stuffs (1992-1995), tyre re-treading (2002-2007), furniture manufacturing and wholesale (on-going since 2008).
- The land was not subject to regulation by the EPA and was not listed in any of the Authority's public registers.
- A search of stored chemicals records through the NSW WorkCover Authority (currently SafeWork NSW), revealed the presence of an abandoned UST and various aboveground (dangerous goods) storage depots.
- At the time of the walkover inspection, conducted 29 October 2015, the property consisted of a large, brick and metal warehouse. Vegetation was present along the southern boundary and included garden beds and grass. All plants displayed no signs of stress.
- Small piles of plastic, metal and wooden debris were observed in north eastern corner of the property.
- Petroleum hydrocarbon (solvent-like) odours were detected in the south western corner of the warehouse, which was used for painting and varnishing furniture products.
- Three flammable liquid storage cabinets were observed within the south western section of the warehouse. Obvious signs of leakage (spillage/staining) were noted on the surrounding floors. The chemicals included Mirosol 1229 and Mirocat PC 3220/30 (clear satin topcoats).
- LPG bottles were observed inside the south western section of the warehouse.
- Three air compressors were present within the warehouse, two on the eastern side and one on the western side. Localised floor staining was present in their vicinities.

- Evidence of a former UST (now decommissioned) was observed in the south western corner of the property, by way of concreted tank filling points; however, no vents or fuel lines were identified.
- The conceptual site model identified multiple areas of environmental concern (i.e. potential sources of contamination), including the previous industrial activities, the chemical storage facilities (former UST area and flammable liquid cabinets), imported filling (for site levelling) and potential onsite burial of ACM from demolished structures.
- EI concluded that there was potential for contamination to be present on the land and recommended that a detailed site investigation (DSI) be conducted, including an assessment for ASS to characterise site soils and groundwater and to provide baseline data for determining any remedial requirements necessary to render the property suitable for the proposed rezoning.

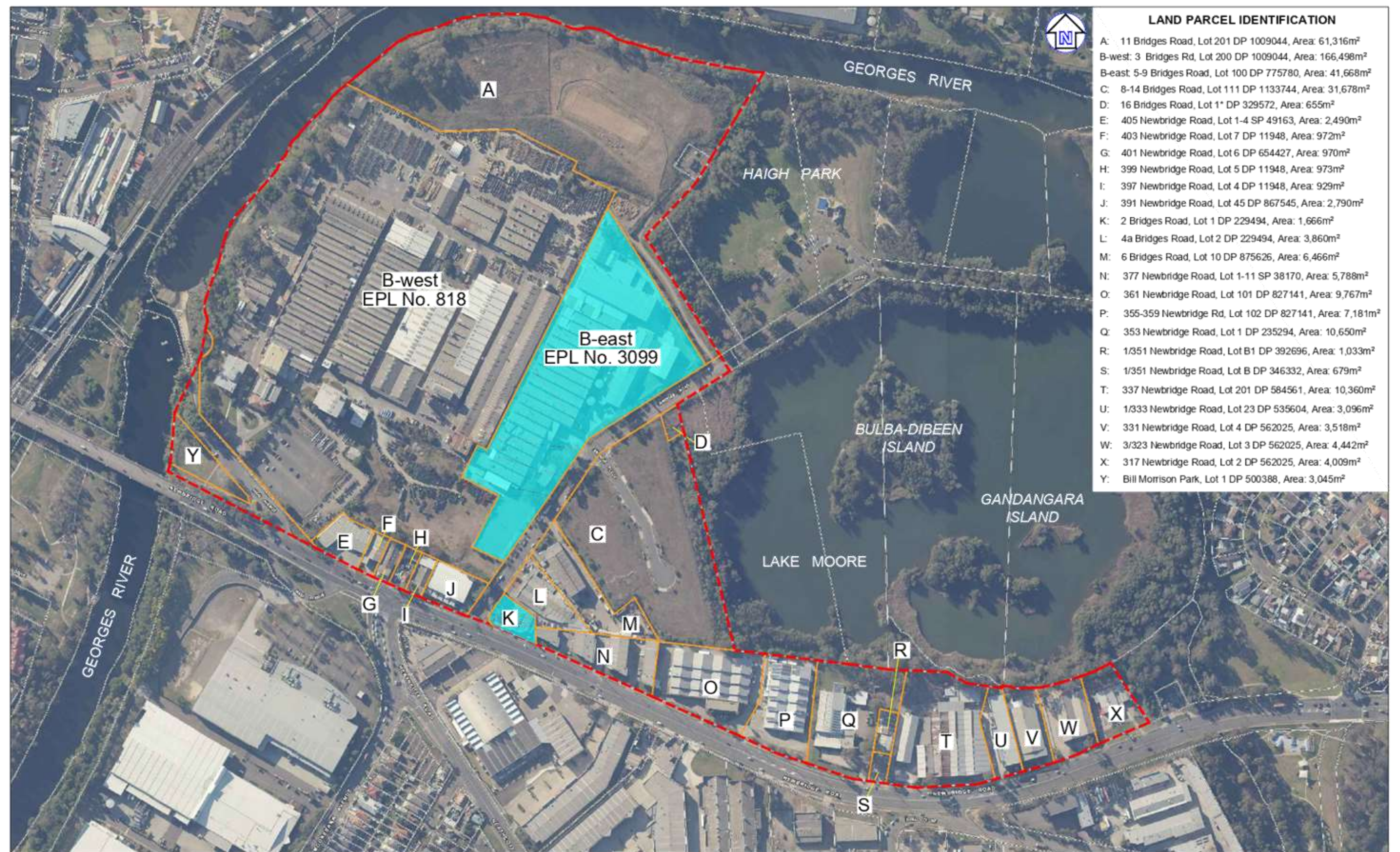
4.4 Environment Protection Licences

A search for Environment Protection Licences (EPLs) under the *Protection of the Environment Operations Act 1997* (the POEO Act) was performed on 15 August 2019 and identified two properties which are currently subject to EPLs. The results of the search are listed in **Table 4-1**, with the site locations highlighted on **Figure 4-2**. A copy of each licence downloaded from the NSW EPA website (<https://apps.epa.nsw.gov.au/prpoeoapp/>) is presented in **Appendix D**.

It should be noted that Environment Protection Licensing only came into effect in 1997 and did not address activities which ceased prior to 1997. Also, EPLs are required for sites involving industrial operations that are considered to present a greater potential risk of causing contamination, as compared to sites where operations do not include activities requiring an EPL. Potentially contaminating activities however, are also conducted on sites that are not required under the POEO Act to have an EPL. Historical activities which preceded the EPL scheme and landfilling may also be sources of contamination.

Table 4-1 Sites with previous or current Environment Protection Licences

Company name	Site Address (EPL No., Issue date)	Regulated Activities
Joyce Foam Pty Ltd (T/A Joyce Foam Products)	5-9 Bridges Road, Moorebank (Licence No. 3099, 2 Feb 2000) <i>Area B - east</i>	Plastic resins production
Prysmian Australia Pty Ltd	1 Heathcote Road, Liverpool, also known as: 3 Bridges Rd, Moorebank (Licence No. 818, 4 Aug 2000) <i>Area B - west</i>	Metal coating and metal waste generation

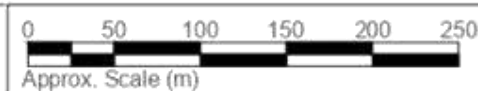


LAND PARCEL IDENTIFICATION	
A:	11 Bridges Road, Lot 201 DP 1009044, Area: 61,316m ²
B-west:	3 Bridges Rd, Lot 200 DP 1009044, Area: 166,498m ²
B-east:	5-9 Bridges Road, Lot 100 DP 775780, Area: 41,668m ²
C:	8-14 Bridges Road, Lot 111 DP 1133744, Area: 31,678m ²
D:	16 Bridges Road, Lot 1* DP 329572, Area: 655m ²
E:	405 Newbridge Road, Lot 1-4 SP 49163, Area: 2,490m ²
F:	403 Newbridge Road, Lot 7 DP 11948, Area: 972m ²
G:	401 Newbridge Road, Lot 6 DP 654427, Area: 970m ²
H:	399 Newbridge Road, Lot 5 DP 11948, Area: 973m ²
I:	397 Newbridge Road, Lot 4 DP 11948, Area: 929m ²
J:	391 Newbridge Road, Lot 45 DP 867545, Area: 2,790m ²
K:	2 Bridges Road, Lot 1 DP 229494, Area: 1,666m ²
L:	4a Bridges Road, Lot 2 DP 229494, Area: 3,860m ²
M:	6 Bridges Road, Lot 10 DP 875626, Area: 6,466m ²
N:	377 Newbridge Road, Lot 1-11 SP 38170, Area: 5,788m ²
O:	361 Newbridge Road, Lot 101 DP 827141, Area: 9,767m ²
P:	355-359 Newbridge Rd, Lot 102 DP 827141, Area: 7,181m ²
Q:	353 Newbridge Road, Lot 1 DP 235294, Area: 10,650m ²
R:	1/351 Newbridge Road, Lot B1 DP 392696, Area: 1,033m ²
S:	1/351 Newbridge Road, Lot B DP 346332, Area: 679m ²
T:	337 Newbridge Road, Lot 201 DP 584561, Area: 10,360m ²
U:	1/333 Newbridge Road, Lot 23 DP 535604, Area: 3,096m ²
V:	331 Newbridge Road, Lot 4 DP 562025, Area: 3,518m ²
W:	3/323 Newbridge Road, Lot 3 DP 562025, Area: 4,442m ²
X:	317 Newbridge Road, Lot 2 DP 562025, Area: 4,009m ²
Y:	Bill Morrison Park, Lot 1 DP 500388, Area: 3,045m ²

Photo Source: <https://maps.six.nsw.gov.au>, Accessed 17/07/2019

LEGEND

- Approximate precinct boundary
- Approximate lot boundaries
- Contaminated sites notified to EPA
- EPL Sites with current Environmental Protection Licence under POEO Act



4.5 Documented Contaminated Sites

4.5.1 NSW EPA Contaminated Land Notices

An on-line search of the Contaminated Land Public Record of NSW Environment Protection Authority (EPA) Notices was conducted on 5 August 2019. The contaminated land public record is a searchable database of:

- Orders made under Part 3 of the Contaminated Land Management Act 1997 (CLM Act);
- Approved voluntary management proposals under the CLM Act that have not been fully carried out and where the approval of the EPA has not been revoked;
- Site Audit Statements provided to the EPA under Section 53B of the CLM Act that relate to significantly contaminated land;
- Where practicable, copies of any documentation formerly required to be part of the public record; and
- Actions taken by the EPA under Sections 35 and 36 of the Environmentally Hazardous Chemicals Act 1985.

The search confirmed that the NSW suburb of Moorebank, NSW, including properties within 500m of the precinct, were not subject to any regulatory notices issued by the NSW EPA or the Office of Environment and Heritage (OEH).

4.5.2 Contaminated Sites Notified to the EPA

A search through the List of NSW Contaminated Sites notified to the EPA under Section 60 of the CLM Act 1997 was conducted on 15 August 2019. This list was last updated by the EPA on 1 August 2019 and includes properties on which contamination has been identified, and which are at various stages of the assessment and remediation process.

This search confirmed two properties within the suburb of Moorebank NSW were on the notified sites list (**Table 4-2**). These parcels are highlighted on **Figure 4-2**. It was also noted that the list of notified sites did not include any property located within 500m of the precinct.

Table 4-2 Summary of EPA Notified Sites in the vicinity of the precinct

Address	Site Occupier / Activity Type	Management Classification
2 Bridges Road, Moorebank	Caltex Service Station Moorebank / Service Station	Regulation under CLM Act not required
5-9 Bridges Road, Moorebank	Joyce Foam Products / Chemical Industry	Regulation under CLM Act not required

4.6 SafeWork NSW Searches for Underground Storage Tanks

Searches of SafeWork NSW (formerly WorkCover NSW) records relating to the storage of hazardous substances were conducted during the previous investigations. These searches identified the presence of underground storage tanks (UST) on land parcels B-west, B-east, C and O, some of which are believed to have been decommissioned and/or removed. In addition, 2 Bridges Road (land parcel K) has been in operation as a Caltex petrol service station for some time, which also is expected to have USTs.

As not all parcels within the precinct have undergone environmental assessment to date, it is possible that USTs also exist, or have previously existed, in other areas. A thorough review of underground petroleum storage systems (UPSS) within the precinct is warranted and is part of the recommended data gap closure works.

4.7 Summary of Known and Potential Contaminating Activities

The precinct has a history of passive and cultivated rural use during the 1800s and early 1900s. Mixed industrial development commenced in the early 1940s and expanded between the 1940s and 1970s, spreading to all remaining parts of the precinct. Based on current land uses for sites that have not been previously investigated (**Section 2.2.3**), and reported historical operations for previously investigated sites (**Section 4.3**), a summary of potentially contaminating land use activities is provided in **Table 4-3**.

Table 4-3 Potentially Contaminating Activities (Past and Present)

Parcel ID / Address	Business name(s) or site use	Historical operations and Potentially contaminating activities
Area A / 11 Bridges Rd	Undeveloped site	<ul style="list-style-type: none"> Market gardening pre-1940s involved chemical spraying using herbicides and pesticides. Widespread filling and site releveling between the late 1940s - 1970s. Fill materials comprised inert waste sourced from land parcels B-west and B-east, as well as surplus natural soils excavated from developments in the Liverpool area. Metal sheet fabrication. Storage of construction and electrical equipment, cable drums and redundant machinery (1982 - 1990). Grit blasting conducted during 1992. <p>SGS reported that site wide investigations found no evidence of significant contamination, Ref. SGC, 2007 (Section 4.3.1)</p>
Area B-west / 3 Bridges Rd	Cablemakers Australia Pty Ltd, Metal Manufacturers Pty Ltd, Prysmian Power Cables & Systems Australia Pty Ltd, Coronation Property Company Pty Ltd	<ul style="list-style-type: none"> Farming up to 1940s with potential chemical spraying using herbicides and pesticides. AGC-WC, 1999 reported a number of activities in relation to electrical cables manufacturing, as detailed in Section 4.3.2: <ul style="list-style-type: none"> Factory 1: elastomer insulated cable manufacture; Factories 2: wire drawing operations, petroleum-impacted soils were found at 4.5mBGL in southwest part of factory, due to UST leak of wire drawing coolant/lubricant, Environmental Management Plan (EMP) in place (ES, 2013d). Site Audit found that the site can be made suitable for commercial/industrial uses by implementing the EMP; South of Factory 2: rubber compounding building; Factory 3: flammable goods storage & wire drawing; South of the Raw Material Store: flammable goods storage; Factory 4: PVC compounding; South of Factory 4: petroleum-impacted soil and groundwater, with phase-separated hydrocarbons (PSH) related to diesel leak from former UST. Petroleum product recovery was conducted by RES between 2003 and August 2005 Factory 5: polyethylene-insulated cable production and silane mixing; Southeast of Factory 5: petroleum-impacted groundwater, with PSH related to diesel leak from former UST; North of Factory 5: Drum storage area; Factory 9 (formerly Factory 6): use not reported Factory 8 (formerly Factory 7): cable testing; North of factory 8: Buried drums, suspected to contain isocyanate; South of Raw Material Store & Factory 3: flammable goods storage; Northern unsealed storage area: copper, lead and zinc impacted filling was reported; Western area adjacent to Georges River: ACM and boiler ash in filling; and TCFM was found in groundwater close to the eastern boundary with Area B-east.
Area B-east / 5-9 Bridges Rd	Cablemakers Australia Pty Ltd, Joyce Australia Pty Ltd	<ul style="list-style-type: none"> Farming up to 1940s with potential chemical spraying using herbicides and pesticides. AGC-WC, 1999 reported a number of activities in relation to electrical cables manufacturing by Joyce Australia Pty Ltd after

Parcel ID / Address	Business name(s) or site use	Historical operations and Potentially contaminating activities
Area B-east / 5-9 Bridges Rd (continued)		<p>1990, as detailed in Section 4.3.2:</p> <ul style="list-style-type: none"> – Polyurethane foam products manufacture; – Groundwater TCFM contamination was identified, which resulted in the site becoming regulated as described in Section 4.5.2; – Multiple ASTs; – A liquid waste UST close to the southeast corner, believed to be the source of the groundwater TCFM contamination; – Chemical dispensing, reacting and storage areas; – Building structures and/or roofing were observed to include ACM; and – ACM fragments found in fill soils at depth.
Area C / 8-14 Bridges Rd and Area D / 16 Bridges Rd	Unused sites	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • Sand mining operations were conducted on the site followed by land releveling from the late 1940s to 1970s. Fill materials included uncontrolled wastes from unknown sources and concrete mixer wash out (slimes). Fill materials may contain asbestos and other contamination. • The following potentially contaminating activities and observations of contamination were reported by DP (2015), as described in Section 4.3.3: <ul style="list-style-type: none"> – A sporadic ACM fragment was identified in the surface fill; – Multiple soil stockpiles were previously located onsite, with suspected ACM fragments contained within. – A concrete batching plant was located in the western portion (sometime between 1970 and 1990). – Residual hydrocarbons and odorous soils may exist in site soils in the vicinity of a former UST.
Area E / 405 Newbridge Rd	Total Tools, Bells Carpet Court	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides.
Area F / 403 Newbridge Rd	MPE – Mura's Plastic Extrusions	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • Plastic extrusion manufacturing indicates potential storage and use of a range of chemicals, such as: <ul style="list-style-type: none"> – Resins: i.e. the raw polymer material; – Fillers: e.g. calcium carbonate, natural or synthetic silica, carbon black, graphite; – Plasticisers: e.g. phthalates, adipates, phosphate, polyester; – Additives: hardeners, catalysts, stabilizers containing phenol or amines, blowing agents, lubricants, dyes, fungicides, bactericides and solvents.
Area G / 401 Newbridge Rd	Gearbox Solutions	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • In addition to oil-based hydraulic fluids used in vehicle hoists, mechanical workshops, typically involve the handling of: <ul style="list-style-type: none"> – Asbestos: found in hood liners, brakes, clutches and engine gaskets; – Antiknock agents: e.g. Methylcyclopentadienyl manganese tricarbonyl (MMT); – Lead dusts and fumes; – Solvents: e.g. degreasers; and – Waste Oil: phenols and PAHs.
Area H / 399 Newbridge Rd	Private Residence	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides.
Area I / 397 Newbridge Rd	Pioneer DJ, Showtime	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides.
Area J / 391 Newbridge Rd	Pay Less and Carwash Cafe	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • Contaminants associated with vehicle auto-wash facilities include:

Parcel ID / Address	Business name(s) or site use	Historical operations and Potentially contaminating activities
Area J / 391 Newbridge Rd (continued)		<ul style="list-style-type: none"> - Cleaning agents, detergents and their by-products; - Engine coolant; - Oil, grease and other lubricants; and - Petroleum based products.
Area K / 2 Bridges Rd	Callex service station	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • Underground petroleum storage systems (UPSS), including USTs, fuel pumps, fuel delivery lines; • Contaminants associated with service station operations typically include: <ul style="list-style-type: none"> - Petroleum Hydrocarbons and BTEX ; - PAHs, Phenols and Lead.
Area L / 4a Bridges Rd	Andrews Smash Repairs	<ul style="list-style-type: none"> • Farming up to 1940s with potential chemical spraying using herbicides and pesticides. • Contaminants that have been identified for this site in a PSI report by EI (2015), based on historical operations as a smash repair business, include: <ul style="list-style-type: none"> - Petroleum Hydrocarbons and BTEX ; - PAHs, Phenols and Lead; - Oil and grease; and - Paints and cleaning solvents used in relation to spray booth activities.
Area M / 6 Bridges Rd	Jordbellows Pty Ltd	<ul style="list-style-type: none"> • Farming up to 1960s with potential chemical spraying using herbicides and pesticides. • Subsequent operations involved the manufacture of filters, strainers and pressure vessels, with use of the following potential chemicals: <ul style="list-style-type: none"> - Metals (particularly associated with welding, metal fabrication activities and metal wastes produced); - TRH, BTEX and solvents in flammable liquids storage; - PAHs, Phenols and Lead. - Oil-based hydraulic fluids; - Oil and grease; - Paints and cleaning solvents used in spray booth operations. • ACM in fibre cement warehouse building. • Numerous ASTs and flammable liquid stores present. • Anecdotal evidence indicated the absence of UPSS in this area.
Area N / 377 Newbridge Rd	Versaquip, Allstaff Australia, Century Picture Framing, Creative Trophies, Scope Signs, Pedders Suspensions, Workscene	<ul style="list-style-type: none"> • Farming up to 1960s with potential chemical spraying using herbicides and pesticides. • Various light industrial uses, on separate industrial units. • It is unknown if previous contaminating practices were conducted onsite, however current uses appear to pose a low risk of site contamination.
Area O / 361 Newbridge Rd	ICON Furniture Pty Ltd	<ul style="list-style-type: none"> • Farming up to 1965 with potential chemical spraying using herbicides and pesticides. • Imported filling was used for site levelling; • Potential onsite burial of demolished structures indicated potential for ACM in fill; • Operational history included manufacture of plastics (1970-1990), storage and distribution of food stuffs (1992-1995), tyre re-treading (2002-2007) and furniture manufacturing and wholesale (on-going since 2008). • Evidence of decommissioned UST (i.e. filling points) was identified in the south western corner of the site. Vents and fuel lines were absent. • Various flammable liquid stores present. • Solvent and petroleum hydrocarbon odours were detected in the vicinity of three flammable liquid storage cabinets in the southwest corner of the warehouse.

Parcel ID / Address	Business name(s) or site use	Historical operations and Potentially contaminating activities
		<ul style="list-style-type: none"> Floor staining indicated leakage and spillage of furniture stains. Air compressors indicated that spraying of paint, stain and other furniture finishing had been taking place. <p>Data gap closure investigations were recommended by DP (2015), which are described in Section 6.</p>
Area P / 355-359 Newbridge Rd	Seafood Warehouse & Taitung Food	<ul style="list-style-type: none"> Farming up to 1965 with potential chemical spraying using herbicides and pesticides. Redeveloped for warehousing thereafter.
Area Q / 353 Newbridge Rd	Diesel Drive	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Redeveloped for warehousing of auto parts thereafter.
Area R / 1/351 Newbridge Rd	Big O Tyres	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Auto tyres retailer/filter business, which use the following range of chemicals: <ul style="list-style-type: none"> Rubber adhesives or vulcanising cements, rubber cleaners, tyre sealants, chemical accelerators (to speed up drying), tyre mounting paste, tyre (carbon) black; and Hydraulic hoists that may leak hydraulic (oil) fluids.
Area S / 2/351 Newbridge Rd	Big O Tyres	
Area T / 337 Newbridge Rd	Wilson & Gilkes P/L	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Manufacturing of precision metal products including: laser cutting, bending, CNC punching, welding and powder coating.
Area U / 1/333 Newbridge Rd	Various	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Non-contaminating activities related to commercial uses: including retail of bathroom supplies, carpet, tiles, dance/drama studio, gymnasium and offices.
Area V / 1/333 Newbridge Rd	Studio Bagno, Kings Academy	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Non-contaminating activities: Martial arts academy and yoga centre.
Area W / 3/323 Newbridge Rd	Carpet Warehouse	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Business liquidation warehouse and Carpet supplier.
Area X / 317 Newbridge Rd	Carasel Towbars	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; and Towbars and trailers workshop.
Area Y / SW Corner Reserve	Bill Morrison Park	<ul style="list-style-type: none"> Farming with cultivation up to 1960s with potential chemical spraying using herbicides and pesticides; thereafter Public, open green space, trees and grass.

5. Preliminary Conceptual Site Model

Considering the findings of the desktop assessment, described in **Sections 2 to 4** of this report, a high-level preliminary conceptual site model (CSM) was developed for the precinct as a whole to assess plausible pollutant linkages between potential contamination sources and potential receptors.

CSMs are typically developed on a site-specific basis in accordance with *Schedule B2 – Guideline on Site Characterisation* of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (2013 Amendment). As the available contamination reports do not address all areas of the precinct, this CSM incorporates only known impacted areas and potential contamination sources, as summarised in **Table 4-3 (Section 4.7)**.

This CSM was used to identify data gaps in the existing environmental data set, which will require closure as part of future site characterisation investigations. It informs the data gap closure investigations described in **Section 6** and budgeted in **Section 8.1**.

5.1 Subsurface Conditions

As indicated in **Section 3.2**, the typical soil profile consists of an upper layer of sandy fill that is between 2m and 4m in thickness, becoming thicker close to the Georges River foreshore area. Underlying the fill layer are natural soils comprising sands, silts and clays associated with Georges River alluvium. The alluvium is in turn underlain by shale, carbonaceous claystone, laminite and lithic sandstone, which form the regional bedrock materials.

5.2 Potential Contamination Sources

Based on the reviewed site history information and the findings documented in the available environmental reports for selected sites, potential contamination sources for the precinct are summarised as follows:

- Imported fill soils of largely unknown origins used as backfill for levelling various parts of the precinct. Fill materials included ash fill, asbestos in soil, asbestos in fibrous-cement sheet fragments and boiler lagging (Area B-west), and in some cases uncontrolled wastes, asbestos-containing material (ACM) fragments and concrete washer slimes, particularly within Areas C and D.
- Previous farming, market gardening and cultivation activities, which typically involved the application of chemicals for weed and pest control, fertilisers and petroleum hydrocarbon products used to power and maintain motorised farming equipment.
- The use and handling of paints and other chemicals, including volatile organic compounds (VOCs), during historical and current industrial activities involving manufacturing, chemical reacting, dispensing, treatment and the production of liquid wastes.
- TCFM, leaked from an underground, concrete liquid waste tank located within the south western portion of Area B-east, which was reported to have migrated westwards to the adjacent property Area B-west at 3 Bridges Road;
- Multiple underground and above ground storage of petroleum fuels (i.e. UPSS and ASTs), particularly within areas B-west, B-east, M and O, some of which are still in use and/or remain in partially decommissioned condition;
- Deeper, natural soils and groundwater containing residual impacts from leaked hydrocarbons and other chemicals, representing potential secondary sources of contamination;

- Hazardous building materials (past and present structures), including ACM and lead-based paints; and
- Asbestos impacted site soils.

5.3 Chemicals of Potential Concern

Based on currently available information, the chemicals of potential concern (COPCs) for the precinct are considered to be:

- **In Soil** – metals, petroleum hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), including the monocyclic aromatic hydrocarbons benzene, toluene, ethylbenzene and xylenes (BTEX), chlorinated VOCs (CVOCs, including *trichlorofluoromethane* - TCFM), organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), herbicides, polychlorinated biphenyls (PCBs), phenols, per- and poly-fluoroalkyl substances (PFAS) and asbestos.
- **In Soil Vapour** – VOCs including light-chain TRHs, BTEX, CVOCs and the semi-volatile PAH compound *naphthalene*, particularly in areas where VOCs are present in soil and/or groundwater.
- **In Groundwater** – metals, TRHs, PAHs, VOCs, CVOCs and PFAS.

5.4 Potential Sources, Exposure Pathways and Receptors

Potential contamination sources, exposure pathways and potential human and environmental receptors that are considered relevant for the precinct are summarised in **Table 5-1**. Also shown in this table is a qualitative assessment of the potential risks posed when complete exposure pathways exist between contamination sources and potential receptors.

Table 5-1 Preliminary Conceptual Site Model for Previously Investigated Sites

Precinct Area	Potential Sources	Potential Contaminants	Media	Potential Receptors	Migration & Exposure Pathways	Potential Risk of Complete Exposure
A / 11 Bridges Rd	Fill containing slag and ash, sand-blasting activities and application of herbicides and pesticides during historical cultivation activities	metals, PAHs, OCPs, OPPs, herbicides, PCBs and asbestos	Soil and groundwater	Georges River, Site Workers during construction; and Future site users and maintenance workers	Seepage into site soils and groundwater, Dermal contact, ingestion	Low risk (during and post development) Previous, detailed intrusive investigations of soil, soil gas and groundwater did not identify evidence of significant contamination.
B-west / 3 Bridges Road and B-east / 5-9 Bridges Road	Filling, industrial operations involving past contaminating activities including UPSS, ASTs, deep soil impacts with spilled chemicals, burned, hazardous materials and hazardous materials in building structures	metals, TRHs, PAHs, VOCs, OCPs, OPPs, herbicides, PCBs, phenols, PFAS and asbestos	Soil Groundwater Soil Vapour	Georges River, Site Workers during demolition and construction; and Future site users and maintenance workers	Seepage into site soils & groundwater Dermal contact, Ingestion and inhalation	Medium to High Risk (during redevelopment) Previous investigations have identified existing sources and evidence of contamination at concentrations exceeding health-based and ecological assessment criteria. Low risk (post remediation) The site can be made suitable for more sensitive land uses through appropriate remedial action.
C / 8-14 Bridges Rd and D / 16 Bridges Rd	Uncontrolled filling, former UPSS and associated, residual hydrocarbon impacts, application of herbicides and pesticides during historical cultivation activities (Note: soil and groundwater data gaps reported for southern areas in DP, 2015)	metals, TRHs, PAHs, VOCs, OCPs, OPPs, herbicides, PCBs, asbestos	Soil Groundwater Soil Vapour	Lake Moore, Site Workers during demolition and construction; and Future site users and maintenance workers	Seepage into site soils & groundwater Dermal contact, Ingestion and inhalation	Low to Medium Risk (during redevelopment) Previous investigations have identified existing asbestos containing material fragments in site fill soils and petroleum odours from impacted soils close to a former underground tank. These and other impacts that may be identified during data gap closure investigations may be remediated to achieve site suitability for sensitive land uses.
M / 6 Bridges Road	Application of herbicides and pesticides during historical cultivation activities, filling, industrial activities	metals, TRHs, PAHs, VOCs, OCPs, OPPs, herbicides, PCBs, phenols, PFAS, asbestos	Soil Groundwater Soil Vapour	Lake Moore, Site Workers during demolition and construction; and Future site users and maintenance workers	Seepage into site soils & groundwater Dermal contact, Ingestion and inhalation	Medium to High Risk (during redevelopment) A preliminary site investigation identified the potential for onsite contamination and recommended a detailed investigation to characterise site environmental conditions.

Precinct Area	Potential Sources	Potential Contaminants	Media	Potential Receptors	Migration & Exposure Pathways	Potential Risk of Complete Exposure Pathway
O / 361 Newbridge Road	including chemical and flammable liquids storage (ASTs, paints, hydraulic oil drums), buried hazardous building materials, including ACM. Application of herbicides and pesticides during historical cultivation activities, filling, industrial activities including chemical and flammable liquids storage (UST, ASTs, paints, hydraulic oil drums), buried hazardous building materials, including ACM.	metals, TRHs, PAHs, VOCs, OCPs, OPPs, herbicides, PCBs, phenols, PFAS, asbestos	Soil Groundwater Soil Vapour	Lake Moore; Site Workers during demolition and construction; and Future site users and maintenance workers	Seepage into site soils & groundwater Dermal contact, ingestion and inhalation	<i>Medium to High Risk (during redevelopment)</i> A preliminary site investigation identified the potential for onsite contamination and recommended a detailed investigation to characterise site environmental conditions.

Note: Land parcels E-J, K, L, N and P-Y had not yet been investigated at the time of preparation of this report. The need for data gap closure investigations is discussed in **Section 6**.

6. Data Gap Closure Requirements

Based on the Preliminary CSM described in **Section 5**, the following data gaps have been identified in the existing environmental data set. Of particular relevance is the need to establish the environmental condition of land parcels that have not yet been investigated, or have been investigated to a limited extent.

6.1 Recommended Data Gap Closure for Previously Investigated Areas

6.1.1 Area A (11 Bridges Road)

The SGC (2007) investigation established that no significant, widespread soil and groundwater contamination was present within Area A, and that it was suitable for on-going commercial and industrial use. Since completion of that investigation, the land has remained undeveloped and vacant; however, the following data gap closure tasks are considered relevant for site redevelopment purposes:

- Review of the existing soil and groundwater data against the current environmental criteria, including the health-based investigation levels provided in the NEPC 2013 and the ANZG 2018 (in relation to water quality) applicable for the relevant land uses that are envisaged for the area.
- To confirm if previously reported groundwater impacts at monitoring well GW06 (SGC, 2007) are still present or attenuating, a groundwater monitoring event (GME) incorporating existing monitoring wells is recommended. The GME should include groundwater level gauging and sampling at all existing monitoring wells that are found to be functioning, to include groundwater level gauging, sampling, field testing and laboratory analysis for metals, total recoverable hydrocarbons, BTEX, PAHs, phenols and VOCs.
- To enable appropriate offsite disposal or offsite reuse of site soils, if required, an assessment of soil data against current EPA waste classification guidelines, for landfill disposal, or VENM / Excavated Natural Material (ENM) guidelines, in the case that offsite reuse is considered. Additional soil sampling and analysis may be required to obtain leachability data to enable proper waste classification, in accordance with current NSW EPA waste guidelines.

6.1.2 Area B (3 and 5-9 Bridges Road)

The previous investigations determined that widespread contamination was present across Area B (east and west areas), with both soils and groundwater being impacted. Based on the information reviewed the following recommended environmental data gap closure tasks are identified:

- Detailed review of the existing soil and groundwater data against NEPC 2013 and ANZG 2018 criteria applicable for the proposed site-specific land uses and potential groundwater receptors.
- Conduct a hazardous materials survey for existing building structures.
- Undertake a detailed inspection of the ground surface, referring to previous layout and sampling plans to establish the locations of the former USTs and any existing groundwater monitoring wells. The underground tank survey will be guided by use of ground penetrating radar (GPR). Existing monitoring wells should be gauged (tested) to establish well condition (i.e. whether each well is functional).

- Further intrusive investigations to increase sampling coverage for site characterisation and to delineate the extent of previously reported contamination and to identify contaminant source(s). The investigations should include:
 - Test pitting at target locations suspected as being contaminated (i.e. close to UST areas, north of Factory 8, the northern, unsealed storage area and the western area adjacent to Georges River), with fill/soil sampling and laboratory testing as required;
 - Systematic soil sampling of previously reported impacted locations, to delineate the vertical and lateral extent of contamination and to define hotspot dimensions (e.g. the petroleum hydrocarbon-impacted soils to 4.5m BGL in the south west section of Factory 2);
 - Systematic soil sampling in the vicinity of ASTs and liquid / solid waste storage areas;
 - Systematic soil sampling within areas not previously investigated (e.g. the building footprints, post demolition);
 - Delineation and identification of the source of petroleum hydrocarbon-impacted groundwater contamination in the south eastern corner of Area B west, close to former monitoring well BH3M; and
 - Delineation and identification of the source(s) of the TCFM groundwater contamination.
- The analytical program for the data gap closure investigations should include field-based screening of soil headspace samples for VOCs, as well as laboratory testing of selected, representative soil and groundwater samples for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and polyfluoroalkyl substances (PFAS).
- Perform soil vapour assessment in areas where VOCs (including TRH F1 and BTEX) and chlorinated VOCs are detected.
- Waste classification(s) of fill/soils that require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).
- VENM / Excavated Natural Material (ENM) assessments, where deeper bulk excavation into natural soils is proposed, and offsite reuse of natural materials is being considered.
- Should data gap closure investigations indicate groundwater contamination is still present and/or elevated VOCs are confirmed, a human health and ecological risk assessment (HHERA) should be conducted to define if the contamination poses risks to potential off-site receptors. HHERA findings would inform a remedial action plan (RAP) aimed at reducing risks to acceptable levels.
- Collate all available environmental data, including that produced by the data gap closure works and develop a RAP for the area. The proposed (preferred) remedial strategy may incorporate a combination of method(s) as discussed in **Section 7**.

6.1.3 Areas C and D (8-14 Bridges Road and 16 Bridges Road)

The DP (2015) investigation established that, except in relation to asbestos, the soils and groundwater of Areas C and D were generally suitable for residential land use (with minimal opportunities for soil access). A possible exception to this was the "Uncontrolled Refuse Fill" within the southern portion of Area C, since sampling had not been performed there.

Since completion of the 2015 investigation, the land has remained undeveloped and vacant, apart from the asphaltic concrete internal road. The recommended environmental tasks for data gap closure prior to redevelopment are therefore:

- Access to previous survey data is not confirmed.
- Undertake further intrusive investigations, to broaden the assessment and delineate the vertical and lateral extent of asbestos contamination. The investigations should include:
 - A minimum of 42 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At five locations, the sampling is to continue to the maximum depth of fill. Five locations are to target the "Uncontrolled Refuse Fill" within the southern portion.
 - A minimum of 82 asbestos sampling locations is recommended, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - The installation of four groundwater monitoring wells, two positioned along the up-gradient boundary (to assess potential onsite contaminant migration from neighbouring sites) and two positioned along the down-gradient boundary (to assess potential off-site migration). The bores should be sufficiently deep, to intercept (capture) the concrete slurries and all uncontrolled fill for characterisation analysis. Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs and PFAS.
 - Laboratory analytical results to be interpreted against relevant criteria recommended under NEPC (2013) for the envisaged land uses in relation to soil data, and the NEPC 2013/ANZG 2018 criteria in relation to groundwater data.
- Assessment for the presence (depth and lateral extent) of ASS.
- Waste classification(s) of fill/soils that require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).
- Collate all the investigative information and develop a site-specific RAP. The proposed (preferred) remedial strategy may incorporate a combination of method(s) for contamination clean-up and containment (management), making reference to the existing EMP.

6.1.4 Area M (6 Bridges Road)

The EI (2015b) investigation concluded there was potential for contamination to be present on the land covered under Area M, and identified the following data gap closure investigation requirements:

- Undertake a hazardous materials survey for the existing structures and engage licensed Hazmat contractors to manage the safe, offsite removal of identified hazardous materials.
- Undertake intrusive investigations (post building demolition), to increase sampling coverage for site characterisation and delineate the extent of any identified contamination. The investigations should include:
 - A combination of systematic (grid-based) and targeted soil sampling across the entire area. A minimum of 17 soil sampling locations are recommended, with at least one representative fill sample from each sampling location being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At all locations the fill layer should be penetrated to establish the depth of fill across Area M.

- A minimum of 34 asbestos sampling locations (to comply with NSW EPA guidelines), with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
- The installation of four groundwater monitoring wells, two positioned along the up-gradient boundary (to assess potential on-site migration of contamination from neighbouring sites) and two positioned along the down-gradient boundary (to assess potential off-site migration). Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs and PFAS.
- Data assessment against NEPC (2013) and ANZG 2018 criteria applicable for the proposed site-specific land uses and potential groundwater receptors.
- Waste classification(s) of fill/soils that require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).
- VENM / Excavated Natural Material (ENM) assessments, where deeper bulk excavation into natural soils is proposed, and offsite reuse of natural materials is being considered.
- Collate all available environmental data, including that produced by the data gap closure works and develop a RAP for the area. The proposed (preferred) remedial strategy may incorporate a combination of method(s) as discussed in **Section 7**.

6.1.5 Area O (361 Newbridge Road)

The EI (2015c) investigation concluded there was potential for contamination to be present on the land, with the following data gap closure investigation requirements:

- Undertake a hazardous materials survey for the existing structure.
- Undertake intrusive investigations (post building demolition), to broaden the assessment and delineate the extent of any identified contamination. Data gap closure investigations should include:
 - Systematic (grid-based) and targeted soil sampling across the entire area. A minimum of 21 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At all locations, the sampling is to continue to natural soils in order to define the maximum depth of fill across the site.
 - A minimum of 42 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - The installation of four groundwater monitoring wells, two positioned along the up-gradient boundary (to assess potential on-site migration of contamination from neighbouring sites) and two positioned along the down-gradient boundary (to assess potential off-site migration). Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and chlorinated VOCs), TRH, PAH and PFAS.
 - Soil and VOC results to be interpreted against relevant criteria recommended under NEPC (2013) for the envisaged land uses, and the NEPC 2013/ANZG 2018 criteria in relation to groundwater data.
- Waste classification(s) of fill/soils that require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).

- Collate all available environmental data, including that produced by the data gap closure works and develop a RAP for the area. The proposed (preferred) remedial strategy may incorporate a combination of method(s) as discussed in **Section 7**.

6.2 Recommended Investigations for Other Areas

6.2.1 Areas Requiring Stage 1 & 2 Environmental Site Assessment

The following parts of the Moore Point precinct require a Stage 1 Preliminary Site Investigation (PSI) and a Stage 2 Detailed Site Investigation (DSI), as described under the NSW EPA (2019) *Contaminated Land Guidelines – Consultants reporting on contaminated land*.

With the exception of the Caltex Service Station at Area K, which is known to be a regulated site (as described in **Section 4.5.2**), the rest of these areas are yet to be investigated for the assessment of site contamination and are grouped as follows:

Group 1 Areas

Areas E to J – cover a total area of 0.89 hectares and are located on the north side of Newbridge Road (west of Bridges Road), identified in **Figure 2** as:

Area E	405 Newbridge Road	Lots 1-4 in SP 49163
Area F	403 Newbridge Road	Lot 7 in DP 11948
Area G	401 Newbridge Road	Lot 6 in DP 654427
Area H	399 Newbridge Road	Lot 5 in DP 11948
Area I	397 Newbridge Road	Lot 4 in DP 11948
Area J	391 Newbridge Road	Lot 45 in DP 867545

Group 2 Areas

Areas K, L and N – cover a total area of 1.14 hectares and are located on the north side of Newbridge Road (east of Bridges Road), identified in **Figure 2** as:

Area K	2 Bridges Road	Lot 1 in DP 229494
Area L	4A Bridges Road	Lot 2 in DP 229494
Area N	377 Newbridge Road	Lots 1-11 in SP 38170

Group 3 Areas

Areas P to X – cover a total area of 5.20 hectares and are located on the north side of Newbridge Road (southeast part of the precinct), identified in **Figure 2** as:

Area P	355-359 Newbridge Road	Lot 102 in DP 827141
Area Q	353 Newbridge Road	Lot 1 in DP 235294
Area R	1/351 Newbridge Road	Lot B1 in DP 392696
Area S	1/351 Newbridge Road	Lot B in DP 3234332
Area T	337 Newbridge Road	Lot 201 in DP 584561
Area U	1/333 Newbridge Road	Lot 32 in DP 535604
Area V	331 Newbridge Road	Lot 4 in DP 562025
Area W	3/323 Newbridge Road	Lot 3 in DP 562025
Area X	317 Newbridge Road	Lot 2 in DP 562025

Group 4 Area

Area Y – is Bill Morrison Park, covering a total area of 0.3 hectares, located on the north side of Newbridge Road (southwest corner of the precinct), identified in **Figure 2** as:

Area Y Bill Morrison Park Lot 1 in DP 500388

6.2.2 Recommended DSI Activities

In addition to standard requirements for Stage 1 PSI and Stage 2 DSI works, the following additional tasks should be included on a group by group basis:

Group 1 – DSI Inclusions for Areas E to J

- A hazardous materials survey for the existing structures on each of the properties.
- Intrusive investigations (post building demolition), to include:
 - Mixed systematic (grid-based) and targeted soil sampling across the entire area. A minimum of 20 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At all locations, the sampling is to continue to the maximum depth of fill.
 - A minimum of 40 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - The installation of four groundwater monitoring wells, positioned along the length of the combined area (to assess potential on- and off- site migration of contamination). Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs and PFAS.
 - Data assessment against relevant criteria for the proposed land uses.
- Waste classification(s) of fill/soils that may require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).

Group 2 – DSI Inclusions for Areas K, L and N

- A hazardous materials survey for the existing structures on each of the properties.
- As Area K (2 Bridges Road), is a Caltex service station and is a regulated site, previous investigations are expected to have been conducted previously on this property. A *freedom of information* search should be conducted through the EPA to access copies of previous investigation reports for Area K, to establish the current contamination and/or remediation status of this site.
- Intrusive investigations for Areas L and N (post building demolition), to include:
 - Mixed systematic (grid-based) and targeted soil sampling across the entire area. A minimum of 23 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At all locations, the sampling is to continue to the maximum depth of fill.
 - A minimum of 46 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).

- The installation of four groundwater monitoring wells, two positioned along the up-gradient boundary (to assess potential on-site migration of contamination from neighbouring sites) and two positioned along the down-gradient boundary (to assess potential off-site migration). Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs and PFAS.
- Additional investigations on the service station site at Area K may be required, subject to the data that is made accessible via the EPA freedom of information search.
- Data assessment against relevant criteria for the proposed land uses.
- Waste classification(s) of fill/soils that may require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).

Group 3 – DSI Inclusions for Areas P to X

- A hazardous materials survey for the existing structures on each of the properties.
- Intrusive investigations for Areas P to X (post building demolition), to include:
 - Mixed systematic (grid-based) and targeted soil sampling across the entire area. A minimum of 57 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs, phenols, OCPs, OPPs, herbicides, PCBs and PFAS. At all locations, the sampling is to continue to the maximum depth of fill.
 - A minimum of 114 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - The installation of eight groundwater monitoring wells, positioned along the length of the combined area (to assess potential on- and off- site migration of contamination). Groundwater samples are to be analysed for dissolved metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), VOCs (including BTEX and VCHs), TRHs, PAHs and PFAS.
 - Data assessment against relevant criteria for the proposed land uses.
- Waste classification(s) of fill/soils that may require off-site disposal, including leachability assessment (for metals, PAHs and other relevant chemicals).

Group 4 – DSI Inclusions for Area Y (Morrison Park)

- Intrusive investigations for Area Y, to include:
 - Systematic (grid-based) soil sampling across the entire area. A minimum of 9 soil sampling locations is recommended, with at least one representative fill sample from each being analysed for metals (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRH, BTEX, PAH, phenols, OCPs, OPPs, PCBs and PFAS. At all locations, the sampling is to continue to the maximum depth of fill.
 - A minimum of 18 asbestos sampling locations, with at least one representative fill sample from each being screened for the presence of ACM (including respirable fibres).
 - Data assessment against relevant criteria for the proposed land use.
- Waste classification(s) of fill/soils is only required if offsite disposal of excavated materials is envisaged.

Should the Stage 1 PSIs identify the potential for site contamination, a Stage 2 DSI involving intrusive investigations should be conducted to determine if contamination is present in site soils or groundwater. In the case that the Stage 2 DSI identifies soil vapours impacted with VOCs, then soil vapour investigations should also be conducted to determine the degree and extent of the soil vapour contamination. For sites where significant soil vapour contamination is identified, a vapour intrusion risk assessment will also be required to determine the level of risk posed to future site users.

The environmental data produced by the DSI for each Group area should be used to develop a RAP for that area. The proposed (preferred) remedial strategy may incorporate a combination of method(s) as discussed in **Section 7**.

6.3 Site Characterisation in Relation to Acid Sulfate Soils

Based on the desktop assessment of ASS Risk in **Section 3.4**, there is a high probability of actual ASS (AASS) and/or potential ASS (PASS) within land parcels C, D, M, N, O, P, Q, T, U, V, W and X (shown in **Figures 2 and 3**).

The above listed land parcels should be investigated to assess for the presence of AASS or PASS. As a minimum, these investigations should include:

- A site inspection should be conducted to visually assess the ground topography, geomorphology, hydrology and dominant vegetation (if any);
- A site-wide intrusive investigation of shallow soils by manual auger method to characterise soil type and soil profile;
- Deeper investigations should be conducted soil and groundwater sampling and analysis where ground disturbance is expected, or at grid-based locations across the site in the case that the proposed development concept is uncertain; and
- Analysis of soil and groundwater indicators in accordance with the NSW ASSMAC (1998) Acid Sulfate Soils Assessment Guidelines, to confirm the distribution of AASS/PASS.

The results of this assessment will provide site-specific information for the final ASSMP.

7. Remediation and Management Options

7.1 Remediation Objective and Goals

The objective of site remediation is to render the impacted areas suitable for the proposed, site-specific land uses. Based on the preliminary masterplan concept (**Appendix A**), rezoning to more sensitive land uses is expected for various parts of the precinct. It is understood that these will include high density residential, recreational, commercial and industrial zones, with roads and communal (public) open spaces.

The review of environmental data for the purposes of this assessment has not identified contaminant levels that would not be able to be remediated using currently available technologies. The findings of this assessment therefore would not preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

The feasibility of various remedial options and the final remedial strategy adopted for each area will depend on a number of factors, including:

- a) Site characterisation findings based on previous investigation results and the results produced from the data gap closure investigations, to complete the environmental data set;
- b) The final configuration of land uses across the precinct area;
- c) Development acceptance of a long-term Environmental Management Plan (LTEMP), associated environmental monitoring requirements and potential annotations to the land titles, in the case that contaminated materials are retained beneath development footprint areas;
- d) Council acceptance of contaminated materials being transferred to Council-owned roadway alignments, where they can be safely buried between the water table and the road construction layers, clear of underground services, maintenance pits and road verge tree planting areas; and
- e) Council acceptance of contaminated materials being transferred to physical containment cells located at depth within Council-owned deep soil areas, such as may be present in various parts of the redeveloped precinct, clear of underground services, maintenance pits and road verge tree roots.

Adequate site characterisation, Item (a), should make it possible to understand the nature, degree and extent of the contamination. This is an essential prerequisite for developing detailed, site-specific RAP documents to guide the remedial action.

A clear understanding of the site constraints outlined in Items (b) to (e), is also necessary to inform decisions on suitable management options for impacted materials that can be accommodated onsite.

Since items (a) to (e) are not yet thoroughly known, the remediation concept strategy outlined in **Section 7.4** is preliminary in nature and provides a process to enable the preparation of indicative remedial cost estimates (under a separate cover). It is intended that this information will assist stakeholders in assessing the feasibility of future land uses and precinct development options. The proposed strategy is therefore presented with the understanding that it will be refined, as more specific information regarding the development masterplan and relevant constraints become known. It is also considered appropriate for data gap closure works to take place at the development application stage.

A key preference for the final remedial strategy will be avoidance of annotations to title for commercial and residential units. In view of these guiding terms, the site remediation strategy must achieve the following goals:

- To minimise the amount of excavated fill material that is assigned for landfill disposal;
- To maximise the amount of excavated fill material that is reused on-site, isolating residual, impacted materials to unoccupied areas (i.e. beneath roads, open space parkland or designated containment cells); and
- To ensure that the site is remediated in a safe and acceptable manner, to a condition that is consistent with the intended land uses.

The strategy must be consistent with the requirements of the NEPC (2013) *National Environment Protection (Assessment of Site Contamination) Measure 1999 (Amendment 2013)*, as well as other relevant EPA-endorsed guidelines and the principles of ecologically sustainable development.

7.2 Environmental Setting and Contamination Risk

As described in **Section 3**, the Precinct environment is characterised by low gradients, a fill layer comprising mainly reworked natural soils with some anthropogenic materials, sediments comprising sand, silt and clay associated with Georges River; overlying relatively impermeable shale, claystone and sandstone bedrock. The fill material and more permeable sediments, with shallow groundwater (between 6 m and 10 m in depth), create an environment where contaminants may infiltrate the ground and then migrate downwards and laterally through the more permeable sand and gravel lenses. The fill material which has been placed across the historically lower areas of the Precinct presents a potential source of contamination. The presence of potential acid sulphate soils (as identified in **Section 3.4.3**) would require management during excavation works to prevent generation of acid forming conditions.

The waters of Lake Moore and Georges River represent potential receptors for contamination migrating via soil erosion, stormwater and groundwater. The presence of underground services and storm water drainage systems may also act as preferential pathways for contaminants to move towards the lake and the river environments.

7.3 Precinct Contamination Summary

Based on a review of the available information, including potentially contaminating activities described in **Section 4.7**, known land use impacts appear to be mainly associated with the historical operations on the largest land parcels in the precinct and some smaller sites, summarised as follows:

- Areas A, C and D - widespread filling for site releveling purposes;
- Area C was also reported to have received uncontrolled waste from unknown sources, with previous identification of ACM fragments in fill and stockpiles at multiple onsite locations;
- Area B:
 - Area B-west and Area B-east were subject to chemical spills and leaks from the handling and storage of hazardous substances (including metals, petroleum hydrocarbons, chlorinated solvents, TCFM and asbestos);
 - Area B-west was also subject to burial of industrial waste, including asbestos waste and disused chemical drums, in;

- Area B-west, south of Factory, 4 diesel-type phase separated hydrocarbons (PSH), were previously reported on groundwater at former monitoring well WS01 and remedial product recovery works were reported by RES (1999), however it is assumed that further remedial action may be needed in regards to PSH;
- Area B-west, southeast of Factory 5, at former monitoring wells WS13 and WS14, diesel-type PSH and dissolved petroleum hydrocarbons were previously reported for groundwater located in Area B-west, this was thought to be a result of onsite migration from an up-gradient UST on Area B-east, as reported by AGC-WC (1999);
- Area K - Petroleum hydrocarbon and VOC impacts associated with service station operations at the Caltex Service Station;
- Area F - plastics extrusion factory, which stores and handles a range of chemicals, including resins, plasticisers, phenols and solvents;
- Areas G, J, L, R and S - mechanical workshops, tyre repair, car wash, and smash repair businesses handling a range of chemicals, including: metals, automotive fluids, PFAS, oil, grease, paints, resins, plasticisers, phenols and degreasing solvents; and
- Area O - furniture manufacturing facility, with a disused UST and other potentially contaminating operations including flammable liquids storage, painting and staining of furniture and the onsite burial of ACM in site fill.

In addition to the above, all areas of the precinct were identified from the historical aerial photograph review (see **Appendix C**) to have been used for market gardening and crop cultivation in the early- to mid-1900s, indicating the potential for organochlorine pesticide impacts in site soils.

7.4 Remediation Concept Strategy

7.4.1 Remediation of Hazardous Building Materials

The remediation of hazardous building materials (HBM) requires identification followed by removal and off-site disposal in accordance with the following guidelines:

- Safe Work Australia (2011) *National Code of Practice How to Manage and Control Asbestos in the Workplace*;
- Safe Work Australia (2011) *National Code of Practice How to Safely Remove Asbestos*;
- National Occupational Health and Safety Commission: 2002 (2005) *Code of Practice for the Safe Removal of Asbestos 2nd Edition*;
- National Occupational Health and Safety Commission: 2018 (2005) *Code of Practice for the Management and Control of Asbestos in Workplaces*;
- Environmental Health Committee, Department of Health and Ageing (2005) *Management of Asbestos In The Non-Occupational Environment*; and
- WorkCover Authority of New South Wales (2008) *Working with Asbestos: Guide*.

7.4.2 Remedial Options for Contaminated Soils and Soil Vapour

In consideration of the previously reported findings, as well as the proposed mixed uses for the land, a combination of the following remedial options may be implemented to achieve the remediation objective:

- **Excavation and Onsite Encapsulation** – involving excavation of impacted soils from bulk excavations that are intended for the construction of basement car parking facilities, followed by onsite reuse to the extent possible (within engineered containment cells). Onsite containment of contaminated soils by way of capping and/or encapsulation within low permeability cells or other appropriately designed barrier system, where subsurface or above-ground storage areas are available. Contaminated materials that are retained onsite will need to be managed under a site-specific LTEMP, which will include periodic groundwater monitoring to confirm that offsite contaminant migration is not occurring. Should offsite migration be detected, then contingent groundwater remediation measures will also need to be implemented.
- **Excavation and Offsite Disposal** – involving excavation of impacted soils from bulk excavations followed by offsite disposal of surplus impacted soils to licensed waste landfill;
- **In-situ Soil Vapour Extraction** – coarse grained soils impacted with VOCs (including chlorinated VOCs, light fraction petroleum hydrocarbons and BTEX), may be treated in-situ by extracting soil vapour under vacuum, via horizontal vent pipes installed in trenches throughout the impacted area. The contamination is drawn out of the soil as vapour and liquid, which are collected for appropriate onsite treatment and/or offsite recycling.
- **Ex-situ Bioremediation with Soil Vapour Extraction** – coarse grained soils impacted with VOCs (including chlorinated VOCs, light fraction petroleum hydrocarbons and BTEX), may be treated ex-situ by extracting soil vapour under vacuum, via horizontal vent pipes installed in bio-piles (covered stockpiles) created from the excavation of impacted soils. The contamination is drawn out of the soil bio-piles as vapour and liquid, which are collected for appropriate onsite treatment and/or offsite recycling.

7.4.3 Remedial Options for Contaminated Groundwater

The preferred order for the remediation and management of contaminated groundwater as recommended under the EPA (2007) Groundwater Contamination Guidelines is outlined as:

1. Clean-up so that the natural background water quality is restored;
2. Clean-up to protect the environmental, human and ecological health; and
3. Clean-up to the extent practicable.

Based on the existing environmental data set, the following remedial options may be implemented to address groundwater contamination issues:

In-situ Groundwater Treatment

- Bio-remediation: Addition of oxygen and nutrient compounds to accelerate the natural process of organic compound decay within the environment.
- Chemical oxidation: Addition of chemical compounds to oxidise the contaminants in groundwater into compounds that are less harmful to the environment.
- Air Sparging and Vapour Extraction: Air is forced through the contaminated groundwater system to volatilise organic contaminants. The air is then extracted and captured for treatment leaving reduced contaminant concentrations within the sub-strata.

Ex-situ Groundwater Treatment

- Washing: Groundwater is stripped of contaminants via a leaching process, with the concentrated contaminated liquid product retained for disposal or additional treatment.
- Bioremediation: Groundwater is pumped into an above ground tank and treated with inorganic nutrients. Oxygen is introduced in to the tank by sparging, and hydrocarbons are broken down by naturally occurring bacteria.
- Pumping with Offsite Treatment: Contaminated groundwater is extracted, collected and transported to an approved/licensed treatment facility. There it is treated to remove and/or stabilise the contaminants, then returned to the subject site for re-injection into the aquifer, or transported to an alternative facility for disposal.

Groundwater Management and Monitoring

Measures to manage groundwater contamination may include:

- Notifying appropriate government agencies, owners of subsurface facilities and any other appropriate parties of the presence of groundwater contamination;
- Plume containment;
- Monitored natural attenuation;
- Implementing management or contingency plans to reduce risks; and
- Restricting groundwater use in and down gradient of the contaminated plume.

7.5 Recommendations

Once the results of data gap closure investigations are available, the remedial strategy may be refined.

A detailed, site-specific remedial action plan is required for each site, before the commencement of site remediation.

The site specific-RAP must include an Unexpected Finds Protocol to provide guidance on addressing unexpected contamination that may be identified during the course of site redevelopment.

8. Concluding Remarks

This assessment did not identify any evidence to preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

It is also considered appropriate for data gap closure investigation works to take place at the development application stage.

9. References

AECOM (2015) *Phase I Environmental Site Assessment, Moorebank Precinct Rezoning Planning Proposal*, prepared for Goodman Property Services (Aust) Pty Ltd, by AECOM Australia Pty Ltd, Report 60336053-rpe-20150527_0, 27 May 2015.

Ahern CR, Stone Y and Blunden B (1998) *Acid Sulfate Soils Assessment Guidelines*, part of the ASS Manual, Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia, 28 August 1998, 59 p.

Australian Standard (2005) Table E1 – *Minimum sampling points required for site characterisation*, in Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds, Standards Australia, AS4482.1-2005.

Bouwer H (1978) *Groundwater Hydrology*, McGraw-Hill Ryerson Limited.

Chapman, GA and Murphy CL (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, September 1989.

DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, Dept. of Environment and Conservation, New South Wales, DEC 2007/144, June 2007.

DECCW (2009) *Guideline for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*, Department of Environment and Climate Change NSW, DECC 2009/156, May 2009.

DMR (1983) *Sydney 1:100,000 Geological Series Sheet 9130 (Edition 1)* Geological Survey of New South Wales, Department of Mineral Resources.

DP (2015) *Report on Contamination Data Review*, Proposed Residential Development, 8-16 Bridges Road, Moorebank, NSW, prepared for Coronation Property Co Pty Ltd, by Douglas Partners, Report 76647 00-1, 2 February 2015.

EPA (1995) *Sampling Design Guidelines* Environment Protection Authority of New South Wales, Contaminated Sites Unit, EPA 95/59, September 1995.

EPA (2014a) *Waste Classification Guidelines – Part 1: Classifying Waste*, Environment Protection Authority of New South Wales, Doc. EPA 2014/0796, November 2014.

EPA (2014b) *Technical Note: Investigation of Service Station Sites* Environment Protection Authority of New South Wales, EPA 2014/0315, April 2014.

EPA (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*, NSW EPA, Doc. EPA 2015/0164, September 2015.

EPA (2017) *Guidelines for the NSW Site Auditor Scheme* (3rd Edition), NSW EPA, Doc. EPA 2017P0269, October 2017.

HEPA (2018) *PFAS National Environmental Management Plan*, Heads of EPAs Australia and New Zealand, January 2018.

LCC (2019) *Connected Liverpool 2050 - Draft Local Strategic Planning Statement – A Land Use Vision 2050*, Liverpool City Council, 2019.

McWhorter DB and Sunada DK (1977) *Ground-water Hydrology and Hydraulics*, Water Resources Publications, LLC.

Murphy CL (1997) *Acid Sulfate Soil Risk of the Liverpool Sheet* Department of Land and Water Conservation, Sydney, Second Edition. Supplied by the Sydney South Coast, Geographical Information Systems Unit.

Naylor SD, Chapman GA, Atkinson G, Murphy CL, Tulau MJ, Flewin TC, Milford HB and Morand DT (1998) *Guidelines for the Use of Acid Sulfate Soil Risk Maps*, Department of Land and Water Conservation, Sydney, Second Edition.

NEPM (2013) *Schedule B1 Guideline on Investigation Levels for Soil and Groundwater, Schedule B2 Guideline on Site Characterisation and Schedule B4 Guideline on Site-Specific Health Risk Assessments*, National Environmental Protection (Assessment of Site Contamination) Measure 1999, National Environmental Protection Council, December 1999, Amendment 2013.

OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*, NSW Office of Environment and Heritage (OEH), OEH 2011/0650.

SJB Urban (2019) *Moore Point Masterplan – Council Workshop*, Prepared for Coronation and Leamac, Issued 24 July 2019.

USEPA (2006) *Data Quality Assessment: A Reviewers Guide – EPA QA/G-9R*. USEPA Office of Environmental Information, EPA/240/B-06/002, February 2006.

WADOH (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. Published by the Western Australian Department of Health, May 2009.

WC (1999) *Phase 1 Environmental Due-diligence Investigation, 1 Heathcote Road, Liverpool, NSW*, prepared for Allen Allen & Hemsley acting for Pirelli Cables, by Woodward-Clyde, Report A8602126 R001-B, 8 January 1999.

Ahern CR, Stone Y and Blunden B (1998) *Acid Sulfate Soils Assessment Guidelines*, part of the ASS Manual, Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia, 28 August 1998, 59 p.

Australian Standard (2005) Table E1 – *Minimum sampling points required for site characterisation*, in Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds, Standards Australia, AS4482.1-2005.

Bouwer H (1978) *Groundwater Hydrology*, McGraw-Hill Ryerson Limited.

Chapman, GA and Murphy CL (1989) *Soil Landscapes of the Sydney 1:100 000 Sheet*, Soil Conservation Service of NSW, Sydney, September 1989.

DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, Dept. of Environment and Conservation, New South Wales, DEC 2007/144, June 2007.

DECCW (2009) *Guideline for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*, Department of Environment and Climate Change NSW, DECC 2009/156, May 2009.

DMR (1983) *Sydney 1:100,000 Geological Series Sheet 9130* (Edition 1) Geological Survey of New South Wales, Department of Mineral Resources.

DP (2015) *Report on Contamination Data Review*, Proposed Residential Development, 8-16 Bridges Road, Moorebank, NSW, prepared for Coronation Property Co Pty Ltd, by Douglas Partners, Report 76647 00-1, 2 February 2015.

EPA (1995) *Sampling Design Guidelines* Environment Protection Authority of New South Wales, Contaminated Sites Unit, EPA 95/59, September 1995.

EPA (2014a) *Waste Classification Guidelines – Part 1: Classifying Waste*, Environment Protection Authority of New South Wales, Doc. EPA 2014/0796, November 2014.

EPA (2014b) *Technical Note: Investigation of Service Station Sites* Environment Protection Authority of New South Wales, EPA 2014/0315, April 2014.

EPA (2015) *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997*, NSW EPA, Doc. EPA 2015/0164, September 2015.

EPA (2017) *Guidelines for the NSW Site Auditor Scheme* (3rd Edition), NSW EPA, Doc. EPA 2017P0269, October 2017.

HEPA (2018) *PFAS National Environmental Management Plan*, Heads of EPAs Australia and New Zealand, January 2018.

LCC (2019) *Connected Liverpool 2050 - Draft Local Strategic Planning Statement – A Land Use Vision 2050*, Liverpool City Council, 2019.

McWhorter DB and Sunada DK (1977) *Ground-water Hydrology and Hydraulics*, Water Resources Publications, LLC.

Murphy CL (1997) *Acid Sulfate Soil Risk of the Liverpool Sheet* Department of Land and Water Conservation, Sydney, Second Edition. Supplied by the Sydney South Coast, Geographical Information Systems Unit.

Naylor SD, Chapman GA, Atkinson G, Murphy CL, Tulau MJ, Flewin TC, Milford HB and Morand DT (1998) *Guidelines for the Use of Acid Sulfate Soil Risk Maps*, Department of Land and Water Conservation, Sydney, Second Edition.

NEPM (2013) *Schedule B1 Guideline on Investigation Levels for Soil and Groundwater, Schedule B2 Guideline on Site Characterisation and Schedule B4 Guideline on Site-Specific Health Risk Assessments*, National Environmental Protection (Assessment of Site Contamination) Measure 1999, National Environmental Protection Council, December 1999, Amendment 2013.

OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*, NSW Office of Environment and Heritage (OEH), OEH 2011/0650.

SJB Urban (2019) *Moore Point Masterplan – Council Workshop*, Prepared for Coronation and Leamac, Issued 24 July 2019.

USEPA (2006) *Data Quality Assessment: A Reviewers Guide – EPA QA/G-9R*. USEPA Office of Environmental Information, EPA/240/B-06/002, February 2006.

WADOH (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. Published by the Western Australian Department of Health, May 2009.

WC (1999) *Phase 1 Environmental Due-diligence Investigation, 1 Heathcote Road, Liverpool, NSW*, prepared for Allen Allen & Hemsley acting for Pirelli Cables, by Woodward-Clyde, Report A8602126 R001-B, 8 January 1999.

Abbreviations

ACM	Asbestos-containing materials
AHD	Australian Height Datum
ANZG	Australian and New Zealand Guidelines
AASS	Actual acid sulfate soils
ASS	Acid sulfate soils
AST	Above-ground storage tank
B(a)P	Benzo(a)Pyrene (a PAH compound), - B(a)P TEQ Toxicity Equivalent Quotient
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
Council	Liverpool City Council (in NSW)
CDR	Contamination data review
CLM Act	Contaminated Land Management Act 1997
COPCs	Contaminants (or Chemicals) of Potential Concern
Council	Liverpool City Council
CSM	Conceptual Site Model
DA	Development Application
DEC	Department of Environment and Conservation, NSW (see OEH)
DECC	Department of Environment and Climate Change, NSW (see OEH)
DECCW	Department of Environment, Climate Change and Water, NSW (see OEH)
DLWC	Dept. of Land & Water Conservation (now Water NSW and NSW Land & Property Information)
DP	Deposited Plan
DSI	Detailed Site Investigation
EI	EI Australia
EC	Electrical Conductivity
EPA	Environment Protection Authority NSW
EPL	Environment Protection Licence
EMP	Environmental Management Plan
ENM	Excavated natural material
F1	TRH $C_4 - C_{10}$ less the sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH $>C_{10} - C_{16}$ less the concentration of naphthalene (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
GPR	Ground penetrating radar (a non-intrusive investigation technique)
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
DNAPL	Dense, non-aqueous phase liquid
EIL	Ecological Investigation Level
ESL	Ecological Screening Level
m	Metres
m AHD	Metres Australian Height Datum
m bgl	Metres Below Ground Level (units for depth)
mg/m ³	Milligrams per cubic metre (units of concentration in air)
mg/L	Milligrams per litre (units of concentration in water)
µg/L	Micrograms per litre (units of concentration in water)
µS/cm	Micro Siemens per centimetre (units of electrical conductivity)
LAC JV P/L	More Point Land Owner Group and/or Leamac & Coronation Property, for the purposes of this report
LEP	Local Environmental Plan
LPG	Liquefied petroleum gas
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia
NEPC	National Environmental Protection Council
NSW	New South Wales
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
OCP	Organochlorine pesticides

OPP	Organophosphate pesticides
PAHs	Polycyclic Aromatic Hydrocarbons
PASS	Potential acid sulfate soils
PFAS	Poly- and Per-fluoro alkyl substances (used in fire-fighting foams and various industrial processes)
pH	Measure of the acidity or basicity of an aqueous solution
PCB	Polychlorinated biphenyls
PSH	Phase-separated hydrocarbons (also referred to as LNAPL)
POEO Act	Protection of the Environment Operations Act 1997
PQL	Practical Quantitation Limit (limit of detection for respective laboratory instruments)
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
Ref	Reference
SEPP	State Environmental Planning Policy
SWL	Standing Water Level
TCLP	Toxicity Characteristics Leaching Procedure
TCFM	Trichlorofluoromethane (used as a blowing agent in the manufacture of polyurethane foam)
TDS	Total dissolved solids (a measure of water salinity)
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit of the mean
USEPA	United States Environmental Protection Agency
UPSS	Underground Petroleum Storage System (including: USTs, fuel pumps, fuel delivery lines, etc.)
UST	Underground Storage Tank
VENM	Virgin excavated natural material
VCH	Volatile Chlorinated Hydrocarbons (also referred to as CVOCs – chlorinated VOCs, or VHC)
VHC	Alternative acronym for VCH
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)

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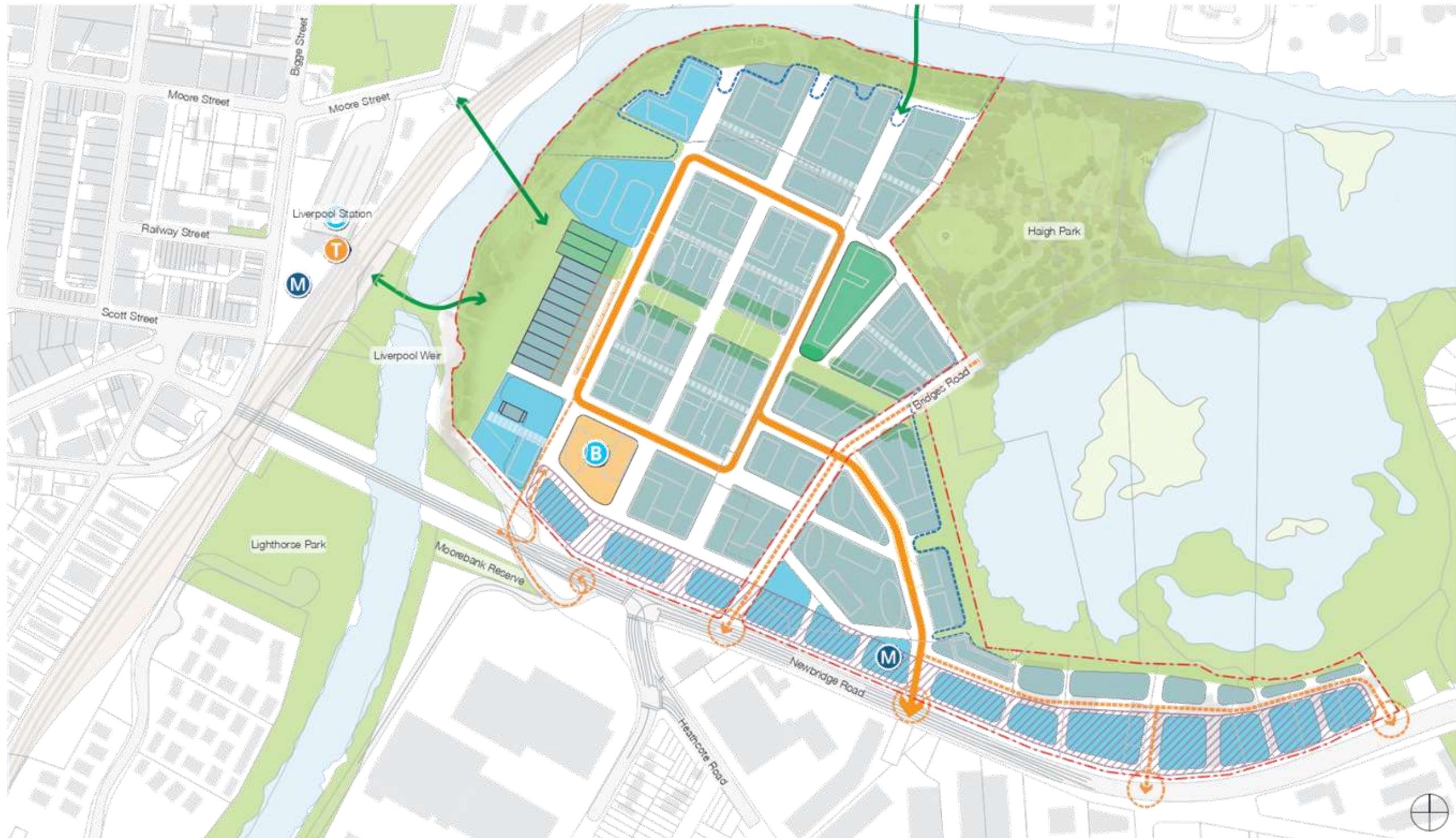
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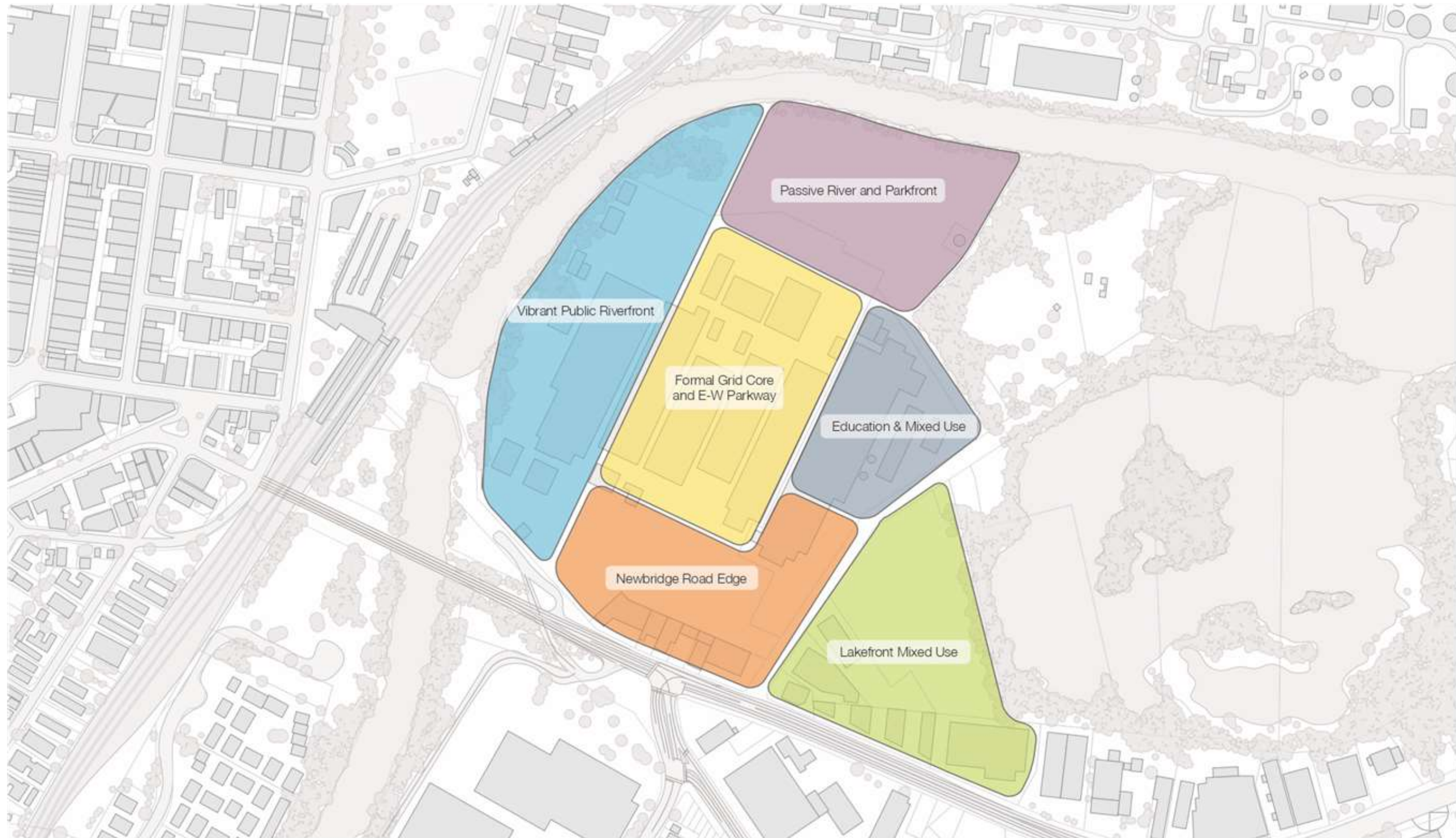
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Appendix A – Preliminary Masterplan Concept

Concept Masterplan



Character areas



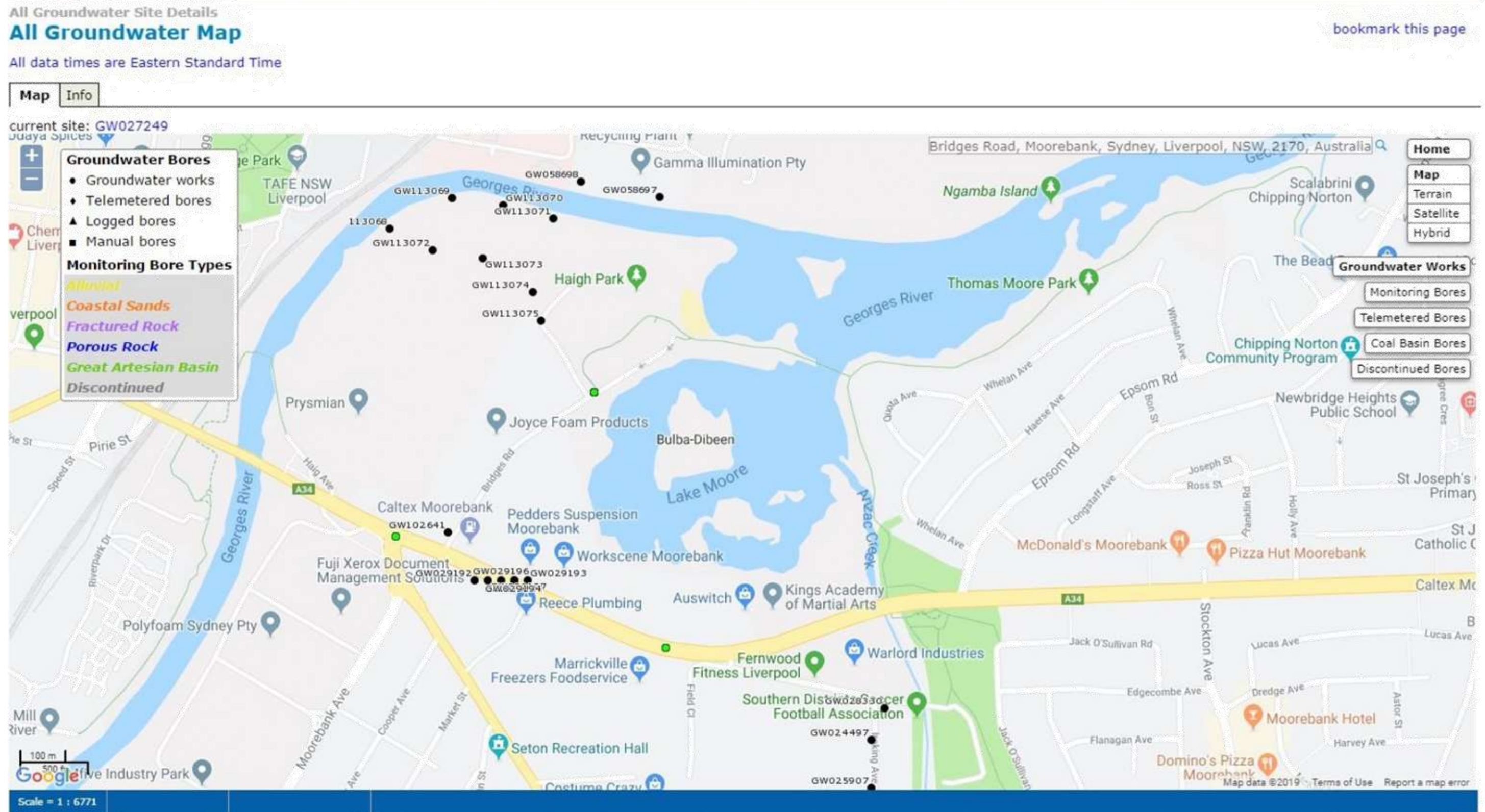
Open spaces and public domain



Appendix B – Groundwater Bore Search



Appendix B - Search of Registered Bores



8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw024497.agappf_org.wsr.htm?156498335091...

WaterNSW Work Summary

GW024497

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Bore	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 3.00 m
Completion Date: 01/10/1965	Drilled Depth: 3.00 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243502.000	Latitude: 33°55'54.3"S	
Elevation Source: (Unknown)	Easting: 309703.000	Longitude: 150°56'28.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD, ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Opening	Perforations	-100.00	0.00	381		1	SL: 50.8mm
1	1	Casing	Concrete Cylinder	0.00	0.00	381			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	Topsoil	Topsoil	
0.30	1.21	0.91	Clay	Clay	
1.21	2.43	1.22	Loam Sandy	Loam	
2.43	3.04	0.61	Sand	Sand	

Remarks

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw024497.agappf_org.wsr.htm?1564983350917&1564983... 1/2

13/08/1980: LOT 4 IRAKING AVE MOOREBANK
23/09/2011: Slot Length and Width adjusted due to data entry errors with advice from Madhwan Keshwan. GDS Data Cleanup project 2011.

*** End of GW024497 ***

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https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw025907.agappf_org.wsr.htm?156498345912...

WaterNSW Work Summary

GW025907

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/04/1966	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243409.000	Latitude: 33°55'57.3"S	
Elevation Source: (Unknown)	Easting: 309705.000	Longitude: 150°56'28.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Opening	Perforations	-100.00	0.00	381		1	
1	1	Casing	Asbestos Cement	0.00	0.00	381			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.91	0.91	Clay	Clay	
0.91	1.52	0.61	Loam Sandy	Loam	
1.52	2.43	0.91	Sand	Sand	

Remarks

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw025907.agappf_org.wsr.htm?1564983459121&1564983... 1/2

8/5/2019 https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw025907.agappf_org.wsr.htm?156498345912...
13/08/1980: LOT 9 IRAKING AVE MOOREBANK

*** End of GW025907 ***

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https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw028330.agappf_org.wsr.htm?156498316342...

WaterNSW Work Summary

GW028330

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 6.40 m
Completion Date: 01/01/1966	Drilled Depth: 6.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre L2 (56)
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243564.000	Latitude: 33°55'52.3"S	
Elevation Source: (Unknown)	Easting: 309728.000	Longitude: 150°56'29.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Backfill	Backfill	0.00	6.40	609			
1	1	Casing	Asbestos Cement	0.00	6.40	609			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
5.40	5.40	0.00	Unconsolidated	1.80					

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw028330.agappf_org.wsr.htm?1564983163428&1564983... 1/2

8/5/2019 https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw028330.agappf_org.wsr.htm?156498316342...

0.00	5.48	5.48	Driller	(Unknown)	
5.48	6.40	0.92	Sand Nominal Water Supply	Sand	

Remarks

13/08/1980: LOT 2 EPSOM RD MOOREBANK

*** End of GW028330 ***

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https://realtimedata.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029192.agappf_org.wsr.htm?156498239594...

WaterNSW Work Summary

GW029192

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/11/1968	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County: CUMBERLAND	Parish: HOLSWORTHY	Cadastre: 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243794.000	Latitude: 33°55'44.3"S	
Elevation Source: (Unknown)	Easting: 308927.000	Longitude: 150°55'58.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	0.00	2.40	914			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.43	2.43	Loam Sandy	Loam	

Remarks

13/08/1980: NEWBRIDGE RD MOOREBANK

https://realtimedata.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029192.agappf_org.wsr.htm?1564982395946&1564982... 1/2

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029192_agapf_org.wsr.htm?156498239594...

*** End of GW029192 ***

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https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029194.agappf_org.wsr.htm?156498266522...

WaterNSW Work Summary

GW029194

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/11/1968	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243796.000	Latitude: 33°55'44.3"S	
Elevation Source: (Unknown)	Easting: 309004.000	Longitude: 150°56'01.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	0.00	0.00	914			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.43	2.43	Loam Sandy	Loam	

Remarks

13/08/1980: NEWBRIDGE RD MOOREBANK

https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029194.agappf_org.wsr.htm?1564982665225&1564982... 1/2

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029194.agapf_org.wsr.htm?156498266522...

*** End of GW029194 ***

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https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029195.agappf_org.wsr.htm?156498258714...

WaterNSW Work Summary

GW029195

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/11/1968	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243796.000	Latitude: 33°55'44.3"S	
Elevation Source: (Unknown)	Easting: 309004.000	Longitude: 150°56'01.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	0.00	0.00	914			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.43	2.43	Loam Sandy	Loam	

Remarks

13/08/1980: NEWBRIDGE RD MOOREBANK

https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029195.agappf_org.wsr.htm?1564982587145&1564982... 1/2

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029195.agappf_org.wsr.htm?156498258714...

*** End of GW029195 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029196.agappf_org.wsr.htm?156498254289...

WaterNSW Work Summary

GW029196

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/11/1968	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County: CUMBERLAND	Parish: HOLSWORTHY	Cadastre: 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243795.000	Latitude: 33°55'44.3"S	
Elevation Source: (Unknown)	Easting: 308978.000	Longitude: 150°56'00.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	0.00	0.00	914			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.43	2.43	Loam Sandy	Loam	

Remarks

13/08/1980: NEWBRIDGE RD MOOREBANK

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029196.agappf_org.wsr.htm?156498254289...

*** End of GW029196 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029197.agappf_org.wsr.htm?156498245918...

WaterNSW Work Summary

GW029197

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): WASTE DISPOSAL
Work Type: Well	
Work Status:	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 2.40 m
Completion Date: 01/11/1968	Drilled Depth: 2.40 m
Contractor Name: (None)	
Driller:	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish HOLSWORTHY	Cadastre 56
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6243795.000	Latitude: 33°55'44.3"S	
Elevation Source: (Unknown)	Easting: 308952.000	Longitude: 150°55'59.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Concrete Cylinder	0.00	0.00	914			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	2.43	2.43	Loam Sandy	Loam	

Remarks

13/08/1980: NEWBRIDGE ROAD MOOREBANK

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029197.agappf_org.wsr.htm?1564982459183&1564982... 1/2

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw029197.agapf_org.wsr.htm?156498245918...

*** End of GW029197 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058697.agapf_org.wsr.htm?156497849906...

WaterNSW Work Summary

GW058697

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): G/WATER XPLORE
Work Type: Bore	
Work Status: Test Hole	
Construct.Method: Cable Tool	
Owner Type: Private	
Commenced Date:	Final Depth: 19.20 m
Completion Date: 01/07/1984	Drilled Depth: 19.20 m
Contractor Name: (None)	
Driller: Roy Max Barrett	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A: CUMBERLAND Licensed:	County CUMBERLAND	Parish ST LUKE	Cadastre 260
Region: 10 - Sydney South Coast	CMA Map: 9030-2S	Scale:	
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:		
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244541.000	Latitude: 33°55'20.3"S	
Elevation Source: (Unknown)	Easting: 309271.000	Longitude: 150°56'12.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Opening	Screen	0.00	0.00	150		1	Stainless Steel, A: 0.90mm
1	1	Casing	Threaded Steel	0.00	9.00	150			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
8.50	14.00	5.50	Unconsolidated	8.50		0.13			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058697.agapf_org.wsr.htm?1564978499060&1564978... 1/2

8/5/2019 https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058697.agappf_org.wsr.htm?156497849906...

0.00	5.00	5.00	Clay Stiff	Clay	
5.00	6.00	1.00	Sand Soft Silty	Sand	
6.00	8.00	2.00	Sand Coarse Silty, Wood Charcoal	Sand	
8.00	14.00	6.00	Sand Grey Silty Coarse Water Supply	Sand	
14.00	16.00	2.00	Clay Grey Silty, Some Coarse Sand	Clay	
16.00	18.30	2.30	Clay Grey Silty	Clay	
18.30	19.20	0.90	Slate Clayey	Slate	

*** End of GW058697 ***

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8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058698.agappf_org.wsr.htm?156497994810...

WaterNSW Work Summary

GW058698

Licence:	Licence Status:
	Authorised Purpose(s):
	Intended Purpose(s): G/WATER XPLORE
Work Type: Bore	
Work Status: Test Hole	
Construct.Method: Cable Tool	
Owner Type: Private	
Commenced Date:	Final Depth: 19.50 m
Completion Date: 01/07/1984	Drilled Depth: 19.50 m
Contractor Name: (None)	
Driller: Roy Max Barrett	
Assistant Driller:	
Property:	Standing Water Level
	(m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

Form A:	County	Parish	Cadastre
Licensed:	CUMBERLAND	ST LUKE	260
Region: 10 - Sydney South Coast	CMA Map: 9030-2S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244568.000	Latitude: 33°55'19.3"S	
Elevation Source: (Unknown)	Easting: 309117.000	Longitude: 150°56'06.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: GD_ACC.MAP	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	11.50	11.50	Clay Black Grey	Clay	
11.50	12.00	0.50	Clay Coarse Sandy Gravel	Clay	
12.00	19.00	7.00	Clay Grey Sandy	Clay	
19.00	19.50	0.50	Shale	Shale	

*** End of GW058698 ***

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058698.agappf_org.wsr.htm?1564979948107&1564979... 1/2

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw058698.agapf_org.wsr.htm?156497994810...

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw102641.agagpf_org.wsr.htm?156498229566...

WaterNSW Work Summary

GW102641

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): INDUSTRIAL
Work Type: Bore	
Work Status:	
Construct.Method: Rotary	
Owner Type:	
Commenced Date:	Final Depth: 16.50 m
Completion Date: 01/01/1998	Drilled Depth: 16.70 m
Contractor Name: PANORAMA DRILLING COMPANY	
Driller: Ronald John Lee	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 45 867545
Region: 10 - Sydney South Coast	CMA Map:	
River Basin: - Unknown	Grid Zone:	Scale:
Area/District:		
Elevation: 0.00 m (A.H.D.)	Northing: 6243885.000	Latitude: 33°55'41.3"S
Elevation Source: Unknown	Easting: 308873.000	Longitude: 150°55'56.2"E
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack;
PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	16.70	225			Rotary Air/Mud
1		Annulus	Waterworn/Rounded	0.00	16.70				Graded, Q:0.300m3
1	1	Casing	Pvc Class 9	-0.50	13.50	140			Seated on Bottom, Screwed
1	1	Opening	Screen	13.50	16.50	140		0	Steel, Screwed, A: 1.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
14.20	16.10	1.90	Unknown	5.13		0.20			420.00

Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments
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https://realtime.data.watersnsw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw102641.agagpf_org.wsr.htm?1564982295662&1564982... 1/2

8/5/2019 https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw102641.agappf_org.wsr.htm?156498229566...

(m)	(m)	(m)			
0.00	2.00	2.00	BROWN LT. CLAY	Invalid Code	
2.00	3.40	1.40	CLAY RED AND BROWN	Clay	
3.40	10.50	7.10	SILT LT. BROWN AND FINE SAND	Silt	
10.50	14.20	3.70	SILT CLAYING BROWN YELLOW	Silt	
14.20	16.10	1.90	GRAVELS	Gravel	
16.10	16.70	0.60	SHALE	Shale	

*** End of GW102641 ***

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8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113068.agagpf_org.wsr.htm?156498147646...

WaterNSW Work Summary

GW113068

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 10/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244469.000	Latitude: 33°55'22.3"S	
Elevation Source: Unknown	Easting: 308749.000	Longitude: 150°55'51.8"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113068 ***

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8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113069.agagpf_org.wsr.htm?156498131964...

WaterNSW Work Summary

GW113069

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 10/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:			
	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244531.000	Latitude: 33°55'20.4"S	
Elevation Source: Unknown	Easting: 308869.000	Longitude: 150°55'56.5"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113069 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113070.agagpf_org.wsr.htm?156498062365...

WaterNSW Work Summary

GW113070

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 10/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244520.000	Latitude: 33°55'20.8"S	
Elevation Source: Unknown	Easting: 308968.000	Longitude: 150°56'00.4"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113070 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113071.agagpf_org.wsr.htm?156498009837...

WaterNSW Work Summary

GW113071

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 10/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244495.000	Latitude: 33°55'21.7"S	
Elevation Source: Unknown	Easting: 309065.000	Longitude: 150°56'04.1"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113071 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtimedata.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113072.agagpf_org.wsr.htm?156498143118...

WaterNSW Work Summary

GW113072

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 9.50 m
Completion Date: 11/07/2003	Drilled Depth: 9.50 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244429.000	Latitude: 33°55'23.7"S	
Elevation Source: Unknown	Easting: 308832.000	Longitude: 150°55'55.0"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113072 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113073.agagpf_org.wsr.htm?156498108086...

WaterNSW Work Summary

GW113073

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 11/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244416.000	Latitude: 33°55'24.2"S	
Elevation Source: Unknown	Easting: 308929.000	Longitude: 150°55'58.8"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113073 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113074.agagpf_org.wsr.htm?156498032425...

WaterNSW Work Summary

GW113074

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 10.00 m
Completion Date: 11/07/2003	Drilled Depth: 10.00 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244353.000	Latitude: 33°55'26.3"S	
Elevation Source: Unknown	Easting: 309029.000	Longitude: 150°56'02.6"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113074 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

8/5/2019

https://realtime.data.watersw.com.au/wgen/users/7411d989bb504487a7654b73a693265a/gw113075.agagpf_org.wsr.htm?156498040127...

WaterNSW Work Summary

GW113075

Licence:	Licence Status:
	Authorised Purpose(s): Intended Purpose(s): MONITORING BORE
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth: 9.50 m
Completion Date: 11/07/2003	Drilled Depth: 9.50 m
Contractor Name: Macquarie Drilling	
Driller: Unknown Unknown	
Assistant Driller:	
Property:	Standing Water Level (m):
GWMA:	Salinity Description:
GW Zone:	Yield (L/s):

Site Details

Site Chosen By:

	County Form A: CUMBERLAND Licensed:	Parish HOLSWORTHY	Cadastre 201/1009044
Region: 10 - Sydney South Coast	CMA Map:		
River Basin: - Unknown	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6244297.000	Latitude: 33°55'28.1"S	
Elevation Source: Unknown	Easting: 309045.000	Longitude: 150°56'03.2"E	
GS Map: -	MGA Zone: 56	Coordinate Source: Unknown	

Remarks

29/07/2014: Nat Carling, 29-July-2014; Added status, drill method, depth & work name, updated work type.

*** End of GW113075 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix C – Historic Aerial Photography

Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils & Remedial Strategy
Report Number: E22882.E09_Rev1 | 9 April 2020

Historic Aerial Photography Review

Aerial photographs of the precinct were sourced from NSW Land and Property Information (formerly NSW Department of Lands), or from alternative databases (such as Google Earth). These provided an appreciation of the historical development and changes of land use across the precinct area. Land use observations and comments for each of the aerial photographs reviewed are summarised in **Table C-1**. Where the land use activity has been documented by previous studies (**Section 4.2**), reference to the corresponding information source is made.

Table C-1 Historical aerial photo review

Photo year	Aerial photograph details	Historical land use description	Land use category
1930	Survey: Sydney NSW 3429, Run 24, Photo 797; Photo date: 10-2-1930; Source: Commonwealth of Aust., see Figure C-1	<p>Within the precinct:</p> <p>Although photo image resolution was low in quality, the whole of the precinct area appeared to be rural land with most parts showing evidence of cultivation, with occasional structures believed to be farm sheds and/or residences. Four residences were located in the southern part of parcel A.</p> <p>Two buildings were present in the southwest corner of the site (land ¹ parcel Y) over present day Bill Morrison Park.</p> <p>Cleared, grazing land, with sparse trees was present over all or most of the smaller land parcels D, C, P, Q, R, S, T, U, the northern and western parts of parcel A.</p> <p>Bridges Rd. terminated at Haigh Park. The western end of Newbridge Road joined Heathcote Road, which extended over what is now Haigh Avenue, in the southwest corner of the precinct. A former road was also present running from Heathcote Road to the south through the centre of parcel B-west and terminating at parcel A.</p> <p>Surrounding Properties:</p> <p>An oxbow lake feature was located 150m east of parcels C and D and adjacent to the northern boundary of parcels T to X, over the eastern part of current day Lake Moore, which was fed by ANZAC Creek located 70 to 90m east of parcel X.</p> <p>Other off-Precinct areas south of Georges River were passive or cultivated rural land, with the exception of the land to the south of Heathcote and Newbridge Roads, and close to Georges River, which was partly covered by regular structures, indicating more intensive farming operations (e.g. dairy or poultry farming).</p> <p>A railway corridor was apparent to the west and north of Georges River, with the early Liverpool train station on eastern edge of Liverpool Town visible to the west of the rail line.</p>	<p>Rural: passive, cultivated and sparse residential</p> <p>Rural and town development</p>
1943	Survey: SKM Sydney 1943; Photo date: not specified; Source: Sinclair Knight Merz., see Figure C-2	<p>Within the precinct:</p> <p>The 1943 photo showed cultivated areas had been extended, with some lots remaining as passive rural grazing land. Roadways appeared unchanged.</p> <p>Major changes were as follows:</p> <ul style="list-style-type: none"> • A topographic depression, which appeared to be inundated with water, was obvious in the south east part of parcel B-west, immediately north of 	Rural: passive, cultivated and sparse residential

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Report Number: E22882.E09_Rev1 | 9 April 2020

Photo year	Aerial photograph details	Historical land use description	Land use category
		<p>parcels E, F, G, H and I;</p> <ul style="list-style-type: none"> Earthworks, believed to be associated with sand mining operations (DP, 2015), were evident on the eastern parts of land parcel C, with partially flooded excavated areas almost reaching the eastern Precinct boundary at this location; and A factory structure measuring approximately 50m by 160m was constructed over the western part of parcel B-west, approximately 70-100m from the east bank of Georges River, with a number of other associated structures resembling separate commercial/industrial buildings also present in the vicinity. This parcel had been acquired by Cable Makers Australia Pty Ltd and was used for a range of processes in the manufacture of electrical cables, overhead transmission cables and polyurethane foam (WC, 1999 and AECOM, 2015). WC also recorded that during the 1940s the northern part of parcel B-west began to be used for onsite waste scrap disposal. <p>Surrounding Properties:</p> <p>The island within the oxbow lake feature (over present day Bulba-Dibeen Island), east of the precinct showed evidence of cultivation, as did the surrounding land.</p> <p>Commercial/industrial buildings had been constructed on the land adjacent to Georges River and to the south of Heathcote and Newbridge Roads. This was understood to be a Department of Defence facility, specifically, the No. 3 Sub-base of the 5th Ordnance Depot during World War II, believed to be used for storage of clothing, artillery, armament parts and firearms, military vehicles, technical equipment, inflammables (paints, acids, oils, turps) and tallow drums. Also on this site were the Australian Women's Army Barracks, truck storage facilities, pallet manufacturing and workshops (Ref. AECOM, 2015).</p> <p>A residential estate had been developed south of Newbridge Road and east of Morebank Avenue.</p>	<p>Commercial and industrial</p> <p>Industrial</p> <p>Rural, with surface water features</p> <p>Industrial</p> <p>Low-density residential</p>
1965	Survey: Cumberland NSW 5228, Run 23, Photo 1404; Photo date: 29-8-1965; Source: NSW Dept. of Lands, see Figure C-3	<p>Within the precinct:</p> <p>Rural land uses within the precinct had been diminished to parcels A, the northern part of B-east, D, K to P and R to X. Parcel C still appeared disturbed due to sand mining works, with flooding of excavations.</p> <p>Other changes were as follows:</p> <ul style="list-style-type: none"> The factory building on the western part of parcel B-west on the 1943 aerial photo had been extended eastwards over previously cultivated land, with the construction of additional industrial buildings over parcel B-east (Joyce Foam Pty Ltd, foam manufacturer), to Bridges Rd. A summary of historical operations reported by WC (1999) indicated that extensions between 1940 and 1967 included an administration 	<p>Industrial and passive rural</p>

Moore Point Precinct Review Study
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Photo year	Aerial photograph details	Historical land use description	Land use category
		<p>building, coal-fired boiler, incinerator building, mould shop, flammable liquids store, mixing shed and carbon black store.</p> <ul style="list-style-type: none"> Earthworks and filling were noted in parcel A and the northwest corner of parcel B-west close to Georges River. The fill comprised inert industrial waste from land parcels B-west and B-east, with some originating from commercial development sites in Liverpool (Ref. S&G, 2007). A new road appeared to the north of the factory extension connecting Bridges Road to the western part of parcel B-west. Small to medium sized structures had been constructed on parcels E to J on Newbridge Road. A commercial / industrial building with approximate dimensions 20m x 50m had been constructed south of Lake Moore, over previously cultivated land within parcel Q. <p>Surrounding Properties:</p> <p>The land to the east of the precinct, north and west of the oxbow lake, as well as the southern part of the island within the lake, had undergone significant sand mining and appeared flooded.</p> <p>South of Newbridge Road, a factory building measuring approximately 70m x 80m had been constructed over former cultivated land between Heathcote and Newbridge Roads. Some of the factory buildings close to Georges River had been extended eastwards almost to Moorebank Avenue.</p> <p>Light Horse Bridge crossing the Georges River on Newbridge Road was constructed and increased development of Liverpool town was evident.</p>	Mainly industrial and commercial, with surface water features and some low-density residential
1970	Survey: Cumberland NSW; Photo date: 7-7-1970; Source: NSW Dept. of Lands, see Figure C-4	<p>Within the precinct:</p> <p>Additional industrial development occurred across the precinct as follows:</p> <ul style="list-style-type: none"> The existing factory buildings in land parcels B-west and B-east had been extended northwards to the southern boundary of parcel A. WC (1999) noted that three underground storage tanks (USTs) containing petrol and diesel were installed near Factory No. 9. A PCB compound was being produced in Factory No. 4 where cables were manufactured. Land parcel A had some small structures constructed in the western part, with motor vehicles (heavy and light) parked or moving across the site. New industrial buildings had been constructed on land parcels K, L, M, O, Q and T on Newbridge Road. Parcels U to X appeared to be prepared for development. The building on parcel K was believed to have been a petrol service station. The EI (2015b) Phase 1 Preliminary Site Investigation (PSI) reported that parcel M was used for the manufacture of filters, strainers and 	Industrial / commercial

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Photo year	Aerial photograph details	Historical land use description	Land use category
		<p>pressure vessels. Asbestos-cement sheeting was on the warehouse building. Other potential contamination sources on land parcel M included above ground storage tanks inside the warehouse, flammable liquids storage including paints, hydraulic oil and LPG.</p> <ul style="list-style-type: none"> The EI (2015c) PSI reported that parcel O was used for the manufacture of plastics, food storage and distribution, tyre re-treading and furniture manufacture and wholesaling. The site inspection revealed a decommissioned UST and a number of dangerous goods storage depots. <p>Other changes were as follows:</p> <ul style="list-style-type: none"> The sand-mined, eastern part of Parcel C was still flooded. A new access road connecting Bridges Road to the eastern part of parcel A had been constructed. <p>Surrounding Properties: The land to the east appeared to be inundated with flood waters, with the exception of the central island and access roadways. Additional factory buildings were evident to the south of Newbridge Road, opposite land parcels O and P. Otherwise no significant change to off-site properties was evident.</p>	Industrial and commercial, with surface water features and some low-density residential
1991	Survey: Sydney NSW 4028, Run 12, Photo 197; Photo date: 13-8-1991; Source: NSW Dept. of Lands, see Figure C-5	<p>Within the precinct: Additional industrial development occurred across the precinct as follows:</p> <ul style="list-style-type: none"> Extensions to the existing factory buildings to the north and south of land parcel B-west and to the north of parcel B-east; and New industrial buildings or extensions to existing buildings had been constructed on land parcels N, P and R to X. <p>The sand-mined, eastern part of Parcel C was only partially flooded, probably indicating that some filling of this site had commenced to raise its level above that of Lake Moore to the east. An industrial operation was taking place on the western part of parcel C, corresponding with historical information regarding a concrete batching plant in this area.</p> <p>Surrounding Properties: Sand mining operations east of the precinct appeared to have ceased and the shape of Lake Moore with islands was formed generally as per the present day layout of this surface water feature. New industrial developments were evident on the land south of Newbridge Road, opposite land parcels V to X, and on properties located north of Georges River. All other off-Precinct properties remained mostly unchanged.</p>	Industrial
2002	Survey: Pennrith NSW 4724 (M2302), Run 12, Photo 53; Photo date: 16-3-2002; Source: NSW	<p>Within the precinct: Photo resolution was poor; however, it was evident that only minimal changes occurred across the precinct. These included:</p>	Industrial

Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils & Remedial Strategy
Report Number: E22882.E09_Rev1 | 9 April 2020

Photo year	Aerial photograph details	Historical land use description	Land use category
	Dept. of Lands, see Figure C-6	<ul style="list-style-type: none"> Extensions to the existing factory buildings in the northwest corner of land parcel B-west; and Filling operations were in progress across the sand mined portion of parcel C. <p>Surrounding Properties: New industrial developments evident on the land south of Newbridge Road, opposite land parcels O and P. Haigh Park to the east of parcel A appeared to have been filled and rehabilitated. All other off-Precinct properties remained mostly unchanged.</p>	Industrial and commercial, with surface water features and some low-density residential
2009	Survey: not specified; Photo date: 14-11-09; Source: nearmap.com.au; Accessed: 02-8-2019, see Figure C-7	<p>Within the precinct: The industrial activities appeared unchanged from previous historical aerial photographs, with the following exceptions:</p> <ul style="list-style-type: none"> Outdoor industrial storage areas were evident to the north and south of factory buildings within the land parcels B-west and Q, as well as other parcels located on Newbridge Road; Above-ground storage tanks were also visible in between factory buildings on parcel B-east; and Stockpiled materials (possibly soil) were visible in the southern and central parts of Parcel A. <p>Surrounding Properties: Former industrial buildings in the area adjacent to the Georges River appeared to have been extended and modernised. All other off-Precinct properties remained mostly unchanged.</p>	Industrial and commercial, with surface water features and some low-density residential

Notes: ¹ Land parcels A to X are current designations used to identify the separate sites making up the precinct and are identified on **Figure 2-1** (), which showed an aerial view of the site in 2019.



Photo Source: Commonwealth of Australia, SYDNEY SURVEY, NSW Survey 3429, Run 24, Photo 797, 10-2-1930

LEGEND

--- Approximate precinct boundary



Approx. Scale (m)



Suite 6.01, 55 Miler Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn: M.G.

Approved: N.K.

Date: 02-08-19

LAC JV Pty Ltd
Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils and Remedial Strategy
Newbridge & Bridges Roads, Liverpool NSW
Aerial Photograph - 1930

Figure:

C-1

Project: E22882.E09

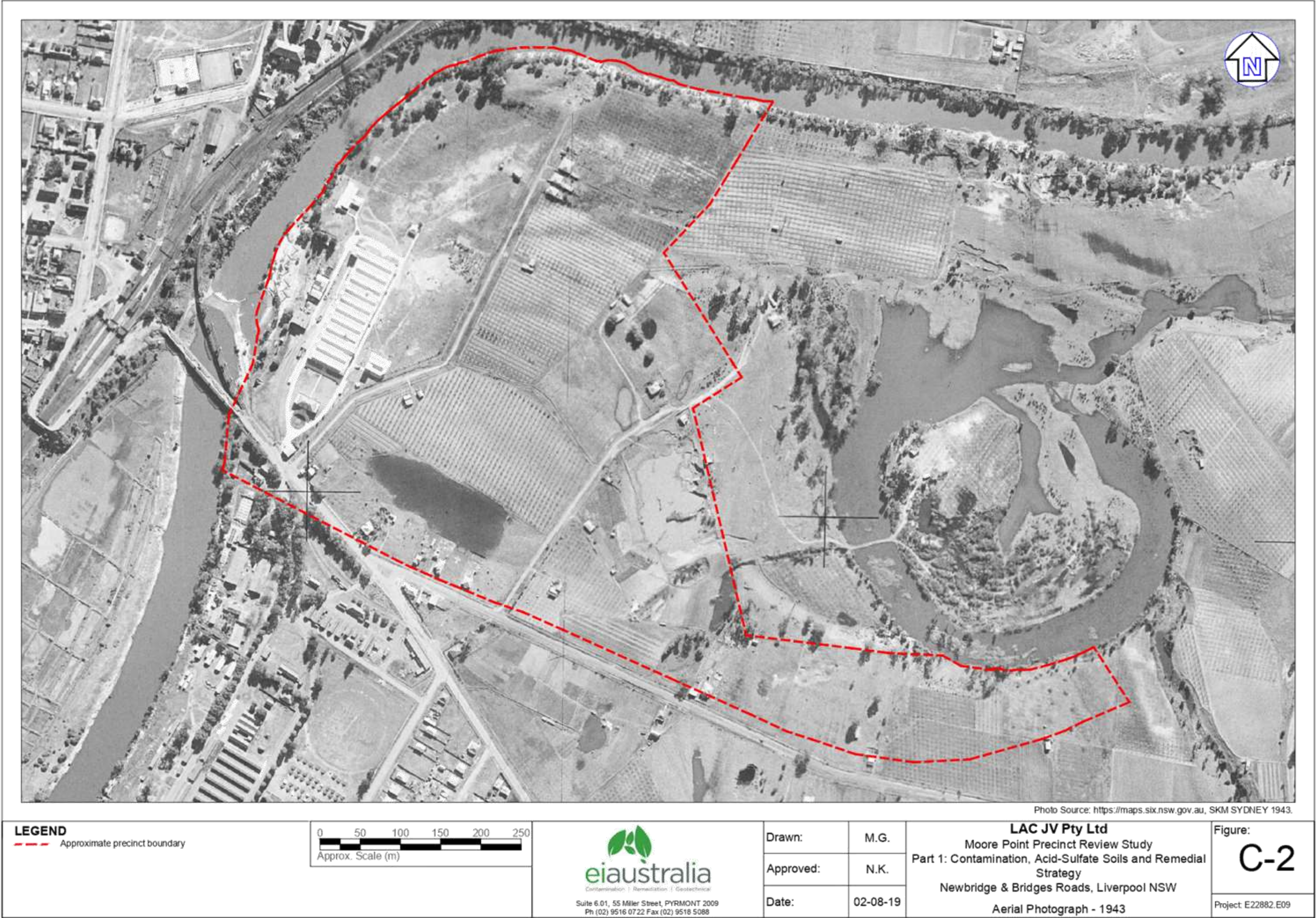




Photo Source: NSW Lands Department, Cumberland, NSW Survey 5228, Run 23, Photo 1404, 29-8-65

LEGEND

--- Approximate precinct boundary



Drawn:	M.G.	LAC JV Pty Ltd Moore Point Precinct Review Study Part 1: Contamination, Acid-Sulfate Soils and Remedial Strategy Newbridge & Bridges Roads, Liverpool NSW Aerial Photograph - 1965	Figure: C-3
Approved:	N.K.		
Date:	02-08-19		Project: E22882.E09

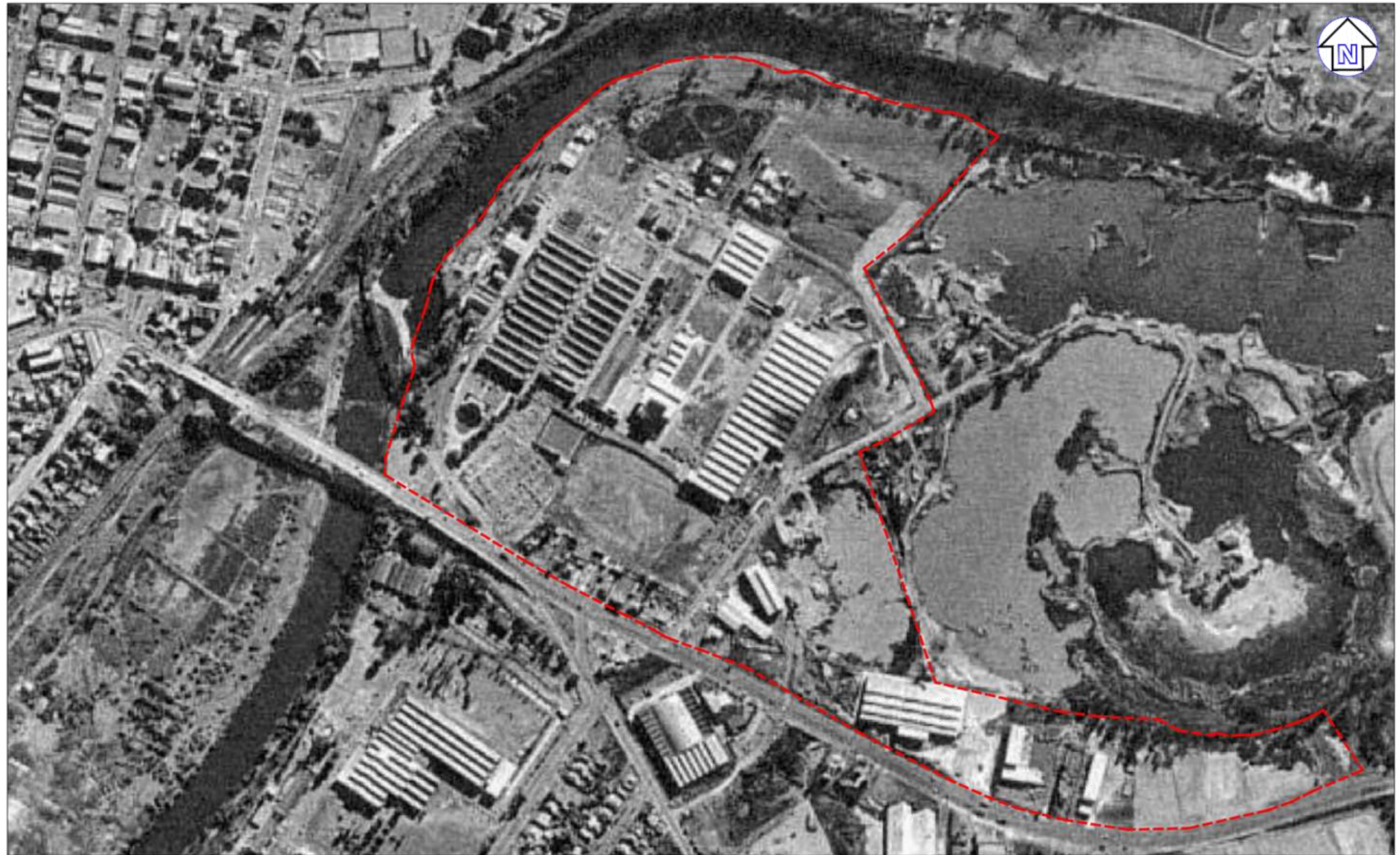
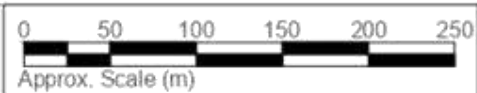


Photo Source: NSW Lands Department, Cumberland, NSW Survey 5195, Photo 1908, 07-07-1970

LEGEND

--- Approximate precinct boundary



Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9516 5088

Drawn: M.G.

Approved: N.K.

Date: 02-08-19

LAC JV Pty Ltd
Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils and Remedial Strategy
Newbridge & Bridges Roads, Liverpool NSW
Aerial Photograph - 1970

Figure:

C-4

Project E22882.E09



Photo Source: NSW Lands Department, SYDNEY, NSW Survey 4028, Run 12, Photo 197, 13-8-91

LEGEND

--- Approximate precinct boundary



Approx. Scale (m)



Suite 6.01, 55 Miler Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn: M.G.

Approved: N.K.

Date: 02-08-19

LAC JV Pty Ltd
Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils and Remedial Strategy
Newbridge & Bridges Roads, Liverpool NSW
Aerial Photograph - 1991

Figure:

C-5

Project: E22882.E09



Photo Source: NSW Lands Department, PENRITH, NSW Survey 4724 (M2302), Run 12, Photo 53, 16-3-02

LEGEND

--- Approximate precinct boundary



Suite 6.01, 55 Miler Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn: M.G.

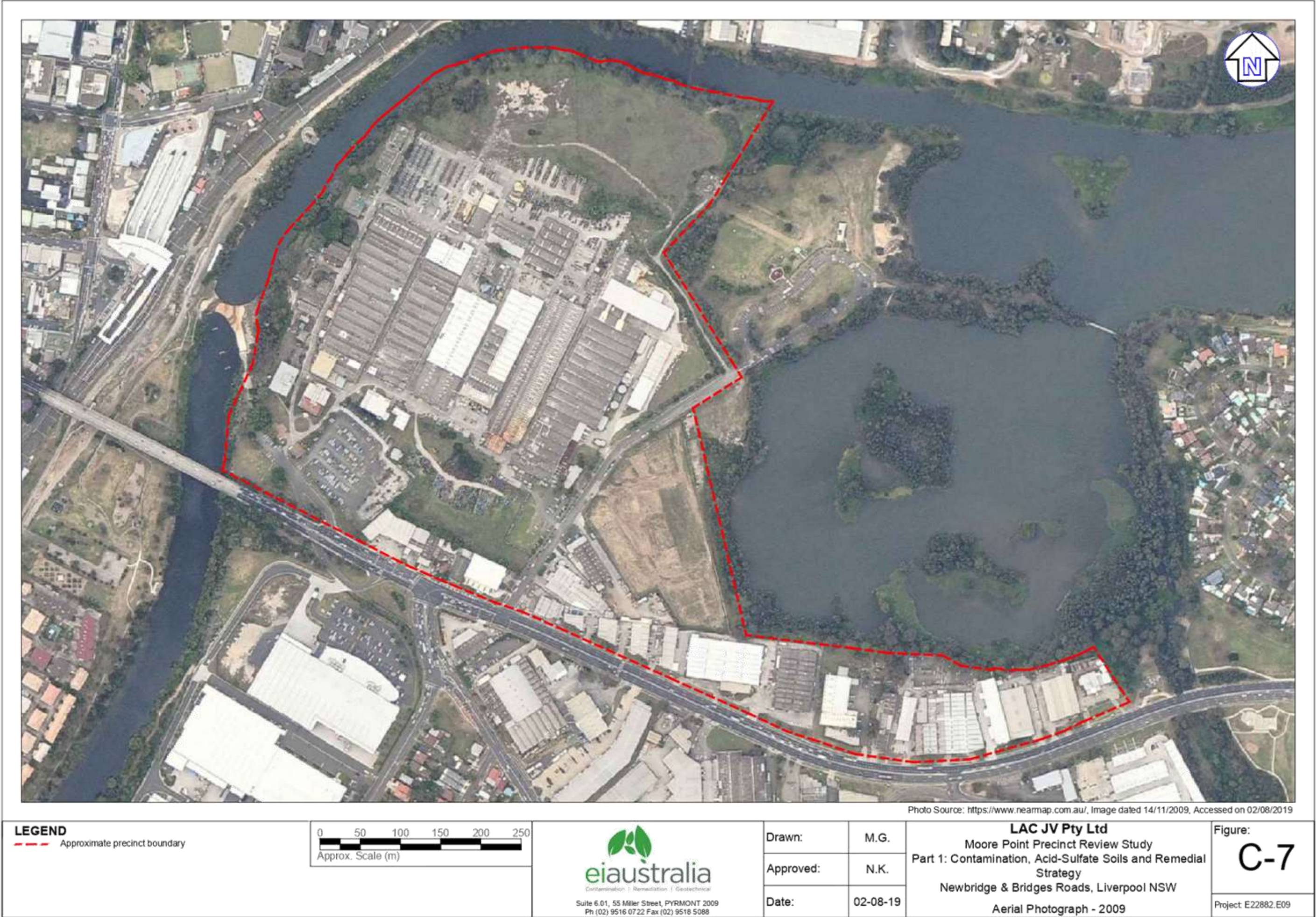
Approved: N.K.

Date: 02-08-19

LAC JV Pty Ltd
Moore Point Precinct Review Study
Part 1: Contamination, Acid-Sulfate Soils and Remedial Strategy
Newbridge & Bridges Roads, Liverpool NSW
Aerial Photograph - 2002

Figure:
C-6

Project: E22882.E09



Appendix D – Environment Protection Licences

8/15/2019

Environment & Heritage | POEO Licences, Application and Notice Detail

[Home](#) [Environment protection licences](#) [POEO Public Register](#) [Search for licences, applications and notices](#)

Licence summary

[Search Again](#) [Return to Previous Page](#)

Summary Licence No: 818

[View this licence](#) (PDF document 121 kb)

Licence holder: PRYSMIAN AUSTRALIA PTY LTD
Premises: PRYSMIAN AUSTRALIA PTY LIMITED
 1 HEATHCOTE ROAD, LIVERPOOL, NSW, 2170
LGA: LIVERPOOL **Catchment:** Sydney Coast & Georges River

Administrative fee: \$2,128.00
Licence status: Issued
Activity type: Metal coating
 Metal waste generation

Licence review: Complete date 06 Apr 2016
 Complete date 13 Apr 2011
 Complete date 06 Apr 2006
 Complete date 15 Mar 2005
 Complete date 21 Jun 2002
 Due date 06 Apr 2021

Pollution incident management plan: Last tested 04 Feb 2019
Current Environmental Risk Level: Level 1

Applications

Number	Application type	Current status	Date received
141780	s.55 Licence Transfer	Approved	21 Feb 2003

Notices

Number	Issue date	Notice type
1046598	22 Jun 2005	s.58 Licence Variation
1057336	07 Apr 2006	s.58 Licence Variation
1072072	10 Apr 2007	s.58 Licence Variation
1076668	09 Aug 2007	s.58 Licence Variation
1096521	16 Jan 2009	s.58 Licence Variation
1511943	29 Aug 2014	s.58 Licence Variation
1538225	02 May 2016	s.58 Licence Variation
1565149	28 May 2018	Penalty Notice

For business
and industry ☐For local
government ☐

Pollution studies and reduction programs

Title	Program type	Start date	Complete date
Remediation and monitoring of contaminated areas	Mixed	30 Apr 2013	Conditions

Contact us

Annual Returns

Start date	End date	Date received	Non-compliance	LBL data
31-Dec-2017	30-Dec-2018	21-Feb-2019	yes	Not available
31-Dec-2016	30-Dec-2017	04-Jul-2018	yes	Not available
31-Dec-2015	30-Dec-2016	25-Jan-2017	No	Not available
31-Dec-2014	30-Dec-2015	29-Feb-2016	No	Not available
31-Dec-2013	30-Dec-2014	26-Feb-2015	No	Not available
31-Dec-2012	30-Dec-2013	13-Feb-2014	No	Not available
31-Dec-2011	30-Dec-2012	27-Feb-2013	yes	Not available
31-Dec-2010	30-Dec-2011	25-Jan-2012	No	Not available
31-Dec-2009	30-Dec-2010	22-Feb-2011	No	Not available
31-Dec-2008	30-Dec-2009	03-Mar-2010	No	Not available
31-Dec-2007	30-Dec-2008	03-Mar-2009	No	Not available
31-Dec-2006	30-Dec-2007	19-Feb-2008	yes	Not available
31-Dec-2005	30-Dec-2006	29-Jan-2007	yes	Not available
31-Dec-2004	30-Dec-2005	24-Jan-2006	yes	Not available
31-Dec-2003	30-Dec-2004	24-Feb-2005	yes	Not available
31-Dec-2002	30-Dec-2003	16-Jan-2004	No	Not available
31-Dec-2001	30-Dec-2002	14-Feb-2003	No	Not available
31-Dec-2000	30-Dec-2001	14-May-2002	No	Not available
31-Dec-1999	30-Dec-2000			

Complete
annual return
via eConnect
at

8/15/2019

Environment & Heritage | POEO Licences, Application and Notice Detail

- ☐ 131 555 (toll 131555)
- ☐ info@epa.nsw.gov.au (<mailto:info@epa.nsw.gov.au>)
- ☐ EPA Office Locations (<https://www.epa.nsw.gov.au/about-us/contact-us/locations>)

[Accessibility](https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help/index) (<https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/help/index>)

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[Copyright](https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright) (<https://www.epa.nsw.gov.au/about-us/contact-us/website-service-standards/copyright>)

☐ <https://au.linkedin.com/company/environment-protection-authority>

Find us on <https://twitter.com/epanew>

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 818



Licence Details

Number:	818
Anniversary Date:	31-December

Licensee

PRYSMIAN AUSTRALIA PTY LTD
LOCKED BAG 7042
LIVERPOOL BC NSW 1871

Premises

PRYSMIAN AUSTRALIA PTY LIMITED
1 HEATHCOTE ROAD
LIVERPOOL NSW 2170

Scheduled Activity

Metallurgical activities

Fee Based Activity

Scale

Metal coating	0-100000 T annual capacity to coat metal
Metal waste generation	> 100 T annual volume of waste generated or stored

Region

Metropolitan - Sydney Industry
Level 13, 10 Valentine Ave
PARRAMATTA NSW 2150
Phone: (02) 9995 5000
Fax: (02) 9995 6900

PO Box 668 PARRAMATTA
NSW 2124

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 818



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Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 818



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Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 818



Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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Licence - 818



The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

PRYSMIAN AUSTRALIA PTY LTD
LOCKED BAG 7042
LIVERPOOL BC NSW 1871

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

- A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Metallurgical activities	Metal coating	0 - 100000 T annual capacity to coat metal
Metallurgical activities	Metal waste generation	> 100 T annual volume of waste generated or stored

A2 Premises or plant to which this licence applies

- A2.1 The licence applies to the following premises:

Premises Details
PRYSMIAN AUSTRALIA PTY LIMITED
1 HEATHCOTE ROAD
LIVERPOOL
NSW 2170
LOT 200 DP 1009044

A3 Other activities

- A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Chemical storage

A4 Information supplied to the EPA

- A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

- a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998;

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and

b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Waste

L2.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled "Waste" and meeting the definition, if any, in the column titled "Description" in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled "Activity" in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled "Other Limits" in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 92 of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	NA
NA	Waste	Any waste received on site that is below licensing thresholds in Schedule 1 of the POEO Act, as in force from time to time	-	NA

L3 Potentially offensive odour

L3.1 No condition of this licence identifies a potentially offensive odour for the purposes of Section 129 of the Protection of the Environment Operations Act 1997.

L3.2 The licensee must not cause or permit the emission of offensive odour beyond the boundary of the premises.

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Note: Section 129 of the Protection of the Environment Operations Act 1997, provides that the licensee must not cause or permit the emission of any offensive odour from the premises but provides a defence if the emission is identified in the relevant environment protection licence as a potentially offensive odour and the odour was emitted in accordance with the conditions of a licence directed at minimising odour.

3 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

O3 Processes and management

O3.1 The licensee must ensure that any any liquid and/or non liquid generated and/or stored at the premises is assessed and classified in accordance with the EPA Waste Classification Guidelines as in force from time to time.

O3.2 The licensee must ensure that waste identified for recycling is stored separately from other waste.

4 Monitoring and Recording Conditions

M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:

- a) in a legible form, or in a form that can readily be reduced to a legible form;
- b) kept for at least 4 years after the monitoring or event to which they relate took place; and
- c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of

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this licence:

- a) the date(s) on which the sample was taken;
- b) the time(s) at which the sample was collected;
- c) the point at which the sample was taken; and
- d) the name of the person who collected the sample.

M2 Recording of pollution complaints

- M2.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M2.2 The record must include details of the following:
- a) the date and time of the complaint;
 - b) the method by which the complaint was made;
 - c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
 - f) if no action was taken by the licensee, the reasons why no action was taken.
- M2.3 The record of a complaint must be kept for at least 4 years after the complaint was made.
- M2.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M3 Telephone complaints line

- M3.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.
- M3.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.
- M3.3 The preceding two conditions do not apply until 3 months after the date of the issue of this licence.

5 Reporting Conditions

R1 Annual return documents

- R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
- 1. a Statement of Compliance,
 - 2. a Monitoring and Complaints Summary,
 - 3. a Statement of Compliance - Licence Conditions,
 - 4. a Statement of Compliance - Load based Fee,

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- 5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
- 6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data,
- 7. a Statement of Compliance - Environmental Management Systems and Practices; and
- 8. a Statement of Compliance - Environmental Improvement Works.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:

- a) the licence holder; or
- b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening

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material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

- R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
- a) where this licence applies to premises, an event has occurred at the premises; or
 - b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
- and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.
- R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.
- R3.3 The request may require a report which includes any or all of the following information:
- a) the cause, time and duration of the event;
 - b) the type, volume and concentration of every pollutant discharged as a result of the event;
 - c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
 - d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
 - e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
 - f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
 - g) any other relevant matters.
- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

6 General Conditions

G1 Copy of licence kept at the premises or plant

- G1.1 A copy of this licence must be kept at the premises to which the licence applies.
- G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.
- G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

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7 Special Conditions

E1 Environmental Management Plan

- E1.1 The licensee must implement the "*Environmental Management Plan Coolant Leak Area - Factory 2, 1 Heathcote Road, Liverpool NSW, 25 November 2013*" audited by Zoic Environmental Pty Ltd (Site Audit Statement ref. KJL090, 23rd December 2013).
- E1.2 The licensee must engage a suitably qualified environmental consultant to sample all five monitoring wells installed around the in-ground tank as depicted in Figure 3, Appendix A of the Environmental Management Plan (EMP) referred to in Condition E1.1. From the date of this Notice onwards, groundwater monitoring is to be undertaken on an annual basis in accordance with the *8.1 Groundwater Sampling Methodology* and analysed in conjunction with *Table 8-3 Groundwater Assessment Criteria* of the EMP.
- E1.3 Within one month of receiving the annual groundwater sampling report, the licensee must submit the report to the EPA's Manager Sydney Industry by email to metro.regulation@epa.nsw.gov.au. The report must address the requirements of *Section 8.2 Groundwater Analytical Program* as described in the EMP.
- E1.4 If at any time, any of the target contaminants exceed the assessment criteria defined in *Table 8.3 Groundwater Assessment Criteria* of the EMP, the licensee must implement contingency options including but not limited to:
- a) further assessment and management by a suitably qualified environmental consultant;
 - b) the adoption and implementation of a suitable remediation technique; and
 - c) notification of any groundwater contaminant exceedances to a NSW EPA-accredited site auditor.
- E1.5 Provided that the NSW EPA, in consultation with the licensee, agree that no further groundwater monitoring is required, the licensee must provide the following:
- a) a site audit report prepared by a NSW EPA accredited site auditor that can verify that there is no further risk to the underlying ground water; and
 - b) a site auditor's statement prepared by an accredited site auditor in accordance with the approved site audit form. The report and statement must comply with the EPA's publication *Guidelines for the NSW Site Auditor Scheme*. The site audit report and site audit statement must be submitted to the Manager Sydney Industry by email to metro.regulation@epa.nsw.gov.au within six months of its preparation.

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Dictionary

General Dictionary

3DGM [in relation to a concentration limit]	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Ms Nadia Kanhoush

Environment Protection Authority

(By Delegation)

Date of this edition: 04-August-2000

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 818



End Notes

- 1 Licence varied by Admin corrections to archived record, issued on 02-Dec-2002, which came into effect on 02-Dec-2002.
- 2 Licence transferred through application 141780, approved on 04-Mar-2003, which came into effect on 01-Jul-2001.
- 3 Licence varied by notice 1046598, issued on 22-Jun-2005, which came into effect on 24-Jun-2005.
- 4 Licence varied by notice 1057336, issued on 27-Apr-2006, which came into effect on 27-Apr-2006.
- 5 Licence varied by notice 1072072, issued on 10-Apr-2007, which came into effect on 10-Apr-2007.
- 6 Licence varied by notice 1076668, issued on 09-Aug-2007, which came into effect on 09-Aug-2007.
- 7 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 8 Licence varied by notice 1096521, issued on 16-Jan-2009, which came into effect on 16-Jan-2009.
- 9 Licence varied by notice 1511943 issued on 29-Aug-2014
- 10 Licence varied by notice 1538225 issued on 02-May-2016

8/15/2019

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Licence summary

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Summary Licence No: 3099

[View this licence](#) (PDF document 139 kb)

Licence holder: JOYCE FOAM PTY LTD
Trading as: JOYCE FOAM PRODUCTS
Premises: JOYCE FOAM PRODUCTS
 5-9 BRIDGES ROAD, MOOREBANK, NSW, 2170
LGA: LIVERPOOL Catchment: Sydney Coast & Georges River

Administrative fee: \$8,840.00
Licence status: Issued
Activity type: Plastic resins production
Licence review: Complete date 25 Jan 2016
 Complete date 25 Jan 2011
 Complete date 25 Jan 2006
 Complete date 26 Oct 2001
 Due date 25 Jan 2021

Pollution incident management plan: Last tested 22 Aug 2018
Current Environmental Risk Level: Level 1

Applications

Number	Application type	Current status	Date received
143769	s.55 Licence Transfer	Approved	27 Oct 2005
1513477	s.58 Licence Variation	Withdrawn	13 Dec 2012

Notices

Number	Issue date	Notice type
1004945	25 Oct 2001	s.58 Licence Variation
1025420	06 Jun 2003	s.58 Licence Variation
1052359	31 Oct 2005	s.58 Licence Variation
1055579	28 Feb 2006	s.58 Licence Variation
1076735	06 Sep 2007	s.58 Licence Variation
1085001	16 May 2008	s.58 Licence Variation
1091163	21 Jul 2009	Load Reduction Agreement
1118608	23 Aug 2010	s.58 Licence Variation
1529545	15 Mar 2016	s.58 Licence Variation
1541996	05 Aug 2016	s.58 Licence Variation
1549859	22 Mar 2017	s.58 Licence Variation
1551743	04 May 2017	s.58 Licence Variation
1556382	10 Jul 2018	s.58 Licence Variation

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Pollution studies and reduction programs

Title	Program type	Start date	Complete date	
Feasibility Assessment of Wet Gas Scrubber	Air	05 Aug 2016	03 Oct 2016	Conditions
Curing and Storage Room Stack Verification	Air	04 Aug 2016	03 Oct 2016	Conditions
Confirmation of TDI Emission Levels and Scrubber Optimisation	Air	01 Mar 2017	03 Jul 2017	Conditions

Annual Returns

Start date	End date	Date received	Non-compliance	LBL data
30-Sep-2017	29-Sep-2018	06-Dec-2018	No	view
30-Sep-2016	29-Sep-2017	05-Dec-2017	No	view
30-Sep-2015	29-Sep-2016	02-Dec-2016	No	view
30-Sep-2014	29-Sep-2015	11-Dec-2015	No	view
30-Sep-2013	29-Sep-2014	08-Dec-2014	No	view
30-Sep-2012	29-Sep-2013	02-Dec-2013	YES	view
30-Sep-2011	29-Sep-2012	13-Dec-2012	No	view
30-Sep-2010	29-Sep-2011	14-Dec-2011	No	view
30-Sep-2009	29-Sep-2010	13-Dec-2010	YES	view
30-Sep-2008	29-Sep-2009	11-Dec-2009	YES	view
30-Sep-2007	29-Sep-2008	05-Dec-2008	YES	view
30-Sep-2006	29-Sep-2007	10-Dec-2007	YES	view
30-Sep-2005	29-Sep-2006	11-Dec-2006	YES	view
30-Sep-2004	29-Sep-2005	01-Dec-2005	YES	view
30-Sep-2003	29-Sep-2004	08-Dec-2004	YES	view

8/15/2019

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30-Sep-2002	29-Sep-2003	28-Nov-2003	YES	view
30-Sep-2001	29-Sep-2002	03-Dec-2002	No	view
30-Sep-2000	29-Sep-2001	26-Mar-2002	No	view
30-Sep-1999	29-Sep-2000	27-Nov-2000	No	view

- ☐ 131 555 (tel:131555)
- ☐ info@epa.nsw.gov.au (<mailto:info@epa.nsw.gov.au>)
- ☐ EPA Office Locations (<https://www.epa.nsw.gov.au/about-us/contact-us/locations>)

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<https://www.youtube.com/channel/UCkpothVW8>

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 3099



Licence Details

Number:	3099
Anniversary Date:	30-September

Licensee

JOYCE FOAM PTY LTD

PMB 7

MOOREBANK NSW 1875

Premises

JOYCE FOAM PRODUCTS

5-9 BRIDGES ROAD

MOOREBANK NSW 2170

Scheduled Activity

Chemical production

Fee Based Activity

Plastic resins production

Scale

> 2000-10000 T annual production
capacity

Region

Metropolitan - Sydney Industry

Level 13, 10 Valentine Ave

PARRAMATTA NSW 2150

Phone: (02) 9995 5000

Fax: (02) 9995 6900

PO Box 668

PARRAMATTA NSW 2124

Section 55 Protection of the Environment Operations Act 1997

Environment Protection Licence

Licence - 3099



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Information about this licence

Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act);
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

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The EPA publication "A Guide to Licensing" contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

Transfer of licence

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

Public register and access to monitoring data

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

This licence is issued to:

JOYCE FOAM PTY LTD
PMB 7
MOOREBANK NSW 1875

subject to the conditions which follow.

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1 Administrative Conditions

A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

Scheduled Activity	Fee Based Activity	Scale
Chemical production	Plastic resins production	> 2000 - 10000 T annual production capacity

A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

Premises Details
JOYCE FOAM PRODUCTS
5-9 BRIDGES ROAD
MOOREBANK
NSW 2170
LOT 100 DP 775780

A3 Other activities

A3.1 This licence applies to all other activities carried on at the premises, including:

Ancillary Activity
Chemical production - use of toxic substances (commercial use of Toluene diisocyanate (TDI) in foam making)

A4 Information supplied to the EPA

A4.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:

a) the applications for any licences (including former pollution control approvals) which this licence

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replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and
b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

2 Discharges to Air and Water and Applications to Land

P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

<i>Air</i>			
EPA identification no.	Type of Monitoring Point	Type of Discharge Point	Location Description
1	Discharge to air - emissions monitoring	Discharge to air - emissions monitoring	Stack serving the wet gas scrubber outlet located externally on the western wall of the foam production building serving the Henneke and Maxfoam production lines
2	Discharge to air - emissions monitoring	Discharge to air - emissions monitoring	Stack serving the Variable Pressure Foam (VPF) process chamber. The stack discharge point is located on the western wall of the building and follows an activated carbon bed.
3	Discharge to air - emissions monitoring	Discharge to air - emissions monitoring	Stack serving the Variable Pressure Foam (VPF) air lock chamber. The stack discharge point is located on the western wall of the building and follows an activated carbon bed.

3 Limit Conditions

L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Load limits

L2.1 The actual load of an assessable pollutant discharged from the premises during the reporting period must not exceed the load limit specified for the assessable pollutant in the table below.

L2.2 The actual load of an assessable pollutant must be calculated in accordance with the relevant load calculation protocol.

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Assessable Pollutant	Load limit (kg)
Benzene (Air)	5.50
Fine Particulates (Air)	250.00
Nitrogen Oxides - Summer (Air)	
Nitrogen Oxides (Air)	0.00
Volatile organic compounds - Summer (Air)	
Volatile organic compounds (Air)	175000.00

Note: An assessable pollutant is a pollutant which affects the licence fee payable for the licence.

L3 Concentration limits

L3.1 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L3.2 Air Concentration Limits

POINT 1

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Toluene 2,4 & 2,6 diisocyanate (TDI) (combined)	milligrams per cubic metre	0.01	Dry, 273K, 101.325 kPa(a)		1 hour
Methylene chloride	milligrams per cubic metre	500	Dry, 273K, 101.325 kPa(a)		1 hour

POINT 2,3

Pollutant	Units of measure	100 percentile concentration limit	Reference conditions	Oxygen correction	Averaging period
Toluene 2,4 & 2,6 diisocyanate (TDI) (combined)	milligrams per cubic metre	0.01	Dry, 273K, 101.325 kPa(a)		1 hour

L3.3 The licensee must not operate any of the foam production lines simultaneously.

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L4 Noise limits

- L4.1** Noise from the premises must not exceed:
- a) An LA10 (15 minute) noise emission criterion of 70 dB(A) 0700 to 2200 Monday to Saturday and 0800 to 2200 Sundays and Public Holidays; and
 - b) An LA10 (15 minute) noise emission criterion of 65 dB(A) at all other times, except as expressly provided by this licence.
- L4.2** Noise from the premises is to be measured or computed at any point within 1 metre of the boundary of the premise to determine compliance with condition L4.1. A reduction of 5dB(A) must be applied to the relevant limits if the noise is tonal or impulsive in character.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

- O1.1** Licensed activities must be carried out in a competent manner.
This includes:
- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
 - b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

- O2.1** All plant and equipment installed at the premises or used in connection with the licensed activity:
- a) must be maintained in a proper and efficient condition; and
 - b) must be operated in a proper and efficient manner.

5 Monitoring and Recording Conditions

M1 Monitoring records

- M1.1** The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.
- M1.2** All records required to be kept by this licence must be:
- a) in a legible form, or in a form that can readily be reduced to a legible form;
 - b) kept for at least 4 years after the monitoring or event to which they relate took place; and
 - c) produced in a legible form to any authorised officer of the EPA who asks to see them.
- M1.3** The following records must be kept in respect of any samples required to be collected for the purposes of

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this licence:

- a) the date(s) on which the sample was taken;
- b) the time(s) at which the sample was collected;
- c) the point at which the sample was taken; and
- d) the name of the person who collected the sample.

M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

POINT 1

Pollutant	Units of measure	Frequency	Sampling Method
Dry gas density	kilograms per cubic metre	Special Frequency 1	TM-23
Methylene chloride	milligrams per cubic metre	Special Frequency 1	TM-34
Moisture	percent	Special Frequency 1	TM-22
Molecular weight of stack gases	grams per gram mole	Special Frequency 1	TM-23
Temperature	Kelvin	Special Frequency 1	TM-2
Velocity	metres per second	Special Frequency 1	TM-2

POINT 1,2,3

Pollutant	Units of measure	Frequency	Sampling Method
Toluene 2,4 & 2,6 diisocyanate (TDI) (combined)	milligrams per cubic metre	Special Frequency 1	TM-34

M2.3 Special Frequency 1 requires monitoring to be undertaken at 6 monthly intervals.

Note: Methylene chloride is stored in bulk at the premises. The licensee advised that it is used as a blowing agent within the Maxfoam and Henneke production lines.

Note: In addition to Condition M2.2, the licensee should conduct a 5-yearly performance review of the activated carbon within the vessels serving the Variable Pressure Foam (VPF) line. This performance review should address:

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- the suitability of the maintenance program to ensure that it is effective in detecting actual or potential changes in the environmental and safety performance;
- any procedures for detecting changes to the equipment which could impact on performance, including the effects of moisture and corrosion;
- results of any internal inspections, using video techniques, sampling and analysis the activated carbon where appropriate.

The first review will be due in the 2020 reporting period.

M3 Testing methods - concentration limits

- M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
- a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
 - b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
 - c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M4 Testing methods - load limits

Note: Division 3 of the *Protection of the Environment Operations (General) Regulation 2009* requires that monitoring of actual loads of assessable pollutants listed in L2.2 must be carried out in accordance with the relevant load calculation protocol set out for the fee-based activity classification listed in the Administrative Conditions of this licence.

M5 Recording of pollution complaints

- M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.
- M5.2 The record must include details of the following:
- a) the date and time of the complaint;
 - b) the method by which the complaint was made;
 - c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
 - d) the nature of the complaint;
 - e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the

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complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after: the date of the issue of this licence.

M7 Other monitoring and recording conditions

Wet scrubber liquor tank operating parameters

M7.1 The parameters set out in the table below must be monitored continuously to ensure that the wet gas scrubber is being operated in a proper and efficient manner.

Parameter	Unit of measure	Frequency	Method
pH	pH	Continuous	Probe

Wet scrubber liquor tank operating limits

M7.2 The liquor tank associated with the operation of the wet gas scrubber must be operated to meet the parameter limits specified in the table below:

Parameter	Unit of measure	Lower limit
pH	pH	9.0

M7.3 The licensee must retain a log of all pH measurements made in relation to condition M7.1.

M7.4 The licensee must conduct inspections of the wet scrubbing system at a frequency of at least one inspection per four week period. The outcomes of these inspections must be captured within a service log that includes, but is not limited to, a checklist, a record of service or repair, damper adjustments, pH level, fan current and a description of any dosing chemicals supplied.

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Note: The requirement to conduct periodic inspection of the Wet Gas Scrubbing system was derived from the Pollution Study: Feasibility Assessment of Wet Gas Scrubber, October 2016.

6 Reporting Conditions

R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:

1. a Statement of Compliance,
2. a Monitoring and Complaints Summary,
3. a Statement of Compliance - Licence Conditions,
4. a Statement of Compliance - Load based Fee,
5. a Statement of Compliance - Requirement to Prepare Pollution Incident Response Management Plan,
6. a Statement of Compliance - Requirement to Publish Pollution Monitoring Data; and
7. a Statement of Compliance - Environmental Management Systems and Practices.

At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

R1.3 Where this licence is transferred from the licensee to a new licensee:

- a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
- b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:

- a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
- b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA via eConnect *EPA* or by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 Where the licensee is unable to complete a part of the Annual Return by the due date because the licensee was unable to calculate the actual load of a pollutant due to circumstances beyond the licensee's control, the licensee must notify the EPA in writing as soon as practicable, and in any event not later than the due date. The notification must specify:

- a) the assessable pollutants for which the actual load could not be calculated; and
- b) the relevant circumstances that were beyond the control of the licensee.

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R1.7 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.8 Within the Annual Return, the Statements of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R2 Notification of environmental harm

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any

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complainants;

f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and

g) any other relevant matters.

- R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

7 General Conditions

G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

G2 Other general conditions

G2.1 Completed Programs

Program	Description	Completed Date
Develop emission concentration limits controls.	The objective of this PRP was to develop emission concentration limits and to develop fugitive emissions control; monitor and control air emissions.	01-October-2003
Groundwater Contamination Monitoring Program - discontinued owing to landowner (not licensee) being responsible	The object of the PRP was to implement an ongoing Groundwater Monitoring Program in accordance with a Groundwater Monitoring Plan, prepared by GHD Pty Ltd. Its goal was to determine the extent and concentration of contaminants and in light of the monitoring results, to inform any further actions which may be necessary. The licensee leases the land and the land owner is responsible for ongoing monitoring	09-April-2015
Further investigate the ground level concentration	The objective of this PRP was to further investigate the ground level concentration impacts of VOCs in light of the PRP 1 report findings that informed decisions regarding cleaner production opportunities.	22-February-2007

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Air pollutant impact assessment and mitigation	Air pollutant impact assessment and mitigation study to ensure compliance with the EPA's health based impact assessment criteria for toluene di-isocyanate (TDI). To reduce emission of TDI & Methylene Chloride to an acceptable level in order to protect human health.	18-February-2008
Feasibility Assessment of Wet Gas Scrubber	Investigative study to determine the suitability of the wet gas scrubber for the treatment of TDI emissions from the foam making process.	03-October-2016
Curing and Storage Room Stack Verification	verifying the proposed site specific emission limits within the curing and storage rooms	03-October-2016
Confirmation of TDI Emission Levels and Scrubber Optimisation	Dispersion Modelling for Scrubber and VPF line carbon filter to confirm emission limits for TDI	03-July-2017

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Dictionary

General Dictionary

3DGM (in relation to a concentration limit)	Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples
Act	Means the Protection of the Environment Operations Act 1997
activity	Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997
actual load	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
AM	Together with a number, means an ambient air monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
AMG	Australian Map Grid
anniversary date	The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
annual return	Is defined in R1.1
Approved Methods Publication	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
assessable pollutants	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
BOD	Means biochemical oxygen demand
CEM	Together with a number, means a continuous emission monitoring method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .
COD	Means chemical oxygen demand
composite sample	Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume.
cond.	Means conductivity
environment	Has the same meaning as in the Protection of the Environment Operations Act 1997
environment protection legislation	Has the same meaning as in the Protection of the Environment Administration Act 1991
EPA	Means Environment Protection Authority of New South Wales.
fee-based activity classification	Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009.
general solid waste (non-putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997

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flow weighted composite sample	Means a sample whose composites are sized in proportion to the flow at each composites time of collection.
general solid waste (putrescible)	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
grab sample	Means a single sample taken at a point at a single time
hazardous waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
licensee	Means the licence holder described at the front of this licence
load calculation protocol	Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009
local authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
material harm	Has the same meaning as in section 147 Protection of the Environment Operations Act 1997
MBAS	Means methylene blue active substances
Minister	Means the Minister administering the Protection of the Environment Operations Act 1997
mobile plant	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
motor vehicle	Has the same meaning as in the Protection of the Environment Operations Act 1997
O&G	Means oil and grease
percentile [in relation to a concentration limit of a sample]	Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence.
plant	Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles.
pollution of waters [or water pollution]	Has the same meaning as in the Protection of the Environment Operations Act 1997
premises	Means the premises described in condition A2.1
public authority	Has the same meaning as in the Protection of the Environment Operations Act 1997
regional office	Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence
reporting period	For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 months. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act.
restricted solid waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
scheduled activity	Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997
special waste	Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997
TM	Together with a number, means a test method of that number prescribed by the <i>Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales</i> .

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TSP	Means total suspended particles
TSS	Means total suspended solids
Type 1 substance	Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements
Type 2 substance	Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements
utilisation area	Means any area shown as a utilisation area on a map submitted with the application for this licence
waste	Has the same meaning as in the Protection of the Environment Operations Act 1997
waste type	Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste

Mr Tim Gilbert

Environment Protection Authority

(By Delegation)

Date of this edition: 02-February-2000

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End Notes

- 1 Licence varied by notice 1004945, issued on 26-Oct-2001, which came into effect on 31-Oct-2001.
- 2 Licence varied by notice 1025420, issued on 06-Jun-2003, which came into effect on 01-Jul-2003.
- 3 Licence varied by notice 1052359, issued on 31-Oct-2005, which came into effect on 25-Nov-2005.
- 4 Licence transferred through application 143769, approved on 06-Dec-2005, which came into effect on 30-Nov-2005.
- 5 Licence varied by notice 1055579, issued on 01-Mar-2006, which came into effect on 26-Mar-2006.
- 6 Licence varied by change to legislation, issued on 05-Jul-2007, which came into effect on 05-Jul-2007.
- 7 Licence varied by notice 1076735, issued on 06-Sep-2007, which came into effect on 06-Sep-2007.
- 8 Licence varied by notice 1085001, issued on 16-May-2008, which came into effect on 16-May-2008.
- 9 Condition A1.3 Not applicable varied by notice issued on <issue date> which came into effect on <effective date>
- 10 Licence varied by notice 1118608, issued on 23-Aug-2010, which came into effect on 23-Aug-2010.
- 11 Licence varied by correction to scheduled activity name, issued on 21-Dec-2010, which came into effect on 21-Dec-2010.
- 12 Licence varied by notice 1529545 issued on 15-Mar-2016
- 13 Licence varied by notice 1541996 issued on 05-Aug-2016
- 14 Licence varied by notice 1549859 issued on 22-Mar-2017
- 15 Licence varied by notice 1551743 issued on 04-May-2017
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LEAMAC & CORONATION



Moore Point Precinct Review Study - Part 2: Preliminary Acid Sulfate Soil Management Plan

Newbridge & Bridges Roads, Liverpool, NSW

Moore Point Precinct Review Study - Part 2: Preliminary Acid Sulfate Soil
Management Plan
Report Number: E22882.E14_Rev1 | 9 April 2020

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Executive Summary

This report has been prepared by EI Australia Pty Ltd (EI) on behalf of Leamac and Coronation to develop a preliminary, precinct Acid-Sulfate Soil Management Plan in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses. There is nothing contained within this report to preclude rezoning.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure ES-1 – Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'



Figure ES-2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Acid-Sulfate Soil Management Plan

The purpose of this study is to provide guidance for the management of acid-sulfate soils (ASS) and potential ASS (PASS) that may be encountered during site preparation and construction works undertaken as part of the envisaged Precinct Land Use and Infrastructure Strategy.

In this preliminary precinct ASSMP the risk of encountering ASS or PASS is considered, various management options are detailed and general procedures for the management of excavated and in situ ASS are provided. Guidance for the management of groundwater and stormwater to prevent adverse impacts associated with ASS is also provided, in addition to a contingency plan for mitigating risks associated with unforeseen issues that may arise during plan implementation and ground disturbance works.

1. INTRODUCTION

1.1 Overview

Leamac and Coronation Group ("the Client") engaged EI Australia (EI) to prepare a Preliminary Acid Sulfate Soil Management Plan (preliminary ASSMP) for the Moore Point Precinct, Liverpool NSW ("the Precinct").

The Precinct, formerly known as the Liverpool Waterfront, is situated about 26km south west of the Sydney central business district, within the Local Government Area of Liverpool City Council. With a total approximate area of 38.5 hectares (Ha), it is located within a portion of the Liverpool Collaboration Area, identified as Georges River North (Area 10). It is bound by Georges River to the north and west, Newbridge Road to the south and the recreational area comprising Haigh Park, Lake Moore and associated islands to the east (**Figures 1 and 2, Appendix A**).

Part 1 of the Moore Point Precinct Review Study (reported separately) involved a review of available land contamination data and soil conditions, presenting potential remedial options with indicative costs, to make the land suitable for a range of land uses. Part 2 (this document) presents a preliminary acid sulfate soil management plan for the Precinct, reported under a separate cover.

At the time of completing this plan, the Precinct was occupied by multiple buildings (mostly commercial / industrial), hardstand areas and vegetation. Based on information provided in the Greater Sydney Commission's 2018 Collaboration Area, *Liverpool Place Strategy*, the Precinct will undergo redevelopment for a range of mixed uses, including high density residential, recreational, commercial and industrial, with roads and public and communal open spaces. Bulk excavations for the provision of basement (car parking) facilities will be performed to depths up to 5.5-6m below ground level (BGL).

EI understands that this preliminary ASSMP is required by the Client as part of a *Precinct Land Use and Infrastructure Strategy* for the New South Wales Department of Planning & Environment ("the Department"). As actual investigation for the presence of acid sulfate soils (ASSs) within the Precinct had not been undertaken at the time of preparing this document, this plan must be considered as preliminary and any construction activities within ASSs would require specific direction. Intrusive investigation is needed to establish the extent of any ASS within the Precinct and any such investigation should result in a more specific ASSMP suited to the corresponding outcomes. Further investigations may be performed at the development application stage.

1.2 Project Purpose and Objectives

The purpose of this study is to provide guidance for the management of acid-sulfate soils (ASS) and potential ASS (PASS) that may be encountered during site preparation and construction works undertaken as part of the envisaged Precinct Land Use and Infrastructure Strategy. The objectives of this preliminary ASSMP are therefore to:

- consider the risk of encountering acid sulfate soils during the proposed development of the Precinct; and
- provide general procedures for the management of excavated and *in situ* acid sulfate soils.

1.3 Scope of Works

In order to achieve the above objectives and with reference to the ASSMAC (1998) *Acid Sulfate Soil Manual*, the scope of works includes:

- A description of the Precinct, focusing on its soil attributes, utilising information from ASS risk maps, the Liverpool Local Environment Plan 2008 and previous environmental reports for the Precinct;
- A description of the potential impacts caused by the proposed activities;
- Description of the management options and procedures to be undertaken in an ASS area, which when implemented will prevent, or minimise, the release of acid leachates;
- Presentation of a focussed monitoring program, covering soil, surface water and groundwater;
- Procedures for reporting and consultation with co-ordinating authorities; and
- A description of the contingency measures to be implemented in the case of failure of management procedures.

2. SITE DESCRIPTION

2.1 Identification, Location and Physical Setting

The Precinct identification details and associated information are presented in **Table 2-1**, as well as **Figures A.1** and **A.2 (Appendix A)**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Location	About 26 km south west of Sydney CBD. The Precinct forms the Georges River North Place, in east central part (Area 10) of the Liverpool Collaboration Area, as shown in Figure A.1 (Appendix A) . Precinct bound by Georges River to the north and west, Newbridge Road to the south, and the recreational area comprising Haigh Park, Lake Moore and the Bulba-Bideen Islands to the east (Figure A.2, Appendix A). North-eastern corner of Precinct (as per GDA94-MGA56): Easting: 309185.085; Northing: 6244487.434 (Source: http://maps.six.nsw.gov.au)
Precinct Area	Approximately 38.5 Ha
Lots and Deposited Plans (DPs)	Precinct comprised of numerous cadastral parcels. Refer to Figure A.2 (Appendix A) for their identification.
State Survey Marks	Four State Survey (SS) marks are situated in close proximity to the Precinct: SS141031 (north east of the Precinct) located in vacant / cleared land, SS167461 (east) on Bridges Road and SS176047 and SS31250D (south) located on the corner of Bridges Road and Newbridge Road. (Source: http://maps.six.nsw.gov.au)
Local Government Authority	Liverpool City Council
Parish	St Luke
County	Cumberland
Current Zoning	IN2 - Light Industrial (Liverpool Local Environment Plan 2008)
General Description	Flat, low-lying, river flood plain. Occupied by multiple buildings (mostly commercial / industrial), hardstand areas and vegetation.

2.2 Regional Setting

A summary of the local topography, regional geology, hydrogeology and soil landscape information are presented in **Table 2-2**.

Table 2-2 Summary of Topography, Geology, Hydrogeology and Soil Landscape

Attribute	Description
Ground Topography	Generally flat and level, the middle to northern parts being man-made (disturbed / filled) terrain. Elevations range from 7.0m Australian Height Datum (AHD) at the north western boundary, to 9.0m AHD at the eastern boundary.

Drainage	Drainage is likely to be consistent with the general slope of the Precinct. Stormwater expected to be collected by pit and pipe drainage, and discharge either directly into the Georges River, or into the municipal stormwater system.
Regional Geology	According to the GSNSW (1983) <i>Pennith 1:100 000 Geological Sheet 9130</i> , the Precinct is underlain by fluvial and estuarine sediments (Qha), which consist of quartz sand, silty sand, silt and clay, overlying the Liverpool sub-group of Wianamatta Shales comprising Bringelly Shale, Minchinbury Sandstone and Ashfield Shale (broadly described as shale with some sandstone beds).
Soil Landscape	The natural soils are dominated by Quaternary-aged sedimentary deposits associated with the Georges River, further described as fluvial, medium-grained quartzose sand, clay and silt (Chapman and Murphy, 1989).
Depth to Groundwater	Based on previous investigations of the Precinct, groundwater can be expected from 5.2-7m BGL (3.3-1.4m AHD). Groundwater is inferred to flow in a north / north westerly direction, towards the Georges River.

3. DESKTOP REVIEW

3.1 Acid Sulfate Soil

Acid sulfate soils (ASSs) are naturally occurring sediments containing iron monosulfides and/or iron disulfide minerals. As ASSs are naturally occurring, their presence is not related to site boundaries or anthropogenic contamination, but rather regions previously suitable for their deposition. Characteristics of ASS typically include:

- Sediments of Holocene geological age (up to 10,000 years old).
- Formation in soil horizons at an elevation of less than 5m AHD.
- Formation in marine or estuarine sediments and tidal lakes.
- Formation in coastal wetlands or back swamp areas, waterlogged or scalded areas, interdune swales or coastal sand dunes.
- Formation where the dominant vegetation is mangroves, reeds, rushes and other swamp tolerant and marine vegetation.
- Potential presence in areas identified as bearing sulfide minerals, coal deposits or former marine shales/sediments.
- Potential presence in deeper older estuarine sediments greater than 10m below the ground surface of Holocene or Pleistocene age.
- Visual and olfactory indicators may include sulfidic odours, bright yellow, yellow or straw-coloured mottling and pore space or coatings that could indicate the presence of jarosite, goethite or other similar acid producing sulfate minerals.
- May be indicated by the presence of shells, organic matter and dark reddish streaks that would indicate the presence of iron oxides.
- May be indicated by the presence of dark grey or black monosulfidic sediments or material showing the characteristics of fluvial bottom sediments or sediments deposited in a lacustrine environment.

When ASSs are exposed to air (e.g. due to bulk excavation or dewatering), the oxygen reacts with the iron sulfides in the sediment, producing sulfuric acid. This exposure to air, oxidation, produces hydrogen ions in excess of the sediment's capacity to neutralise the acidity resulting in soils with pH of 5.5 or less. These soils can usually be identified by the presence of pale yellow mottles and coatings of jarosite.

The acid can sometimes be produced in large quantities and drain into waterways causing severe short and long term socio-economic and environmental impacts, including damage to manmade structures and natural ecosystems.

ASSs can either be classified as actual acid sulfate soil (AASS), which is soil that has already reacted with oxygen to produce acid, or potential acid sulfate soil (PASS), which is soil that contains iron sulfide, but has not been exposed to oxygen (e.g. soil below the water table) and therefore has not produced sulfuric acid (although it has the potential to do so). AASS and PASS are often found in the same soil profile, with AASS generally overlying PASS horizons. The field pH of PASS in their undisturbed state is 5.5 or more (usually neutral or slightly alkaline).

3.2 Liverpool Local Environmental Plan 2008

According to Division 2, Section 7.7 of the Liverpool Local Environmental Plan (LEP) 2008, development consent is required to carry out works where the works occur within that Class of land as follows:

Table 3-1 Liverpool LEP 2008 Land Class for Acid Sulfate Soil

Class of land	Works
1	Any works.
2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Works more than 1m below the natural ground surface. Works by which the watertable is likely to be lowered more than 1m below the natural ground surface.
4	Works more than 2m below the natural ground surface. Works by which the watertable is likely to be lowered more than 2m below the natural ground surface.
5	Works within 500m of adjacent Class 1, 2, 3 or 4 land that is below 5m Australian Height Datum, or by which the watertable is likely to be lowered below 1m Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Development consent is not required for the stated reasons in Clauses (3), (4), (5) and (6) of Division 2, Section 7.7 of the LEP 2008, (paraphrased) as follows:

- Preliminary assessment of the proposed works prepared in accordance with the Acid Sulfate Soils Manual indicates that an ASSMP need not be carried out for the works, and
- The preliminary assessment has been provided to the Consent Authority and the Consent Authority has confirmed the assessment by notice in writing to the person carrying out the works.
- Where works are being carried out by a Public Authority that are either emergency works, routine management works, minor work that costs less than \$20,000 (other than drainage work).

Under Clause 6, development consent is not required to carry out any works unless:

- the works involve the disturbance of more than 1 tonne of soil, or
- the works are likely to lower the watertable.

According to the Liverpool LEP 2008 and associated *ASS Planning Maps* (1:5,000 scale; Sheets ASS-011, ASS-012 and ASS-014), the majority of the precinct lies within *Class 5* land, while portions of precinct parcels nominated as C, D, M, N, O, P, Q, T, U, V, W and X shown on **Figure 2** lie within *Class 3* land. A copy of the LEP 2008 ASS planning map is reproduced on **Figure 3**.

3.3 Department of Land and Water Conservation ASS Risk Map

According to the Department of Land and Water Conservation *Liverpool Acid Sulfate Soil Risk Map* (Map 9030S2, Edition 2, 1:25,000 scale), the Precinct lies within the following two class descriptions (**Figure 3**):

- Majority of the precinct: *No Known Occurrence*, meaning acid sulfate soils are not known or expected to occur. Environmental risk is stated as: "Land management activities are not likely to be affected by ASS materials".

- Portions of precinct parcels nominated as C, D, M, N, O, P, Q, T, U, V, W and X: *Ep1 - Estuarine Plain (1-2m AHD)*, with *High Probability* of ASS occurrence within 1m of the ground surface. The typical landform is low alluvial plains, estuarine sandplains, estuarine swamps and supratidal flats. The environmental risk is stated as: "Severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing".

Although not within the Precinct lands, it is important to note that Lake Moore sediments are mapped as *Em - Estuarine Bottom Sediments* below water level. Their environmental risk is stated as: "Severe environmental risk if bottom sediments are disturbed by activities such as dredging".

3.4 Summary of ASS Mapping

On the basis of the Liverpool LEP 2008 *ASS Planning Maps* and Department of Land and Water Conservation *Liverpool Acid Sulfate Soil Risk Map*, there is a high probability of ASSs within portions of precinct parcels nominated C, D, M, N, O, P, Q, T, U, V, W and X (**Figures 2 and 3**).

3.5 Previous Investigations

Numerous environmental reports have been completed for the Precinct, or part thereof, dating back to 1999. These were also reviewed for the EI (2019) *Moore Point Precinct Review Study – Part 1: Remedial Strategy Review* (EI Ref. E22882.E09). Of those reports, the following contained information relating to soil composition.

Area A (11 Bridges Road (Lot 201 in DP 1009044; 6.13 hectares))

- Soil & Groundwater Consulting (2007) *Environmental Site Assessment – Phase 1 and 2; Metal Manufacturers Site, 11 Bridges Road, Moorebank, New South Wales* (S&G Ref: SG071485 RP01 Revision 1; 14 December 2007); and
- Jeffery & Katauskas Pty Ltd (2013) *Report to Proactive Property (NSW) Pty Ltd on Geotechnical Investigation for Proposed Warehouse Development at 11 Bridges Road, Moorebank, NSW* (JKG Ref: 27021Zrpt; 2 December 2013).

Area B (3 Bridges Road (Lot 200 in DP 1009044; 16.65 hectares) and 5-9 Bridges Road (Lot 100 in DP 775780; 4.17 hectares))

- AGC Woodward-Clyde Pty Ltd (1999) *Phase 1 Environmental Due Diligence; 1 Heathcote Road, Liverpool NSW* (AGC W-C Ref: A8602126\0001; 8 January 1999);
- Benbow Environmental (2013) *Environmental Site Assessment Factory 2 Coolant Release; Report for Prysmian Group Liverpool NSW* (BE Ref: 121081_Rep_Final; 30 January 2013);
- Environmental Strategies (2013a) *Supplementary Soil and Groundwater Investigation; Prysmian Power Cables & Systems Australia Pty Ltd* (ES Ref: 10355RP01, 20 June 2013);
- Environmental Strategies (2013b) *Letter Report: Hydrocarbon Impacted Soil - Former Leaky In-Ground Pit, Factory 2; Prysmian Power Cables & Systems Australia Pty Ltd, 1 Heathcote Road, Liverpool, NSW* (ES Ref: 10355L01; 8 August 2013);
- Zoic Environmental Pty Ltd (2013) *Site Audit Report (SAR) and Site Audit Statement (SAS); Factory 2 Coolant Release; 1 Heathcote Road, Liverpool NSW, Prysmian Power Cables & Systems Australia Pty Ltd* (Zoic Ref: 13080 final; 20 December 2013);
- EI Australia (2015a) *Preliminary Site Investigation; 5-9 Bridges Road, Moorebank NSW* (EI Ref: E22745 AA_Rev0; 13 November 2015); which reviewed the following GDH Pty Ltd report:

- o GHD Pty Ltd (2005) *Environmental Site Assessment; 5-9 Bridges Road, Moorebank NSW* (GDH Ref. 2113524/Moorebank_R001; April 2005);
- EI Australia (2016a) *Preliminary Site Investigation with Limited Sampling; 3 Bridges Road, Moorebank NSW* (EI Ref: E22882 AA_Rev0; 30 March 2016);
- EI Australia (2016c) *Preliminary Site Investigation; Liverpool Waterfront, 3-11 Bridges Road, Moorebank NSW* (EI Ref: E22882 AD_Rev1; 22 November 2016); and
- EI Australia (2016d) *Geotechnical Assessment Report; 3-11 Bridges Road, Moorebank NSW* (EI Ref: E22882 GA; 13 January 2017).

None of these previous reports actually confirmed the presence of ASSs on the Precinct. No samples were laboratory analysed specifically for ASS parameters.

In the absence of confirmatory data and in keeping with the rationale for this preliminary ASSMP, EI has assumed there is a high probability of the presence for ASS materials, at least in localised areas of precinct parcels C, D, M, N, O, P, Q, T, U, V, W and X. This is based on:

- The filling layers, typically 2-4m thick and up to 12m BGL across the Precinct, could contain dredged sediments from the Georges River, Lake Moore and the Bulba-Bideen Islands;
- The natural (previously undisturbed) soils beneath the filling layers were at <5m AHD elevation; and
- The natural soils included Quaternary-aged, alluvial (estuarine) silty sands and clays, which could contain sulfidic minerals;

4. ACID SULFATE SOIL RISK AND IMPACTS

4.1 Soil Disturbance

The Precinct will undergo redevelopment for a range of mixed uses, including high density residential, recreational, commercial and industrial, with roads and public and communal open spaces. Bulk excavations for the provision of basement (car parking) facilities will be performed to depths up to 5.5-6m BGL.

The following infrastructure construction activities include sub-surface excavations typically greater than 1m below the ground surface:

- Surface trenching for installation of pipelines;
- Excavations for basement construction;
- Piling works; and
- Localised groundwater dewatering.

These activities undertaken in areas classified with high probability of ASS, or confirmed as containing ASS, should be considered high risk areas.

The Precinct development will involve disturbance of large amounts of soils (>1000 tonnes). In accordance with Section 4.3, *Assessment Guidelines* of the ASSMAC (1998) *Acid Sulfate Soil Manual*, "for projects that disturb >1000 tonnes of ASSs with $\geq 0.03\%$ oxidisable sulfur or equivalent existing acidity, a detailed management plan and development consent will be required". ASS management for the Precinct will most likely equate to *Very High Treatment*, as >5 tonnes of lime will be needed (Table 4.5, *Assessment Guidelines* (ASSMAC, 1998)).

4.2 Potential Construction Issues and Effects

The presence / extent of ASSs across the Precinct has not yet been investigated. Intrusive investigations in accordance with the ASSMAC (1998) *Acid Sulfate Soil Manual* are required to determine this well in advance of Precinct construction works, so that management controls are in place. Assuming that ASSs are present, the following construction issues and effects need to be considered prior to excavation and construction in an ASS environment so that appropriate solutions can be designed and implemented:

- Volume of excavated soil identified as being ASS;
- Physical characteristics of the ASSs, such as grain size and natural buffering capacity;
- Time that ASSs are exposed to air;
- Rate of oxidation and transport of the oxidation products;
- Exposure and oxidation rates of excavated material;
- Discharge of acidic leachates into groundwater and the Georges River; and
- Theoretical liming rates (neutralisation requirement, or dosage).

Many aquatic organisms are sensitive to acid drainage. The environmental impacts include:

- Dissolved aluminium and iron in leachate can be poisonous to fish and aquatic plants; and
- Sulfate salts can increase the salinity of the receiving water (a particular issue for freshwater systems).

Effective control of ASSs and any acidic leachates will require suitable identification and monitoring programs. Appropriate contingencies are also needed, as back up should proposed management measures be inadequate, or unexpected finds emerge.

5. MANAGEMENT OF ACID SULFATE SOIL

5.1 Management Options Overview

ASS management options for the development in accordance with the EPA (2014) *Waste Classification Guidelines* (Part 4: Acid Sulfate Soils), include:

- Avoid, where possible, any disturbance of PASS/AASS. This approach requires careful planning and investigation, which considers the deepest excavation elevations (including lift pits, services and piling) and relating them to the occurrence of potential ASS sediments.
- If disturbance of PASS/AASS cannot be avoided, four potential options are considered:
 - Option 1 - Excavation of PASS and disposal beneath the water table at a NSW EPA licensed premise, prior to oxidation.
 - Option 2 - Excavation, on-site neutralisation and disposal of neutralised PASS/AASS at a NSW EPA licensed premise.
 - Option 3 - Excavation, on-site neutralisation and onsite re-use of neutralised PASS/AASS, subject to characterisation and assessment of risks.
 - Option 4 - Excavation, on-site neutralisation and off-site re-use of neutralised PASS/AASS, subject to characterisation and assessment of risks, as well as regulatory (Council and/or EPA) approval.

Excavations of PASS/AASS must be supervised by a suitably qualified environmental consultant, to monitor and validate PASS/AASS management, re-use, and/or disposal.

The four options where disturbance of PASS is unavoidable are further described below.

5.2 Option 1 – Excavation and Landfill Disposal Below Water Table

This option involves excavation of PASS only, no neutralisation undertaken, and disposal under the water table at a licensed landfill within 24 hours of excavation. It is not a suitable option where AASS is present.

For the disposal of PASS below the water table at a suitably licensed landfill facility, the PASS must be excavated, transported and deposited in a highly organised and timely manner, the permitted period being no greater than 24 hours, in accordance with the EPA (2014) *Waste Classification Guidelines* (Part 4: Acid Sulfate Soils).

A number of conditions and controls must be satisfied for disposal of PASS beneath the water table to be a viable option:

- There must be a suitably licenced landfill within a reasonable distance to the site, to ensure the procedure can be carried out within 24 hours;
- The PASS should not have been impacted by contaminants; and
- The pH of soils on excavation and immediately prior to disposal has not experienced a significant change (not <5.5).

This management option is considered to be suitable for the proposed excavation works where soils underlying the Precinct are PASS. Sequencing management and control of all excavation works will require careful consideration to prevent oxidation of PASS. Key time constraints required in the management of PASS are:

- 24 hours - PASS must be excavated, transported and deposited below the water at a licensed facility.

- 16 hours - PASS must be received at the proposed disposal point within 16 hours of being dug up.
- 8 hours - PASS must be disposed of within 8 hours of their receipt at a landfill.

5.2.1 Excavation and Handling for Off-site Landfill Disposal under Water table

Excavations should be carried out in a carefully managed and controlled sequence, designed to minimise the amount of PASS disturbed and exposed at any one time. The excavations should also be carried out so that potentially acidic water within the area of disturbance cannot migrate uncontrollably.

The following recommendations are provided in relation to excavation of PASS for the purpose of off-site disposal below the permanent water table at a NSW EPA licenced facility.

- 1 The surface must be stripped and any existing PASS-free fill materials shall be excavated and removed or stored separately in stockpiles with adequate environmental protection measures as part of the Construction Environment Management Plan. Care must be taken to confirm that surface fill is not mixed with PASS material. The sides of the excavation shall also be stripped a further 200mm to ensure potential PASS-free materials do not fall into excavations and cross contaminate PASS materials beneath.
- 2 Once overlying fill soils are removed, the exposed (natural) surface shall be inspected by a qualified environmental consultant and a representative of the receiving landfill facility, prior to excavation of PASS.
- 3 When surface clearance is granted, PASS materials shall be excavated to the required depth and loaded directly onto waiting trucks with sealed trays and/or placed directly into a designated Containment Area to prevent spillage, egress or leakage of water/leachate during handling and transportation.
- 4 Each truckload shall be inspected and verification testing for pH shall be carried out to confirm soil pH does not fall below 5.5 prior to leaving the site.
- 5 Verification testing is required to demonstrate that materials with existing acidity are not being reburied. Should field pH fall below 5.5, the materials from that truck shall remain on-site and lime neutralisation techniques shall proceed as described in **Section 5.3.2**.
- 6 PASS must be kept wet at all times during excavation and subsequent handling, transport and storage until they can be disposed. They must be received at the proposed disposal point within 16 hours of being dug up.
- 7 Where excavated PASS cannot meet disposal timelines, or it fails to meet PASS definition, it must be neutralised immediately in accordance with Option 2.

5.2.2 Transportation

Transport of PASS material to the receiving landfill facility for the purpose of disposing below the water table shall take place immediately and must be received within 16 hours of being dug up. Vehicles should have sealed trays for moisture control.

If either the 24 hour or 16 hour timeline cannot be achieved, or the landfill cannot dispose of the PASS within 8 hours of receipt, the PASS must be stockpiled in a designated Containment Area and undergo lime neutralisation techniques, followed by disposal at a licenced facility.

5.2.3 Disposal of PASS

Landfill facilities in NSW that are licenced to dispose PASS as waste below the permanent water table in accordance with the EPA (2014) *Waste Classification Guidelines* (Part 4: Acid Sulfate Soils) are able to do so if the PASS meets the following criteria:

- Disposal occurs before the PASSs have had a chance to oxidise (i.e. within 24 hours of excavation); and

- The soils meet the definition of *virgin excavated natural material* (VENM) under the *Protection of the Environment Operations Act 1997*, even though they contain sulfidic ores or soil.

In addition to the above requirements:

- PASS must be disposed within 8 hours of their receipt at the receiving landfill facility, and kept wet at all times until their burial at least 2m below the lowest historical level of the water table at the disposal site.
- PASS must be received at the proposed disposal point within 16 hours of being dug up.
- The pH of the water at the landfill into which the PASS is placed must not be less than pH 6.0 at any time. Landfill licence conditions require the occupiers of PASS disposal sites to regularly monitor the pH of ground and surface waters at their premises.
- PASS material should have a pH greater than 5.5, both immediately following excavation and immediately prior to disposal beneath the permanent water table. Where soil pH is less than 5.5, it is not considered eligible for disposal below the water table and must be considered as AASS, to be treated by neutralisation and then chemically assessed as per the EPA (2014) *Waste Classification Guidelines*, prior to disposal at an appropriate (alternative) landfill.

5.2.4 Documentation

Documentation must be provided to the occupier of the landfill for each truckload of PASS received, indicating that the soil excavation, transport and handling have been conducted in accordance with ASSMAC (1998) and EPA (2014) guidelines, thus preventing the generation of acid. Information to be included in documentation should entail:

- pH of each load of soil received at the source site and immediately prior to its placement under water, using the test method(s) in ASSMAC (1998), specifically methods 21A and/or 21AF;
- details of the source site;
- details of the transporter;
- date and time of the extraction of the PASS;
- pH of the PASS at time of extraction;
- name and details of the person classifying the material as PASS;
- satisfactory review and confirmation by a representative from the landfill of geotechnical and contamination reports pertaining to the source site; and
- confirmation of an inspection of the source site by a representative of the licensed landfill.

5.3 Option 2 – Excavation, Neutralisation, Landfill Disposal

This option involves the excavation, on-site neutralisation, transport and land-based disposal of PASS and/or AASS at an approved NSW EPA licenced facility. This may be necessary in circumstances where the required timelines for PASS cannot be met, or the PASS cannot be immediately placed in trucks for off-site disposal, and/or where the soil does not comply with VENM certification. The processes required for this option are outlined below.

5.3.1 Excavation and Handling for On-site Neutralisation

Excavations should be carried out in a carefully managed and controlled sequence, designed to reduce to a minimum the amount of PASS disturbed and exposed at any one time. The excavation should also be carried out so that potentially acidic water within the excavation cannot migrate from the excavations.

The following recommendations are provided in relation to excavation of ASS for the purpose of on-site neutralisation with lime.

- 1 ASS materials shall be excavated to the required depth and deposited into a designated Containment Area located in close proximity for neutralisation.
- 2 The designated Containment Area should consist of:
 - A low permeability, bunded area (minimum 150mm walls) to prevent surface run-off from entering the Containment Area and a minimum 300mm thick treatment pad base of adequate size to contain and treat the volume of excavated PASS/AASS. The size of the containment area must be a function of the anticipated excavation, treatment, and disposal rate.
 - The Containment Area should be lined with two layers of low density polyethylene (LDPE) sheeting, with no leakage at overlaps, and backfilled with compacted fine grained crushed limestone, or other appropriate neutralisation material. The level of compaction used should produce an appropriately low permeability base to prevent infiltration of leachate.
 - Leachate management for the Containment Area should include:
 - Slight slope of the constructed base, to encourage water and leachate to drain to a lower point for collection;
 - Installation of leachate collection pipe(s) and treatment systems; and
 - Construction of supplementary erosion and sediment control structures.
- 3 If neutralising cannot be performed on PASS/AASS materials within the Containment Area immediately, plastic sheeting shall be placed over the stockpile to reduce oxidation; however, this should be only be considered in unusual circumstances.
- 4 The ASS should be spread out within the confines of the designated Containment Area in a maximum 0.3m deep layer, over a thin bed of lime, and allowed to dry. Once dried, a layer of lime should be placed by hand and/or excavator bucket over the contained PASS/AASS and a light-weight rotary hoe (or similar) should be used to mix in the lime and aerate the soil (to allow oxidation).
- 5 The excavated PASS/AASS will continue to be placed within the Containment Area in 0.3m deep lifts as the excavation proceeds and undergo regular sampling to validate the treatment rates.
- 6 On completion of lime neutralisation and prior to disposal, field pH testing on representative samples must be performed to ensure that sufficient neutralisation has occurred (i.e. pH >5.5). Selected samples will also be analysed for Suspension Peroxide Oxidation Combined Acidity and Sulfate (SPOCAS) - the testing rate for a designated area to be determined following the initial results and/or any available investigation data. Once the pH is above 5.5 and the sulfur and acid trails are below the levels specified in **Table 5.1 of Section 5.7**, the soil can be considered neutralised.
- 7 Following treatment and validation, a Waste Classification Certificate must be prepared in accordance with the EPA (2014) *Waste Classification Guidelines* by the Environmental Consultant, to enable off-site disposal at a licensed landfill. The certificate must incorporate the results of the acid sulfate testing, as well as the analytical data for any other chemicals of concern.
- 8 Adequate water management will be required during the works, to contain any potential acid leachate and to prevent clean storm/surface water from coming into contact with disturbed soil and/or leachate. Groundwater and storm water management are described in **Section 5.10**.

5.3.2 Determination of Lime Requirement

It is noted that the liming requirements are likely to vary across the Precinct, and PASS investigation (SPOCAS testing) is required to ascertain both the extent of ASSs and liming requirements.

The quantity of lime required to neutralise the theoretical maximum amount of acid that could be generated from complete oxidation of soil sulfides can be determined through the following calculation (based on SPOCAS results; Ref. Table 4.6, *Assessment Guidelines* (ASSMAC, 1998)):

$$\text{Lime requirement (kg CaCO}_3\text{ / tonne material)} = S_{\text{pos}} \times 30.59 \times 1.5$$

where S_{pos} is the average peroxide oxidisable sulfur concentration (in % w/w);

30.59 is the theoretical stoichiometric conversion factor; and

1.5 represents the minimum industry safety factor (based on the expected bulk density).

5.4 Option 3 – Excavation, Neutralisation, On-site Re-use

This option involves the excavation of PASS, on-site neutralisation and re-burial on another part of the Precinct within 24 hours of excavation. It is not suitable where AASS is confirmed to be present.

This option may be necessary in circumstances where the required timelines for PASS cannot be met, or the PASS cannot be immediately placed in trucks for off-site disposal. The processes required for this option are outlined in Section 5.3 above, except that the treated soil will be retained on-site.

The treated soil material is to be re-used onsite only where it is geotechnically and environmentally feasible to do so. The area selected for burial should be a specified location (identified on a site plan), where future disturbance will be limited (e.g. beneath basement slabs or pavements, encapsulated in a clay-lined mound or cell).

The re-use of treated ASS on the Precinct would require the following to be confirmed:

- The material is not impacted by contaminants, such that it poses no risks to human health and/or the environment. This shall require the completion of a rigorous testing program, involving analyses for contaminants of potential concern (both total and water-leachable), as well as ASS parameters.
- The acid producing potential of the ASS has been sufficiently neutralised.
- Written approval has been obtained from the NSW EPA and Liverpool Council.
- The soil material is geotechnically suitable for use, which may require consultation with the appointed Structural / Geotechnical Engineer(s).

5.5 Option 4 – Excavation, Neutralisation, Off-site Re-use

This option involves the excavation of PASS, on-site neutralisation and re-burial on another development property external to the Precinct within 24 hours of excavation. It is not suitable where AASS is confirmed to be present.

This option may be necessary in circumstances where the required timelines for PASS cannot be met, or the PASS cannot be immediately placed in trucks for off-site disposal. The processes required for this option are outlined in Sections 5.3 and 5.4 above, except that the treated soil will be reused on an external property undergoing (re)development.

The treated soil material is to be re-used on the designated (external) site only where it is geotechnically and environmentally feasible to do so. The area selected for burial should be a specified location (identified on a site plan), where future disturbance will be limited (e.g. beneath basement slabs or pavements, encapsulated in a clay-lined mound or cell).

The re-use of treated ASS on such a site would require the following to be confirmed:

- The material is not impacted by contaminants, such that it poses no risks to human health and/or the environment. This shall require the completion of a rigorous testing program, involving analyses for contaminants of potential concern (both total and water-leachable), as well as ASS parameters.
- The acid producing potential of the ASS has been sufficiently neutralised.
- The treated material complies with a Specific Resource Recovery Exemption, as authorised by the NSW EPA.
- Written approval has been obtained from the NSW EPA and Liverpool Council, prior to the off-site transport of any treated material.
- The soil material is geotechnically suitable for use, which may require consultation with the appointed Structural / Geotechnical Engineer(s) responsible for the development of the external site.

5.6 Monitoring and Assessment During Excavation Works

Soil excavated and exposed during the development will be field tested for pH (pH_i and pH_{tox}), using standard techniques. Where soil is found to be acidic ($pH_i < 5.5$) and/or have a significant potential to oxidise ($pH_{tox} < 3$), it will be managed as ASS, and where required, neutralised at the prescribe rate via the addition of agricultural lime.

Analysis of the soil following lime treatment will be undertaken to ensure neutral pH conditions have been achieved. Results will be compared with background levels and laboratory data (e.g. theoretical liming rates), to evaluate the success of control (neutralisation) procedures. Any leachate generated within the ASS storage area shall be sampled and discharged subject to compliance with water disposal requirements.

5.7 Laboratory Analysis

Standard, approved laboratory methods have been developed for the routine analysis of soil samples. The most common method for ASS testing is Suspension Peroxide Oxidation Combined Acidity and Sulfate (SPOCAS). Such testing will be performed to confirm the presence of ASS.

The ASSMAC (1998) oxidisable sulphur (sulfur trail) and potential acidity (acid trail) criteria which trigger ASS management are grouped into three broad categories, based on clay content of the soil. For this site, the action criteria for the disturbance of more than 1000 tonnes of coarse textured (sandy) soils are recommended (**Table 5-1**). Note, these criteria also apply for medium and fine (>40% clay-dominated) textured soils, where more than 1000 tonnes are disturbed.

Table 5-1 Summary SPOCAS Action Criteria

Texture	Approximate Clay Content	Sulphur Trail sPOS (%)	Acid Trail TPA (mol H ⁺ /tonne)
Coarse Texture Sands to Loamy Sands	<5.0%	0.03	18

5.8 Treatment of Acid Sulfate Soil

The excavation activities associated with the development may generate ASS-related issues, which will need to be addressed. For management purposes, the highest result by either the sulfur or the acid trail is generally used as the confirmation and amount of ASS present, unless mitigating factors are pre-identified (e.g. the quantity, fineness and reactivity of neutralising material such as shell, etc).

The procedures set out below are to be implemented in the event that natural materials are excavated and exposed to air (and not immediately disposed off-site to landfill at potential ASSs). They are conservative and should ensure that any incremental increases in soil / groundwater are negligible.

5.9 Management of *In Situ* Acid Sulfate Soil

For every day that an excavated (ASS) surface is in an exposed state, soil pH shall be monitored by in-field testing of representative samples. Where soil pH falls below 5.5, lime will be applied to the ASS horizon(s). Plastic sheeting can be placed over the corresponding surface (where possible) to reduce the oxidation rate.

5.10 Groundwater and Stormwater Management and Disposal

Surface and groundwater associated with ASS within the excavations, or any leachate in the Containment Area, will be tested for pH (by simple field indicator tests). The pH should be between 6.5 and 8.5. If pH is outside this range, then treatment of the water will be performed by:

- mixing with AASS awaiting treatment, in the case of alkaline water (pH >8.5); or
- mixing with lime, in the case of acidic water (pH <6.5).

Once the testing of treated water indicates its pH is between 6.5 and 8.5, the water can be considered neutralised and suitable for discharge (in accordance with relevant water authority requirements). Treated water that does not meet the criteria as listed above must be retreated and retested until it meets the test criteria.

A Storm and Groundwater Management Strategy should be implemented for the excavation works, and include the following:

- Methods for dewatering the excavation if required;
- Volumes of groundwater expected to be produced during dewatering;
- Storage of any pumped groundwater and stormwater;
- Monitoring requirements for pumped groundwater and stormwater;
- Discharge methods of water; and
- Procedure of record keeping detailing monitoring results, discharge times and volumes.

The following should be included in the Storm and Groundwater Management Plan, considering the ASS present onsite:

- The depth of dewatering should be minimised to reduce the generation of AASS and/or acidic conditions. The dewatering and excavation should be staged over short durations to reduce the time and volume of ASS exposed to oxidation in the excavation. This is an important consideration if below the permanent groundwater table disposal is to be used to manage the ASS.
- Approvals for the disposal of groundwater and stormwater may need to be obtained from Council, WaterNSW, Sydney Water and any other relevant authority, considering that the Precinct contains ASS.
- Water from the excavation and stormwater should be collected in portable tanks or a suitably designed engineered pond where samples can be obtained for analysis.
- Prior to disposal, the pH of the water should be in the range of 6.5 to 8.5. If the pH is outside this range some treatment may be required prior to disposal (as per above).
- Groundwater pH should be monitored on a regular basis throughout the excavation and construction period. Treatment may be necessary to address a change in pH levels.

- The approvals for disposal from the relevant authorities may require that further contaminants may also need to be screened.

Stormwater should be diverted away from excavations and stockpiles by a series of bunds to be retained until excavations are backfilled or until permanent stormwater infrastructure is installed on the site. Management measures for the Precinct should include:

- Stormwater diversion bunds around excavations and designated Containment Areas (as required).
- Minimising surface disturbance and maximising the retention of existing surface cover (pavements, vegetation) during the works.
- Construction of sediment controls downstream of any diversion bunds, hardstand and traffic areas to minimise the off-site migration of sediment.
- Vehicular access is to be stabilised to prevent tracking of mud onto roads and footpaths. Soil, earth and mud shall be removed from the roadway by sweeping, shovelling or a means other than washing on a daily basis or as required.

Groundwater Management

The removal (pumping) of any groundwater from an excavation area may cause alterations to the existing groundwater table. Extracted groundwater should be pumped to a holding vessel for assessment of pH and electrical conductivity (EC) characteristics during the dewatering process. Extracted water should be treated with lime to display a pH level of pH 6.5-8.5, prior to off-site disposal. Powdered lime should be added to the water by hand and/or excavator bucket and mixed. Field pH testing on representative samples should be performed to ensure that sufficient neutralisation has occurred, prior to disposal.

In addition to the above, an appropriately designed truck wash area will be required to capture liquids and solids generated, prior to vehicles exiting the Precinct. Treatment and neutralisation of liquids and solids shall be in accordance with the corresponding methods described above.

Groundwater Disposal

It is anticipated that extracted groundwater from the dewatering process will be disposed to the municipal stormwater system. Any permits / licences from Council and WaterNSW shall be obtained prior to discharging to the municipal stormwater system.

Water for disposal will be tested routinely (weekly intervals) for the duration of dewatering activities, to ensure that no change to the quality of water entering the stormwater system, with the results made available to Council or WaterNSW on request. Should it be found that groundwater quality is not suitable for disposal to the stormwater system, groundwater treatment or a Sydney Water permit to dispose to sewer shall be required prior to disposal.

Water quality monitoring for disposal to the municipal stormwater system shall include the following:

- Daily monitoring of field parameters (pH, EC, dissolved oxygen (DO), temperature and turbidity) in the treated discharge water using data logging equipment.
- Weekly sampling and laboratory analysis of treated groundwater water for suspended solids, dissolved metals (aluminium, arsenic, cadmium, chromium, copper, iron, lead, nickel, zinc and mercury), TRHs, BTEX, VOCs, PAHs, total nitrogen and total phosphorus. Laboratory results should be compared to freshwater trigger values provided in ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* for slightly - moderately disturbed systems to provide a 95% level of species protection.
- Weekly sampling shall be performed by a suitably qualified Environmental Consultant, with samples submitted to a NATA accredited laboratory for analysis of the above parameters.

5.11 Consultation and Records

During the development of the/a final ASS management plan, due regard is to be given to the following organisations:

- NSW EPA concerning their requirements with respect to the various pollution control issues/associated with the project and the detail required in the acid sulfate soil management plan;
- Department of Planning concerning the extent of ASS in the local region; and
- DA Compliance and the handling requirement for ASS situations.

A file will be established to store all hard copy records associated with the final Acid Sulfate Soil Management for the project. All analysis and monitoring information will be stored electronically to permit ease of access and data interpretation.

5.12 Contingency Measures

Contingency procedures that may occur during the project could include:

- Extended rainfall generating excessive water to be analysed, treated (if required) and disposed of prior to installation activities recommencing.
- The control procedures detailed in the plan will accommodate this contingency. The timeframe needed to recover the excessive water may extend the period during which the trench or excavation is open increasing the potential for acid generation and therefore requiring more careful consideration.
- Extended Delays due to equipment failure, leaving trenches or excavations and material extracted open to oxidation.
- The control procedure requires the addition of lime sufficient to neutralise the total potential acidity of the excavated waste. A safety factor of 1.5 is included in the calculation of lime required which should ensure sufficient neutralising capacity should the excavation be open for greater than the planned period. The oxidation of the walls and base of the excavation should also be considered in regards to engineering design.
- Spillage of Acid Sulfate Soil.
- Spillage of Acid Sulfate Soil should be collected and transferred to the acid soil storage facility as soon as practicable to ensure surface soil or groundwater is not adversely impacted.

A contingency plan is detailed below in Table 5-2. The plan provides a list of potential events that may arise during bulk excavation and the actions to be undertaken if unexpected conditions occur.

Table 5-2 Contingency Plan

Unexpected Condition	Action
Potential ASS identified at unexpected depths	<ul style="list-style-type: none"> • Stop excavations; • Have material assess by an environmental consultant for the presence of ASS; • Follow management procedures adopted in the ASSMP.
Neutralisation of ASS was not effective	<ul style="list-style-type: none"> • Re-assess liming rates and add additional lime to material; and • Re-test material to check neutralisation

Unexpected Condition	Action
Neutralisation of ASS indicates that too much lime has been added and soil are alkaline	<ul style="list-style-type: none"> • Remediate soil before use; • Remediation comprises mixing additional ASS with the material, i.e. use excess lime to neutralise more ASS; and • Re-test material to check neutralisation
Bunded ASS treatment area is damaged	<ul style="list-style-type: none"> • Repair bund as soon as practicable; • Clean-up any ASS that escaped the treatment area and place back into the treatment area; and • Check surrounding area for impact from the ASS or leachate, and undertake remedial action as required.
Groundwater level falls below the top of areas defined as containing PASS	<ul style="list-style-type: none"> • Stop dewatering; • Review PASS exposure by checking the ASS and Non-ASS interface in the affected area; • Determine potential causes by reviewing construction practises, weather, baseline groundwater monitoring data, and performing additional groundwater monitoring as necessary on groundwater monitoring present at the Precinct; • Review and confirm mitigation measures to be implemented, including: <ul style="list-style-type: none"> i. Maintain PASS soil moisture levels through targeted groundwater recharge; ii. adjusting the construction activities or schedule; and iii. Treatment of additional PASS in treatment area.

6. STATEMENT OF LIMITATIONS

This plan has been prepared for the inclusion of a Planning Proposal, on behalf of Leamac & Coronation Property Group, who is the only intended beneficiary of EI's work. The scope of this plan is limited to that agreed with LAC JV Pty Ltd.

No other party should rely on the document without the prior written consent of EI, and EI undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

In preparing this management plan, EI used a degree of care and skill ordinarily exercised by reputable members of the environmental industry in Australia. No other warranty, expressed or implied, is made or intended. Each section of this plan must be read in conjunction with the whole of this document, including its appendices.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

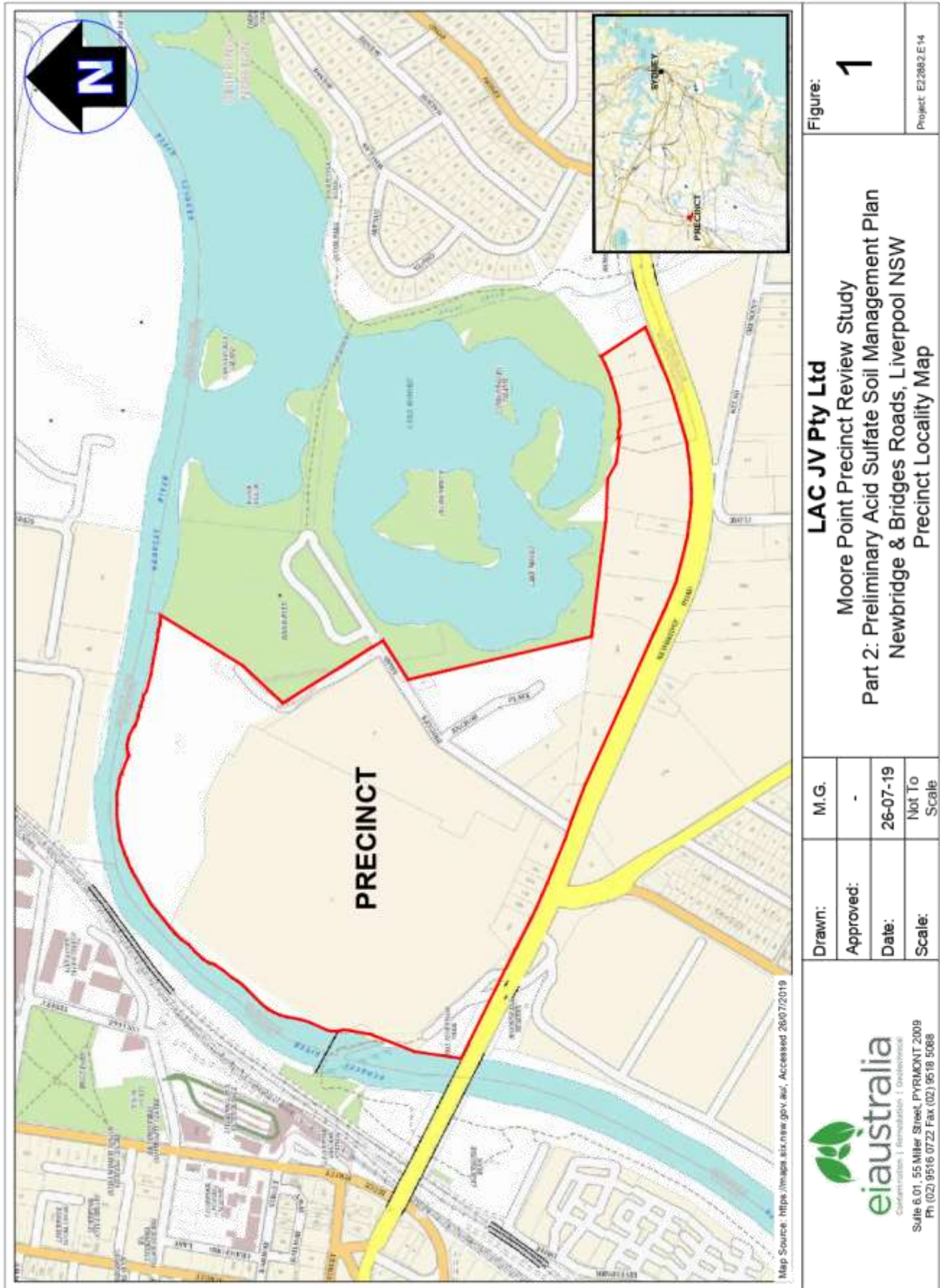
REFERENCES

- ASSMAC (1998) *Acid Sulfate Soil Assessment Guidelines*, Section 2 of the *Acid Sulfate Soil Manual*. Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia, 28 August 1998.
- ANZECC/ARMCANZ (2000) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, October 2000.
- ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Governments and Australian State and Territory Governments, Canberra ACT, Australia, August 2018
- Chapman GA and Murphy CL (1989) *Soil Landscapes of the Penrith 1:100 000 Sheet*. Soil Conservation Service of NSW, September 1989.
- EPA (2014) *Waste Classification Guidelines*. NSW Environmental Protection Authority, November 2014.
- Department of Land and Water Conservation (1997) *Liverpool Acid Sulfate Soil Risk Map*, Map 9030S2, Edition 2 (1:25,000 scale).
- GSNSW (1983) *Penrith 1:100 000 Geological Sheet 9130* (1st edition). Geological Survey of New South Wales, 1983.
- Naylor SD, Chapman GA, Atkinson G, Murphy CL, Tulau MJ, Flewin TC, Milford HB and Morand DT (1998) *Guidelines for the Use of Acid Sulfate Soil Risk Maps* (2nd Edition). Department of Land and Water Conservation, Sydney.
- Liverpool Local Environmental Plan 2008, No 403, Acid Sulfate Soil Planning Maps (1:5,000 scale; Sheets ASS-011, ASS-012 and ASS-014).

ABBREVIATIONS

AHD	Australian Height Datum
ASS	Acid sulfate soil
AASS	Actual acid sulfate soil
BGL	Below ground level
EI	EI Australia
EPA	Environmental Protection Authority
km	Kilometres
LAC JV P/L	Moore Point Land Owner Group and/or Leamac & Coronation Property, for the purposes of this report
m	Metres
mAHD	Metres relative to Australian Height Datum
MBGL	Metres below ground level
NSW	New South Wales
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
PASS	Potential acid sulfate soil
pH	Measure of the acidity or basicity of an aqueous solution
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance / Quality Control
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
TDS	Total dissolved solids (a measure of water salinity)

Appendix A - Figures



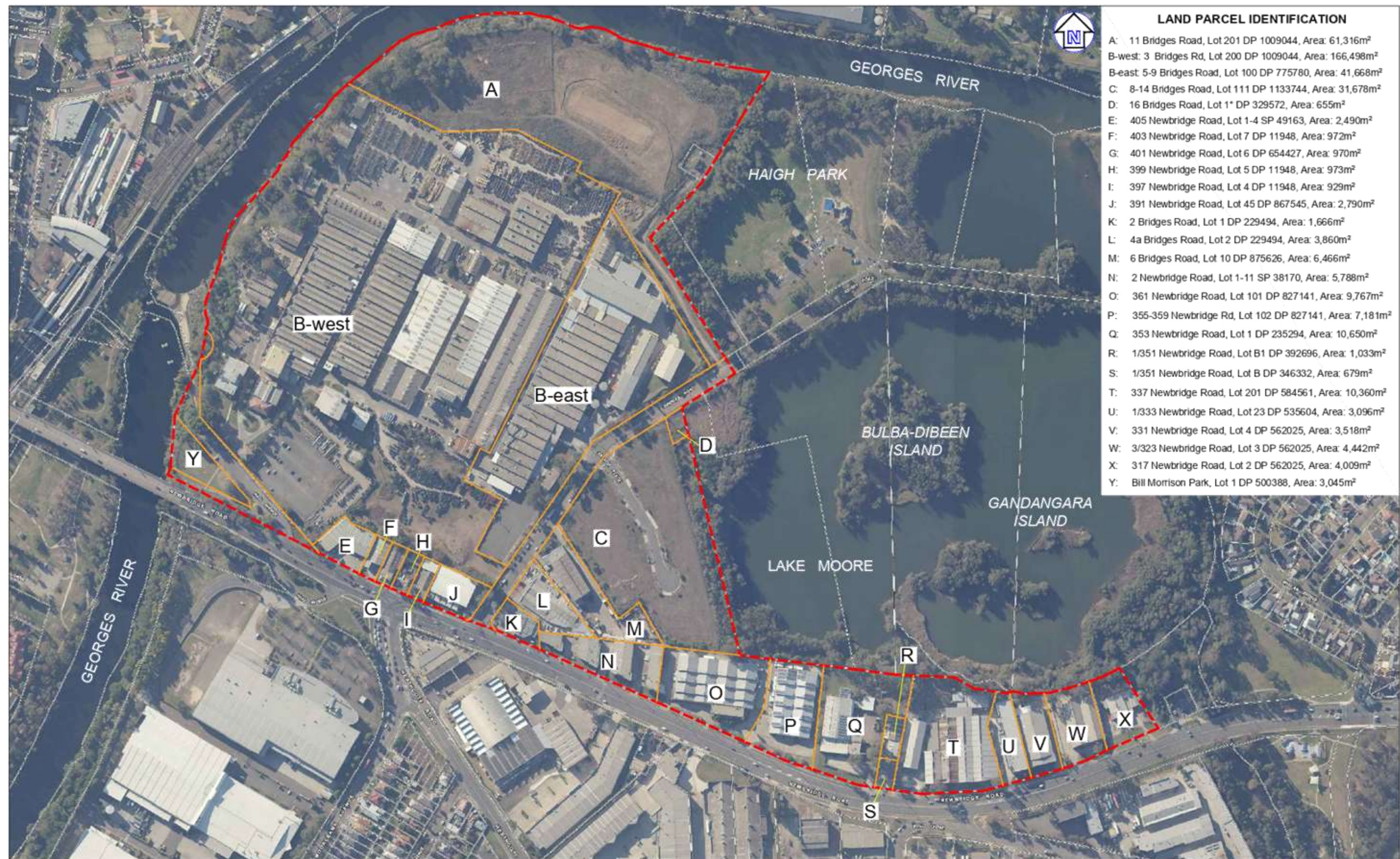
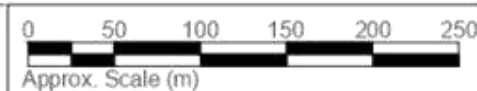


Photo Source: <https://maps.six.nsw.gov.au>, Accessed 17/07/2019

LEGEND

- Approximate precinct boundary
- Approximate lot boundaries



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Date: 26-07-19

LAC JV Pty Ltd
Moore Point Precinct Review Study
Part 2: Preliminary Acid Sulfate Soil Management Plan
Newbridge & Bridges Roads, Liverpool NSW

Land Parcel Identification

Figure:

2

Project: E22882.E14

MAP A Legend

Map Class Description	Depth to Acid sulfate Soil Materials	Environmental Risk
High Probability High probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has been suitable for the formation of acid sulfate soil materials. Acid sulfate soil materials are widespread or sporadic and may be buried by alluvium or windblown sediments.	Em Below water level	Bottom Sediments. Severe environmental risk if bottom sediments are disturbed by activities such as dredging.
	Ep0	At or near the ground surface. Severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing.
	Ep1	Within 1 metre of the ground surface. Severe environmental risk if acid sulfate soil materials are disturbed by activities such as shallow drainage, excavation or clearing.
		Between 1 and 3 metres below the ground surface. Environmental risk if acid sulfate soil materials are disturbed by activities such as deep excavation for pipelines, dams or deep drains.
Low Probability Low probability of occurrence of acid sulfate soil materials within the soil profile. The environment of deposition has generally not been suitable for the formation of acid sulfate soil materials. Soil materials are often Pleistocene in age. Acid sulfate soil materials, if present, are sporadic and may be buried by alluvium or windblown sediments.		Greater than 3 metres below the ground surface.* Environmental risk if acid sulfate soil materials are disturbed by activities such as deep excavations, -e.g., large structure foundations or deep dams.
	Below water level	Bottom sediments.
		At or near the ground surface. The majority of these landforms are not expected to contain acid sulfate soil materials. Therefore, land management is generally not affected by acid sulfate soils.
		Within 1 metre of the ground surface. However, highly localized occurrences may be found, especially near boundaries with environments with a high probability of occurrence. Disturbance of these soil materials will result in an environmental risk that will vary with elevation and depth of disturbance.
No Known Occurrence Acid sulfate soils are not known or expected to occur in these environments.		Between 1 and 3 metres below the ground surface.
	Ap4	Greater than 3 metres below the ground surface.*
Disturbed Terrain	X4	Disturbed terrain (above 4m elevation) may include filled areas, which often occur during reclamation of low lying swamps for urban development. Other disturbed terrain includes areas which have been mined or dredged, or have undergone heavy ground disturbance through general urban development or construction of dams or levees. Soil investigations are required to assess these areas for acid sulfate potential.

*Deep occurrences of acid sulfate soil materials not able to be confirmed by field inspection and sampling.

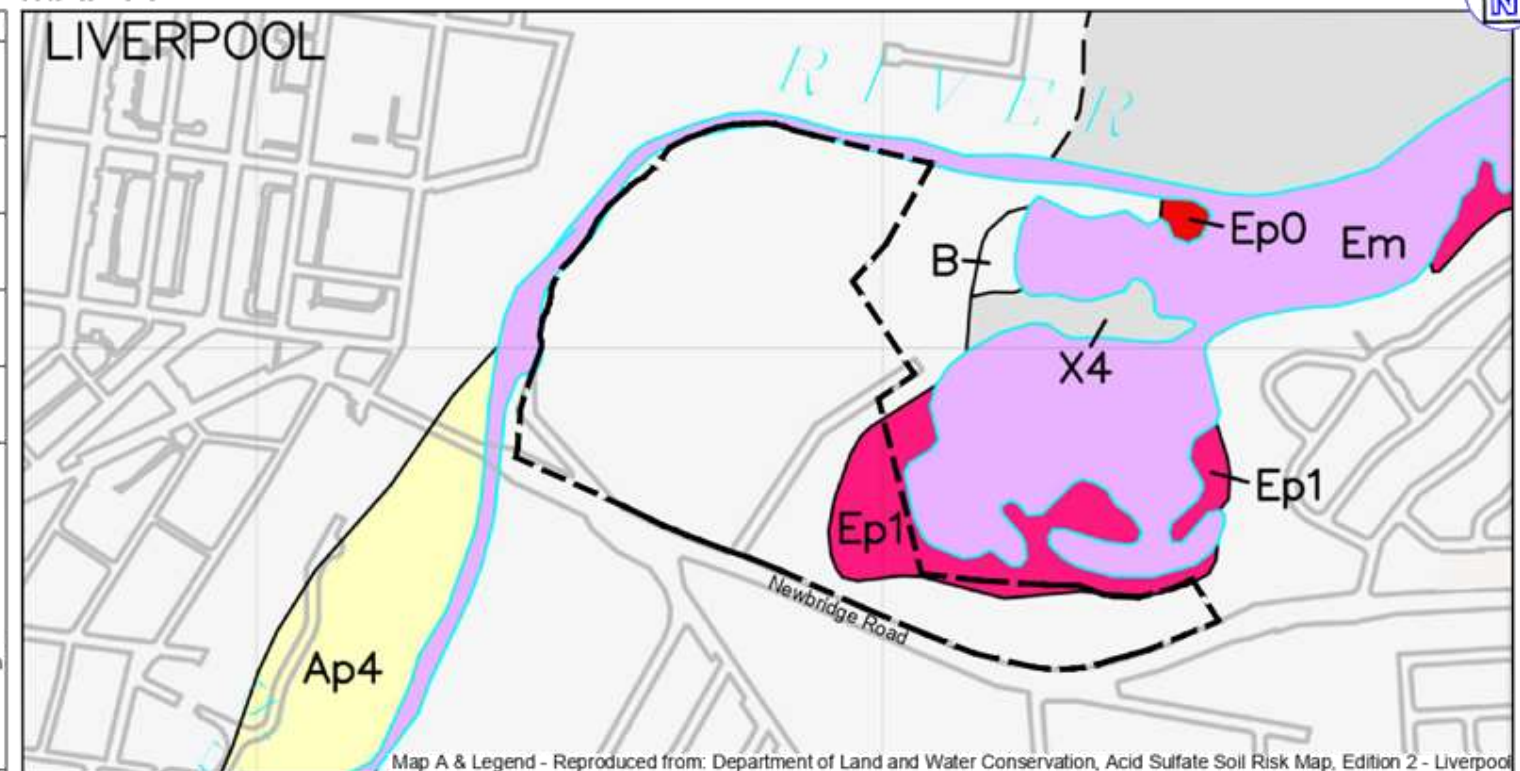
MAP B Legend

Colour Legend	Class of Land	Works
1	Class 1	Any works.
2	Class 2	Works below the natural ground surface. Works by which the watertable is likely to be lowered.
3	Class 3	Works more than 1m below natural ground surface. Works by which the watertable is likely to be lowered more than 1m below natural ground surface.
4	Class 4	Works more than 2m below natural ground surface. Works by which the watertable is likely to be lowered more than 2m below natural ground surface.
5	Class 5	Works within 500m of adjacent Class 1, 2, 3 or 4 land that is below 5m AHD by which the water table is likely to be lowered 1m AHD on adjacent Class 1, 2, 3 or 4 land.

Cadastre

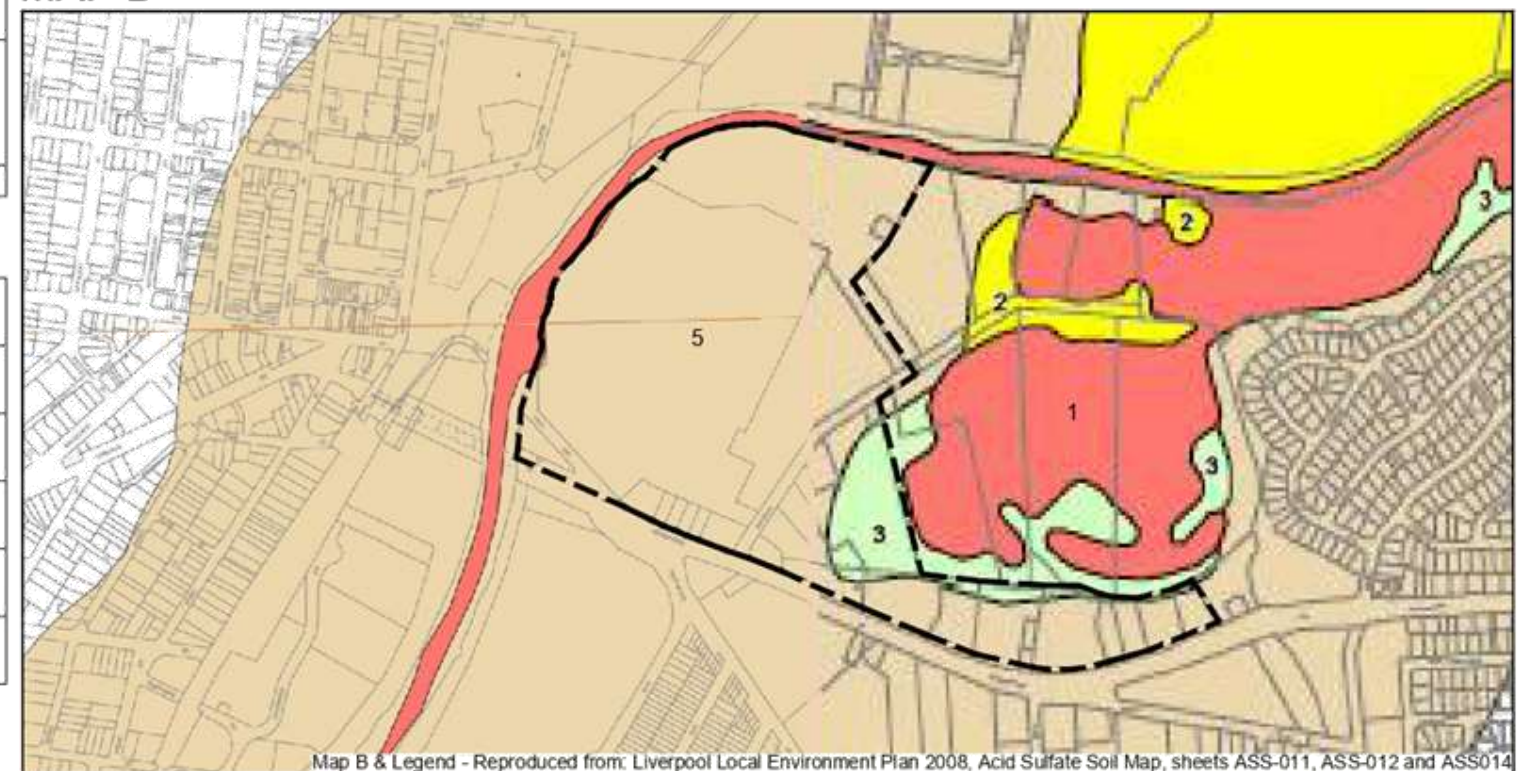
Cadastre 15/8/2008 © Dept of Lands

MAP A



Map A & Legend - Reproduced from: Department of Land and Water Conservation, Acid Sulfate Soil Risk Map, Edition 2 - Liverpool

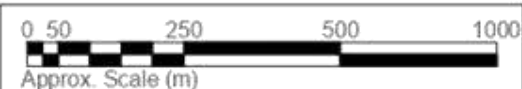
MAP B



Map B & Legend - Reproduced from: Liverpool Local Environment Plan 2008, Acid Sulfate Soil Map, sheets ASS-011, ASS-012 and ASS-014

LEGEND

--- Approximate precinct boundary



Drawn: M.G.

Approved: -

Date: 26-07-19

Figure:

3

Project E22882.E14

4TH APRIL 2020

Place Design Framework



Moore Point





-
1. Introduction
 2. Place Analysis
 3. Framework
 4. A Loveable Moore Point
 5. Activation Plan
 6. Place Performance
-
-

EXECUTIVE SUMMARY

This Place Design Framework has been prepared by RobertsDay on behalf of Leamac and Coronation to articulate the Place benefits of the project, in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to figure the figure below:

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'



Figure 1 – Site aerial (Source: Nearmap modified by Mecone)



Figure 2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

<p>The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area.</p> <p>These included:</p> <ul style="list-style-type: none"> • Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and • Flood studies and floodplain risk management plan completed by Liverpool City Council. <p>The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.</p> <p>The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:</p>	<p>Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)</p> <p>The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:</p> <ul style="list-style-type: none"> • Adaptive re-use of existing heritage; • Foreshore embellishments and new open spaces; • Educational and cultural facilities; • Connections to Liverpool CBD and Train Station; and • Transport, intersection and collector road improvements. 	<p>The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing.</p>
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The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.



introduction

“

*Cities should be integrated into
local ecosystems rather than imposed
on them.*

”

Richard Register, EcoCities: Rebuilding Cities in Balance with Nature

10

- 01. BACKGROUND, PLACE DESIGN FRAMEWORK,
PLANNING FOR LOVEABLE CITIES
- 02. THE SITE
- 03. CONTEXT
- 04. POLICY OVERVIEW
- 05. KEY PLACE BENEFITS

INTRODUCTION

Moore Point - A Loveable Place: Liverpool is a river city at its heart, and Moore Point (38ha) is its next frontier – an opportunity to shift Sydney from a liveable to loveable city-making agenda and set a new benchmark for creating complete cities. The size and location of the precinct presents the opportunity for up to 15,000 new homes with walkable access to Sydney's third strategic centre, major transport nodes and a stunning waterfront. For the people of Liverpool, a loveable Moore Point gives priority to attachment and meaning building on the city's stories; identity guides decision making to evolve a city more than the sum of its parts; social connectedness is valued equally with infrastructure connectivity; and increasing urbanity is more important than density.

Moore Point – Liverpool City Success Story: Liverpool City Centre has grown rapidly over the last ten years and has the ambition to become a thriving, safe, inclusive and green city, with a strong 24-hour economy. Based on internationally renowned Project for Public Spaces (PPS) Power of Ten methodology used by NSW Government, the world's most complete cities have at least 10 major precincts; with each precinct having at least 10 sub-precincts with at least 10 activities or things to do. Whilst not a formula, PPS's research of over 3,000 cities concludes this 'power of ten' is a key ingredient of successful cities for people. Moore Point creates a new type of precinct for the city that complements other precincts and helps Liverpool into a complete city.

Moore Point – Connecting the City to its River: The good fortunes of river-orientated cities, such as London and Paris, are founded on the fact the river is a unifying element where an intensity of river crossings and river-orientated urban form enable a dynamism where the flows of people, investment and energy are unimpeded by the river itself. Moore Point creates this connectivity for Liverpool City Centre delivering three new bridges connecting important precincts and destinations in a way that gives priority to people walking, cycling and using public transport. Moore Point's future proofing of conscious mobility opportunities, including metro station and public transport interchange, is a

Moore Point – Greener, People Places: Moore Point's public realm focus creates over 20ha of river-front parkland and 8km of paths to connect existing and new destinations along the eastern bank – McMillan Park and Haigh Park to the new heritage River Square Place – into a continuous green loop offering a diversity of experiences from the tranquillity of nature to pulse of city life. In doing so, Moore Point delivers on the NSW Government Premier's Priorities of creating greener places paired with increased people within an easy walk and policies focusing on creating happy, healthy and resilient communities.

Moore Point – Quantifiable Place Performance: The most successful Moore Point - where daily life maximises happiness and minimises hardship - will succeed when people fall in love with the place. To assess future success and the possibility of 'love at first sight', RD has identified 25 quantifiable place performance metrics that cut across all aspects of creating great places, including identity, greenery, mobility, urbanity, health and resilience. Applied rigorously to the evolving urban design concept, this analysis concludes the underlying DNA of the place is robust to support the unfolding of a vibrant public life, strong place economy and conscious mobility where walking is highly desirable. Further, there is latent potential within the concept for stakeholders to advance future place performance and set the Australian benchmark for world's best practice.

KEY PLACE BENEFITS



REINVIGORATE THE RIVERFRONT

Delivers 18Ha of public parklands and embellishes 10Ha of adjoining parklands.



CONNECT KEY DESTINATIONS

3 new bridge crossings and 8Ha of publicly accessible foreshore connecting Liverpool's key destinations.



BRING PARKLANDS TO LIFE

Bringing to life parkland contributing to
Sydney's Green Grid and creating more active
communities.



CREATE NEW PLACES FOR THE COMMUNITY

10 new destinations including the revitalisation
of a distinct heritage building.

BACKGROUND

In accordance with State Government Planning mandate of planning and designing for better places and respecting and enhancing local character, Roberts Day have been engaged as Place Design consultants to develop a Place Design Framework for the Moore Point Masterplan.

This Framework aims to support the development of the Planning Proposal to ensure it achieves place-based goal of creating a loved urban community.

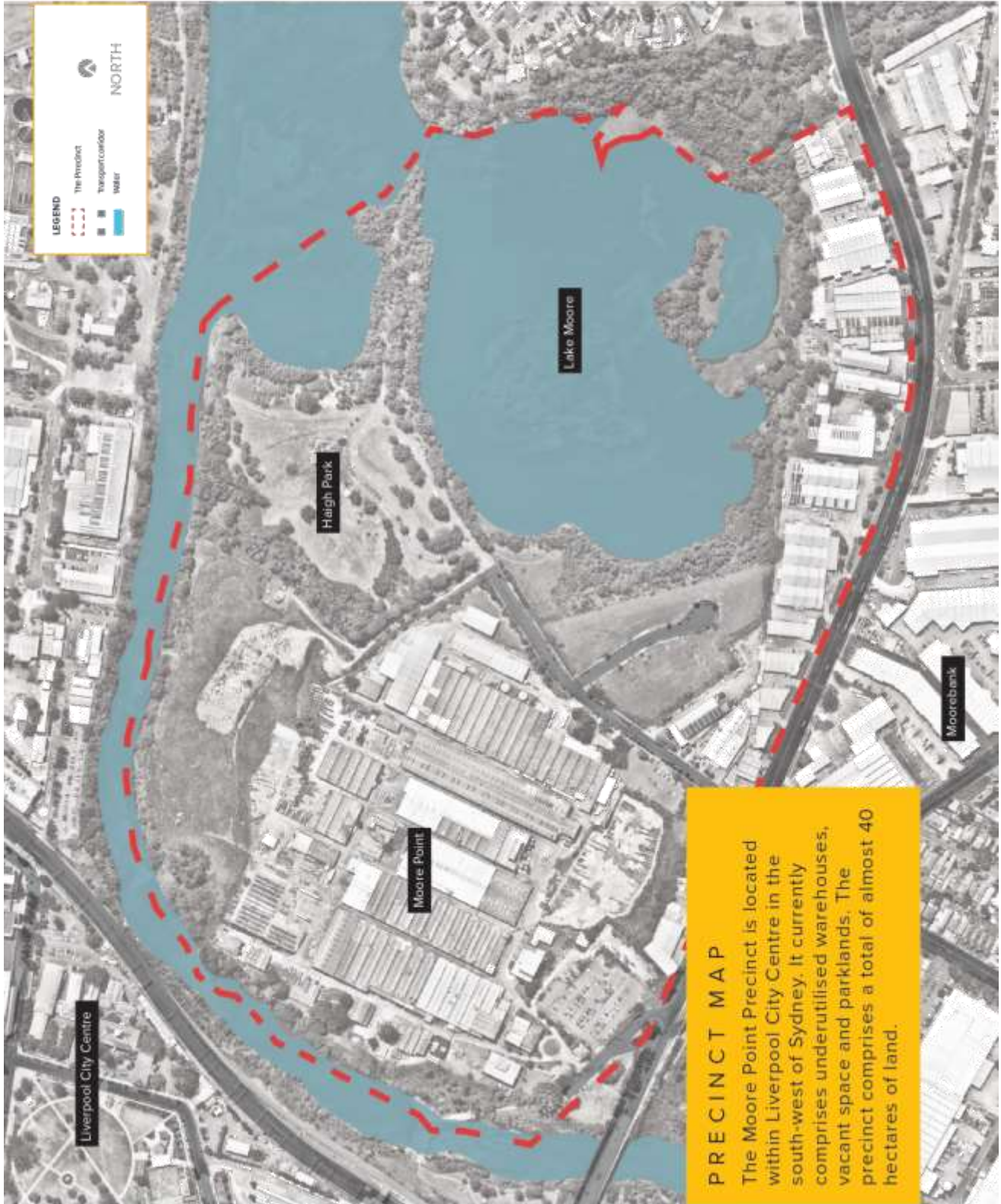
PLACE DESIGN FRAMEWORK

The Moore Point Place Design Framework sets out the Principles and Place Framework for the Moore Point Masterplan. This document is a tool that guides the physical interpretation of the Vision for transformation for the development of the Site and surrounding open spaces.

The aim of the Place Design Framework is to set a clear and authentic vision for the precinct, including the individual identities for each of the character areas. It sets the core values that will guide activation and decision making at these places as they transform.

PLANNING FOR LOVEABLE PLACES

Loveable places are places which people are attached to, have sense of ownership over and generate a desire to return. To create loveable places, the qualities which make them unique must be celebrated and enhanced and new ideas embraced, liberating communities to participate in the evolution of their place.



CITY CONTEXT

Moore Point is located within Liverpool City Centre - one of Australia's oldest settlements. Just 20 kilometres from the new Western Sydney Aerotropolis, the area is strategically located to take advantage of both the existing and future opportunities developing at the regional scale.

GLOBAL



CONNECTED



PRODUCTIVE



GROWING



LIVERPOOL AND AEROTROPOLIS

- 20 Kilometres and 20 minutes from the new Sydney Aerotropolis.
- 200,000 new jobs expected from the development of the Aerotropolis and associated Industries.
- Potential new Aerospace Institute in the region.
- Aviation and logistics companies expected to headquarter in Liverpool.

TRANSPORT LINKS

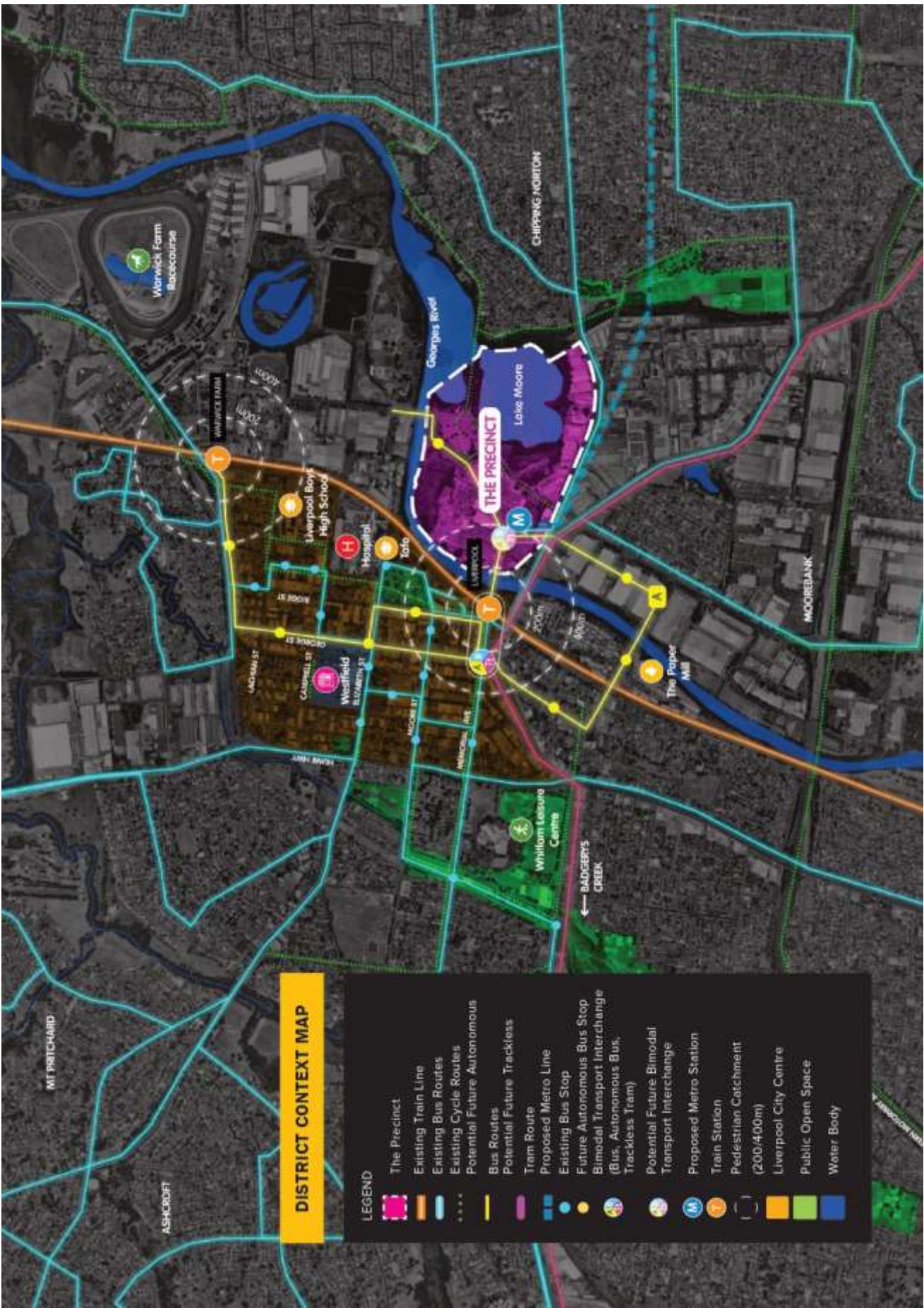
- Potential South West Sydney Metro extension from Bankstown to Moore Point.
- New Western Sydney freight network connecting Port Botany and Western Sydney.
- North South Rail Link will connect Liverpool with Aerotropolis and other Strategic Centres.
- Rapid Bus Service linking Liverpool, Penrith and Campbelltown to each other and the Aerotropolis.

THRIVING REGIONAL ECONOMY

- 3 million additional residents in Western Sydney by 2036.
- Already Western Parkland City is Australia's third largest economy and continues to grow.
- The Western Sydney City Deal will unlock opportunities across business, education and employment.

SYDNEY'S NEW CITY CENTRE

- Strategically positioned as the key regional centre of the Western Parklands City.
- 1.5 million residents expected in Liverpool within 20 years.
- rezoning encouraging mix of uses and 18 hour economy.
- Western Sydney Planning Partnership to unlock land efficiently and providing higher quality outcomes.



POLICY & GUIDANCE OVERVIEW

Moore Point delivers progressive Place Policy of the NSW Government, the United Nations, Council and other relevant agencies. The following pages sets out key policy documents and their relationship with the Moore Point Place Design Framework.



GLOBAL



UN - HABITAT III - THE NEW URBAN AGENDA

Three key principles have been established, including an implementation plan to be utilised as a key instrument for enabling national, regional, local governments and relevant stakeholders to achieve sustainable urban development.

Key principles include:




- Leave no one behind
- Ensure sustainable and inclusive urban economies
- Ensure environmental sustainability







UN - THE 2030 AGENDA FOR SUSTAINABLE DEVELOPMENT

The Sustainable Development Goals are a universal call to action including 17 goals forming part of the 2030 Agenda for Sustainable Development. This Agenda outlines the 15-year plan to achieve these goals. The most relevant goals applicable to Moore Point include:

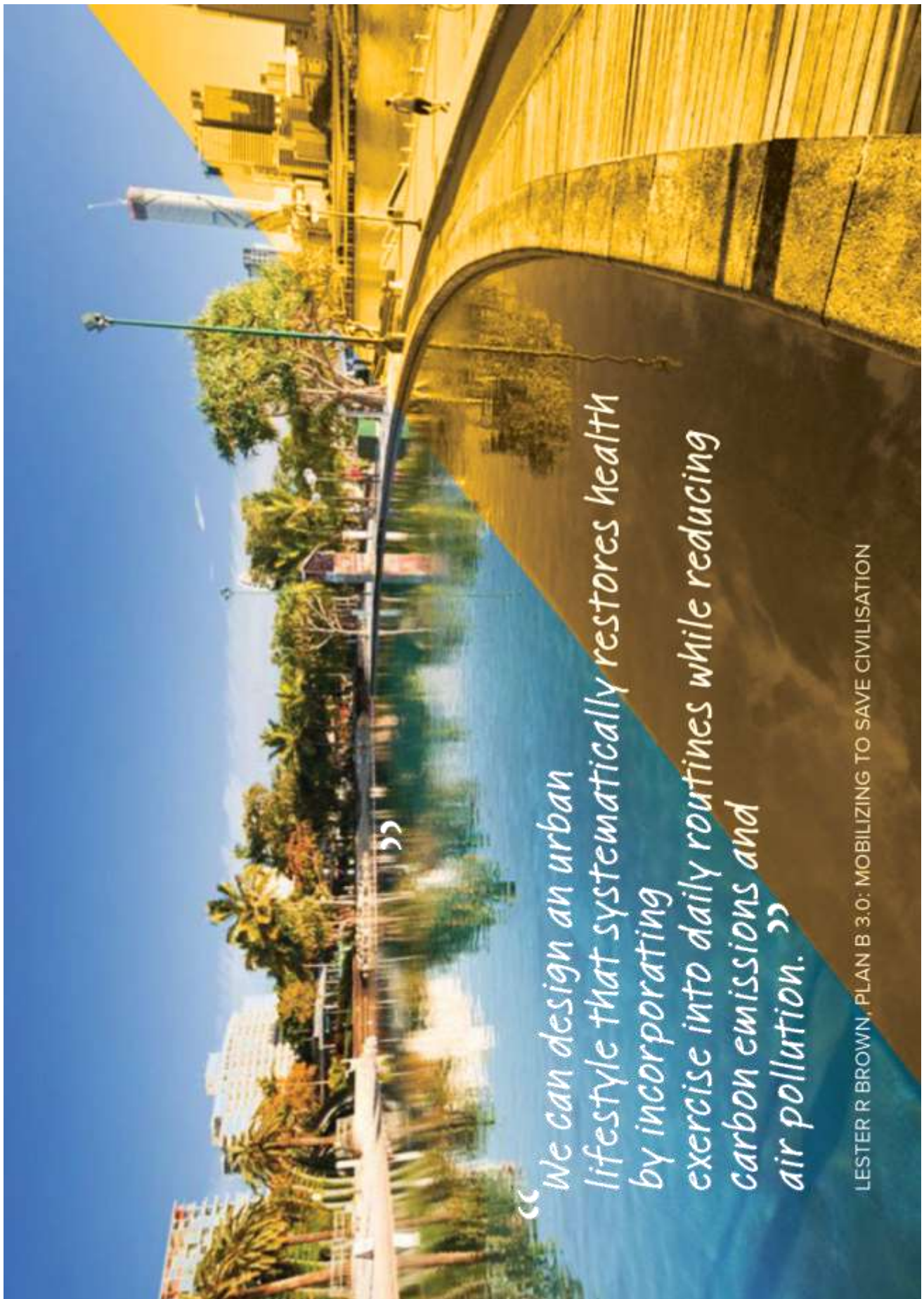
- Goal 3: Good Health and Well-being
- Goal 11: Sustainable Cities and Communities
- Goal 13: Climate Action
- Goal 15: Life on Land

STATE	
	<p>WESTERN CITY DISTRICT PLAN</p> <p>The Western City District Plan categorises Liverpool into The Western Parkland City Metropolitan Cluster and identifies the need for revitalisation and and capitalisation on the Western Sydney Airport. Relevant Priorities include:</p> <ul style="list-style-type: none">• Planning Priority W4: Fostering healthy, creative, culturally rich and socially connected communities• Planning Priority W18: Delivering high quality open space• Strategy 6: Encourage physical activity by providing better parks and better amenity• Strategy 7: Provide open space that is multifunctional and fit for purpose• Strategy 8: Design versatile, flexible spaces
	<p>FUTURE TRANSPORT 2056</p> <p>Future Transport 2056 acknowledges the vital role transport plays in the land use, tourism, and economic development of towns and cities. It includes issue-specific and place-based supporting plans that shift the focus away from individual modes of transport, toward integrated solutions.</p> <p>The Strategy and Plans also focus on the role of transport in delivering movement and place outcomes that support the character of the places and communities we want for the future.</p>
	<p>NSW LOCAL CHARACTER AND PLACE GUIDELINES</p> <p>The guideline provides information to clarify the key influences of local character and place, how local character can be integrated into the planning system and current approaches for the inclusion of local character in local planning.</p> <p>The Guidelines set out key ways in which local character can be identified and articulated in a proposal, including the integrations of tree canopy and heritage.</p>

STATE	
	<p>LIVERPOOL PLACE STRATEGY</p> <p>The Policy "Liverpool Collaboration Area Place Strategy has been developed by the Greater Sydney Commission to help deliver the shared objectives for Liverpool and guide planning decisions into the future.</p> <p>The Moore Point proposal site is classified as a Mixed use Collaboration Area known as the Georges River North area. Requirements including a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core.</p>
	<p>BETTER PLACED</p> <p>The Policy "Better Placed has been developed by the Government Architect to deliver the strategic approach needed to ensure that as our cities and towns grow bigger they get even better." Key, applicable objectives include:</p> <ul style="list-style-type: none">• Objective 1 - Better Fit: Contextual, local and of its place• Objective 3 - Better for Community: Inclusive, connected and diverse• Objective 4 - Better for People: Safe, comfortable and liveable• Objective 6 - Better Value: Creating and adding value• Objective 7 - Better Look and Feel: Engaging.
	<p>GREENER PLACES</p> <p>The Policy "Greener Places has been developed by the Government Architect to deliver the strategic approach for encouraging connection and integration of our green assets, ensuring their contribution to quality of life, and that the environment and the economy are maximised, rendering a working whole that is greater than the sum of its parts."</p> <p>Key principles for creating Greener Places include:</p> <ul style="list-style-type: none">• Principle 1: Integration• Principle 2: Connectivity• Principle 3: Multifunctionality• Principle 4: Participation

STATE	
	<p>DRAFT - OPEN SPACE FOR RECREATION GUIDE - GREENER PLACES</p> <p>The guideline, 'Open Space for Recreation' is a document supporting the guide and implementation of the Policy document 'Greener Places, developed by the Government Architect. Key applicable strategies include:</p> <ul style="list-style-type: none">• Strategy 1: Improve the provision and diversity of open space for recreation• Strategy 2: Understand the demands on existing open space, and plan for open space in new and growing communities• Strategy 3: Improve the quality of open space for better parks and facilities• Strategy 4: Use open space to connect people to
	<p>DRAFT DESIGNING WITH COUNTRY</p> <p>"If we care for country it will care for us"</p> <p>Government Architects NSW is currently working with the design industry, government and community to explore opportunities to Design with Country, embedding aboriginal culture in planning and places. The document Draft working title is 'Ochre Grid'</p> <p>Designing with Country will look to assist with this and other regulatory requirements and be useful as a tool to create better places.</p>
	<p>DRAFT HERITAGE GUIDELINES</p> <p>The Policy "Design Guide for Heritage has been developed by the Government Architect to provide advice to guide a broad range of design work in heritage places in NSW. The Design Guide for Heritage is part of the suite of documents developed by Government Architect NSW to support Better Placed.</p> <p>The guide details the Better Placed design objectives in the context of heritage, and identifies the processes and principles that ensure good design supports the significance of heritage places. The design guide also provides case studies which show how principles of good design have been applied across a wide range of heritage contexts, scales, and building types to meet a variety of briefs and requirements.</p>

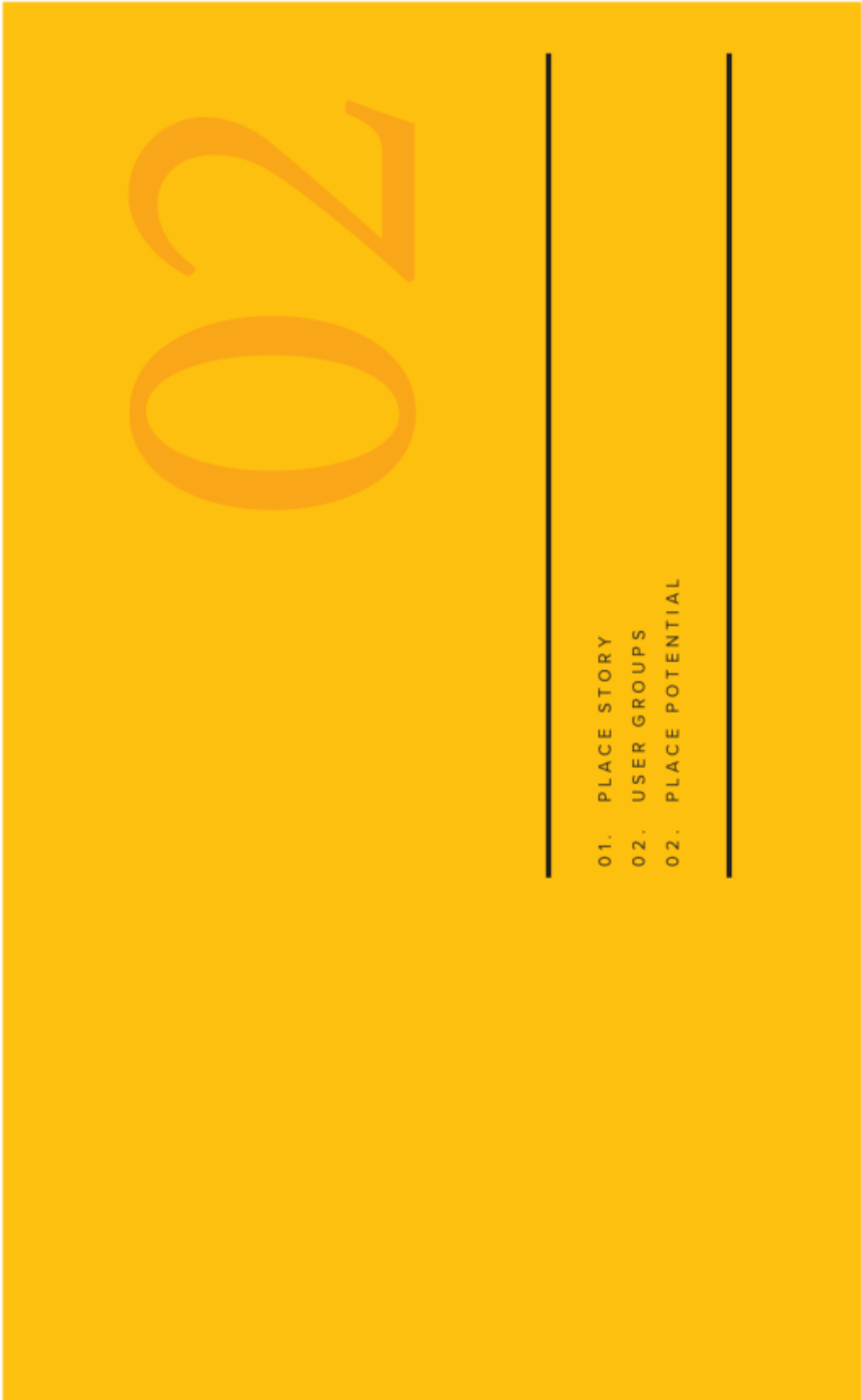
LOCAL	
	<p>OUR HOME, LIVERPOOL 2027</p> <p>Liverpool City Council's Community Strategic Plan – Our Home, Liverpool 2027 defines the vision and priorities of the community and is designed to improve life in Liverpool and the wellbeing of its residents.</p> <p>The plan captures the priorities identified by residents, such as social inclusion, protecting our environment,</p>
	<p>CONNECTED LIVERPOOL 2050</p> <p>Connected Liverpool 2050 is Council's Local Strategic Planning Statement (LSPS). It will inform the review of Liverpool City Council's Local Environment Plan. Connected Liverpool 2050 looks to guide development in communities, balancing the need for housing, jobs and services as well as parks, community facilities and the natural environment.</p> <p>Key relevant priorities to Moore Point include:</p> <ul style="list-style-type: none">• Priority 1: Active public transport reflecting
	<p>CITY ACTIVATION STRATEGY 2019-2024</p> <p>The City Activation Strategy looks to encourage the development of a well-integrated and economically vibrant City Centre. The vision sets out "To foster an 18-hour walkable city with a lively and well-integrated mix of activities, in order to attract private investment and stimulate Liverpool's communities to make</p>
	<p>generating opportunity and collaborative leadership.</p> <p>The four key relevant directions for Moore Point include: Direction 1: Creating Connection, Direction 2: Strengthening and protecting our environment, Direction 3: Generating Opportunity, Direction 4: Leading through collaboration</p>
	<p>Liverpool's strategic significance.</p> <ul style="list-style-type: none">• Priority 3: Accessible and connected suburbs.• Priority 5: A vibrant, mixed use and walkable 24hr city centre with the Georges River at its heart.• Priority 6: High quality, plentiful accessible community facilities, open space and infrastructure aligned with growth.• Priority 7 - Housing choice for different needs, with diversity focused in the city centre and centres well served by public transport.• Priority 9: Safe, healthy and inclusive places shaping the wellbeing of the Liverpool community.
	<p>greater use of the City Centre and its attributes".</p> <p>A key recommendations applicable to Moore Point Precinct includes:</p> <p>Developing a well-connected visual and public space relationship between the east side of the City Centre and the adjacent Georges River.</p>



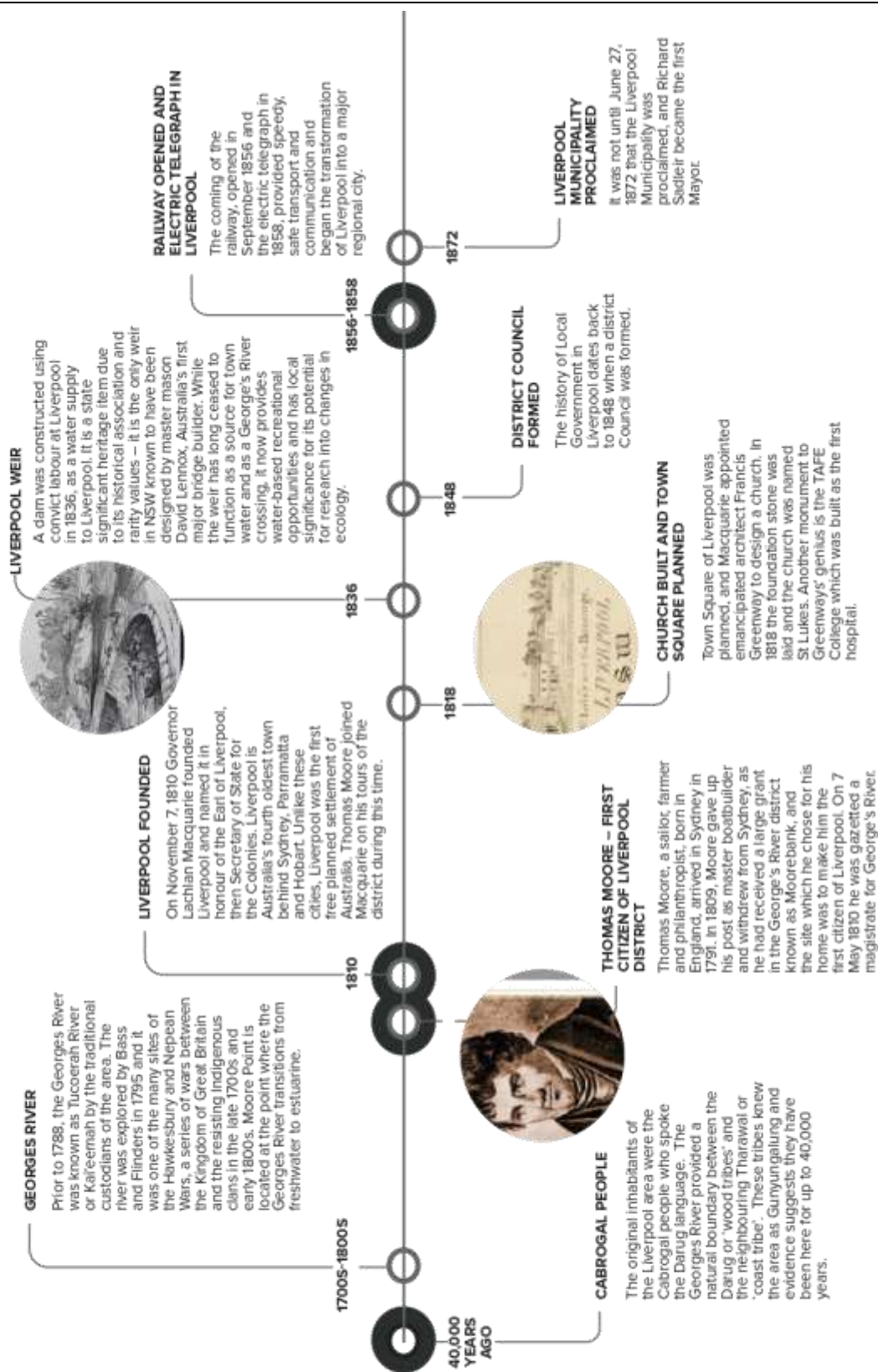
place analysis

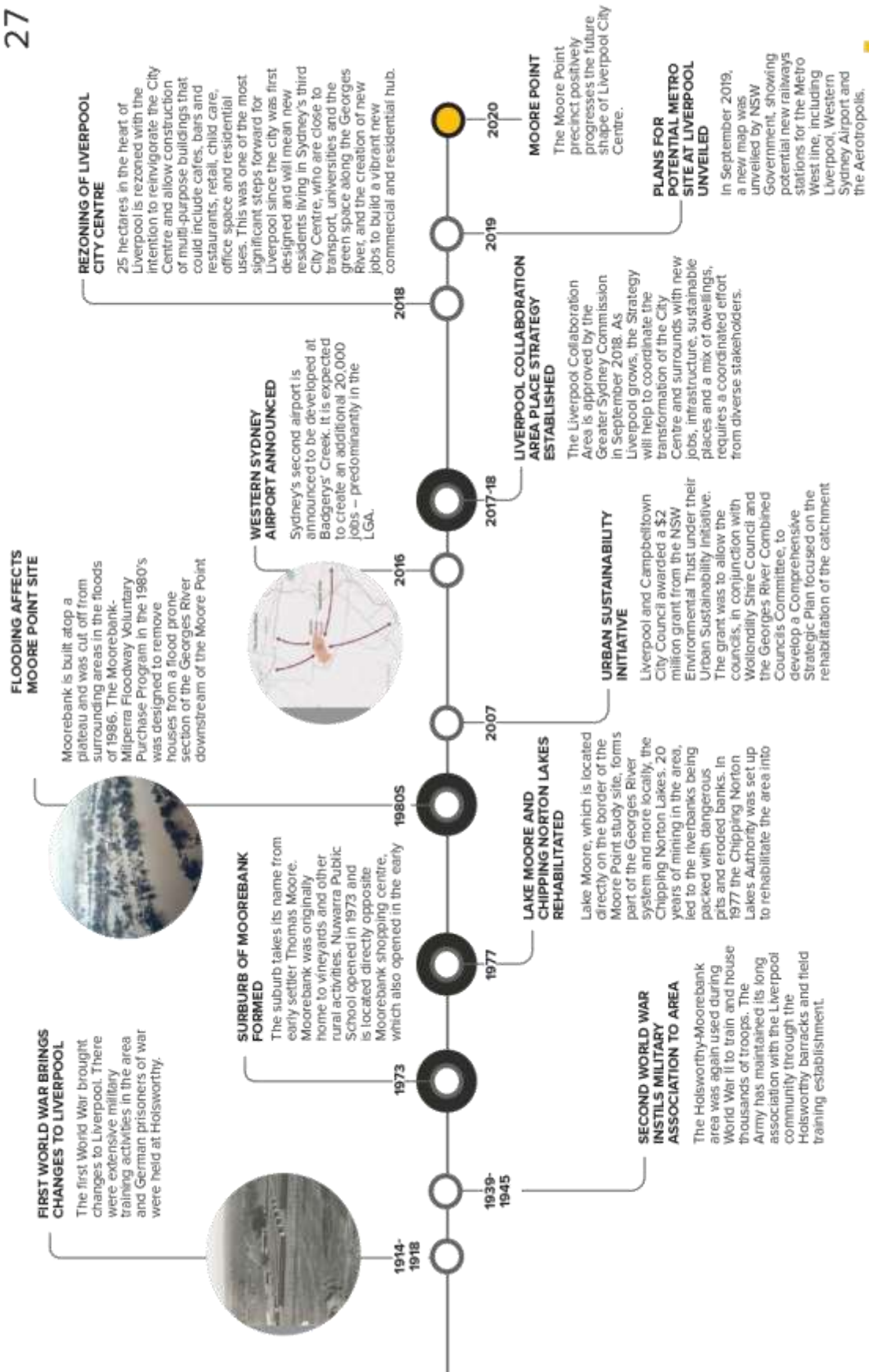
“ I find it striking that the quality of the urban habitat of *homo sapiens* is so weakly researched compared to the habitats of gorillas, elephants, and Bengal tigers and panda bears in China...you hardly see anything on the habitat of man in the urban environment. ”

JAN GEHL



PLACE STORY A snapshot of the history of Moore Point and surrounds.







“ Liverpool. Rich in nature.
Rich in opportunity. Creating
community; our place to share
and grow. ”
Our Home, Liverpool 2027.





**MOORE POINT'S
USER GROUPS**

To gain a better understanding of the experiences that can occur at Moore Point, it is important to break the wider potential users into defined user groups. This list is not exhaustive, but identifies a number of particular users who can bring benefit to the precinct.

MOORE POINT
PLACE DESIGN FRAMEWORK

CHILDREN	YOUTH + TEENS	STUDENTS
		
Aged between 0-9 years old, this user group is expected to increase by proportion of population in the future. Currently, however, children make up a predominate group in Moorebank (24.4%). This user group may require safe and accessible streets for walking, cycling, childcare, schools, play areas, parks and access to learning places such as libraries.	Aged between 10-19 years old, this user group is expected to increase by proportion of population in the future. This user group may require access to safe, well-lit, good surveillance social spaces, public transport, skate parks, sporting facilities, wifi, cheap places to eat, libraries, access to creative & recreation activities - youth centres, bike hire, trails and tracks.	Aged between 20-34 years old, this user group is expected to increase by proportion of population in the future with the relocation of University of Wollongong's Liverpool Campus to be relocated to the new Civic place development serving over 7,000 students by 2030. This user group may require access to bars, cafes, public transport, wifi, affordable places to eat, free places to exercise, groceries, outdoor recreation areas and facilities, retail, social spaces, creative, art, culture, making and co-working spaces.

WORKERS	VISITORS	FAMILIES	OVER 60'S
 <p>Aged between 20-65 years old, this user group is the broadest category in Moore Point and is expected to grow in the future with infrastructure, entertainment and recreation precinct renewals*. This user group may require access to convenient shopping, cafes, restaurants, gym, sporting facilities, co-working spaces, urban and green spaces, quality public transport, childcare, retail, essential services including medical centre, post office, banks and groceries.</p>	 <p>This user group category covers any aged person and can be from anywhere. This group comes to Moore Point for entertainment, recreational, health services and educational needs. This user group may require cafes, bars, restaurants, shops, cinemas, events infrastructure, art galleries, access to nature, sights to visit, places to picnic & bbq, places to walk dogs, urban spaces, recreational and cultural facilities, and places to host unique events to leverage on the increasing populations within the surrounding area.</p>	 <p>Generally age between 25 and 60 and with children varying in age, this user group category is expected to be the largest growing group in the future, accounting for just over 20% of the total Moorebank population. This user group may require free and affordable places, parks, cycling & walking trails, gardens, urban spaces with integrated play elements, sports, pools, libraries, parent-children social places, places to walk dogs, grocery stores, schools and childcare. Access to attractive, interesting and changing events and activities available during the day, evening and weekends will be essential to supporting this user group category.</p>	 <p>Aged 60 and above, this user group is expected to increase in the future by proportion of population in the future. Currently however, persons within this user group are a predominate age group within Moore Point, making up 13% of the population. This user group may require safe streets, crosswalks, easy to access health services, essential shopping and recreational needs, nature walking paths, gardens, sights to visit, restaurants, cafes, clubs and social spaces.</p>

* Source: Profile id, Moorebank population and household forecasts, 2016 to 2041.
 ** Source: 2016 ABS Census Moorebank

PLACE POTENTIAL

Potential place-led opportunities that build upon the existing precinct and its wider context.



BUILDING ON LIVERPOOL
CITY CENTRE'S STORIES
AND HISTORIC FABRIC,
CREATE A UNIQUE
IDENTITY FOR MOORE
POINT.



INTENSIFICATION AND
REORIENTATION OF THE
CITY TOWARDS THE RIVER.



CREATE A RICH TAPESTRY
OF DESTINATIONS AND
ACTIVITIES.



DELIVER PRECINCT-
WIDE SUSTAINABILITY
INITIATIVES.



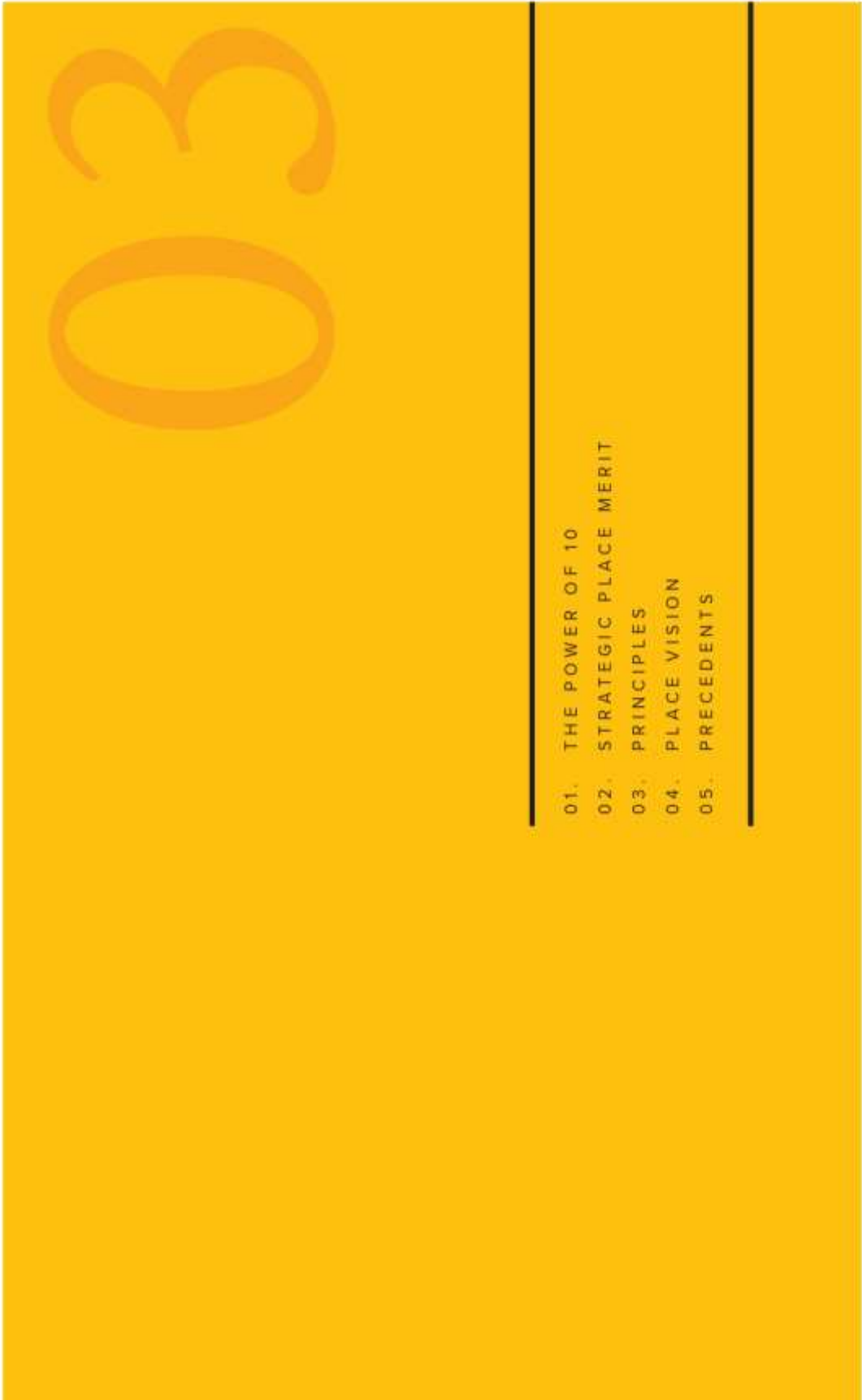
STAGING FOR THE
REALISATION OF NEW
EXPERIENCES AND THE
IMPROVEMENT OF PUBLIC
LIFE.

framework

“

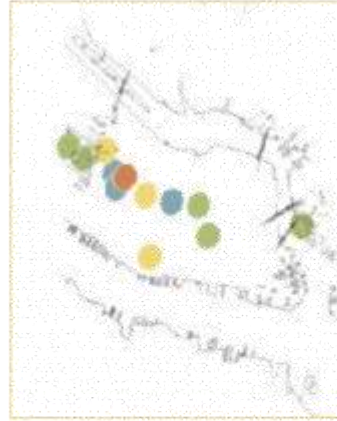
Our urban anchors are in our waterways. In the face of climate change and 21st century resilience planning, healthy rivers are once again the armature of cities. ”

Kaitlin Lovell, Bureau of Environmental Services, City of Portland, Oregon

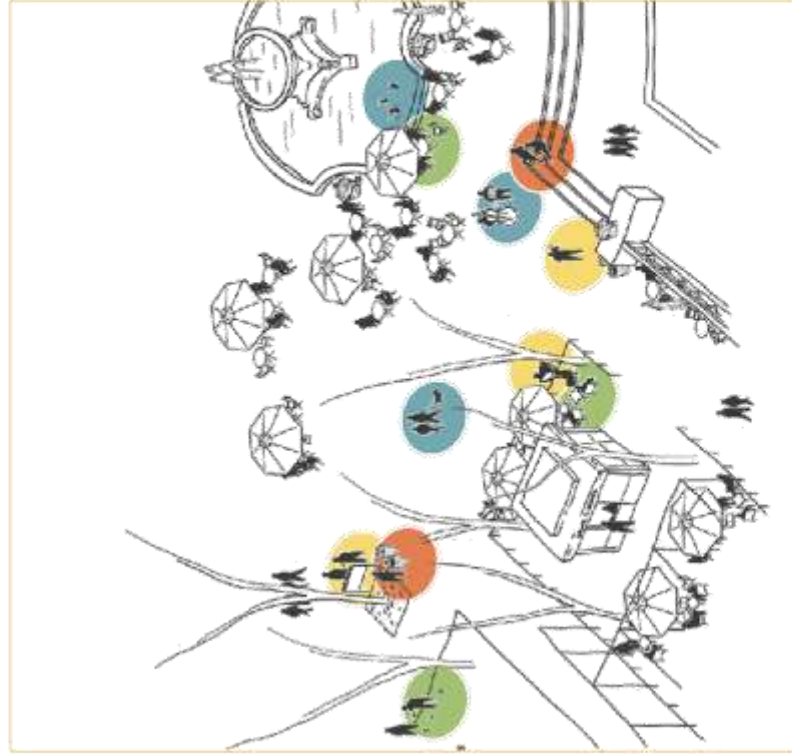


THE POWER OF 10

Project for Public Spaces was recently commissioned by the NSW Government to educate key Departments on the Power of Ten. This is a best practice concept to ensure that places thrive when users have 10 reasons to be there. This might include places to sit, playgrounds, art to touch, or a ledge to skateboard. When a region contains at least 10 precincts for activities to occur within, their public perception begins to shift amongst both locals and tourists, and urban centres can become better equipped for generating resilience and innovation. The Power of 10 forms the basis for the development of Precincts at Moore Point and how these can be programmed.



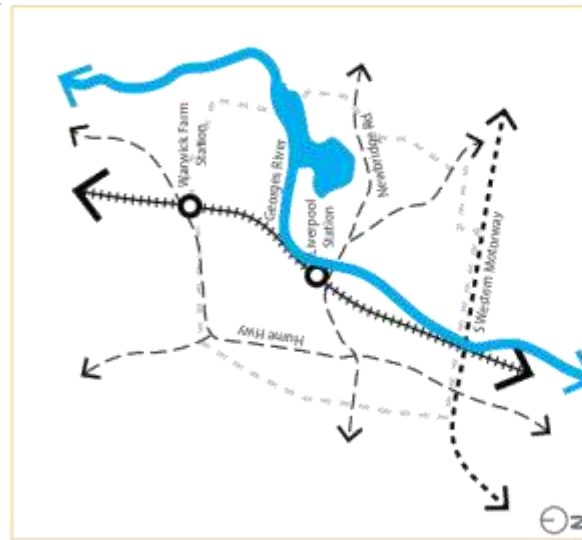
REGION
10 Precincts



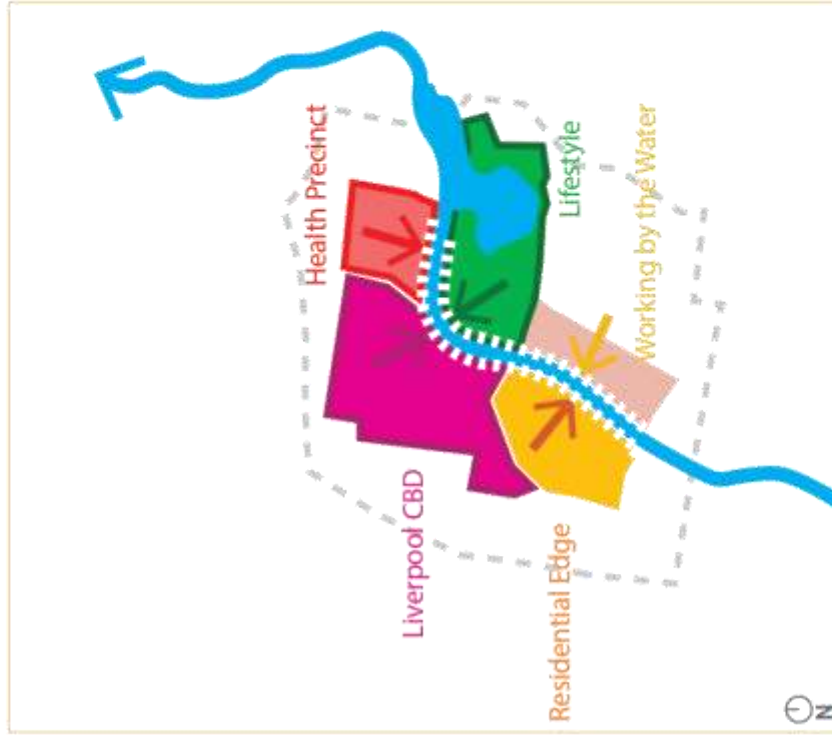
PRECINCT
10 things to do

STRATEGIC PLACE MERIT

There exists the opportunity for Moore Point to respond to Liverpool's surrounding precincts, creating a new mixed-used, recreational area that revitalises the riverfront, helping to make Liverpool a true 'River City'.



LIVERPOOL: THE RIVER CITY



CONNECTING THE CITY TO ITS RIVER

PLACE DESIGN PRINCIPLES

The following 7 guiding Principles help to ensure design, activation and future decision making can be 'cross-checked' against best practice Place Design.

1

Greener
People Places



2

Cooler
Green Places



3

Inclusive
Places for
All



4 Happy +
Healthy
Places



5 Vibrant
Places +
Public Life



6 Consciously
Mobile
People

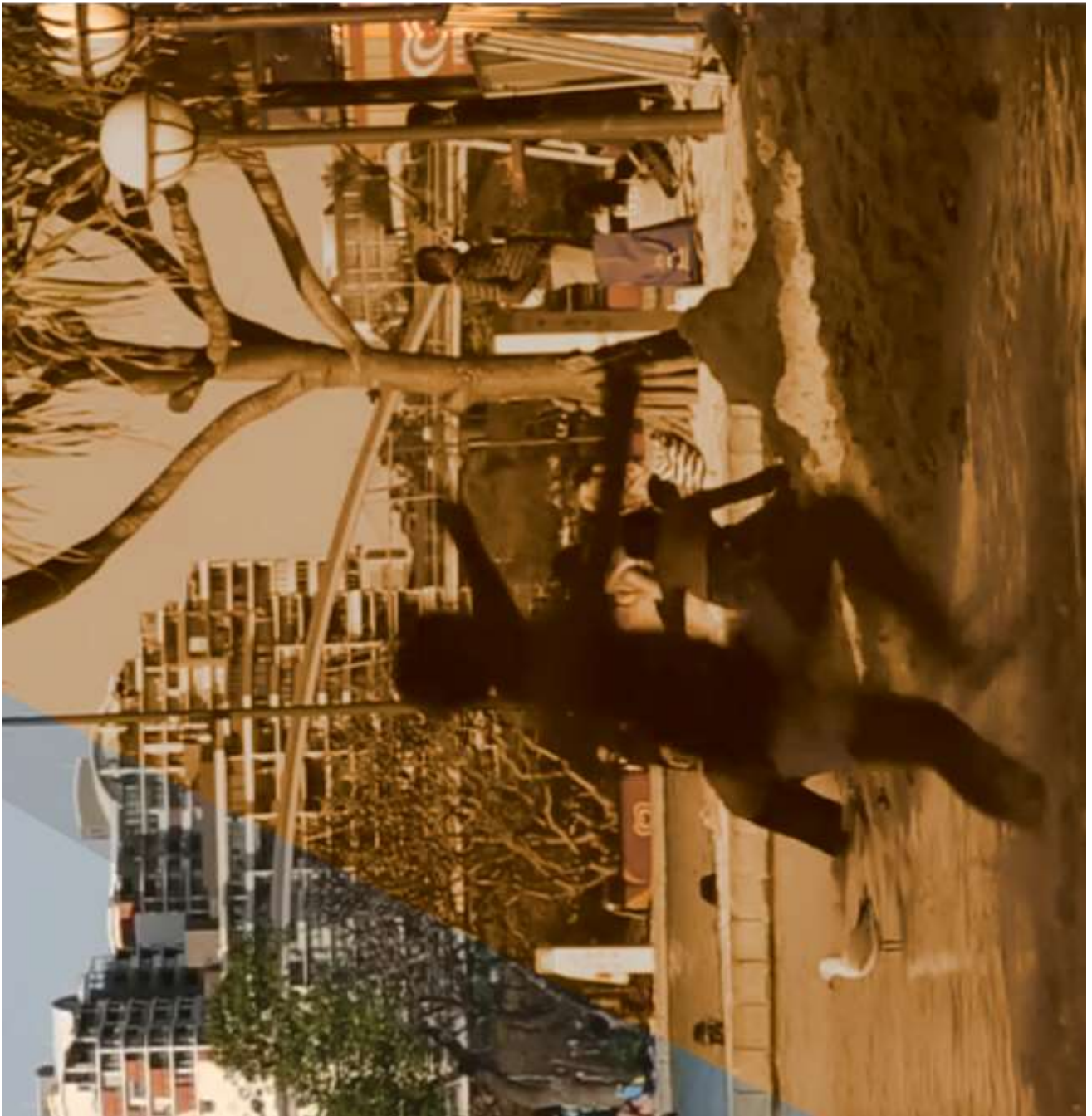


7 Resilience





vision



PRECEDENTS

HAMMARBY, STOCKHOLM

GREENER PEOPLE PLACES

Leveraging its natural parks centred around the lake, the community is lined with open green spaces, and parks, places for people to walk, places for mooring boats, docks and the active green edges to the waterfront.

- Public Open Space Accessibility: 60%
- Diversity of Open Spaces: 6/11
- Public green space - 19 % total site area

COOLER GREEN PLACES

Innovative green-blue infrastructure systems integrated across the site, allowing for planting, green roofs and stormwater systems.

- Green View Index - 35%
- Stormwater harvest / filtration - 1 Implemented system

CONSCIOUSLY MOBILE PEOPLE

Residents can actively commute as part of their daily life activity.

- Active Travel Commutes - 80% of residents
- Total distance of walking & cycling paths - 45km & 18.5km
- Cars per 1000 residents - 210

RESILIENCE

The Glass House environmental education centre is a space accessible to all residents and visitors and has been deemed an essential socially sustainable asset for the community.

- Education, Training & Allied Purpose Building x 1



BO01, MALMO

GREENER PEOPLE PLACES:

A highly diverse range of green spaces and biodiversity provided by the trees, ponds, green roofs, and climber vertical plants.

- Public Open Space Accessibility: 80%
- Diversity of Open Spaces: 5/11
- Dedicated area for open space - 50%

COOLER GREEN PLACES

Green roofs cover an extensive areas across Malmo to help reduce the urban island heat effect and providing habitats for migrating birds.

- Green roofs - 9,000m²

HAPPY AND HEALTHY PLACES

Utilises the 'Green Space Factor' point system, which includes growing plots on balconies and ensuring all plants provide some household use.

- Productive gardens - 2m² p/d

CONSCIOUSLY MOBILE PEOPLE

Compact scale and mixed lot sizes create a walkable network. The public spaces are predominantly inaccessible to cars, providing a range of open spaces for people to enjoy accessing walking and cycling routes.

- Cars per unit - 0.7
- Mobility on Demand - 50 car pools



PRECEDENTS

BROOKLYN PARK, NYC

GREENER PEOPLE PLACES:

A diverse range of green and blue connected spaces including parklands, natural landscaped footpaths, recreational fields, water recreation facilities for kayaking, access to a marina, bike paths and innovative water access via boardwalks, floating bridges, and canals. Pockets of parklands attract bird and other wildlife.

- Public Open Space Accessibility: 70%
- Diversity of Open Spaces: 11/11

COOLER GREEN PLACES

The extent of diverse green open spaces and planting assists in reducing the urban island heat effect.

- Green View Index - 30%

VIBRANT PLACES AND PUBLIC LIFE

The reuse of the deteriorating East River waterfront for public benefit and to make the waterfront an asset to the city and region is a parallel drawn to Moore Point. The increase in public access to the waterfront enables greater availability of recreational open space for residents, visitors and workers in the areas.

- Waterfront public access - 85%



HOWARD SMITH WHARVES, BRISBANE

HAPPY AND HEALTHY PLACES

Given its prominent location people are drawn to the waterfront to enjoy local retail and food offerings set in a distinct setting.

- Local Retail & Business - 100%

VIBRANT PLACES AND PUBLIC LIFE

As a critical connection and destination along the broader river edge of Brisbane, direct waterfront access and engagement with active building frontages ensures continuous activity and public life takes place.

- Waterfront public access - 75%
- Building Entries - 10 entries

CONSCIOUSLY MOBILE PEOPLE

The development provides a range of active travel options to access the site, including the CityCat, train, bus, bike, ride share and by foot with accessible footpaths adjoining multiple destinations along the City Reach Walk. The precinct also accommodates on a daily basis 3,000 daily users regularly accessing to and from the CBD.

- Bike Parking - 50 spaces
- Employee Bike Spaces - 33
- Shuttle Bus - Free 12pm-9pm (Thurs to Sun) to Residential Apartment Precinct to Transport Terminal

RESILIENCE

The reuse of heritage wharf sheds and WWII bunkers with new buildings along with the Riverwalk has helped to create a new destination with a distinct identity.

- Hybrid Buildings (Adaptive Reuse) x 1



a loveable Moore Point

“
We can create ever-evolving, gentle
urban symbioses, discovering
opportunities for healthier, more
sustainable, more enjoyable and more
meaningful relationships, by being
neighbours.”

David Sim, Soft City



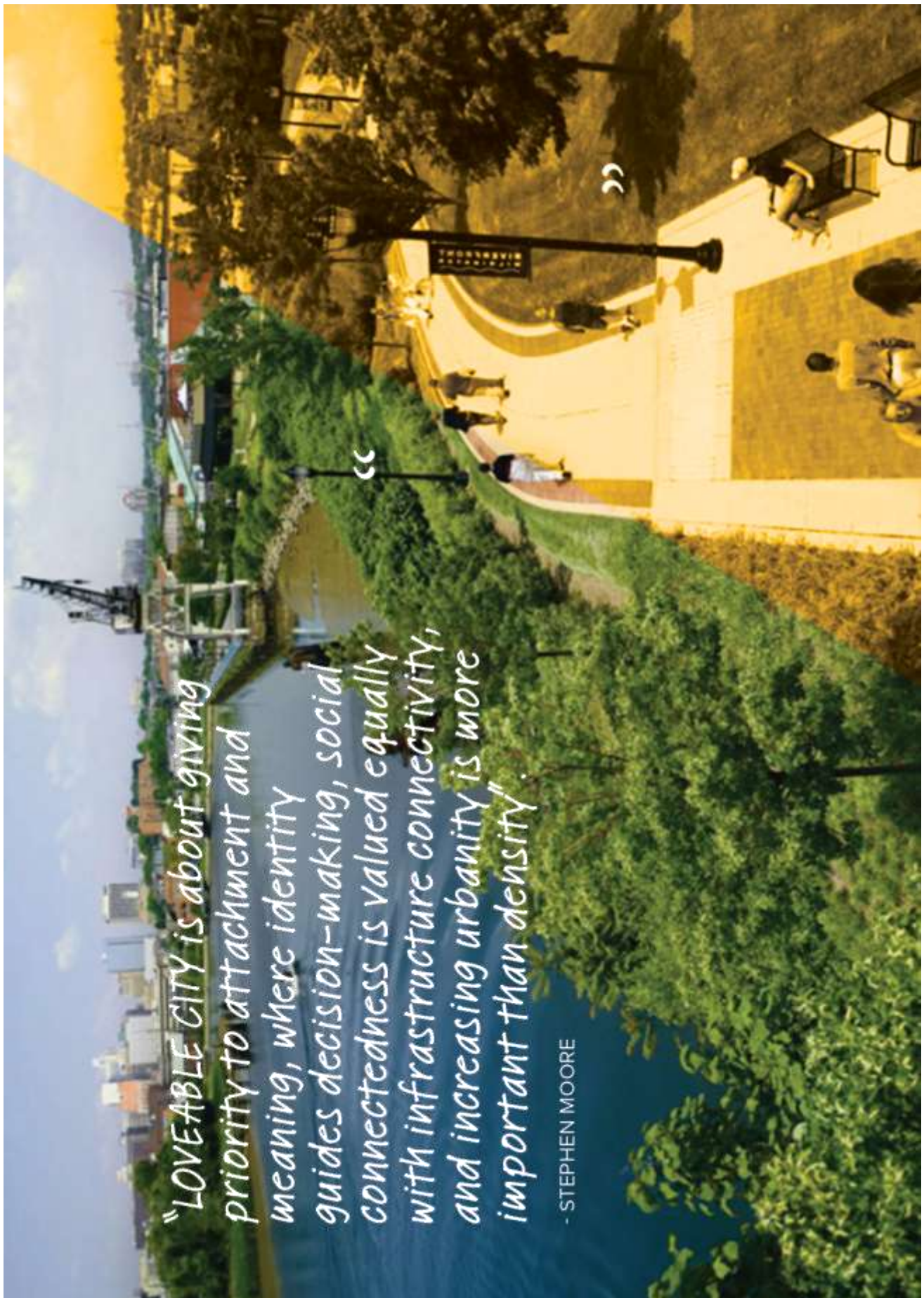
INTRODUCTION

The Moore Point Place Design Framework offers flexibility, iteration and adaptation through the considered design and delivery of public spaces and a process that allows public life to unfold as the first stage of renewing the eastern bank of the Liverpool City Centre.

By focusing on creating public life and places as the critical to ingredients to Moore Point's success, the freedom of the framework is the certainty it provides in delivering a happy, healthy and resilient community, whilst providing flexibility in the design of future buildings and their ability to respond to the market.

Building on the world's best place design methodologies of Gehl Architects and Projects for Public Spaces (PPS) (both recently commissioned by NSW Government to lead place training) and NSW Government place policy, the Place Design Framework is guided by five key elements:

- **Identity:** the defining characteristic of the whole and its precincts that will guide all other decisions
- **Public life:** the activities within each precinct to create vibrancy to tranquility
- **Urban form:** the marrying of conscious mobility and destinations for all people to enjoy
- **Sustainability:** socially, economic and environmental resilience
- **Realisation:** providing a flexible framework in which opportunities for activities are accumulated over time.



IDENTITY

The work undertaken by SJB to date provides a great foundation for the further development of the character of place. The 7 Character Areas have clear identities and defining characteristics to drive the progression of the Masterplan.

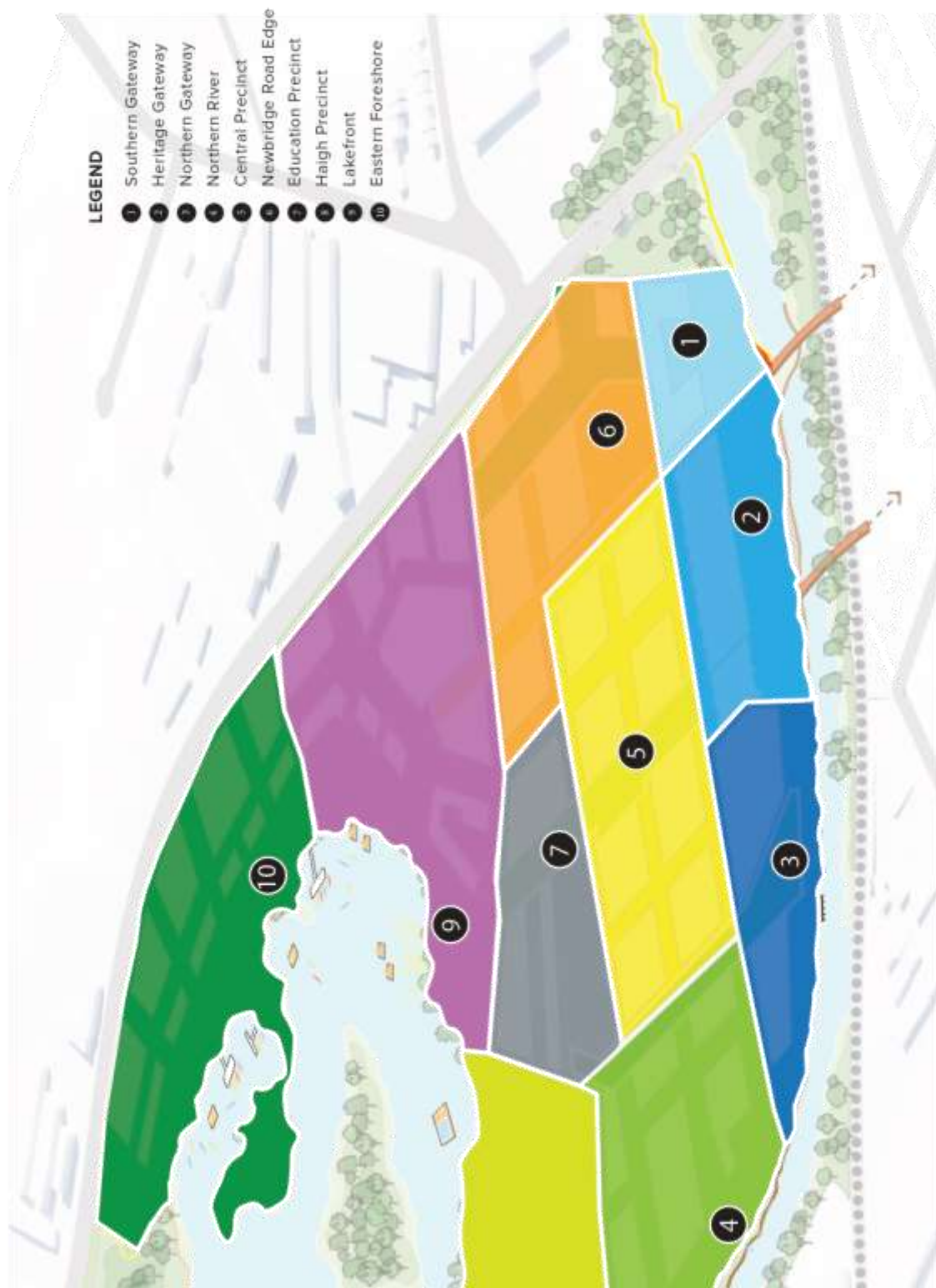
With a subtle, but significant evolution based on the Power of 10, more granular precincts have been created to help realise the type of public life that can be occur, and ultimately deliver the Power of 10.

Moore Point Character Areas



Courtesy of SJB.







PUBLIC LIFE

Moore Point provides the opportunity for 100 activities or things to do, creating the critical ingredients for a happy, healthy and resilient community.





URBAN FORM

Contrasting with conventional development our place led urban form for Moore Point identifies the key destinations, streets and places to create a diversity of experiences for people.

Collectively the Precinct Plan, Public Life Plan and Urban Form Plan provides the opportunity to evoke a more detailed Place Activation Strategy in due course. This is illustrated in the following chapter.





SUSTAINABILITY

Through a place lens the project delivers sustainability through a series of parklands that create an interconnected loop of outdoor activity, improving physical and mental health for the local community, and improving happiness.



activation
plan





ACTIVATION PLAN

Building on the Public Life Plan the following Activation Plan creates focus areas for Place Interventions, illustrating how The Power of 10 can be delivered.

The pages following this spread demonstrate the detailed potential of these destinations. This work would be completed with stakeholders for the project to evolve.





WEST FORESHORE

OVERVIEW

Situated around a large amphitheatre overlooking the river and Liverpool City Centre, West Foreshore is Moore Points most stimulating Precinct. This Precinct is where people from across Sydney travel to see Western Sydney's best live performances, or even watch the fireworks on Chinese New Year. It is full of serendipitous encounters where people are constantly seeing, hearing and learning new things, and where social interaction is common, casual and (commonly) costless.

Key activities include:

- Formal live performances
- Busking and informal entertainment
- Eating and drinking
- Relaxing by the riverfront



PRIMARY USER GROUPS



PRIMARY SEASON ACTIVITIES

SUMMER	SPRING	AUTUMN	WINTER
CONCERTS BUSKING PEOPLE WATCHING INFORMAL PLAY	PUBLIC ART EXHIBITIONS FARMER'S MARKET FOOD AND DRINK	CONCERTS BUSKING PEOPLE WATCHING ART FAIR	YULEFEST BONFIRE NIGHT MULLED WINE ICE SKATING RINK



HERITAGE PRECINCT

OVERVIEW

A canvas for people to express and celebrate the way of life of the individual and groups - including their behaviours, art, beliefs, values, and symbols that they identify with. The Heritage Precinct is a gateway to Moore Point where large groups of people come together to enjoy a range of sensory experiences through art, food and conversation.

Key activities include:

- Markets
- Busking
- Art



PRIMARY USER GROUPS



PRIMARY SEASON ACTIVITIES

SUMMER	SPRING	AUTUMN	WINTER
MARKETS/ SHOPPING	MARKETS/ SHOPPING	MARKETS/ SHOPPING	MARKETS/ SHOPPING
OUTDOOR ART	CRAFTS FAIR	FOOD/DRINK	NIGHT MARKETS
FOOD/DRINK	FOOD/DRINK	FLOWER MARKET	INDOOR ART
INFORMAL PLAY	LOCAL PRODUCE MARKET	SMALL THEATRE	OUTDOOR CINEMA



HAIGH PRECINCT

OVERVIEW

Haigh Precinct is an inclusive place is one that is physically accessible to everyone, but is also inclusive of all ages, cultures, sexes and abilities. With a range of outdoor and indoor activities for young people it is a particularly vibrant place after school hours and on weekends. Tall gum trees provide much needed shade in the summer months where people are seen strolling along dirt tracks, or fishing at the water's edge. Haigh Precinct is a oasis in the middle of Sydney's Third CBD.

Key activities include:

- Skateboarding/BMX
- Walking, cycling, jogging
- Community centre
- Wildplay
- Kayak launch
- Team sports



PRIMARY USER GROUPS



PRIMARY SEASON ACTIVITIES

SPRING	SUMMER	AUTUMN	WINTER
CYCLING/ WALKING/ JOGGING	CYCLING/ WALKING/ JOGGING	CYCLING/ WALKING/ JOGGING	CYCLING/ WALKING/ JOGGING
SKATE SPORTS	FISHING	FISHING	FISHING
WILD PLAY	GYM	GYM	GYM
	WATER ACTIVITIES	RELAXING	INDOOR SPORTS



SEASONAL
ACTIVITIES

Moore Point will be an active and lively place all year round. With a range of active and passive activities occurring during both night and day time, people will feel safe walking to and from public transport and enjoying public life at all hours.

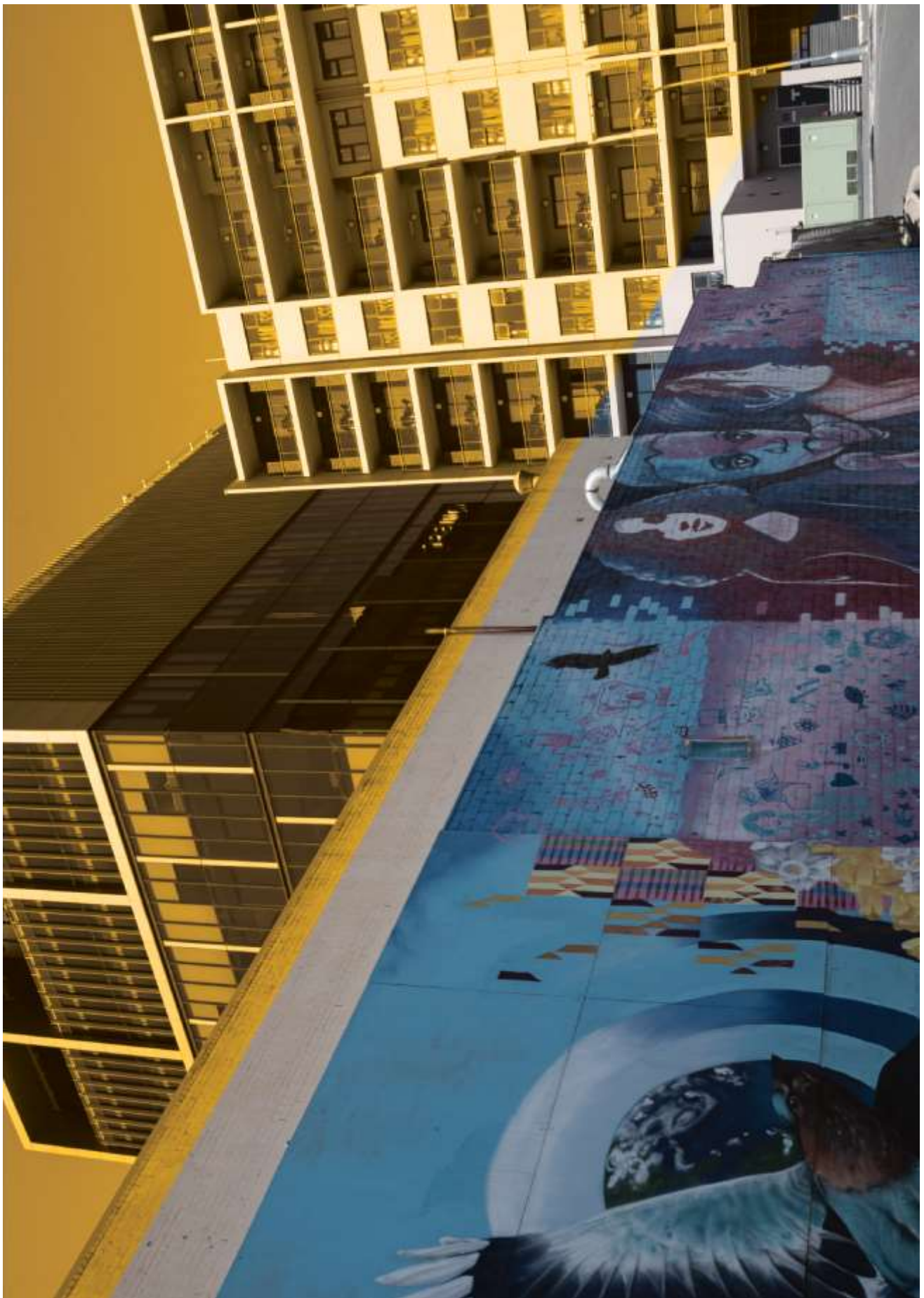
PRIMARY SEASON ACTIVITIES											
SUMMER				SPRING				AUTUMN			
CONCERTS	FISHING	CONCERTS	FISHING	CONCERTS	FISHING	CONCERTS	FISHING	CONCERTS	CAMPING	ICE RINK	CYCLING
BUSKING	NATURAL PLAY	BUSKING	NATURAL PLAY	BUSKING	NATURAL PLAY	BUSKING	NATURAL PLAY	BUSKING	OUTDOOR BBQ	COFFEE	WALKING DOG
PEOPLE-WATCHING	KAYAKING/BOATING	PEOPLE-WATCHING	KAYAKING/BOATING	PEOPLE-WATCHING	KAYAKING/BOATING	PEOPLE-WATCHING	KAYAKING/BOATING	TEAM SPORTS	NATURE WALK	FOOD AND DRINKING	INDOOR PLAY CENTRES
NATURE WALK	MOUNTAIN BIKE RIDING	NATURE WALK	MOUNTAIN BIKE RIDING	NATURE WALK	MOUNTAIN BIKE RIDING	NATURE WALK	MOUNTAIN BIKE RIDING	CYCLING	FOOD AND DRINKING	ART EXHIBITIONS	ART CLASSES
TEAM SPORTS	OUTDOOR CINEMA	TEAM SPORTS	OUTDOOR CINEMA	TEAM SPORTS	OUTDOOR CINEMA	TEAM SPORTS	OUTDOOR CINEMA	WALKING DOG	ART EXHIBITIONS		
CYCLING	SKATE/BMX	CYCLING	SKATE/BMX	CYCLING	SKATE/BMX	CYCLING	SKATE/BMX	KICK ABOUT ON LAWN	INDOOR PLAY CENTRES		
WALKING DOG	WILD SWIMMING	WALKING DOG	WALKING DOG	WALKING DOG	WALKING DOG	WALKING DOG	WALKING DOG		ART CLASSES		
KICK ABOUT ON LAWN		KICK ABOUT ON LAWN		KICK ABOUT ON LAWN		KICK ABOUT ON LAWN					
POOL SWIMMING		POOL SWIMMING		POOL SWIMMING		POOL SWIMMING					



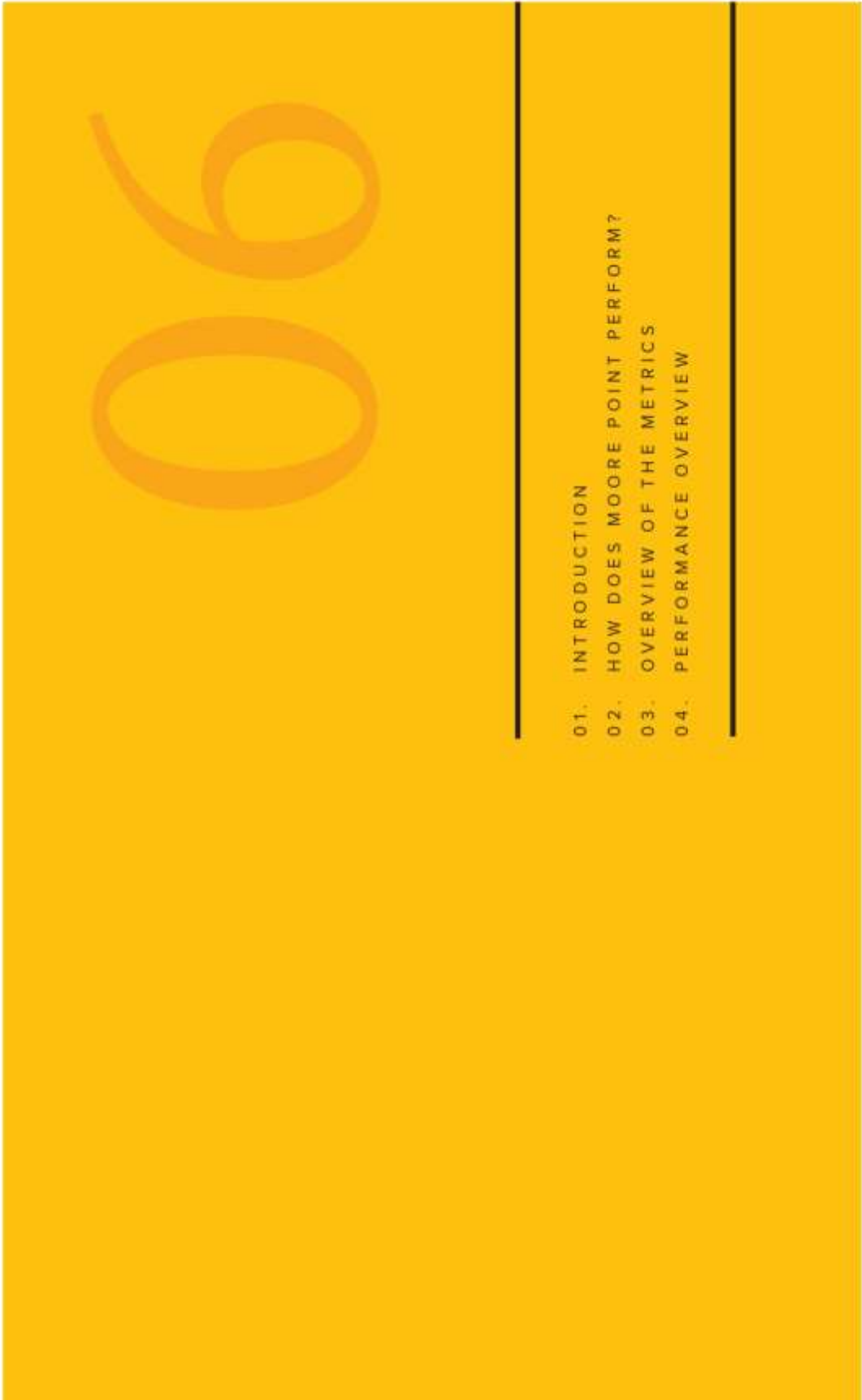


“ As Liverpool transforms, we
see great potential in the
development of economic assets
and jobs creation. ”

Roderick Simpson.



performance
measures



INTRODUCTION

Research has been undertaken into world's best practice place making and benchmarking to identify and quantify the appropriate performance measures of Moore Point to support the Urban Design and Place outcomes.

The Place Performance Metrics and Scoring draws upon RobertsDay's accumulative IP and research over many years. This information can become public as the project evolves.

The place performance measures Moore Point against the Place Design Principles for the project.

PLACE DESIGN PRINCIPLES

1. Greener People Places
2. Cooler Green Places
3. Inclusive Places for All
4. Happy & Healthy Places
5. Vibrant Places and Public Life
6. Consciously Mobile People
7. Resilience

The primary goal of the performance measures is to create a set of quantifiable metrics (25 in total) that evaluate performance in a way that is nuanced to a locality, easily understood, and can support evidence-based decision making.



HOW DOES MOORE POINT PERFORM?

OVERVIEW OF
THE METRICS

The following place performance metrics quantify that the overall experience for Moore Point.

PLACE DESIGN
PRINCIPLE

MEASURE

METRIC



GREENER
PEOPLE PLACES

Public Open Space Accessibility

The percentage of all resident building entries within 100m of an identifiable Open Space

Open Space to People Ratio

m² of Green Space per Individual

Diversity of Open Spaces

Types of Open Spaces per 100m



COOLER
GREEN PLACES

Green View Index

Min % of Visible Tree Canopy cover visible in public spaces and streets at eye-level

Landscape Replacement Area Ratio

% of site area contributing to communal landscape or vertical planting above the street level

Tree Canopy

% of land surface area shaded by tree canopy



INCLUSIVE PLACES
FOR ALL

Micro-Neighbourhoods

micro-neighbourhoods in the precinct

Pedestrian Streets

Max speed of vehicles on streets within precinct (km/h)

Child-Friendly Design

% of all public realm and parks facilitating play

Community Use Facilities

of community uses and respective size

Aged Care

of aged care beds



HAPPY AND
HEALTHY PLACES

Productive Garden

Area of productive garden space per person (sqm)

Outdoor Markets

Frequency of Markets held




Local Retail & Business

% of retail floor area dedicated to local retailers and businesses (rather than franchises)

Public Affordances

Number, frequency and variety of public furnishings coloured to bring people together in a place









PLACE DESIGN PRINCIPLE	MEASURE	METRIC
 VIBRANT PLACES AND PUBLIC LIFE	Streets as Places	# of activities per street
	Parks as Places	# of activities per public open space
	Waterfront Public Access	Public access to water
	Building Entries	# building entries per 100m of facade
 CONSCIOUSLY MOBILE PEOPLE	Walkability	Walkscore
	Intersection Density	# of Intersections per km2
	Mobility on Demand	# shared cars / cars removed from road
 RESILIENCE	Hybrid Building	Serves multiple uses
	Adaptable Ground Floors	Lineal Metres of Active Ground Floor
		Floor-to ceiling height for ground and first floor
		Min width of pedestrian shelter at ground plane
	Education, Training & Allied Purpose	Min % of non-residential space dedicated to local education training

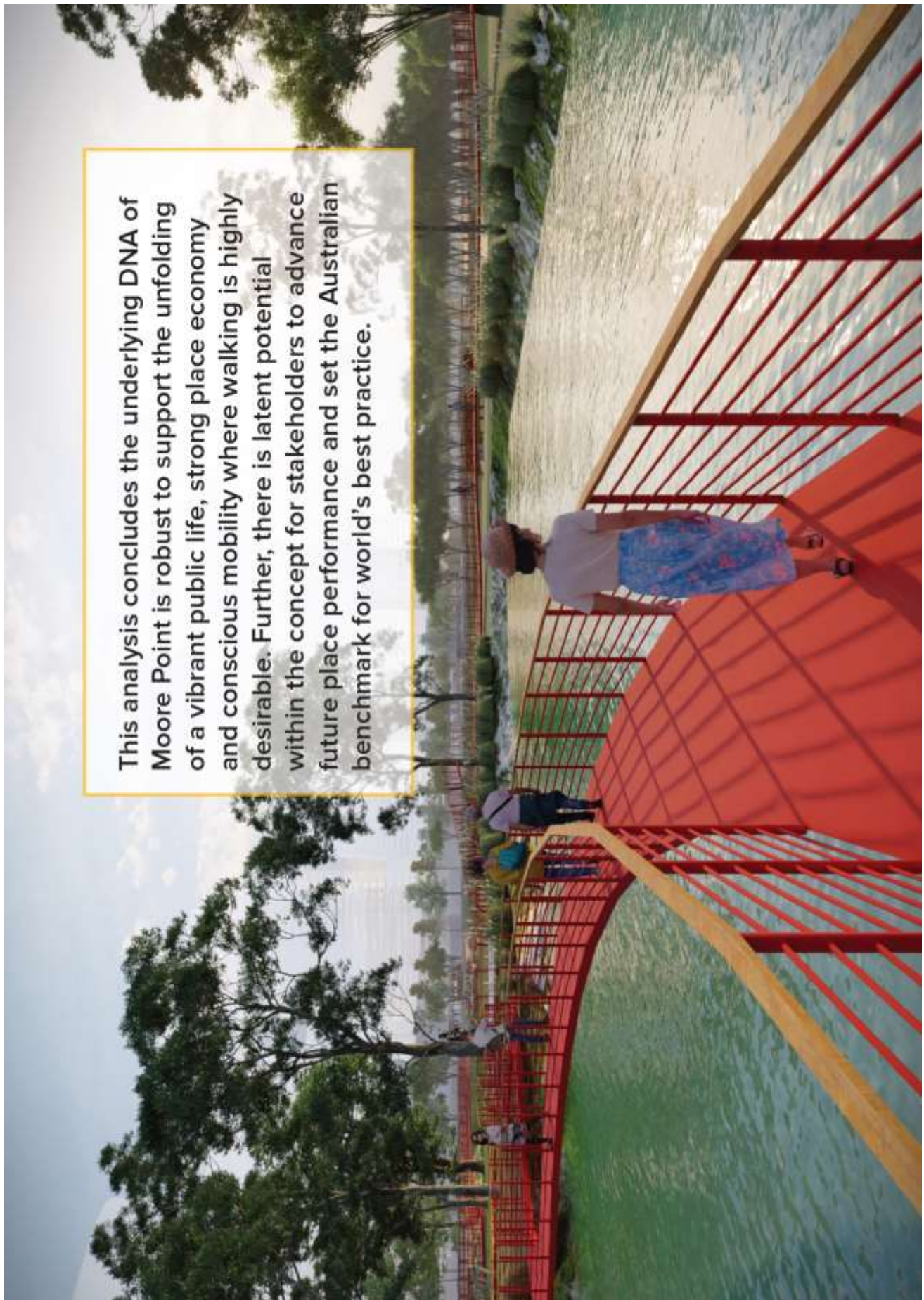
PERFORMANCE
OVERVIEW

OBJECTIVES	MEASURE	TARGET	MOORE POINT PERFORMANCE
GREENER PEOPLE PLACES	Public Open Space Accessibility	60%	80%
	Open Space to People Ratio	6m²	6.3m²
	Diversity of Open Spaces	7/11	11/11
COOLER GREEN PLACES	Green View Index	30%	40%
	Landscape Replacement Area Ratio	40%	40%
	Tree Canopy	30%	40%
INCLUSIVE PLACES FOR ALL	Micro-neighbourhoods	7	7
	Pedestrian Streets	10km/hr	10km/hr
	Child-Friendly Design	50%	60%
	Community Use Facilities	1 Community Centre -1400m² area	1 Community Centre -1400m² area
	Aged Care	100 beds	200 beds
	Productive Garden	0.5m²	0.6m²
HAPPY & HEALTHY PLACES	Outdoor Markets	1 Monthly	1 Monthly
	Local Retail & Business	50%	65%
	Public Affordances	10 elements / 60m	10 elements / 60m

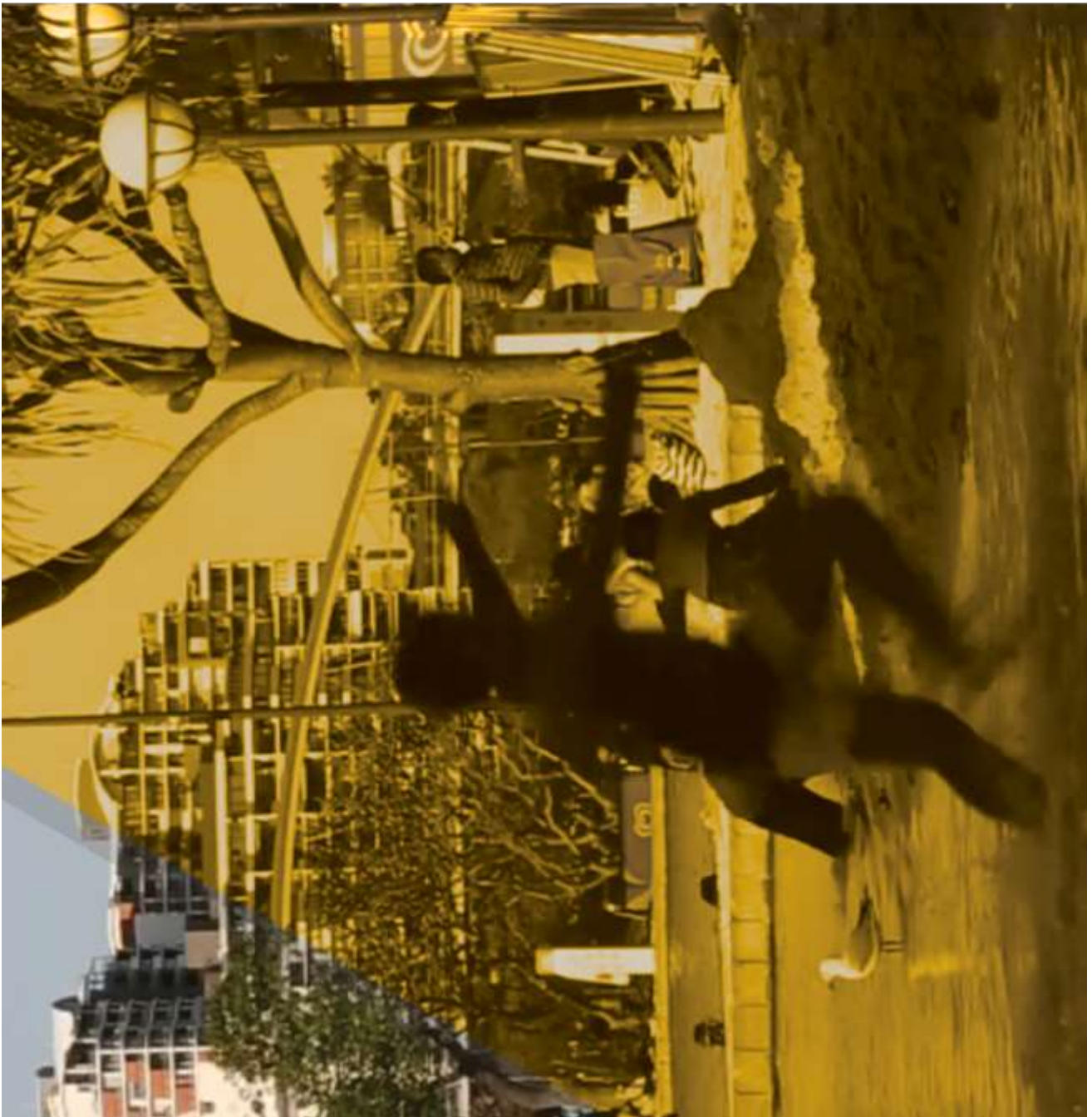


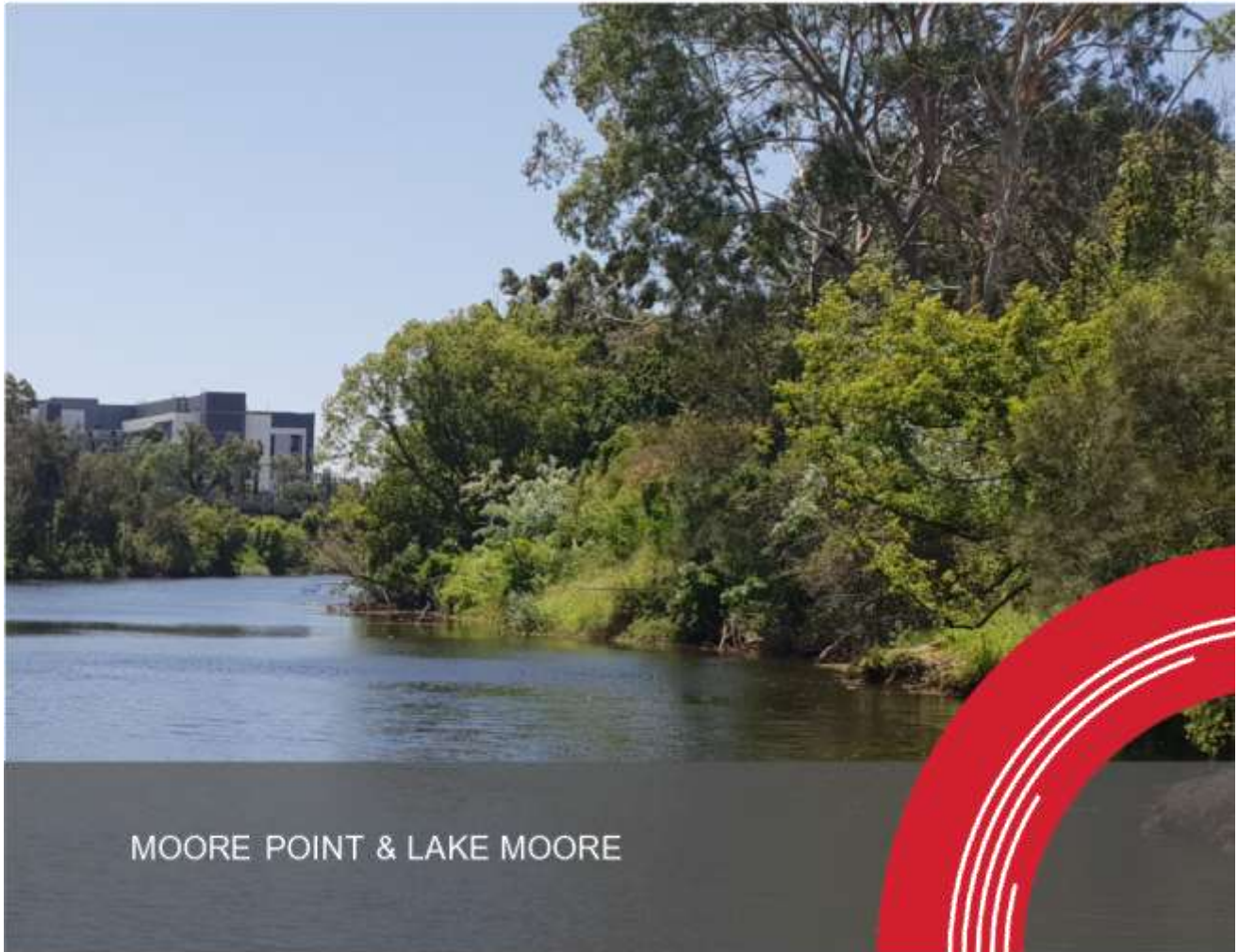
OBJECTIVES	MEASURE	TARGET	MOORE POINT PERFORMANCE
VIBRANT PLACES AND PUBLIC LIFE	Streets as Places	3 Activities (including 1 at night-time) on the street per block	3 Activities
	Parks as Places	5 Activities	10 Activities
	Waterfront Public Access	75%	100%
	Building Entries	10 entries (with no more than 9m of blank wall)	10 entries
CONSCIOUSLY MOBILE PEOPLE	Walkability	95	95
	Intersection Density	35	39
	Mobility on Demand	1820 Cars off the road (based on target intersection density)	2028 Cars off the road
RESILIENCE	Hybrid Buildings	1	1
		2000m linear metres active ground floor	2000m
	Adaptable Ground Floors	4.4m Floor-to-ceiling height	4.4m
		3m Min width pedestrian shelter	3m
	Education, Training and Allied Purpose	10%	12%

PLACE DESIGN PRINCIPLE	SCORE	SUMMARY
 GREENER PEOPLE PLACES	100	Moore Point significantly increases public space accessibility. Open space to people ratio and provides high quality diverse open spaces which leverages off the local natural assets of the Georges River and Lake Moore.
 COOLER GREEN PLACES	89	Increasing the urban greenery and reducing the effects of the urban island heat is a critical goal for the development of Moore Point Precinct. Significant increase in tree coverage, streetscape and communal planting contribute to Moore Point becoming a 'Cooler Green Place'.
 INCLUSIVE PLACES FOR ALL	80	Moore Point currently lacks places inclusive for all. Through the provision of slow, walkable streets, child-friendly design of public spaces and access to services and facilities including aged care and community use facilities Moore Point will become an improved community with inclusive places.
 HAPPY AND HEALTHY PLACES	83	Moore Point will deliver a socially connected and healthy community that prioritises the wellbeing & happiness of its residents. Access to local retail, productive gardens, high quality public space amenities and interesting markets will bring people together in an engaging and local way.
 VIBRANT PLACES AND PUBLIC LIFE	83	With attractive things to see and do across the Moore Point Precinct, from the lively buzz of ground floor retail, cafes and restaurants, street life, to activities in the park and along the waterfront, Moore Point will be a place to linger & spend the day engaging in something for interesting for everyone.
 CONSCIOUSLY MOBILE PEOPLE	89	Moore Point will deliver a pedestrian oriented precinct with a focus on providing regular, safe and easy crossings at intersections to access key places. Car sharing pods will feature across the precinct, supporting the environmental & mobility conscious community.
 RESILIENCE	78	The Moore Point will deliver adaptable and flexible spaces for diverse future uses, including multi-use spaces, and adaptable floor-to-ceiling heights. In addition, the location of education facilities within the precinct will contribute to the social, cultural and economic resilience of the community.









Riparian Strategy

For Coronation Property & Leamac Property Group



Riparian Strategy

Date	Revision	Issue	Prepared By	Approved By
25/03/2020	A	For Review	M Brown	M Brown
7/04/2020	B	For Submission		M Brown

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Executive Summary

This report has been prepared by Northrop Consulting Engineers on behalf of Leamac and Coronation to outline a riparian management strategy in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018 (Figure 1).



Figure 1: Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core' (Figure 2).

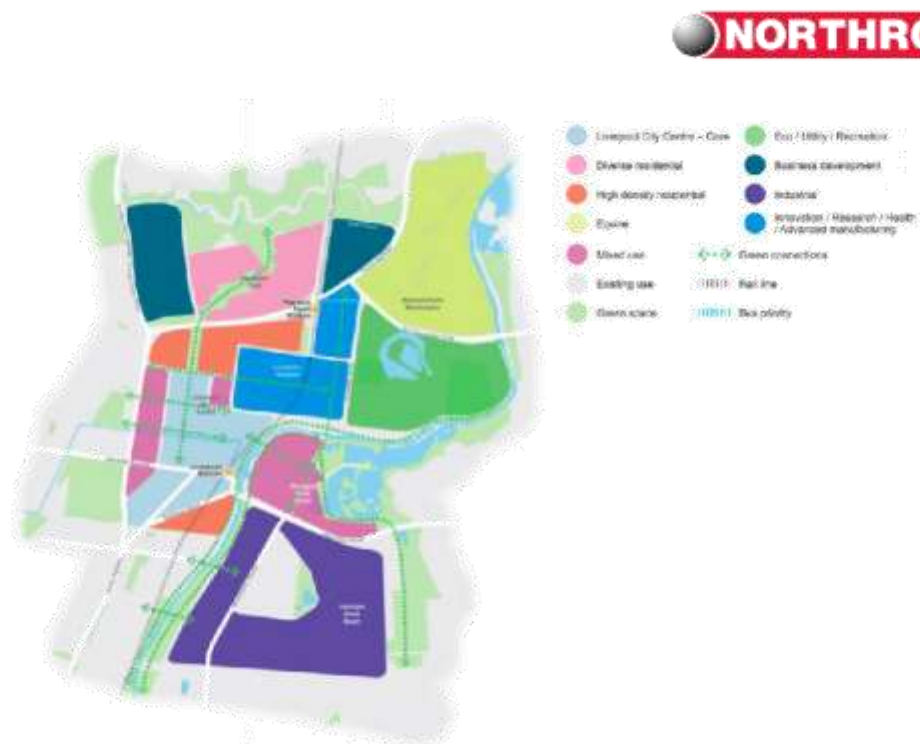


Figure 2: A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.



The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.

Specifically, the Joint Landowners Group for Moore Point are proposing to create a vibrant mixed-use development that embraces, embellishes and enhances the environmental and community benefits of the riparian corridor at Moore Point and Lake Moore.

In order to take advantage of placemaking opportunities for the precinct, the type of river front that is created will contain a mix of landscaped responses - some urban and some environmental. This mix of treatments will provide an immersive riverine experience for the community of Moore Point and Liverpool. Here, people-centric urban landscapes will blend with vegetated areas down to the river shore.

The riparian corridor in the precinct will contain three zones, i.e. River Bank, Inner VRZ and Outer VRZ which is consistent with the NRAR Riparian Guideline. Where no vegetation exists in riparian



zones now, it will be landscaped with a varying balance of native revegetation and urban landscape forms. These urban forms are to encourage activation of the river zones and they will protrude into the Inner VRZ in each zone. This approach does not conform to the Guideline. Therefore, a merit-based approach to assessment of this riparian strategy for the entire precinct is proposed which – in part - relies on offsetting to demonstrate an overall improved environmental outcome. These outcomes are summarized as follows:

- Development encroachment into the Inner and Outer VRZs is reduced by 8,158m² compared to the existing situation
- For the Inner VRZ, River Bank and Outer VRZ, the total amount of retained vegetation + proposed offset revegetation compared to that lost is 109,195m² vs 7,751m²

These outcomes show that the proposed offsetting strategy provides a significant improvement in the environmental, ecosystem and biodiversity outcomes at Moore Point and Lake Moore. The approach has a sound rationale which justifies a merit-based assessment on this basis. A merit-based assessment should also rely on compliance with policy and legislative framework relevant to the riparian corridor at Moore Point which this Strategy demonstrates.

With this Riparian Strategy implemented, the result will be a riparian corridor that is stable, rehabilitated, revegetated, biodiverse, activated, cooled and popular. Through the Placemaking Working Group, the Joint Landowners commit to achieving each of the outcomes as they plan and further design the riparian corridor in the precinct. The environmental and community amenity at Moore Point and Lake Moore will be vastly improved and commensurate with the aspirations of the community that will inhabit it, pass through it, and visit it.



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1. Preamble

Associated reports

This report should be read in conjunction with:

- Moore Point Masterplan – Urban Design Report. (SJB, 2020)
- Moore Point Precinct Flood Impact Assessment (J. Wyndham Prince, 2020)
- Moore Point Planning Proposal Biodiversity Assessment Report (Eco Logical Australia, 2020)
- Collaboration Area: Liverpool Place Strategy (Greater Sydney Commission, 2018)
- Moore Point Integrated Blue-Green Management Strategy (Realm Studios, 31/7/19)

Images in these documents have been reproduced in this Report.

About the author

- Mal Brown, Master of Natural Resources, B. Env'tl Sci (Hons)
- Mal has 35 years' experience in the environment and engineering, with particular strength in water environments.



2. The Development

Coronation Property and Leamac Property Group own land that dominates Moore Point and parts of Lake Moore.

Together, they are proposing to rezone their landholdings to provide a master planned mixed use residential community. In doing so, they are also addressing land fronting Moore Point which they do not own, with a view to achieving a consistent and integrated approach to land use and development in this precinct. The layout of the development is shown in their site masterplan (Figure 1).



Figure 1: Site masterplan showing boundary and proposed uses (Source: SJB, 2020)



3. Site Context

3.1 Riverine environment

Moore Point and Lake Moore are bounded by the main channel of the Georges River as it meanders eastward at the Liverpool CBD reach (Figure 2).

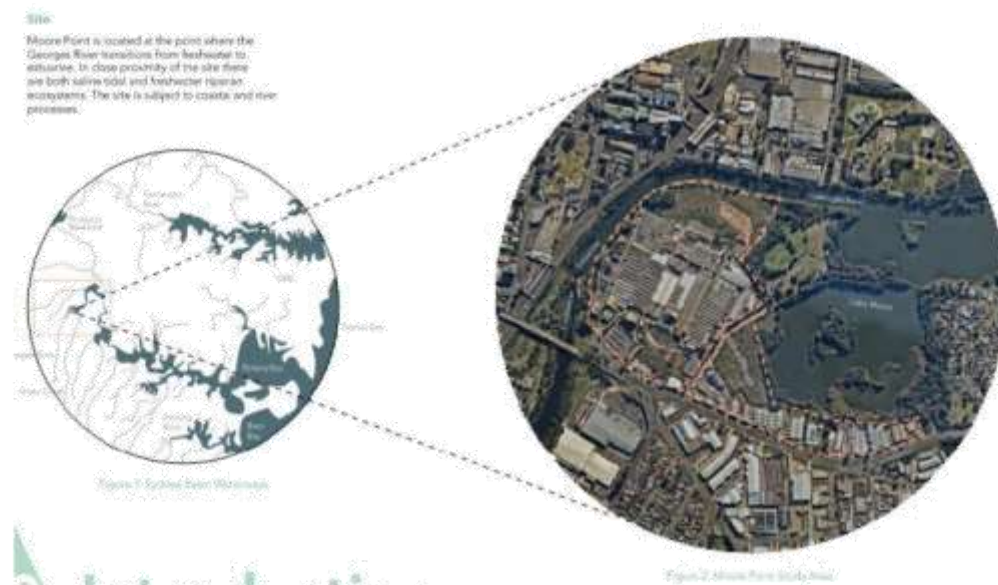


Figure 2: Moore Point and Lake Moore in the context of the Georges River (Source: Realm, 2020)

On the western side of Moore Point is a weir which forms a physical barrier between the tidal (brackish) water downstream, and non-tidal, fresh water upstream (Figure 3).



Figure 3: The weir on Georges River.



The fluvial (riverine) morphology of Moore Point was quite different in 1943 (Figure 4). Lake Moore was a remnant oxbow lake/billabong. The area (including riverbanks) was largely cleared and the alluvial floodplain supported horticulture. Lake Moore was subsequently formed by sand mining, connecting it to the Georges River.



Figure 4: Moore Point in 1943 (Source Six Maps 18/3/2020)

Today, Moore Point and Lake Moore supports somewhat more vegetation, largely from plantings around the Lake and Haigh Park, and limited natural regeneration around the river (Figure 5).



Figure 5: Moore Point and Lake Moore today (Source Six Maps 18/3/2020)



There are no known erosion features on the Moore Point peninsula. This is because “points” of rivers occur on the low energy side where deposition, rather than erosion, is a feature. The steep banks of the opposing river shore demonstrate an erosional history.

3.2 Flooding

The Georges River is particularly susceptible to flood due to its morphology. Upstream of Moore Point, the narrow river valley confines waters causing it to back up and breach the banks. Significant flooding (>7.0m AHD) has not occurred since 1986. The highest recorded flood level is 10.5m AHD in 1873.

Moore Point is situated where this confined river reach terminates, before opening out into Lake Moore. The 1% AEP (or 1 in 100 year) flood level varies between 8.4m-9.2m AHD, while the Probable Maximum Flood level is 12.4m AHD. The 1% AEP flood extent for the existing condition is shown in Figure 6.



Figure 6: Moore Point 1% AEP Flood Impact - Existing Conditions (Source: J. Wyndham Prince, 2020)

JWP (2020) have undertaken flood modelling and they propose some local solutions to mitigate the effects of flooding in the precinct, including:

- Installation of a levee to prevent river over-topping around Newbridge Road, and
- Raising of the developable area of the site to raise it above the Flood Planning Level.

The developed condition flood extents are shown in Figure 7. The proposed development will not exacerbate flooding that will affect any property or risk to life. For most parts of the precinct and surrounding lands, flood conditions will be improved as a result of the solutions.



Figure 7: Moore Point 1% AEP Flood Impact - Developed Conditions (Source: J. Wyndham Prince 2020)

3.3 Remnant Ecology

There is little if any original vegetation in the precinct. None of what remains is undisturbed. Most of the vegetation that is present is as a result of previous plantings, and natural regeneration. Despite this, the vegetation that is established on site is representative of ecologically significant vegetation communities (Figure 8). Much of this is weed-infested to varying degrees.

Most of the site has been significantly altered over the last 200 years. However, some significant forested areas still remain, especially in High Park. There is also a significant hollow-bearing tree in the area South-west.

These existing ecological characters have informed the public open space programming.

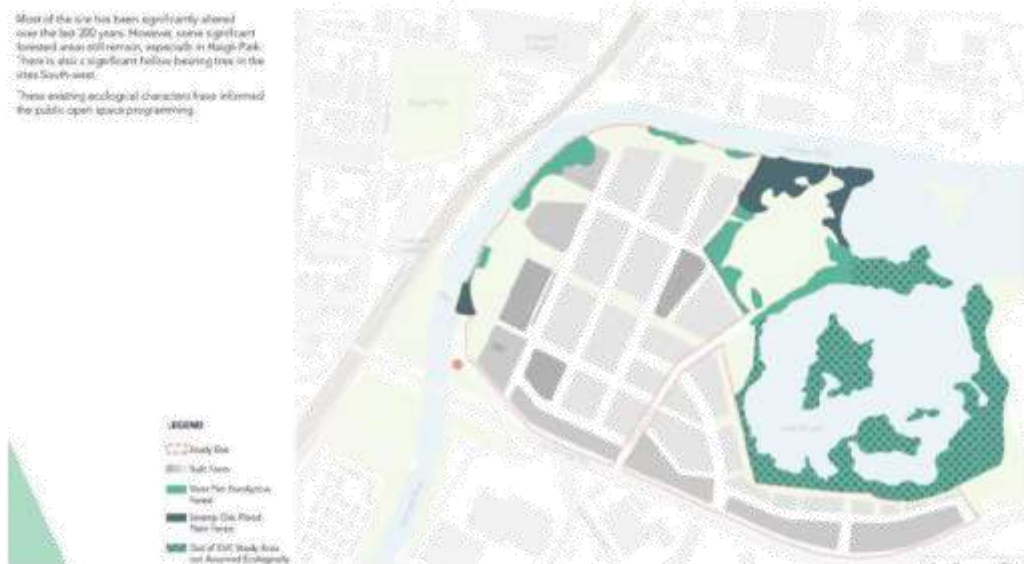


Figure 8: Remnant ecological communities at Moore Point and Lake Moore (Source: SJB 2020)



4. Policy & legislative framework

4.1 Local context

The *Liverpool City Council Development Control Plan (2008)* identifies the following objectives for consideration in regard to development near a watercourse:

- Prevent bank and bed erosion and instability of waterways
- Protect, restore and maintain ecological processes...
- Ensure conservation and long-term maintenance of existing native vegetation in waterfront areas

4.2 Precinct context

The Joint Landowners Group (Leamac and Coronation Property) have proposed a Placemaking Working Group to ensure that the delivery of Moore Point over the next 40 years creates a happy, healthy and resilient community. The aim of the Working Group is to collaboratively explore and assess place-led opportunities to ensure the precinct vision is delivered based on world's best practice. The interim vision below is expected to be refined by the Working Group:

A riverfront place for people which is well served by public transport, connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront it will be a focal point for the growing Western Sydney metropolis and place for everyone.

Placemaking

Ensure the structure plan will deliver the desired amenity, activation and walkability in river-orientated setting to create a place that is welcoming, comfortable, safe and family friendly. Key elements include: Identity; Public Life; Urban Form; Sustainability and Realisation. The Movement and Place Framework will be used to explore opportunities for conscious mobility giving priority to people walking, cycling, using public transport and driving – in that order. These strategies and projects will aim to improve people's health, and reduce unnecessary vehicle trips.

River interface

Agree to foreshore embellishments to the Georges River in line with the precinct vision, including improved connections across the Georges River. These measures will contribute to Sydney's Green Grid, improve access to Liverpool CBD and establish a community that celebrates identity and place. Enabling a transect of foreshore experiences from most-urban to most-natural will be a key focus to ensure the realization of the opportunity provided by this city-shaping precinct to increase public foreshore access and activation.

Sustainability

Explore opportunities for precinct-wide sustainability initiatives in line with Western City District Plan, and to address the urban heat island effect by increasing the quantum of green space and tree canopy currently found on the site for active and passive recreational use.

The key issue for this Riparian Strategy is *Enabling a transect of foreshore experiences from most-urban to most-natural will be a key focus*. This challenges the NRAR Guideline approach and is discussed in subsequent sections.



4.3 Regional context

The Liverpool Collaboration Area Place Strategy considers multiple stakeholders and is organized by the Greater Sydney Commission. The purpose of this collaboration is to solve complex urban issues as Liverpool LGA grows. The area is shown in Figure 9.



Figure 9: Liverpool Urban Collaboration Area

The *Liverpool Place Strategy* identifies priorities for the Liverpool Collaboration Area including:

- Connectivity
- Liveability
- Sustainability.

Priority 8 is to "Develop a network of high quality open space ... (with) improvements to the Georges River and its foreshores". Priority 9 is to "create a resilient place which includes various environmental initiatives such as vegetation to reduce urban heat". The Collaboration envisions the Georges River banks as providing a range of urban and ecosystem functions.

4.4 State Policy context

4.4.1 Riparian lands

The Natural Resources Access Regulator (NRAR) is an independent regulator established under the *Natural Resources Access regulator Act 2017*. It's primary function is regulation of water activities. NRAR administers the *Water Management Act 2000* and is required to assess the impact of any activity proposed for waterfront land (called a controlled activity) to minimise the harm done to



waterfront land as a result of the work. This means that applicants must obtain a controlled activity approval from NRAR before starting any work on waterfront land.

To assist with approvals of development on waterfront land, NRAR has prepared the *Guideline for controlled activities on waterfront land: Riparian Corridors*. The Guidelines define riparian corridors and zones within them, and they propose an averaging rule whereby encroachments into the riparian zone by development can be offset. They have prepared a riparian corridor matrix governing allowed allowable infrastructure.

In the case of Moore Point, the proposed development does not fully conform to the matrix/Guideline. A range of foreshore transects will be created ranging from most-urban to most-natural. In the case of Moore Point, it is proposed to develop merit based site specific guidelines through the Placemaking Working Group to deliver on Liverpool Council's vision to become a true river city. The merit-based approval process proposed is consistent with the local, precinct and regional contexts described above, and the Objects and Principles of the *Water Management Act 2000*.

4.4.2 Water Management Act 2000

The *Water Management Act 2000* contains the following objectives that the proposed development will adopt:

- Ecologically Sustainable Development
- Protect, enhance and restore:
 - Water sources,
 - Ecosystems and their processes
 - Biological diversity
 - Water quality
- Foster social and economic benefits:
 - Environment
 - Communities and recreation

The *Water Management Act 2000* also lists the following principles for waterways:

- Social and economic benefits to the community maximized
- Floodplain management
 - Land must be rehabilitated
 - Impacts of flood works minimized
 - Existing and future risk to life and property minimized
- Controlled activities
 - No decline in native vegetation
 - No increase in land degradation, land must be rehabilitated

The Joint Landowners commit to achieving each of the objectives incorporating these principles into the riparian corridor of the precinct.



5. Urban design and the riparian corridor

SJB have developed an urban design for the proposed development in consideration of a broad range of factors. Key elements of the urban design are the character areas, which define land uses within the Moore Point precinct (Figure 10) and a Landscape Structure Plan (Figure 11).



Figure 10: Moore Point Character areas overview (Source: SJB 2020)



Figure 11: Landscape structure plan for Moore Point and Lake Moore (Source: SJB 2020)



Key features of these two plans for the precinct include:

- A development that integrates, embraces and embellishes the waterfront
- Recognition of different levels of use and activation of the waterfront: i.e. active, passive, lakefront and existing open space (Haigh Park).
- Retention and embellishment of existing environmental and social/recreational values in and beyond the waterfront
- Provision of an urban landscaped Georges Riverfront that faces and connects to Liverpool CBD

This represents a considered and balanced approach to creating a mixed use community in the precinct, and allows for significant environmental improvements in the riparian corridor.

Realm Studios prepared the *Moore Point Integrated Blue-Green Management Strategy* (2019) for the Precinct. Their approach is consistent with SJB's plans, varying only in the increased emphasis placed on the river and waterfront land. This acknowledges the flood constraints of the site and maximises the interaction of the community in the waterfront. Figure 12 shows their design philosophy of urban liveability.

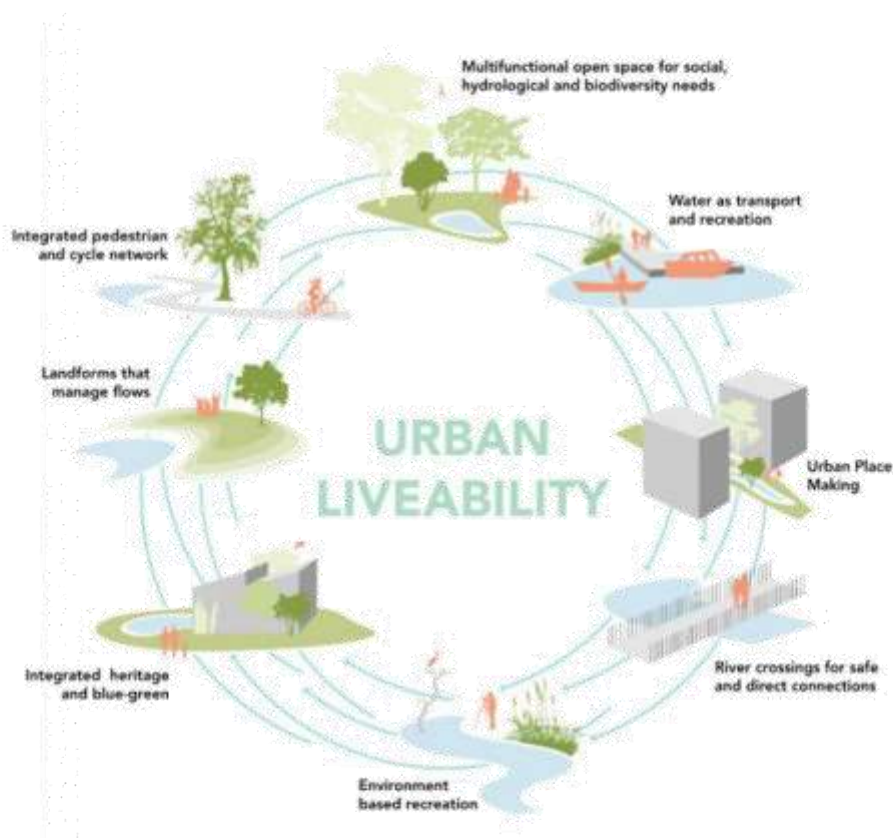


Figure 12: Design philosophy behind the *Integrated Blue-green Management Strategy* (Courtesy: Realm Studios)



Realm Studios depicted their Blue-Green Strategy showing how the Georges River will interact with the development in normal and flood conditions (Figure 13)



Figure 12: Blue-green Management Strategy (Courtesy: Realm Studios)



6. Riparian corridor responses

As intimated throughout this document, a merit-based approach to the management and assessment of the precinct riparian strategy is proposed. This section develops and provides a rationale for the riparian strategy.

6.1 Delineation of Vegetated Riparian Zones (VRZ)

A top-of-bank method was adopted to define the riparian zones as opposed to using the highest bank. The reason for this is the amount of existing development within the precinct that encroaches into the VRZs (Appendix A – Drawing SK01.01). Three zones are created, viz.:

- River Bank (part of the river channel as per the NRAR Riparian Guideline) (53,263m²)
- Inner VRZ – 20m width (45,295m²)
- Outer VRZ – 20m width (44,923m²)

For area analysis purposes, the River Bank and Inner VRZ are grouped.

The total riparian corridor area for Moore Point and Lake Moore is 14.4Ha.

6.2 Comparative riparian corridor encroachments

When the proposed development outline is superimposed on the riparian corridor, there is much less development within the riparian corridor than at present (Table 1 and Appendix A – Drawing SK01.02). This is a significant improvement.

Table 1: Existing and Proposed development encroachments into the riparian corridor

Encroachment	Existing (m ²)	Proposed (m ²)
Outer VRZ	10,029	3,264
Inner VRZ and River Bank	1,417	24
Totals	11,446	3,288

6.3 Impacts of development on VRZs

Much of the existing riparian vegetation in the precinct will be retained (Appendix A – Drawing SK01.03). These areas of vegetation will also be weeded to improve and embellish their condition and appearance.

Some vegetation in the riparian corridor will be removed. It will be necessary to remove this vegetation in order to create urban riverine places. A range of people-centric landscaped treatments will be provided to entice the community to the banks so they can enjoy an immersive riverine experience. This may include hard landscaped elements.



6.4 Vegetation offsetting in the Precinct

Where there is no native vegetation present in the riparian corridor, the typical response will be to provide this, in balance with other more urban landscape treatments (Appendix A – Drawing SK01.04).

The creation of newly vegetated riparian corridor areas plus those areas directly adjoining them counts as offsetting in the Riparian Guideline. Revegetation will take the form of the three ecologically significant communities at Moore Point and Lake Moore (as shown in Drawing SK01.03).

The amount of offsetting that is being claimed has been adjusted based on the relative balance of native vegetation versus the urban landscape treatments. There are five river zones that are being created and their relative amount of offsetting is as follows:

- Georges Riverfront – 20% native revegetation counting as offsetting
- Riverfront Neighbourhood – 60% native revegetation counting as offsetting
- Haigh Park and surrounds (Council-owned land) – existing vegetation retained and areas adjoining outer VRZ count as 100% offsetting
- Lakefront - 60% native revegetation counting as offsetting
- Lake Moore Foreshore - 80% native revegetation counting as offsetting

So, for instance the Lakefront zone will have foreshore areas in which 60% of the existing unvegetated zone will be revegetated, and the remaining 40% would be landscaped with a more urban form, and this may project into the Inner VRZ.

As a result, the total amount of riparian corridor vegetation lost, compared to those retained and that provided by offsetting is shown in Table 2. The amount of retained and offset vegetation is an order of magnitude greater than the areas of vegetated riparian corridor that will be lost. This provides a significantly improved environmental and community outcome.

Table 2: Offsetting of lost vegetation areas

Vegetated areas	Area of existing vegetation lost within the riparian corridor (m ²)	Areas of vegetation retained within riparian corridor (m ²)	Areas of vegetation offset, i.e. new plantings in riparian corridor + existing vegetated areas outside and adjacent to (m ²)
Inner VRZ and River Bank	6,975	65,931	10,554*
Outer VRZ	776	4,920	27,790*
Totals	7,751		109,195

*this number sums the percentage area of offset in each river zone of the precinct



7. Conclusions

The Joint Landowners Group for Moore Point are proposing to create a vibrant mixed-use development that embraces, embellishes and enhances the environmental and community benefits of the 14.4Ha riparian corridor at Moore Point and Lake Moore.

In order to take advantage of placemaking opportunities for the precinct, the type of river front that is created will contain a mix of landscaped responses – some urban and some environmental. This mix of treatments will provide an immersive riverine experience for the community of Moore Point and Liverpool. Here, people-centric urban landscapes will blend with vegetated areas down to the river shore.

The riparian corridor in the precinct will contain three zones, i.e. River Bank, Inner VRZ and Outer VRZ which is consistent with the NRAR Riparian Guideline. Where no vegetation exists in riparian zones now, it will be landscaped with a varying balance of native revegetation and urban landscape forms. These urban forms are to encourage activation of the river zones and they will protrude into the Inner VRZ in each zone. This approach does not conform to the Guideline. Therefore, a merit-based approach to assessment of this riparian strategy for the entire precinct is proposed which – in part – relies on offsetting to demonstrate an overall improved environmental outcome. These outcomes are summarized as follows:

- Development encroachment into the Inner and Outer VRZs is reduced by 8,158m² compared to the existing situation
- For the Inner VRZ, River Bank and Outer VRZ, the total amount of retained vegetation + proposed offset revegetation compared to that lost is 109,195m² vs 7,751m².

These outcomes show that the proposed offsetting strategy provides a significant improvement in the environmental, ecosystem and biodiversity outcomes at Moore Point and Lake Moore. The approach has a sound rationale which justifies a merit-based assessment on this basis.

A merit-based assessment should also rely on compliance with policy and legislative framework relevant to the riparian corridor at Moore Point. In Section 4 of this Riparian Strategy, the framework was identified as Local, Precinct, Regional and State-level policies and legislation. Table 3 (over page) summarises the outcome for each level of the framework. It demonstrates that there is broad compliance at each framework level.

With this Riparian Strategy implemented, the result will be a riparian corridor that is stable, rehabilitated, revegetated, biodiverse, activated, cooled and popular. Through the Placemaking Working Group, the Joint Landowners commit to achieving each of the outcomes as they plan and further design the riparian corridor in the precinct.

The environmental and community amenity at Moore Point and Lake Moore will be vastly improved and commensurate with the aspirations of the community that will inhabit it, pass through it, and visit it.

To that end, nothing contained in the body of this report would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.



Table 3: Compliance with policy and legislative framework relevant to riparian corridor at Moore Point

Compliance framework	Compliance criteria	Outcome provided
Liverpool City Council Development Control Plan (2008)	<ul style="list-style-type: none"> Prevent bank and bed erosion and instability of waterways Protect, restore and maintain ecological processes... Ensure conservation and long-term maintenance of existing native vegetation in waterfront areas 	<p>No erosion is currently present or expected to be created</p> <p>Most existing ecosystems retained, new ones created in riparian corridor</p>
Precinct Context	<ul style="list-style-type: none"> Placemaking – activation and walkability River interface - a transect of foreshore experiences from most-urban to most-natural Sustainability – reducing urban heat island effect 	Achieved to varying degrees by this Riparian Strategy.
Regional context - Liverpool Collaboration Area Place Strategy	<ul style="list-style-type: none"> Connectivity Liveability Sustainability. "...a network of high quality open space ...improvements to the Georges River and its foreshores". "create a resilient place which includes various environmental initiatives such as vegetation to reduce urban heat". The Collaboration envisions the Georges River banks as providing a range of urban and ecosystem functions. 	<p>To be further developed by the Placemaking Working Group (including NRAR)</p> <p>Landscape Design responses to develop and support the agreed outcomes of the Placemaking Working Group</p>
Water Management Act 2000 Principles	<ul style="list-style-type: none"> Ecologically Sustainable Development Protect, enhance and restore: <ul style="list-style-type: none"> Water sources Ecosystems and their processes Biological diversity Water quality Foster social and economic benefits: <ul style="list-style-type: none"> Environment Communities and recreation 	<p>The Riparian Strategy proposes rehabilitated lands and ecosystems that will improve biological diversity and water quality. Flooding impact to life and property will not be exacerbated by riparian works.</p>
Water Management Act 2000 Objects	<ul style="list-style-type: none"> Social and economic benefits to the community maximized Floodplain management <ul style="list-style-type: none"> Land must be rehabilitated Impacts of flood works minimized Existing and future risk to life and property minimized Controlled activities <ul style="list-style-type: none"> No decline in native vegetation No increase in land degradation, land must be rehabilitated 	<p>With revegetation, native vegetation cover will increase and be improved.</p> <p>Communities will enjoy a riparian zone that has placemaking elements to encourage activation and healthy lifestyles.</p>



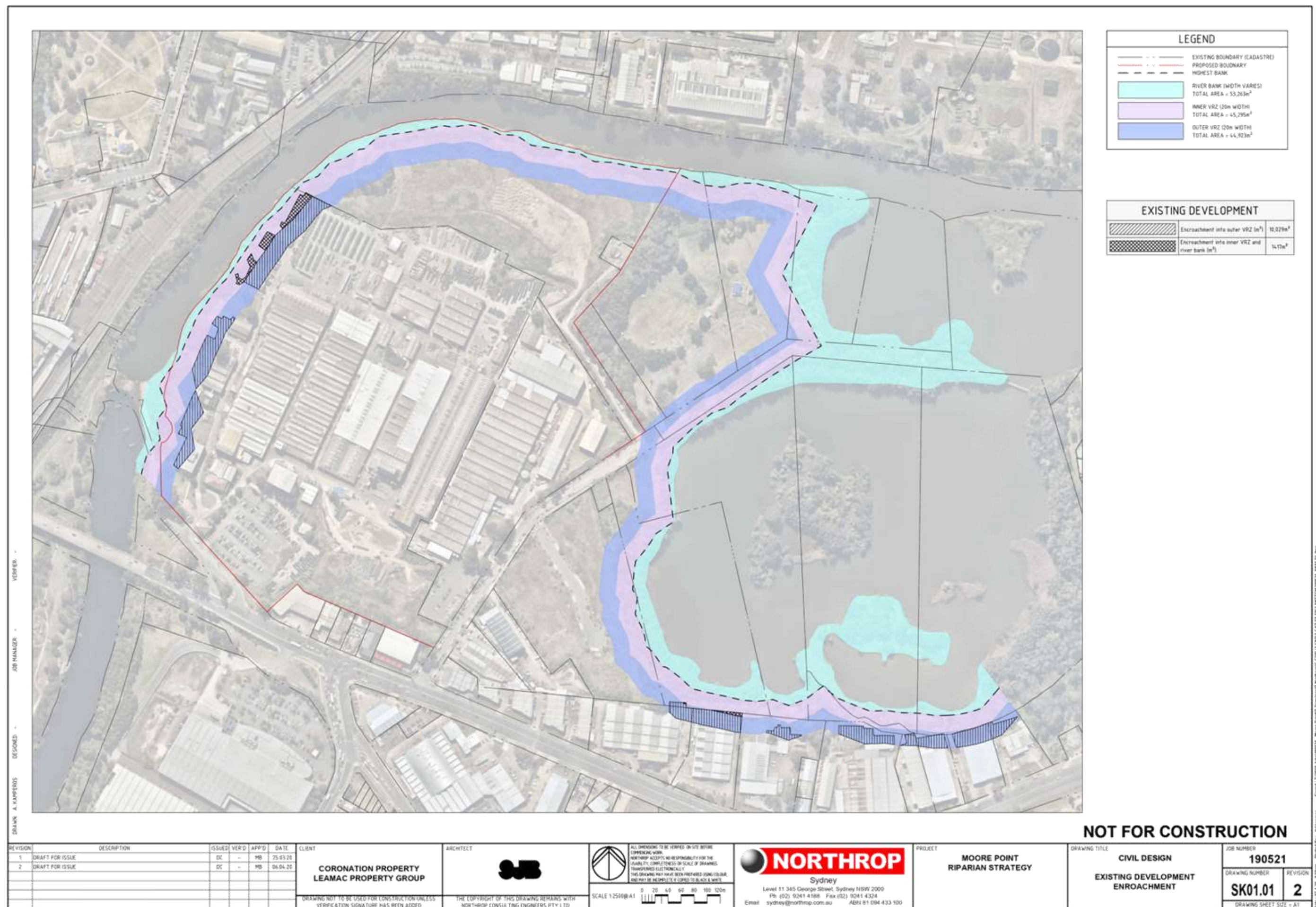
Appendix A

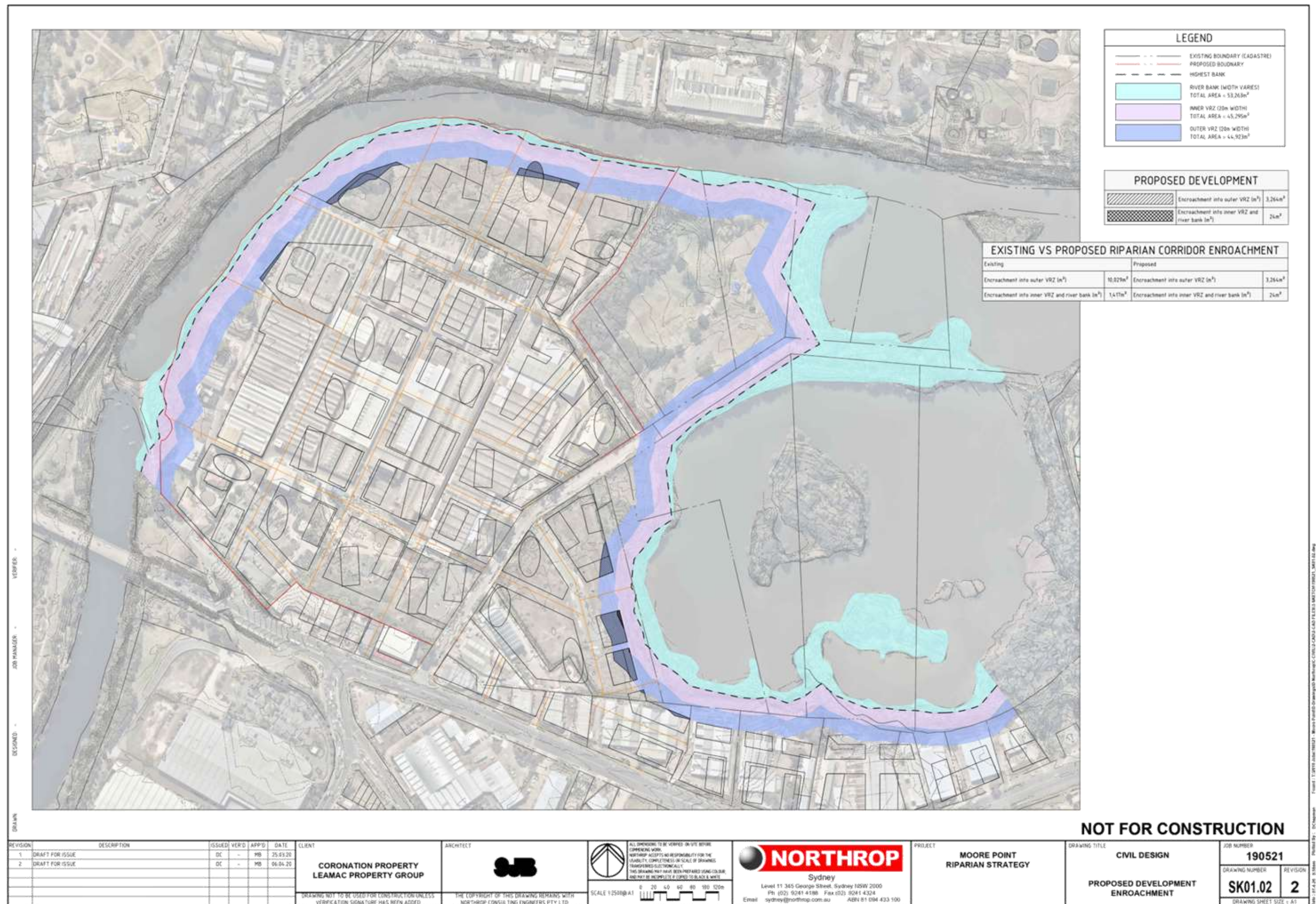
Drawing SK01.01 – Existing Development Encroachment

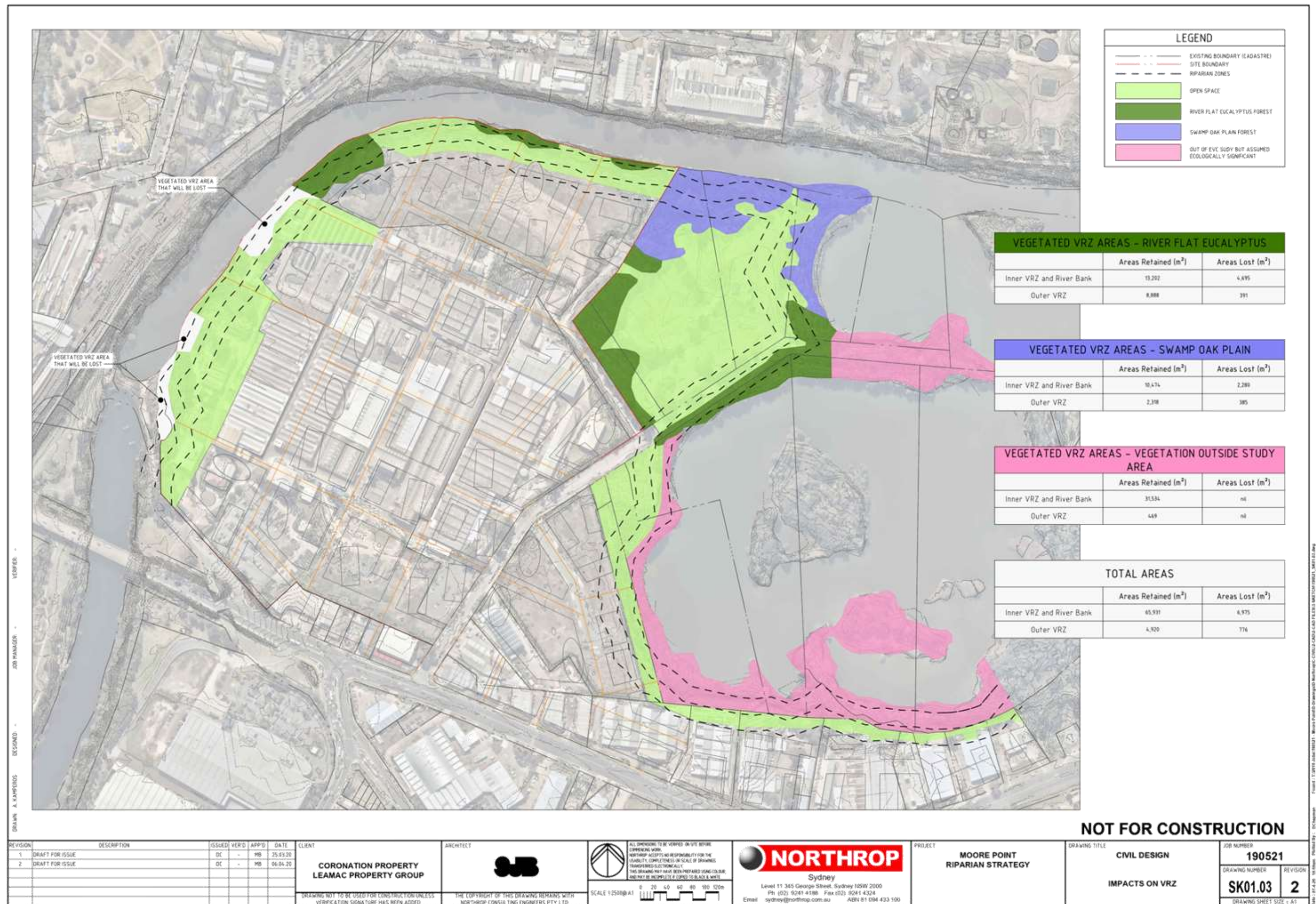
Drawing SK01.02 – Proposed Development Encroachment

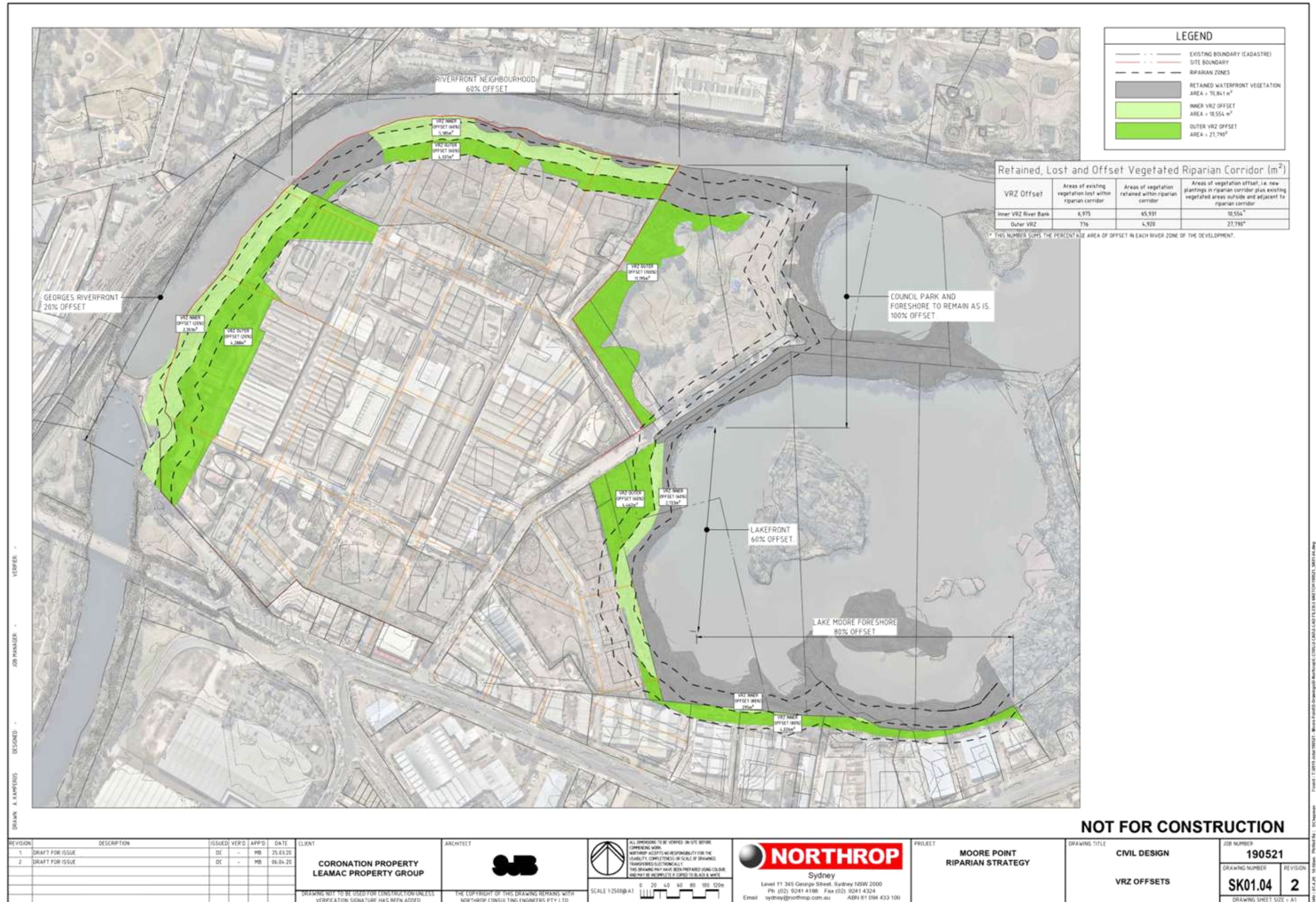
Drawing SK01.03 – Impacts on VRZs

Drawing SK01.04 – VRZ Offsets









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Servicing Infrastructure Report

Moore Point Rezoning Application

Property:

Newbridge Road, Moorebank

Applicant:

Coronation Property and Leamac Property Group

Date:

April 2020



Project Management • Town Planning • Engineering • Surveying
Visualisation • Social Impact • Urban Planning

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Document Control Sheet

Issue No.	Amendment	Date	Prepared By	Checked By
A	Preliminary DRAFT	20 th November 2019	WP	GD
B	First Issue	23 rd March 2020	WP	GD
C	Client Comments	6 th April 2020	GD	GD

Limitations Statement

This report has been prepared in accordance with and for the purposes outlined in the scope of services agreed between ADW Johnson Pty Ltd and the Client. It has been prepared based on the information supplied by the Client, as well as investigation undertaken by ADW Johnson and the sub-consultants engaged by the Client for the project.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, any such information was, in our opinion, deemed to be current and relevant prior to its use. Whilst all reasonable skill, diligence and care have been taken to provide accurate information and appropriate recommendations, it is not warranted or guaranteed and no responsibility or liability for any information, opinion or commentary contained herein or for any consequences of its use will be accepted by ADW Johnson or by any person involved in the preparation of this assessment and report.

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Executive Summary

OVERALL PROJECT

This Services Infrastructure report has been prepared by ADW Johnson on behalf of Leamac and Coronation to review the provision of utility services to the proposed development in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure 1 – Site aerial (Source: Nearmap modified by Mecore)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment. Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

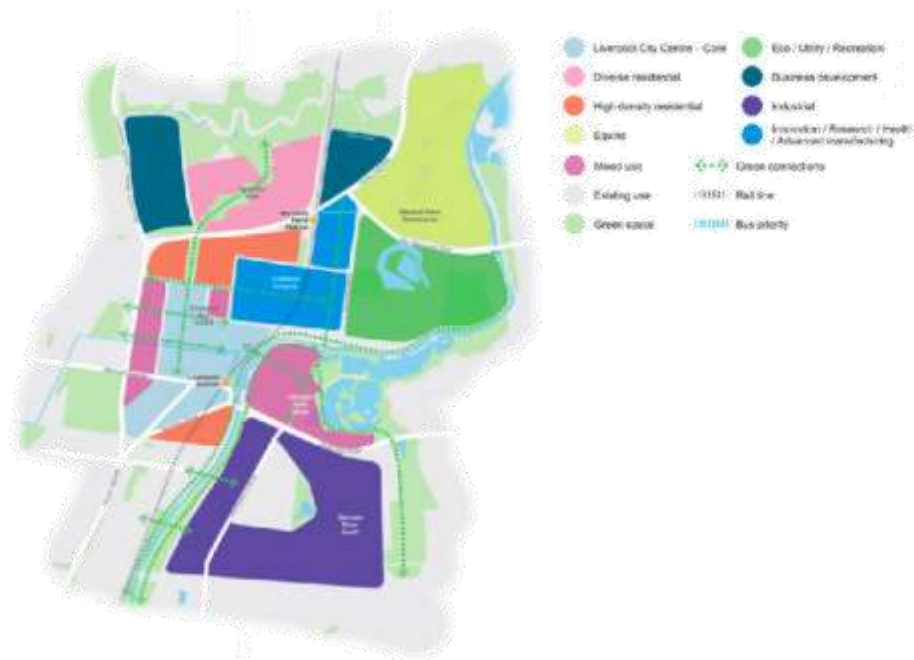


Figure 2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:





- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptative re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area. Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney. Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.



KEY FINDINGS

Dial Before You Dig (DBYD) plans were obtained and indicate that trunk infrastructure for each of the utility service providers has been established for the existing site and surrounding area and that the provision of services to the proposed development is available for connection subject to formal development applications.

In order to assess the existing infrastructure, ADW Johnson made applications to the primary utility service providers including:

- Endeavour Energy;
- Sydney Water;
- NBN Co; and
- Jemena.

All authorities have advised that they can service the proposed overall development, albeit in some cases, with upgrades to the existing network required. A summary of the capacity of each utility service to service the proposed overall development is provided in Table 8.1 on page 15 of the conclusion of this report.

The final provision of services to the site are subject to formal application for provisioning of services in conjunction with the respective Development Applications.



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APPENDIX

- Appendix A** DBYD Service Plans
- Appendix B** Sydney Water Feasibility Application Response
- Appendix C** NBN Co. Feasibility Application Response
- Appendix D** Jemena Feasibility Application Response
- Appendix E** Endeavour Energy Feasibility Application Response
- Appendix F** Liverpool's Local Strategic Planning Statement



1.0 Introduction

1.1 BACKGROUND

ADW Johnson has been commissioned by Coronation Property and Leamac Property Group to prepare a Services Infrastructure Report to support a rezoning application for the proposed development at Moorebank, known as Moore Point (herein referred to as the site).

This report investigates and assesses the availability and capacity of utility services infrastructure necessary to service the proposed development and its impact on the existing infrastructure including:

- Electrical Infrastructure;
- Sewer Infrastructure;
- Water Infrastructure;
- Telecommunications Infrastructure; and
- Gas Infrastructure.

1.2 LOCALITY

The site is located in the Liverpool City Council Local Government Area (LGA) in the suburb of Moorebank in south-western Sydney. It is bound by Georges River to the east, north and west, and the existing Newbridge Road to the south. A locality plan is shown in **Figure 1**.

The site comprises several parcels of land owned by both Coronation Property and Leamac Property Group. Industrial operations make up the majority of the existing site use, with a number of commercial businesses fronting Newbridge Road and Bridges Road. An access road (Anchor Place) and associated services have recently been constructed on the empty land on the eastern side of the site. The rezoning application is made over approximately 40ha of land.

The main access to the site is along Haig Ave, Newbridge Rd and Bridges Rd.



Figure 1 – Moore Point Locality Plan



2.0 Proposed Development

The rezoning application seeks to change the current zoning of the land from industrial to predominantly residential with some commercial and open space areas in order to facilitate development of large-scale high-rise complexes for apartment dwellings and commercial spaces. The proposed development is reflective of current market requirements, with a vision of providing vibrant residential and mixed-use complexes that provide a range of dwelling types and affordability levels.

Overall, development of the site is envisaged to comprise up to thirty (30) separate built-form structures for an estimated 12,500 dwellings and commercial spaces. The proposed gross floor area (GFA) is approximately 1,560,000 m².

Figure 2 below shows the proposed masterplan for the site.



Figure 2 – Proposed Development: Moore Point Masterplan



3.0 Potable Water Supply

3.1 EXISTING INFRASTRUCTURE

A Dial Before You Dig (DBYD) search was undertaken and it was found that there are large volume water mains at the southern and eastern boundary of the site, extending along Haig Ave, Newbridge Rd and Bridges Rd.

A DN750 SCL IBL trunk main crosses Georges River into Haig Ave, and extends along Newbridge Rd and into Heathcote Rd and Moorebank Ave. An additional CICL main ranging from DN200 up to DN375 extends along the property boundary from Haig Ave, along Newbridge Rd and up Bridges Rd to Haigh Park.

A 150 mm PVC reticulation connects into the main on Bridges Rd and extends along Anchor Pl.

DBYD service plans are included in **Appendix A** and show the existing underground water services in the vicinity of the site.

We note that the servicing plans received from Sydney Water do not show any recycled water connections in the area of the proposed rezoning. As such, we do not discuss recycled water further in this report.

3.2 FEASIBILITY APPLICATION

A feasibility application was lodged with Sydney Water Corporation (SWC) on 16th August 2019.

Two (2) face-to-face meetings were undertaken with SWC, ADWJ and Coronation Property on 25 September and 28 November 2019. The first meeting was an initial meeting to discuss the overall project aims and requested information, with the second meeting allowing SWC to provide information on current and future network availability. The minutes from both meetings are included as **Appendix B**.

SWC have advised that there is capacity in the current potable water network for up to 2,000 additional dwellings, with approximately 70% of the network for residential and 30% for non-residential/commercial.

The water network infrastructure is currently being developed in Liverpool, with a water reservoir currently under construction and due for completion in 2022/2023. This piece of infrastructure could increase the capacity for the proposed development.

3.3 LEAD IN WORKS

Future upgrade lead-in works will likely be required to service additional dwellings beyond the initial capacity. However, the likely upgrades have not yet been advised by SWC. Future planning by SWC will determine the required upgrades.



3.4 internal works

SWC have advised that standard internal reticulation works would be required to service future dwellings and commercial spaces and would be constructed by the developer as part of the development works.

3.5 POTABLE WATER SUPPLY Conclusion

SWC have advised that there is capacity within the current potable water network to service up to 2,000 additional dwellings. There is also infrastructure works currently being undertaken that may increase capacity, including completion of a water reservoir in Liverpool.

Future upgrade works required to increase the capacity in the long term have not yet been advised by SWC, and will be identified following future planning by SWC.



4.0 Sewerage Infrastructure

4.1 EXISTING INFRASTRUCTURE

A DBYD search was undertaken and it was found that a DN225 VC and DN900 concrete sewer main extends from Newbridge Rd and Bridges Rd to an existing Waste Water Pump Station (WWPS) in the north-eastern corner of the site. A secondary DN900 concrete main (identified for rehabilitation as per the DBYD plans) connects into the main on Bridges Rd and extends along Newbridge Rd.

The existing businesses fronting Newbridge Rd are serviced via a connection into the sewer main on Bridges Rd.

A DN750 SCL rising main is located adjacent to the sewer main and crosses Georges River north of the WWPS at two locations. The DBYD plan indicates horizontal drilling with a grouted annulus for one of the crossings.

A DN225 PE reticulation located on Anchor Pl connects into the sewer and rising mains on Bridges Rd.

DBYD service plans are included in **Appendix A** and show the existing underground sewer services in the vicinity of the site.

4.2 FEASIBILITY APPLICATION

A feasibility application was lodged with Sydney Water Corporation (SWC) on 16th August 2019.

Two (2) face-to-face meetings were undertaken with SWC, ADWJ and Coronation Property on 25 September and 28 November 2019. The first meeting was an initial meeting to discuss the overall project aims and requested information, with the second meeting allowing SWC to provide information on current and future network availability. The minutes from both meetings are included as **Appendix B**.

SWC have advised that there is currently no additional capacity in the sewer network. The limiting piece of infrastructure is the rising main that extends into the pumping station at the northern boundary of the proposed development site.

The pumping station will be upgraded by SWC with an estimated minimum timeframe of 3 years from the conceptual planning stage to completion. Additional land may be required for the pump station upgrade which may impact the development.

4.3 LEAD IN WORKS

The lead-in works will comprise upgrade of the existing pumping station and will be completed by SWC.

4.4 internal works

Standard internal reticulation works would be required to service future dwellings and commercial spaces and would be constructed by the developer as part of the development works.



4.5 SEWERAGE SUPPLY Conclusion

SWC have advised that there is currently no additional capacity in the existing infrastructure. The limiting piece of infrastructure is the rising main that extends into the pump station at northern boundary of the proposed development site.

The provision of sewer to the proposed development would require an upgrade to the waste water pump station and additional land may be required for the pump station upgrade. An estimated minimum timeframe of 3 years from the conceptual planning to completion.

A letter from Council (as included in **Appendix F**) supporting of the proposed redevelopment has been provided to Sydney Water and the proponents are working with Sydney Water for the provision of the necessary upgrades required to service the proposed development.



5.0 Electricity Infrastructure

5.1 EXISTING INFRASTRUCTURE

A DBYD search was undertaken and it was found that underground and overhead power lines exist within the road reserves around the boundary of the site.

The DBYD plans indicate that the underground cables are restricted to the southern side of Newbridge Rd and approximately half the length of Bridges Rd. Underground power assets are located in Haigh Park at the north-eastern corner of the site and along the full length of Anchor Pl.

During a site inspection overhead power lines were visually observed to extend from Haig Ave around to the existing WWPS at the north-eastern corner, following the boundary of the site along Newbridge Rd and Bridges Rd.

The plans do not show the internal network for the current site occupants, though is assumed to comprise both underground and overhead lines.

Existing electrical kiosks were visually observed along Anchor Pl.

DBYD service plans are included in **Appendix A** and show the existing electricity infrastructure around the boundary of the site.

5.2 FEASIBILITY APPLICATION

A feasibility application was lodged with Endeavour Energy on 15th August 2019. A response was received on 31st October 2019 and is included in **Appendix E**.

Endeavour Energy have estimated the required load for the development to be 50MVA based on the preliminary information supplied by ADWJ and Coronation. They have assessed that 10MVA can be supplied from the 11kV feeders currently used to supply the existing premises assuming that they will be demolished as part of the development.

The remaining 40MVA load will require an additional 8 new 11kV feeders to be reticulated from the Moorebank Zone Substation (MZS).

5.3 LEAD IN WORKS

Endeavour Energy have proposed the following lead-in works be completed to service the development site:

- Circuit breaker termination works of six (6) 11kV cables in the MZS;
- Installation of two (2) new switching stations at the MZS to allow branching out of the remaining two (2) cables; and
- Reticulation of the eight (8) new 11kV feeders along Newbridge Road to the development site. An appropriate route will need to be investigated.

Figure 5.3.1 below shows the proposed alignment of the lead-in works.



Figure 5.3.1 – Concept Proposed Electrical Design

(image provided by Endeavour Energy)

5.4 internal works

As part of the development, the existing internal infrastructure is to be demolished and replaced with a new high voltage network. The new 11kV distribution network will need to be designed and constructed to Endeavour Energy standards.

5.5 ELECTRICITY INFRASTRUCTURE Conclusion

It is understood that there will not be capacity within the existing electrical network to service the proposed development, based upon correspondence with Endeavour Energy.

Endeavour Energy have advised that eight (8) new feeders will be required to service the proposed overall development. They have proposed that the feeders be connected into the existing Moorebank Zone Substation and extend along Newbridge Road to the site.

The existing electricity network can be upgraded to facilitate the proposed development and is not likely to present a significant constraint to the project.



6.0 Telecommunications Infrastructure

6.1 EXISTING INFRASTRUCTURE

A DBYD search was undertaken and it was found that there are a significant amount of telecommunication lines extending along Haig Ave, Newbridge Rd, Bridges Rd and Anchor Pl, including Optical Fibre and NBN.

The DBYD plans indicate that the existing industrial and commercial businesses currently have internal connections to the NBN.

The telecommunication assets are owned by the following service providers:

- Telstra;
- Optus;
- AARNet;
- NBN Co.; and
- Nextgen

DBYD service plans are included in **Appendix A** and show the existing telecommunications infrastructure in the vicinity of the site.

6.2 FEASIBILITY APPLICATION

A feasibility application was lodged with NBN on 28th August 2019. A response was received on 1st October 2019 and is included in **Appendix C**.

NBN have advised that the proposed development can be serviced from the existing network with no backhaul cost to the developer. NBN would undertake the works necessary to bring the fibre from the existing Liverpool Fibre Access Node (FAN) to the development site. The developer would then be responsible for connecting the Node to Dwelling (NTD) for each resident.

NBN have indicated that the cost for the NTD connections will be \$600 per Single-Dwelling Unit (SDU) and \$400 per Multi-Dwelling Unit (MDU).

6.3 LEAD IN WORKS

The lead-in works will comprise bringing the fibre from the existing FAN in Liverpool to the development site. The cost of these works would be absorbed by NBN.

6.4 internal works

Internal telecommunication infrastructure will be generally located within the road verges or basement car parks with the necessary easements created. The developer will be required to provide NTD connections for each dwelling.

6.5 TELECOMMUNICATIONS Conclusion

The provision of telecommunication services to the site is not envisaged to present a constraint to the project based on the response received from NBN.



NBN has indicated that there will be no backhaul charges to the developer associated with connection of the site to the existing FAN located in Liverpool. However, the developer will be responsible for the cost of connections from the node to each dwelling.

The cost for the NTD connections will be \$600 per Single-Dwelling Unit (SDU) and \$400 per Multi-Dwelling Unit (MDU).



7.0 Gas Infrastructure

7.1 EXISTING INFRASTRUCTURE

A DBYD search was undertaken and it was found that there is a high pressure gas main that traverses the site within the current rezoning footprint. The main crosses the Georges River from the north through to the existing WWPS. The main continues adjacent to Haigh Park and along Bridges Rd to Newbridge Rd. The gas main is rated to 1050 kPa and comprises DN200 steel pipe.

The main splits at the intersection of Bridges Rd and Newbridge Rd and continues down Heathcote Rd/Moorebank Ave (200 mm steel and 50mm Nylon) and Newbridge Rd (100mm steel).

DBYD service plans are included in **Appendix A** and show the existing gas infrastructure in the vicinity of the site.

7.2 FEASIBILITY APPLICATION

A feasibility application was lodged with Jemena on 20th August 2019. A response was received on 28th August 2019 and is included in **Appendix D**.

Jemena have confirmed that the existing 1050 kPa high pressure network located in Bridges Rd currently has capacity to service the proposed residential and commercial yield. Jemena advised that a below-ground regulator station will have to be installed to allow a suitable medium pressure network to extend from the high pressure gas main to each of the proposed buildings along the future internal road network. They have also advised that a minimum separation of 1 m is required between the high pressure gas main and any part of the development.

It is noted that the advice received from Jemena is typical to that received on other projects, in that Jemena will not reserve capacity for any individual project and will make a formal offer once construction works are imminent. Based upon our experience working on similar projects and review of Jemena's preliminary advice, it is our opinion that the provision of gas services is unlikely to present a significant constraint to the development.

We note that a portion of the 1050 kPa gas main conflicts with the proposed development layout. Jemena have advised that the main could be realigned pending confirmation from the external works/relocations team at Jemena and at cost to the developer.

7.3 LEAD IN WORKS

Lead-in works are likely to be limited to connection into the existing 1050 kPa high-pressure main and installation of a below-ground regulator station.

7.4 Internal works

It is expected that an internal gas reticulation network would be located within the service allocations within the proposed public road reserves. Infrastructure extending within private land would be covered by suitable easements.



The internal reticulation would comprise a medium pressure (i.e. 210 kPa) plastic network connected to the below-ground regulator station.

7.5 GAS INFRASTRUCTURE Conclusion

Based upon the advice received from Jemena, the provision of gas reticulation to the site is not envisaged to present a constraint to the project, with the existing 1050 kPa high pressure main located within Bridges Road being capable of feeding the overall proposed development.

Lead-in works will require installation of a below-ground regulator station to connect into the high pressure main. The internal reticulation network is likely to be underpinned by a medium pressure network, which will typically be located within the service allocation within the public road reserve.



8.0 Conclusion

An investigation of the provision of primary utility services to the site was carried out by ADW Johnson in order to support the rezoning and to determine any required augmentation that may be required to the existing services infrastructure to facilitate the development as proposed in the rezoning application.

DBYD plans were obtained and indicate that servicing infrastructure is available for the proposed Moore Point development.

ADW Johnson also made applications to the following primary service authorities:

- Endeavour Energy;
- Sydney Water;
- NBN Co.; and
- Jemena

All authorities have advised that they can service the proposed overall development, albeit in some cases, with upgrades to the existing network required. A summary of the capacity of each utility service to service the proposed overall development is provided in **Table 8.1** below.

**Table 8.1: Summary of Existing Utility Services Infrastructure and Upgrades Required**

UTILITY SERVICE	UTILITY AUTHORITY CONTACTED	CAN PROPOSED OVERALL DEVELOPMENT BE SERVICED BY EXISTING TRUNK NETWORK? *	DESCRIPTION OF TRUNK UPGRADE WORKS REQUIRED TO SERVICE WHOLE DEVELOPMENT	ARE THE WORKS DEVELOPER FUNDED?
Potable Water Supply	Sydney Water Corporation	Yes	Future upgrade works likely, though not yet advised SWC to undertake future planning.	TBC**
Recycled Water Supply	Sydney Water Corporation	N/A	N/A	N/A
Sewerage Infrastructure	Sydney Water Corporation	No	Major upgrade of the existing pumping station to be completed to service proposed development. The upgrade works will be completed by SWC, and take an estimated 3 years from concept to completion.	No
Electricity Infrastructure	Endeavour Energy	No	<ul style="list-style-type: none"> Eight (8) new 11KV feeders from Moorebank Zone Substation. Six (6) new circuit breaker terminations at Moorebank Zone Substation. Two (2) new switching stations at Moorebank Zone Substation. 	TBC
Tele-communications Infrastructure	NBN Co	No	Fibre connecting the site to the existing Liverpool Fibre Access Node (FAN) to be constructed by NBN.	No
Gas Infrastructure	Jemena	Yes	Installation of below-ground regulator station.	TBC**

* Existing capacity and servicing requirements to be re-confirmed with each utility authority as project progresses and in conjunction with detailed design work.

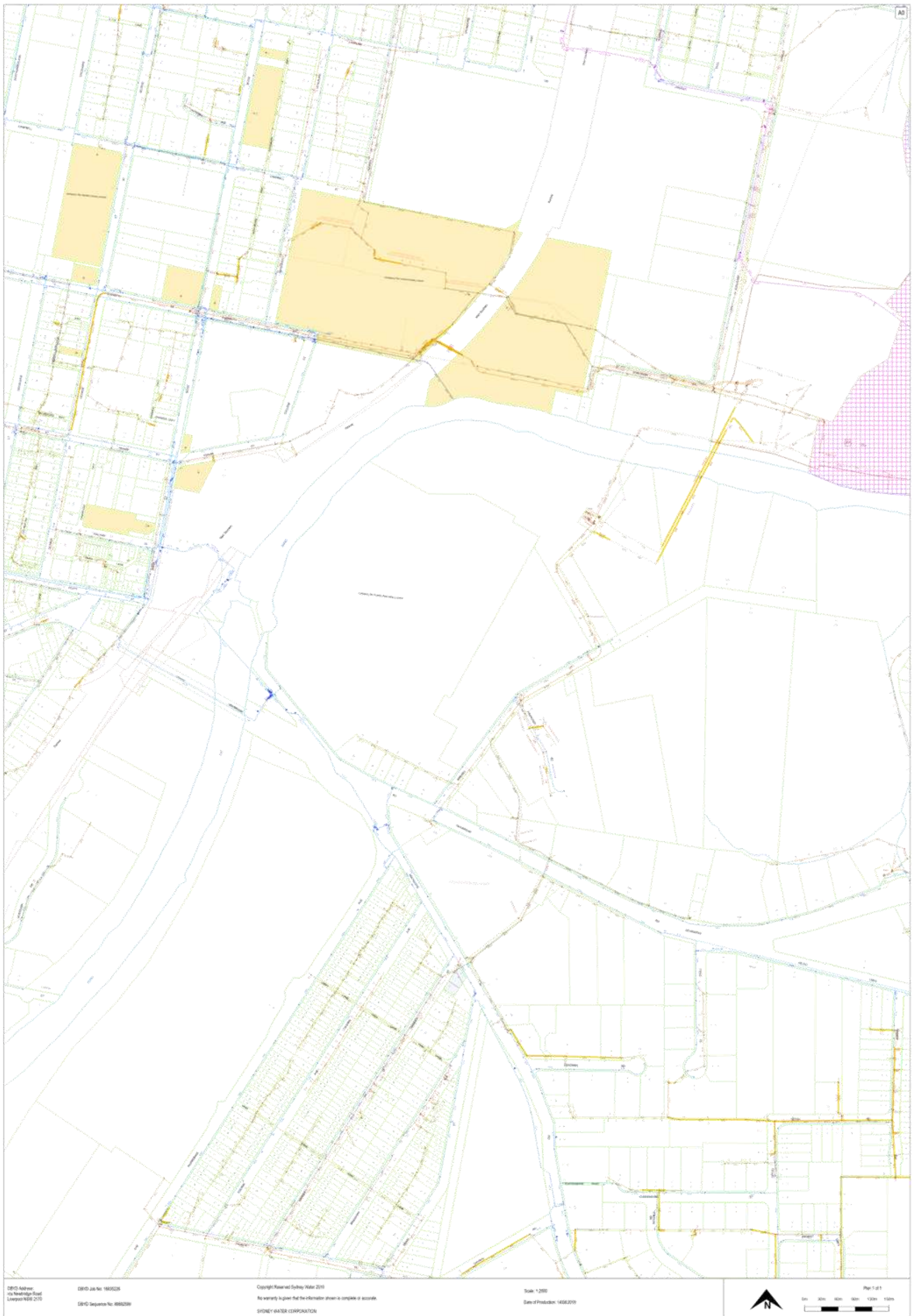
** To be confirmed post obtainment of development consent

The final provision of services to the site are subject to formal application for provisioning of services in conjunction with the respective Development Applications.




Appendix A

DBYD SERVICE PLANS





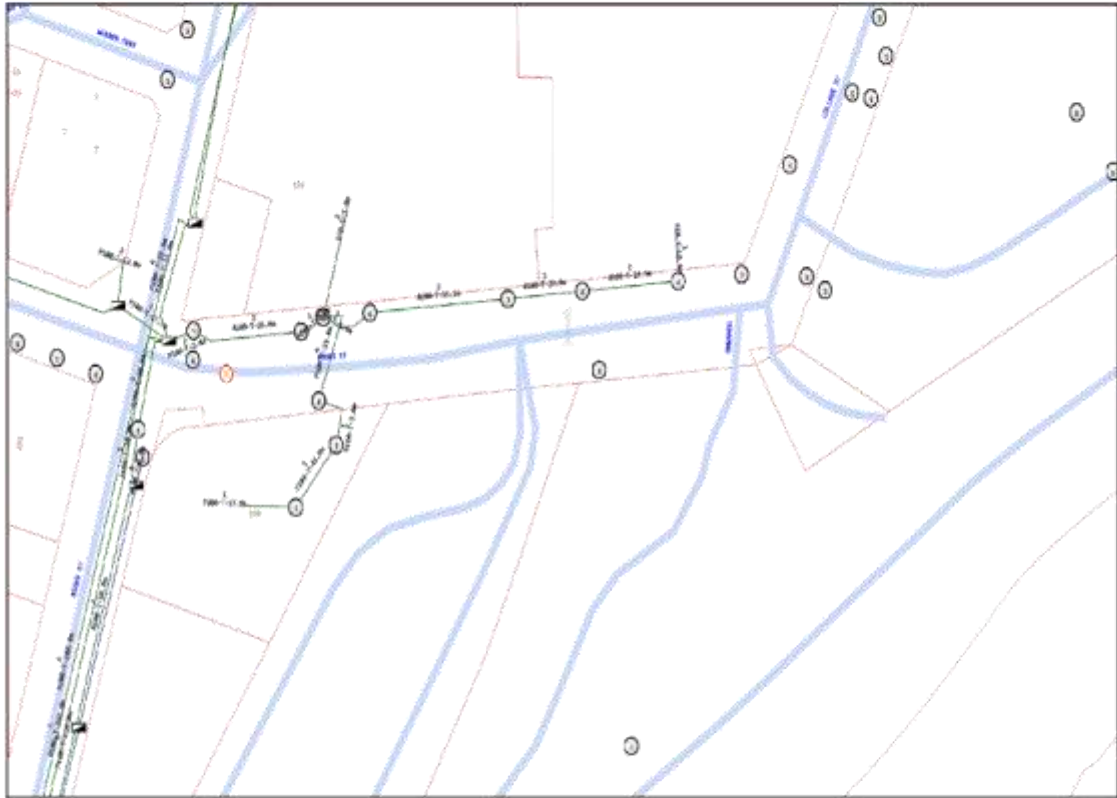
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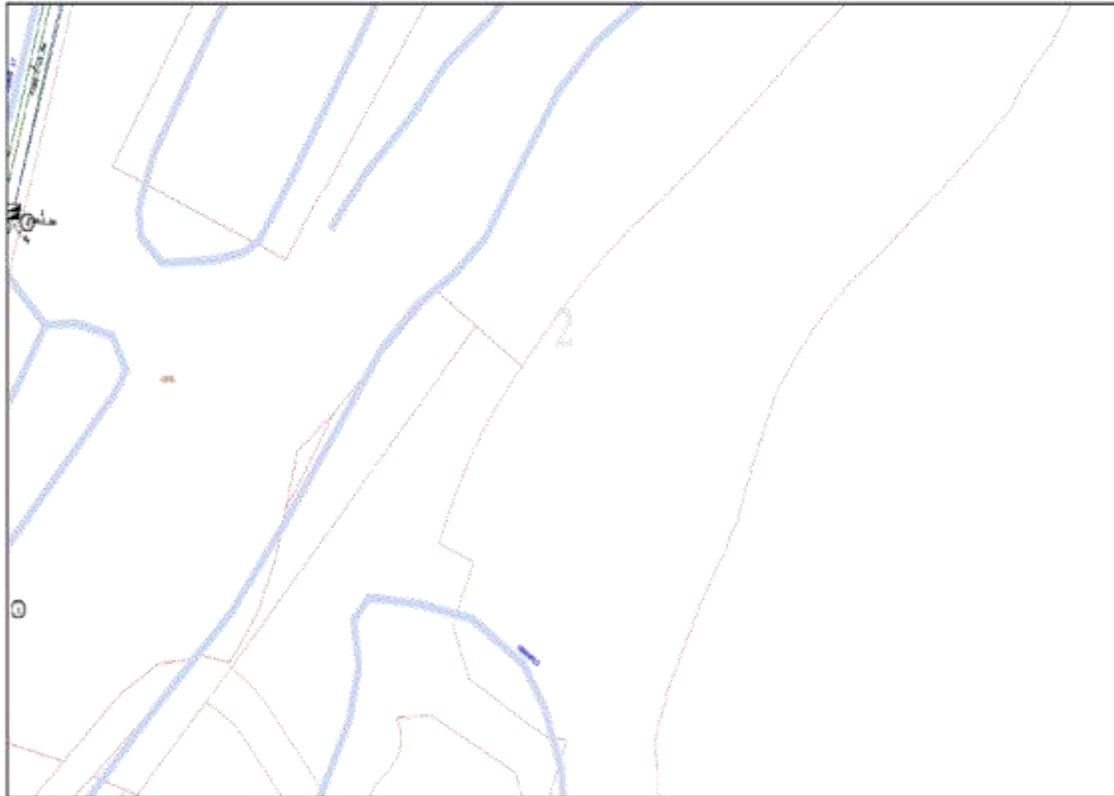
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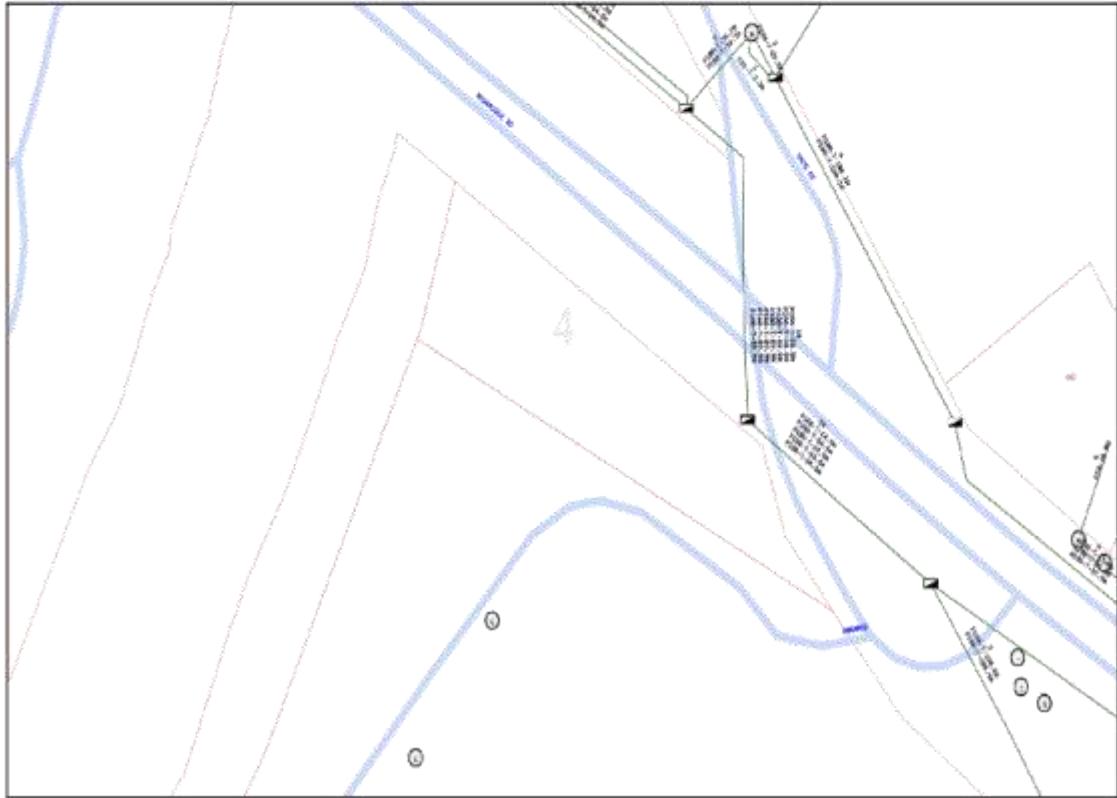
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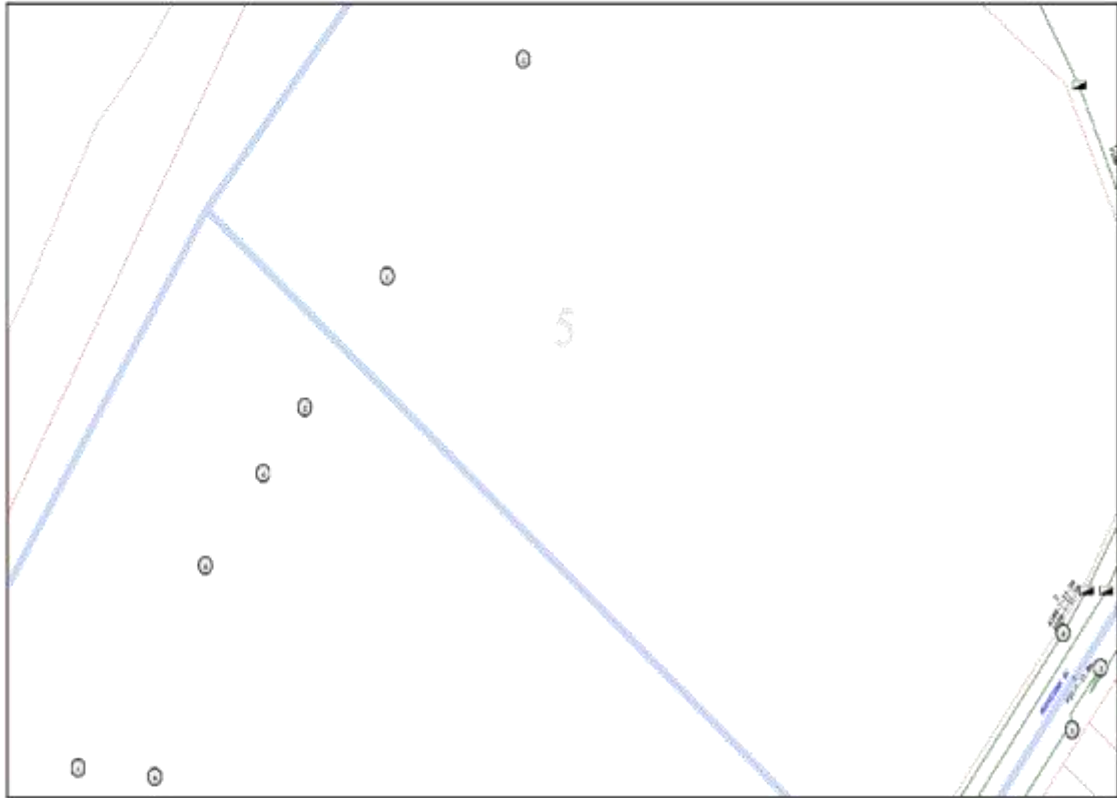


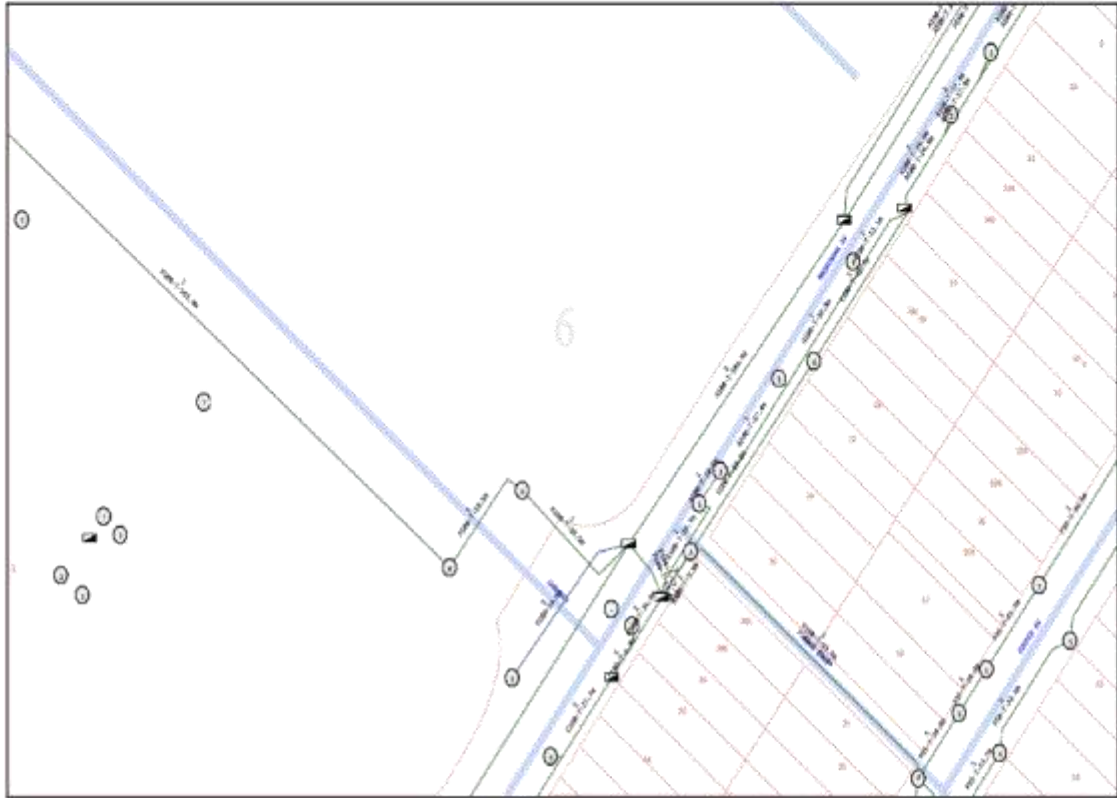
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	Parcel and the location
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	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
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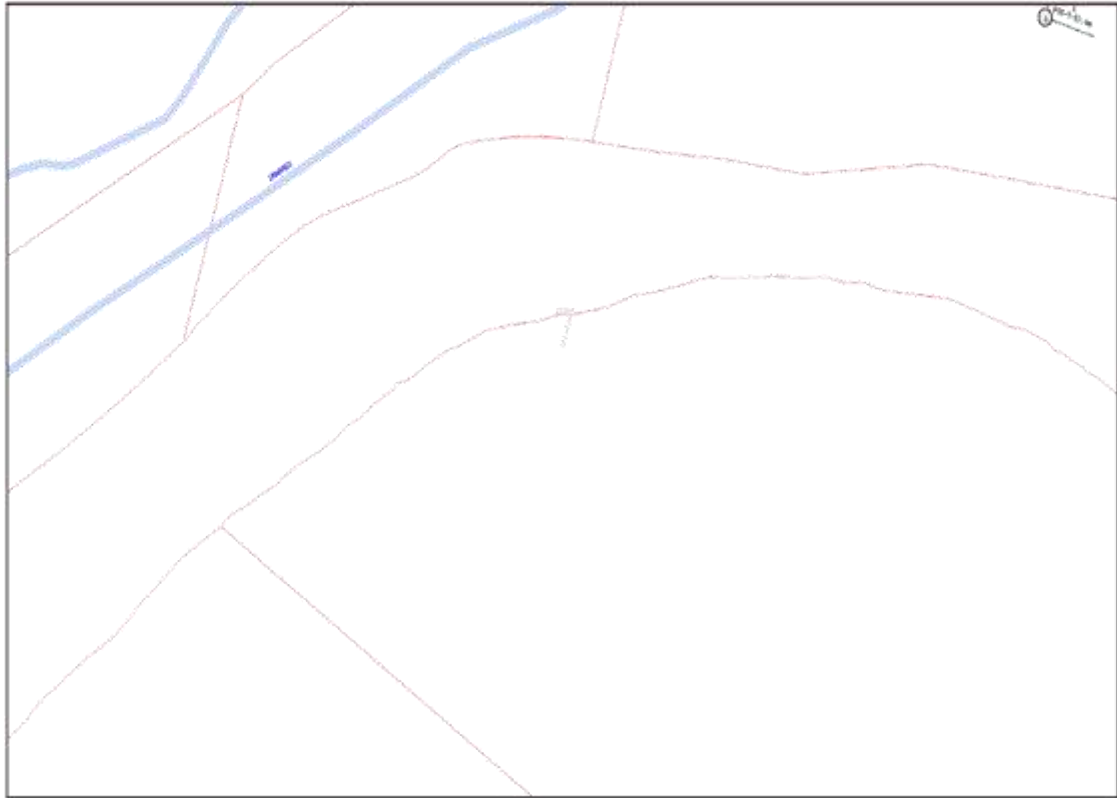


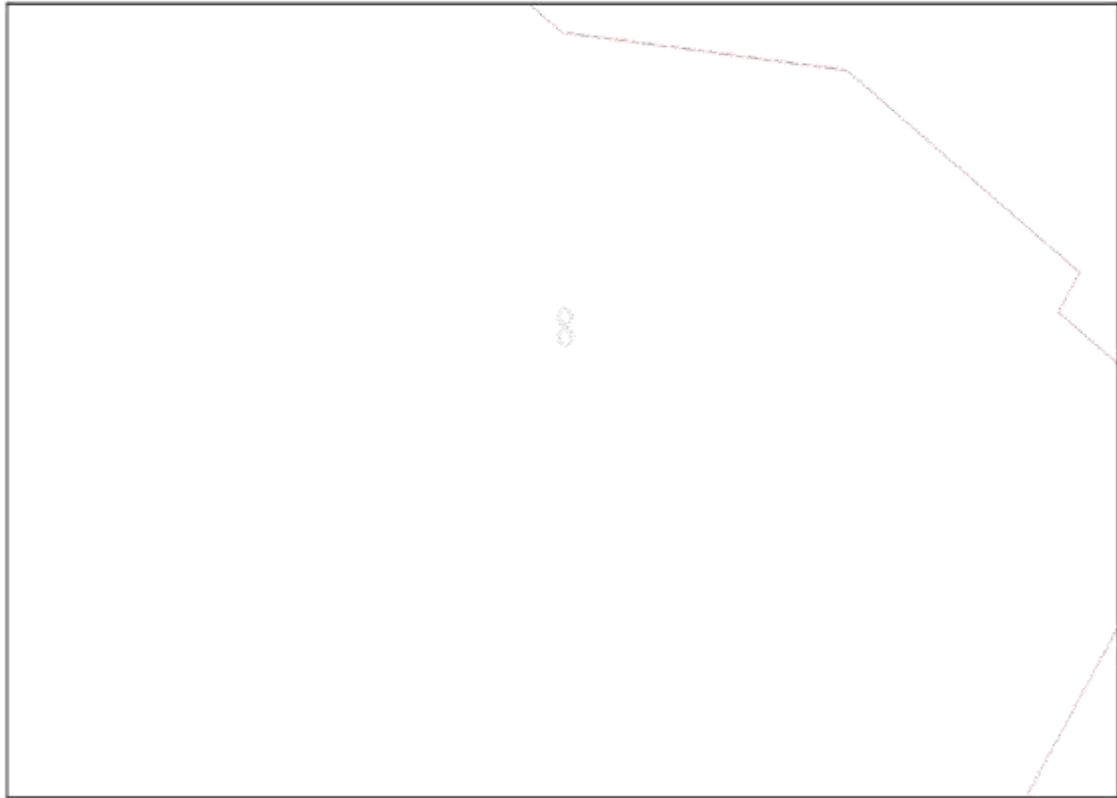


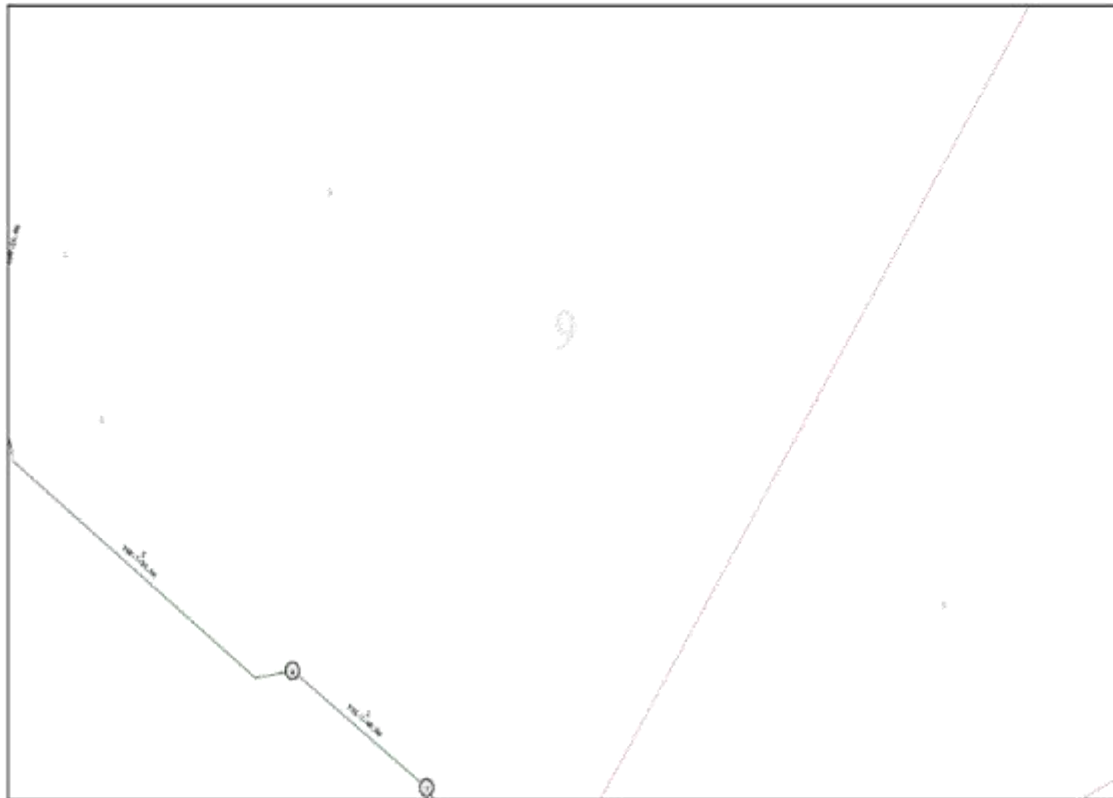


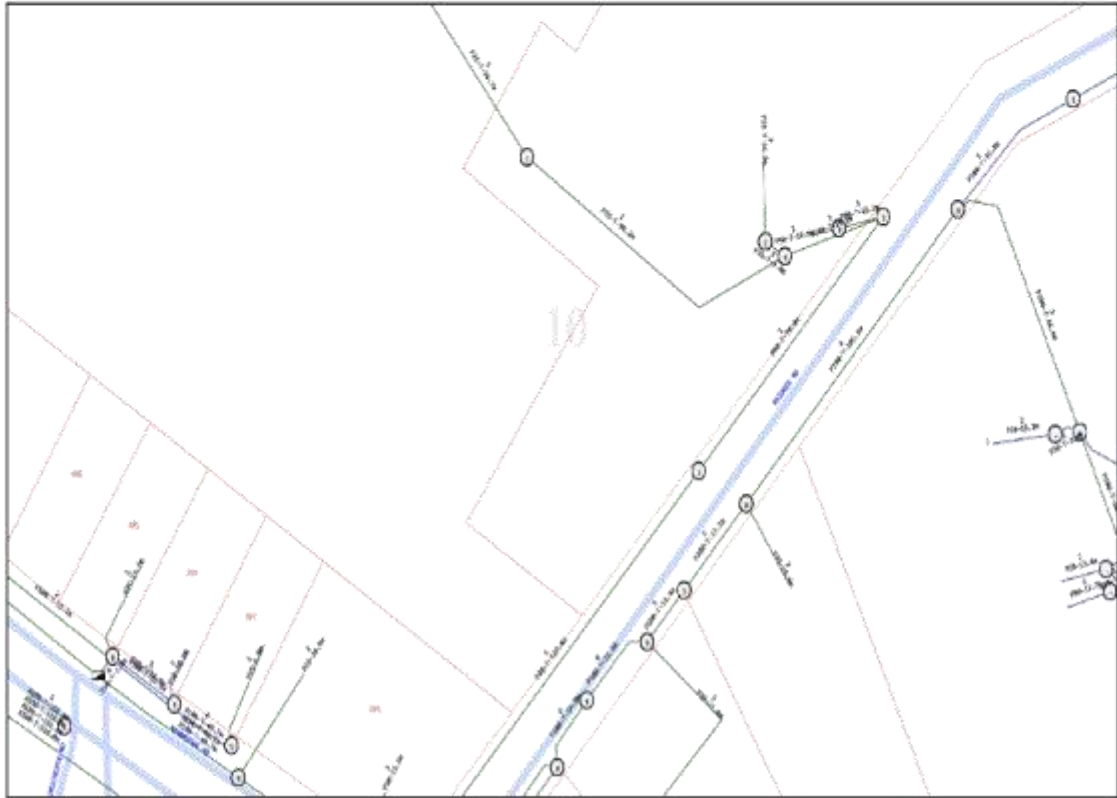


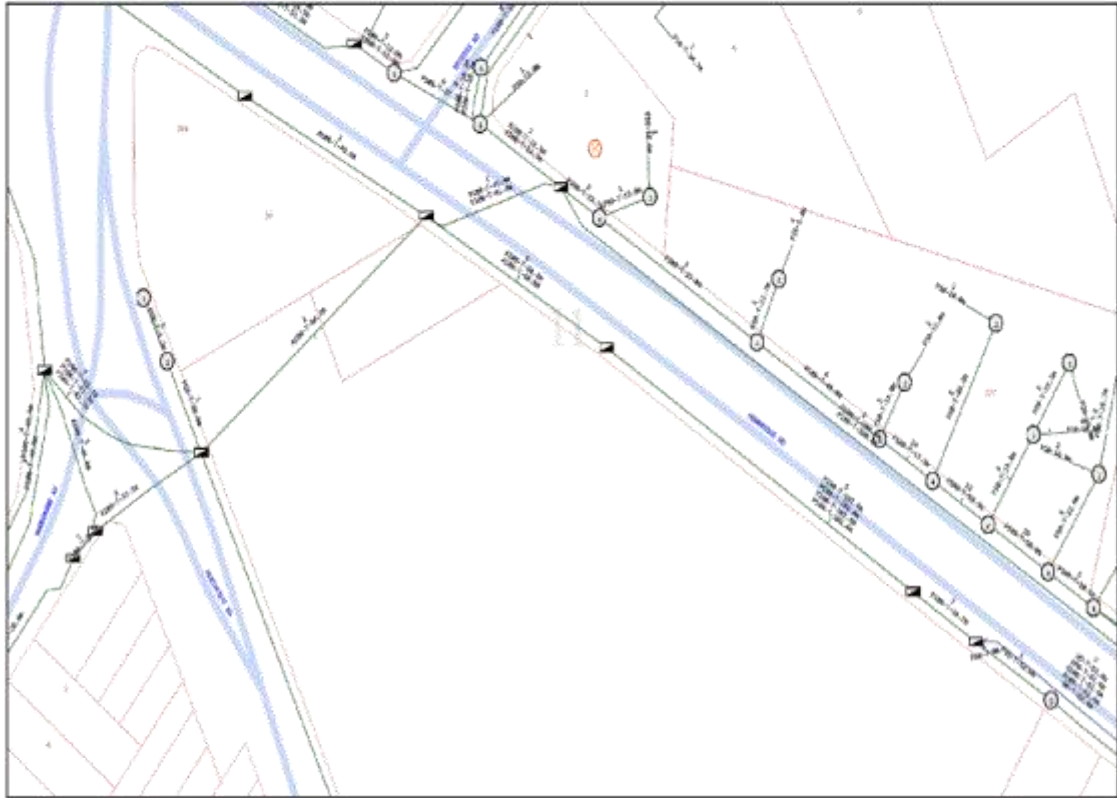


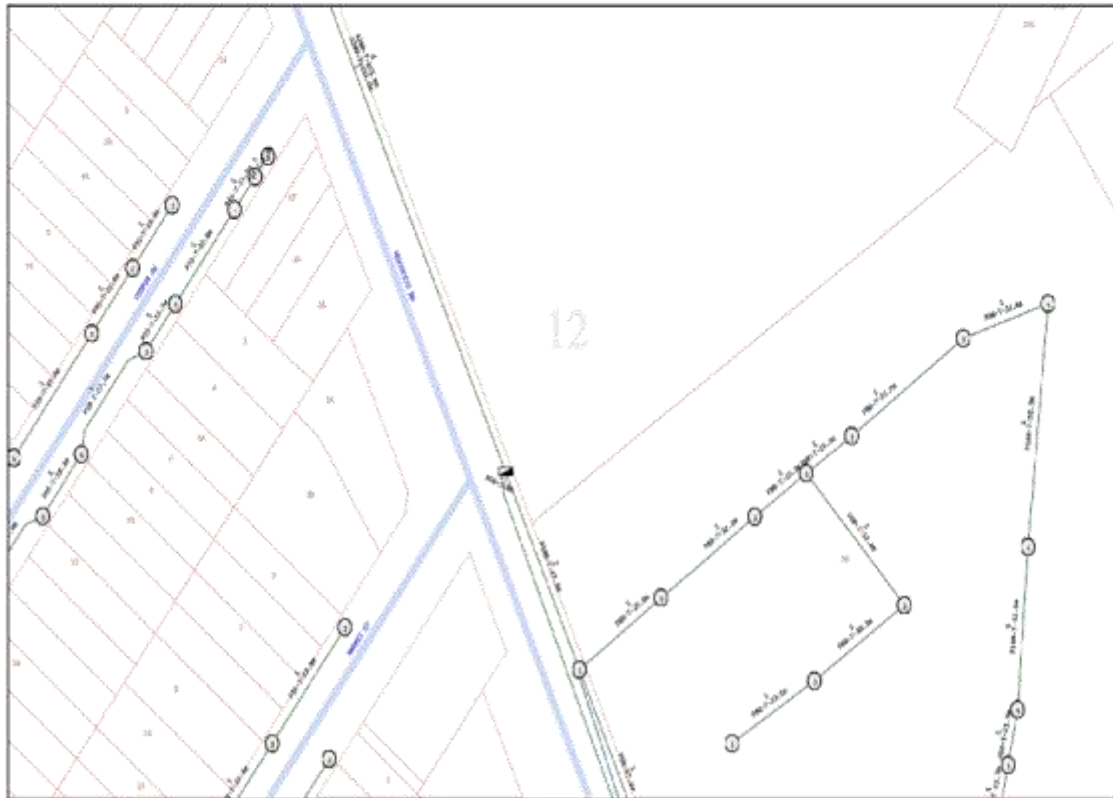


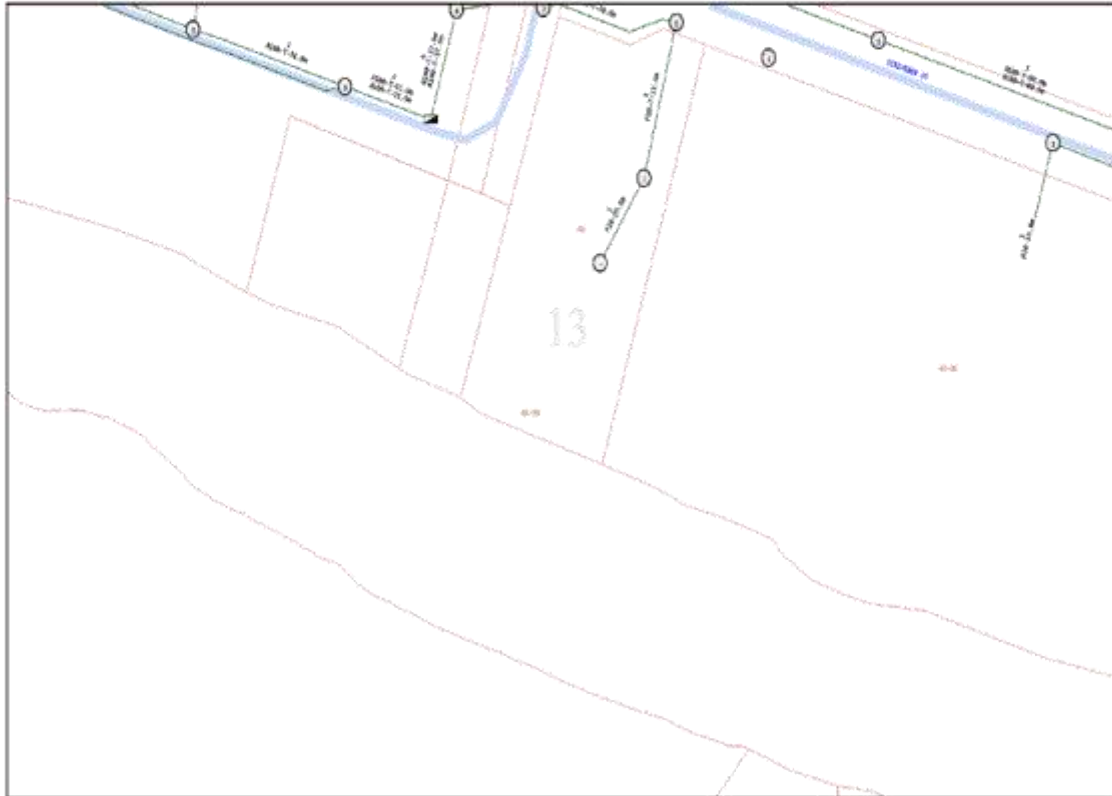


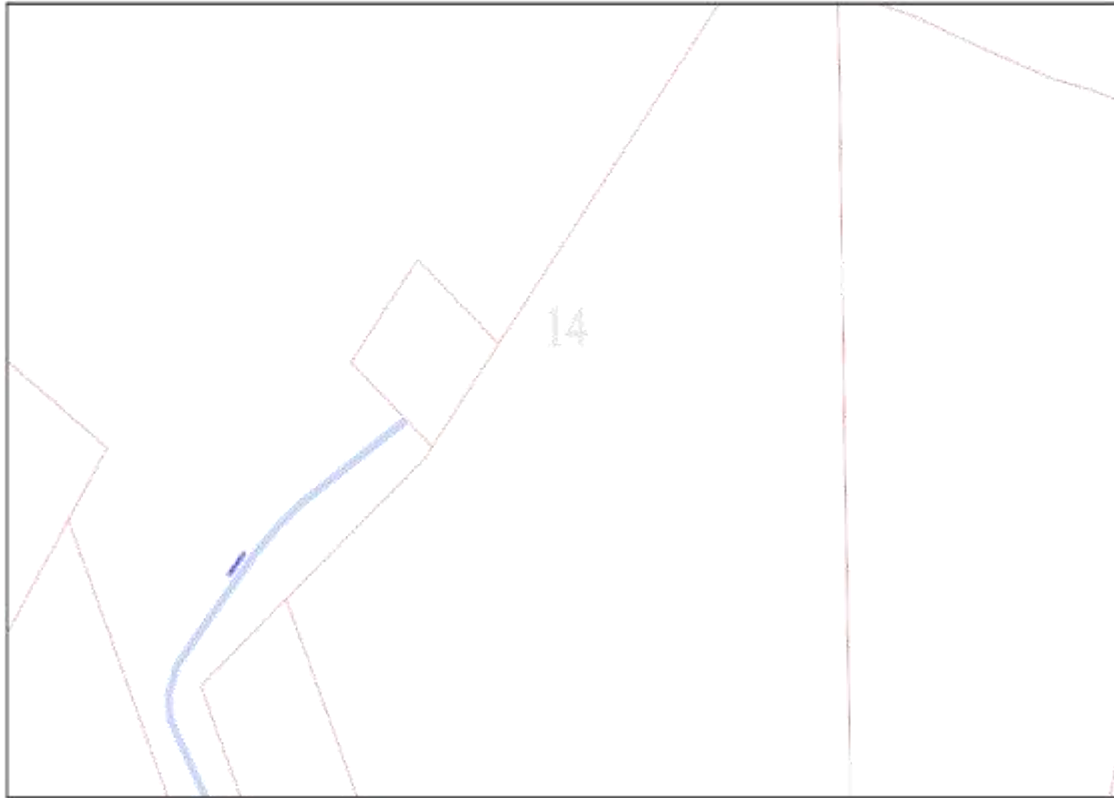


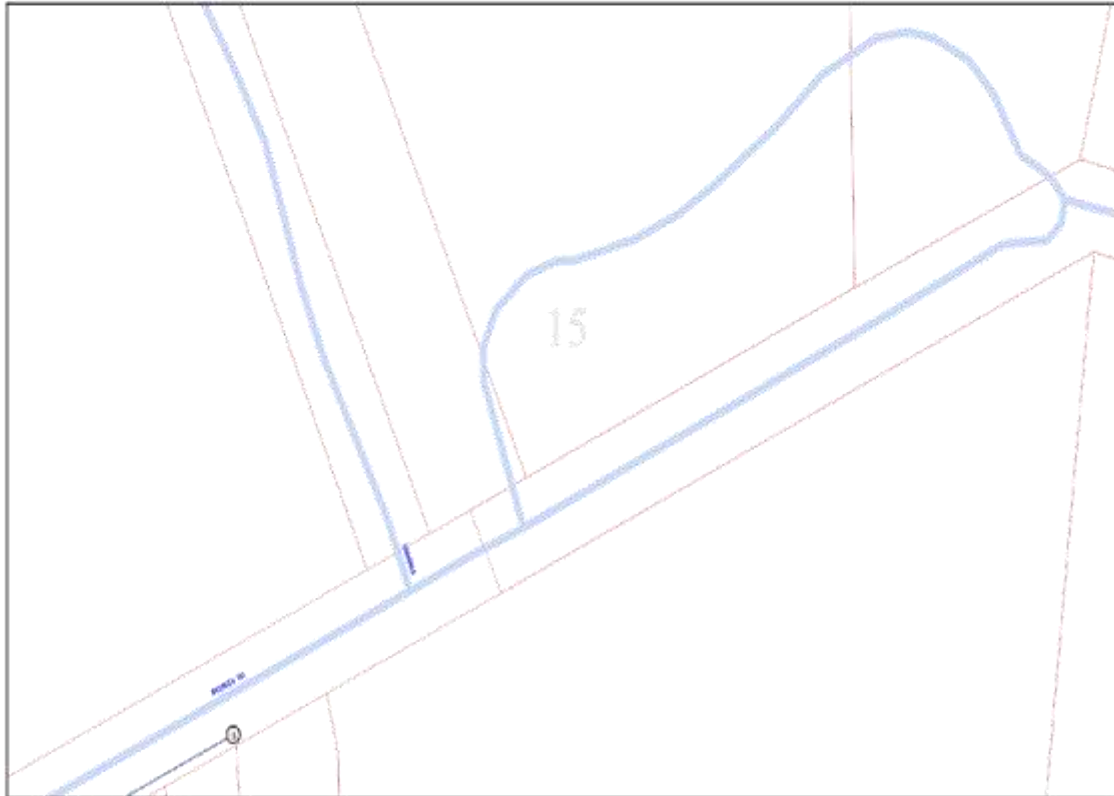


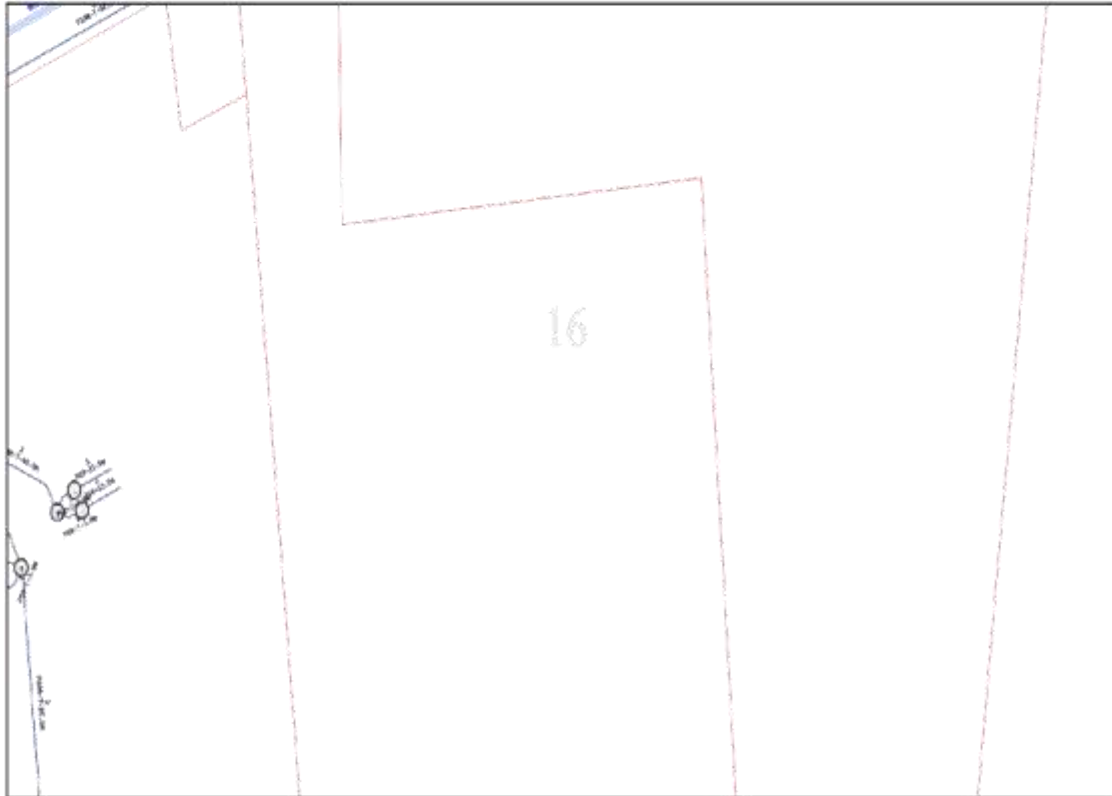


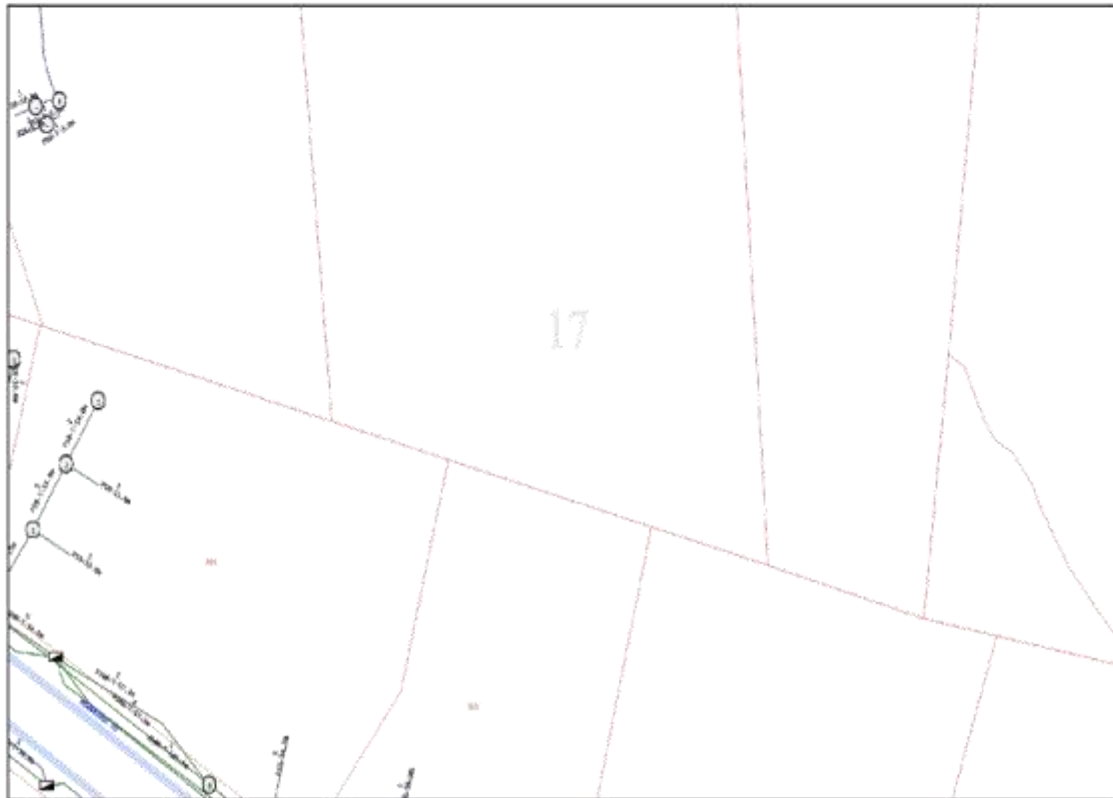


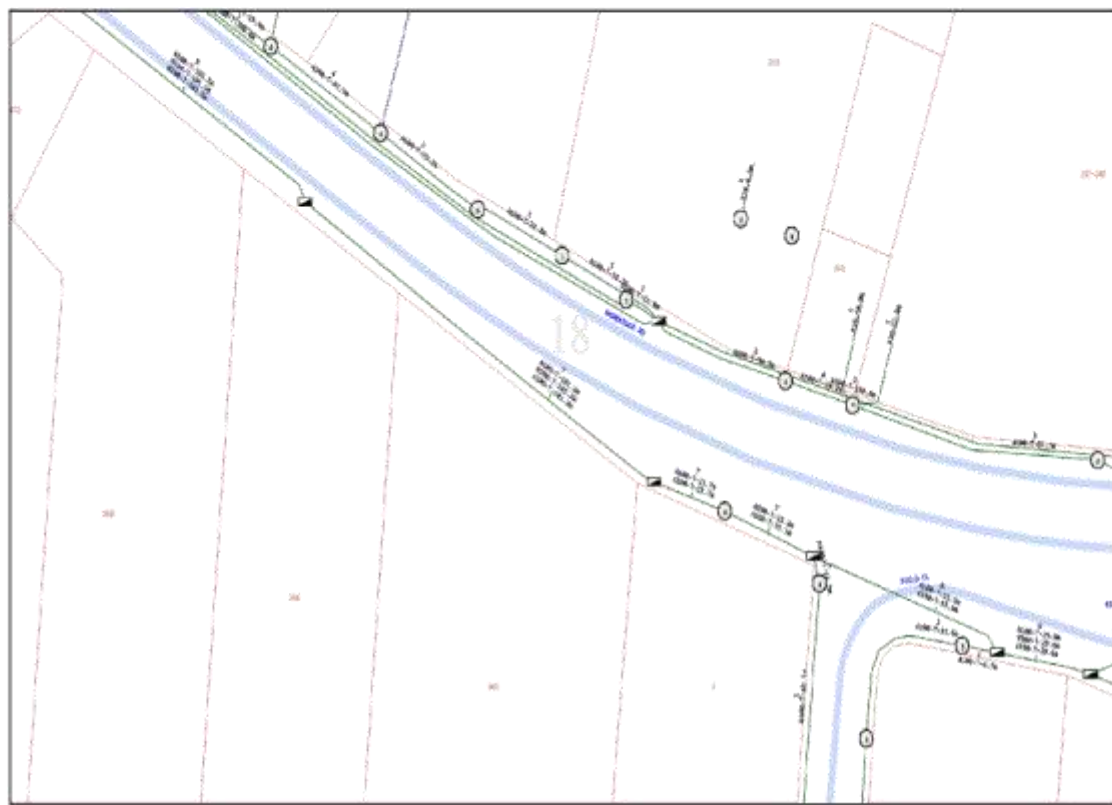






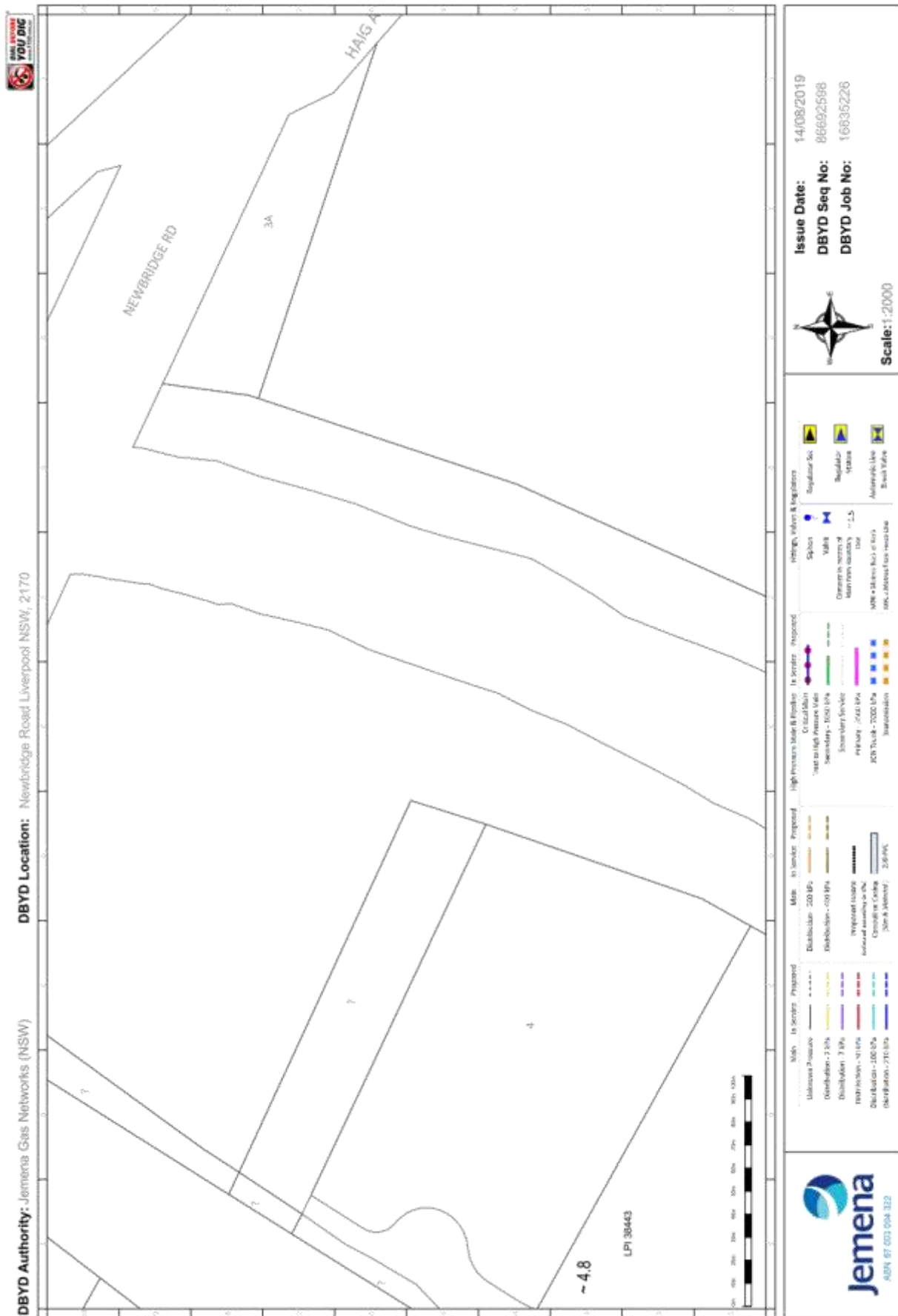


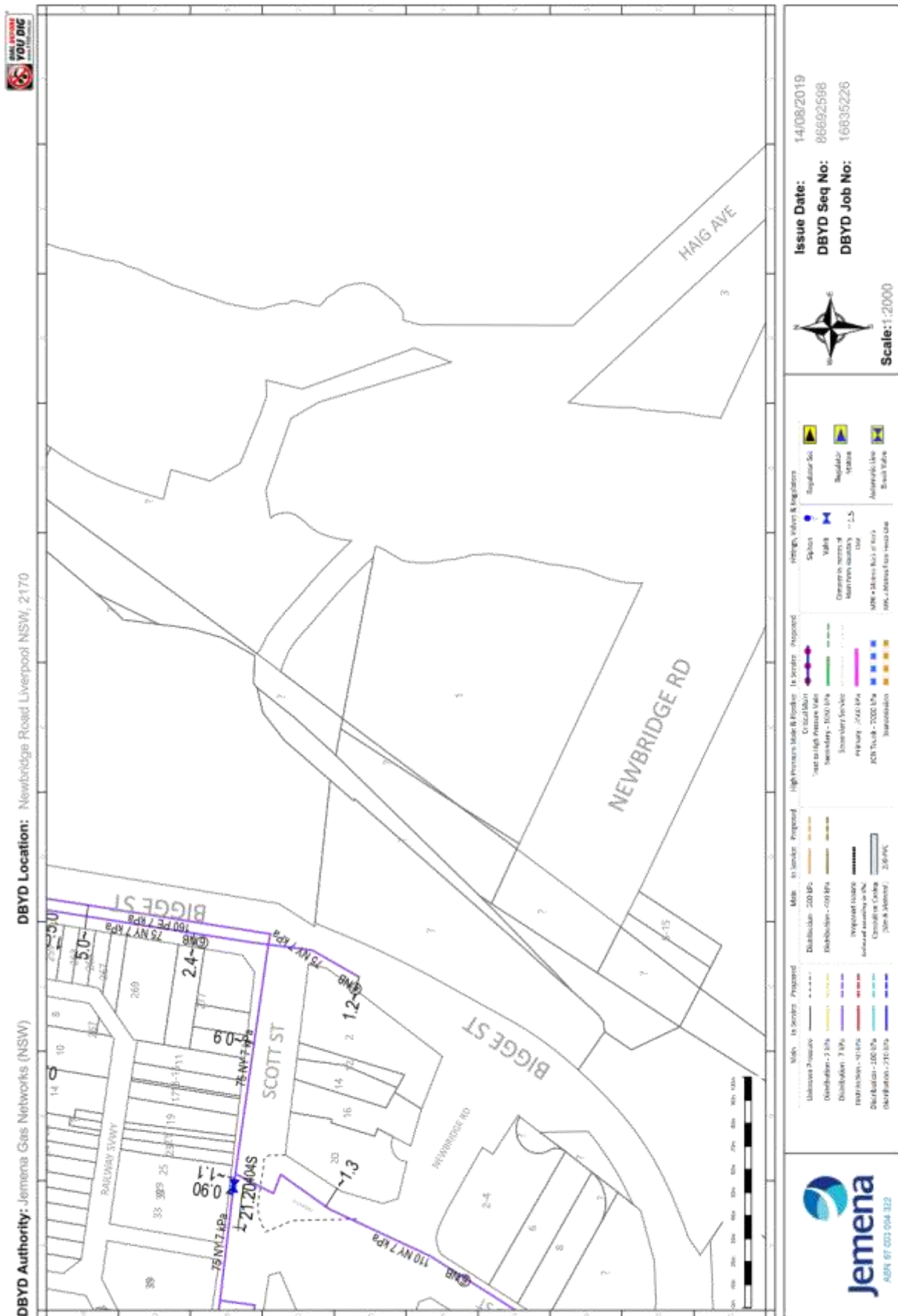


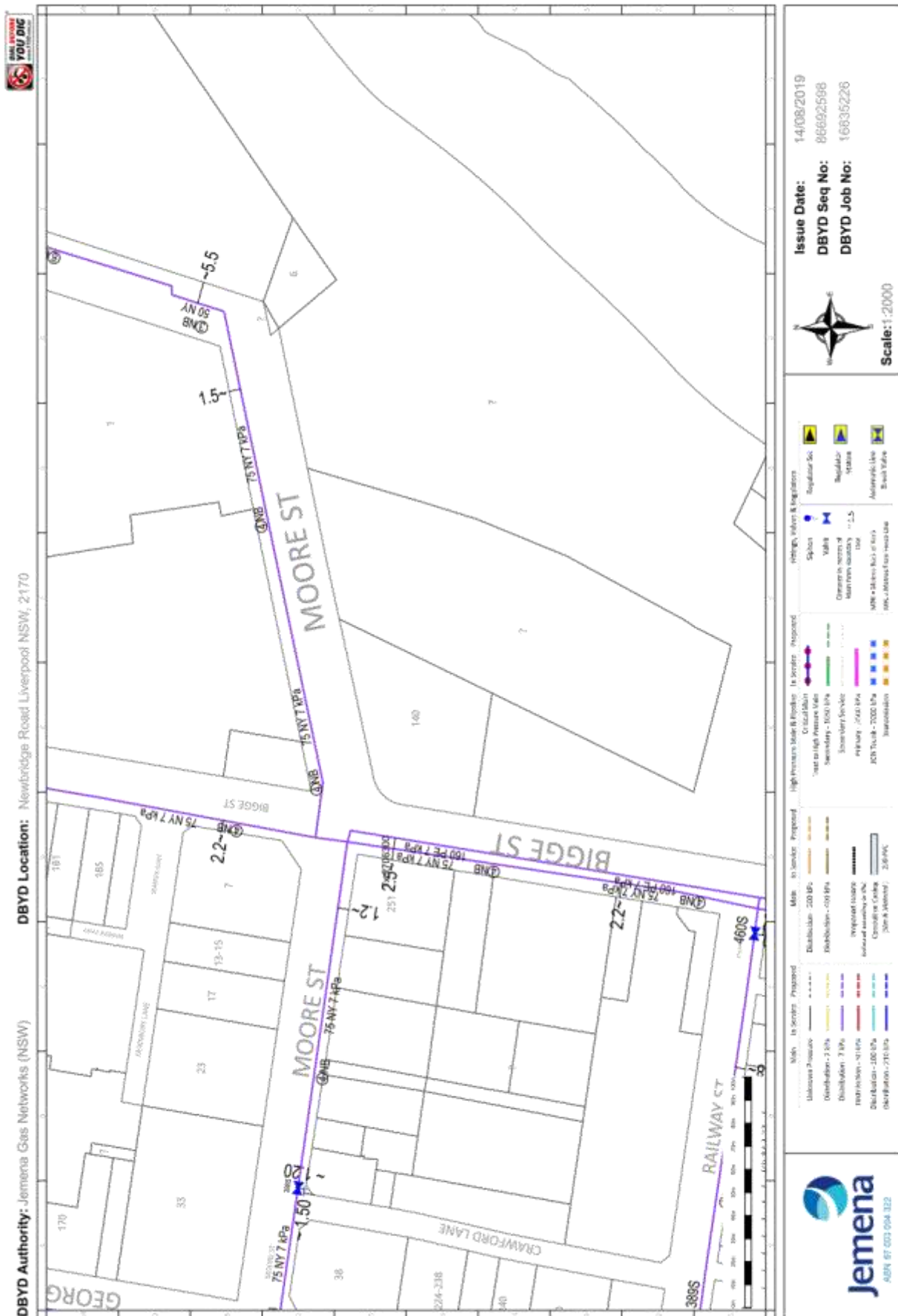


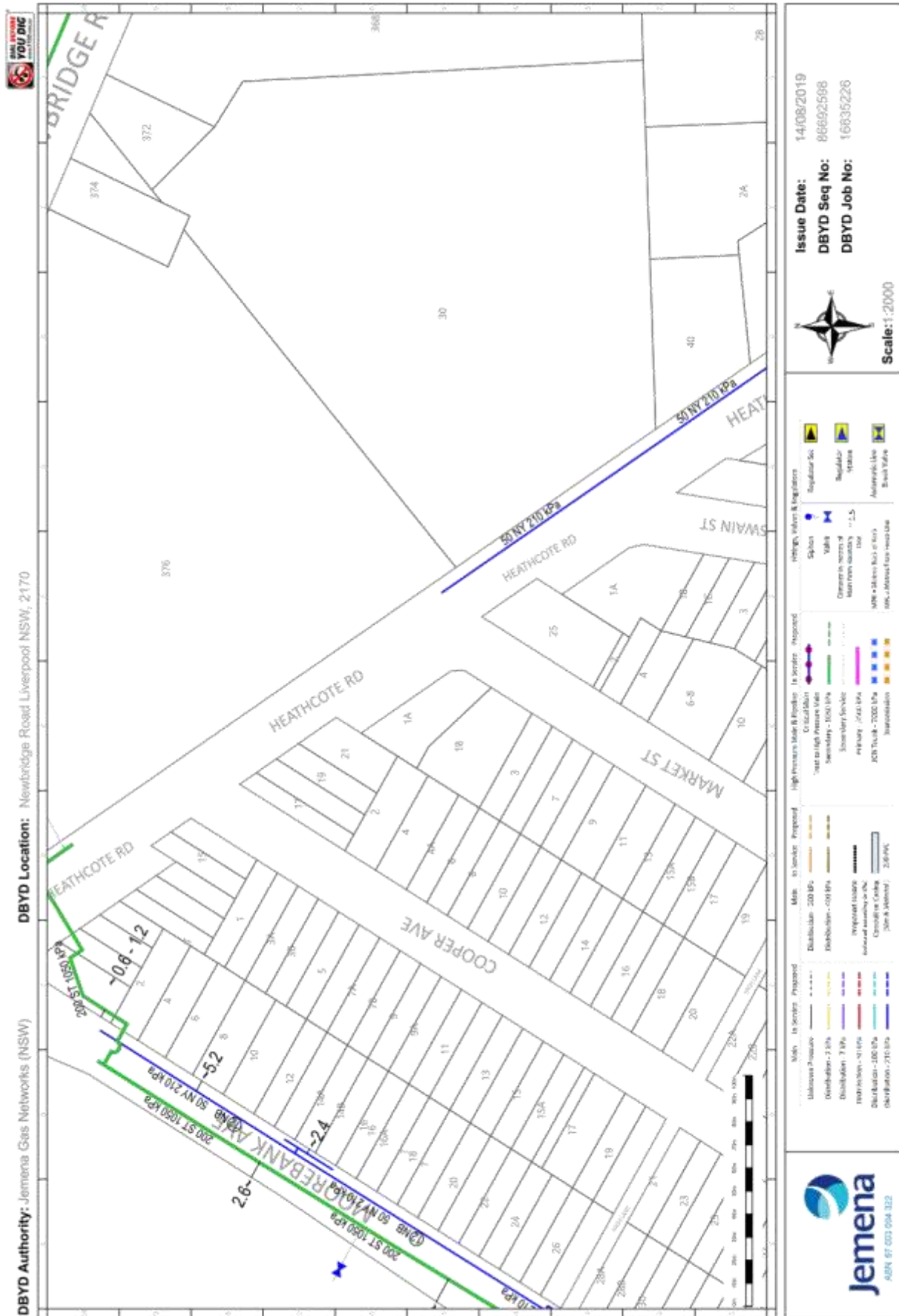
Emergency Contacts

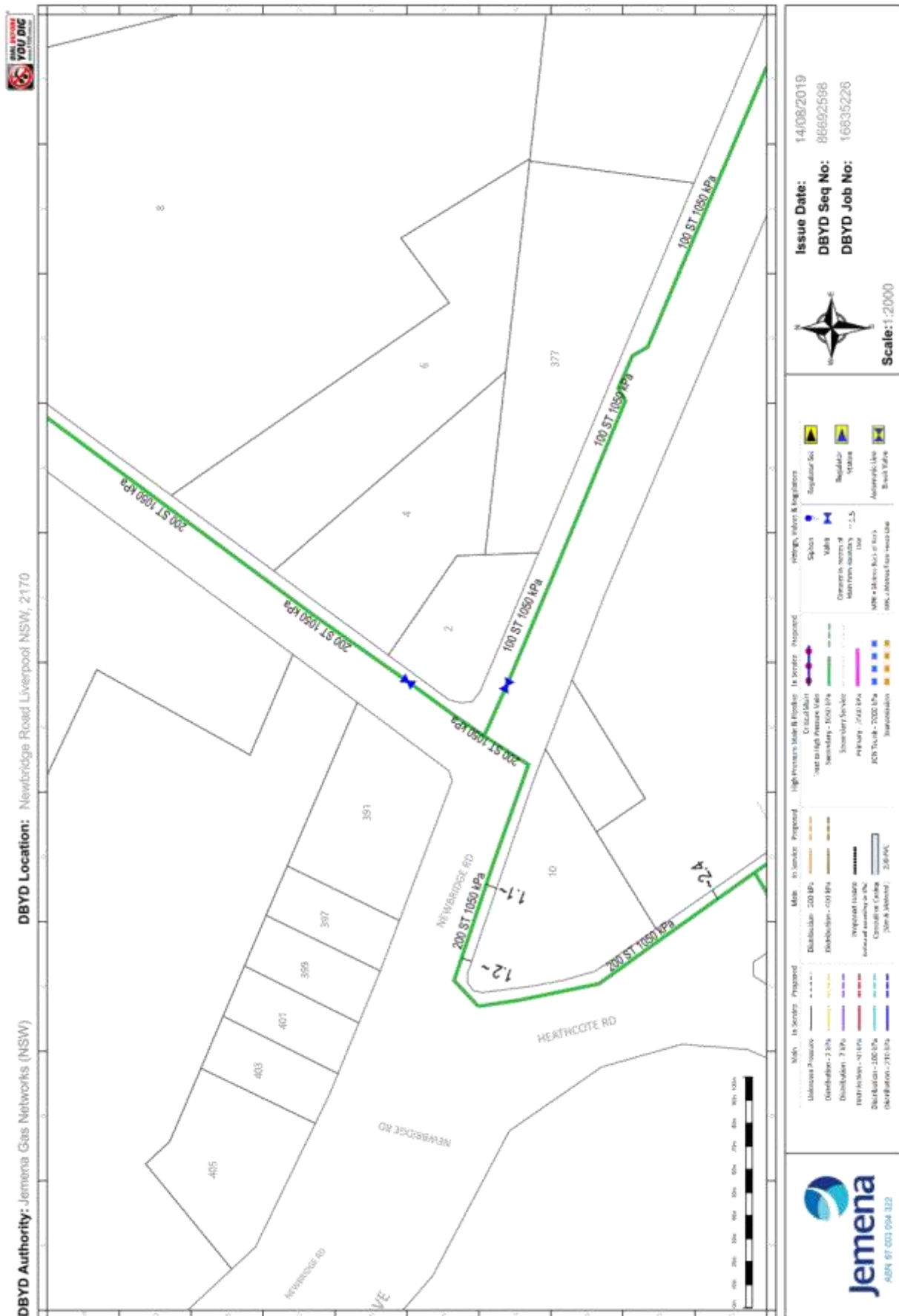
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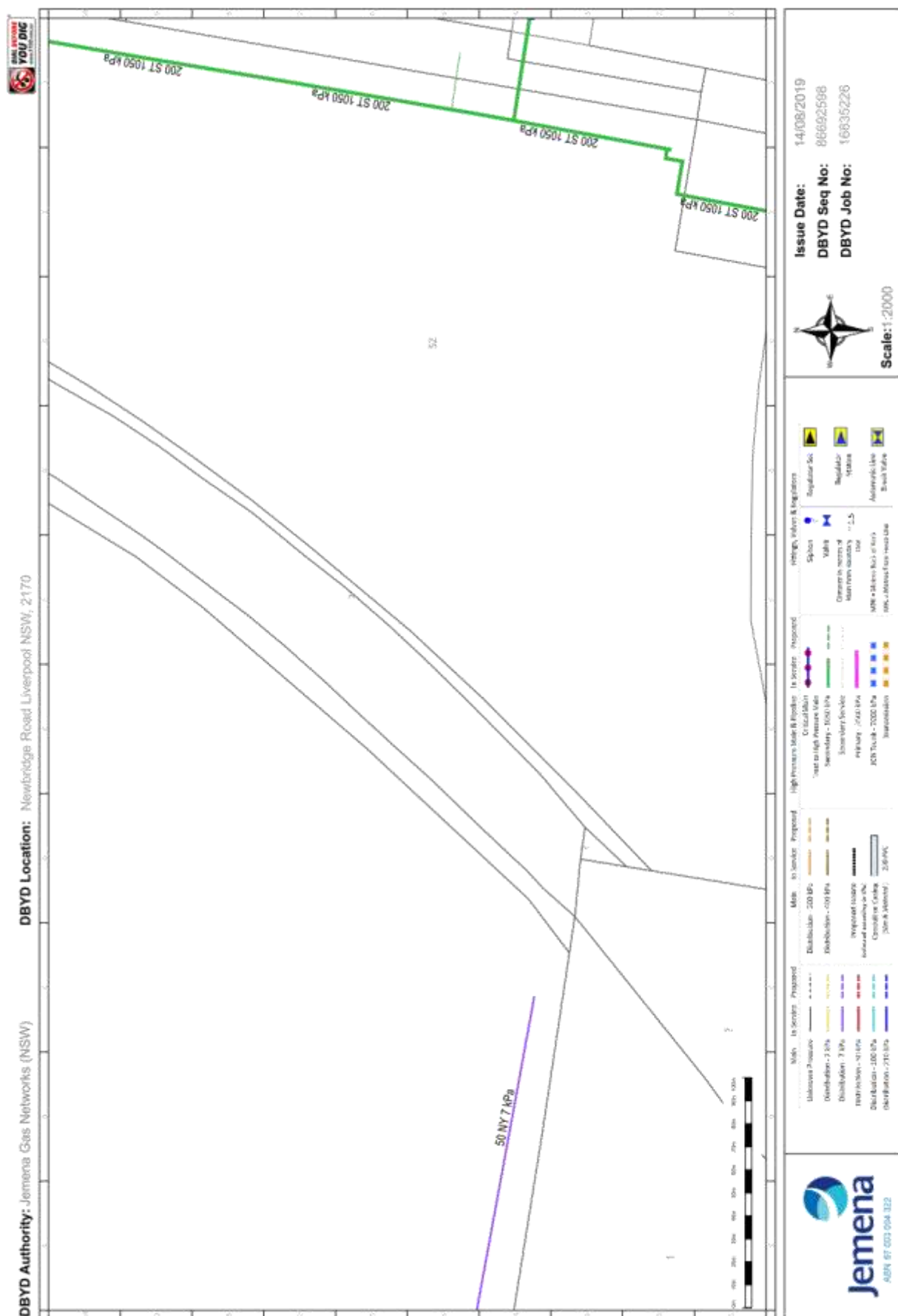




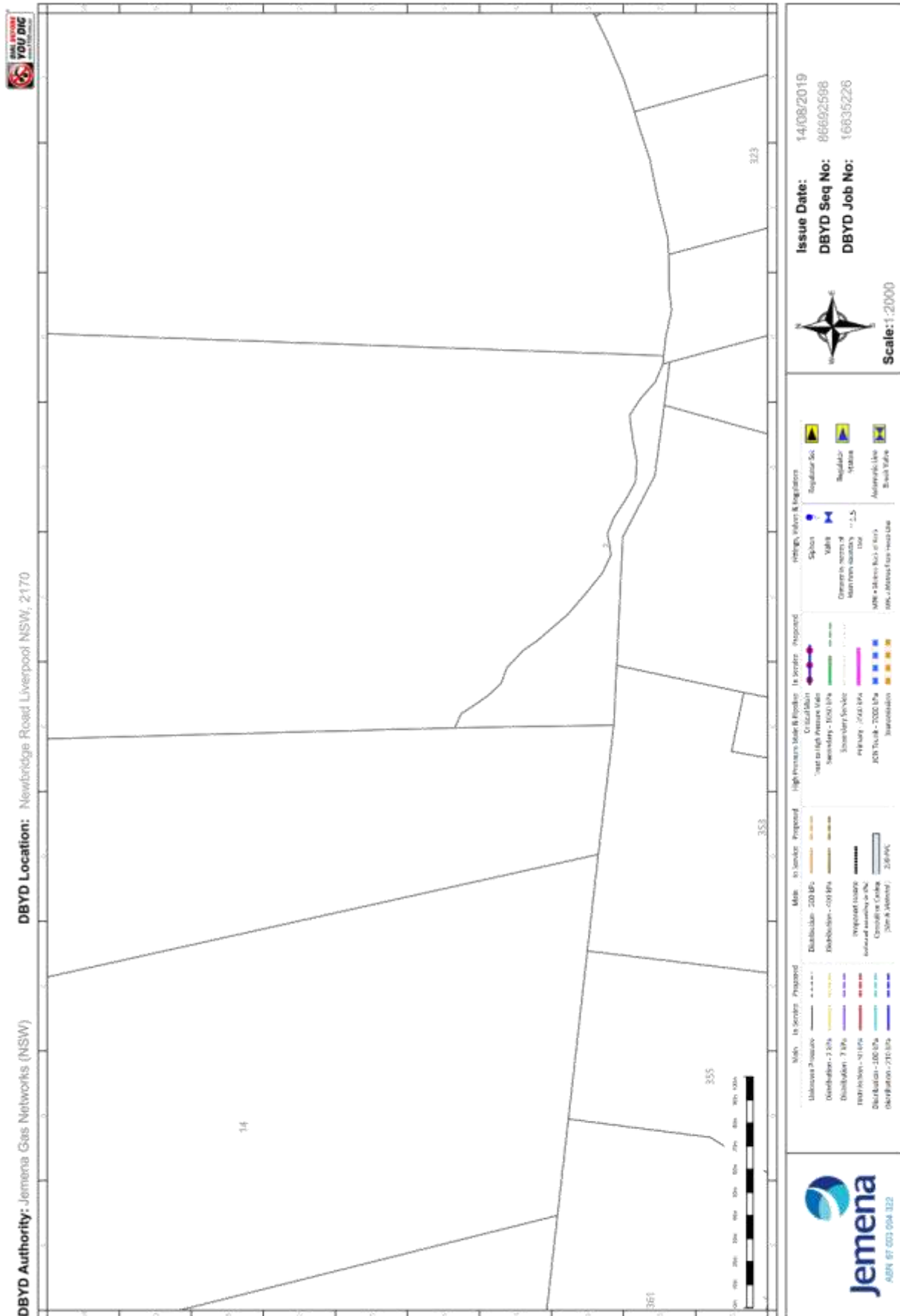


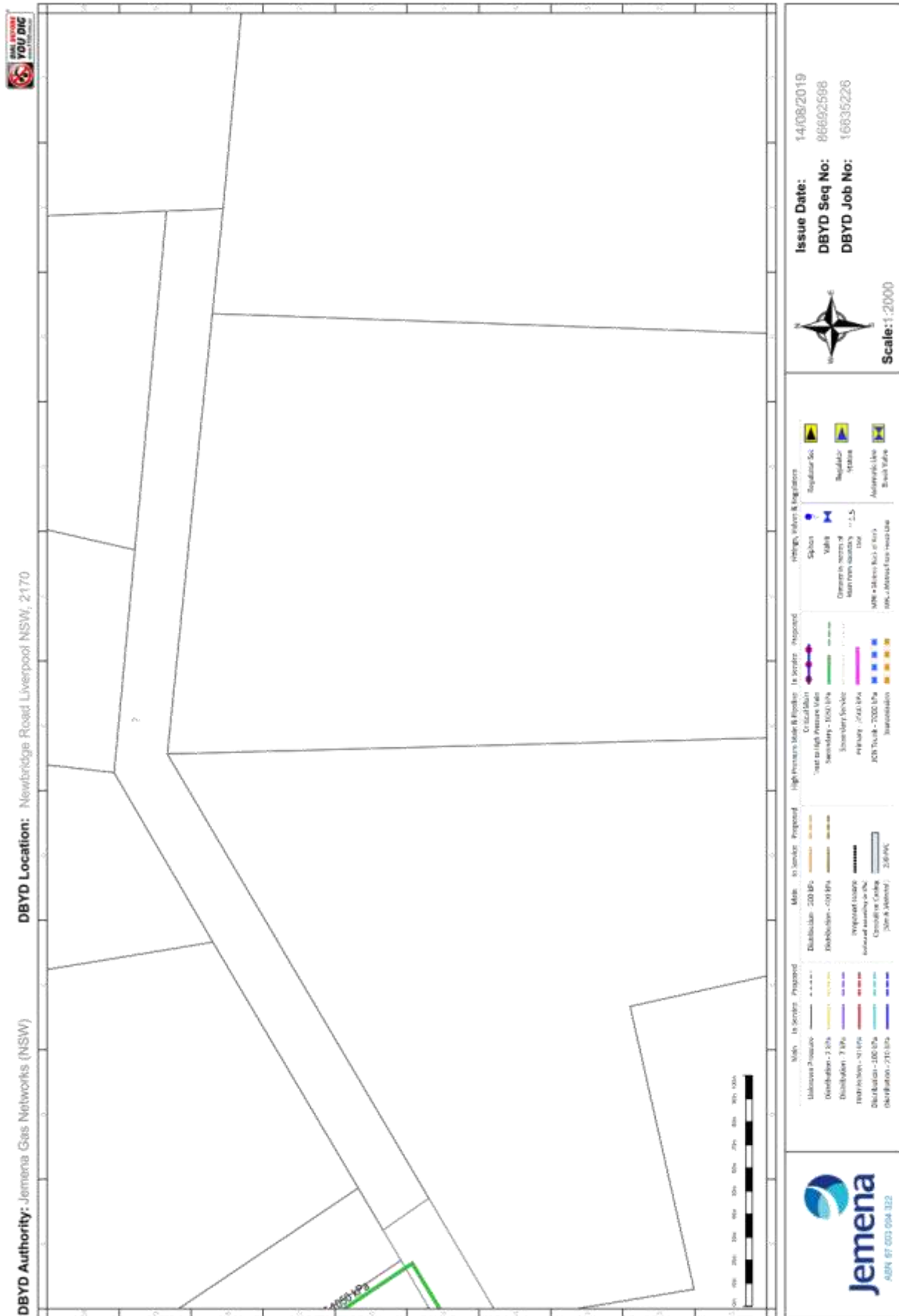


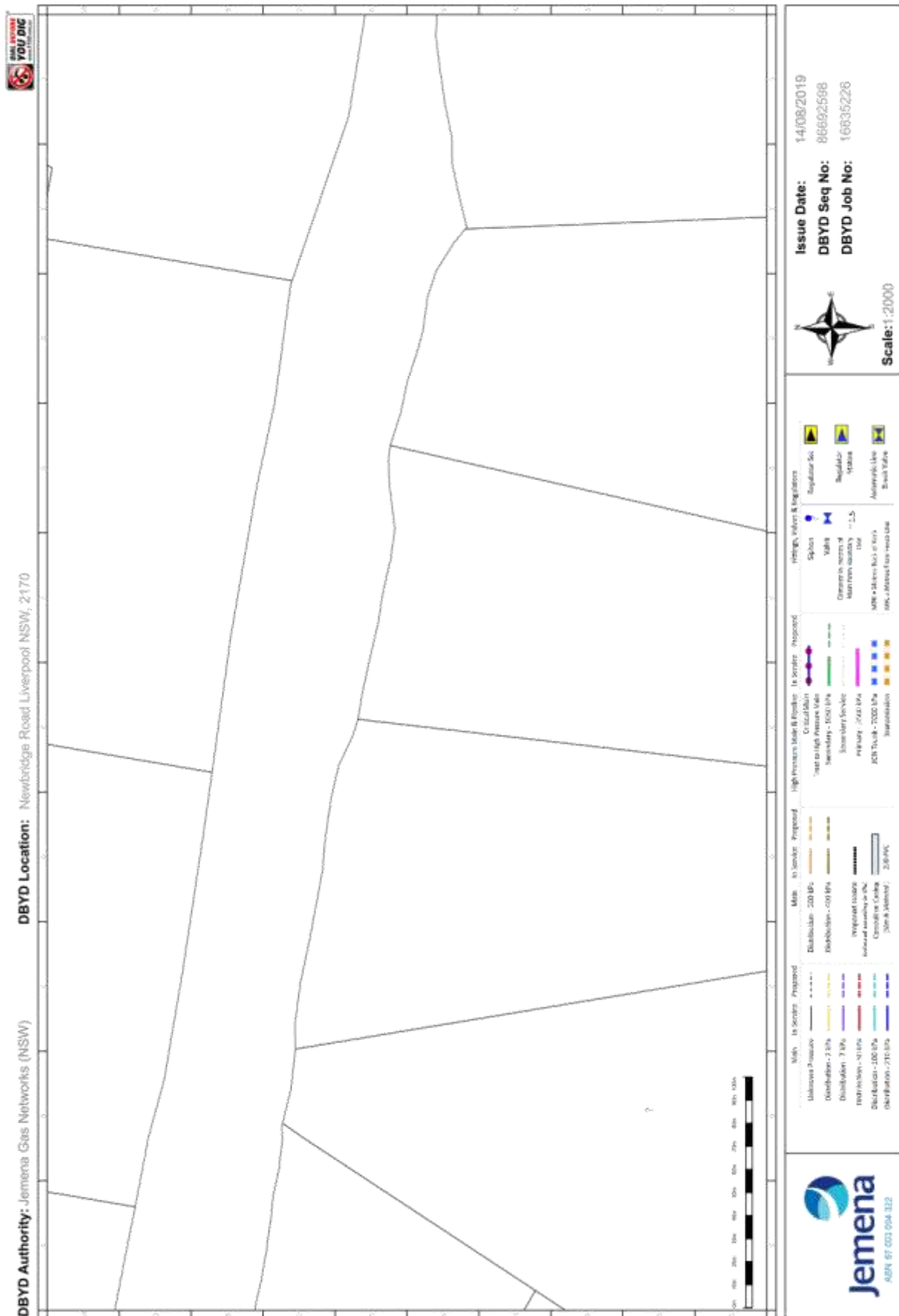


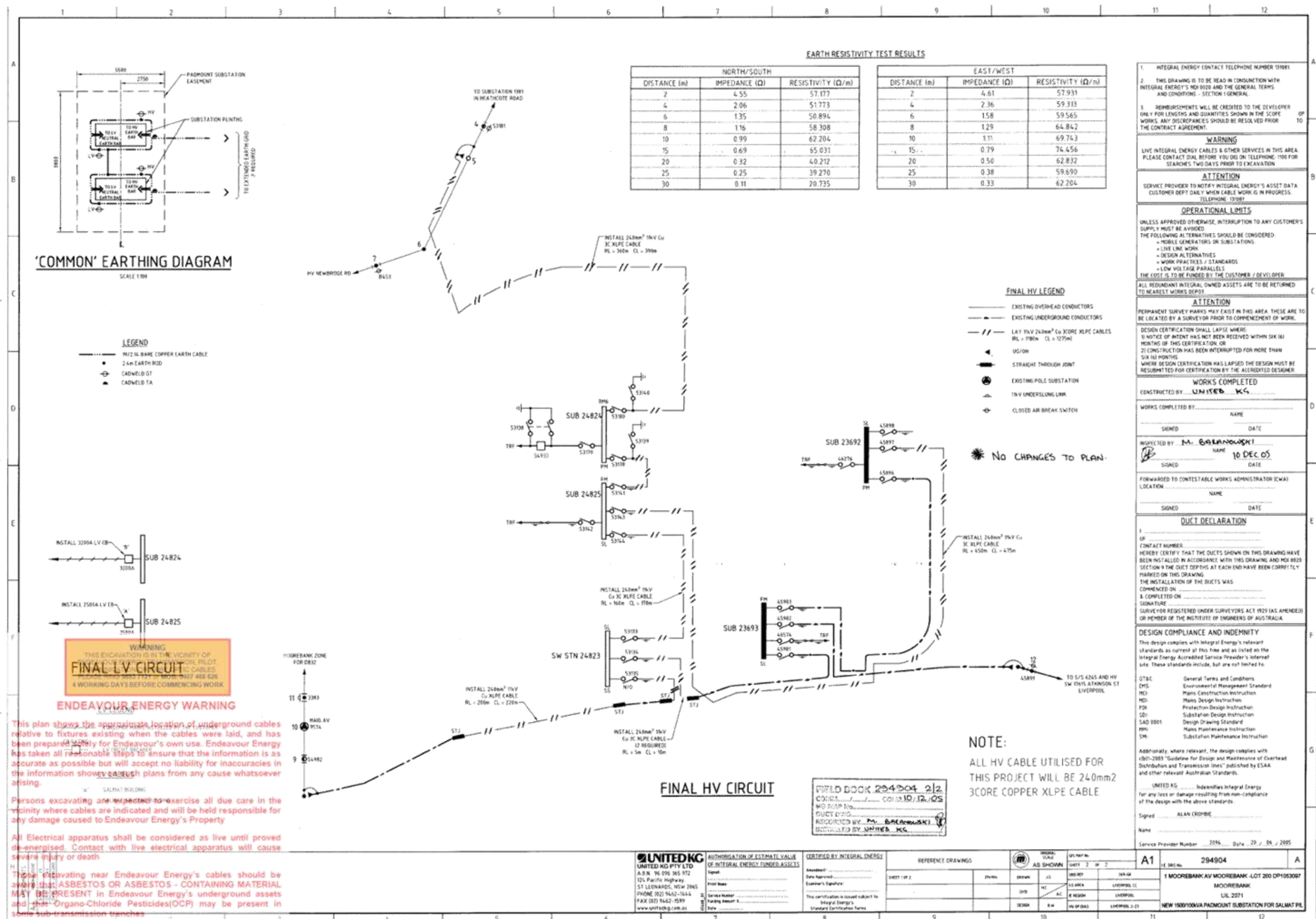


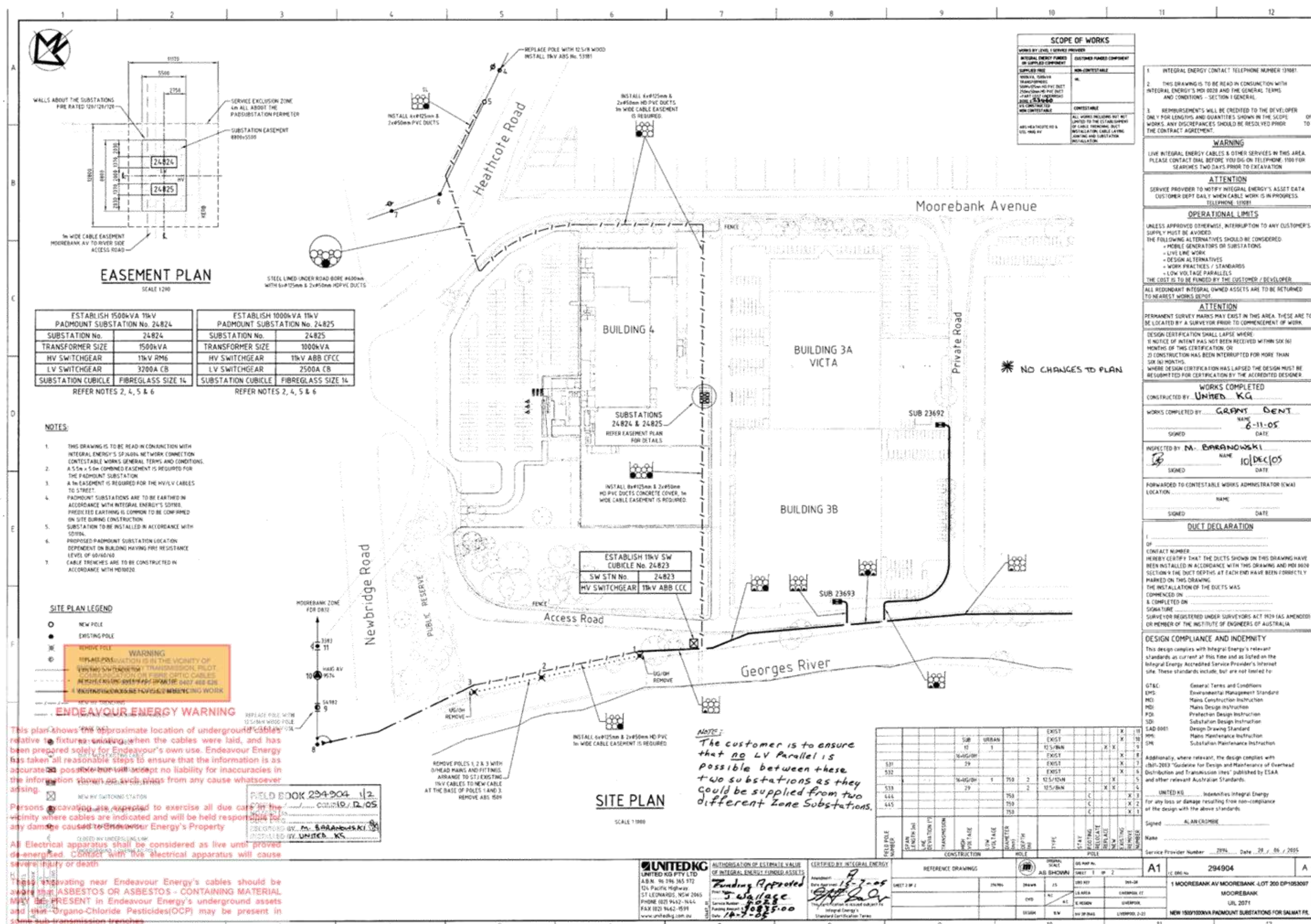


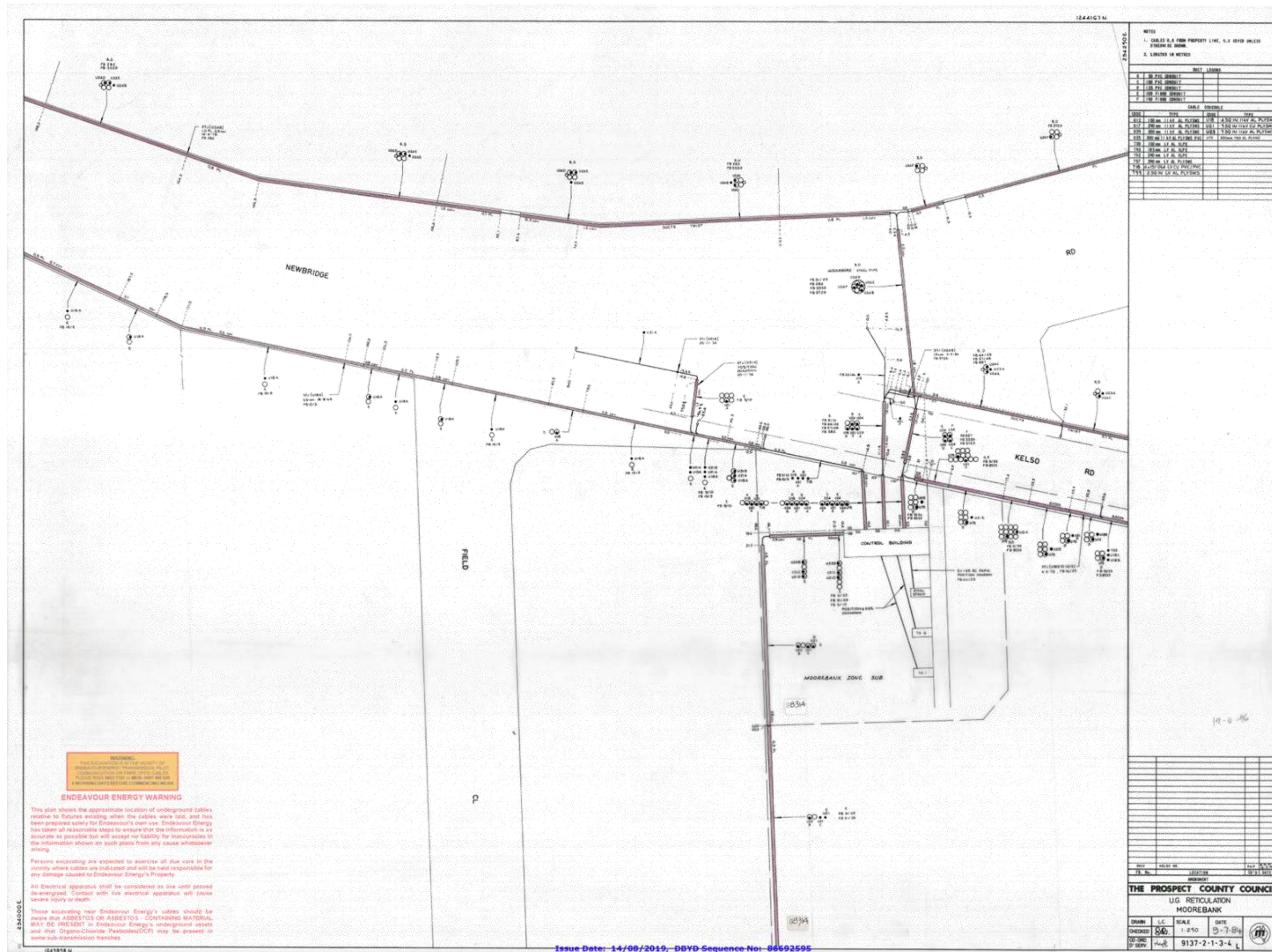


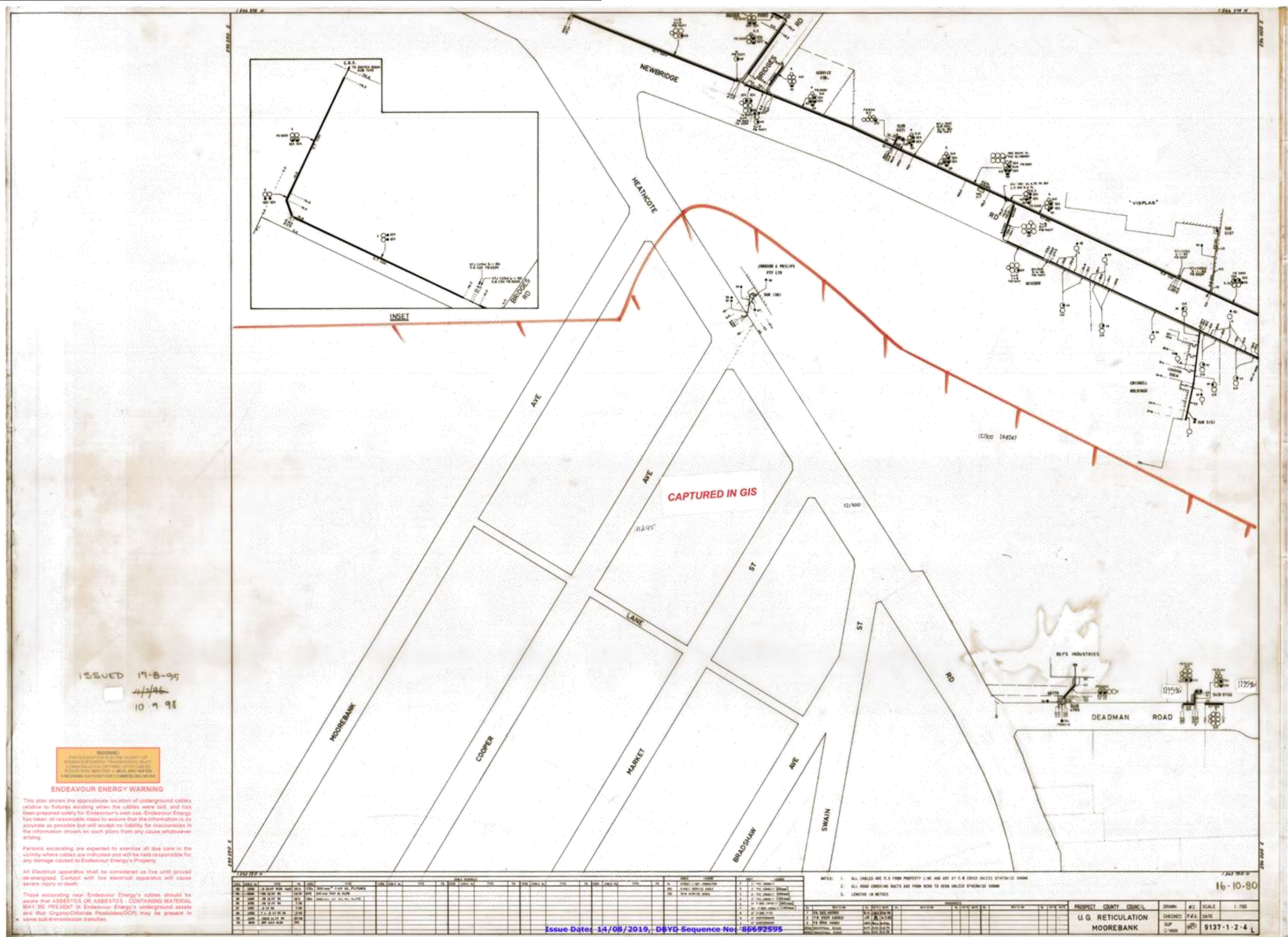














WARNING

- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty (**20**) working days of the original plan issue date.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

INFORMATION PROVIDED BY ENDEAVOUR ENERGY











- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
- Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

DISCLAIMER

Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

WARNING
THIS EXCAVATION IS IN THE VICINITY OF
ENDEAVOUR ENERGY TRANSMISSION, PILOT,
COMMUNICATION OR FIBRE OPTIC CABLES.
PLEASE RING 9853 7121 or MOB. 0407 468 626
4 WORKING DAYS BEFORE COMMENCING WORK.

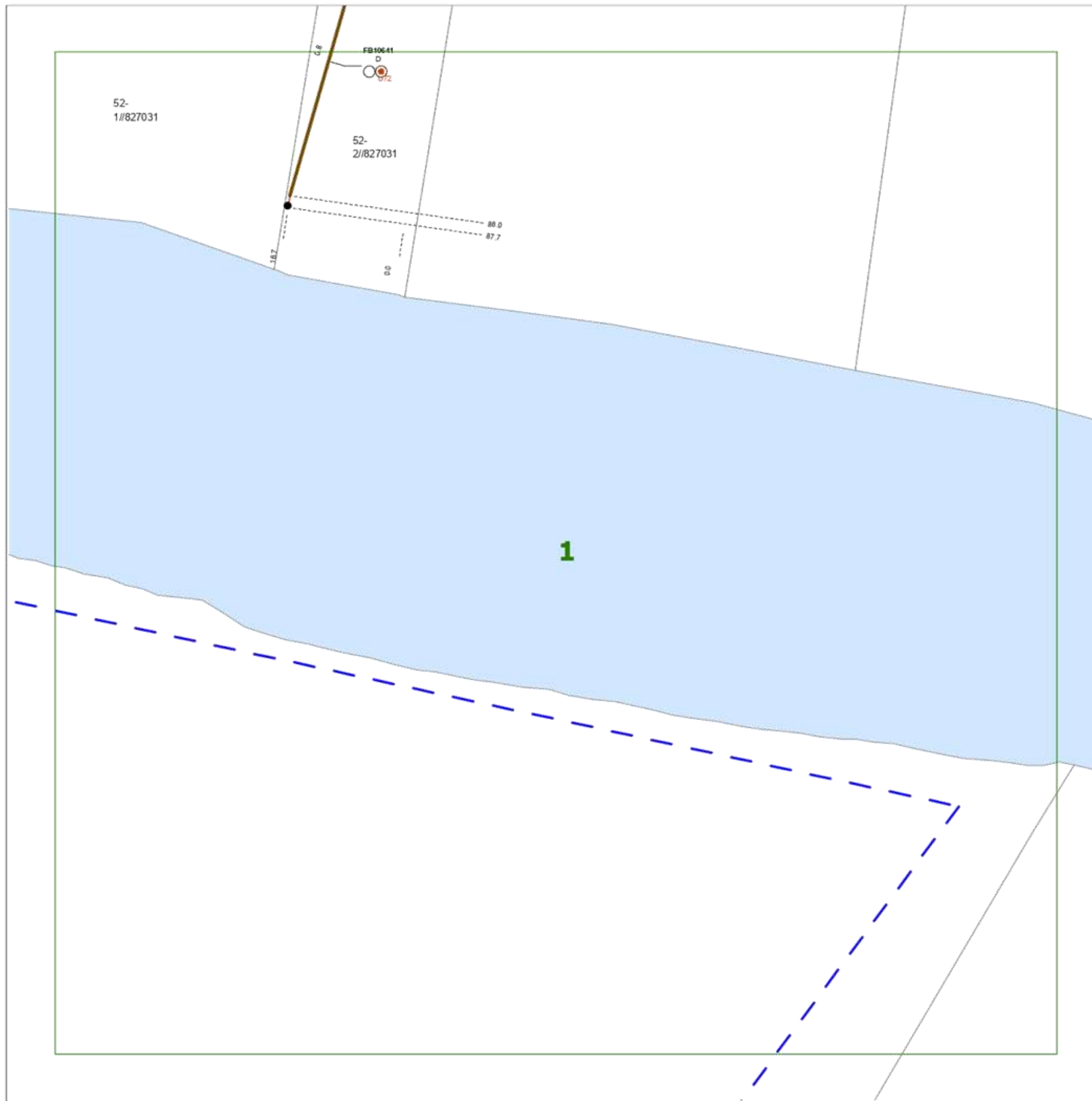
LEGEND

- | | |
|--|-----------------------------|
|  or  | Street light column |
|  | Padmount substation |
|  or  | Overground pillar (O.G.Box) |
|  | Underground pit |
|  | Duct run |
|  | Cable run |
|  | Typical duct section |
|  | Asbestos warning |



NOT TO SCALE

DBYD Sequence No.:	86692595
Issued Date:	14/08/2019



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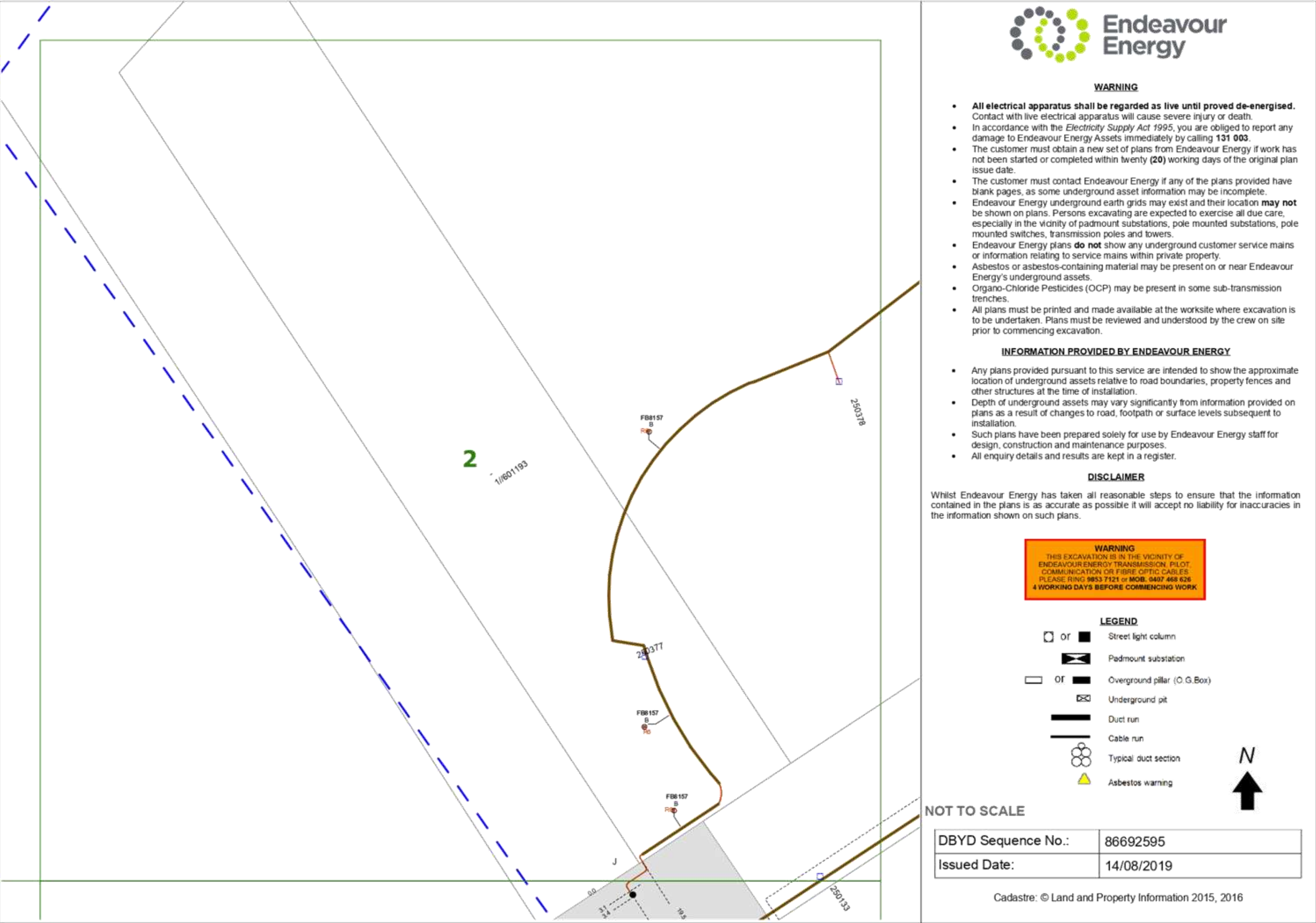
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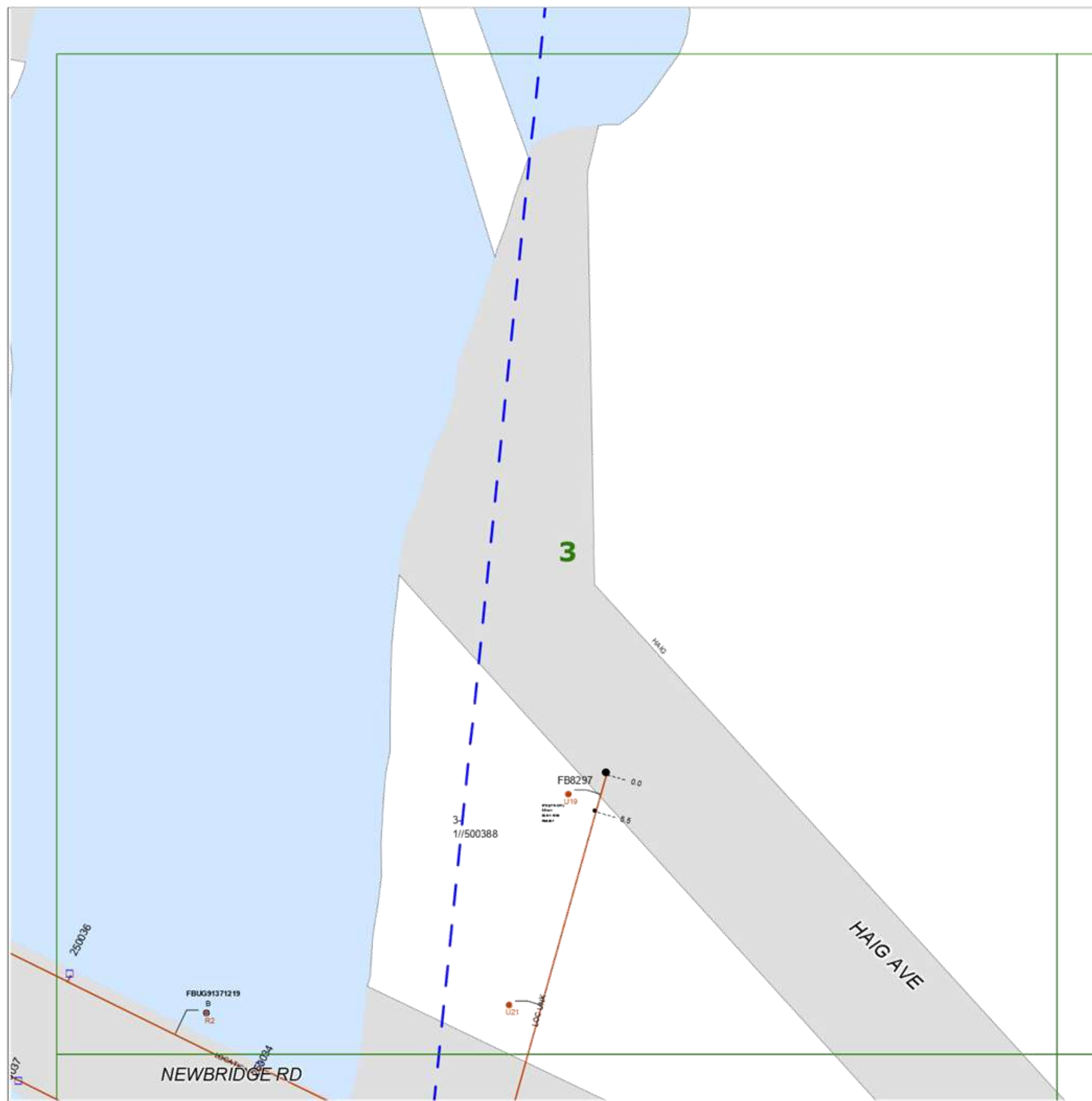
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NOT TO SCALE

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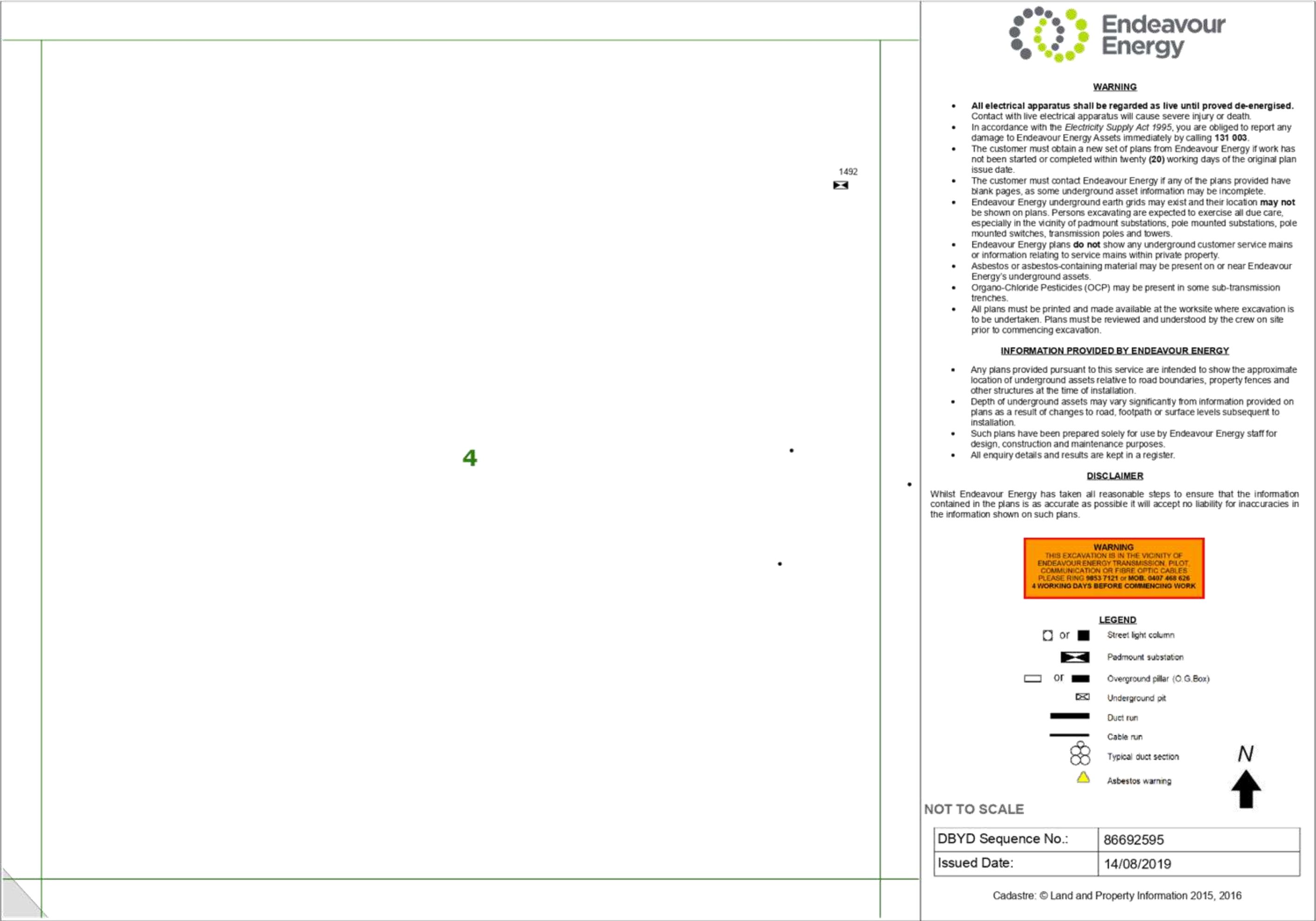
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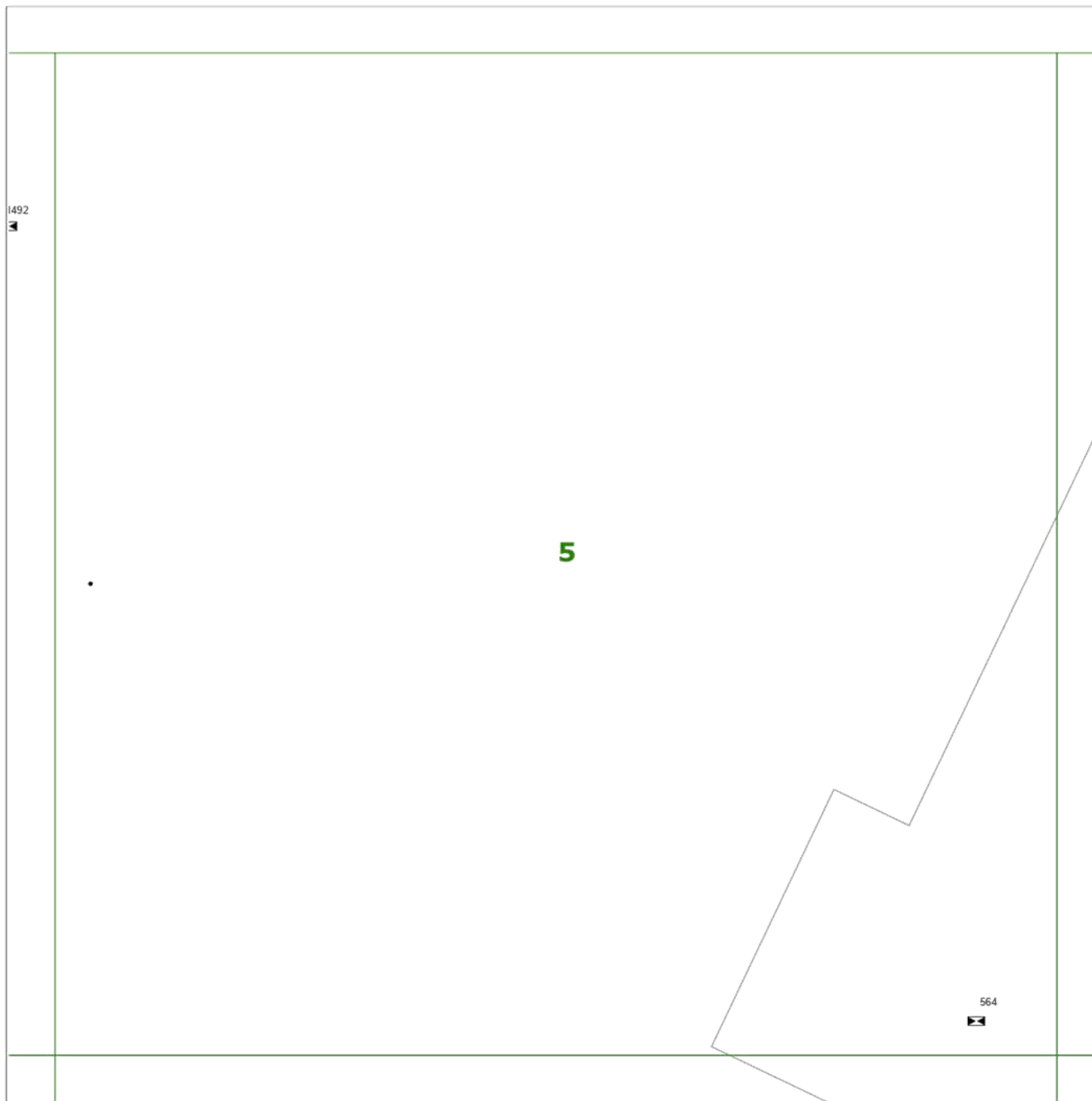
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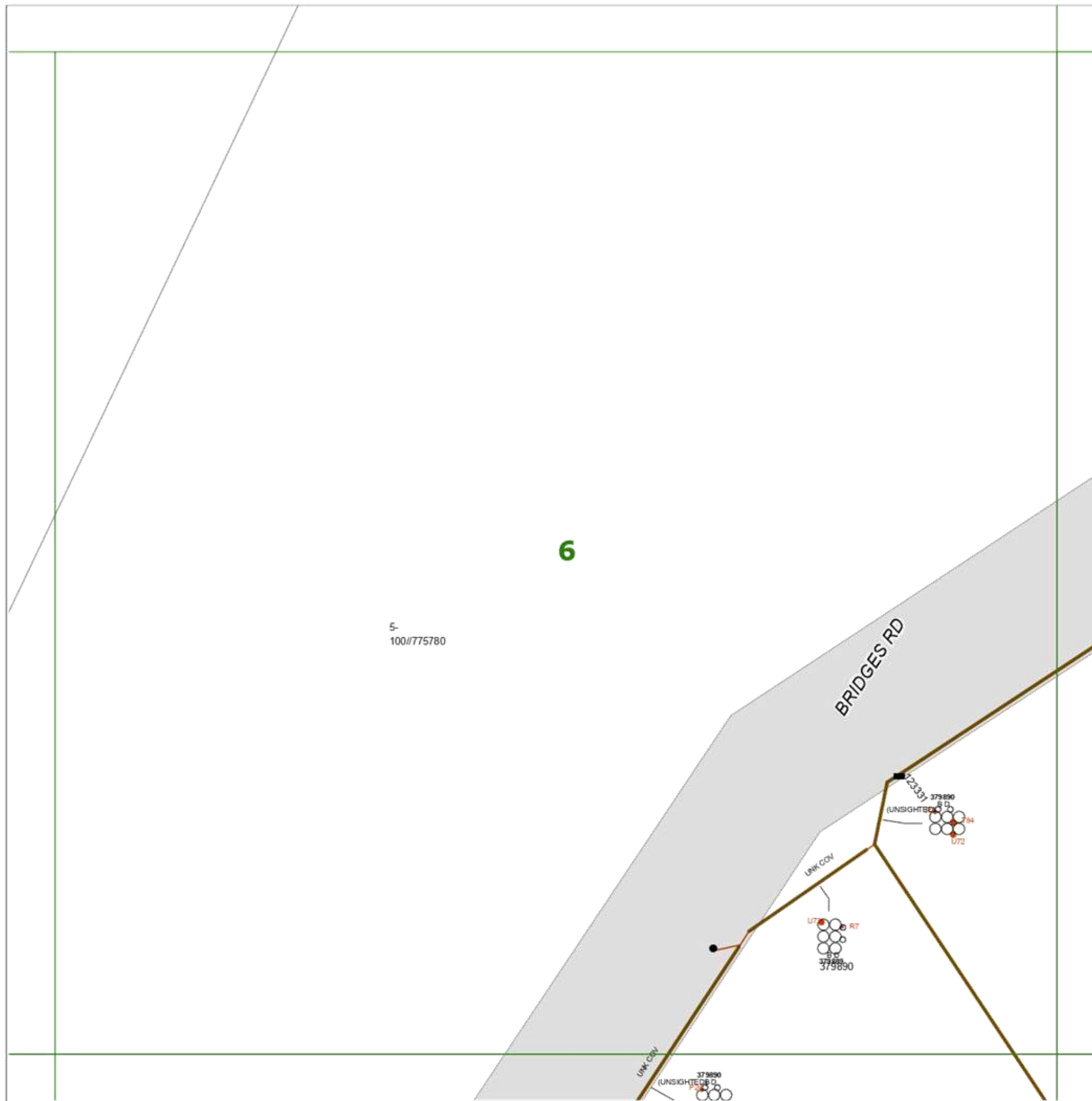
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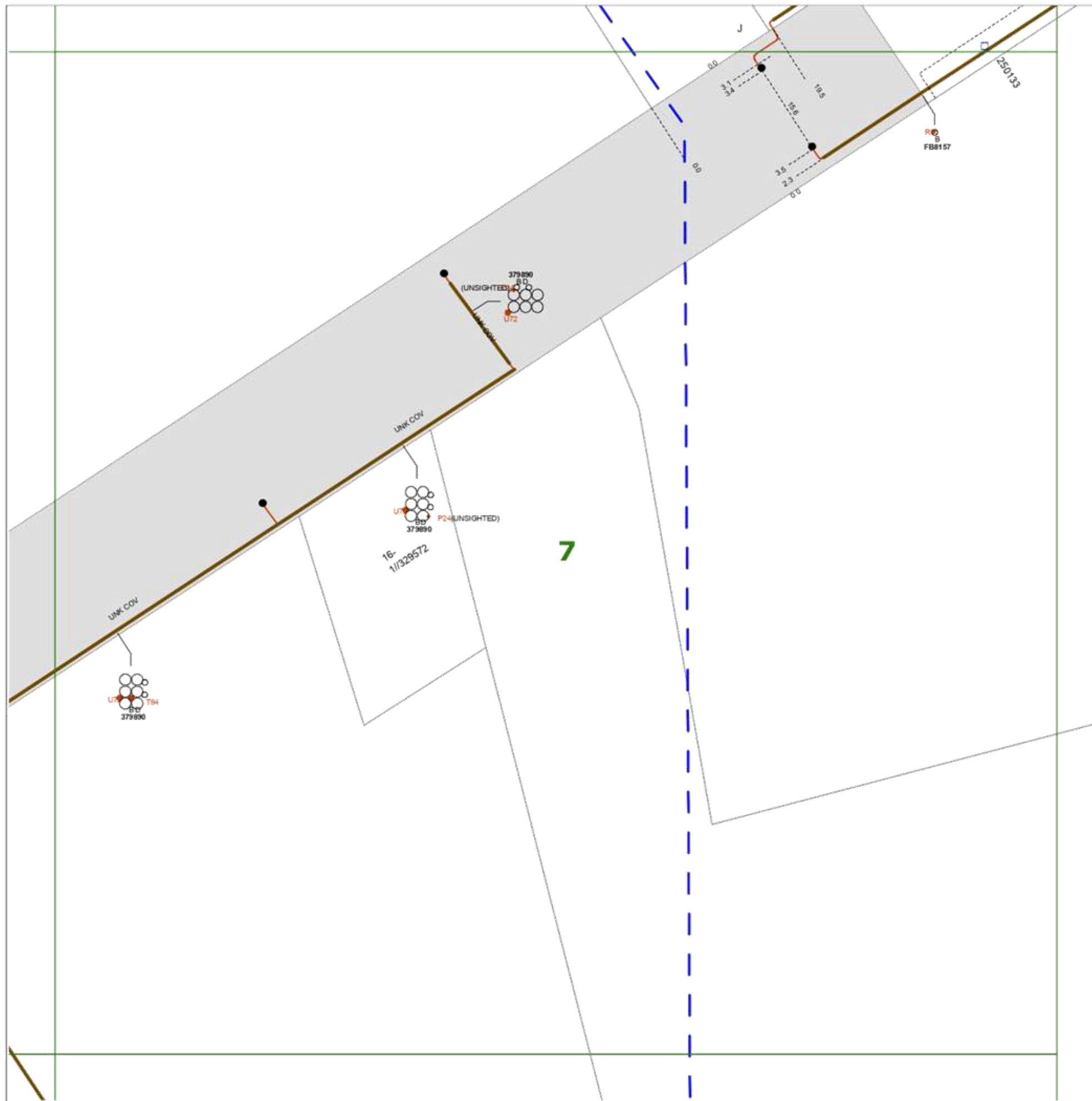
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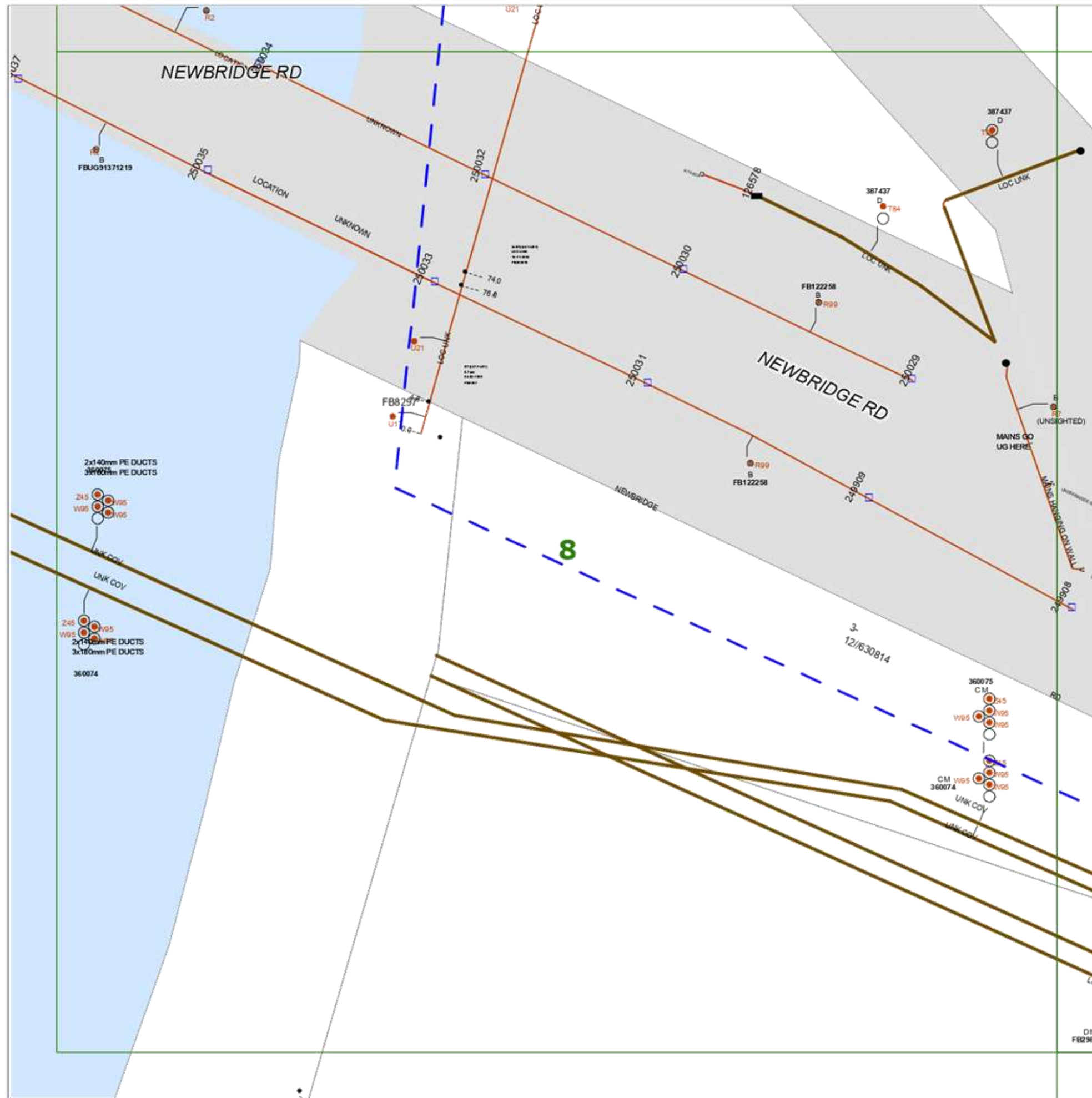
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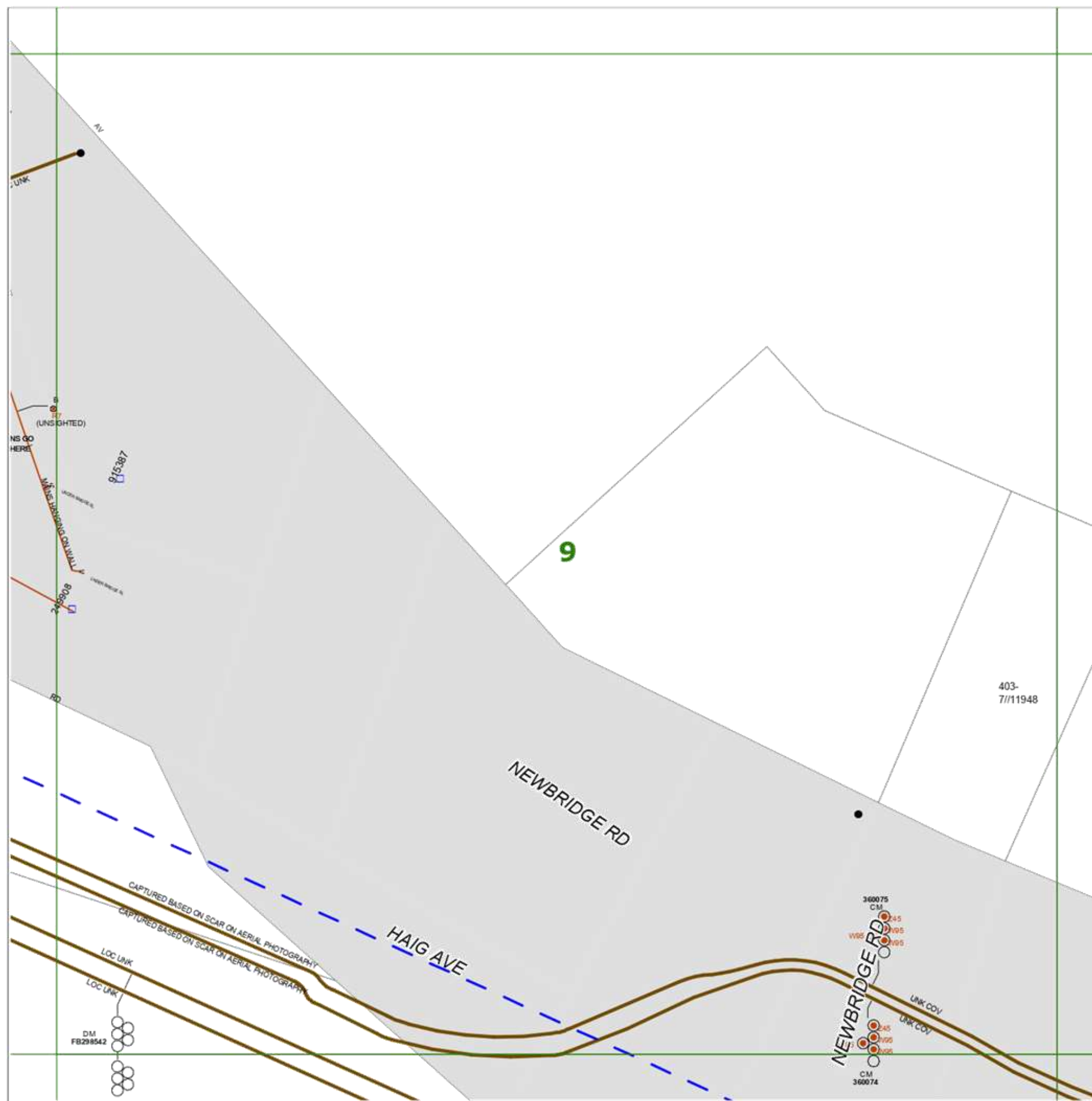
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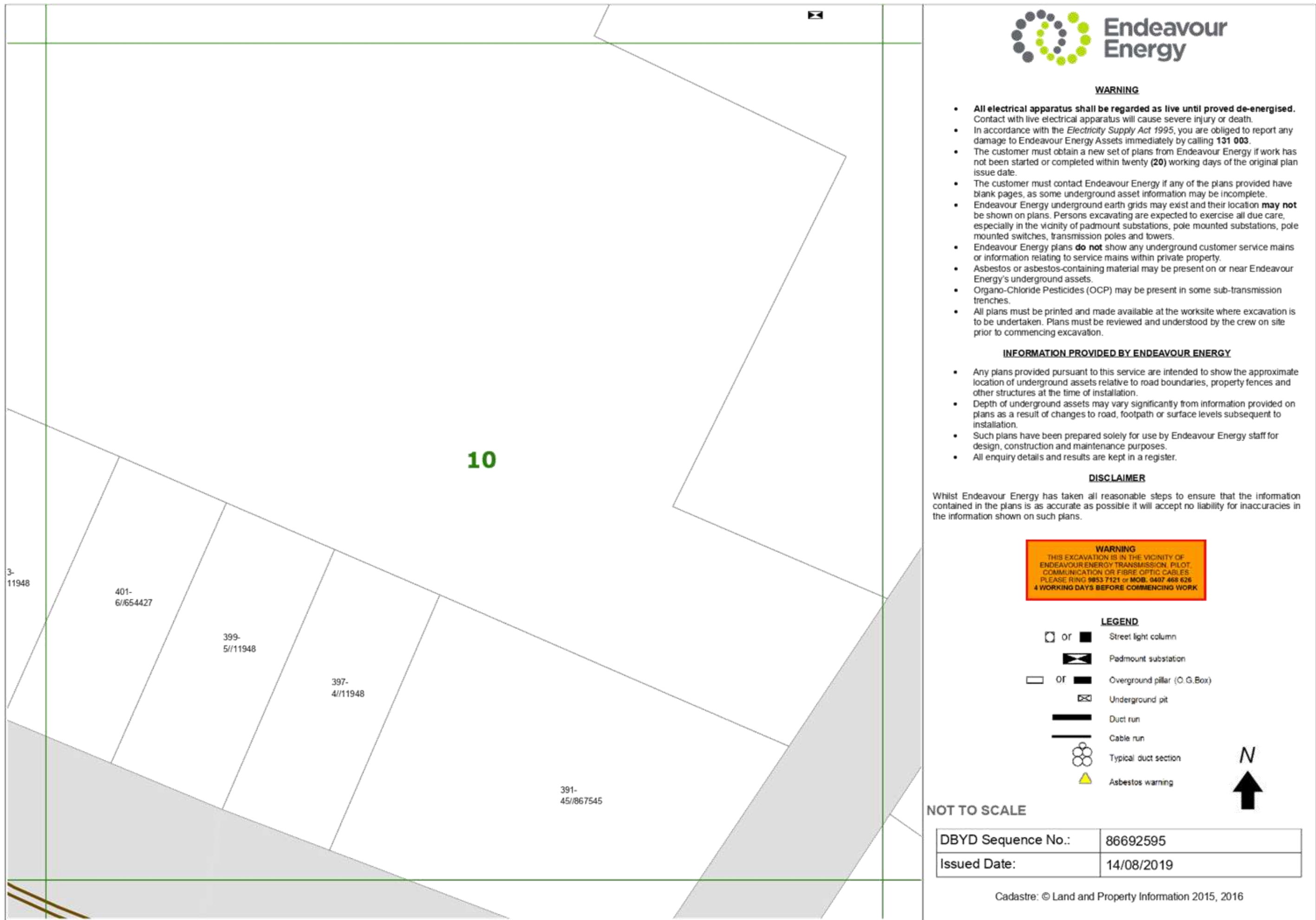
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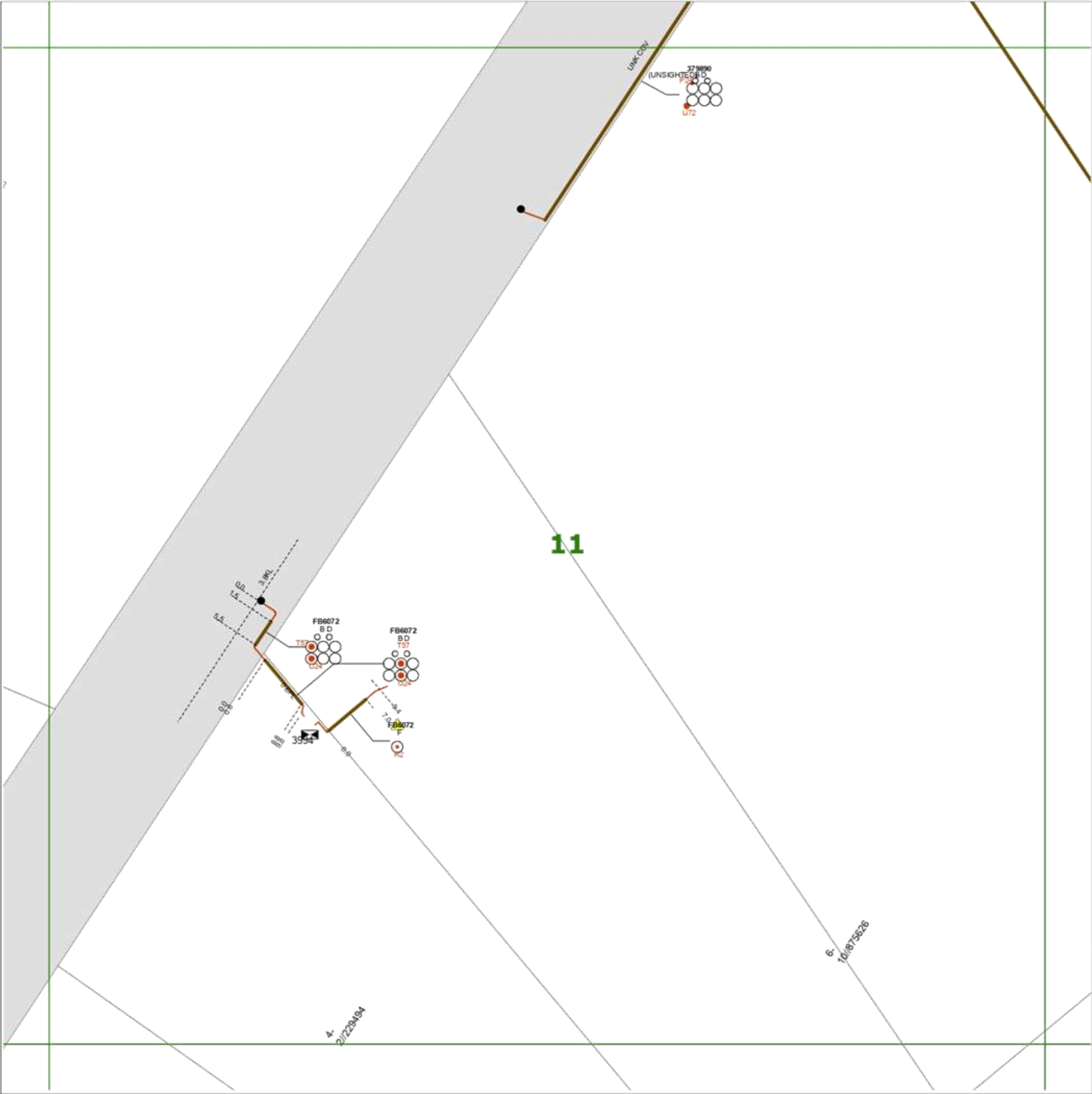


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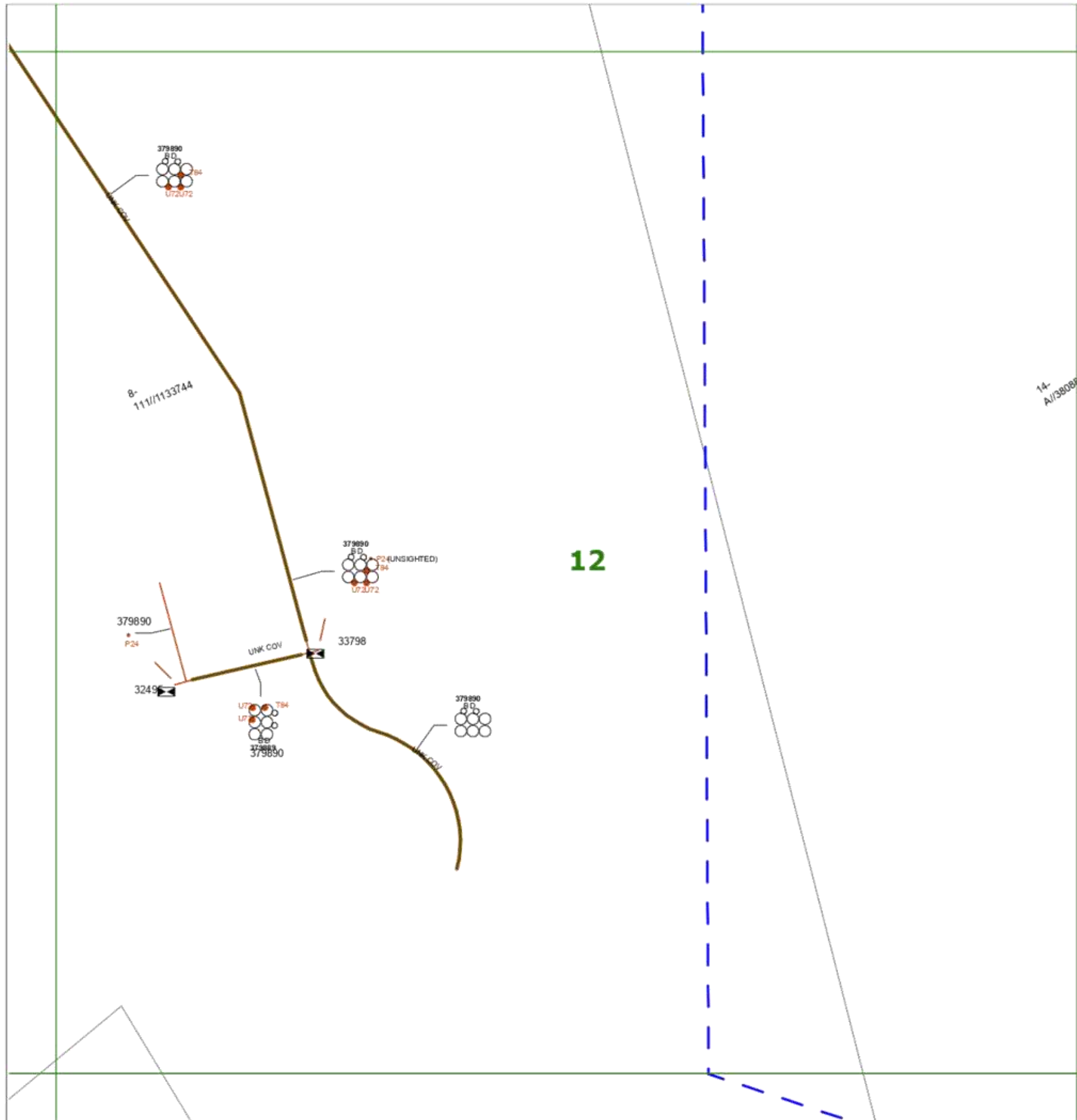
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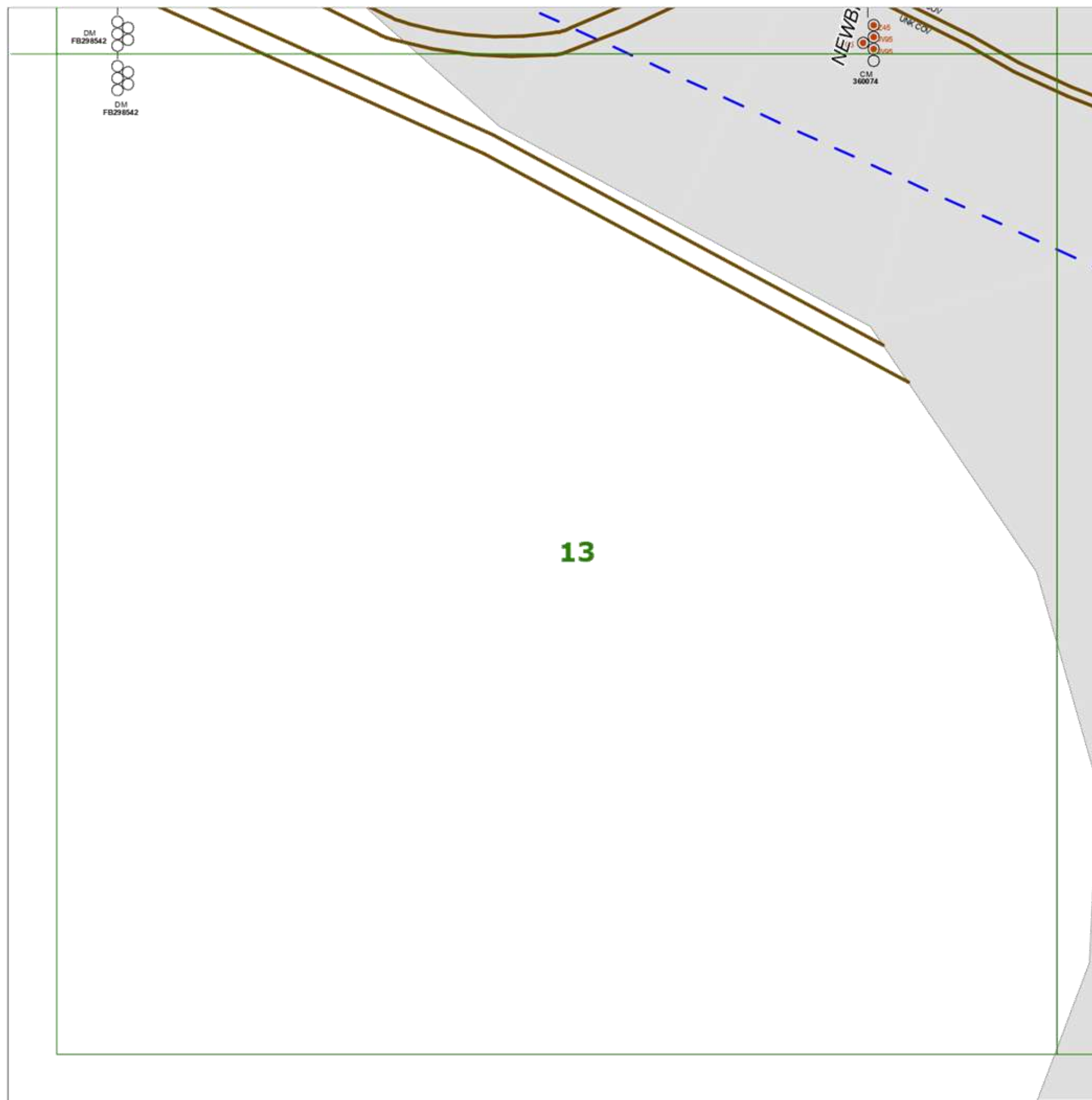
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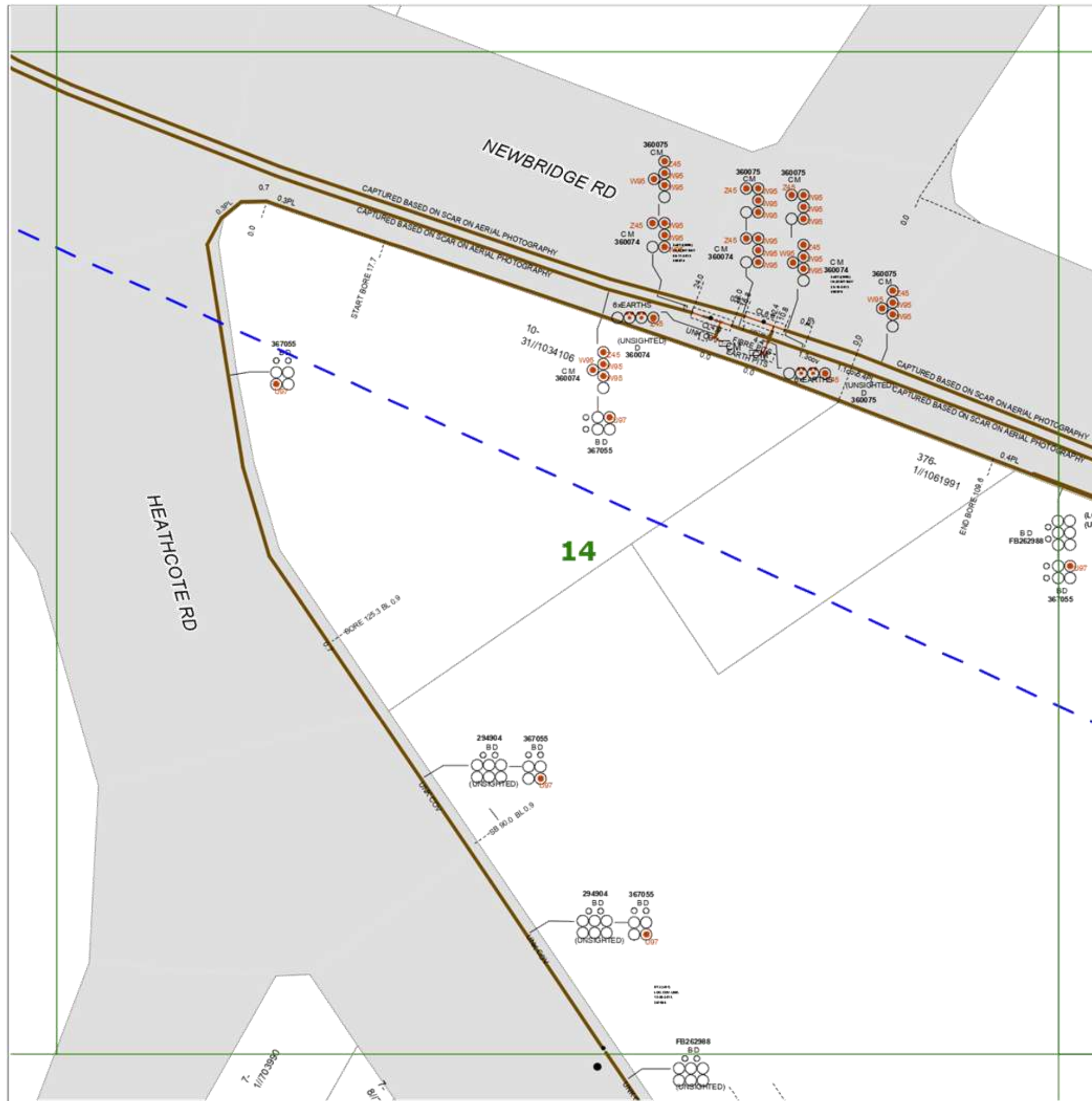
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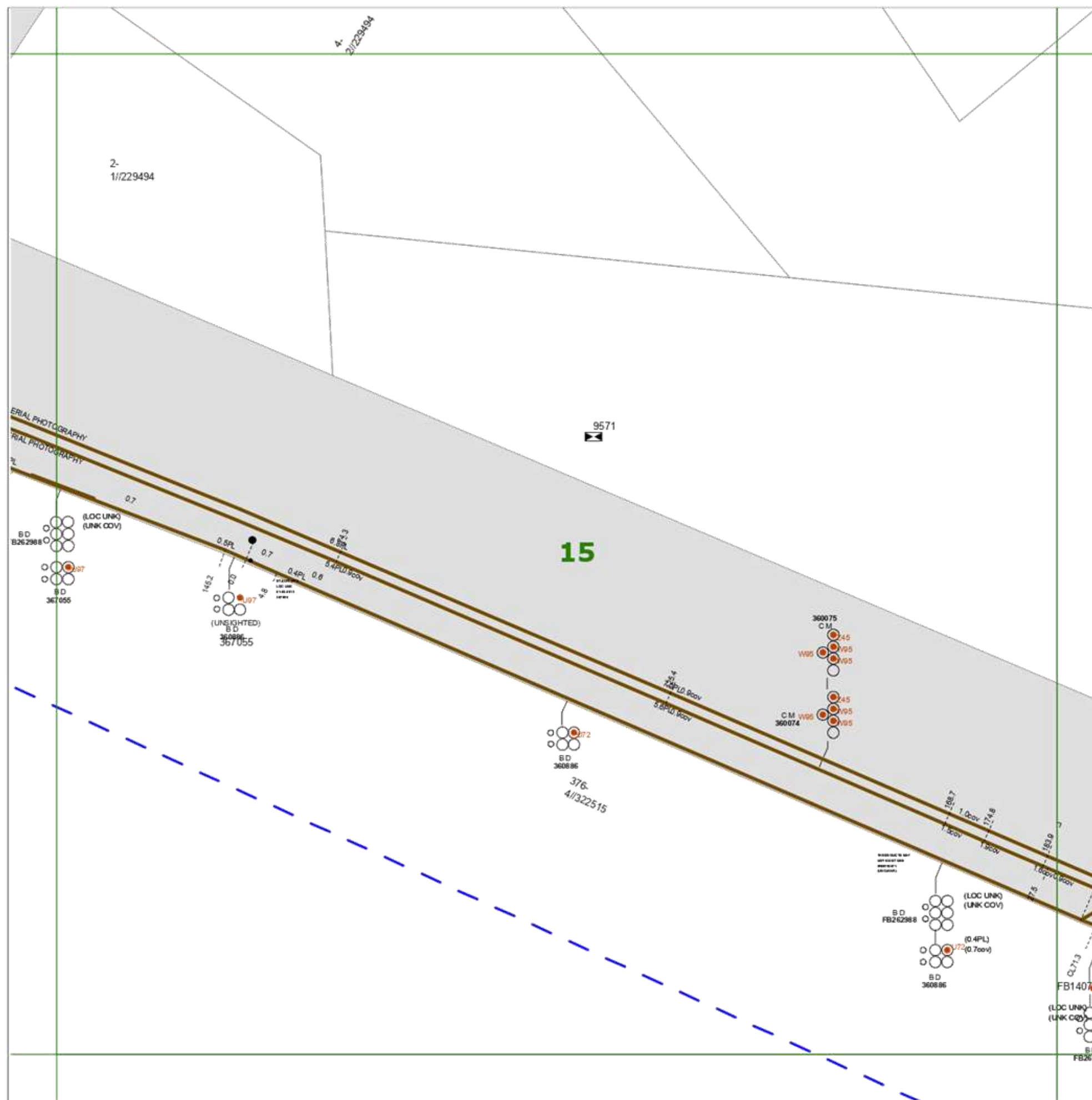
LEGEND

- or ■ Street light column
- ▭ Padmount substation
- or ■ Overground pillar (O.G.Box)
- ⊗ Underground pit
- Duct run
- Cable run
- ⊗ Typical duct section
- ▲ Asbestos warning



NOT TO SCALE

DBYD Sequence No.:	86692595
Issued Date:	14/08/2019



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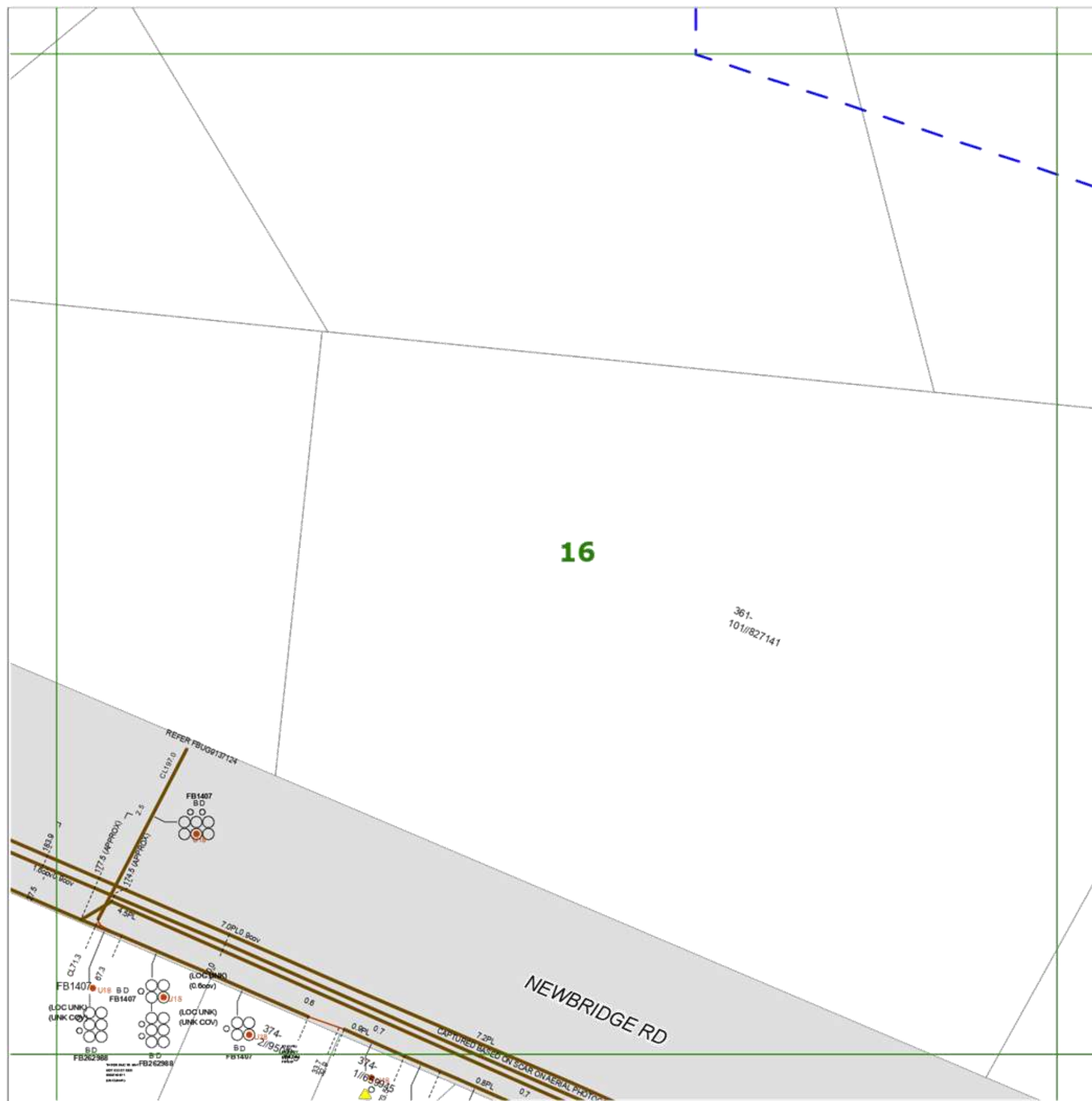
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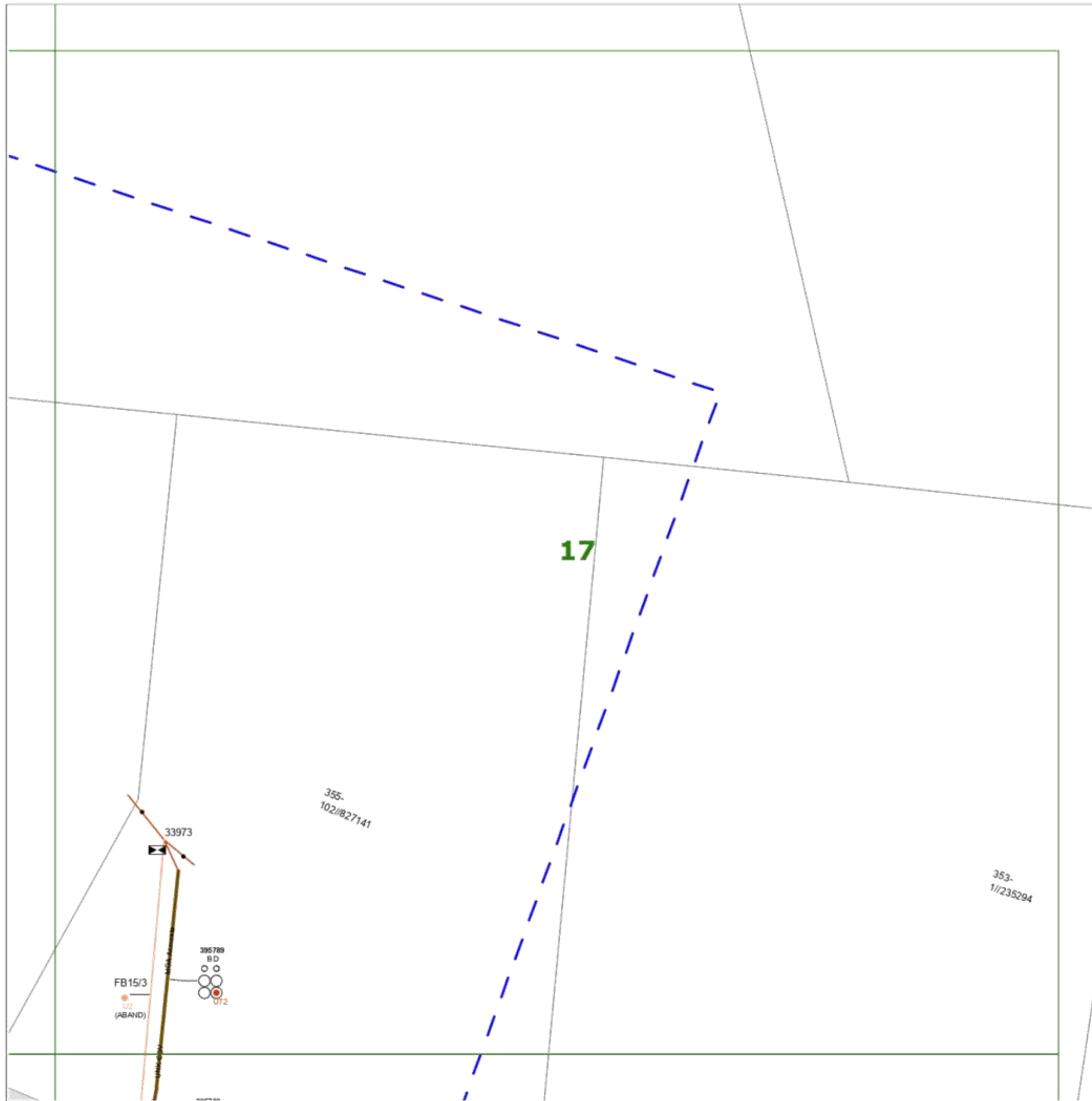
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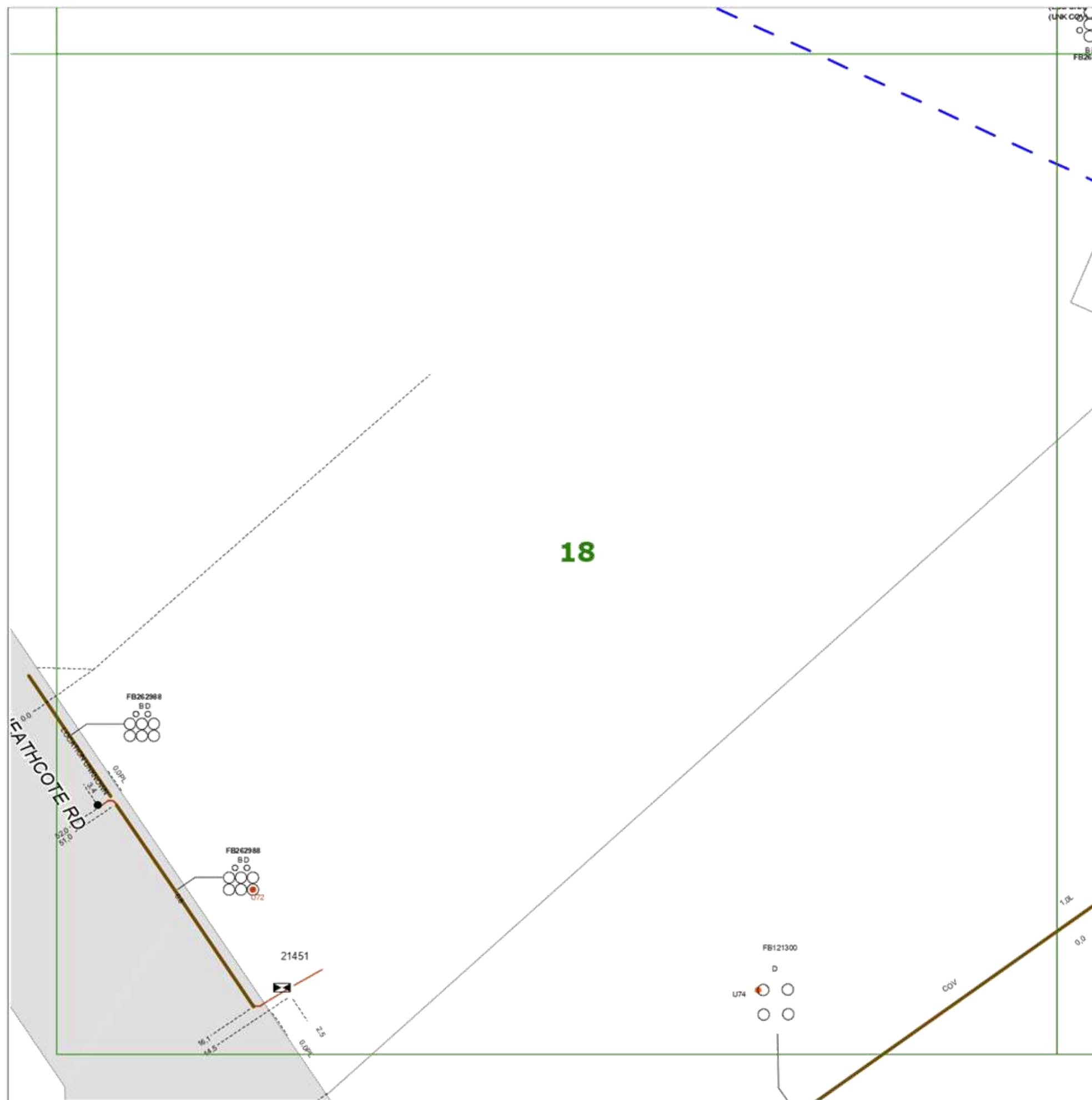
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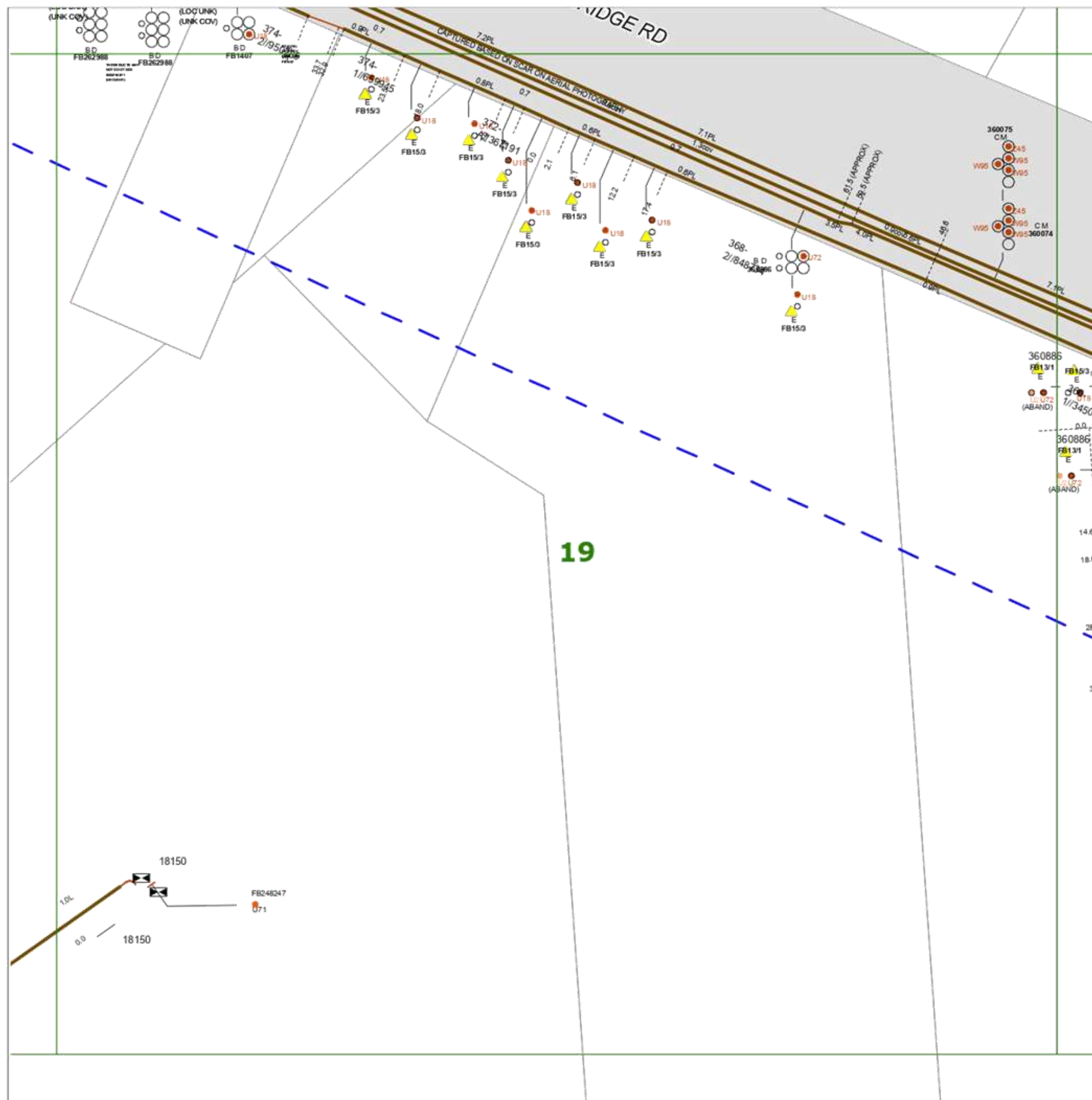
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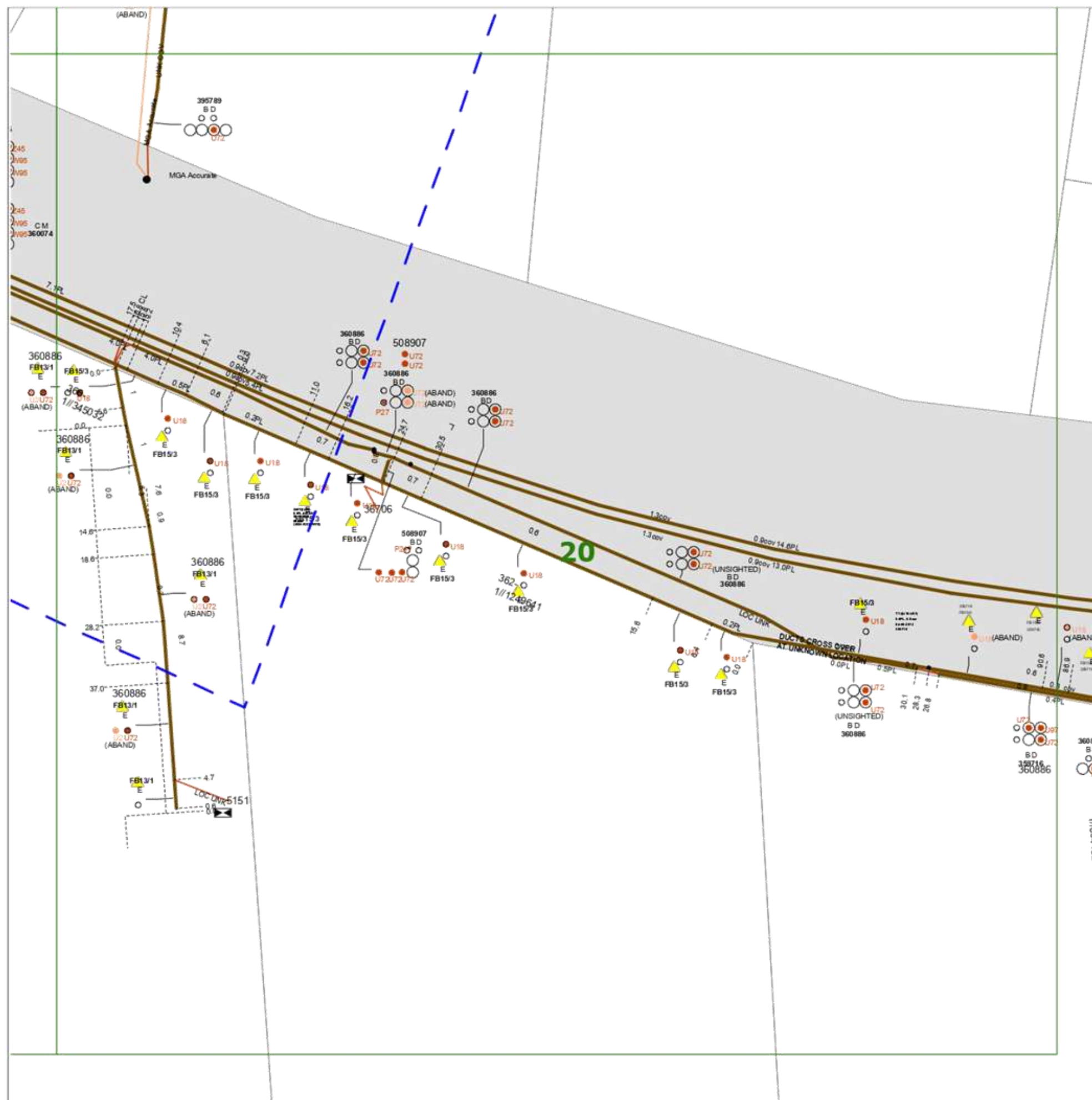
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Appendix B

SYDNEY WATER FEASIBILITY APPLICATION RESPONSE



RECORD OF MEETING

DATE: 25 th September 2019		TIME: 13:00 – 14:00	Meeting #1
LOCATION:	Sydney Water Office – 1 Smith St, Parramatta		
REFERENCE:	300115 – Moore Point		
ATTENDEES:	Joan Burchell	Sydney Water	
	Suhanti Thirunavukarasu	Sydney Water	
	Pradip Saha	Sydney Water	
	Richard Wajzer	Sydney Water	
	Kathy Hansen	Sydney Water	
	Faith Tid-Ang	Sydney Water	
	Aras Labutis	Coronation	
	Hilmand Dehsabzi	Coronation	
	Max Clinton	Leamac	
	Gavin Drennan	ADW Johnson	
	Will Piper	ADW Johnson	
APOLOGIES:			

ITEM	DESCRIPTION	ACTION BY	DUE DATE
1.0	GENERAL		
1.1	<ul style="list-style-type: none"> Meeting undertaken to introduce relevant parties and outline current expectations. 	-	-
1.2	<ul style="list-style-type: none"> ADWJ have requested information from Sydney Water regarding current water and sewer network capacity and possible system augmentations. Information will be used to prepare a service infrastructure report to support a rezoning application. 	-	-
1.3	<ul style="list-style-type: none"> Sydney Water have advised that they will be able to provide current capacity and preliminary upgrade requirements. Sydney Water have requested additional information regarding timing, yearly lot yields, etc. to better inform their preliminary assessment. ADWJ to provide. Sydney Water have also requested any information from GSC/Council study into Georges River Precinct that Coronation may be able to provide. 	ADWJ	26/09/19
1.4	<ul style="list-style-type: none"> Sydney Water have also given indicative advice on the following: <ul style="list-style-type: none"> Waste water pumping station in Haigh Park will need upgrading at some point, but most likely cannot be moved. Layout may have to be altered. The rising main associated with the pumping station most likely won't need upgrading Water trunk main will most likely require upgrading, potentially to be completed by Sydney Water?? The development will need to provide separate reticulation main as the land is developed. 		



1.5	<ul style="list-style-type: none"> • Sydney Water advised that a servicing strategy for both Sewer and Water will need to be completed. <ul style="list-style-type: none"> ◦ Sydney Water may have planning resources to complete this work and will outline timeframes for such work or alternatively the client may choose to engage a suitable consultant to complete the options report (servicing strategy). ◦ ADWJ outlined that their first priority was to obtain a letter from Sydney Water advising if the proposed development can be serviced with augmentations if required. ◦ ADWJ then advised they would work with Sydney Water to ascertain the existing capacity in the network in terms of: <ol style="list-style-type: none"> 1. Dwellings that can be serviced. 2. Identification of augmentation works required and the number of Lots that can be serviced with these works and potential timing. • All parties agreed to another meeting in approximately 4 weeks time to keep the project moving forward. Sydney Water to advise of specific timing. 	ADWJ/Sydney Water	
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LEAVE/SHUTDOWN: -	
NEXT MEETING DATE: TBC	TIME: TBC
LOCATION:	Sydney Water offices



RECORD OF MEETING

DATE: 28 th November 2019	TIME: 10:30 – 12:00	Meeting #2
LOCATION:	Sydney Water Office – 1 Smith St, Parramatta	
REFERENCE:	300115 – Moore Point	
ATTENDEES:	Joan Burchell Pradip Saha Kathy Hansen Aras Labutis Hilmand Dehsabzi Max Clinton Will Piper	Sydney Water Sydney Water Sydney Water Coronation Coronation Leamac ADW Johnson
APOLOGIES:	Gavin Drennan Angus McInnes Steven Penellum	ADW Johnson Leamac RMA Infrastructure

ITEM	DESCRIPTION	ACTION BY	DUE DATE
1.0	GENERAL		
1.1	<ul style="list-style-type: none"> Meeting undertaken to progress project and discuss preliminary advice for the sewer and water network. 	-	-
1.2	<ul style="list-style-type: none"> Sydney Water provided preliminary network capacity advice for the proposed development. Water network: <ul style="list-style-type: none"> There is capacity in the existing network for up to 2,000 additional dwellings. This may be broken down to approximately 70% residential and 30% non-residential/commercial. Internal reticulation would be required to be constructed by the developer as part of the development works. Standard assumptions should be made for trunk reticulation subject to detailed assessment of the trunk mains. Upgrades required to service additional dwellings beyond initial capacity have not yet been advised. Future planning by Sydney Water will determine required upgrades. Water network infrastructure is currently being developed in Liverpool. A Water Reservoir is under construction in Liverpool and could increase capacity for the precinct. Due for completion in 2022/2023. Sewer Network: <ul style="list-style-type: none"> No additional capacity in the current network. Rising main is the limiting infrastructure. Pumping station requires staged upgrades to increase capacity. The upgrade works would be completed by Sydney Water. 	-	-



	<ul style="list-style-type: none"> o A minimum timeframe of 3 years would be required from conceptual planning stage to completion of upgrades. 		
1.3	<ul style="list-style-type: none"> • Sydney Water have to initiate the planning stage for the pumping station upgrades. • Proponents will seek a letter from Liverpool Council stating that they support the proposed development to give confidence to Sydney Water that the development will proceed. This will assist in commencing the planning stage for the upgrade works. 	Proponents	-
1.4	<ul style="list-style-type: none"> • Sydney Water advised that additional land will be required for upgrade of the pump station. Footprint of upgraded pump station is approximately 100 m x 100 m. • Proponents asked if pump station can be moved during upgrade works. Sydney Water unable to advise until detailed planning commences. 		
1.5	<ul style="list-style-type: none"> • Buffer/exclusion zones may apply to structures constructed adjacent to water and sewer assets. Sydney Water to advise. • Sydney Water to provide formal summary of advice discussed during meeting in written format i.e. email. 	Sydney Water	

LEAVE/SHUTDOWN: -

NEXT MEETING DATE: January 2020

TIME: TBC

LOCATION: Sydney Water offices



Appendix C

NBN Co. FEASIBILITY APPLICATION RESPONSE

Hannah Williams

From: Kareena Prado <kareenaprado@nbnc.com.au>
Sent: Tuesday, 1 October 2019 2:03 PM
To: Will Piper
Cc: Gavin Drennan
Subject: nbn Ref # DEV-00085417 NBN Feasibility Assessment Request - Newbridge Rd, Moorebank

Hello Will,

Thank you for speaking with me today.

I can confirm there is no backhaul cost to bring capacity to this development for 12500 connections at Cnr Newbridge Road and Bridges Road, Moorebank, NSW.

You mentioned there as an estimate the first stage of 1000 may start in 3 years.

nbn will bring the fibre from the Liverpool FAN (2LIV) and the only cost to the developer will be the cost to connect the NTD to each resident dependant on the building type (SDU - \$600 inc / MDU \$400 inc)

Please do not hesitate to contact me

Kind regards,

Kareena Prado

Business Development Manager, NSW/ACT | New Developments, Business Enterprise & Government
| M +61 4 2853 7208 | E kareenaprado@nbnc.com.au

Visit our New Developments site: www.nbn.com.au/newdevelopments

Remember to submit all Pre-Construct and As-Built designs for review via the [new upload tools](#).

For all existing application updates please use the [tracker](#)

business nbn™



From: Will Piper <willp@adwjohanson.com.au>
Sent: Wednesday, 11 September 2019 2:19 PM
To: Kareena Prado <kareenaprado@nbnc.com.au>
Cc: Gavin Drennan <gavind@adwjohanson.com.au>
Subject: [External] NBN Feasibility Assessment Request - Newbridge Rd, Moorebank

This message is from an external sender - be cautious, particularly with links and attachments.

Hi Kareena,

Just following up on the progress of our feasibility assessment request for Moorebank, as per our phone discussion and below email trail.

Thanks.

Regards,



Will Piper
PROJECT MANAGER

Central Coast Office
0427 017 312

Email : willp@adwjohnson.com.au
Website: www.adwjohnson.com.au



ADW Johnson Pty Limited

SYDNEY

Level 35 One International Towers, 100 Barangaroo Avenue, Sydney NSW 2000

Ph. 02 8046 7412

CENTRAL COAST

5 Pioneer Avenue, Tuggerah NSW 2259

Ph. 02 4305 4300

HUNTER

7/335 Hillsborough Road, Warners Bay NSW 2282

Ph. 02 4978 5100

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From: Will Piper

Sent: Wednesday, 28 August 2019 10:36 AM

To: 'Matthew Pittas' <MatthewPittas@nbnco.com.au>

Cc: Kareena Prado <kareenaprado@nbnco.com.au>

Subject: RE: Feasibility Assessment Request - Newbridge Rd, Moorebank

Thanks Matthew, much appreciated.

Regards,



Will Piper
PROJECT MANAGER

Central Coast Office
0427 017 312

Email : willp@adwjohnson.com.au
Website: www.adwjohnson.com.au



ADW Johnson Pty Limited

SYDNEY

Level 35 One International Towers, 100 Barangaroo Avenue, Sydney NSW 2000

Ph. 02 8046 7412

CENTRAL COAST

5 Pioneer Avenue, Tuggerah NSW 2259

Ph. 02 4305 4300

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Sent: Wednesday, 28 August 2019 10:36 AM

To: Will Piper <willp@adwjohnson.com.au>

Cc: Kareena Prado <kareenaprado@nbnco.com.au>

Subject: RE: Feasibility Assessment Request - Newbridge Rd, Moorebank

Thanks Will.

I have emailed Kareena to contact you and get the application started.

Kareena Prado

Business Development Manager, NSW/ACT | New Developments, Business Enterprise & Government
| M +61 4 2853 7208 | E kareenaprado@nbnco.com.au

Regards,
Matthew Pittas

Relationship Manager | nbn New Developments | Demand Programs | NPD

M 0429 834 846 | E matthewpittas@nbnco.com.au

Level 18, 100 Arthur St, North Sydney NSW 2060



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From: Will Piper <wilp@adwjohnson.com.au>
Sent: Wednesday, 28 August 2019 9:44 AM
To: Matthew Pittas <MatthewPittas@nbnco.com.au>
Subject: [External] Feasibility Assessment Request - Newbridge Rd, Moorebank

This message is from an **external sender - be cautious**, particularly with links and attachments.

Hi Matthew,

We are engaged to prepare a service infrastructure report as part of a rezoning application for a large site at Moorebank (intersection of Newbridge Rd and Bridges Rd). The rezoning application is proposing to change the zoning from its current industrial zoning to residential and it is proposed to be developed into approx. 12,500 apartments and commercial usage as per the attached plan.

We would like to request a feasibility assessment from NBN in order to provide advice in relation to availability of NBN to the site, capacity requirements and likely back haul costs. Are you able to help organise this?

I note that the online feasibility assessment request no longer appears to be available from the NBN website.

I believe our senior project manager Gavin Drennan may have recently sent an email to someone at NBN regarding this site, but as he is away on leave at the moment I am not sure who he contacted.

Thank you for your help.

Regards,



Will Piper
PROJECT MANAGER
Central Coast Office
0427 017 312

Email : wilp@adwjohnson.com.au
Website: www.adwjohnson.com.au



ADW Johnson Pty Limited

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CENTRAL COAST	5 Pioneer Avenue, Tuggerah NSW 2259	Ph. 02 4305 4300
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Appendix D

JEMENA FEASIBILITY APPLICATION RESPONSE

Hannah Williams

From: Neale Hilton <Neale.Hilton@jemena.com.au>
Sent: Wednesday, 28 August 2019 11:31 AM
To: Gavin Drennan
Subject: FW: 300115 - Moore Point Servicing Infrastructure - Gas - response
Attachments: Moore Point Structure Plan 08072019.pdf; Masterplan land use yield schedule.xlsx; Cocon 26.pdf; Cocon in-situ 1.jpg

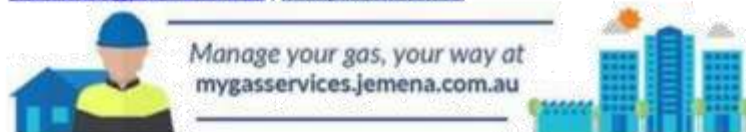
Gavin

Thank you for providing this initial information regarding the proposed development of Moore Point. Jemena appreciates being involved in the early planning of these sites and can confirm that the existing 1050kPa High Pressure network located in Bridges Rd currently has capacity to supply the nominated residential and Retail yield in this estate.

From this High Pressure gas main, a below ground Regulator Station will have to be installed to allow a suitable medium pressure plastic network extend to each building through the future road network. Attached is a typical below ground regulator station that will need to be accommodated.

Please note Jemena does not reserve capacity for any individual project and will make a formal offer once construction is imminent. Regards.

Neale Hilton
Network Development Manager
Jemena
Level 14, 99 Walker Street, North Sydney, NSW 2060
M 0402 060 151
neale.hilton@jemena.com.au | www.jemena.com.au



From: Gavin Drennan <gavind@adwjohanson.com.au>
Sent: Tuesday, 20 August 2019 11:17 AM
To: Gregory Knight <Gregory.Knight@jemena.com.au>
Cc: Will Piper <willp@adwjohanson.com.au>; Ben Myles <benm@adwjohanson.com.au>
Subject: 300115 - Moore Point Servicing Infrastructure - Gas

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Hi Greg,

We are engaged to prepare a service infrastructure report as part of a rezoning application for a large site at Moorebank.

The rezoning application is proposing to change the zoning from its current industrial zoning to residential and it is proposed to be developed into approx. 12,500 apartments and commercial usage as per the attached spreadsheet and plan

Can you please provide advice on the following:

- confirm existing infrastructure
- any augmentation requirements to the network for the proposed development yield
- Timing for augmentation requirements
- Advice on existing capacity to quantify what yield can utilise the existing infrastructure prior to any augmentation requirements

Please give me a call if you have any queries

Regards,



Gavin Drennan
Sydney Office
0413 804 000
Email : gavind@adwjohanson.com.au
Website: www.adwjohanson.com.au



ADW Johnson Pty Limited

SYDNEY	Level 35 One International Towers, 100 Barangaroo Avenue, Sydney NSW 2000	Ph. 02 8046 7411
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Appendix E

ENDEAVOUR ENERGY FEASIBILITY APPLICATION RESPONSE



31 October 2019

Endeavour Energy Ref: ENL3510

ADW Johnson
5 Pioneer Avenue
TUGGERAH NSW 2259

Attention: Gavin Drennan

ENL3510 – Newbridge road, MOOREBANK NSW 2170

Thank you for your application providing information of the proposed re-zoning and redevelopment of the above-mentioned site. Endeavour Energy has carried out a desktop assessment of providing power supply via existing and new feeders to support the ultimate load of the development.

Since no maximum demand breakdown was received with the application, we have determined the total proposed load based on AS3000 and the GFA breakdown of land uses (received from ADW Johnson) and estimated the load to be **50MVA (diversified)**.

Available Capacity from Existing Network

Assuming all the existing premises will be demolished, the surrounding 11kV feeders can be freed up and utilised as follows (please also refer to the plan below);

- Feeder 6431 currently being double cabled can be split into two feeders and each would be able to accommodate about 3.9MVA (with total being 7.8MVA). This will involve some minor works at Moorebank Zone Substation and some cable reticulation work near/around the site.
- Feeders 6419 and 6426 that run past the site (east side) can each provide 1.5MVA capacity with some minor upgrade works of the existing assets.

The above, constituting to approximately 10MVA, can support about 2500 dwellings.



Proposed Network

The remaining 40MVA load will require 8nos new 11kV feeders to be reticulated from Moorebank Zone Substation. Works may involve,

- circuit breaker termination works of 6nos 11kV cables in Moorebank Zone Substation,
- installation of two new switching stations at Moorebank Zone Substation to allow branching out of the remaining 2nos cables.
- reticulation of all the 8nos new 11kV feeders along Newbridge road to reach the development site (appropriate route to be investigated).

Please refer to the plan below.



In addition to the above, the site will require a 11kV distribution network designed and constructed to Endeavour Energy standards to supply each lot/establishment.

Note: The above is a preliminary advice only and does not reserve capacity unless firm applications are received with staging plans. The above described methodologies are conceptual only and are based on the current conditions of the network and is subject to change depending on load applications received and actual loads observed.

Regards,

Ayman

Ayman Shahalam
Contestable Works Project Manager
Network Connections
T : 02 9853 7803
M: 0439 351 215
490 Hoxton Park Rd, Hoxton Park
<http://www.endeavourenergy.com.au>



Appendix F

LIVERPOOL'S LOCAL STRATEGIC PLANNING STATEMENT

Elizabeth Foster

To: Gavin Drennan
Subject: RE: Sydney Water - Sewer Pump Station upgrade works - Georges River North

From: David Smith <SmithD@liverpool.nsw.gov.au>
Sent: Wednesday, 29 January 2020 11:54 AM
To: joan.burchell@sydneywater.com.au
Subject: Sydney Water - Sewer Pump Station upgrade works - Georges River North

Hi Joan,

Liverpool City Council is progressing a structure plan in a collaborative manner with the key landowners in the Georges River North Precinct in the Liverpool Collaboration Area consistent with the District Plan, Place Strategy and the Draft LSPS exhibited by Council in 2019.

Action 11.2 of the draft LSPS states that Council will *investigate amendments to the LEP to rezone the river precinct north of Newbridge Road (Moore Point) as a mixed use zone to support the Liverpool CBD and Innovation Precinct with an extensive open space system and cross river linkages in the short to medium term*. The LSPS defines short term as between 2019/20-2020/2021 and medium term as 2021/22 to 24/25. The proposal is to change the current industrial zoning to mixed use including commercial and residential.

Council understands that Coronation and Leamac (that are in a joint landowner group and are the majority owners of the precinct) requested Sydney Water provide capacity and future upgrade information regarding their water and sewer networks in the vicinity of the site as part of a services feasibility assessment. Council also understands that in order to commence the preliminary planning phase of the upgrade works, Sydney Water is seeking confirmation that the proposed urban regeneration project is intended to progress. Council requests that Sydney Water commence the planning phase of the sewer pump station upgrade works for the Georges River North Precinct now in order to service the proposed renewal of the area within a reasonable timeframe, consistent with the draft LSPS and the Liverpool Collaboration Area Place Strategy.

If you have further queries, please let me know. Attached for your information is a copy of the draft LSPS that has been endorsed by the Council and is currently awaiting assurance review from the GSC.

Regards,

David Smith
 Manager Planning & Transport Strategy

LIVERPOOL CITY COUNCIL 02 8711 7610 | 0447 162 283 | SmithD@liverpool.nsw.gov.au
 Customer Service: 1300 36 2170 | 33 Moore Street Liverpool, NSW 2170, Australia
[f](#) [i](#) [in](#) www.liverpool.nsw.gov.au

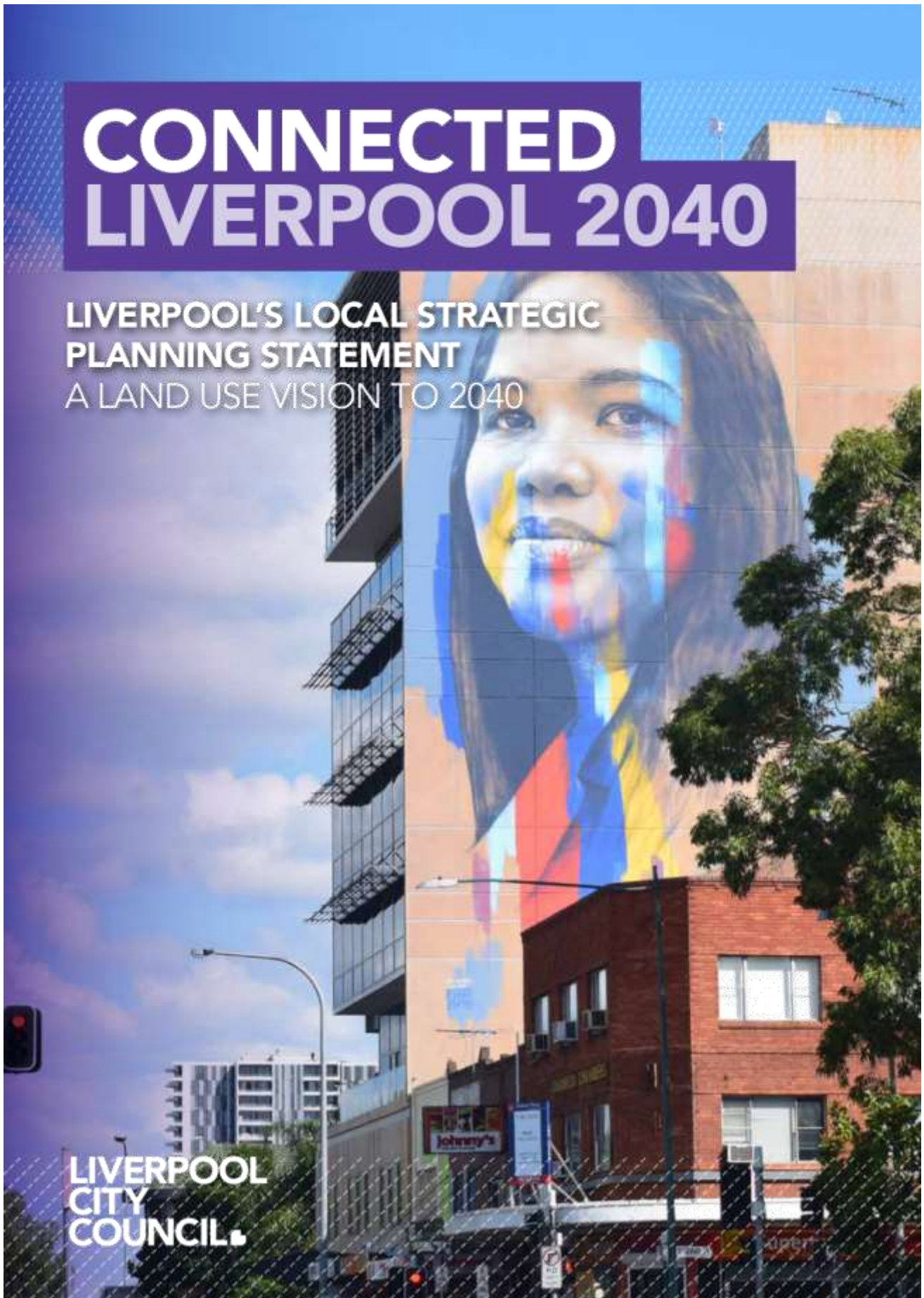


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CONNECTED LIVERPOOL 2040

LIVERPOOL'S LOCAL STRATEGIC
PLANNING STATEMENT
A LAND USE VISION TO 2040

LIVERPOOL
CITY
COUNCIL



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Connectivity – Our Connections 27

- PLANNING PRIORITY 1
Active and public transport reflecting Liverpool's strategic significance
- PLANNING PRIORITY 2
A rapid smart transit link between Liverpool and Western Sydney International Airport /Aerotropolis
- PLANNING PRIORITY 3
Accessible and connected suburbs
- PLANNING PRIORITY 4
Liverpool is a leader in innovation and collaboration

Liveability – Our Home 37

- PLANNING PRIORITY 5
A vibrant, mixed-use and walkable 24-hour City Centre with the Georges River at its heart
- PLANNING PRIORITY 6
High-quality, plentiful and accessible community facilities, open space and infrastructure aligned with growth
- PLANNING PRIORITY 7
Housing choice for different needs, with density focused in the City Centre and centres well serviced by public transport
- PLANNING PRIORITY 8
Community-focused low-scale suburbs where our unique local character and heritage are respected
- PLANNING PRIORITY 9
Safe, healthy and inclusive places shaping the wellbeing of the Liverpool community



Productivity – Our Jobs

51

PLANNING PRIORITY 10

A world-class health, education, research and innovation precinct

PLANNING PRIORITY 11

An attractive environment for local jobs, business, tourism and investment

PLANNING PRIORITY 12

Industrial and employment lands meet Liverpool's future needs

PLANNING PRIORITY 13

A viable 24-hour Western Sydney International Airport growing to reach its potential

Sustainability – Our Environment

61

PLANNING PRIORITY 14

Bushland and waterways are celebrated, connected, protected and enhanced

PLANNING PRIORITY 15

A green, sustainable, resilient and water-sensitive city

PLANNING PRIORITY 16

Rural lands are protected and enhanced

IMPLEMENTATION, MONITORING AND REPORTING

71

ABBREVIATIONS

CAV	Connected and Autonomous Vehicles	LEP	Local Environmental Plan
CHP	Community Housing Provider	LGA	Local Government Area
CSP	Community Strategic Plan	LIP	Liverpool Innovation Precinct
DCP	Development Control Plan	LSPS	Local Strategic Planning Statement
DPIE	Department of Planning, Industry and Environment	NARCIIM	NSW and ACT Regional Climate Modelling
EP&A	Environmental Planning and Assessment Act 1979	TfNSW	Transport for NSW
FAST	Fifteenth Avenue Smart Transit	WSA	Western Sydney Airport (Company)
IP&R	Integrated Planning and Reporting	WSI	Western Sydney International (Nancy-Bird Walton) Airport
LALC	Local Aboriginal Land Council	WSPP	Western Sydney Planning Partnership

Front cover image:

The mural featured on the front cover of Connected Liverpool 2040 is by artist Claire Foxton, and portrays University of Wollongong student and social justice advocate Adi Holmes.

MAYOR'S MESSAGE



The next 20 years promise to be an exciting time for Liverpool. Connected Liverpool 2040, our Local Strategic Planning Statement (LSPS), represents the shared vision of Council and the community and will inform future land use planning for Liverpool, one of the fastest growing areas in Sydney.

Thank you to everyone who contributed to the development of Connected Liverpool 2040. We heard from a large number of residents, ratepayers and businesses during our extensive consultation on this document.

I'm looking forward to seeing Liverpool grow over the next 20 years. The new Western Sydney International (Nancy-Bird Walton) Airport will open, providing local employment, education and business opportunities for our community. Council's flagship Fifteenth Avenue Smart Transit (FAST) Corridor project will make sure our residents can take advantage of these opportunities with a short and comfortable trip to work.

Liverpool's CBD will transform into a vibrant destination with a strong 24-hour economy. The city will be more walkable, cooler and greener, with the Georges River at its heart.

The Liverpool Innovation Precinct, anchored by Liverpool Hospital, will grow, providing high-value health, education, research and advanced manufacturing jobs for the local community.

The population will also grow, but as it does we will make sure we channel that growth into the right places, and that there are the modern, high-quality facilities, services and amenities that our residents and visitors need and deserve.

While many aspects of Liverpool are changing and opportunities abound, I am also mindful of the things about Liverpool we love and want to remain – the local character of our suburbs, our significant heritage, our fantastic bushland, our civic pride and our commitment to diversity.

The 16 priorities of Connected Liverpool 2040 capture our goals for Liverpool over the next 20 years and provide a clear plan of how we're going to achieve them. The future is looking bright.

MAYOR WENDY WALLER



CEO'S MESSAGE



A clear vision for Liverpool's future and a robust plan for getting there are vital if we are to harness the rapid change and growth the city is experiencing.

The nation's largest infrastructure project – Western Sydney International (Nancy-Bird Walton) Airport – is located entirely within our Local Government Area (LGA). The Western Sydney Aerotropolis is already attracting global corporations as our city centre continues its transformation into a vibrant, productive, mixed-use CBD.

We will attract more businesses, more people and more jobs. We need to make sure that the opportunities these changes create are maximised to benefit the whole community. To do this we must plan ahead, implement city-shaping projects and work to safeguard the elements that make Liverpool a great place in which to live, work and play.

The Local Strategic Planning Statement (LSPS), Connected Liverpool 2040, details our priorities over the next 20 years of development, and provides a list of actions that make sure we can meet our goals.

These actions include the completion of some of Council's most ambitious strategic projects ever attempted – realigning our CBD around the Georges River including a river-edge promenade and new river crossings; developing Woodward Park into our own 'Central Park' – an iconic lifestyle precinct that will be a thriving hub of community activity known as Woodward Place; creating a rapid transit link between the Liverpool City Centre and the new Western Sydney International Airport; and transforming our ageing stock of community facilities into a world-class network of modern, attractive facilities that address community needs.

The LSPS is our strategic roadmap for the future. It is based on and expands upon the priorities of our Community Strategic Plan, *Our Home, Liverpool 2027*, and provides a one-stop resource for the major planning work we're doing to make Liverpool a vibrant, diverse and attractive place.

I thank the community for its contribution to developing the LSPS. We had thousands of survey responses, close to 150 formal submissions, and countless conversations that all shaped the final document making it stronger and more reflective of our shared vision for Liverpool's continued success.

CEO, KIERSTEN FISHBURN





ABOUT THE PLAN

The Local Strategic Planning Statement (LSPS) has been created to set Liverpool City Council's strategic planning vision for the next 20 years.

It lists our planning priorities across four areas: **Connectivity, Productivity, Liveability, and Sustainability**. The LSPS will inform what type of growth occurs in our local government area (LGA), where it occurs and when it occurs. It sets out actions to deliver on our planning priorities in order to meet the community's future vision for Liverpool.

The LSPS has been prepared in accordance with the *Environmental Planning and Assessment Act 1979* (the EP&A Act). It identifies:

- The **basis for strategic planning** in Liverpool, having regard to economic, social and environmental matters;
- The **planning priorities** for Liverpool that are consistent with the *Western City District Plan* and the *Community Strategic Plan*;
- The **actions** required for achieving the planning priorities; and
- How Council will monitor and report on the **implementation of those actions**.

The LSPS gives effect to the *Greater Sydney Region Plan* and *Western City District Plan*. It also takes into consideration State Environmental Planning Policies (SEPPs) and Ministerial Directions issued under Section 9.1 of the EP&A Act.



It has also been informed by Council's Community Strategic Plan (CSP) – *Our Home, Liverpool 2027* – and aligns with the CSP's directions.



IMPLEMENTATION TIMEFRAMES

SHORT TERM

Now-2020/2021

MEDIUM TERM

2021/2022-2024/2025

LONG TERM

2025/2026-2028/2029

VISIONARY

2029/2030+

WHAT WE'VE HEARD

The LSPS has been informed by extensive community consultation including:

Preliminary consultation (Feb – May 2019):

- A flyer to residents in the Liverpool LGA;
- An online survey on Council's 'Liverpool Listens' webpage (approximately 500 responses);
- Feedback provided at District Forums;
- Feedback provided at the Moorebank Community Forum
- Planner for a Day preschool excursion; and
- A Youth Workshop held in May 2019.

Public Exhibition (28 June 2019 – 9 August 2019):

- An online survey on Council's 'Liverpool Listens' webpage (approximately 500 responses);
- Ideas wall / interactive online map;
- Pop Ups at Shopping Centres across the Liverpool LGA;
- Drop-in sessions at libraries and community centres;
- Business and Developer Breakfast; and
- Feedback provided at District Forums.

Council has also built upon the extensive consultation undertaken when developing our Community Strategic Plan – *Our Home, Liverpool 2027*. It has also been developed in consultation with Councillors, staff, state agencies and neighbouring councils.

During the exhibition period, Council received a positive response from the community including through 147 formal submissions; 542 survey responses; and over 680 big ideas.



147
FORMAL
SUBMISSIONS



542
SURVEY
RESPONSES



OVER
680
BIG
IDEAS



What makes my suburb a great place to live?

The culture –
everyone is
welcome

**Close
proximity
to shops
and schools**



The rich history of Liverpool,
recent education opportunities,
an Airport in the future, and a
very diverse population.



**Great community, sports
facilities nearby**

**Location, hospital, shopping
malls, university, restaurants,
access to main roads**

**The diversity of the
people, the upcoming
vibrant culture**



**The Georges River and
Chipping Norton Lakes**

Location, not too far from
the Sydney CBD and
close to the outer west



**Proximity to major
transport routes**

What would make your suburb better?



A **clean** and **safer** community

More jobs, less traffic and cheaper housing

Express train to the city



Greater employment opportunities

Increase commuter parking spaces at Edmondson Park Station



LIVERPOOL TODAY OUR HOME

A growing city with a diverse community and rich heritage.

Liverpool is a growing city with a bright future. Spanning the Georges River in the east to the Nepean River in the west, it is a diverse local government area (LGA) featuring city, suburban and rural living.

Liverpool is the modern face of multicultural Australia. We are proudly one of the most culturally diverse cities in NSW with around 40% of people born overseas and half the population speaking a language other than English at home. We have high levels of refugee and migrant settlement, which Council has been vocal in supporting, so our diversity is growing. We also have a significant Aboriginal community, and celebrate the original inhabitants – the Darug and Dharawal people.

Liverpool is experiencing substantial growth, with the population expected to increase by around 60% between 2019 and 2036. This growth is due to increased residential development in our city centre and near train stations, and through new release development in our growth areas.

The city is working to solidify its position as a strategic centre. The Liverpool City Centre is being revitalised to support increased commercial and residential uses and will develop into a walkable, active river city with attractive open spaces and increased transport connections. A burgeoning health and education-focused innovation precinct could see additional health and knowledge workers attracted to the area, beyond the 30,000 health and knowledge workers already expected by 2036.

We are also proudly home to the Western Sydney International (Nancy-Bird Walton) Airport, set to open in 2026. The airport and associated Aerotropolis are expected to generate significant employment and economic opportunities for Liverpool, including knowledge-intensive jobs. The Liverpool City Centre is equidistant from Western Sydney International Airport and Sydney Airport, making it a natural location for development supporting the new airport.

Liverpool has substantial environmental assets, with a wide variety of plants, animals and ecosystems, including a significant number of threatened species. As Liverpool grows and the effects of climate change become more pronounced, protecting our trees, waterways and open space is critical to our success as an attractive, welcoming city.

Liverpool has a rich heritage with a major cultural and arts focus. A number of significant heritage buildings and places are protected at the local and state levels, including Rosebank Cottage, Pioneers' Memorial Park, the Casula Powerhouse Arts Centre, the TAFE college building, which is formerly Liverpool Hospital (1820-1958), and St Luke's Church (1819-present). There are also significant Aboriginal sites and cultural landscapes, which we are committed to preserving.

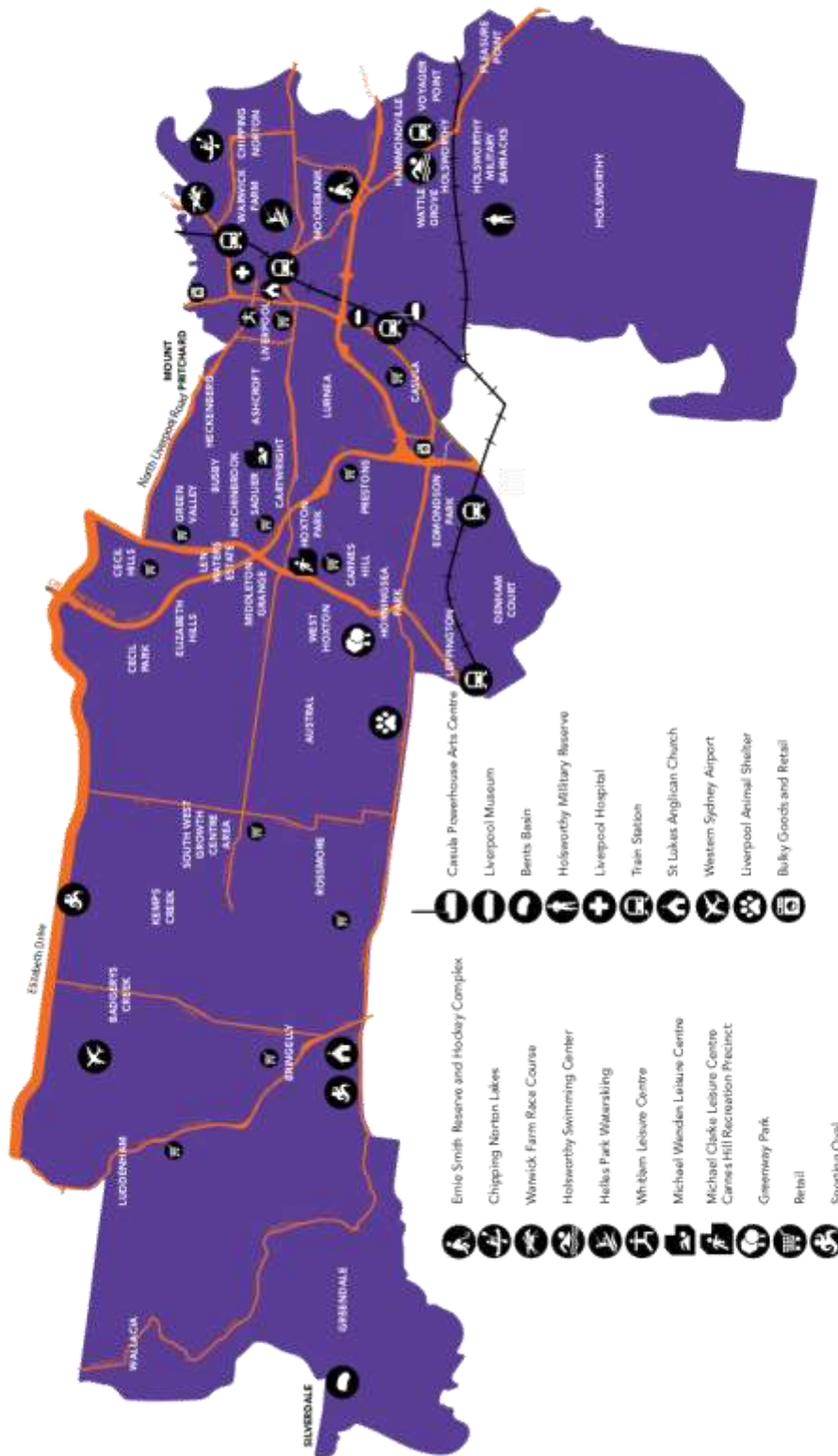
**THE ORIGINAL INHABITANTS OF
LIVERPOOL ARE THE DARUG AND
DHARAWAL ABORIGINAL PEOPLE**



■ DID YOU



OUR HOME OUR CULTURE



■ KEY CHALLENGES AND OPPORTUNITIES

Transport Accessibility

Liverpool has good access to Sydney's major motorways, including the M5 and M7, providing direct routes to the wider Western City District and beyond. However, congestion during peak periods is a major challenge. Many residents use cars as opposed to public transport, and the growing population is placing demands on existing infrastructure.

Roads are being enhanced through key projects including The Northern Road Upgrade, the Bringelly Road Upgrade, the M9 and M12 motorways, and the Outer Sydney Orbital. Council also is working with external stakeholders to improve access in and around the CBD and investigate options for public parking to support growth.

Council advocates a modal shift to public transport, however new or additional, better and faster services are required to make public transport a more attractive option. Council will continue to push for new and improved public transport services that match Liverpool's status as a metropolitan cluster, as identified in the Greater Sydney Region Plan. We will also work to improve active transport options, such as cycling, that can reduce congestion while improving health.

Council's flagship project – the Fifteenth Avenue Smart Transit Corridor – will provide our residents with a rapid public transit connection from Liverpool city centre to the many opportunities provided by Western Sydney Airport, including new high-value jobs. It will also link existing suburbs such as Miller and Middleton Grange, redressing past public transport disadvantage.

City Economy

While Liverpool's rapid population growth creates momentum for new business opportunities, significant challenges exist in ensuring that local employment growth keeps pace with population growth. Currently close to 70% of Liverpool's population works outside the LGA, reflecting a long-standing structural imbalance of jobs between Western and Eastern Sydney. A key Council priority is providing local jobs for local people. As part of the Western Sydney City Deal, we are committed

to supporting an increase in jobs in the Western City District by 200,000 over the next 20 years. Focus will be placed on supporting Liverpool's competitive advantages – health, education, distribution and logistics, professional services and advanced manufacturing. While we will be investing in opportunities to grow and transition industries, we will also support and nurture the significant number of skilled trade jobs operating in the LGA.

Liverpool continues to experience growth in commercial and industrial development. Its status as the key regional centre of South West Sydney, and its strong transport links to other areas of Sydney, place it in prime position to attract a range of industries. This is heightened by the new Western Sydney International Airport and Aerotropolis – which promises growth in industries such as agriculture, agribusiness, aerospace and tourism – as well as the Moorebank Intermodal Terminal.

The revitalisation of the city centre is a key Council priority to support economic growth. Council has implemented several strategies aimed at revitalising the city centre, developing key economic, cultural, recreation and entertainment activities, and creating a place in which people want to live and business wants to invest.

The Natural Environment & Sustainability

Liverpool's growth, while increasing opportunities for the community, also places pressure on our environment – a challenge Council is working to address.

Maintaining and enhancing natural values in the Liverpool LGA has the potential to increase the area's attractiveness as a place to live, work and play. Council is actively pursuing opportunities to increase connections to the Georges River and Chipping Norton Lakes, which involves improving community access to riverfront land and increasing opportunities for recreation while also protecting and enhancing environmental values such as water quality.

The Western District is noted for having significantly lower tree canopy cover, which along with geography and continued increases in impermeable surfaces associated with urban development,

■ KEY CHALLENGES AND OPPORTUNITIES

contributes to an urban heat island effect that makes temperatures significantly higher than in eastern Sydney areas. Climate change projections from the NSW and ACT Regional Climate Modelling (NARCLIM) Project indicate that the Liverpool City area will become warmer, with more hot days and fewer cold nights. Extreme temperatures will become more severe and droughts will be more frequent and last longer. There will be slightly more rainfall overall, and storm rainfall intensity will increase, adding to flood risk. The risk of bushfire will grow. Extreme weather events are projected to become more severe. This can place human life, property and natural ecosystems at increased risk.

Council will work to both mitigate and adapt to climate change, in partnership with the State and Federal governments. Because Council has limited ability to influence sustainability outcomes for the vast majority of development, we will advocate strongly for improvements to building codes and other associated State planning instruments in order to help us to address issues of urban heat and climate change. We will also pursue opportunities to address energy, waste and water efficiency, such as the creation of solar farms, better design of precinct-wide systems; increased tree canopy; and water-sensitive urban design.

Approximately one-third of Liverpool's land is covered by native vegetation and the LGA contains a number of significant biodiversity values, including vegetation communities, threatened ecological communities, and threatened and migratory species and populations. This includes the critically endangered Cumberland Plain Woodlands, which are at threat from increasing suburban development. We will protect, enhance and connect areas of high conservation value bushland and corridors to offer the best chance of long-term survival of flora and fauna. It should be noted, however, that the State Government's biocertification process has a dominant influence over ecological outcomes, particularly given that the extent of biocertified land is likely to be expanded within Western Sydney. Council continues to advocate for the protection of its important high conservation value land.

Significant amounts of Liverpool's rural lands are earmarked for urban development, making it important that we protect remaining rural and scenic lands from urban development into the future, and that there are clear boundaries between urban, non-urban and scenic lands.

Social connection

Liverpool is one of the most culturally diverse cities in NSW with around 40% of people born overseas and almost half the population speaking a language other than English at home.

Liverpool is also a young LGA, with a median age of 33 and 37% of the population under the age of 25. While there is currently a lower number of people in older age groups (60+ years), demographic trends point to a rapid increase in older people over the next 30 years.

Liverpool also has a slightly higher level of disadvantage than the rest of Greater Sydney, and has a high number of households in rental and mortgage stress. This disadvantage is not evenly distributed across the LGA, with some areas featuring much higher levels of hardship, particularly in areas with high proportions of social housing, such as the 2168 District. Census 2016 data indicates 6.2% of the Liverpool population identify as living with disability and requiring some form of assistance. This is higher than the Greater Sydney average of 4.9%, suggesting that people with disability represent a significant portion of the Liverpool community.

Council acknowledges that planning plays an integral role in determining the health and wellbeing outcomes of people. It also acknowledges that socially diverse communities are inclusive, healthy and creative. Liverpool needs to continue efforts to create a harmonious society where differences are appreciated and celebrated, while working to address inequality. There is also a challenge for the Council to ensure its services reach a broad range of citizens in an equitable way while still accommodating those most in need. Council will continue to work with government, non-government organisations and community groups to create social connections among our broad and diverse population, including residents living with a disability, young people, Aboriginal communities, migrants and refugees. This is achieved through various channels and strategic community engagement mechanisms such as committees, Liverpool District Forums, community events, libraries, arts and cultural programs, and utilisation of community centres and precincts.

Local character

Liverpool is growing rapidly, putting pressure on both growth areas, which are seeing major increases in greenfield development, and established areas, where we are seeing more infill development. Council is working hard to accommodate this significant growth and the opportunities it brings while ensuring that local character and heritage are preserved and Liverpool's renowned community pride remains intact.

Key issues for Council include ensuring development is of an appropriate scale, that congestion is properly managed and that service delivery is improved – both for new suburbs where services are being rolled out and in our established areas where services need to be upgraded to ensure great liveability outcomes.

Metropolitan Cluster	Major Urban Parks including National Parks and Reserves
Health and Education Precinct	Waterways
Strategic Centre	South Creek Park and Investigation
Local Centre	Green and Priority Corridor
Economic Corridor	Train Station
Trade Gateway	Disputed Train Link
Western Sydney Employment Area	Proposed Mass Transit Investigation 0-10 years
Industrial Land	Train Line/Mass Transit Visionary
Land Release Area	Proposed Investigation
Transit Oriented Development	City Serving Transport Corridor
Urban Renewal Area	Motorway
Greater Parramatta to Eastern Creek Growth Area	Disputed Motorway
Urban Investigation Area	Road Investigation 10-20 years
Urban Area	Road Visionary
Protected Natural Area	District Boundary
Metropolitan Rural Area	

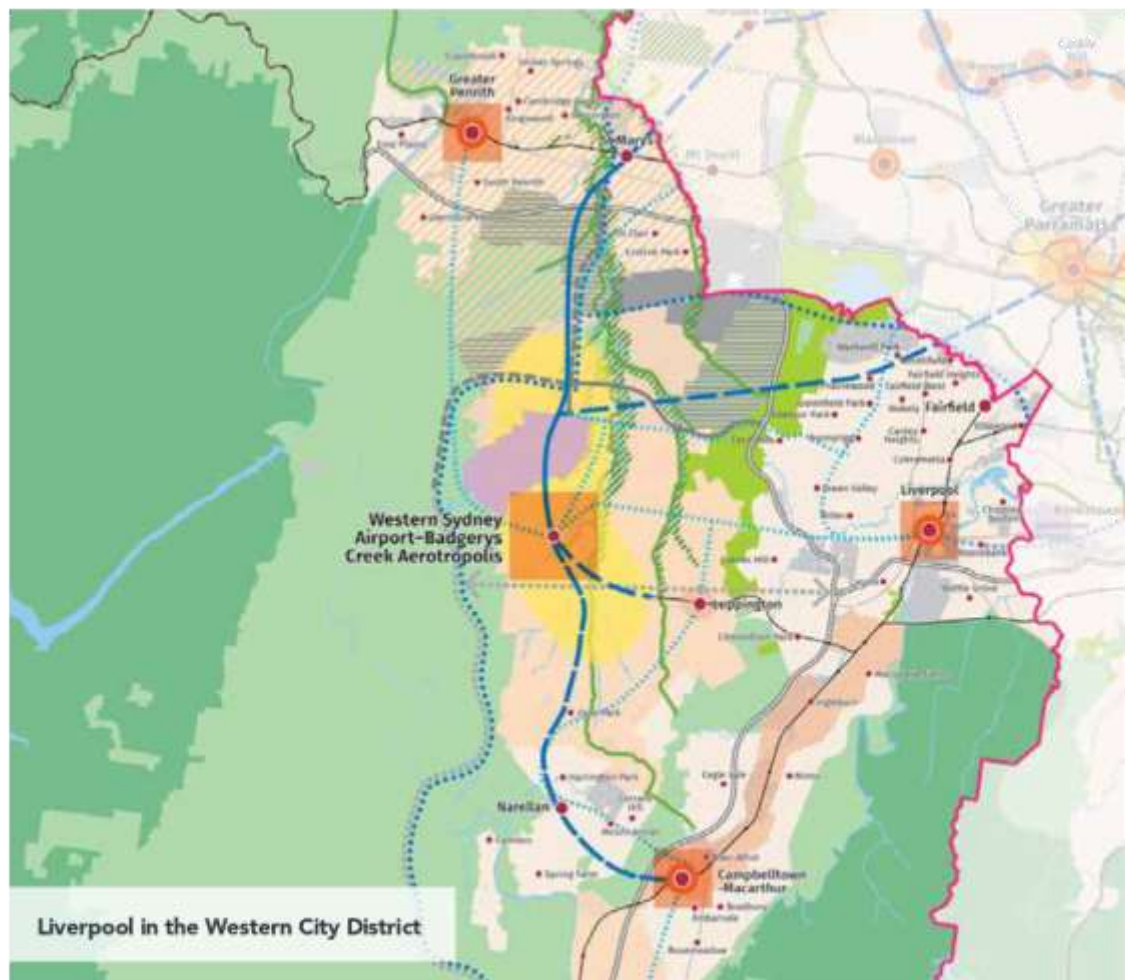


Image: Greater Sydney Commission

VISION CONNECTED LIVERPOOL 2040

A vibrant place for people that is community focused, walkable, public transport-oriented, sustainable, resilient and connected to its landscape. A place that celebrates local diversity and history, and is connected to other Sydney centres. A jobs-rich city that harnesses health, research, education, innovation and growth opportunities to establish an inclusive and fair place for all.

Liverpool in 2040 is a connected, cosmopolitan city. Anchored by a vibrant CBD in the east and a successful 24-hour Western Sydney International Airport to the west, the area is rich in opportunity.

Changes to planning controls in Liverpool City Centre have spurred significant high-quality development, with a balanced mix of housing, employment, community and retail space. Improvements to the urban domain and a focus on active and innovative transport have led to a thriving, safe, inclusive and green city centre with a strong 24-hour economy. Access to the Georges River has been improved, providing residents and visitors with cool, clean, green spaces in which to connect, play, swim and relax. A boom in local education opportunities has changed the city, with an influx of university students bringing greater life and vibrancy to the CBD, feeding into Liverpool's activated streets and enhanced night-time economy. While much has changed in the last 30 years, Liverpool still values and protects its rich heritage, be it Aboriginal, Colonial or migrant, and is renowned for its celebration of diversity and its residents' civic pride.

Liverpool has solidified its position as an innovation leader and an attractive, successful CBD. The Liverpool Innovation Precinct provides high-value health, education and research jobs for local residents and skilled workers from across Sydney. Transport infrastructure has evolved to reflect Liverpool's strategic importance, with fast, frequent connections to other key destinations in Sydney and between our suburbs, enabling people to live, work and play within a 30-minute city. Liverpool is the destination of choice for business and study, and opportunities abound for local residents.

Council's flagship project, the Fifteenth Avenue Smart Transit (FAST) Corridor, uses electric, autonomous technology to seamlessly connect residents to the vast commercial and industrial employment opportunities provided by Western Sydney International Airport, while spurring sustainable transit- and landscape-oriented development along its route. The airport and

the FAST corridor showcases the unique natural identity of South West Sydney to the world. As the gateway city to the airport, Liverpool enjoys a robust commercial and visitor economy, providing office space, hotel and key worker accommodation, and lively recreation options day and night.

Liverpool's suburbs are distinct environments with a focus on local character and quality built form. Housing growth has been planned with supporting infrastructure to maximise amenity. Density has been concentrated in the CBD and centres close to public transport, while ensuring established local character is respected. In growth areas, housing development has been supported by crucial transport and servicing infrastructure. Land has only been rezoned for housing when required, and Liverpool's important contribution as a food bowl for Sydney and the export market has been protected and enhanced.

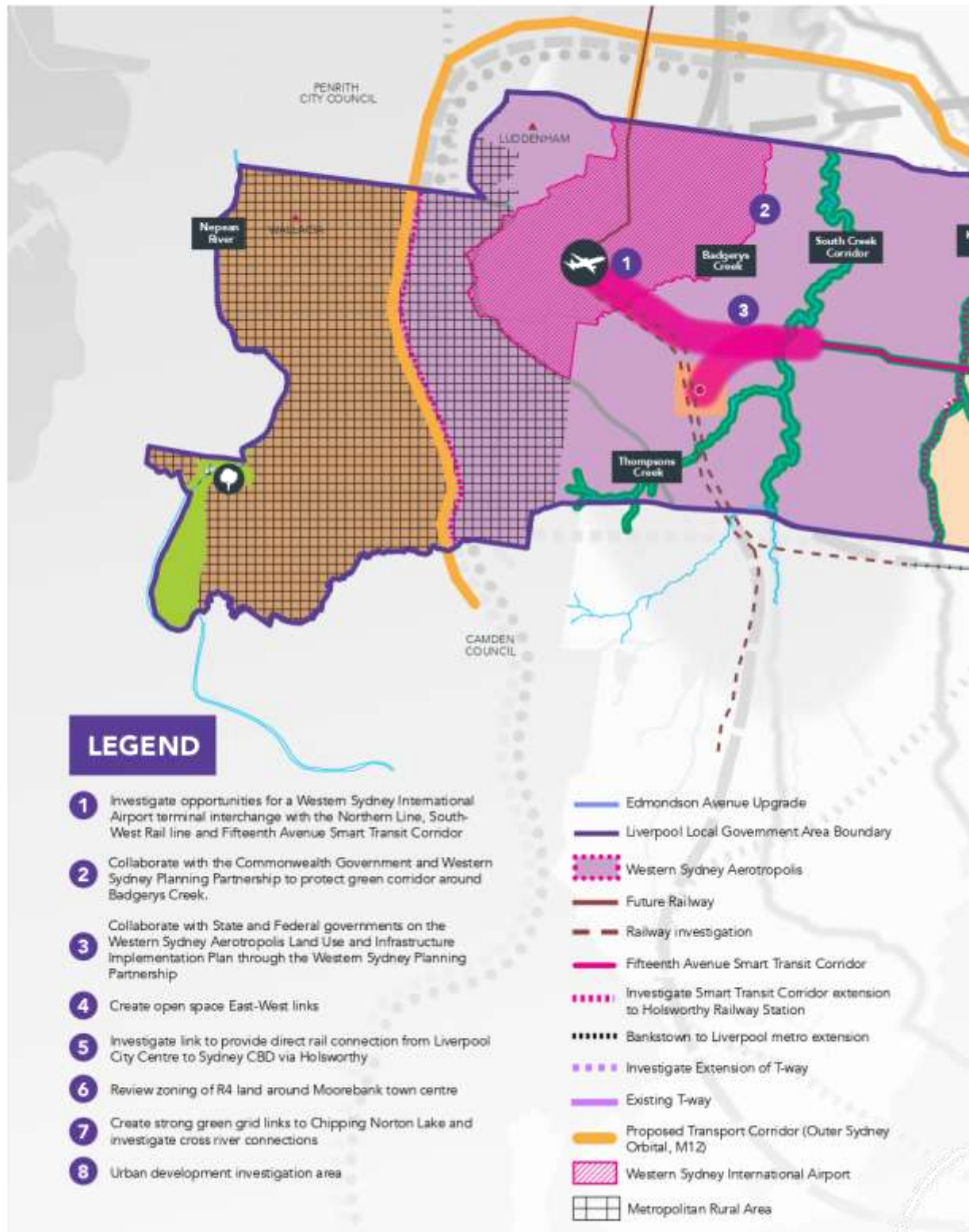
Areas of high ecological value have been protected and enhanced while high tree canopy cover exists across both established and new release areas, and active transport links have been strengthened, creating a high-quality, cooler, high-amenity environment. New housing is supported by plentiful open space, high-quality community facilities, reliable transport infrastructure and water-sensitive urban design. Liverpool has taken a strong role in meeting the State Government's net zero 2050 aspirations, and is an exemplar of sustainability and climate resilience.

While the airport has led to major changes to the western part of the LGA, Council has protected its rural lands and ensured that biodiversity, nature and sustainability are central considerations of all new development.



Artist's impression of Liverpool Civic Place

LIVERPOOL CITY COUNCIL STRUCTURE PLAN





LIVERPOOL CITY CENTRE AND SURROUNDING AREA (Inset)



LEGEND

- Investigate grade separated pedestrian crossing
- Investigate linking open space & green corridor
- Retain Industrial Zonings
- Bulky Goods and Retail
- Investigate flexible employment
- Investigate cross river links
- Investigate railway station redevelopment
- Masterplan Woodward Place (including RE2 zone)

- Liverpool Innovation Precinct
- Work with State Government to investigate residential development at Hargrave Park precinct
- Investigate residential/mixed use at Moore Point to support CBD and Innovation precinct (River Precinct)
- Health and Education
- Commercial Core/Mixed Use
- Prepare structure plan and planning proposal to rezone the Warwick Farm racing precinct to B4
- Review residential development in odour buffer to Water Recycling Plant

PLANNING PRIORITIES.



PLAN ON A PAGE

OUR THEMES AND PLANNING PRIORITIES



CONNECTIVITY

Our Connections

PLANNING PRIORITY 1

Active and public transport reflecting Liverpool's strategic significance

PLANNING PRIORITY 2

A rapid smart transit link between Liverpool and Western Sydney International Airport/Aerotropolis

PLANNING PRIORITY 3

Accessible and connected suburbs

PLANNING PRIORITY 4

Liverpool is a leader in innovation and collaboration



LIVEABILITY

Our Home

PLANNING PRIORITY 5

A vibrant, mixed-use and walkable 24-hour City Centre with the Georges River at its heart

PLANNING PRIORITY 6

High-quality, plentiful and accessible community facilities, open space and infrastructure aligned with growth

PLANNING PRIORITY 7

Housing choice for different needs, with density focused in the City Centre and centres well serviced by public transport

PLANNING PRIORITY 8

Community-focused low-scale suburbs where our unique local character and heritage are respected

PLANNING PRIORITY 9

Safe, healthy and inclusive places shaping the wellbeing of the Liverpool community

Priorities are not listed in order of importance.
Each priority is of equal importance.



PRODUCTIVITY

Our Jobs

PLANNING PRIORITY 10

A world-class health, education, research and innovation precinct

PLANNING PRIORITY 11

An attractive environment for local jobs, business, tourism and investment

PLANNING PRIORITY 12

Industrial and employment lands meet Liverpool's future needs

PLANNING PRIORITY 13

A viable 24-hour Western Sydney International Airport growing to reach its potential



SUSTAINABILITY

Our Environment

PLANNING PRIORITY 14

Bushland and waterways are celebrated, connected, protected and enhanced

PLANNING PRIORITY 15

A green, sustainable, resilient and water-sensitive city

PLANNING PRIORITY 16

Rural lands are protected and enhanced



Artist's impression of the Fifteenth Avenue
Smart Transit (FAST) Corridor project





CONNECTIVITY

Our Connections

The Liverpool of 2040 is a fast, efficient and productive city connected by rapid frequent transport, high speed digital networks and strong collaboration between community, business and government, all supporting abundant opportunity.

Liverpool will grow its position as the pre-eminent capital of South West Sydney, reflecting its history, amenity, strategic location, and large concentration of jobs and services.

Today Liverpool is growing rapidly and is predicted to welcome more than 130,000 additional residents between 2019 and 2036 – close to a 60% increase on the current population. Council is committed to supporting this growth while providing the best outcomes for the local community. This means ensuring the necessary infrastructure is in place to support growth and manage congestion.

Transport connectivity is a critical element of Council's vision for a connected Liverpool. In our LSPS survey, the community told us its top transport priority is 'faster public transport services to Liverpool and other major centres'. While Liverpool is known for its strong road transport links, including proximity to the M5 and M7 motorways, Council continues to advocate for better public transport connectivity. This will be particularly important for the success of Liverpool's burgeoning Innovation Precinct, Western Sydney International Airport and Western Sydney Aerotropolis, and to help in the management of road congestion.

The development of the airport, located entirely within the local government area (LGA), provides one of our biggest opportunities. Liverpool has a unique opportunity to become the hub for the transport of goods, services and information between Sydney and the world, but we need the supporting infrastructure to deliver this vision.

We will ensure that infrastructure projects being planned for and delivered – including the South-West rail line extension, the Moorebank Intermodal Terminal, the M12 motorway, the

Outer Sydney Orbital and freight line, the Sydney Metro City and Southwest extension from Bankstown to Liverpool and the North-South rail line – benefit Liverpool's residents, and will advocate for their timely delivery. We will also progress city-shaping infrastructure such as the Fifteenth Avenue Smart Transit (FAST) Corridor project, and advocate for Liverpool to be connected to future fast rail projects.

We will also prioritise transit-oriented development opportunities. Transit-oriented development should be designed so that communities have access to a diversity of transport options and are not reliant on private car use to move around the local government area. For development to qualify as transit-oriented, Council expect that in the long term a majority (50%+) of work-related travel movements will be able to be achieved by sustainable modes due to the availability of high-quality walking and cycling paths, and micro-mobility and public transit options.

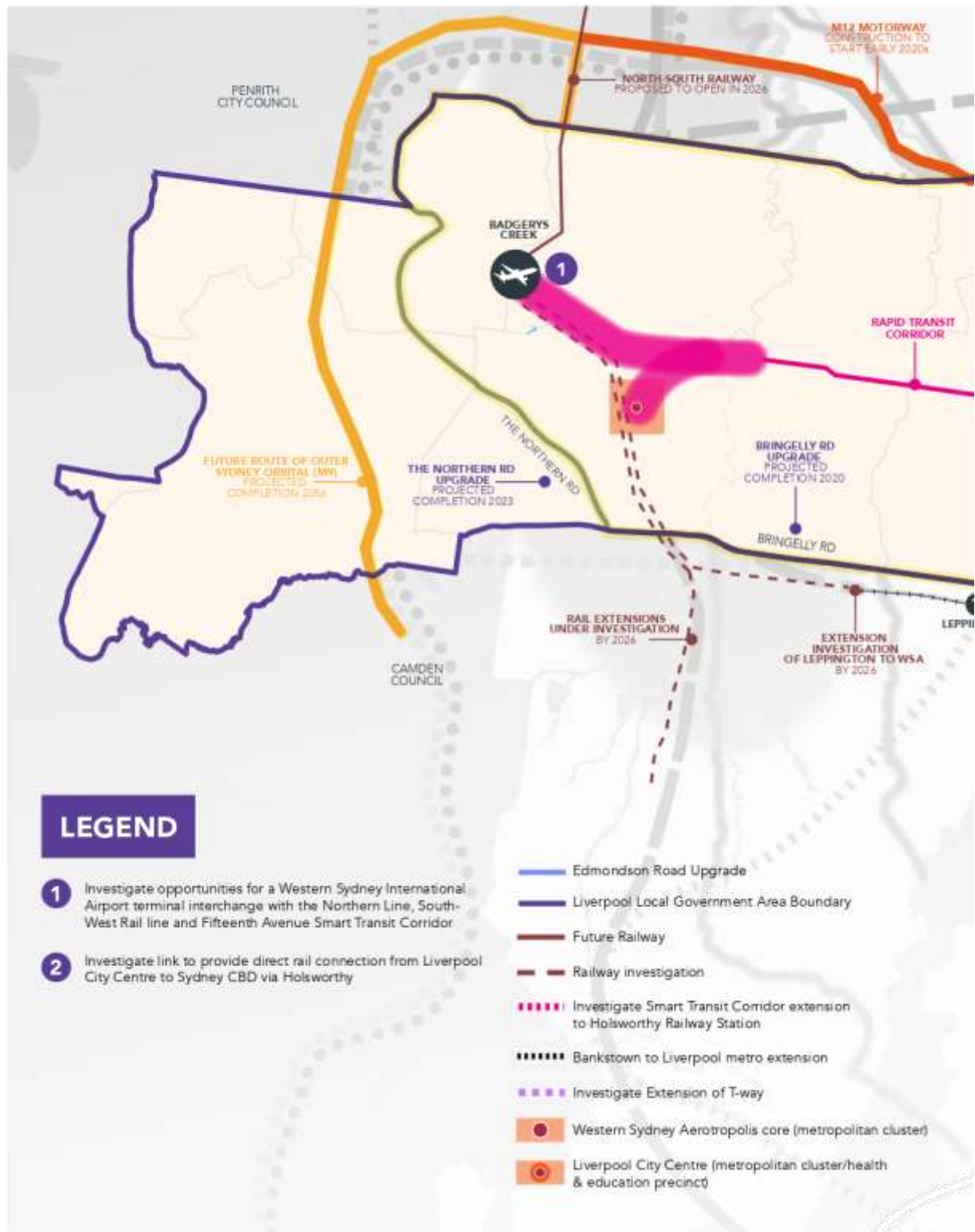
Council is committed to strengthening social connectivity as a way to improve health and wellbeing. Improving walkability of neighbourhoods can encourage greater social engagement. Council also delivers place-based initiatives, engaging residents in disadvantaged areas or areas of geographical isolation to improve social outcomes.

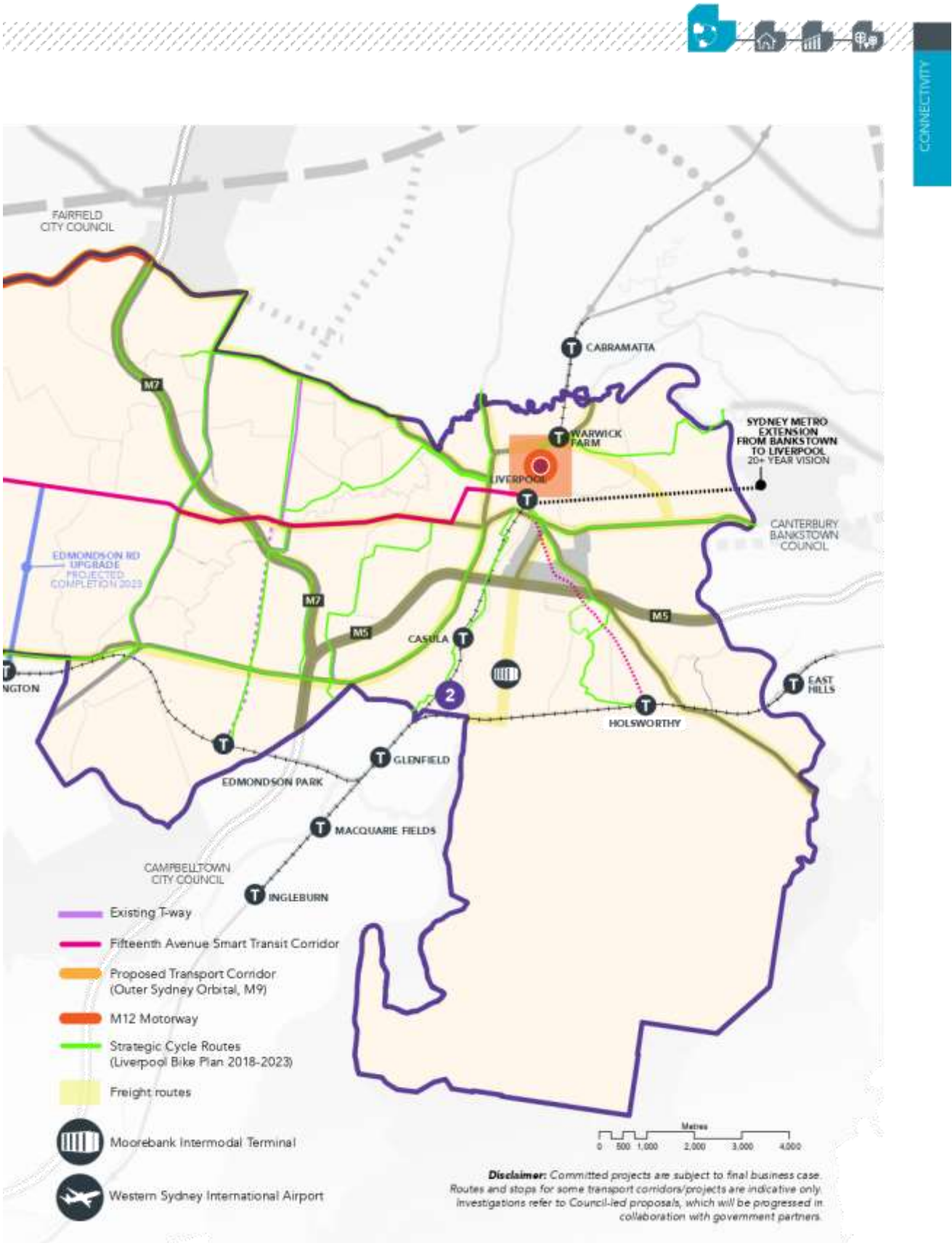
Connectivity also refers to digital connectivity. As part of the Western Sydney City Deal, Liverpool will be at the forefront of digital technology, developing a Digital Action Plan and fast 5G Strategy to ensure our residents and local industries have the tools to take advantage of new economy opportunities, and for Liverpool to meet its goal of becoming a connected, smart Innovation City.

Finally, connectivity means collaboration. We have a strong relationship with residents, community groups, local businesses, Councils, state agencies, and State and Federal governments. We will continue to put collaboration and consultation at the heart of our activities to get the best outcomes for everyone.

TRANSPORT IMPROVEMENT INITIATIVES

CONNECTIVITY





CONNECTIVITY

LOCAL PLANNING PRIORITY 1

Active and public transport reflecting Liverpool's strategic significance

As a Metropolitan Cluster in the Greater Sydney Region Plan – *A Metropolis of Three Cities* and one of the fastest growing LGAs in Australia, Liverpool's transport systems must cater to existing and future development, and provide connectivity to other metropolitan centres and clusters.

While Liverpool is well connected to other major centres, it currently takes a long time to travel via public transport, thus 30-minute city outcomes are not available to many of our residents.

Our community survey indicated that 'fast public transport to Liverpool and other centres' was the most important transport desire for residents and workers in Liverpool. With the strengthening of its health, education and innovation sectors, fast public transport connectivity will be a key ingredient to success.

Our vision is to have fast and frequent connections within Liverpool LGA and to other centres, and Council is committed to advocating for the transport we need and deserve. Council will continue to make representations to the State Government on critical transport improvements in and around the Liverpool LGA, including:

- Express train services between Liverpool and Sydney CBD and beyond;
- The fast-tracked extension of the City & Southwest Metro from Bankstown to Liverpool;
- A fast-tracked Leppington to WSA-Aerotropolis train link with an interchange at the airport;
- Western Sydney Aerotropolis/Airport as a stop on any future fast rail project;
- Improvements to the road network surrounding Liverpool City Centre to support additional developments in the Liverpool Collaboration Area;
- Improved local bus services

- Road network upgrades to minimise traffic impacts from Moorebank Intermodal Terminals; and
- Heathcote Road upgrade between Infantry Parade and Pleasure Point

Future transport investigations include an extension to Council's proposed FAST corridor and an extension of the Parramatta-Liverpool Rapid Bus T-Way to Edmondson Park. An extension of the currently proposed FAST corridor from the city centre south to Holsworthy would allow direct interchange with the Airport & South Line (T8), providing a relatively rapid connection between Western Sydney International Airport, Liverpool City Centre, Sydney Airport and the Sydney CBD. This would provide better access to jobs and reduce road congestion. Liverpool's bus T-way priority corridor could also be extended to provide public transit connectivity from new population centres such as Edmondson Park to the FAST Corridor and airport, north to Parramatta and south into Ingleburn, which also has access to the T8 line.

We will work with Transport for NSW to support and implement travel behaviour change programs to help manage demand on the transport network, including by requiring new developments and businesses operating in key precincts to develop and implement travel plans to encourage the use of sustainable transport choices.

Council is also working to address active transport, acknowledging the health and amenity benefits of walking and cycling, by implementing the Liverpool Bike Plan 2018-2023. By 2040 there will be a complete connected network of cycle paths in new and established areas. We will also support emerging forms of micro-mobility in the LGA, including e-bikes and e-scooters.



**Our vision is to have fast
and frequent connections
within Liverpool and to
other centres.**





COUNCIL WILL

- Collaborate with State Government to improve public transport connections and timetabling, providing Liverpool residents with fast access to other major centres and key infrastructure such as Western Sydney International Airport and the Sydney CBD.
- Work to ensure all Liverpool's residents and workers can access the benefits of the 30-minute city.
- Improve cycling and walking tracks, and prioritise pedestrian movement.
- Investigate measures required to support micro-mobility.
- Investigate locations of active transport bridge connections into adjoining LGAs.
- Continue to collaborate with State government to deliver more commuter car parking around train stations.
- Investigate setting mode shift targets.

HOW WE GET AROUND



ACTIONS

- 1.1** Update CBD Parking Strategy. **(short term)**
- 1.2** Develop a Transport and Mobility Plan and review Local Environmental Plan (LEP) to ensure alignment **(short term)**
- 1.3** Advocate the prompt delivery of the South-West rail line extension from Leppington to Western Sydney International Airport, with a terminal interchange at Western Sydney International Airport **(short term)**
- 1.4** Advocate a fast rail service to the Liverpool City Centre from Sydney CBD, and enhanced integration with future rail links **(short term)**
- 1.5** Advocate a Western Sydney Aerotropolis/Airport stop on any future high speed rail network **(short term)**
- 1.6** Work with Transport for NSW (TfNSW) to bring forward extension of the Sydney Metro City and Southwest and investigate a preferred alignment **(short term planning, with delivery in the long term)**
- 1.7** Upgrade Edmondson Avenue from Fifteenth Avenue to Bringelly Road **(medium term)**
- 1.8** Work with TfNSW on an extension of the T-way from Hoxton Park Road south to Edmondson Park Station **(medium to long term)**

CONNECTIVITY

CONNECTIVITY

LOCAL PLANNING PRIORITY 2

A rapid smart transit link between Liverpool and Western Sydney International Airport/Aerotropolis

RATIONALE

To assist in achieving Liverpool's goal of becoming the regional city for South West Sydney, and support its role as a Metropolitan Cluster in the Greater Sydney Region Plan, fast and regular connections to other strategic centres and key facilities is of critical importance.

Council's flagship project, the Fifteenth Avenue Smart Transit (FAST) Corridor, is a visionary city-shaping project intended to deliver a high-speed end-to-end link between the Liverpool CBD and the Western Sydney International Airport by the airport's opening in 2026. Liverpool City Council considers that rapid transit along Fifteenth Avenue needs to be high-quality, fast (a maximum 30-minute connection to the airport in order to support aspirations for a 30-minute city), supportive of compact transit- and landscape-oriented development, suitable for both workers and airline passengers (directly connecting to Western Sydney International Airport), and cost-effective. Council is designing the corridor to support a rapid transit mode that meets these criteria.

Council sees the FAST Corridor as a key gateway for visitors to Australia, and as such envisages a parkland corridor that provides multiple roles, including landscaping, city cooling and water sensitive urban design. The location of this corridor, as the gateway to Australia for international travellers, is an opportunity to showcase high-quality affordable design and the unique natural environment of South West Sydney. International travellers want to experience Australian nature, and Fifteenth Avenue – as a parkway – can be their first introduction to this (similar to the experience of arriving at Changi Airport and entering Singapore via the Eastern Parkway).

These segments will be designed to be uniquely South West Sydney. The corridor will be high-quality, inviting and vegetated, with buildings and transport

infrastructure naturally forming part of the landscape. This parkway will reinforce the city's commitment to effective public transport and active transport, such as cycling.

Council will also encourage compact medium/high-density development in appropriate locations along the corridor, which, while not common yet in Western Sydney, will be designed in a way that is familiar and approachable.

Design decisions will prioritise affordability and achievability while ensuring quality of place. Design will also integrate the circular economy – an economic system aimed at minimising waste and optimising resource use – as a fundamental design principle, along with a connection to existing natural assets (including the Western Sydney Parklands). The corridor will create places for people with a high level of amenity for current and future populations and users.

Liverpool City Council's approach to development in the area is intended to reduce sprawl, improve availability and patronage of public transport, increase walking and healthy lifestyles, and preserve the amenity and productivity of the area and rural land uses. We will investigate first and last mile active and public transport connections between new centres and established suburbs that lie adjacent. When complete, the FAST Corridor will be a catalyst for increased public transport growth in the LGA and wider region, and a shift away from car dependence.

COUNCIL WILL

- Progress the FAST Corridor to deliver a high-quality rapid transit connection to Western Sydney International Airport.
- Increase connectivity to the airport to support jobs growth and airport viability.
- Create transit- and landscape-oriented development along the route at appropriate locations and at an appropriate scale.



The Fifteenth Avenue Smart Transit (FAST) Corridor is a visionary, city-shaping project



ACTIONS

- 2.1** Finalise investigations into the FAST corridor in collaboration with State and Federal government agencies (**short term**)
- 2.2** Amend the LEP and relevant environmental planning instruments to preserve the FAST corridor (**short term**)
- 2.3** Investigate location of transit- and landscape-oriented development hubs along the FAST Corridor route (**short term**)
- 2.4** Investigate extension of FAST corridor to Holsworthy station with consideration of appropriate station locations, including Moore Point (**medium to long term**)
- 2.5** Deliver the FAST Corridor (**long term**)



LOCAL PLANNING PRIORITY 3

Accessible and connected suburbs

RATIONALE

Communities in Liverpool have strong networks that extend to other suburbs and centres, and importantly to the Liverpool City Centre, which serves as the regional centre for South West Sydney. These networks include community ties as well as access to jobs and services. Sometimes the development of new areas, major roads and other infrastructure put barriers in the way of these connections.

Council is committed to ensuring these connections are retained and improved, and that new suburbs will be linked to the broader Liverpool community and region.

Neighbourhood centres are the heart of Liverpool's suburbs. Council will use placemaking principles to link these centres with other centres and the Liverpool City Centre by a network of pathways and cycleways integrated into system of parks and open space. This will include ensuring through-site links are provided on larger blocks to improve connectivity and permeability.

An efficient public transport and road network is important to provide access to jobs and services for our community. Council will ensure that barriers are minimised by improving local infrastructure and working with State agencies to ensure that our suburbs are accessible and connected by high-quality roads and public transport services.

Council will collaborate with neighbouring councils to ensure a coordinated approach to open space and transport planning to improve access to local jobs, services and recreation opportunities.



Neighbourhood centres are the heart of Liverpool's suburbs



CONNECTIVITY

COUNCIL WILL

- Link suburbs and centres with each other and Liverpool City Centre by a network of high-quality pathways and cycleways integrated into system of parks and open space
- Advocate for improvements to public transport connections and timetabling for suburban areas and centres
- Use placemaking principles to ensure that public transport infrastructure and accessibility to suburban centres is optimised
- Improve local road access to suburbs and centres
- Collaborate with neighbouring councils to ensure a coordinated approach to open space and transport planning

ACTIONS

- 3.1** Collaborate with neighbouring councils to improve open space and transport connections, including active transport routes, around Chipping Norton Lakes **(short term)**
- 3.2** Optimise public transport infrastructure and accessibility as well as connectivity to pathways and cycleways as part of place-making for neighbourhood centres **(short to medium term)**

LOCAL PLANNING PRIORITY 4

Liverpool is a leader in innovation and collaboration

RATIONALE

Liverpool City Council is committed to supporting and leading innovation in our organisation and our community as we develop into a connected smart city. By creating an innovation ecosystem, testing new approaches and working with partners in government, industry and the community, we will secure Liverpool's place as the premier edge city for the Western Sydney Aerotropolis.

Liverpool City Centre will become a rejuvenated river city offering new and diverse housing and employment spaces, anchored by a world-leading Innovation Precinct providing high-value local job opportunities. This area is covered by the Liverpool Collaboration Area Place Strategy, developed by the Greater Sydney Commission in collaboration with Council and other stakeholders. We will maintain our position as an active leader in the strategy's delivery, ensuring the best outcomes are reached for our community.

Key to the success of all our plans is to collaborate and work effectively with stakeholders from the private, public and community sectors. Consultation with the community will be guided by Council's Community Participation Plan and an engagement framework that builds community capacity and social capital, allowing people to feel connected and proud of our City, and able to participate in processes and decisions that affect their lives.

Council will always collaborate with neighbouring councils, Aboriginal Land Councils, State and Federal governments, state agencies, private sector interests and the Western Sydney Planning Partnership to deliver the best outcomes.



COUNCIL WILL

- Be recognised as an innovation leader locally, nationally and globally.
- Work with other councils and the NSW and Federal Government to implement the Western Sydney City Deal.
- Improve digital connectivity.
- Ensure planning controls respond to connected and autonomous vehicles (CAV) without compromising pedestrian amenity.
- Be a leading voice in the Western Sydney Planning Partnership to deliver good planning outcomes in the development of the Western Sydney Aerotropolis.
- Work with adjoining councils to address cross-border issues.
- Involve the community in strategic planning matters.
- Involve Aboriginal Land Councils in strategic planning matters.
- Collaborate with government agencies to coordinate delivery of local and regional infrastructure.
- Support innovative approaches to the operation of business, educational and institutional establishments to improve the performance of the transport network.

ACTIONS

- 4.1** Collaborate with government agencies to prepare a local and regional level infrastructure schedule (**short term**)
- 4.2** Collaborate with Greater Sydney Commission and relevant stakeholders to address the Liverpool Collaboration Area Place Strategy through amendments to the LEP (**short to medium term**)
- 4.3** Investigate planning control changes to support CAVs and adaptive reuse of parking infrastructure (**short to medium term**)



**Liverpool is committed
to supporting and
leading innovation**







LIVEABILITY

Our Home

Liverpool in 2040 will become one of Australia's most liveable cities, capitalising on its youth, culturally diverse and harmonious population, proximity to Western Sydney International Airport, and a City Centre close to transport and the amenity of the Georges River.

Council is working to make the entire LGA an attractive, vibrant and healthy place to live, work and play for our diverse community. Council is committed to ensuring that the LGA is accessible and inclusive to all people, including older people and people with a disability. The Liverpool community, through the Community Strategic Plan (CSP), has told Council that having a clean, attractive city with ample facilities and community activities is essential. The LSPS survey also revealed the top two liveability priorities for the community are 'access to parks and recreation options' and 'walkable neighbourhoods'.

Council is committed to ensuring the parks, facilities and amenities the community requires are of high quality and provided close to homes to create walkable suburbs. Liverpool is working to transform community hubs in new and existing suburbs to create vibrant and multipurpose facilities in which the community can connect. The activation of these hubs with sporting facilities, outdoor fitness gyms, improved pathways and lighting and children's playgrounds will provide the community with spaces to lead healthy lifestyles and spend time with friends and family to improve social connections and harmony.

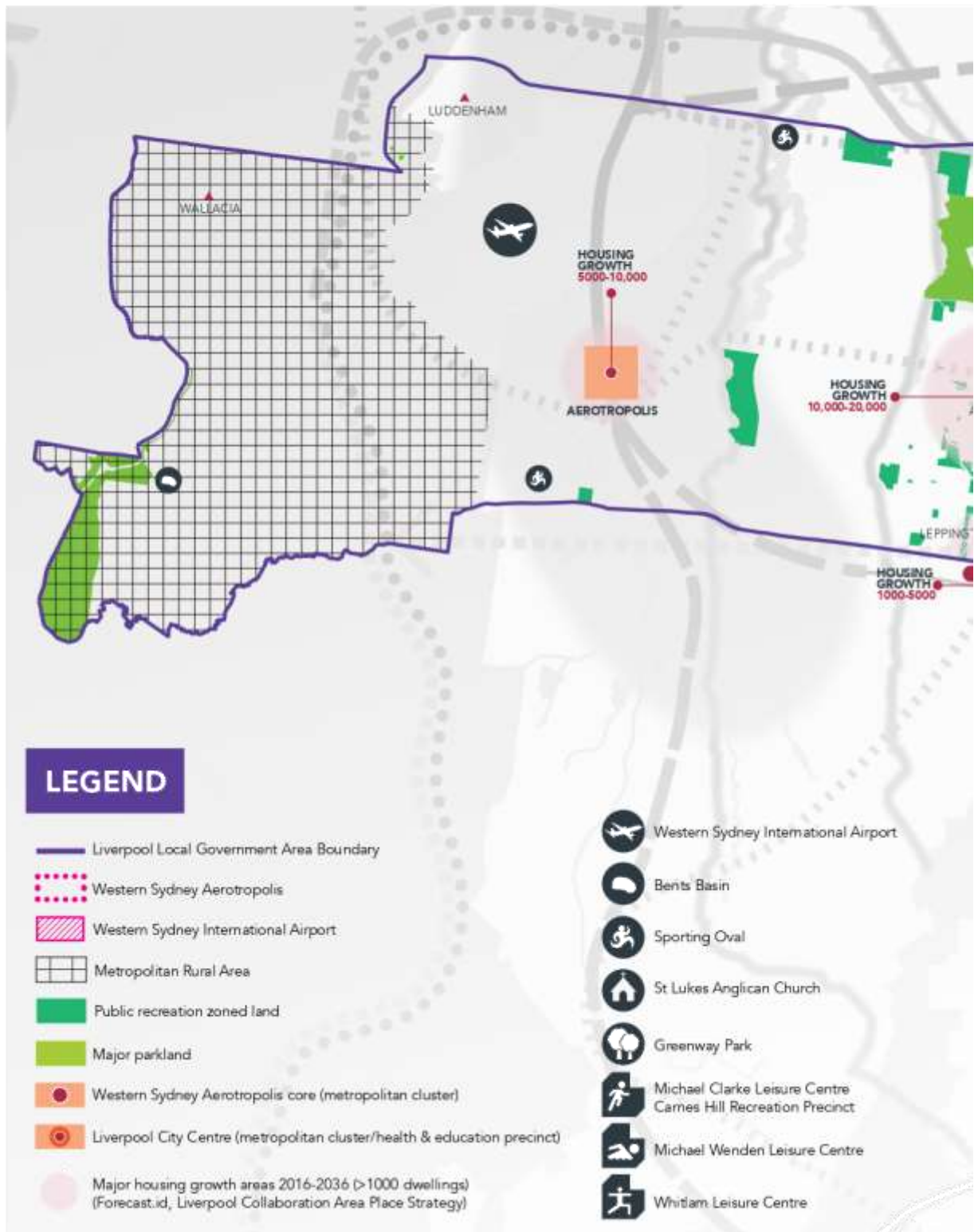
Through development of the Liverpool Housing Strategy, Council is also making sure the right housing is being built in the right places to cater to the many needs of the community, while ensuring local character is respected. This includes increasing affordable housing options, as Liverpool has one of the highest needs for social and affordable housing in the country.

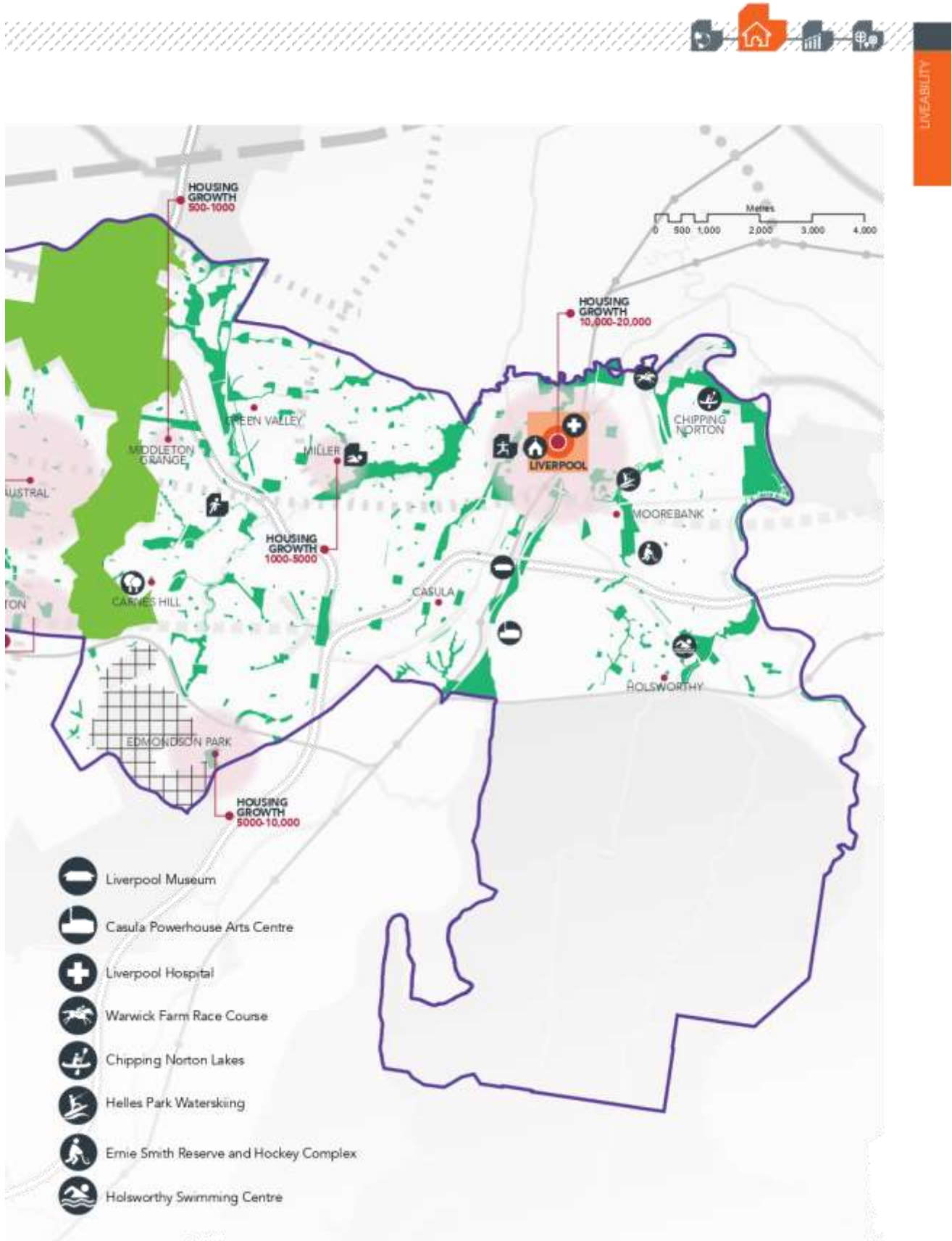
In the City Centre, Council has already implemented Amendment 52 to the LEP, allowing mixed-use development and, along with a new City Centre Public Domain Master Plan, seeks to create a functional, high-amenity city centre with a strong 18-hour economy and better opportunities for healthy active transport, such as walking and cycling. We will activate sites across the city for art, events and festivals, improve night-time activities and provide a lively environment for locals that also becomes an internationally renowned destination. By 2040 we will expand our 18-hour economy to become a dynamic 24-hour city.

While Liverpool is experiencing significant change, it is also committed to honouring its local character and rich heritage, with a number of significant buildings and sites protected at the local and state levels, and a commitment to retain the low-scale nature of existing suburbs.

OUR HOME

LIVABILITY





LIVEABILITY

LIVEABILITY

LOCAL PLANNING PRIORITY 5

**A vibrant, mixed-use and walkable
24-hour City Centre with the
Georges River at its heart**

RATIONALE

Liverpool is working to create a vibrant 18-hour economy in the City Centre over the next decade, and then transform into a lively river city by 2040 with a strong 24-hour economy, providing ample space for jobs, homes, entertainment, recreation and education.

Council is working on an ambitious suite of plans and projects to deliver this vision. The City Centre Public Domain Master Plan will guide the development of a city centre that meets the needs of the community now and into the future. This will involve major public domain improvements, including increased urban canopy, active transport integration, wayfinding and walkability enhancements, safety improvements and better design standards. This will be complemented by City Activation and Heritage Interpretation strategies to improve the experience of Liverpool residents and visitors.

We will also be embarking on ambitious transformational projects like Woodward Place, which will see the current Woodward Park become Liverpool's own 'Central Park' – an iconic lifestyle precinct providing world-class facilities to support a healthy, connected and diverse population.

The City Centre will refocus around the amenity of a healthy Georges River, connected to parkland and open space with development that is of appropriate scale and which respects the natural character of the river environment.

With a 24-hour economy and a focus on vibrancy, we will need to ensure that extended trading hours in the CBD can occur without being affected by increased residential development and the potential for amenity impacts.

COUNCIL WILL

- Ensure Liverpool City Centre is a vibrant, mixed-use, pleasant and walkable city by providing a high-quality public realm and open spaces; fine grain and diverse urban form; a diverse land use and housing mix, high amenity and walkability; and recognising and celebrating the character of the place and its people.
- Foster a 24-hour economy with a lively and well-integrated mix of activities.
- Investigate and establish destinations (interactive public places) within the City Centre to facilitate walkability and ensure sustainability.
- Refocus the City around the amenity and assets of the Georges River, while ensuring the natural character of the river is protected through development of an appropriate scale.
- Develop a high-quality Georges River and Chipping Norton Lakes open space system addressing integration with the Liverpool City Centre and the local and regional open space network.
- Reduce congestion in the CBD.
- Ensure appropriate levels of parking are available.



**The City Centre will
refocus around the
amenity of a healthy
Georges River**





LIVABILITY

ACTIONS

- 5.1** Review Development Control Plan (DCP) to ensure the 18-hour economy can be suitably protected from reverse amenity issues **(short term)**
- 5.2** Review LEP and DCP to give effect to City Centre Public Domain Master Plan **(short term)**
- 5.3** Incorporate community and cultural facilities in Liverpool Civic Place **(short to medium term)**
- 5.4** Review LEP to support development, community facilities and linkages at key Council-owned sites in the City Centre **(short to medium term)**
- 5.5** Review LEP to ensure alignment and give effect to Woodward Place Masterplan **(medium to long term)**



LIVEABILITY

LIVEABILITY

LOCAL PLANNING PRIORITY 6

High-quality, plentiful and accessible community facilities, open space and infrastructure aligned with growth

RATIONALE

Liverpool City Council is committed to the delivery of high-quality facilities and services that are attractive, flexible and address the needs of the general community. Council supports the central concept that an efficient and effective network of quality and appropriate community facilities is essential to the health, social and economic wellbeing of Liverpool. Council's vision is to create best practice recreation spaces for people that inspire and connect residents, and act as a catalyst for community life.

However, current restrictions around what types of social infrastructure Council is able to raise funds for through development contributions makes it difficult for us to provide the services the community expects in a timely fashion. Council will continue to advocate expansion of the types of facilities we can levy for, including community centres and high-quality embellished parks, and also investigate alternative sources of funding to deliver the amenity the community expects and deserves in new and existing areas.

Council is also committed to improving its open space network. While our latest Social Infrastructure Study found there is sufficient open space to meet our growing needs through to 2041 overall, there are some areas where open space access needs to be improved, including in the City Centre and New Release areas.

One of Council's most ambitious projects will be the River Connections plan, which will create a continuous network of accessible, high-quality paths along the Georges River from Casula through the City Centre to Pleasure Point. Collaboration with adjoining councils will allow extended green links to be established beyond Liverpool's LGA boundaries. The Liverpool LGA also contains part of the Western Sydney Parklands, a key open space and recreational

asset for the region. Council will improve active transport connections to the Parklands and, in collaboration with the Western Sydney Parklands Trust, investigate potential improvements to the recreation, sports, tourism and community value of the area.

COUNCIL WILL

- Deliver a world-class network of community facilities.
- Deliver timely construction of community facilities in new release areas.
- Ensure community facilities, open space and recreation facilities meet the needs of a growing population across the entire LGA.
- Ensure place-based integrated services by co-locating social services within neighbourhoods.
- Undertake community needs assessment and community engagement prior to constructing new facilities.
- Encourage integrated planning with community facilities for all major new and redeveloped recreation precincts.
- Prioritise a collaborative approach towards community and social infrastructure planning.
- Increase public open space and work with key stakeholders to revitalise and develop parks and open space across the Liverpool LGA.
- Strengthen and promote active transport links between centres and open space.
- Strengthen connections to Western Sydney Parklands.
- Develop the regional riverside parkland as part of a wider plan to reengage communities with the Georges River.
- Engage communities who use the Georges River on relevant projects.
- Collaborate with neighbouring councils to identify outdoor sports and recreation facilities that have a regional focus.



LIVABILITY

ACTIONS

- 6.1** Advocate changes to contributions planning and seek alternative funding mechanisms to deliver high-quality facilities and infrastructure, including the FAST corridor within accelerated timeframes **(short term)**
- 6.2** Investigate DCP changes to encourage green open space in high-rise development **(short term)**
- 6.3** Collaborate with the NSW Department of Education to identify opportunities for sharing local school infrastructure with the wider community **(short term)**
- 6.4** Develop community and recreation hub at Phillips Park, Lurnea **(short term)**
- 6.5** Redevelop Lighthouse Park into a district recreation and open space destination park, including a community centre, and active and passive open spaces **(medium term)**
- 6.6** Review LEP to give effect to River Connections Program linking green space networks from Casula to Pleasure Point, improving accessibility and visual amenity **(short, medium and long term)**
- 6.7** Establish a metropolitan-scale cultural/entertainment facility in the City Centre **(visionary)**



Our vision is to create recreation spaces for people that inspire and connect residents, and act as a catalyst for community life



Casula Parklands Adventure Playground



LIVEABILITY

LIVEABILITY

LOCAL PLANNING PRIORITY 7

Housing choice for different needs, with density focused in the City Centre and centres well serviced by public transport

RATIONALE

Forecast.id population projections predict that Liverpool's population will grow to 358,871 by 2036, compared with our 2019 population of 227,312 – an increase of almost 60%.

Council delivered on average 1684 new dwellings a year between 2013/14-2017/18. In the year to May 2019 completions hit a record of 2314 new dwellings. Council expects strong demand for housing to continue.

The Liverpool Local Housing Study 2019 predicts demand for an additional 43,452 dwellings between 2016 and 2036. Liverpool will need to ensure that the households built are suitable to support the growing population, and located in the right areas, which will be explored further through the development of a Local Housing Strategy.

Population and dwelling forecast

Year	2016	2021	2026	2031	2036
Population	212,232	242,817	276,970	319,304	358,871
Total dwelling demand	67,738	77,279	87,261	99,632	111,190
Additional dwellings required over five years		9,541	9,982	12,371	11,558

Sources: Population – Forecast population projections (Forecast.id); Dwellings and additional dwellings – Liverpool Local Housing Study 2019 (SGS Economics and Planning).

Taking into account existing growth areas and our recent changes to City Centre planning controls to allow for more housing, our Local Housing Study indicates that there's enough zoned land to provide for 89,652 additional dwellings, more than enough to cater for projected demand well into the

future. As such, there is no pressure to zone more land for residential development over the next 20 years. Council's preference is for any increases in the density of current controls to be focused in the City Centre and close to centres with good public transport accessibility, including potential transit- and landscape-oriented development hubs along the Fifteenth Avenue Smart Transit (FAST) Corridor.

Findings from the Local Housing Study indicate there is a mismatch between the types of housing being delivered, and what is needed by the community. For example, the majority of housing in the city centre is two-bedroom apartments, however there is demand from larger family homes in the city centre with more bedrooms. In growth areas, there is a large number of 4-5 bedroom houses being delivered, however, there is demand for smaller housing, including semi-detached housing such as townhouses.

Council acknowledges that a variety of homes will be needed to cater for a diverse population with different needs and incomes. In 2017/2018, less than 2% of new developments were diverse housing options. Liverpool needs housing that is suitable for young families, larger culturally appropriate housing for multi-generational families, more affordable dwellings, and housing for downsizers, seniors and those who want to age in place. Council supports increasing the diversity of housing – including 'missing middle' style developments such as terraces, townhouses and manor houses – to assist in providing more affordable dwellings, but this must respect local character and be in areas close to services and transport. For affordable housing in particular, it is critical that support services are close by.

Council also supports an increase in affordable rental housing for the community as a priority, with the LGA suffering from one of the highest rates of rental stress in the country. There are currently over 7,000 households in rental stress (meaning more than 30% of income is spent on rent) with more than 4,000 experiencing severe rental stress (more than 50% of income spent on rent). Council acknowledges the economic and social benefits created through the provision of affordable housing, including supporting job growth, encouraging greater financial prosperity for low income households, increasing social cohesion through mixed tenure developments, and reducing social isolation.

Demand for social and affordable housing is increasing at much faster rates than Sydney more broadly. By 2036 our LGA will have the highest



LIVABILITY

demand for social and affordable housing in the entire Western City District. Increasing the provision of affordable rental housing will mean that Liverpool's key workers will be able to better support themselves, their families and the local economy. Council will develop an Affordable Housing Contributions Scheme, identifying new areas for higher density housing in which contributions for affordable housing can be levied. Council will also continue to deliver affordable housing through mechanisms such as voluntary planning agreements, and the provision of Council-owned land for affordable housing developments.



HOUSEHOLDS IN RENTAL STRESS

LIVERPOOL 43%
SYDNEY 37.5%
2016 CENSUS

HOUSEHOLDS IN MORTGAGE STRESS

LIVERPOOL 27.9%
SYDNEY 17.5%
2016 CENSUS

DEMAND FOR SOCIAL AND AFFORDABLE HOUSING

2016 7646 DWELLINGS
2036 16,465 DWELLINGS

What is social and affordable housing?

SOCIAL HOUSING is affordable rental housing provided by not-for-profit, nongovernment or government organisations to assist people who are unable to access suitable accommodation in the private rental market and may be at risk of homelessness. Social housing includes public, Aboriginal and community housing, as well as other services and products. It acts as a safety net for the most vulnerable in the community.

AFFORDABLE HOUSING is not the same as social housing. It is also open to moderate income earners that may be struggling to make ends meet, and is around 20-25 per cent below market rental prices. It allows key workers whose household income is not high enough to cover market rent to live and work locally. Affordable housing can be owned by private developers or investors, local governments, charitable organisations or community housing providers (CHPs), but is managed by CHPs.



Council supports increasing the diversity of housing while respecting local character



HOW WE LIVE

SEPARATE
HOUSE 73.7%



APARTMENTS 11.7%



MEDIUM
DENSITY 13.8%



COUNCIL WILL

- Concentrate residential development in the Liverpool City Centre, in growth areas, in transit- and landscape-oriented development hubs along the Fifteenth Avenue corridor route, and in existing centres with high amenity that are well serviced by public transport.
- Ensure housing typologies are diverse and appropriately located to cater for the entire community.
- Ensure housing supports aging in place and accessibility principles.
- Ensure a greater proportion of affordable housing is delivered.
- Work with residents, government and other relevant stakeholders to renew social housing that is near end of life and build more diverse and inclusive communities.
- Deliver ongoing renewal and beautification projects in Miller, Cartwright and Ashcroft.
- Work with DPIE to deliver housing in growth areas with supporting infrastructure.

HOUSING TENURE

- FULLY OWNED 25%
- RENTING 33%
- MORTGAGE 42%



NUMBER OF CARS

- NO CARS 8%
- CAR 30%
- TWO CARS 38%
- THREE+ CARS 24%



ACTIONS

- 7.1** Develop and implement a Local Housing Strategy through amendments to the LEP and DCP (**short term**)
- 7.2** Consider an Affordable Housing Contributions Scheme in line with Greater Sydney Commission's requirement for 5-10% affordable housing, and amend LEP to give effect (**short term**)
- 7.3** Partner with State Government to investigate the potential for master planned precincts (such as NSW Land and Housing Corporation properties in Warwick Farm and Green Valley) to improve and increase social and affordable housing (**medium term**)
- 7.4** Partner with State Government and stakeholders including TAFE to review the Masterplan for Miller Town Centre (**short term**)
- 7.5** Advocate to State and Federal Governments for more investment in social and affordable housing (**short term**)
- 7.6** Partner with State Government to investigate planning controls to address land fragmentation challenges in growth areas (**short term**)
- 7.7** Progress planning for sustainable, high-density transit- and landscape-oriented development along the Fifteenth Avenue Smart Transit Corridor (**short to medium term**).
- 7.8** Monitor, review and update the Local Housing Strategy to ensure sufficient, appropriate and diverse housing is delivered to meet community needs (**ongoing**)



LIVABILITY

LOCAL PLANNING PRIORITY 8

Community-focused low-scale suburbs where our unique local character and heritage are respected

RATIONALE

Our established areas feature suburbs with strong communities, low scale development and relatively affordable development, and good access to services. Consultation for the LSPS shows that residents of Liverpool's established suburbs have a strong desire for their areas to maintain their low-scale local character into the future.

Council will work to ensure development remains largely low scale and sympathetic to local character. This approach is supported by findings from the Local Housing Study that indicate further rezoning is not required to meet housing growth targets, and that housing targets can be easily accommodated without apartment developments outside of the City Centre and town centres.

In existing centres, Council will undertake design-led planning using placemaking principles to ensure growth is sympathetic to local character and heritage. We're also working to improve the amenity of our suburbs. We've updated contributions plans to better enable local infrastructure that can meet needs, and we will continue to advocate changes to contributions planning to provide funds for improvements such as open space embellishment and new facilities.



Suburbs will largely remain low scale



COUNCIL WILL

- Ensure residential development is maintained at a low scale around local centres not well-served by public transport.
- Preserve local character of existing suburbs.
- Improve the amenity of local centres and recognise the role of retail in establishing vibrant local centres.
- Ensure heritage, including Aboriginal heritage, is valued and protected.
- Support heritage asset revitalisation and adaptive reuse where appropriate
- Advocate for and provide social and cultural infrastructure in established and new release areas.

ACTIONS

- 8.1** Amend LEP to implement findings of review of dwelling typologies and density around Moorebank Shopping Centre (**short term**)
- 8.2** Review R4 zoned land around local centres to address interface issues (**short to medium term**)
- 8.3** Investigate Local Character Statements and Local Character overlays for areas identified as requiring more fine-grain planning responses (**short term**)
- 8.4** Review and update heritage provisions in LEP, and address anomalies (**short term**)
- 8.5** Undertake design-led planning using placemaking principles for local and district centres (**medium term**)

LIVEABILITY

LIVEABILITY

LOCAL PLANNING PRIORITY 9

**Safe, healthy and inclusive places
shaping the wellbeing of the
Liverpool community**

RATIONALE

The future of Liverpool is vibrant, active and healthy. While Western Sydney residents should enjoy the same health outcomes as those in other parts of Sydney, currently this is not the case, with significantly higher rates of obesity and diabetes. This is due to a number of reasons, including high car dependence, relatively lower levels of spare time due to commuting and traffic, poor access to public and active transport, and fewer recreation opportunities.

A healthy built environment is a key motivator for the future. We are working to build more walking and cycling trails, opening access to our natural assets, focusing development near public transport to encourage mode shift, and ensuring there is enough open space and recreational facilities to meet growing demand. New urban centres will be compact and transit-oriented, to maximise opportunities for walking and active transport.

Council is also committed to creating inclusive and harmonious environments. Liverpool is one NSW's most culturally diverse cities with around 40% of people born overseas. Liverpool will continue efforts to create a harmonious society where differences are appreciated and celebrated, as socially diverse communities are inclusive, healthy and creative. We will also continue to develop programs, in partnership with government and non-government organisations, to improve mental wellbeing, which is a key aspect of health and safety.

In Council's LSPS consultation, safety was indicated as a major community concern. In 2019 Liverpool was recognised as a Pan Pacific Safe Community – a strong, cohesive, vibrant community, where citizens actively participate in public life. We have identified domestic violence, road accident trauma, drugs and alcohol, and fall-and-trip-related injuries as key issues, and will work to continuously improve safety.

Council is committed to embedding Crime Prevention through Environmental Design (CPTED) principles across the LGA. This crime prevention strategy focuses on the planning, design and structure of cities and neighbourhoods in order to reduce opportunities for criminal behaviour. The DCP has been developed to encourage safe design, and Council will continue to provide high-quality environments in which our residents feel safe and secure, including through building design, maintenance works, landscaping, lighting, and open and public space design.

Council will also be improving the safety of our residents during natural disasters by ensuring hazard data is up to date, not locating development in high hazard areas, and addressing environmental issues that place the community at risk, such as the urban heat island effect.



**The future of Liverpool
is vibrant, active and
healthy**





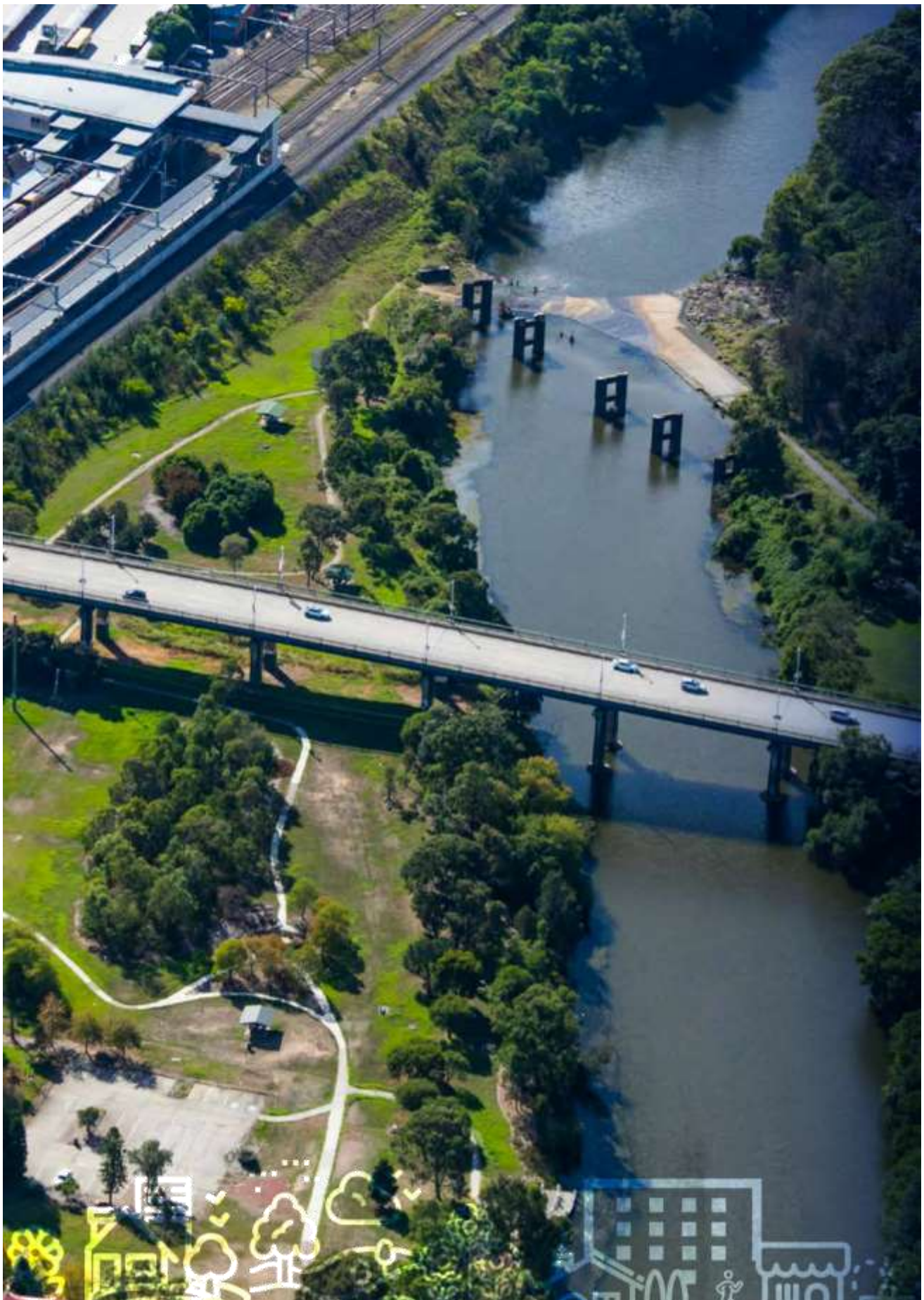
COUNCIL WILL

- Support the health and wellbeing of the community through healthy urban design and placemaking.
- Consider child-friendly planning strategies and aging in place principles in LEP and DCP reviews.
- Advocate better public transport outcomes.
- Focus development close to public transport.
- Ensure new centres are compact and transit-oriented.
- Ensure community and social support services are located near areas of need.
- Work with stakeholders to reduce road trauma.
- Work with partners to reduce crime.
- Ensure the built environment incorporates CPTED principles.
- Facilitate the development and promotion of integrated walking and cycling networks within and between centres.
- Prioritise pedestrian movement in the CBD and beyond.
- Investigate locations of active transport connections into adjoining LGAs.
- Continue to update hazard mapping to ensure safety, including flood and bushfire mapping.
- Address the urban heat island effect.

ACTIONS

- 9.1** Amend DCP to better respond to urban heat (**short term**)
- 9.2** Liaise with Fairfield and Canterbury Bankstown councils to implement active transport routes around Chipping Norton Lakes, including bridge and road connections (**medium term**)







PRODUCTIVITY

Our Jobs

Liverpool in 2040 will be the premier edge city to Western Sydney International Airport – a jobs-rich, attractive destination drawing in jobs, business, study, tourism and investment, supporting the operation of a successful 24-hour international airport.

Liverpool has a long-standing role as the regional centre for the South West, reflecting its history and strategic location near major transport infrastructure, such as the M5 and M7 motorways, and T2, T8 and freight lines.

The City boasts a major health and education precinct including Liverpool Hospital – the largest standalone hospital in NSW – three major universities and two TAFE campuses. It also supports a significant manufacturing and logistics sector.

Recent infrastructure announcements mean that Liverpool has significant potential to strengthen its productivity and capitalise on its status as an attractive, jobs-dense centre. The opening of the Western Sydney International Airport will catalyse investment in a wide range of knowledge-intensive industries. The Western Sydney Aerotropolis will also generate significant employment and economic opportunities for Liverpool and the broader South West region.

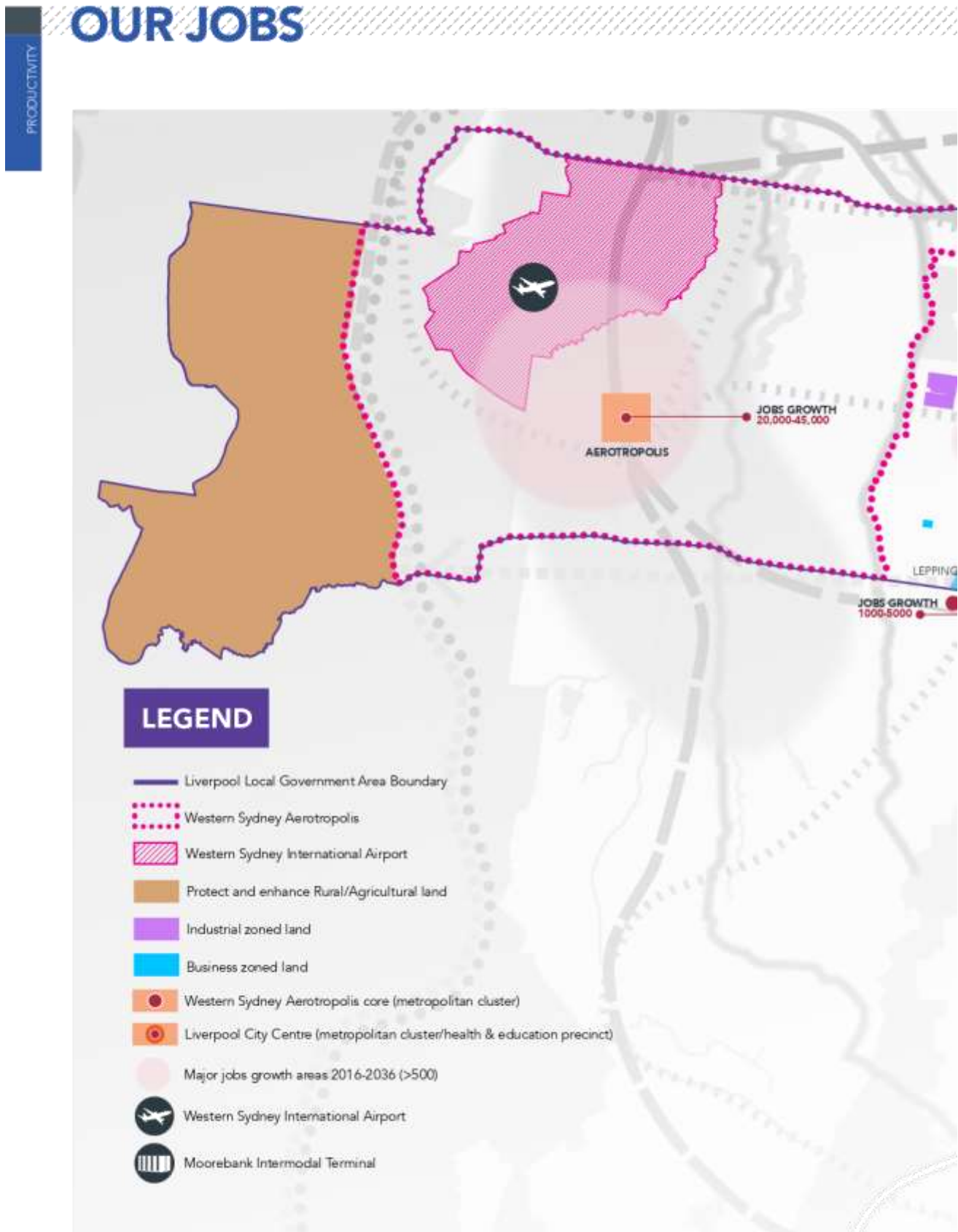
Changes to Liverpool's City Centre planning controls means that Liverpool is well-placed to accommodate additional jobs and housing growth. With its position on the Georges River, and following additional rail and rapid transit connections set out in the State Government's Future Transport 2056 Strategy are complete, there is opportunity to create a high amenity Centre that will be the natural location

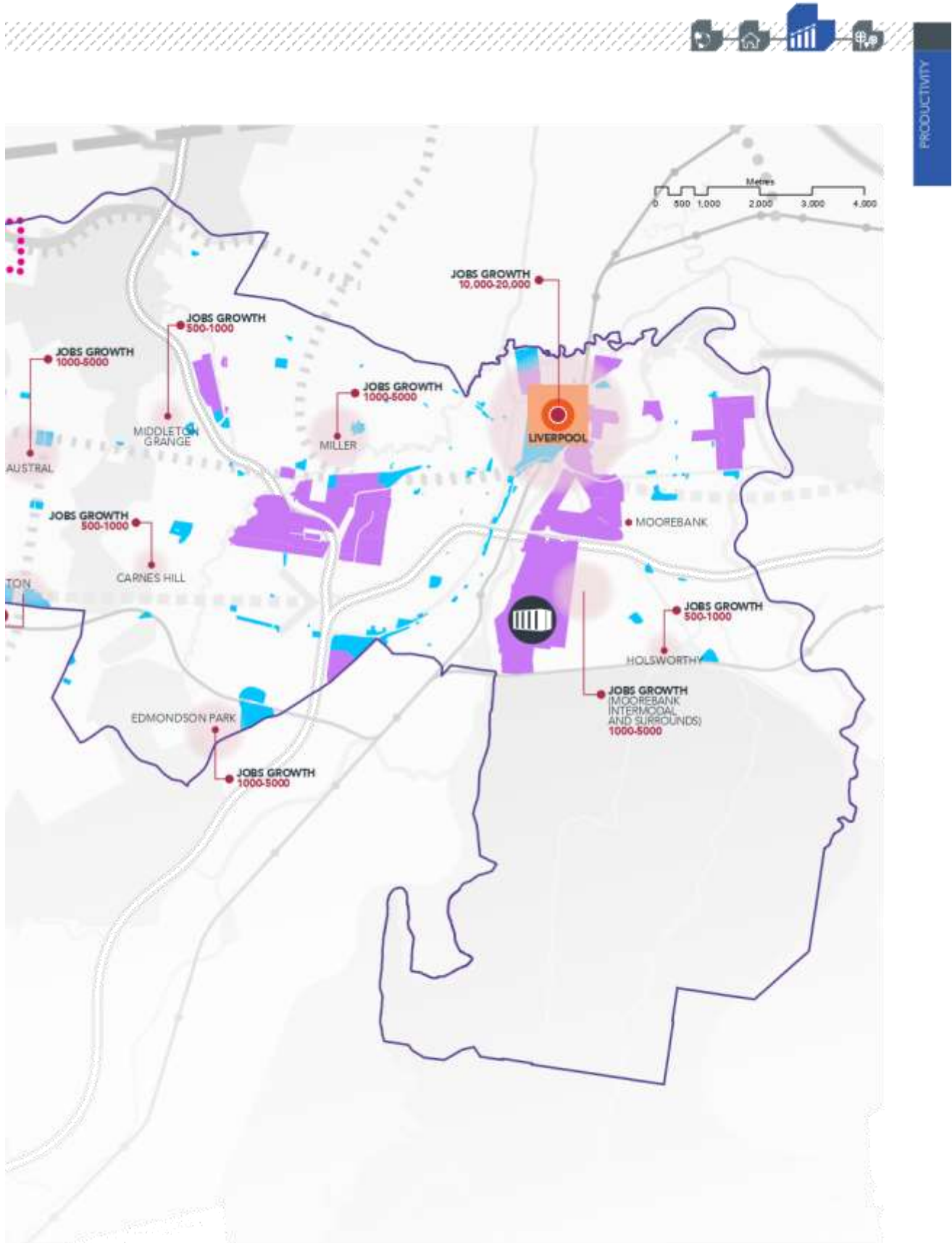
for businesses related to the airport. Liverpool will become the premier edge city to Western Sydney International Airport.

A key challenge for Liverpool's productivity is managing the infrastructure and employment land needed to sustain projected population growth and economic opportunities. A key action will be investigating ways to increase or better manage existing industrial and employment lands to cater for the jobs of the future.

Another challenge is poor access to knowledge jobs due to long journey times to other centres and significant road congestion. While Liverpool has a goal of increasing opportunities to work in the LGA – and our LSPS survey indicated that the community's number one Productivity priority is 'creating more jobs in the local area' – the reality is that many residents need to leave the LGA for employment. Currently close to 70% of Liverpool's residents leave the LGA for work. Liverpool will work to ensure that these residents can reach their jobs in a satisfactory time, and that workers outside the LGA can reach the abundant opportunities provided by Liverpool with ease. With a significant migrant and refugee intake, Liverpool will also work to increase opportunities for our new residents.

We will advocate for delivery of transport commitments and attract new business investment to support an increase in jobs of 200,000 in Western Sydney over the next 20 years, as part of our commitment to the Western Sydney City Deal. Council will also work to meet its stated jobs target of 2500 per year, as part of our Economic Development Strategy 2019-2029.





PRODUCTIVITY

PRODUCTIVITY

LOCAL PLANNING PRIORITY 10

A world-class health, education, research and innovation precinct

Liverpool will capitalise on these advantages, and grow its Innovation Precinct to cater for the significant growth in health and knowledge workers expected in the next 20 years, and become a global leader in collaboration for health, education and research.

RATIONALE

Health and education play a significant role in Liverpool, with Liverpool Hospital, Ingham Institute of Applied Medical Research, the University of NSW (UNSW), Western Sydney University (WSU), University of Wollongong (UOW), South West Private Hospital and TAFE NSW in the local area. There are more than 15,000 health and knowledge workers in the LGA, accounting for about 20% of all workers. This could increase to 30,000 by 2036 and even higher if the right actions are taken.

Liverpool City Centre has significant advantages that could reinforce its position as a health leader and help it to develop a world-class health, education, research and innovation precinct based around Liverpool Hospital. This includes close access to a train line, a river providing significant amenity potential, availability of commercial land and a diverse population.

Liverpool also has potential to improve its standing as an education destination, building upon its network of outstanding government and non-government schools, a nationally recognised trade training centre, and multiple university campuses. Student numbers are growing rapidly. In the next 5-7 years, it is expected Liverpool will be home to more than 5000 university students and 8000 TAFE students. The number of university students is expected to grow to more than 10,000 over the next 10 years.

COUNCIL WILL

- Lead development of the Liverpool Innovation Precinct.
- Ensure land use planning supports the operation and growth of the precinct for all in the health, education and innovation ecosystem.
- Support tertiary institutions, including vocational and technical training opportunities.
- Collaborate with tertiary institutions to encourage appropriate student housing.

ACTIONS

- 10.1** Investigate LEP changes necessary to support the operations and growth of the Liverpool Innovation Precinct (**short to medium term**)
- 10.2** Prepare structure plan and planning proposal to rezone the Warwick Farm racing precinct to B4 (**short term**)
- 10.3** Collaborate with universities, TAFE, the Department of Education and other education providers to support growth (**short term**)

**LIVERPOOL
WORKFORCE
THAT ARE
LOCAL
RESIDENTS**



**NUMBER OF
UNIVERSITIES**

3



**HOLDS A
BACHELOR
DEGREE
OR HIGHER**

2011 2016
12.5% 15.7%





LOCAL PLANNING PRIORITY 11

An attractive environment for local jobs, business, tourism and investment

RATIONALE

Liverpool is quickly becoming a business and commercial destination of choice. Due to its proximity to the Western Sydney International Airport, Liverpool's attractiveness as a location for commercial and industrial enterprise will grow significantly over the next 30 years, including in aerospace, agribusiness, education, health, and logistics and transport sectors. Liverpool's goal is to create a domestically thriving, globally known business landscape that prioritises the expansion and innovation of industry to promote its identity to the world.

Liverpool's Community Strategic Plan (CSP) directs Council to generate opportunity across Liverpool, while our LSPS survey indicated a demand for local, high-paying jobs. The Liverpool City Centre is an attractive destination for knowledge intensive industries and has a large capacity for commercial office floor space. Council is committed to attracting business for economic growth and employment opportunities, and have set an ambitious growth target of 2500 new jobs a year to 2029.

We have already changed planning controls in the city centre to facilitate new jobs and housing. Council has completed an Economic Development Strategy to create new job opportunities, develop local capacity, market Liverpool as a business destination, and activate and develop vibrant places to attract new residents, visitors and workers. We have also created a Destination Management Plan and International Trade Engagement Strategy to leverage opportunities from the Western Sydney International Airport and market the potential of Liverpool to the world.

With about 70% of residents currently leaving Liverpool to get to work, a focus for Council will be to increase the number of job opportunities closer to home. We will continue to advocate the fast

and frequent public transport services needed to boost Liverpool's attractiveness as a place for jobs, business, tourism and investment.

The LGA has a number of centres differing in size and function. The concentration of retail within centres plays an important role, yet the function of centres extends beyond providing for the day-to-day and specialised retail needs. Centres act as important focal points for the local community, especially when co-located and well integrated with gathering places such as cafes, restaurants and social infrastructure. In turn, the increase in foot traffic from these other uses contributes to the vibrancy of the centre and supports retail uses. Centres also provide opportunities for local employment and are an important part of establishing the 30-minute city when co-located with high quality public transport.

The Liverpool LGA also has 'stand-alone centres' that contain either a supermarket or another large retail role, such as bulky goods retailing. Whilst these stand-alone centres meet the retail needs of the community, they do not provide multi-function community gathering places. As there is limited demand for new centres within the LGA, Council will prioritise the future expansion of retail within local or town centres rather than stand-alone centres.



Liverpool has significant advantages that could reinforce its position as a health leader



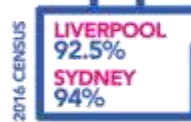
PRODUCTIVITY

PRODUCTIVITY

COUNCIL WILL

- Create an environment to attract, train and retain a skilled workforce to support contemporary business needs.
- Reduce the proportion of people leaving the LGA for work and study.
- Investigate updates to procurement policy to preference local workers.
- Grow jobs in the health and education sectors.
- Support small businesses including start-ups.
- Provide opportunities for refugee and migrant populations to enter the workforce.
- Continue advocacy for city shaping transport infrastructure to boost jobs growth.
- Provide infrastructure, facilities and services needed to support and facilitate visitor economy and tourism growth in light of the opportunities provided by Western Sydney International Airport.
- Enhance tourist attractions, including beautification of Georges River and developing Chipping Norton Lakes.
- Improve connections from the City Centre to the Georges River, and open and active space networks.
- Strengthen Casula Powerhouse's position as the leading Arts Centre in South West Sydney.
- Establish a hierarchy of centres and determine anticipated retail supply and demand to guide future planning.
- Investigate planning controls to allow retail centres in Liverpool to keep up to date with technology and retail trends such as online shopping and electric trucks.
- Investigate a review of trading hours to establish late night trading to support the city centre as a dining destination.

EMPLOYMENT RATE



RESIDENTS THAT WORK OUTSIDE LIVERPOOL



ACTIONS

- 11.1** Develop a Centres and Corridor Strategy, and review LEP and DCP to ensure alignment (**short term**)
- 11.2** Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (**short to medium term**)
- 11.3** Amend LEP to increase land-use flexibility for festival uses (**short term**)
- 11.4** Work with Transport for NSW and RMS to create links from Liverpool Train Station to the Georges River and investigate opportunities for transport interchanges at Moore Point (CBD extension east of the Georges River) (**short to medium term**)



Liverpool is quickly becoming a business destination of choice





LOCAL PLANNING PRIORITY 12

Industrial and employment lands meet Liverpool's future needs



RATIONALE

Prospects for industrial and employment projects in Liverpool are strong, given proximity to transport links such as the M5 and M7, and large projects including Western Sydney International Airport and the Moorebank Intermodal Terminal. Council is committed to safeguarding existing industrial and urban services land from competing pressures, aside from land marked for investigation on the Inset map to support the CBD and Innovation Precinct.

Council has conducted a number of industrial land studies, which indicate that there will be a future lack of zoned and serviced industrial land, requiring Council to investigate suitable areas in the LGA. New industrial land around the Western Sydney International Airport will contribute to meeting demand in the medium to long term for larger industrial uses. However there is a projected shortage of land zoned for local service related industrial uses after 2026. We will develop an Industrial and Employment Lands Strategy to ensure there is enough serviced employment land to sustain projected population growth. This strategy will also be flexible enough to support the needs of future businesses including knowledge-based activities, creative industries and advanced manufacturing.

We will focus on opportunities provided by the establishment of the airport, as well as strengthening our health, education and innovation precinct. Council will also look to facilitate the strengthening of established industrial precincts, guided by the new Industrial and Employment Lands Strategy.

With the development of the Western Sydney Airport, Aerotropolis and Moorebank Intermodal Terminal, as well as increased population growth, managing freight movement through the LGA will become of increased importance. Council is committed to collaborating with State Government and private industry to manage the freight task, protect important freight routes and reduce impacts on the local community.

Land for **LARGER INDUSTRIAL USES** refers to **IN1 (General Industrial)** and **IN3 (Heavy Industrial) zones**, and include uses such as manufacturing, freight, logistics, warehousing and distribution.

Land for **LOCAL SERVICE RELATED INDUSTRY** refers to the **IN2 (Light Industrial) zone**, and includes uses such as maintenance and repair uses and services supporting building and construction.





We will focus on opportunities provided by the airport, and strengthen our Innovation Precinct



COUNCIL WILL

- Monitor land development to ensure there is enough serviced employment and industrial land to meet future need for a number of price points from start-ups to multinationals.
- Prepare flexible planning controls to ensure businesses of the future are not unduly restricted.
- Leverage opportunities created by Western Sydney International Airport to promote agribusiness, food export and tourism.
- Strengthen connectivity between Liverpool City Centre and neighbourhood and district centres.
- Collaborate with TfNSW to address the growing freight task and support actions the State Government and industry need to take for the efficient, safe and sustainable movement of freight, in line with the NSW Freight and Ports Plan 2018-2023.
- Manage the interfaces of industrial, trade and intermodal facilities to reduce adverse impacts.
- Collaborate with TfNSW, DPIE and private industry to support the urban consolidation of freight.

ACTIONS

- 12.1** | Develop Industrial and Employment Lands Strategy and review LEP and DCP to ensure alignment (**short term**)
- 12.2** | Review the LEP and DCP to ensure statutory planning controls protect key freight routes and employment lands from sensitive land uses (**short to medium term**)
- 12.3** | Investigate provision of new industrial land, including light industrial (IN2), between the airport and the CBD, including extension of industrial zoned land in Austral, to ensure ongoing supply (**short to medium term**)





LOCAL PLANNING PRIORITY 13

A viable 24-hour Western Sydney International Airport growing to reach its potential

RATIONALE

Liverpool supports the delivery of Sydney's first 24-hour international airport, and is dedicated to ensuring the comparative advantage of a curfew-free airport is protected.

Inappropriate development around Western Sydney International Airport could constrain airport operations over the long term, affecting the region's productivity, while also having negative impacts on local communities due to aircraft noise. For these reasons, Liverpool City Council advocates a precautionary approach to the consideration of all land around the airport, recognising that extensive international experience has shown that development, particularly residential development, in proximity to airport operations acts as a constraint to and limitation on the success and opportunities of an airport.

Council will continue to collaborate to ensure that a precautionary approach and best-practice measures are put in place to protect any new residential communities and the viability of the airport.

COUNCIL WILL

- Collaborate through the Planning Partnership to protect the airport's competitive advantages as a curfew-free airport.
- Identify employment lands in line with industrial and commercial demand and development needs.
- Collaborate through the Planning Partnership to ensure a precautionary approach is taken to noise-sensitive development in the Aerotropolis.

ACTIONS

- 13.1** Ensure through the Western Sydney Planning Partnership that future planning in the Aerotropolis supports the airport's economic potential and reduces conflicting uses that could inhibit future growth and the curfew free status of the airport (**short term**)
- 13.2** Work collaboratively with the Western Sydney Planning Partnership to implement the Western Sydney City Deal and ensure the best planning outcomes for the Aerotropolis (**short to medium term**)



Liverpool supports the delivery of Sydney's first 24-hour international airport







SUSTAINABILITY

Our Environment

The Liverpool of 2040 is green, clean, safe, sustainable and vibrant. Tree cover and greenery have been greatly expanded, native habitat has been strengthened and protected, waterways are healthy, and climate change and urban heat are well managed.

Liverpool is rich in nature and this will be protected into the future. Bordered by the Georges and Nepean Rivers, it has significant and unique bushland, biodiversity, and green and blue networks. However, Liverpool is currently one of the fastest growing cities in NSW, and therefore the natural environment is exposed to pressures from development and urban sprawl.

Liverpool City Council recognises the importance of protecting our natural environment and using our resources wisely. Indeed, \$27 of every \$100 in operational expenditure goes towards the environment.

We are working towards fostering a partnership with our community to better protect, support and conserve our natural resources and environment. A key direction in Council's CSP – *Our Home, Liverpool 2027* – is 'Strengthening and Protecting our Environment', with the following goals:

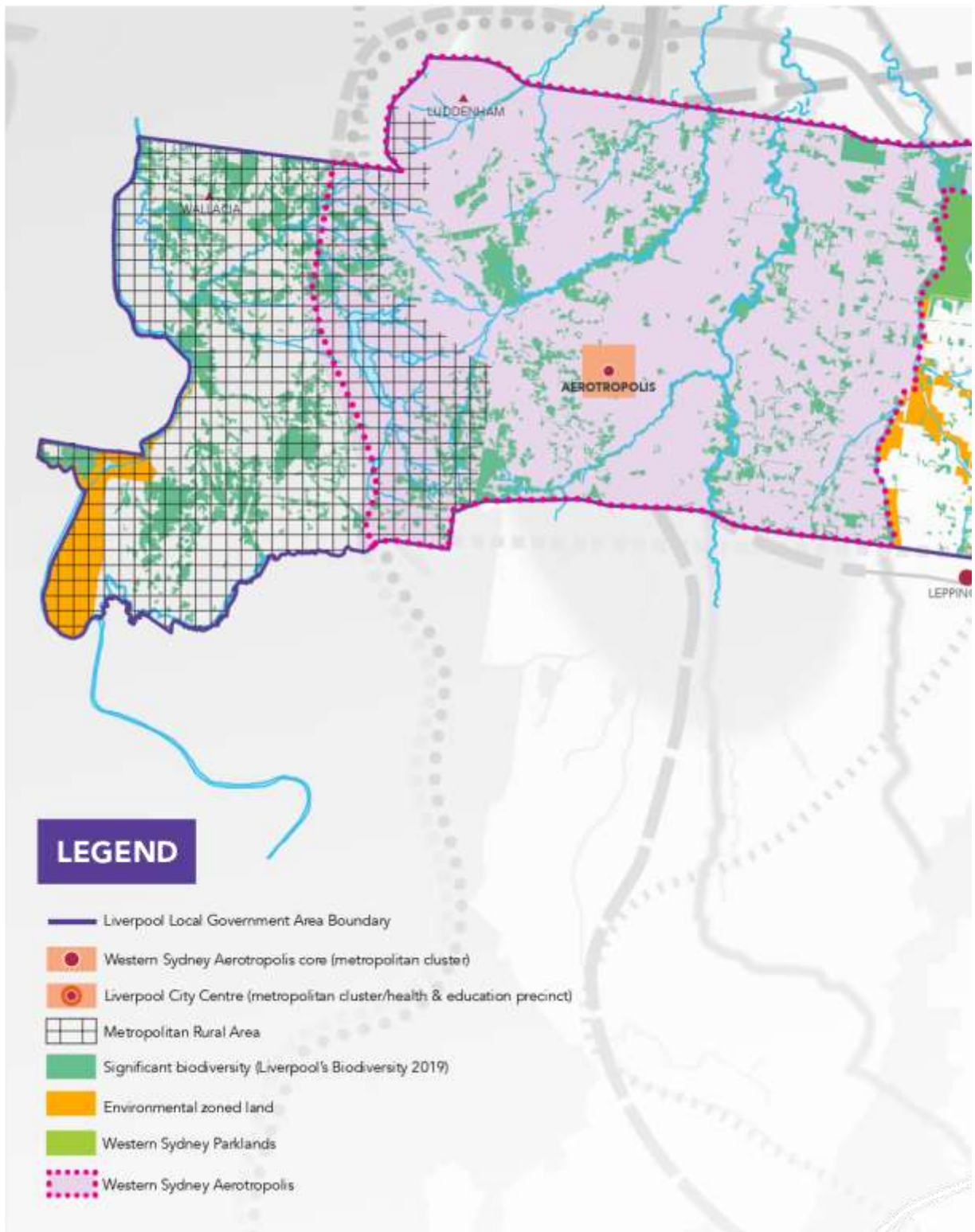
- Manage the community's disposal of rubbish;
- Protect and enhance bushland, rivers and the visual landscape;
- Encourage sustainability, energy efficiency and the use of renewable energy;
- Exercise planning controls to create high-quality, inclusive urban environments; and
- Develop, and advocate for, plans that support safe and friendly communities.

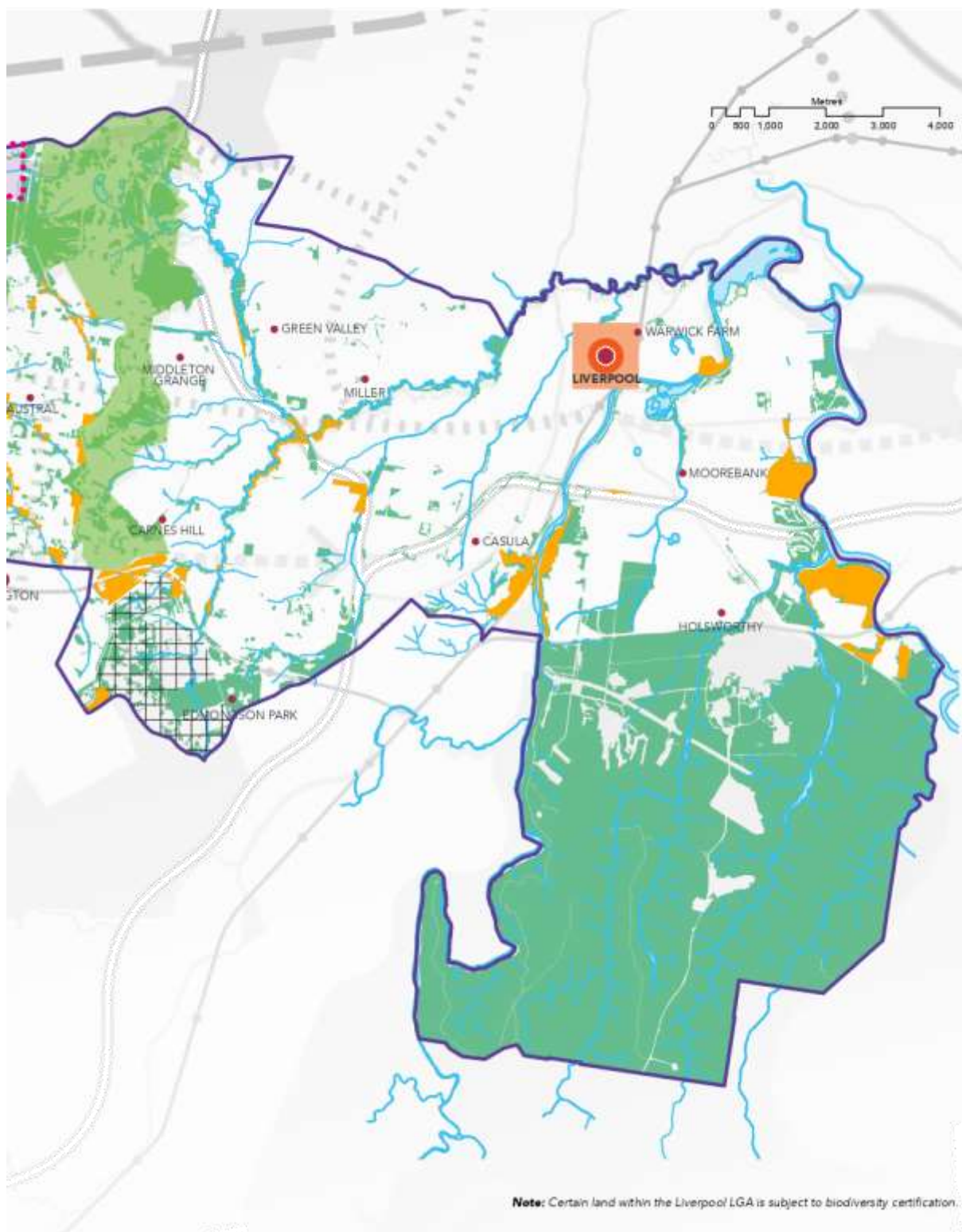
Through the LSPS survey, the community has said the top priorities are 'having plentiful trees and canopy cover' and 'improved access to nature and waterways'. Council is working on plans to protect and increase tree canopy cover in order to improve amenity, reduce air pollution and tackle the urban heat island effect.

Council also acknowledges the risks posed by climate change and is committed to playing its part in mitigating climate change and adapting to the threats posed by climate change, particularly implementing measures to reduce the urban heat island effect.

OUR ENVIRONMENT

SUSTAINABILITY





SUSTAINABILITY

SUSTAINABILITY

LOCAL PLANNING PRIORITY 14

**Bushland and waterways are
celebrated, connected, protected
and enhanced**

RATIONALE

Extensive green and blue corridors traverse the Liverpool LGA. Liverpool sits within the Cumberland Plain, home to a rich array of wildlife and plants. Approximately one-third of our land is covered by native vegetation, supporting extensive biodiversity, including 10 threatened ecological communities, 12 threatened flora species and 57 threatened fauna species. Council will work to protect and restore naturally occurring ecosystems and habitat based on best-practice biodiversity conservation principles. The Liverpool LGA covers substantial portions of the Georges River catchment and the Hawkesbury-Nepean River catchment. It also covers significant tributaries of the Hawkesbury-Nepean River system, including South Creek, Kemps Creek and Badgerys Creek. The health of our waterways is under pressure from development, catchment disturbance, land use transformation and land clearing. With rapidly expanding development, it is vital that waterways, open space and bushland are better protected.

There are significant opportunities to protect, restore and connect areas of high-value bushland, particularly around waterways, that can increase the sustainability and resilience of communities in the LGA. As part of implementing the State Government's Green Grid, Liverpool will work to increase green space, canopy cover, connectivity and recreation opportunities, particularly along the Georges River/Chipping Norton Lakes system, Cabramatta Creek and South Creek. Increasing urban tree cover and Green Grid connections will provide for healthier communities and more resilient, liveable cities.

South Creek has been identified in the Western City District Plan as a key structural element of the Western Parkland City. Council will work with State Government through the Western Sydney Planning Principle to ensure a landscape-led approach to development in the Aerotropolis is undertaken. It will

also work with the State Government to implement the Cumberland Plain Conservation Plan, when finalised. This plan is being designed to protect the region's threatened plants and animals and support the needs of the community through the creation of conservation lands and green spaces.

Council is also committed to incorporating Water Sensitive Urban Design (WSUD) principles that consider and preserve the natural water cycle, and reduce stormwater impacts on waterways. Council's WSUD Guideline is used by both Council and developers in implementing WSUD in the LGA. As part of a review of WSUD principles in Austral and Leppington North, Council is now proposing an alternative approach that uses on-street rain gardens to treat pollutants closer to the source. Council will collaborate with State Government agencies to review the application of these principles more broadly across the LGA, which should lead to an improvement in waterway health. In 2017/2018 the Mid Georges River was given an average ecological health rating of B+, and Council will work to continually improve river health and implement WSUD, with a view to making the Georges River swimmable in the future.

COUNCIL WILL

- Protect and restore naturally occurring ecosystems and habitat based on best practice biodiversity conservation principles.
- Minimise threats to listed species, populations and communities.
- Establish and enhance a Green and Blue Grid corridor network.
- Improve gateway entry experience into LGA, including through landscaping.
- Substantially increase tree canopy cover.
- Implement water-sensitive urban design.
- Improve catchment management and ensure policies and planning instruments work to improve river and waterway health.
- Work towards reinstating more natural conditions in highly modified urban waterways.



- Enhance the ecological health of the Georges River to make it swimmable.
- Create visible, safe and accessible points of entry to the Georges River.
- Collaborate with Western Sydney Planning Partnership to ensure a landscape-led approach to development is taken within the Aerotropolis.
- Collaborate with DPIE to implement the Cumberland Plain Conservation Plan.
- Manage flood risk by limiting development in the 1 in 100 year flood level and collaborating with key stakeholders to implement the Hawkesbury-Nepean Valley Flood Risk Management Strategy for the western edge of the LGA.



There are significant opportunities to protect, restore and connect areas of high-value bushland



ACTIONS

- | | |
|-------------|--|
| 14.1 | Review Environmentally Significant Land overlay in LEP to ensure protection of areas of high ecological conservation value (short term) |
| 14.2 | Review LEP and DCP to ensure protection of biodiversity and waterway quality, and implement the Green Grid (short to medium term) |
| 14.3 | Develop a strategy to increase tree canopy cover in the LGA (short term) |
| 14.4 | Collaborate with Department of Defence and neighbouring councils to investigate a koala habitat protection corridor (short term) |
| 14.5 | Develop a Strategic Urban Biodiversity Framework, dependent on finalisation of State Government's Greener Places policy (short term) |
| 14.6 | Create green entryways to LGA along major road entry points (medium to long term) |

SUSTAINABILITY

SUSTAINABILITY

LOCAL PLANNING PRIORITY 15

A green, sustainable, resilient and water-sensitive city

RATIONALE

Council's Community Strategic Plan (CSP) has a directive to strengthen and protect the environment, and we are working hard to create a city that has sustainability and resilience at its core. In our survey to develop this LSPS, the most repeated words when asked to describe Liverpool in the future were: clean, green, safe, sustainable and vibrant.

Liverpool faces a number of challenges on its journey to meet this vision. Western Sydney faces more extreme heat events than in the east, due to both geography and the urban heat island (UHI) effect. The UHI effect is expected to increase in Sydney as urban development continues and temperatures increase with climate change. Areas along the Georges and Nepean rivers, and many creeks, face significant flood risk. There is also significant amounts of land subject to bushfire hazard.

The community has expectations and aspirations for environments that are comfortable and pleasant, visually appealing and that contribute to health, safety and wellbeing. Through consultation, the community has said sustainable urban design is an important priority. To achieve this, the effects of urban heat need to be considered and addressed, including mitigation responses to urban heat such as design and construction techniques, material selection, and green and blue infrastructure.

Council is also working to address climate change. The highest proportion of the LGA's carbon emissions comes from residential housing. Council is committed to ensuring all development occurs sustainably, however with most residential development occurring through exempt and complying development pathways, and with restricted ability to require residential building standards to exceed that set by the State Government's BASIX controls, there is limited control in this space. However, in areas where Council does have influence, we will work to ensure sustainability and urban heat issues are addressed appropriately.

Council will also work to investigate opportunities for low-carbon, high-efficiency precincts, particularly within the Liverpool Collaboration Area and Leppington Town Centre precinct.

Where there are inconsistencies between State policy instruments and broader strategic goals – such as a commitment to reach net zero carbon emissions by 2050 – Council will advocate better alignment in order to protect amenity and sustainability. For example, Council wants to ensure low-density housing has backyards capable of supporting mature vegetation, with adequate space for recreation, stormwater filtration and attenuation of the urban heat island effect. We want our community's housing to be safe, efficient and comfortable.

Council will work to reduce emissions, considering feedback from its emissions reduction and resource efficiency study, and update relevant environmental sustainability strategies. We will seek to address air pollution issues in the LGA, noting that most air pollution issues arise from activities outside of Council's control.

We will also work to create a water-sensitive city. With changing climate and urban heat, we need to maximise water resources, increase water security and improve water management to respond to increasing temperatures, heatwaves and floods. This involves improving irrigation, water re-use and capture measures within open space areas, and implementing and integrating WSUD into all developments to better manage stormwater.



**The community's vision for
Liverpool is clean, green, safe,
sustainable and vibrant**



CARBON EMISSIONS BY SOURCE

- ELECTRICITY 60.1%
- TRANSPORT 26.6%
- WASTE 9.7%
- GAS 3.6%



COUNCIL WILL

- Ensure development is located appropriately and that natural hazards such as flood and bushfire are avoided or mitigated.
- Encourage sustainability, energy efficiency and renewable energy across the LGA.
- Continue to provide education around sustainability and waste issues to the community.
- Advocate improvements to residential building codes and State planning policies to better align with State net zero carbon emission aspirations.
- Encourage water-sensitive urban design on new development, including through encouraging permeability of the public and private domain.
- Encourage transport demand initiatives that help to reduce greenhouse gas emissions.
- Support the take-up of electric vehicles and associated charging infrastructure.
- Support water efficiency and alternative sources of water for resilient whole-of-water-cycle management.
- Review landscape and street tree planting strategies and guidelines.
- Substantially increase overall tree canopy across the LGA, including the City Centre.
- Pursue opportunities with utilities to deliver integrated energy water and waste infrastructure where community benefits are delivered.
- Pursue waste outcomes that are safe, efficient, cost-effective, maximise recycling and that contribute to the built form and liveability of the community.

ACTIONS

- 15.1** Review LEP and DCP to suitably address sustainability in line with recommendations from emissions reduction and resource efficiency study (**short term**)
- 15.2** Review LEP and DCP to address sustainable waste outcomes (**short term**)
- 15.3** Review LEP and DCP to ensure Water Sensitive Urban Design is adequately addressed (**short term**)
- 15.4** Review LEP and DCP to address the Urban Heat Island Effect (**short term**)
- 15.5** Review DCP to encourage new commercial and industrial buildings to be rooftop solar ready (**short term**)
- 15.6** Review DCP to prioritise low-carbon initiatives in future developments such as adaptive building designs, precinct-level car parking strategies and energy-efficient, water-efficient, waste-efficient and energy generating precinct design (**short term**)
- 15.7** Advocate for changes to Exempt and Complying Development Code to ensure tree canopy cover can be increased in line with State directives (**short term**)
- 15.8** Advocate for increases to BASIX and Section J of the National Construction Code in line with the State Government's net zero by 2050 aspirations (**short term**)



CARBON EMISSIONS BY BUILDING TYPE

- RESIDENTIAL 48%
- RETAIL 18.2%
- INDUSTRIAL 9.3%
- HEALTH 15.1%
- COMMERCIAL 6.2%
- EDUCATION 3.2%

SUSTAINABILITY

SUSTAINABILITY

LOCAL PLANNING PRIORITY 16

Rural lands are protected and enhanced

RATIONALE

Sydney's peri-urban food bowl and its city fringe farmers play a vital role in feeding the city's residents. Each year, the Greater Sydney region generates around \$660 million in agricultural produce. Liverpool's peri-urban area alone is responsible for about 12.5% of this value, with significant industries supplying poultry, fresh vegetables, mushrooms, milk and more to the local population.

The value of agricultural activity will be greatly increased due to the development of Western Sydney International Airport, particularly in the proposed Agribusiness precinct identified in the Western Sydney Aerotropolis Stage 1 Land Use and Infrastructure Implementation Plan (LUIIP). Liverpool is in a unique position to feed a growing international hunger for high-quality fruit, vegetables, meat and dairy.

Council is committed to supporting the development of new agricultural industry in the agribusiness precinct. We are also part of the new Future Food Systems Cooperative Research Centre (CRC), which will investigate ways to transform Liverpool into a regional food hub featuring high-tech agriculture and easy access to the international export market.

Liverpool's existing productive lands, however, are increasingly threatened by conflicting uses, particularly encroachment of residential. We want to ensure that this land and the jobs it provides are protected and enhanced, both to the West of the Aerotropolis, where Council's LEP shall apply, and within the LUIIP, where Council continues to advocate for the sensible protection of rural lands.

Rural land should be protected until there is a strong justification for urban development that cannot be met by existing zoned land. Solutions should be developed so that existing industries, including those rural activities east of the airport, can be

maintained and their value increased as a result of the Western Sydney Aerotropolis, until needed for other urban uses. Some existing uses will not be able to transition into high-intensity production close to the airport, as envisaged by the LUIIP, for example poultry, as a 24-hour airport may have adverse effects on production, and impact viability.

Our rural, productive lands not only support local jobs, they play a role in boosting city resilience. Having produce close to their intended market reduces supply chain waste, reduces food miles and helps protect against potential fuel price shocks. It also works to support biodiversity and lessen the urban heat island effect.

Liverpool recognises the contribution of peri-urban agriculture to city resilience, sustainability, liveability and the economy, and will work to ensure that this valuable agricultural land is protected.

COUNCIL WILL

- Ensure agricultural land is protected and enhanced to support the rural economy, ecosystem services and natural scenic landscapes.
- Manage land use conflict by supporting pre-existing agricultural land uses in the case of nuisance complaints and in a manner consistent with the Right to Farm Policy.
- Advocate the sensible, staged rezoning of land in growth areas.
- Protect land from future urban expansion west of the future Outer Sydney Orbital.
- Protect and promote sustainable rural employment opportunities, including rural tourism.
- Take a lead role in the Future Food Systems CRC to support local agricultural industries.

ACTIONS

- 16.1** Develop Rural Lands Strategy and review LEP to ensure alignment **(short term)**
- 16.2** Investigate placemaking opportunities in Wallacia and Luddenham, including addressing transition of development controls from Liverpool LGA to Penrith LGA and Camden LGA **(short to medium term)**
- 16.3** Review the Rural Lands Strategy every four years to ensure land use standards reflect trends in agriculture and can support the sensible growth of an agriculture industry to support opportunities provided by Western Sydney International Airport and to protect natural landforms and rural lifestyles **(ongoing)**



VALUE OF AGRICULTURE
\$86M
A YEAR



23%
SYDNEY'S
POULTRY
PRODUCTION



15%
SYDNEY'S
VEGETABLE
PRODUCTION
(MUSHROOMS, LEAFY GREENS)



Liverpool is in a unique position to feed a growing international hunger for high-quality fruit, vegetables, meat and dairy



IMPLEMENTATION, MONITORING AND REPORTING.



IMPLEMENTATION, MONITORING AND REPORTING

Implementation

The LSPS communicates Liverpool City Council's strategic land use planning vision for the next 20 years. It informs what type of growth will occur in the LGA, where it will occur and when. To realise this vision, amendments will be required to Council's LEP and DCPs, which provide the delivery framework for Council's strategic planning. Additional strategies will be prepared and existing strategies will be implemented and Council will advocate for new State and Federal programs and infrastructure to be delivered.

The LSPS sets out actions to deliver on the planning priorities in order to meet the community's future vision for Liverpool.

LOCAL ENVIRONMENTAL PLAN (LEP)

LEPs are the principal statutory document that establishes the land use planning controls for an LGA. Through zoning, development standards and other local provisions the LEP provides the legal framework to ensure development is appropriate and reflects the community's vision for land use in the LGA.

DEVELOPMENT CONTROL PLANS (DCPS)

DCPs are non-statutory plans that provide detailed planning and design guidelines, and development controls to support the LEP.

Monitoring and review

Council will monitor, review and report on its LSPS to ensure that its planning priorities are being achieved. Council will use the existing Integrated Planning and Reporting framework under the Local Government Act 1993 for the purpose of monitoring implementation of the LSPS.

The LSPS will play an important role in Council's resourcing strategy, with preparation of strategies and studies required by this plan funded in the four-year delivery program and annual operational plans. Council will conduct a review of the LSPS in 2021

and again every four years to align the review period with Council's overarching community strategic planning and existing Integrated Planning and Reporting framework under the *Local Government Act*. Regular reviews will ensure that the LSPS continues to reflect the community's vision.

TEN-YEAR COMMUNITY STRATEGIC PLAN, OUR HOME, LIVERPOOL 2027

Our Home, Liverpool 2027 is Council's 10-year Community Strategic Plan (CSP). It is the highest level plan that shows where the community wants to be in 10 years' time, what needs to be done to achieve this, and how Council and the community will know when this has been achieved.

Our Home, Liverpool 2027 was created in consultation with the community of Liverpool and sets four key directions that address the quadruple bottom line. It is used by Council and other agencies and stakeholders to guide future direction, policy and service delivery.

FOUR-YEAR DELIVERY PROGRAM - 2017-2021

The Delivery Program translates the directions of the Community Strategic Plan into strategies that will guide Council for the next four years. It is the statement of commitment to the community for each newly elected term of office. The Delivery Program cascades down from the Community Strategic Plan to guide Council's for each newly elected term of office.

ONE-YEAR OPERATIONAL PLAN 2019/20

The Operational Plan is reviewed annually and details the actions that Council will undertake within that financial year. It is directly influenced by the Community Strategic Plan and Delivery Program to realise the community's prospects for the future. It also includes a detailed budget and Capital Works Program for the year.

Council will deliver actions that will work towards accomplishing the directions in the Community Strategic Plan. Council will keep track of progress in the Delivery Program and Operational Plan through:

- Six-monthly reports to Council and the community which detail program and budget progress;
- An Annual Report at the end of each financial year which includes a thorough financial report and overview of all Council's spending and operations. This will be published in a full report format as well as a short community snapshot; and
- A cumulative report at the end of Council's four-year term which details Council's financial position and progress against all the activities outlined in the Delivery Program.

Measuring Progress: Performance Measures

Council plans to use two types of indicators. These are:

COMMUNITY INDICATORS AND TARGETS

To track trends in quality of life for people in Liverpool. These are included in the Community Strategic Plan and will be reported in the Annual Report and the End of Term Report. Community indicators and targets are not intended to measure Council's performance as Council does not control all of the elements which may contribute towards it.

KEY PERFORMANCE INDICATORS

Measures which indicate whether a service is working well or is improving. Collectively, these indicators assist Council, all levels of government, business, community organisations and other stakeholders to have an understanding of conditions, experiences and priorities in Liverpool.

In addition to Council metrics, the GSC has established 'Pulse' indicators that can be used at a local government area scale.

SHORT TERM

Now-2020/2021

MEDIUM TERM

2021/2022-2024/2025

LONG TERM

2025/2026-2028/2029

VISIONARY

2029/2030+

IMPLEMENTATION FOR CONNECTIVITY

Measures:

- Delay from congestion
- Use of public transport
- Use of active transport
- Public transport travel times
- Infrastructure projects
- Number of partnerships developed

PLANNING PRIORITY 1

Active and public transport reflecting Liverpool's strategic significance

PLANNING PRIORITY 2

A rapid smart transit link between Liverpool and Western Sydney International Airport

PLANNING PRIORITY 3

Accessible and connected suburbs

PLANNING PRIORITY 4

Liverpool is a leader in innovation and collaboration



PLANNING PRIORITY 1

Active and public transport reflecting Liverpool's strategic significance

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
1. A city supported by infrastructure 6. A well connected city	1. Planning for a city supported by infrastructure 7. Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City 9. Growing and strengthening the metropolitan cluster 11. Growing investment, business opportunities and jobs in strategic centres	Generating opportunity

Action	2019/20-20/21	2021/22-24/25	2025/26-28/29	2029/30+
1.1 Update CBD Parking Strategy. (short term)	✓			
1.2 Develop a Transport and Mobility Plan and review Local Environmental Plan (LEP) to ensure alignment (short term)	✓			
1.3 Advocate the prompt delivery of the South-West rail line extension from Leppington to Western Sydney International Airport, with a terminal interchange at Western Sydney International Airport (short term)	✓			
1.4 Advocate a fast rail service to the Liverpool City Centre from Sydney CBD, and enhanced integration with future rail links (short term)	✓			
1.5 Advocate a Western Sydney Aerotropolis/Airport stop on any future high speed rail network (short term)	✓			
1.6 Work with Transport for NSW (TfNSW) to bring forward extension of the Sydney Metro City and Southwest and investigate a preferred alignment (short term planning, with delivery in the long term)	✓		✓	
1.7 Upgrade Edmondson Avenue from Fifteenth Avenue to Bringelly Road (medium term)		✓		
1.8 Work with TfNSW on an extension of the T-way from Hoxton Park Road south to Edmondson Park Station (medium to long term)		✓	✓	

IMPLEMENTATION FOR CONNECTIVITY

PLANNING PRIORITY 2

A rapid smart transit link between Liverpool and Western Sydney International Airport/Aerotropolis

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
1. A city supported by infrastructure 6. A well connected city 7. Jobs and skills for the city	1. Planning for a city supported by infrastructure 7. Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City 8. Leveraging industry opportunities from the Western Sydney Airport and Badgerys Creek Aerotropolis 9. Growing and strengthening the metropolitan cluster 11. Growing investment, business opportunities and jobs in strategic centres	Generating opportunity

Action	2019/20-20/21	2021/22-24/25	2025/26-28/29	2029/30+
2.1 Finalise investigations into the FAST corridor in collaboration with State and Federal government agencies (short term)	✓			
2.2 Amend the LEP and relevant environmental planning instruments to preserve the FAST corridor (short term)	✓			
2.3 Investigate location of transit- and landscape-oriented development hubs along the FAST Corridor route (short term)	✓			
2.4 Investigate extension of FAST corridor to Holsworthy station with consideration of appropriate station locations, including Moore Point (medium to long term)		✓	✓	
2.5 Deliver the FAST Corridor (long term)			✓	



PLANNING PRIORITY 3

Accessible and connected suburbs

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
1. A city supported by infrastructure 6. A well connected city	1. Planning for a city supported by infrastructure 7. Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City	Generating Opportunity

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
3.1 Collaborate with neighbouring councils to improve open space and transport connections, including active transport routes, around Chipping Norton Lakes (short term)	✓			
3.2 Optimise public transport infrastructure and accessibility as well as connectivity to pathways and cycleways as part of place-making for neighbourhood centres (short to medium term)	✓	✓		

IMPLEMENTATION FOR CONNECTIVITY

PLANNING PRIORITY 4

Liverpool is a leader in innovation and collaboration

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
2. A collaborative city	2. Working through collaboration	Leading through collaboration

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
4.1 Collaborate with government agencies to prepare a local and regional level infrastructure schedule (short term)	✓			
4.2 Work with Greater Sydney Commission and relevant stakeholders to address the Liverpool Collaboration Area Place Strategy through amendments to the LEP (short to medium term)	✓	✓		
4.3 Investigate planning control changes to support CAVs and adaptive reuse of parking infrastructure (short to medium term)	✓	✓		



IMPLEMENTATION FOR LIVEABILITY

LIVEABILITY

Measures:

- Dwelling approvals by location and type
- Net new dwellings approved and completed
- Housing costs as a percentage of household
- Percentage of affordable dwellings
- Percentage of new housing as diverse dwellings
- Number of new or upgraded community facilities
- Accessibility to open space

PLANNING PRIORITY 5

A vibrant, mixed-use and walkable 24-hour City Centre with the Georges River at its heart

PLANNING PRIORITY 6

High-quality, plentiful and accessible community facilities, open space and infrastructure aligned with growth

PLANNING PRIORITY 7

Housing choice for different needs, with density focused in the City Centre and centres well serviced by public transport

PLANNING PRIORITY 8

Community-focused low-scale suburbs where our unique local character and heritage are respected

PLANNING PRIORITY 9

Safe, healthy and inclusive places shaping the wellbeing of the Liverpool community



PLANNING PRIORITY 5

A vibrant, mixed-use and walkable 24-hour City Centre with the Georges River at its heart

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
3. A city for people 4. Housing the city 5. A city of great places 7. Jobs and skills for the city	3. Providing services and social infrastructure to meet people's changing needs 4. Fostering healthy, creative, culturally rich and socially connected communities 5. Providing housing supply, choice and affordability with access to jobs, services and public transport 6. Creating and renewing great places and local centres, and respecting the District's heritage 9. Growing and strengthening the metropolitan cluster 11. Growing investment, business opportunities and jobs in strategic centres	Generating opportunity Creating connection

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
5.1 Review Development Control Plan (DCP) to ensure the 18-hour economy can be suitably protected from reverse amenity issues (short term)	✓			
5.2 Review LEP and DCP to give effect to City Centre Public Domain Master Plan (short term)	✓			
5.3 Incorporate community and cultural facilities in Liverpool Civic Place (short to medium term)	✓	✓		
5.4 Review LEP to support development, community facilities and linkages at key Council-owned sites in the City Centre (short to medium term)	✓	✓		
5.5 Review LEP to ensure alignment and give effect to Woodward Place Masterplan (medium to long term)		✓	✓	

IMPLEMENTATION FOR LIVEABILITY

PLANNING PRIORITY 6

High-quality, plentiful and accessible community facilities, open space and infrastructure aligned with growth

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
3. A city for people 8. A city in its landscape	3. Providing services and social infrastructure to meet people's changing needs 4. Fostering healthy, creative, culturally rich and socially connected communities 18. Delivering high quality open space	Creating connection

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
6.1 Advocate changes to contributions planning and seek alternative funding mechanisms to deliver high-quality facilities and infrastructure, including the FAST corridor within accelerated timeframes (short term)	✓			
6.2 Investigate DCP changes to encourage green open space in high-rise development (short term)	✓			
6.3 Collaborate with the NSW Department of Education to identify opportunities for sharing local school infrastructure with the wider community (short term)	✓			
6.4 Develop community and recreation hub at Phillips Park, Lurnea (short term)	✓			
6.5 Redevelop Lighthorse Park into a district recreation and open space destination park, including a community centre, and active and passive open spaces (medium term)		✓		
6.6 Review LEP to give effect to River Connections Program linking green space networks from Casula to Pleasure Point, improving accessibility and visual amenity (short, medium and long term)	✓	✓	✓	
6.7 Establish a metropolitan-scale cultural/entertainment facility in the City Centre (visionary)				✓



PLANNING PRIORITY 7

Housing choice for different needs, with density focused in the City Centre and centres well serviced by public transport

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
4. Housing the city	5. Providing housing supply, choice and affordability with access to jobs, services and public transport	Generating opportunity

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
7.1 Develop and implement a Local Housing Strategy through amendments to the LEP and DCP (short term)	✓			
7.2 Consider an Affordable Housing Contributions Scheme in line with Greater Sydney Commission's requirement for 5-10% affordable housing, and amend LEP to give effect (short term)	✓			
7.3 Partner with State Government to investigate the potential for master planned precincts (such as NSW Land and Housing Corporation properties in Warwick Farm and Green Valley) to improve and increase social and affordable housing (medium term)		✓		
7.4 Partner with State Government and stakeholders including TAFE to review the Masterplan for Miller Town Centre (short term).	✓			
7.5 Advocate to State and Federal Governments for more investment in social and affordable housing (short term)	✓			
7.6 Partner with State Government to investigate planning controls to address land fragmentation challenges in growth areas (short term)	✓			
7.7 Progress planning for sustainable, high-density transit- and landscape-oriented development along the Fifteenth Avenue Smart Transit Corridor (short to medium term)	✓	✓		
7.8 Monitor, review and update the Local Housing Strategy to ensure sufficient, appropriate and diverse housing is delivered to meet community needs (ongoing)	✓	✓	✓	✓

IMPLEMENTATION FOR LIVEABILITY

LIVEABILITY

PLANNING PRIORITY 8

Community-focused low-scale suburbs where our unique local character and heritage are respected

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
5. A city of great places	6. Creating and renewing great places and local centres, and respecting the District's heritage	Strengthening and protecting our environment

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
8.1 Amend LEP to implement findings of review of dwelling typologies and density around Moorebank Shopping Centre (short term)	✓			
8.2 Review R4 zoned land around local centres to address interface issues (short to medium term)	✓	✓		
8.3 Investigate Local Character Statements and Local Character overlays for areas identified as requiring more fine-grain planning responses (short term)	✓			
8.4 Review and update heritage provisions in LEP, and address anomalies (short term)	✓			
8.5 Undertake design-led planning using placemaking principles for local and district centres (medium term)		✓		



LIVABILITY

PLANNING PRIORITY 9

Safe, healthy and inclusive places shaping the wellbeing of the Liverpool community

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
3. A city for people	4. Fostering healthy, creative, culturally rich and socially connected communities	Creating connection

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
9.1 Amend DCP to better respond to urban heat (short term)	✓			
9.2 Liaise with Fairfield and Canterbury Bankstown councils to implement active transport routes around Chipping Norton Lakes, including bridge and road connections (medium term)		✓		

IMPLEMENTATION FOR PRODUCTIVITY

Measures:

- Jobs by industry
- Level of employment
- Gross Regional Product
- Vacancy rates
- Land zoned for employment purposes across various industry sectors
- Visitor numbers
- Number of new businesses opened/registered

PLANNING PRIORITY 10

A world-class health, education, research and innovation precinct

PLANNING PRIORITY 11

An attractive environment for local jobs, business, tourism and investment

PLANNING PRIORITY 12

Industrial and employment lands meet Liverpool's future needs

PLANNING PRIORITY 13

A viable 24-hour Western Sydney International Airport growing to reach its potential



PRODUCTIVITY

PLANNING PRIORITY 10

A world-class health, education, research and innovation precinct

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
7. Jobs and skills for the city	9. Growing and strengthening the metropolitan cluster 11. Growing investment, business opportunities and jobs in strategic centres	Generating opportunity Leading through collaboration

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
10.1 Investigate LEP changes necessary to support the operations and growth of the Liverpool Innovation Precinct (short to medium term)	✓	✓		
10.2 Prepare structure plan and planning proposal to rezone the Warwick Farm racing precinct to B4 (short term)	✓			
10.3 Collaborate with universities, TAFE, the Department of Education and other education providers to support growth (short term)	✓			

IMPLEMENTATION FOR PRODUCTIVITY

PLANNING PRIORITY 11

An attractive environment for local jobs, business, tourism and investment

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
7. Jobs and skills for the city	8. Leveraging industry opportunities from the Western Sydney Airport and Badgerys Creek Aerotropolis 9. Growing and strengthening the metropolitan cluster 11. Growing investment, business opportunities and jobs in strategic centres	Generating opportunity

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
11.1 Develop a Centres and Corridor Strategy, and review LEP and DCP to ensure alignment (short term)	✓			
11.2 Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)	✓	✓		
11.3 Amend LEP to increase land-use flexibility for festival uses (short term)	✓			
11.4 Work with Transport for NSW and RMS to create links from Liverpool Train Station to the Georges River and investigate opportunities for transport interchanges at Moore Point (CBD extension east of the Georges River) (short to medium term)	✓	✓		



PRODUCTIVITY

PLANNING PRIORITY 12

Industrial and employment lands meet Liverpool's future needs

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
7. Jobs and skills for the city	10. Maximising freight and logistics opportunities and planning and managing industrial and urban services land	Generating opportunity

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
12.1 Develop Industrial and Employment Lands Strategy and review LEP and DCP to ensure alignment (short term)	✓			
12.2 Review the LEP and DCP to ensure statutory planning controls protect key freight routes and employment lands from sensitive land uses (short to medium term)	✓	✓		
12.3 Investigate provision of new industrial land, including light industrial (IN2), between the airport and the CBD, including extension of industrial zoned land in Austral, to ensure ongoing supply (short to medium term)	✓	✓		

IMPLEMENTATION FOR PRODUCTIVITY

PLANNING PRIORITY 13

A viable 24-hour Western Sydney International Airport growing to reach its potential

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
5. A city of great places 6. A well connected city 7. Jobs and skills for the city	6. Creating and renewing great places and local centres, and respecting the District's heritage 7. Establishing the land use and transport structure to deliver a liveable, productive and sustainable Western Parkland City 8. Leveraging industry opportunities from the Western Sydney Airport and Badgerys Creek Aerotropolis	Generating opportunity Leading through collaboration

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
13.1 Ensure through the Western Sydney Planning Partnership that future planning in the Aerotropolis supports the airport's economic potential and reduces conflicting uses that could inhibit future growth and the curfew free status of the airport (short term)	✓			
13.2 Ensure through the Western Sydney Planning Partnership that future planning in the Aerotropolis supports the airport's economic potential and reduces conflicting uses that could inhibit future growth and the curfew free status of the airport (short term)	✓			



IMPLEMENTATION FOR SUSTAINABILITY

Measures:

- Tree canopy coverage
- Temperature in urban areas
- Environmental indicators
- Rural productivity and employment

PLANNING PRIORITY 14

Bushland and waterways are celebrated, connected, protected and enhanced

PLANNING PRIORITY 15

A green, sustainable, resilient and water-sensitive city

PLANNING PRIORITY 16

Rural lands are protected and enhanced



PLANNING PRIORITY 14

Bushland and waterways are celebrated, connected, protected and enhanced

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
8. A city in its landscape	12. Protecting and improving the health and enjoyment of the District's waterways 14. Protecting and enhancing bushland and biodiversity 15. Increasing urban tree canopy cover and delivering Green Grid connections	Strengthening and protecting our environment

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
14.1 Review Environmentally Significant Land overlay in LEP to ensure protection of areas of high ecological conservation value (short term)	✓			
14.2 Review LEP and DCP to ensure protection of biodiversity and waterway quality, and implement the Green Grid (short to medium term)	✓	✓		
14.3 Develop a strategy to increase tree canopy cover in the LGA (short term)	✓			
14.4 Collaborate with Department of Defence and neighbouring councils to investigate a koala habitat protection corridor (short term)	✓			
14.5 Develop a Strategic Urban Biodiversity Framework, dependent on finalisation of State Government's Greener Places policy (short term)	✓			
14.6 Create green entryways to LGA along major road entry points (medium to long term)		✓	✓	

IMPLEMENTATION FOR SUSTAINABILITY

PLANNING PRIORITY 15

A green, sustainable, resilient and water-sensitive city

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
8. A city in its landscape 9. An efficient city 10. A resilient city	15. Increasing urban tree canopy cover and delivering Green Grid connections 19. Reducing carbon emissions and managing energy, water and waste efficiently 20. Adapting to the impacts of urban and natural hazards and climate change	Strengthening and protecting our environment

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
15.1 Review LEP and DCP to suitably address sustainability in line with recommendations from emissions reduction and resource efficiency study (short term)	✓			
15.2 Review LEP and DCP to address sustainable waste outcomes (short term)	✓			
15.3 Review LEP and DCP to ensure Water Sensitive Urban Design is adequately addressed (short term)	✓			
15.4 Review LEP and DCP to address the Urban Heat Island Effect (short term)	✓			
15.5 Review DCP to encourage new commercial and industrial buildings to be rooftop solar ready (short term)	✓			
15.6 Review DCP to prioritise low-carbon initiatives in future developments such as adaptive building designs, precinct-level car parking strategies and energy-efficient, water-efficient, waste-efficient and energy generating precinct design (short term)	✓			
15.7 Advocate for changes to Exempt and Complying Development Code to ensure tree canopy cover can be increased in line with State directives (short term)	✓			
15.8 Advocate for increases to BASIX and Section J of the National Construction Code in line with the State Government's net zero by 2050 aspirations (short term)	✓			



PLANNING PRIORITY 16

Rural lands are protected and enhanced

Relationship to other plans and policies

Metropolitan Plan Direction	District Plan Priority	CSP Direction
8. A city in its landscape	16. Protecting and enhancing scenic and cultural landscapes 17. Better managing rural areas	Strengthening and protecting our environment

Action	2019/20- 20/21	2021/22- 24/25	2025/26- 28/29	2029/ 30+
16.1 Develop Rural Lands Strategy and review LEP to ensure alignment (short term)	✓			
16.2 Investigate placemaking opportunities in Wallacia and Luddenham, including addressing transition of development controls from Liverpool LGA to Penrith LGA and Camden LGA (short to medium term)	✓	✓		
16.3 Review the Rural Lands Strategy every four years to ensure land use standards reflect trends in agriculture and can support the sensible growth of an agriculture industry to support opportunities provided by Western Sydney International Airport and to protect natural landforms and rural lifestyles (ongoing)	✓	✓	✓	✓



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Liverpool Collaboration Area

Strategic Transport Impact
Assessment

**Coronation Property and
Leamac Property Group**

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1 Executive Summary

This Strategic Transport Impact Assessment has been prepared by Aurecon on behalf of Leamac and Coronation to assess strategic transport alignment in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure 1-1 Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

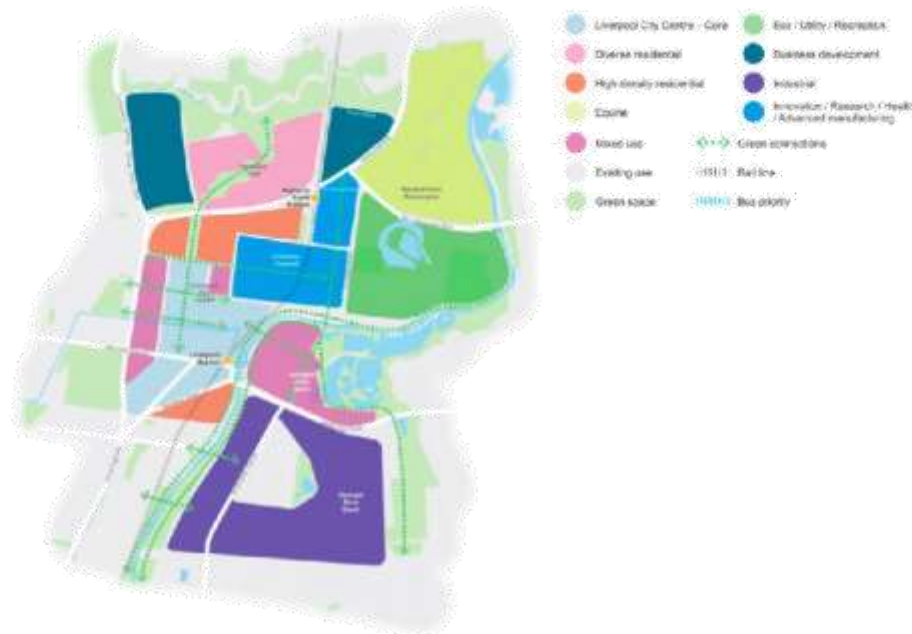


Figure 2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term)

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products. The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City. The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items. These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes. Supported by a 'vision' for Moore Point founded on delivering exceptional pedestrian and cycling connectivity both within the precinct itself as well the broader community, the Planning Proposal represents an opportunity to deliver significant movement and place outcomes for the Liverpool Collaboration Area.

This Strategic Transport Impact Assessment details further works required to understand the detailed transport infrastructure requirements for the precinct, see Section 5 for further details. This work would be delivered in coordination with the Transport Infrastructure Working Group.

Transport Infrastructure Working Group

It was suggested by the Transport Cluster representatives that a Steering Group be formed with TfNSW, RMS, Liverpool City Council, Greater Sydney Commission (GSC)/Department of Planning Industry and Environment (DPIE) and the proponent to oversee the preparation of the TIA Brief and deliver transport infrastructure requirements and costings to support the land being rezoned. As a result, the Transport Infrastructure Working Group (TIWG) was setup.

The TIWG will also discuss and resolve any issues raised and matters that need to be discussed and agreed between relevant stakeholders to allow the TIA and resultant TMAP to be completed in the earliest timeframe possible. The Terms of Reference (ToR) for the TIWG is attached, refer to Appendix A, and identifies appropriate members and roles, intended project outcomes and program. Monthly PWG meetings will be held and attended by the following representatives:

- Liverpool City Council – Chair/Coordinator;

- Greater Sydney Commission;
- Transport for NSW;
- Department of Planning, Industry and Environment (to be confirmed once planning process is determined); and
- Other state agencies as agreed.

2 Strategic Context

2.1 Regional Strategies

2.1.1 Greater Sydney Region Plan, A Metropolis of Three Cities (Greater Sydney Commission)

The Greater Sydney Region Plan, A Metropolis of Three Cities, is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places. This is consistent with the 10 Directions in Directions for a Greater Sydney which establish the aspirations for the region over the next 40 years and are a core component of the vision and a measure of the Plan's performance. The vision brings new thinking to land use and transport patterns to boost Greater Sydney's liveability, productivity and sustainability by spreading the benefits of growth.

To meet the needs of a growing and changing population the vision seeks to transform Greater Sydney into a metropolis of three cities (refer Figure 2-1):

- The Western Parkland City
- The Central River City
- The Eastern Harbour City

Liverpool City is strategically located on a city-shaping public transport corridor providing connectivity between the Central River City and Western Parkland City.



Figure 2-1: A Metropolis Three Cities (Source: Future Transport Strategy 2056)

2.1.2 Western City District Plan

In March 2018, the Greater Sydney Commission (GSC) released the updated Western City District Plan. The Western City District covers the Liverpool, Blue Mountains, Camden, Campbelltown, Fairfield, Hawkesbury, Penrith and Wollondilly local government areas.

Over the next 20-year horizon, the Western City District Plan will aim to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It contains the planning priorities and actions for implementing the Greater Sydney Region Plan at a district level and is a bridge between regional and local planning. A key focus of the District Plan is to deliver on Greater Sydney Commission's three key themes: Productive, Liveable and Sustainable Cities.

As shown in the structure plan for the Western Parkland City (Figure 2-2 and Figure 2-3), Liverpool is located at the border with the Central River City meaning that Liverpool is a key gateway to and from the Western City District.

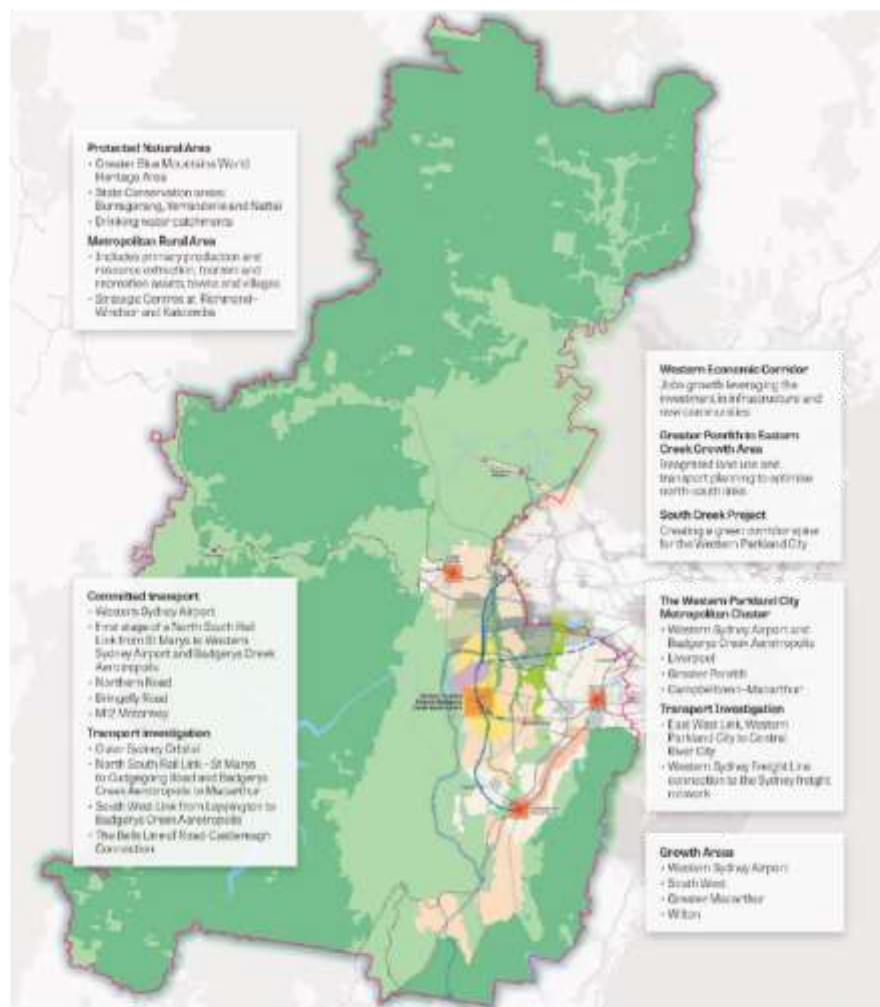


Figure 2-2: Western City District structure plan (Source: Western District Plan, 2018)

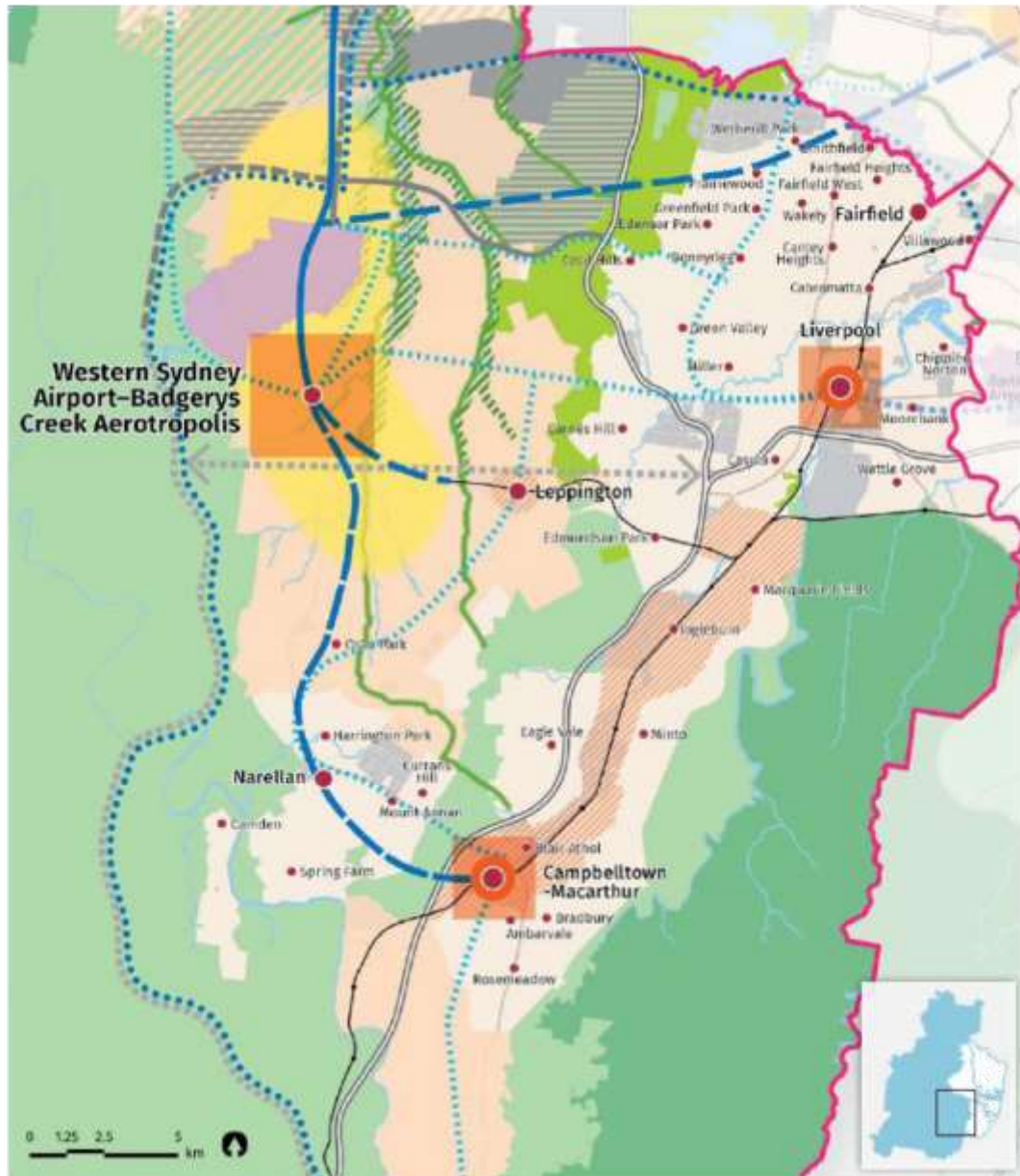


Figure 2-3: Western City District structure plan – Liverpool City focus (Source: Western District Plan, 2018)

The above Western City District Plan also identifies a potential 'Train/Mass Transit Link' to Bankstown and connection to the Sydney Metro network. The identified link/corridor runs very close to the site and is regarded as 'visionary' as it has not been included in the infrastructure identified to be delivered within the next ten (10) years.

2.1.3 Future Transport 2056

Future Transport 2056 is an update of NSW's Long-Term Transport Master Plan. It is a suite of strategies and plans for transport developed in concert with the Greater Sydney Commission's Sydney Region Plan, Infrastructure NSW's State Infrastructure Strategy, and the Department of Planning, Industry and Environment's (DPIE) regional plans, in order to provide an integrated vision for the state.

This vision is built on six outcomes:

- Customer Focused
- Successful Places
- A Strong Economy
- Safety and Performance
- Accessible Services
- Sustainability

To achieve this vision for future transport in Greater Sydney, the strategy identifies key corridors required to support growth:

- City-shaping corridors – major trunk road and public transport corridors providing higher speed and volume links between cities and centres that shape locational decisions of residents and businesses;
- City-serving corridors – higher density corridors concentrated within ~10km of metropolitan centres providing high frequency access to metropolitan cities/centres with more frequent stopping patterns; and
- Centre-serving corridors – local corridors that support buses, walking and cycling, to connect people with their nearest centre and transport node.

As shown in the existing 2018 network maps and the aspirational 2056 network maps, Liverpool is well located on a key City Shaping Corridor, and in proximity of multiple City Serving Corridors making it an ideal location for urban renewal and expansion.

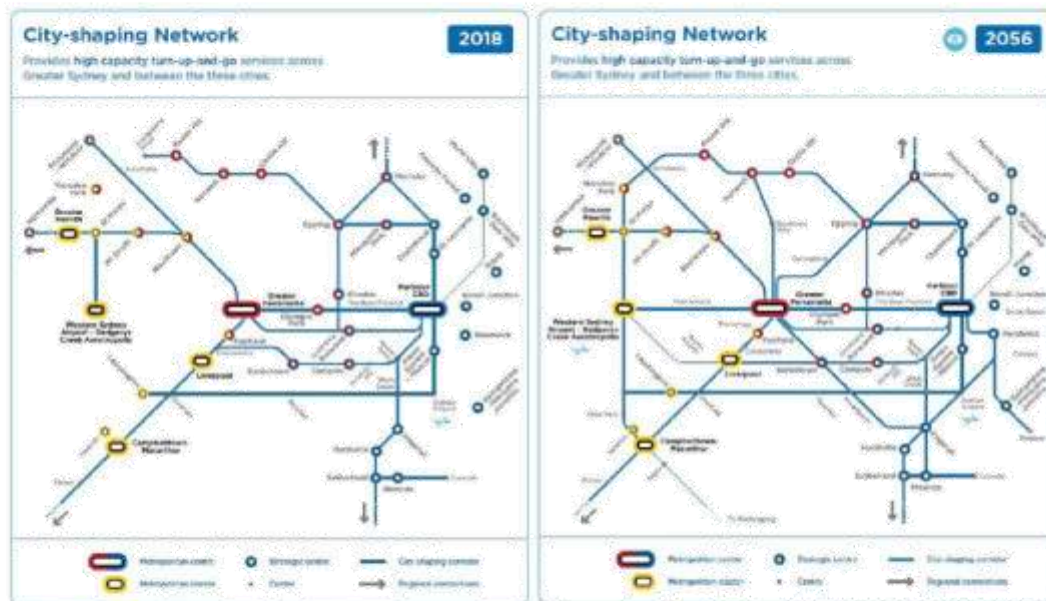


Figure 2-4: City-shaping Networks for 2018 (left) and 2056 (right) (Source: Future Transport Strategy 2056)

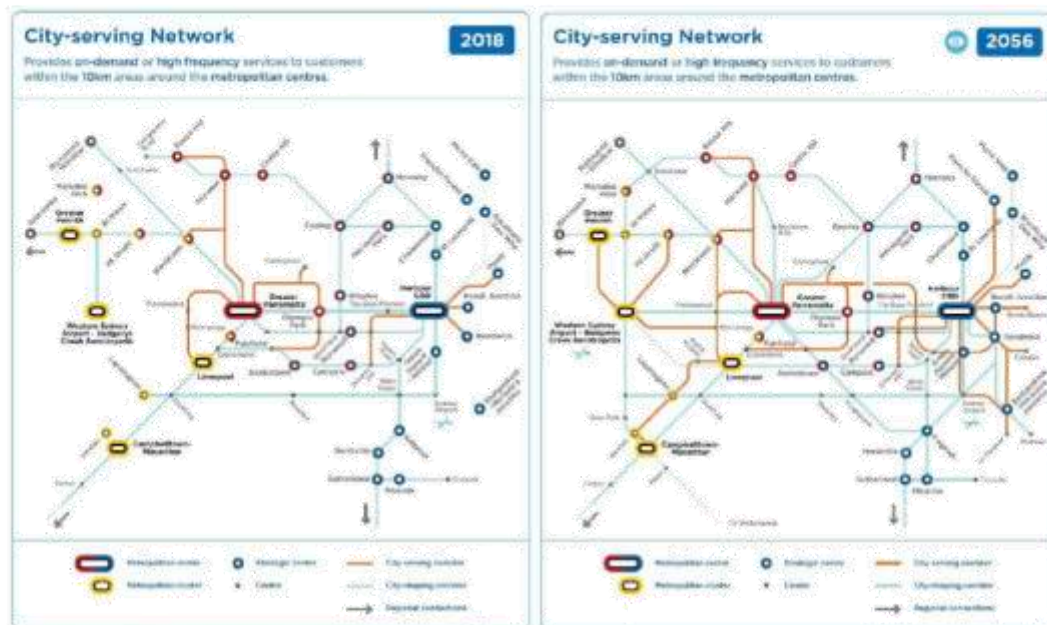


Figure 2-5: City-serving Networks for 2018 (left) and 2056 (right) (Source: Future Transport Strategy 2056)

2.2 Local Strategies and Planning

The following planning and infrastructure strategies/studies have been undertaken or are underway which will inform and direct future land use planning and transport policies for Liverpool LGA. This will also have, to a certain extent, an impact on the Liverpool Collaboration Area including the Georges River North Precinct.

2.2.1 Liverpool Collaboration Area Place Strategy

The Liverpool Collaboration Area Place Strategy is a strategy which identified the need to plan and build infrastructure to keep pace with the demands of the population growth in the area to ensure a sustainable city and maintain high liveability standards. The Place Strategy strives to guide and promote collaboration, identify priority investment opportunities and assist in bringing together local knowledge and professional expertise as Liverpool City transforms. Key aspects considered in the development of the Place Strategy were:

- Establishes a vision for the Liverpool Collaboration Area, based on the community's vision expressed in Our Home Liverpool 2027 and the Western City District Plan;
- Identifies impediments and opportunities;
- Sets priorities for the Collaboration Area; and
- Identifies actions to deliver the vision.

Central to the future development of the Liverpool Collaboration Area Place Strategy is the Georges River which borders the Moore Point site.



Figure 2-6: Liverpool Collaboration Area Map (Source: Liverpool Collaboration Area Place Strategy, 2018)

2.2.2 Liverpool 2027 Community Strategic Plan



Figure 2-7: Liverpool 2027 Community Strategic Plan (Source: Our Home Liverpool 2027)

The plan defines the vision and priorities for the future development of Liverpool City until 2027 based on the several key themes, including community pride and heritage, social connection, economic development, environmental sustainability and transport accessibility.

2.2.3 Fifteenth Avenue Smart Transit (FAST) Corridor

The upgrading of Fifteenth Avenue into a Smart Transit Corridor is a visionary city-shaping project aimed at delivering a high quality public transport link between the Liverpool Collaboration Area, CBD and the Western Sydney International Airport. The FAST Corridor will be a key gateway into South West Sydney.



Figure 2-8: Fifteenth Avenue upgrade (Source: Liverpool City Council website)

2.2.4 Edmondson Park

In 2008, Edmondson Park was rezoned for urban development as part of the first wave of areas to form part of the NSW Government's South West Sydney Priority Growth Area. The proposed plan outlines the development of approximately 8,200 new homes – an additional 25,000 residents – over a 10 to 15-year horizon.



Figure 2-9: Edmondson Park urban renewal (Source: Liverpool City Council website)

2.2.5 Western Sydney International Airport and Western Sydney Aerotropolis Projects

The highly anticipated Western Sydney International Airport is due to be completed and opened in 2026. As a result, the Western Sydney Planning Partnership (NSW Government and Liverpool City Council) have released the blueprint for the Western Sydney Aerotropolis which outlines the development plans for the redevelopment and modernisation of the area to support future growth and industries.



Figure 2-10: Illustration of the Western Sydney Airport
 (Source: Liverpool City Council website)

2.2.6 Sydney's Third CBD

Anticipating the increased demand and growth within Liverpool, the City Council has rezoned the city centre to promote future redevelopment which includes the rezoning of 25 hectares within the CBD.

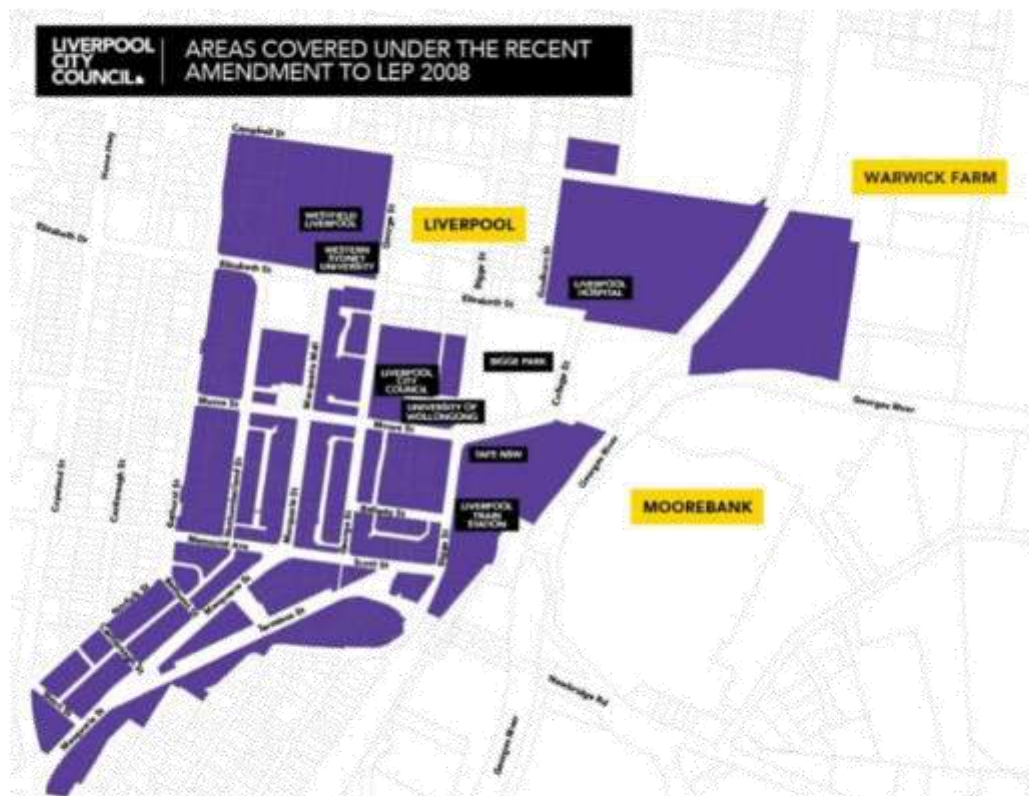


Figure 2-11: Liverpool CBD rezoning plans (Source: Liverpool City Council website)

3 Existing Conditions

The road network surrounding the Georges River North Precinct is well connected and provides access to the major road corridors of the M5 and M7. The proximity of the Precinct to the Liverpool Train Station means that a journey to Sydney CBD via train can currently be achieved in approximately 60 minutes. Although there is no express service currently available that operates directly between Liverpool CBD and the Harbour and Parkland Cities (unlike all other major centres within Sydney) future provision of express services would likely significantly reduce this travel time.

The revitalisation of Liverpool City and precincts such as Georges River North will promote the use of public transport and further expand the network to improve efficiencies. It will also help to alleviate congestion on the road network that may come about as a result of the precinct development.

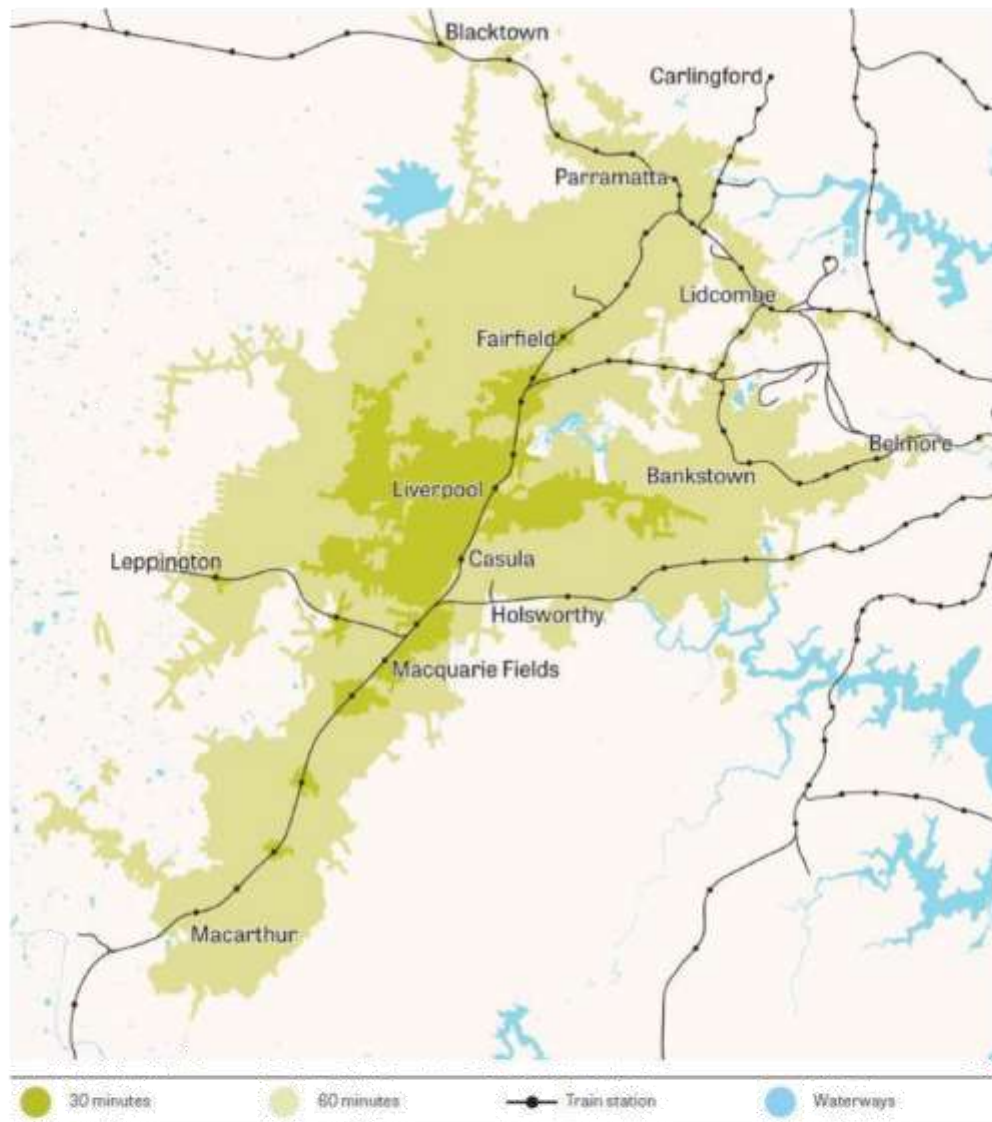


Figure 3-1: Sydney's population with 30 and 60 minutes of Liverpool, 2018 (Source: Greater Sydney Commission)

It is essential to understand the current operation of the transport network to identify opportunities and constraints with the different access arrangements proposed, which will be achieved through the completion

of a Strategic Transport Assessment that identifies current and future opportunities and constraints. The transport assessment is being undertaken by the Transport Infrastructure Working Group (TIWG) – a steering group comprised of TfNSW, Liverpool City Council (Chair), Greater Sydney Commission, Department of Planning Industry and Environment and the proponent to oversee the preparation of the TIA Brief, and deliver transport infrastructure requirements and costings to support the land being rezoned.

3.1 Roads

The road network surrounding the Georges River North Precinct connects vehicles travelling to and along the Hume Highway resulting in high traffic volumes in the North-South direction.



Figure 3-2: Surrounding road network to the Precinct (Source: Open Street Map)

The network also facilitates the movement of local traffic in the East-West direction, linking suburbs such as Bankstown, Milperra and Moorebank in the east to the western suburbs of Ashcroft and Cartwright. General traffic and buses gain access to the southern end of the Precinct via Newbridge Road, and exit similarly. General traffic can gain further access to the industries and business located within the Precinct via Bridges Road and Haig Avenue.

3.1.1 Road Network Designation

State Roads



Figure 3-3: Surrounding road network to the Precinct (Source: Open Street Map)

Newbridge Road

Newbridge Road is signposted at 60km/h within the Precinct and increases to 70km/h when traveling in an easterly direction towards Moorebank. Typically, Newbridge Road carries three traffic lanes in each direction separated by a central median island before reducing to two traffic lanes in each direction as the road crosses over the Georges River.

Heathcote Road

Heathcote Road acts as a connector road, running in a south-east direction connecting Newbridge Road to the South Western Motorway and terminating at the Princes Highway. This section of road is beyond the scope of the study area.

Within the Precinct, Heathcote Road is signposted at 60km/h and carries two traffic lanes in each direction. Prior to the intersection with Newbridge Road, Heathcote Road converges with Moorebank Avenue by way of a three-way signalised intersection. A 'bus only' auxiliary lane is provided on the approach to the intersection along Heathcote Road.

The intersection with Newbridge Road is another three-way signalised intersection with Heathcote Road diverging into two left-hand and two right-hand turning lanes onto Newbridge Road.

Moorebank Avenue

Moorebank Avenue runs in a north-south direction connecting Newbridge Road to the South Western Highway and beyond. This section of road is beyond the scope of the study area.

Within the Precinct, Moorebank Avenue is signposted at 60km/h and carries two traffic lanes in each direction. As mentioned above, prior to the intersection with Newbridge Road, Moorebank Avenue converges with Heathcote Road by way of a three-way signalised intersection.

The intersection with Newbridge Road is another three-way signalised intersection with Heathcote Road diverging into two left-hand and two right-hand turning lanes onto Newbridge Road. TfNSW have identified this intersection for a major upgrade.

Local Roads

Bridges Road

Within the study area, Bridges Road has a single traffic lane in each direction with on-street parking provided on both sides of the roadway.

Haig Avenue

Haig Avenue is accessible via two means off Newbridge Road. Travelling from west to east along Newbridge Road, Haig Avenue is accessible via a left-hand off ramp. Travelling in the opposite direction, access is achieved via an underpass below Newbridge Road which leads into the study area. Haig Avenue has a single traffic lane in each direction and within the study area has on street parking on either side.

Kerbside Use



Figure 3-4: Road network kerbside uses and network constraints (Source: Open Street Map modified by Aurecon)

3.2 Rail

Liverpool Station serves as a key interchange between the T2 Inner West and Leppington line, T3 Bankstown line and T5 Cumberland line. Northern and Western line and T2 Inner West and South line.

The approximate number of suburban services stopping at Liverpool Station during the weekday AM and PM peak periods is provided in Table 3-1.

Table 3-1: Suburban rail service frequencies at Liverpool Station (Source: Sydney Trains, 2020)

Destination	AM Weekday Peak (07:00-09:00)	PM Weekday Peak (16:00-18:00)	Weekend Peak (13:00-15:00)
T2 Inner West and Leppington Line			
Liverpool to City (Central)	27	16	16
City (Central) to Liverpool	18	20	16
T3 Bankstown Line			
Liverpool to City (Central)	9	4	4
City (Central) to Liverpool	9	6	4
T5 Cumberland Line			
Leppington to Parramatta via Liverpool	4	4	-
Parramatta to Leppington via Liverpool	4	4	-

3.3 Bus

The existing bus interchange comprises of seven distinct stands which service several routes, as illustrated in Figure 3-5.

	Stand A Stop no. 2170805 Arrivals only	Stand D Stop no. 2170235 851 Carrmas Hill Marketplace 852 Carrmas Hill Marketplace 857 Narrabay 865 Casula 866 Casula 870 Campbelltown Hospital 871 Campbelltown Hospital 872 Campbelltown Hospital	Stand F Stop no. 2170171 801 Badgerys Creek 804 Parramatta 805 Cabramatta 806 Parramatta 808 Fairfield 819 Polariswood 823 Warwick Farm 827 Carrmas Hill	Stand G Stop no. 2170583 901 Hallsbury 902 Hallsbury 903 Chipping Norton 904 Fairfield M90 Burwood N30 City Town Hall N30 Macarthur N50 City Town Hall
	Stand B Stop no. 2170568 T80 Parramatta			
	Stand C Stop no. 2170570 802 Parramatta 803 Miller 853 Carrmas Hill 854 Carrmas Hill 855 Rutledge Park 856 Briggely 869 Ingleburn	Stand E Stop no. 2170567 Arrivals only		

Figure 3-5: Liverpool station bus interchange (Source: Transport for NSW website)

During the AM and PM peak periods (generally 7:00-8:00am and 5:00-6:00pm respectively), the interchange services approximately 110 bus movements during peak hour across all the stands. Overnight, lower levels of activity are observed.

There are certain sections of Moore Street which have been designated for buses but generally buses are mixed with general traffic.

3.4 On-demand Services

The provision of urban mobility is changing as more accessible and flexible service offerings become available, powered by advances in technology.

In a joint initiative by the government and private sector, a new South and South West on-demand bus service (still in the trial phase) was launched in January 2018 and has been extended to June 2020. The trial area, located in Edmondson Park, allows residents to utilise the service to book a bus to the Edmondson Park train station. The mini-bus service is designed to complement existing public transport and alleviate parking shortages at the train station by providing the 'last mile' gap.



Figure 3-6: Edmondson Park on-demand bus service catchment (Source: Transport for NSW website)

Pick-up points are flexible and are not constrained to existing bus stops, however, increasing demand for the service may drive other requirements at interchanges, including an increased demand for kerbside drop-off locations.

3.5 Commuter Carpark

There is existing parking within the study area for the employees and visitors to the manufacturing and retail businesses. At Liverpool Station there is very limited parking provided for commuters utilising public transport services.

3.6 Special Events

Liverpool City Council hosts several social events throughout the year from the Way Out West Festival, Eat Your Heart Out Liverpool and Light Up the Lake (New Year's Eve) which attract thousands of visitors and spectators. Although special events are infrequent, they should be accounted for when planning the access and egress arrangements within the area surrounding the study area.

4 Proposed Development

The Moore Point Development Planning Proposal seeks the creation of a mixed-use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage
- Foreshore embellishments and new open spaces
- Educational and cultural facilities
- Connections to Liverpool CBD and Train Station
- Transport, intersection and collector road improvements

The vision for the development of Moore Point is:

"A riverfront place for people which is well served by public transport, connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront it will be a focal point for the growing Western Sydney metropolis and place for everyone."



Figure 4-1: Moore Point Structure Plan (Source: SJB Urban)

The proposed development seeks to deliver the desired amenity, activation and walkability in an urban setting to create a place that is welcoming, comfortable, safe and family friendly. To achieve this, the planning proposal aims to deliver improved public transport and amenity connectivity, both within Moore Point and with neighbouring precincts. The planning proposal and structure plan propose the following key transport infrastructure elements and approach to identifying transport needs for the rezoning.

4.1 Road Network

The main access to the development shall be gained via Bridges Road which will be upgraded and formalised to meet the traffic demands and volumes forecasted. The proposed upgrading of Bridges Road will require the formalisation and upgrading of the intersection between Newbridge Road and Bridges Road, most likely to a signalised three-way intersection. Final location and design will be determined on completion of the Transport Impact Assessment currently being undertaken by the TWG. This intersection has previously been identified by TfNSW and Liverpool City Council as a priority intersection for upgrade to facilitate the growth and development of the CBD and surrounding precincts.

Supporting Bridges Road will be an internal collector ring road that will provide access to the area west of Bridges Road, as illustrated in Figure 4-1. Additionally, localised minor access roads will ensure connectivity throughout the development.

4.2 Public Transport

The Moore Point Development proposes locating a bus interchange within the precinct which will be integrated into the regional public transport network. Access to the bus interchange shall be obtained via Bridges Road and the internal ring road. Additionally, the planning proposal acknowledges the importance and benefits of utilising the existing Liverpool Station which is located directly across the Georges River. As a result, the development proposes providing pedestrian and active transport connectivity to the station over the Georges River.

In line with the proposed future expansion of the metro system, namely Sydney Metro West, the Moore Point Development has made allowance for the potential inclusion of a metro station at the bus interchange.

4.3 Pedestrian and Active Transport

Key to the proposed development plan is the promotion of active transport within Moore Point. Supporting infrastructure to endorse and encourage pedestrian and cycling will be provided throughout the development, connecting active transport routes to the adjacent Liverpool precincts across the Georges River.

5 Transport Connectivity and Support Studies

The 'vision' for Moore Point is founded on delivering exceptional pedestrian and cycling connectivity both within the precinct itself as well as the broader community, the adjacent Liverpool CBD, Liverpool Station and hospital which located across the Georges River. In conjunction with the provision of world class active transport infrastructure, the precinct will strive to integrate seamlessly into the future upgraded public transport network which will be rolled out to and within the Liverpool Collaboration Area.

To achieve an integrated and connected Moore Point Development, a two-stage approach has been developed in line with the Terms of Reference provided by the TIWG (refer attached Appendix A). The approach to developing Stage 1 of this assessment, the Transport and Land Use Strategy, is outlined in Section 5.1. An overview of works anticipated in Stage 2 is provided in Section 5.2. A detailed methodology for this assessment will be drafted when the outcomes of the Stage 1 assessment have been finalised.

Our approach aims to drive efficient and collaborative decision making to streamline the planning approvals for the development through early engagement with key stakeholders and the formation of the Transport Infrastructure Working Group (TIWG). By initiating this early dialogue and working group, the objective is to ensure the planning proposals align with the overarching place-making strategy for the Liverpool Collaboration Area and the successful integration of the Moore Point Development into the current and future planned transport network.

5.1 Stage 1 – Due Diligence and Strategic Assessment

This stage will provide a strategic understanding of the infrastructure and services required to support the planning proposals for the Moore Point Development. The strategic assessment will need to be undertaken in the context of cumulative impacts due to growth in the Collaboration Area and surrounds. The outputs of this phase will also inform the feasibility and commercial viability of the planning proposal.

As agreed through the TIWG (March 2020), the assessment will be informed by work undertaken by Transport for NSW to develop a Place-based Transport Strategy for the Liverpool Collaboration Area. The outcomes of this study will feed directly into the development of Scenarios for assessment, see Figure 5-2.

The Joint Landowners Group (JLG) is required to discuss and come to an agreement with Council on appropriate staging land use scenarios, giving effect to the recommended growth profile for the overall Collaboration Area. In parallel, discussions with TfNSW and Roads and Maritime Services should be undertaken to agree on the committed and planned transport infrastructure and services to be included in the assessment as part of the baseline scenario.

Once the above assumptions have been agreed, strategic transport modelling shall be carried out using the TfNSW's Sydney Strategic Transport Model (STM) and Public Transport Project Model (PTPM). This will derive the addition and redistribution of transport demand across the various parts of the transport network as a result of the land use changes envisaged across the Liverpool Collaboration Area.

The outputs of the demand modelling, STM and PTPM, will be further assessed in the Strategic Traffic Forecasting Model (STFM), to inform the strategic transport evaluation component and provide an understanding of the scale of impacts of the planning proposals on the transport networks, and any required changes and associated costs. Based on the required upgrades to the network, strategic cost estimates for the additional infrastructure and service requirements shall be developed.

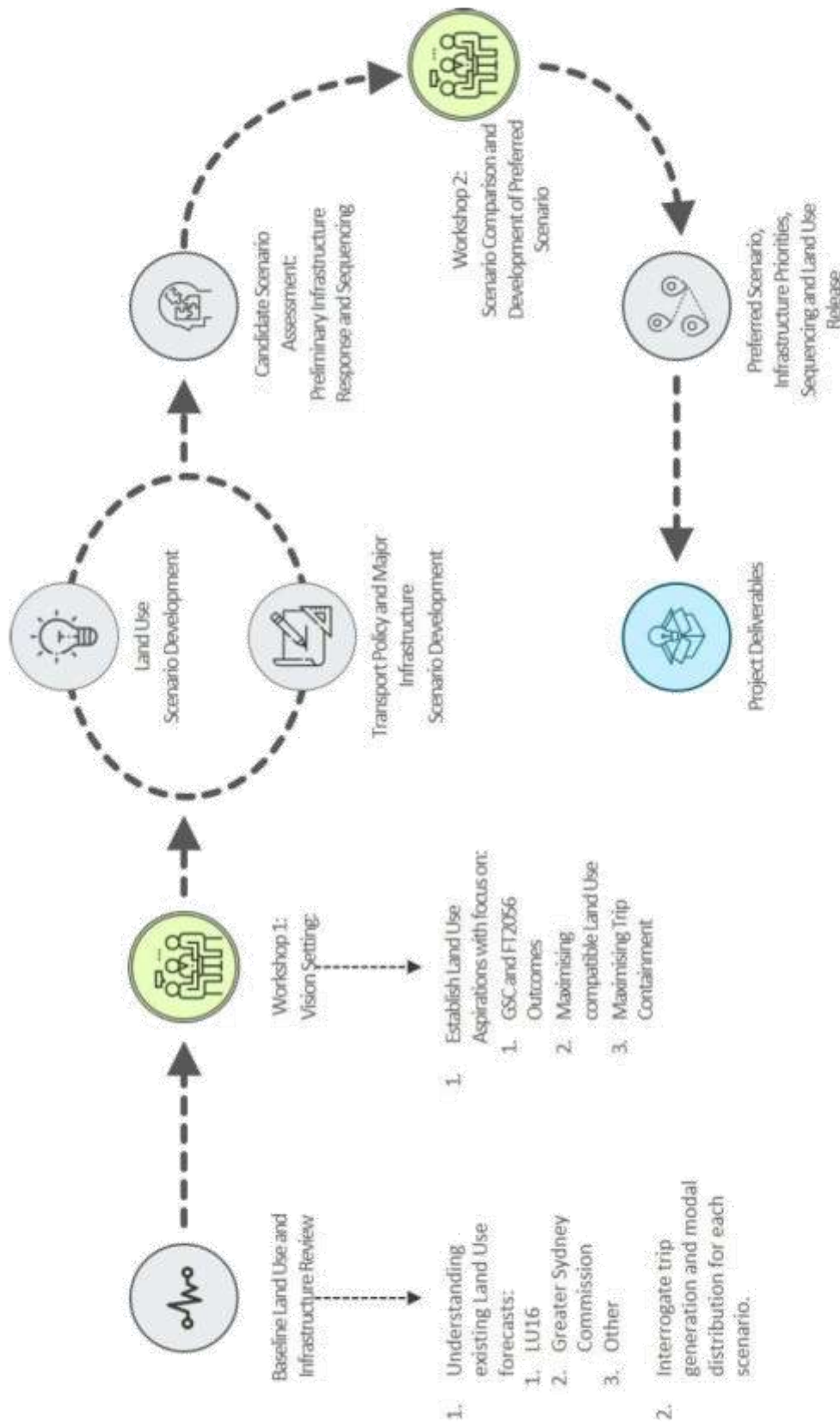


Figure 5-1: Proposed Stage 1 approach

The **key tasks** in Stage 1 include:

- Baseline Scenario test
 - Agreement on the baseline inputs and assumptions based on existing and draft plans, policies and strategies (i.e. Western District Plan, Future Transport 2056, Liverpool Place Strategy, etc.)
 - Set and agree the horizon timelines for testing (2026, 2036 and 2056).
 - Set and agree development staging (i.e. development yield and timeline).
 - The baseline Scenario is anticipated to be consistent with the outcomes of the Place-based Transport Strategy developed by Transport for NSW, to be provided to the TIWG for information. This will include a list of anticipated Transport Infrastructure, Policy and Service requirements to support the development of the Collaboration Area to 2036.
 - Initial scenario testing and analysis
 - Review and agree land use and network assumptions.
 - Develop and run Strategic Transport Model (STM) and Public Transport Project Model (PTPM).
 - High level analysis of the STM and PTPM outputs.
 - Assessment of Baseline Scenario in STFM and PTPM for horizon years, inclusive of agreed infrastructure rollout.
 - Compile a Baseline Scenario Memo including network performance, analysis of additional infrastructure requirements and land use release profiles.
 - Development of suggested alternate scenarios for testing (i.e. alternative land uses, infrastructure, mode shift assumptions and staging) including identification of mechanisms to reduce trip generation for identified constrained modes.
 - Baseline Scenario presentation to the Working Group.
- Analysis and testing of alternative scenarios, maximum of 5, in STM, STFM and PTPM. Refer to Figure 5-2: Scenario development and Figure 5-3: Scenario assessment outlining the proposed process.
- Development of a Preferred Scenario and staging plan for land use release and transport infrastructure, refer to Figure 5-4: Preferred scenario determination.
- High level cost estimation of key required infrastructure and development of an investment profile.
- Preferred Scenario presentation to the Working Group for endorsement to proceed to Stage 2.

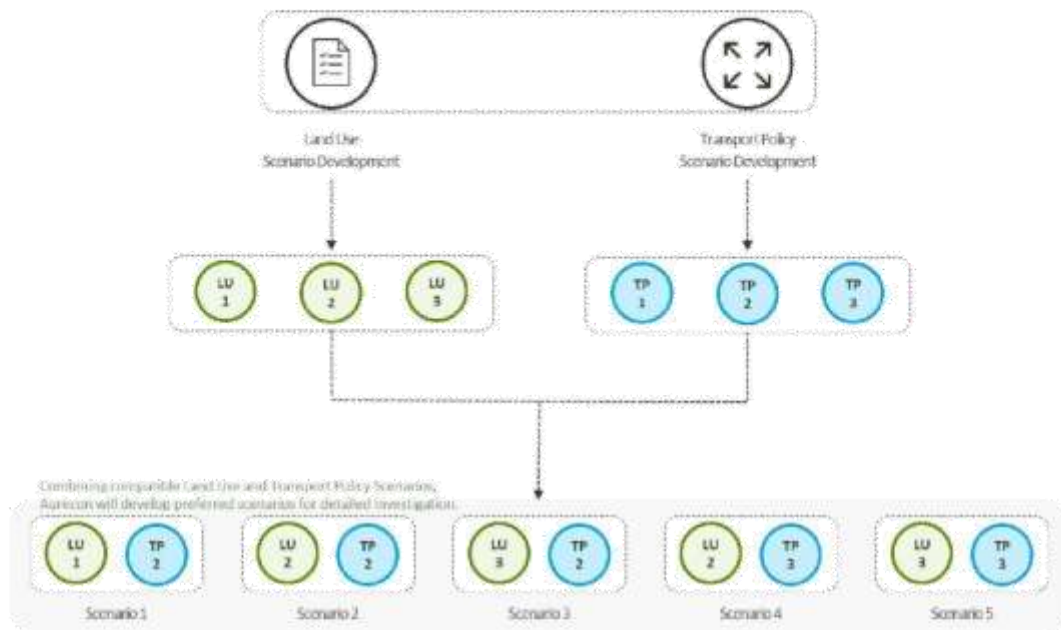


Figure 5-2: Scenario development

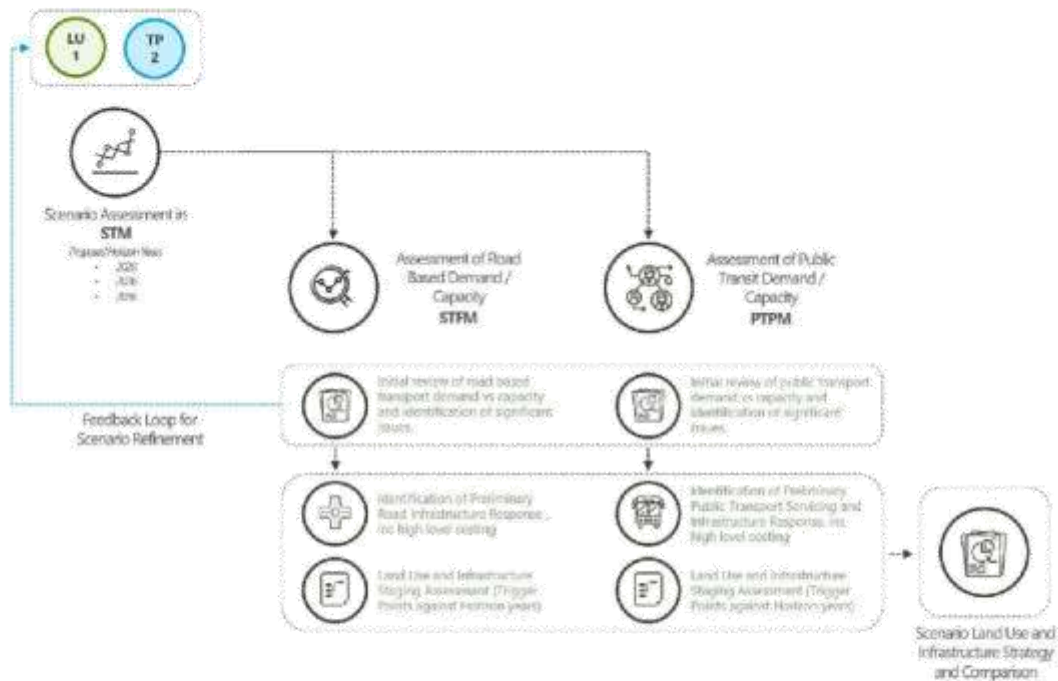


Figure 5-3: Scenario assessment

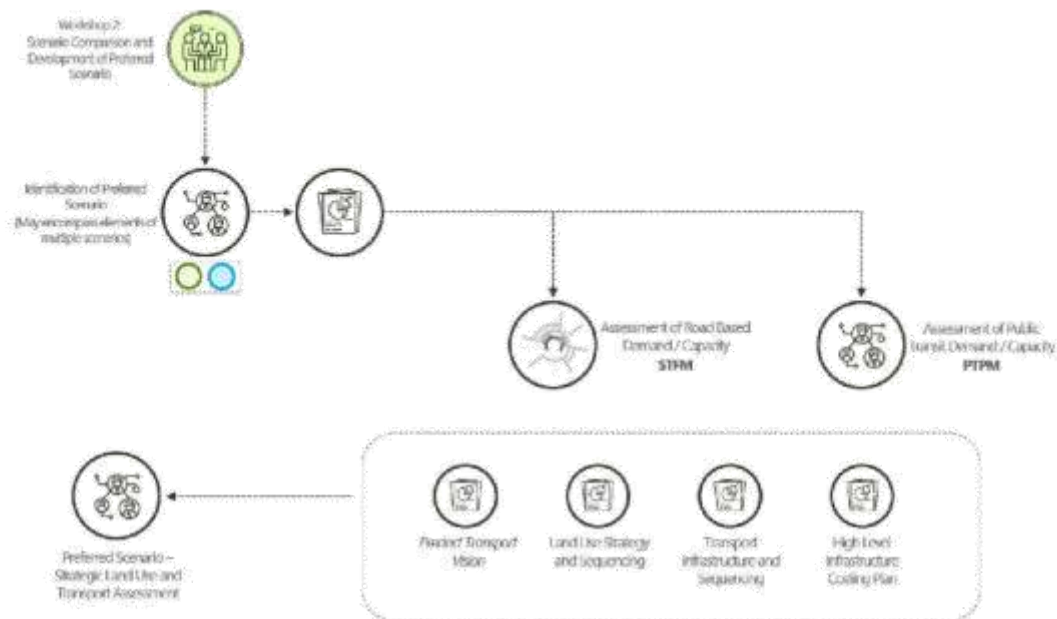


Figure 5-4: Preferred scenario determination

Deliverable of Stage 1:

Submission of a Preferred Land Use and Transport Infrastructure Scenario Report including:

- Land Use and Transport Infrastructure Strategy for Liverpool Collaboration Area;
- High level cost estimation of the key infrastructure requirements and transport access strategy for interim and ultimate developments; and
- An agreed upon funding mechanism.

5.2 Stage 2 – Detailed Transport and Traffic Assessment

Stage 2 shall commence once there is consensus and agreement on the strategic assessment (completion of Stage 1) of the proposed land use changes for the Collaboration Area over time, including the identified infrastructure and services requirements. Building on the findings of Stage 1, Stage 2 will entail the development of a more detailed assessment to assist in more accurately identifying and informing the scope and costs for any infrastructure, including local transport infrastructure.

A detailed transport and traffic assessment largely in the context of a Transport Management and Accessibility Plan (TMAP) will be required to identify the infrastructure and service requirements and determine the development contributions. For land use changes of the scale anticipated, the TMAP may require the support of mesoscopic transport modelling (e.g. Aimsun software), to build on the strategic transport evaluation undertaken in Stage 1. It needs to detail the transport infrastructure and services required to support the land use changes. Findings of Stage 2 TIA will provide a sound basis for the preparation of a suitable funding mechanism for the entire precinct (SIC, LIC, TIC, VPAs and the like). These funding mechanisms will work in tandem with Federal, State and Local Government funding to support the Liverpool Collaboration Area.

TfNSW and Liverpool City Council welcome the opportunity to advise further on the detailed scope for Stage 2 of the study as Stage 1 progresses.

Deliverables of Stage 2:

Deliverables prior to rezoning include:

- Agreed Development Scenario over 2026, 2036 and 2056 planning horizons

- Identified list of Transport infrastructure/policy requirements to support agreed development Scenario – including timing of delivery and costings, and
- Appropriate funding mechanism to identify fair and reasonable developer contributions in addition to Federal, State and Local Government Infrastructure investment.

6 Gateway Approval and Proposed Conditions

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes. Supported by a 'vision' for Moore Point founded on delivering exceptional pedestrian and cycling connectivity both within the precinct itself as well the broader community, the Planning Proposal represents an opportunity to deliver significant movement and place outcomes for the Liverpool Collaboration Area.

The following is the TIWG agreed planning schedule.



Figure 6-1: Indicative strategic transport plan and impact assessment timeline

Gateway approval conditions would be aligned with the outcomes of the Stage 1 Strategic Assessment, as agreed by the TIWG.

- Land-use and Transport Infrastructure strategy for Liverpool Collaboration Area. – Placed-based Transport Strategy,
- High level costing of key infrastructure requirements and transport access strategy for interim and ultimate developments;
- Agree funding mechanism;

Appendix A – TIWG Terms of Reference

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Moore Point

Sustainability Statement

FINAL
06.04.2020

EXECUTIVE SUMMARY

This Sustainability Report has been prepared by Integral Group on behalf of Leamac and Coronation to describe the approach to sustainability in relation to a Planning Proposal at Moore Point, Liverpool (the site).

The site is located east of Liverpool CBD on the opposite side of the Georges River and north of Newbridge Road. It provides a site area of 38.5 hectares (approx.) and is currently developed with industrial uses.

The site is situated within Liverpool Collaboration Area's Georges River North precinct and is subject to the priorities and actions of the Liverpool Place Strategy (Strategy), which was released by the Greater Sydney Commission (GSC) in December 2018. Refer to the figure below:



Figure 1 – Site aerial (Source: Nearmap modified by Mecone)

The Strategy states that by 2036 Liverpool will be a rejuvenated river city, offering diverse and growing residential and employment opportunities. Major health, education and retail precincts, and a mixture of open spaces and parklands alongside the Georges River, will create a rich mix of jobs and workplaces, public spaces, shops and entertainment.

Under the Strategy the site is identified as 'mixed use', which comprises:

'a mixture of commercial, retail, residential and community uses that provide sustainable employment, that is complementary to, and not in competition with, the commercial core'

The 2019 Annual report summary for Liverpool Collaboration Area highlighted key steps commenced and completed to address the imperatives acknowledged in the Strategy to accelerate the delivery of the Collaboration Area. These included:

- Engagement with TfNSW to prepare the Liverpool Place-based Integrated Transport Strategy and accelerated investment; and
- Flood studies and floodplain risk management plan completed by Liverpool City Council.

The land uses reflected in the Strategy are reinforced in Liverpool City Council's Local Strategic Planning Statement (LSPS), which identifies the site for investigation as residential/mixed use to support the CBD and Innovation Precinct in tandem with linking open space and green corridors.

The LSPS provides the following short to medium term action (12-24 months) specific to the Georges River North precinct:

Action 11.2 – Investigate amendments to LEP to rezone River precinct north of Newbridge Road (Moore Point) as a mixed-use zone to support the Liverpool CBD and Innovation Precinct, with an extensive open space system and cross-river linkages (short to medium term).



Figure 2 – A Place Strategy for Liverpool (Source: Liverpool Collaboration Area Place Strategy 2018)



EXECUTIVE SUMMARY

The Planning Proposal involves the creation of a mixed use precinct, providing new homes, jobs and open space adjoining the Georges River and connecting to Liverpool CBD. Key features of the proposal include:

- Adaptive re-use of existing heritage;
- Foreshore embellishments and new open spaces;
- Educational and cultural facilities;
- Connections to Liverpool CBD and Train Station; and
- Transport, intersection and collector road improvements.

The Planning Proposal aligns with the priorities of Government and the implementation phase of the Place Strategy by facilitating the transformation of the Collaboration Area with new jobs, infrastructure, green spaces and housing. The Planning Proposal responds to The Pulse of Greater Sydney's performance indicators, which sit under the following key themes:

Infrastructure and Collaboration

The Planning Proposal will facilitate additional jobs, education and housing in close proximity to Liverpool CBD and Train Station. The proposal will support additional medium and long-term housing supply in Liverpool CBD through diverse and new housing products.

The proposal supports the continual expansion and growth of Liverpool Innovation precinct and nearby health infrastructure, with potential to provide complementary uses near Liverpool Hospital and educational and cultural facilities on the site.

Productivity

The Planning Proposal supports the growth of the thirty-minute city, ensuring Liverpool emerges as a premier CBD in the Western City.

The proposal provides capacity for new transport infrastructure on the site, road and intersection upgrades and locating density near major transport infrastructure (Liverpool Train Station and Badgery's Creek Aerotropolis). The proposal encourages additional business activity and investment in Liverpool by providing new commercial uses that will complement Liverpool CBD.

Liveability

The Planning Proposal significantly improves upon the existing use of the site by creating walkable places for people to live work and play. This includes foreshore embellishments to the Georges River, improved connections across the Georges River and adaptive re-use of existing heritage items.

These measures will contribute to Sydney's Green Grid, improve access to services in Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

The Planning Proposal addresses the urban heat island effect by significantly increasing the quantum of green space on the site for active and passive recreational use. The proposal will provide new parks and green connections to surrounding open spaces including Haigh Park, which will contribute to the urban tree canopy of the area.

Overall, the Planning Proposal represents a clear and consistent strategic line of site with the priorities of government. It meets the performance indicators, priorities and objectives expressed in the District Plan, Place Strategy, LSPS and The Pulse of Greater Sydney.

Nothing contained in the body of this report/assessment would preclude the Planning Proposal from rezoning and gazettal for residential/mixed use purposes.



INTRODUCTION

APPROACH

CONTEXT

The Moore Point Precinct is a proposed urban renewal precinct of mixed use between Liverpool and Chipping Norton area. It is positioned in a riverfront location that is well connected to public transport and Liverpool City Centre.

Precincts of this nature are central to the effective urban growth of Sydney and delivering the vision of the Western Parkland City.

VISION 2036

The sustainability vision is for a precinct that:

- supports substantial reduction in *GHG emissions*;
- reduces the consumption on *non-renewable resources* such as water and materials, while limiting waste;
- provides a place that *adapts to the impacts of climate change* through urban heat management and design for a future climate;
- provides a *healthy, livable and amenable* urban environment
- supports local *ecosystems* and *biodiversity*;
- is connected with, and supportive of, *future mobility* trends including active transport, connection to public transport, electric vehicles, shared vehicles and future mobility services.

This Sustainability Statement presents a strategy for how the project will consider sustainability opportunities as it develops, through its planning, design and infrastructure provisioning stages.

This statement addresses the possible governance and assurance mechanisms for embedding sustainability initiatives and principles in the precinct.

STATEMENT OF COMMITMENTS

The Moore Point precinct will work collaboratively with Liverpool Council, The GSC and Transport for NSW to:

1. To **embed** sustainability principles within the precinct governance and implementation documents, to provide planning certainty for sustainability outcomes.
2. To **support** the inclusion of sustainability initiatives and innovation within the concept masterplan.
3. To **encourage** greater ambition in pursuit of the sustainability priorities identified in the Western District Plan.



INTRODUCTION

SUSTAINABILITY FRAMEWORK POLICY & PLANNING CONTEXT

The concept design addresses a range of sustainable principles and is capable of contributing towards the sustainability goals that are presented in local, state-level and global agreements, legislation and policy.

GLOBAL

UN Sustainable Development Goals

At least seven of the UN Sustainable Development Goals are advanced through sustainability in cities and urban renewal precincts.

Paris Agreement

Cities are critical to the global goal to reduce GHG emissions in order to hold average temperature increase to well below 2°C and pursue efforts to keep warming below 1.5°C above pre-industrial levels.

STATE

Western Parkland City District Plan – Under the authority of the Greater Sydney Commission (GSC), the Western Parkland City District Plan considers sustainability in connecting the centres in the Western City District to improve Liveability, Productivity and Sustainability and notably to improve urban resilience in the face of increasing heat risk.

Liverpool Collaboration Area Place Strategy

The site is at the Georges River North Place in the collaboration area, bringing together representation from Liverpool Council, the GSC and the development team for collaborative decision-making.

LOCAL

“Our Home Our Liverpool” 2027 – the Community Strategic Plan considers the environment as one of 4 strategic directions addressing:

- Energy & GHG Emissions
- Waste
- Biodiversity
- Housing
- Air Quality
- Water Quality.



Figure 3 – UN Sustainable Development Goals targeted in development.

Connected Liverpool 2040 – Liverpool’s Local Strategic Planning Statement – the Liverpool local strategic planning statement identifies sustainability priorities aligned to the Western Parkland City District Plan:

- Bushland and waterways are celebrated, connected, protected and enhanced;
- A green, sustainable, resilient and water-sensitive city
- Rural lands are protected and enhanced

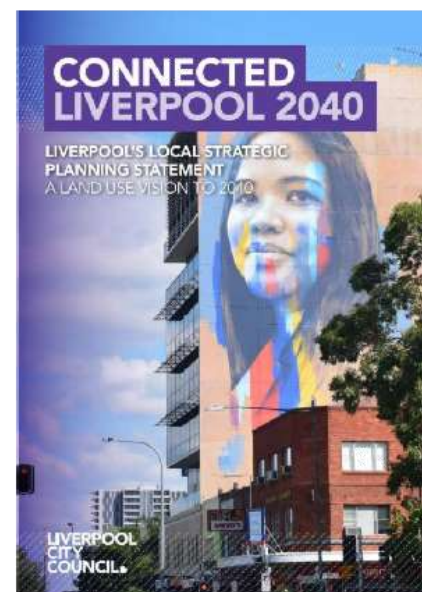


Figure 4 – Liverpool Place Strategy and Local Strategic Planning Statement



LIVERPOOL COLLABORATION AREA PLACE STRATEGY

Whilst the Place Strategy's actions are primarily allocated to Liverpool City Council and various parts of the NSW Government, the project can contribute to many of the Place Strategy actions through the Placemaking Working Group.

SUSTAINABILITY PRIORITY 8

Moore Point will work collaboratively with Liverpool City Council and the Office of Environment and Heritage to support sustainability actions in the Georges River North Place.

SUSTAINABILITY ACTIONS

Actions 23 & 24 The project will support a floodplain risk management plan for the precinct, including floodplain constraints categorisation and flood evacuation studies.

Action 25 The project structure plan will reflect opportunities to improve the useability of the riverbank while supporting active mobility and sustainable urban water management.

Action 26 & 28 The Structure Plan will provide a green spine between Lake Moore and the George's River frontage, supporting the green grid and the rehabilitation of the George's River as well as providing habitat connectivity and urban heat management through the precinct.

Action 27 Brickmakers creek is not impact by he project.

SUSTAINABILITY PRIORITY 9

The Moore Point Structure Plan will embed resilience in its structure plan and make supporting climate change, community resilience and systems resilience a governance priority.

SUSTAINABILITY ACTIONS

Action 29 The project will engage through the Working Group to deliver a precinct in line with the NSW Government's urban tree canopy target. The green spine, street tree strategy and rehabilitation of Georges River frontage will be essential components of the approach to canopy cover.

Action 30 The project will engage through the Placemaking and Transportation Governance Working Groups to embed low-carbon initiatives in future development.

Opportunities that have been considered include:

- Passive design guideline for buildings
- Rooftop and precinct renewable energy
- Future utilities (smart grids)
- Vehicle electrification
- Public transportation
- Active transportation
- Urban heat management to reduce cooling needs

Action 31 The project will work collaboratively with stakeholders to support integrated water management across the precinct.

Opportunities that have been considered include:

- Stormwater catchment and re-use
- Green infrastructure with swales and raingardens to manage water quality while providing amenity and pocket habitat opportunities.
- Water recycling, connecting non-potable demand in the precinct to any potential recycled water scheme.

Action 32 The project will engage through the Working Group to encourage precinct-level renewable energy systems.

Opportunities that have been considered include:

- Smart grid opportunities via private embedded networks
- Building, precinct and off-site renewable energy opportunities (solar PV and wind)
- Energy storage supporting grid stability and resilience
- Electrification to mitigate on-site fossil fuel combustion.

Action 33 The project will engage through the Working group to address urban heat risk.

Opportunities that have been considered include:

- Detailed analytics in design for quantified urban heat and urban amenity analysis
- Urban fabric guidance
- Urban land cover guidance
- Urban metabolism guidance.



SUSTAINABILITY STRATEGY

METHODOLOGY

The delivery of sustainability principles and initiatives is best understood in the context of the built environment's governance and the various procurement frameworks through which sustainability outcomes can be implemented.

Sustainability opportunities have been assessed for the key built environment systems – buildings, utilities, public realm and transport systems. The delivery strategy is therefore structured in line with these mechanisms as illustrated in the scheme below.

- **Planning Governance** – governing authorities, development control, planning agreement and contractual opportunities for sustainability
- **Buildings** – design opportunities for built form
- **Public Domain** – design considerations for public space
- **Utilities** – energy, water & waste management strategies on precinct
- **Transport & Mobility** – opportunities for active transport and mobility in the urban context
- **Assurance** – mechanisms by which the non-financial performance of the precinct can be assured.



Figure 5 - Urban Systems framework for addressing sustainability

MASTERPLAN DESIGN INTEGRATION

The concept masterplan design for Moore Point has identified specific design opportunities for delivering a sustainable urban environment.

BUILDINGS

Passive design strategies are applicable for both the high-rise and the lower podium buildings. The tower design allows for optimum solar access on site.

Passive design strategies allow for comfortable living environments at no extra costs.

PUBLIC DOMAIN

The Georges River frontage and riparian zone as well as substantial new green space in the masterplan provides high quality urban spaces and increases liveability on the precinct.

The use of native plants in the public domain adds to the quality and contributes to biodiversity.

UTILITIES

The site is suitable for on-site renewable energy in the form of rooftop PV and may help reduce peak electricity demands on the precinct scale.

Rainwater catchments in streets and parks and water reuse helps reduce reliance on the water network for irrigation and it reduces the stormwater load on the sewer system.

TRANSPORT & MOBILITY

The precinct is well-connected to public transport and the concept masterplan facilitates active transport.

These contribute to sustainability in terms of livability and connectedness of the community within the Sydney Metropolitan Area.

A range of sustainability initiatives are inherent in the concept masterplan that has been prepared for Moore Point.

With the right Governance and Assurance mechanisms in place, this plan provides a framework for the precinct to achieve its sustainable objectives and set a new standard for urban renewal in the district.



GOVERNANCE

PLACEMAKING WORKING GROUP

The Joint Landowners Group for Moore Point have proposed a Placemaking Working Group to ensure that the development of Moore Point over the next 40 years delivers on the vision for Liverpool as Sydney's third CBD.

AIM

The aim of the Working Group is to collaboratively explore and assess place-led opportunities to ensure the precinct vision is delivered.

The interim vision below is expected to be refined by the Working Group:

A riverfront place for people which is well served by public transport, connected to its surrounding landscape and complements Liverpool City Centre. It will be mixed use with cultural and educational opportunities for residents and visitors. Connected with green gridded streets, bridges and landscaped waterfront it will be a focal point for the growing Western Sydney metropolis and place for everyone.

SCOPE

Placemaking

Ensure the structure plan will deliver the desired amenity, activation and walkability in an urban setting to create a place that is welcoming, comfortable, safe and family friendly.

River interface

Agree to foreshore embellishments to the Georges River in line with the precinct vision, including improved connections across the Georges River.

These measures will contribute to Sydney's Green Grid, improve access to Liverpool CBD and establish a community that celebrates identity and place.

Sustainability

Explore opportunities for precinct-wide sustainability initiatives in line with Western City District Plan, and to address the urban heat island effect by increasing the quantum of green space currently found on the site for active and passive recreational use.

GROUP MEMBERS

The Working Group requires the collaborative contributions from:

- Liverpool City Council (Chair)
- Greater Sydney Commission Environment Commissioner
- Representatives of the Joint Landowners Group (Coronation and Leamac) and their consultants as required
- Additional members may be invited by the working group, including but not limited to:
- Department of Planning, Industry and Environment (foreshore approvals, Place Design and Public Spaces)
- Transport for NSW
- Other state agencies as agreed

MEETINGS

The Placemaking Working Group meet monthly with additional meetings for specific workstreams to be held as required.



IMPLEMENTATION MECHANISMS

A sustainability implementation framework for Moore Point may comprise a site-specific DCP, a potential Voluntary Planning Agreement with Council, a masterplan and a range of contracts and tenders for future design and construction services.

All these tools will consider how the precinct's sustainability principles will be embedded in its buildings, public domain, utilities and mobility systems.

DEVELOPMENT CONTROL PLAN

A site-specific DCP allows for sustainability principles tailored to the needs of the precinct and its surroundings. It is a useful instrument to guide the built form and ensuring a balanced density that underpins a vibrant live/work precinct.

It can also provide guidance on:

- Rainwater catchment in parks and in the promenade on the precinct
- Green roof provisions on low-rise buildings
- Building fabric to support passive design
- On-site renewable energy
- Use of native plants in urban green space to support biodiversity and habitat connectivity
- Land use mix (e.g. employment dividend)

VOLUNTARY PLANNING AGREEMENT

Voluntary Planning Agreements are well suited to the consideration of social and physical infrastructure to support new development.

CONTRACTS AND TENDERS

Construction tenders and other contracts will include sustainability performance requirements for embedding supply chain considerations, construction impact management and the achievement of any building-level certifications in the delivery of buildings on the precinct.

ASSURANCE

Moore Point will use the principles of the Green Star Communities rating tool to benchmark sustainability for the precinct.

Green Star Communities is a voluntary certification framework administered by the Green Building Council of Australia that considers the economic, social and environmental performance of precincts in Australia.

It provides recognition of precinct-wide approach to embedding sustainability in project delivery.

Moore Point presents as a good opportunity to benchmark sustainability using the Green Star Communities rating framework in Western Sydney.

The Green Star Communities rating systems addresses:

- Governance
- Livability
- Economic Prosperity
- Environment
- Innovation

The Moore Point masterplan and development control plan will be benchmarked against the tool (not committing to certification), to demonstrate the precinct's commitment to achieving sustainable outcomes while maintaining flexibility for the detailed resolution of any single phase or project.





Figure 6 – Sustainability opportunities for the Moore Point Structure Plan

ABOUT INTEGRAL GROUP

Integral Group is a global network of building services and sustainability engineers collaborating under a single deep green engineering umbrella.

We specialise in the design of simple, elegant, cost-effective systems for a wide variety of project types: residential, mixed use, critical environments (cleanrooms, laboratories, and data centres), institutional, industrial, and commercial buildings.

We also provide comprehensive analyses of installations that help prioritise energy performance potential. Integral Group is widely regarded as a pioneer in building design, sustainability and performance.

Our team recognises the importance of increasing efficiencies and longevity of systems, while mitigating long-range costs.

Our services include design, feasibility studies, sustainable master planning, community- and district-scale energy system design based on low-carbon, renewable energy sources, peer reviews, energy audits, construction administration, and commissioning.

Additionally, we implement a technically innovative approach to defining clients' requirements and providing a fully integrated product that supports their business objectives.

With a staff of over 500 located in fifteen offices across the United States, Canada, the United Kingdom and Australia, Integral Group is registered in all US States and Canadian Provinces and Territories.

As a member of the Canada, US and Australian Green Building Councils, we have over 80 LEED Accredited Professionals

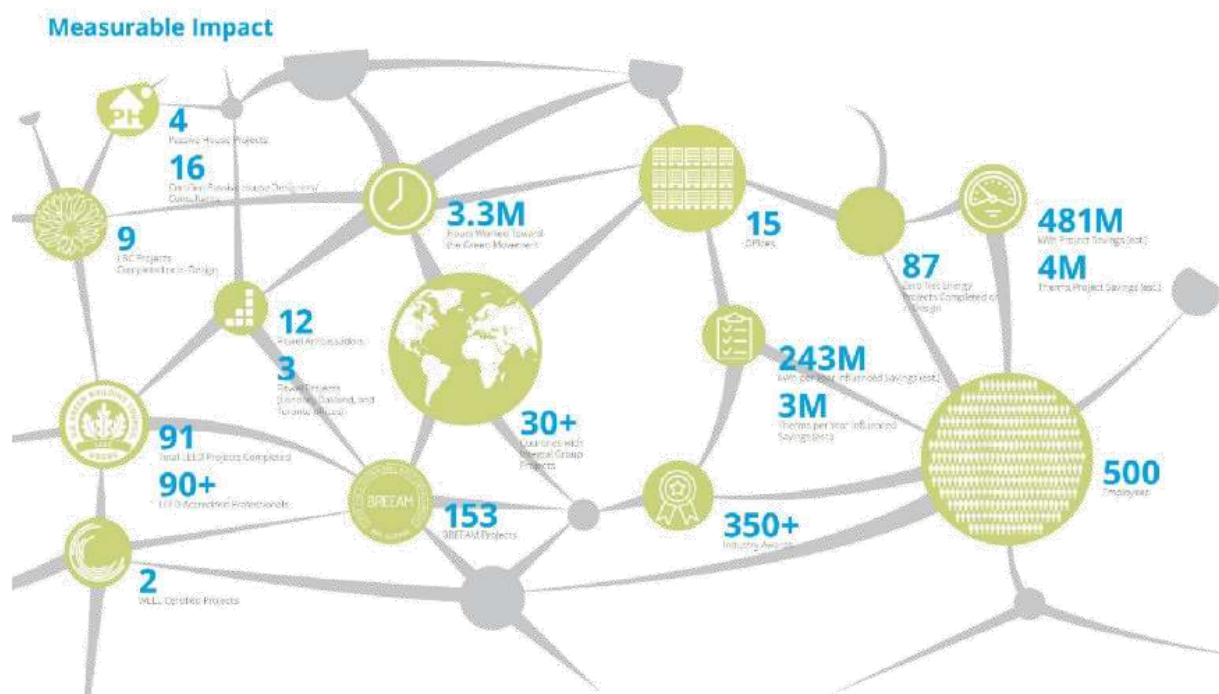


Figure 7 – Integral Group Global Impact





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CORP 07

Annual Financial Reports 2019/20

Strategic Direction	Leading through Collaboration Strive for best practice in all Council processes
Key Policy	Long-Term Financial Plan
File Ref	313763.2020
Report By	Earl Paradeza - Senior Management Accountant
Approved By	Vishwa Nadan - Chief Financial Officer

EXECUTIVE SUMMARY

The Council has a regulatory obligation to prepare and present audited financial reports to the Office of Local Government (due on or before 30th November 2020) and to the Community.

Council's general-purpose financial statements for the year ended 30 June 2020 have been prepared and audited by NSW Audit Office.

The Audit Risk and Improvement Committee Meeting considered and endorsed the financial statements on Wednesday 11 November 2020.

This paper seeks Council's endorsement and a resolution authorising issue of the financial statements.

NSW Audit Office staff will be present at the Council Meeting to answer any questions.

RECOMMENDATION

That Council:

1. Receives and endorses the 2019/20 audited financial reports;
2. Authorises the Mayor, Deputy Mayor, Acting Chief Executive Officer and the Responsible Accounting Officer (CFO) to sign the prescribed statement that will form part of the financial reports;
3. Authorises the Acting Chief Executive Officer to:

- a. forward a copy of the financial reports together with the auditor's report to the Office of Local Government in accordance with Section 417(5) of the Local Government Act 1993;
 - b. issue a public notice containing a summary of financial results and put the financial statements on exhibition for 7 days to seek public submissions;
4. Note that the financial statements and a summary of public submissions received will be presented to Council at its next meeting for consideration and adoption.

REPORT

Legislative Requirements

The *Local Government Act 1993* states:

- As soon as practicable after a council receives a copy of the auditor's reports:
 - a. It must fix a date for the meeting at which it proposes to present its audited financial reports, together with the auditor's reports, to the public, and
 - b. It must give public notice of the date so fixed [Section 418 (1)]
- The date fixed for the meeting must be at least 7 days after the date on which the notice is given, but not more than 5 weeks after the auditor's reports are given to the council. [Section 418 (2)]

Council's general-purpose financial statements for the year ended 30 June 2020 have been prepared and audited.

The Audit Risk and Improvement Committee considered and endorsed the financial statements at its meeting on Wednesday 11 November 2020.

This paper seeks Council's endorsement and a resolution authorising issue of the financial statements.

Council's auditors, NSW Audit Office, have audited the financial statements and will issue an unqualified audit certificate after receiving a signed "Statement by Councilors and Management" following this Council meeting.

A complete set of draft general/ special purpose financial statements and special schedules are provided as **Attachment 1**.

NSW Audit Office staff will be present at the Council Meeting to answer any questions.

CONSIDERATIONS

Economic	There are no economic and financial considerations.
Environment	There are no environmental and sustainability considerations.
Social	There are no social and cultural considerations.
Civic Leadership	There are no civic leadership and governance considerations.
Legislative	Division 2 of the Local Government Act 1993.
Risk	Financial risk management issues are included in the financial statements.

ATTACHMENTS

1. Draft Financial Statements 2019-20

Liverpool City Council

ANNUAL FINANCIAL STATEMENTS
for the year ended 30 June 2020



DRAFT

Liverpool City Council

GENERAL PURPOSE FINANCIAL STATEMENTS
for the year ended 30 June 2020

Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements

for the year ended 30 June 2020

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Income Statement	6
Statement of Comprehensive Income	7
Statement of Financial Position	8
Statement of Changes in Equity	9
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Overview

Liverpool City Council is constituted under the Local Government Act 1993 (NSW) and has its principal place of business at:

33 Moore Street
Liverpool NSW 2170

Council's guiding principles are detailed in Chapter 3 of the LGA and includes:

- principles applying to the exercise of functions generally by council,
- principles to be applied when making decisions,
- principles of community participation,
- principles of sound financial management, and
- principles for strategic planning relating to the development of an integrated planning and reporting framework.

A description of the nature of Council's operations and its principal activities are provided in Note 2(b).

Through the use of the internet, we have ensured that our reporting is timely, complete and available at minimum cost. All press releases, financial statements and other information are publicly available on our website: www.liverpool.nsw.gov.au.

Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements

for the year ended 30 June 2020

Understanding Council's Financial Statements

Introduction

Each year, individual Local Governments across NSW are required to present a set of audited financial statements to their council and community.

What you will find in the Statements

The financial statements set out the financial performance, financial position and cash flows of Council for the financial year ended 30 June 2020.

The format of the financial statements is standard across all NSW Councils and complies with both the accounting and reporting requirements of Australian Accounting Standards and requirements as set down by the Office of Local Government within the Department of Planning, Industry and Environment.

About the Councillor/Management Statement

The financial statements must be certified by senior staff as 'presenting fairly' the Council's financial results for the year and are required to be adopted by Council – ensuring both responsibility for and ownership of the financial statements.

About the Primary Financial Statements

The financial statements incorporate five 'primary' financial statements:

1. The Income Statement

Summarises Council's financial performance for the year, listing all income and expenses. This statement also displays Council's original adopted budget to provide a comparison between what was projected and what actually occurred.

2. The Statement of Comprehensive Income

Primarily records changes in the fair value of Council's Infrastructure, Property, Plant and Equipment.

3. The Statement of Financial Position

A 30 June snapshot of Council's financial position indicating its assets, liabilities and "net wealth".

4. The Statement of Changes in Equity

The overall change for the year (in dollars) of Council's "net wealth".

5. The Statement of Cash Flows

Indicates where Council's cash came from and where it was spent. This statement also displays Council's original adopted budget to provide a comparison between what was projected and what actually occurred.

About the Notes to the Financial Statements

The Notes to the Financial Statements provide greater detail and additional information on the five primary financial statements.

About the Auditor's Reports

Council's financial statements are required to be audited by the Audit Office of NSW.

In NSW the auditor provides 2 audit reports:

1. an opinion on whether the financial statements present fairly the Council's financial performance and position, and
2. their observations on the conduct of the audit, including commentary on the Council's financial performance and financial position.

Who uses the Financial Statements?

The financial statements are publicly available documents and must be presented at a Council meeting between seven days and five weeks after the date of the Audit Report.

The public can make submissions to Council up to seven days subsequent to the public presentation of the financial statements.

Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements

for the year ended 30 June 2020

Understanding Council's Financial Statements (continued)

Council is required to forward an audited set of financial statements to the Office of Local Government within the Department of Planning, Industry and Environment.

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Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements

for the year ended 30 June 2020

Statement by Councillors and Management made pursuant to Section 413(2)(c) of the Local Government Act 1993 (NSW) (as amended)

The attached General Purpose Financial Statements have been prepared in accordance with:

- the *Local Government Act 1993* (NSW) (as amended) and the regulations made thereunder,
- the Australian Accounting Standards and other pronouncements of the Australian Accounting Standards Board
- the *Local Government Code of Accounting Practice and Financial Reporting*.

To the best of our knowledge and belief, these statements:

- present fairly the Council's operating result and financial position for the year
- accord with Council's accounting and other records.

We are not aware of any matter that would render these statements false or misleading in any way.

Signed in accordance with a resolution of Council made on 25 November 2020.

Wendy Waller
Mayor
25 November 2020

Mazhar Hadid
Deputy Mayor
25 November 2020

Dr Eddie Jackson
A/Chief Executive Officer
25 November 2020

Vishwa Nadan
Responsible Accounting Officer
25 November 2020

Liverpool City Council

Financial Statements 2020

Income Statement

for the year ended 30 June 2020

Original unaudited budget 2020	\$ '000	Notes	Actual 2020	Actual 2019
Income from continuing operations				
136,453	Rates and annual charges	3a	137,631	131,133
20,001	User charges and fees	3b	14,988	18,881
9,011	Other revenues	3c	11,394	21,724
16,885	Grants and contributions provided for operating purposes	3d,3e	19,247	19,804
102,938	Grants and contributions provided for capital purposes	3d,3e	98,847	94,664
7,748	Interest and investment revenue	4	6,320	8,978
8,753	Net gains from the disposal of assets	6	909	–
4,432	Rental income	13e	4,175	–
600	Net share of interests in joint ventures and associates using the equity method	18	437	708
306,821	Total income from continuing operations		293,948	295,892
Expenses from continuing operations				
78,520	Employee benefits and on-costs	5a	76,908	73,181
1,424	Borrowing costs	5b	1,920	1,624
62,450	Materials and contracts	5c	61,152	55,749
40,672	Depreciation and amortisation	5d	41,166	39,245
19,245	Other expenses	5e	16,964	17,091
–	Net losses from the disposal of assets	6	–	10,479
3,750	Revaluation decrement / impairment of IPP&E	5d	–	2,048
206,061	Total expenses from continuing operations		198,110	199,417
100,760	Operating result from continuing operations		95,838	96,475
100,760	Net operating result for the year		95,838	96,475
(2,178)	Net operating result for the year before grants and contributions provided for capital purposes		(3,009)	1,811

The above Income Statement should be read in conjunction with the accompanying notes.

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

Liverpool City Council

Financial Statements 2020

Statement of Comprehensive Income

for the year ended 30 June 2020

\$ '000	Notes	2020	2019
Net operating result for the year (as per Income Statement)		95,838	96,475
Other comprehensive income:			
Amounts which will not be reclassified subsequently to the operating result			
Gain (loss) on revaluation of IPP&E	10	8,938	119,471
Total other comprehensive income for the year		8,938	119,471
Total comprehensive income for the year		104,776	215,946

The above Statement of Comprehensive Income should be read in conjunction with the accompanying notes.

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

DRAFT

Liverpool City Council

Financial Statements 2020

Statement of Financial Position

as at 30 June 2020

\$ '000	Notes	2020	2019
ASSETS			
Current assets			
Cash and cash equivalents	7(a)	114,162	85,346
Investments	7(b)	28,663	25,025
Receivables	8	17,855	21,309
Inventories	9a	232	122
Other	9b	1,288	1,370
Total current assets		162,200	133,172
Non-current assets			
Investments	7(b)	157,805	160,725
Receivables	8	80	15
Infrastructure, property, plant and equipment	10	2,790,660	2,709,110
Intangible Assets	11	1,457	1,247
Right of use assets	13a	7,240	-
Investments accounted for using the equity method	18	7,112	8,142
Total non-current assets		2,964,354	2,879,239
Total assets		3,126,554	3,012,411
LIABILITIES			
Current liabilities			
Payables	14	22,175	18,203
Income received in advance	14	-	597
Contract liabilities	12	4,971	-
Lease liabilities	13b	1,943	-
Borrowings	14	6,190	7,421
Provisions	15	25,628	27,736
Total current liabilities		60,907	53,957
Non-current liabilities			
Payables	14	9,285	7,487
Contract liabilities	12	263	-
Lease liabilities	13b	5,278	-
Borrowings	14	32,087	38,277
Provisions	15	3,386	2,199
Total non-current liabilities		50,299	47,963
Total liabilities		111,206	101,920
Net assets		3,015,348	2,910,491
EQUITY			
Accumulated surplus	16	1,917,503	1,821,584
Revaluation reserves	16	1,097,845	1,088,907
Council equity interest		3,015,348	2,910,491
Total equity		3,015,348	2,910,491

The above Statement of Financial Position should be read in conjunction with the accompanying notes.

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

Financial Statements 2020

Liverpool City Council

Statement of Changes in Equity
for the year ended 30 June 2020

	Notes	as at 30/06/20			as at 30/06/19		
		Accumulated surplus	IPP & E revaluation reserve	Total equity	Accumulated surplus	IPP & E revaluation reserve	Total equity
\$'000							
Opening balance		1,821,584	1,088,907	2,910,491	1,725,109	969,436	2,694,545
Changes due to AASB 1058 and AASB 15 adoption	16	18	-	18	-	-	-
Changes due to AASB 16 adoption	16	63	-	63	-	-	-
Restated opening balance		1,821,665	1,088,907	2,910,572	1,725,109	969,436	2,694,545
Net operating result for the year		95,838	-	95,838	96,475	-	96,475
Restated net operating result for the period		95,838	-	95,838	96,475	-	96,475
Other comprehensive income							
- Gain (loss) on revaluation of infrastructure, property, plant and equipment	10	-	8,938	8,938	-	119,471	119,471
Other comprehensive income		-	8,938	8,938	-	119,471	119,471
Total comprehensive income		95,838	8,938	104,776	96,475	119,471	215,946
Equity – balance at end of the reporting period		1,917,503	1,097,845	3,015,348	1,821,584	1,088,907	2,910,491

The above Statement of Changes in Equity should be read in conjunction with the accompanying notes.

The Council has not restated comparatives when initially applying AASB 1058 Income of Not-for-Profit Entities, AASB 15 Revenue from Contracts with Customers and AASB 16 Leases. The comparative information has been prepared under AASB 111 Construction Contracts, AASB 118 Revenue, AASB 1004 Contributions, AASB 117 Leases and related Accounting Interpretations.

Liverpool City Council

Financial Statements 2020

Statement of Cash Flows

for the year ended 30 June 2020

Original unaudited budget 2020	\$ '000	Notes	Actual 2020	Actual 2019
Cash flows from operating activities				
Receipts:				
137,017	Rates and annual charges		136,497	130,145
18,830	User charges and fees		14,945	21,070
5,985	Investment revenue and Interest		6,910	8,464
104,032	Grants and contributions		76,832	80,238
–	Bonds, deposits and retentions received		921	415
18,942	Other		33,109	25,976
Payments:				
(78,520)	Employee benefits and on-costs		(75,146)	(71,150)
(56,450)	Materials and contracts		(65,504)	(57,198)
(1,427)	Borrowing costs		(1,804)	(1,286)
(19,246)	Other		(24,345)	(27,321)
129,163	Net cash provided from (or used in) operating activities	12b	102,415	109,353
Cash flows from investing activities				
Receipts:				
–	Sale of investments		112,014	70,637
17,232	Sale of infrastructure, property, plant and equipment		10,220	286
Payments:				
(66,326)	Purchase of investment securities		(112,393)	(102,044)
(138,122)	Purchase of infrastructure, property, plant and equipment		(74,209)	(109,201)
(2,785)	Purchase of intangible assets		(964)	(465)
–	Contributions paid to joint ventures and associates		1,467	(1)
(190,001)	Net cash provided from (or used in) investing activities		(63,865)	(140,788)
Cash flows from financing activities				
Receipts:				
–	Proceeds from borrowings and advances		–	19,500
Payments:				
(6,657)	Repayment of borrowings and advances		(7,537)	(6,724)
–	Lease liabilities (principal repayments)		(2,197)	–
(6,657)	Net cash flow provided from (used in) financing activities		(9,734)	12,776
(67,495)	Net increase/(decrease) in cash and cash equivalents		28,816	(18,659)
85,346	Plus: cash and cash equivalents – beginning of reporting period	17a	85,346	104,005
17,851	Cash and cash equivalents – end of the year	17a	114,162	85,346

The above Statement of Cash Flows should be read in conjunction with the accompanying notes.

The Council has not restated comparatives when initially applying AASB 1058 *Income of Not-for-Profit Entities*, AASB 15 *Revenue from Contracts with Customers* and AASB 16 *Leases*. The comparative information has been prepared under AASB 111 *Construction Contracts*, AASB 118 *Revenue*, AASB 1004 *Contributions*, AASB 117 *Leases* and related Accounting Interpretations.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 1. Basis of preparation

These financial statements were authorised for issue by Council on 27 October 2020. Council has the power to amend and reissue these financial statements in cases where critical information is received from public submissions or where the OLG directs Council to amend the financial statements.

The principal accounting policies adopted by Liverpool City Council in the preparation of these consolidated financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

Basis of preparation

These general purpose financial statements have been prepared in accordance with Australian Accounting Standards and Australian Accounting Interpretations, the *Local Government Act 1993 (NSW)* and Regulations, and the Local Government Code of Accounting Practice and Financial Reporting.

Liverpool City Council is a not-for-profit entity for the purpose of preparing these financial statements.

The financial statements are presented in Australian dollars and are rounded to the nearest thousand dollars.

Unless otherwise indicated, all amounts disclosed in the financial statements are actual amounts. Specific budgetary amounts have been included for comparative analysis (to actuals) in the following reports and notes:

- Income statement
- Statement of cash flows
- Note 22 – Material budget variations

and are clearly marked.

(a) Historical cost convention

These financial statements have been prepared under the historical cost convention, as modified by the revaluation of certain financial assets and liabilities and certain classes of infrastructure, property, plant and equipment and investment property.

(b) Significant accounting estimates and judgements

The preparation of financial statements requires the use of certain critical accounting estimates. It also requires management to exercise its judgement in the process of applying the Council's accounting policies.

Estimates and judgements are continually evaluated and are based on historical experience and other factors, including expectations of future events that may have a financial impact on the Council and that are believed to be reasonable under the circumstances.

Critical accounting estimates and assumptions

Council makes estimates and assumptions concerning the future.

The resulting accounting estimates will, by definition, seldom equal the related actual results.

The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year include:

- (i) estimated fair values of infrastructure, property, plant and equipment – refer Note 23
- (ii) estimated employee benefits, including self-insured workers compensation claims liability – refer Note 15
- (iii) estimated hazardous waste remediation costs – refer Note 15.

Significant judgements in applying the council's accounting policies

- (i) Impairment of receivables

Council has made a significant judgement about the impairment of a number of its receivables – refer Note 8.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 1. Basis of preparation (continued)

(ii) Assessing condition of its infrastructure assets, their remaining useful lives, and estimating cost to bring them to satisfactory standard.

Monies and other assets received by Council

(a) The Consolidated Fund

In accordance with the provisions of Section 409(1) of the Local Government Act 1993 (NSW), all money and property received by Council is held in the Council's Consolidated Fund unless it is required to be held in the Council's Trust Fund.

The Consolidated Fund has been included in the financial statements of the Council.

Cash and other assets of the following entities have been included as part of the Consolidated Fund:

- General purpose operations

(b) The Trust Fund

In accordance with the provisions of Section 411 of the Local Government Act 1993 (NSW) (as amended), a separate and distinct Trust Fund is maintained to account for all money and property received by the Council in trust which must be applied only for the purposes of, or in accordance with, the trusts relating to those monies.

Trust monies and property subject to Council's control have been included in these reports.

Goods and Services Tax (GST)

Liverpool City Council is exempt from both Commonwealth Income Tax and Capital Gains Tax. Council does, however, have to comply with both Fringe Benefits Tax and Goods & Services Tax legislations.

Revenues, expenses and assets are recognised net of the amount of associated GST, unless the GST incurred is not recoverable from the taxation authority. In this case it is recognised as part of the cost of acquisition of the asset or as part of the expense.

Receivables and payables are stated inclusive of the amount of GST receivable or payable. The net amount of GST recoverable from, or payable to the taxation authority is included with other receivables or payables in the Statement of Financial Position.

Cash flows are presented on a gross basis. The GST components of cash flows arising from investing or financing activities that are recoverable from, or payable to, the taxation authority are presented as operating cash flows.

Volunteer services

Council engages volunteers to help in delivery of some community events. The value of volunteer services Council receives cannot be reliably measured and is not material.

New accounting standards and interpretations issued not yet effective

Certain new accounting standards and interpretations (ie. pronouncements) have been published by the Australian Accounting Standards Board that are not mandatory for the 30 June 2020 reporting period.

Council has elected not to apply any of these pronouncements in these financial statements before their operative dates.

As at the date of authorisation of these financial statements Council does not consider that any of these new (and still to be applied) standards and interpretations are expected to impact on the Council's future financial statements, financial position, financial performance or cash flows.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 1. Basis of preparation (continued)

New accounting standards adopted during the year

During the year Council adopted the following accounting standards and interpretations (as issued by the Australian Accounting Standards Board) which were mandatorily effective for the first time at 30 June 2020:

- AASB 16 Leases
- AASB 15 Revenue from contracts with customers and associated amending standards.
- AASB 1058 Income of Not-for-profit entities

Further information on the newly adopted standards which had a material impact on Council's reported financial position, financial performance and/or associated financial statement disclosures can be found at Note 16.

Significant Events

The COVID-19 pandemic has had significant impact on Council's operations which is reflected in the financial statements.

In April 2020, Council endorsed several initiatives to support its ratepayers and business community. Apart from a general slowdown in business activities, several Council facilities, services and events were affected due to mandatory restrictions which resulted in reduced revenues.

Council recognised the financial difficulties experienced by ratepayers and suspended its debt collection activity which resulted in higher than normal level of outstanding rates and annual charges at 30 June 2020.

The pandemic is expected to have a continued impact on Council's operations in 2020/21.

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 2(a). Council functions/activities – financial information

	Income from continuing operations		Expenses from continuing operations		Operating result from continuing operations		Grants included in income from continuing operations		Carrying amount of assets	
	2020	2019	2020	2019	2020	2019	2020	2019	2020	2019
Functions or activities										
Governance	9	—	1,035	1,177	(1,026)	(1,177)	—	—	—	—
Creating Connection	8,106	7,362	32,675	31,964	(24,569)	(24,582)	5,321	3,651	913,545	904,819
Strengthening and protecting our environment	96,669	102,597	77,835	68,957	18,834	33,640	3,947	6,277	542,968	532,467
Generating opportunity	22,513	30,770	52,706	49,994	(30,193)	(19,228)	9,545	16,774	1,653,207	1,558,426
Leading through collaboration	55,883	47,638	33,859	47,321	22,024	317	502	478	16,833	16,699
Share of gains/ (losses) in Associates & Joint Ventures (using the Equity Method)	—	—	—	—	—	—	—	—	—	—
General purpose income	110,768	107,505	—	—	110,768	107,505	8,912	8,783	—	—
Total functions and activities	283,948	295,802	198,110	199,417	95,838	96,475	28,227	35,963	3,126,554	3,012,411

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 2(b). Council functions/activities - component descriptions

Details relating to the Council's functions/activities as reported in Note 2(a) are as follows:

Governance

Governance includes expenditure for Mayor & Councillor and Executive services.

Creating Connection

This direction is based on the social aspect of the quadruple bottom line and covers actions that include cultural activities, recreation and active living, access and equity, and community facilities.

Strengthening and Protecting our Environment

This direction is based on the environmental (natural and built) aspect of the quadruple bottom line and covers actions that includes waste management, urban design, planning and protection of specific environmental features.

Generating Opportunity

This direction is based on the economic aspect of the quadruple bottom line and covers actions that include small business strategies, economic sustainability strategies, internal and external transport links and the financial sustainability of Council.

Leading through Collaboration

This direction is based on the civic leadership aspect of the quadruple bottom line and covers actions that include leadership and representation, consultation and community participation in decision making, policy frameworks and ethical practices.

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Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations

\$ '000	AASB	2020	2019
(a) Rates and annual charges			
Ordinary rates			
Residential	1058	78,883	75,132
Farmland	1058	437	459
Business	1058	20,897	20,833
Less: pensioner rebates	1058	(1,700)	(1,696)
Rates levied to ratepayers		98,517	94,728
Pensioner rate subsidies received	1058	880	857
Total ordinary rates		99,397	95,585
Special rates			
Environmental	1058	1,766	1,703
Town improvement	1058	1,503	1,515
Rates levied to ratepayers		3,269	3,218
Total special rates		3,269	3,218
Annual charges			
(pursuant to s.496, s.496A, s.496B, s.501 & s.611)			
Domestic waste management services	1058	33,388	30,809
Stormwater management services	1058	1,571	1,521
Waste management services (non-domestic)	1058	262	266
Section 611 charges	1058	128	120
Less: pensioner rebates	1058	(677)	(672)
Annual charges levied		34,672	32,044
Pensioner subsidies received:			
– Domestic waste management	1058	293	286
Total annual charges		34,965	32,330
TOTAL RATES AND ANNUAL CHARGES		137,631	131,133

Accounting policy for rates and charges

Revenue recognition & measurement

Council recognises revenue when the amount of revenue can be reliably measured, it is probable that future economic benefits will flow to it, and specific criteria have been met for each of the Council's activities as described below. Council bases any estimates on historical results, taking into consideration the type of customer, the type of transaction and the specifics of each arrangement.

Revenue is measured at the fair value of the consideration received or receivable.

Rates and annual charges

Council has used 2016 land valuations provided by the NSW Valuer General in calculating its rates.

Rates and annual charges are recognised as revenues when the Council obtains control over the assets comprising these receipts which is the beginning of the rating period to which they relate.

Prepaid rates are recognised as a financial liability until the beginning of the rating period.

A provision for the impairment on rates receivables has not been established as unpaid rates represent a charge against the rateable property that will be recovered when the property is next sold.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

Domestic waste management services and other special purpose annual levies collected are expended for the purposes for which the contributions were required.

Pensioner rebates relate to reductions in rates and certain annual charges for eligible pensioners' place of residence in the local government council area that are not subsidised by the NSW Government.

Pensioner rate subsidies are received from the NSW Government to provide a contribution towards the pensioner rebates and are in substance a rates payment.

The cost of rebates is shared between the NSW State Government (55%) and Council (45%).

2019 accounting policy

Control over assets acquired from rates and annual charges is obtained at the commencement of the rating year as it is an enforceable debt linked to the rateable property or, where earlier, upon receipt of the rates.

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Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	AASB	2020	2019
(b) User charges and fees			
Other user charges and fees			
(i) Fees and charges – statutory and regulatory functions (per s.608)			
Planning and building regulation	15	4,982	7,609
Inspection services	15	2,026	1,983
Section 10.7 certificates (EP&A Act)	15	520	486
Regulatory/ statutory fees	15	344	319
Section 603 certificates	15	273	198
Animal impounding fees	15	86	84
Other	15	62	121
Total fees and charges – statutory/regulatory		8,293	10,800
(ii) Fees and charges – other (incl. general user charges (per s.608))			
Child care	15	1,975	2,688
Parking fees	15	3,432	3,806
Community hall rental	15	802	1,116
Sports field hire	15	272	293
Leaseback fees – Council vehicles	15	70	58
Other	15	144	120
Total fees and charges – other		6,695	8,081
TOTAL USER CHARGES AND FEES		14,988	18,881

Accounting policy for user charges and fees

Revenue arising from user charges and fees is recognised when or as the performance obligation is completed and the customer receives the benefit of the goods / services being provided.

The performance obligation relates to the specific services which are provided to the customers and generally the payment terms are within 30 days of the provision of the service.

Licences granted by Council are all either short-term or low value and all revenue from licences is recognised at the time that the licence is granted rather than the term of the licence.

2019 accounting policy:

User charges and fees are recognised as revenue when the service has been provided.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	AASB	2020	2019
(c) Other revenues			
Fines – parking	1058	2,427	3,529
External works	1058	2,343	1,376
Ex gratia rates ¹	1058	2,200	5,447
Fines – other	1058	645	551
Sales – general	1058	634	573
Sales – art galleries	1058	226	383
Sales – recycling materials	1058	455	315
Animal control	1058	127	102
Diesel rebate	1058	120	103
Rental income – other council properties	1058	–	3,113
Photocopy income	1058	77	95
Compensation – easements	1058	63	310
Legal fees recovery – other	1058	41	41
Room hire	1058	40	37
Long service levy commission	1058	6	6
Insurance claims recoveries	1058	5	526
Sales – printing services	1058	5	13
Adjustment: reversal of impairment of Land Under Roads	1058	–	2,702
Settlement: claim against Standard & Poor's International ²	1058	–	888
Other	1058	1,980	1,301
Sales - energy saving certificates ³	1058	–	313
TOTAL OTHER REVENUE		11,394	21,724

Accounting policy for other revenue

Where the revenue relates to a contract with customer, the revenue is recognised when or as the performance obligation is completed and the customer receives the benefit of the goods / services being provided.

Where the revenue relates to a contract which is not enforceable or does not contain sufficiently specific performance obligations then revenue is recognised when an unconditional right to a receivable arises or the cash is received, which is earlier.

2019 accounting policy:

Council recognises revenue when the amount of revenue can be reliably measured, it is probable that future economic benefits will flow to the Council and specific criteria have been met for each of the Council's activities as described below. Council bases its estimates on historical results, taking into consideration the type of customer, the type of transaction and the specifics of each arrangement.

Parking fees and fines are recognised as revenue when the service has been provided, or when the penalty has been applied, whichever occurs first.

Rental income is accounted for on a straight-line basis over the lease term.

Miscellaneous sales are recognised when physical possession has transferred to the customer which is deemed to be the point of transfer of risks and rewards.

Other Income is recorded when the payment is due, the value of the payment is notified, or the payment is received, whichever occurs first.

(1) Moorebank Intermodal Company (MIC) is a wholly owned Australian Government entity established to facilitate the development and operation of an intermodal terminal at Moorebank. MIC is exempt from paying council rates, however, under Commonwealth's competitive neutrality policy, it has entered into an agreement with Liverpool City Council to pay rates equivalent ex-gratia sum payable at commencement of every financial year. The agreement takes a retrospective effective from 1/1/17.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

⁽²⁾ Liverpool City Council participated in a class legal action against Standard & Poor's International (a credit rating agency) in relation to S&P's rating of certain synthetic collateralised debt obligations in which councils invested and suffered losses when the product defaulted. The associated legal costs were funded by external litigation firms. The sum Council received in 2018/19 under a settlement scheme is its share of the net proceeds from settlement.

⁽³⁾ Under Western Sydney Regional Organisation of Councils (WSROC) initiative, Liverpool City Council participated in the Light Years Ahead Project (Stage 1) and replaced 185 residential street lights by LED. The energy savings as a result was accounted for in form of tradeable "energy saving certificates". Council sold these certificates during the previous financial year.

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Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	AASB	Operating 2020	Operating 2019	Capital 2020	Capital 2019
(d) Grants					
General purpose (untied)					
Current year allocation					
Financial assistance – general component	1058	3,185	3,164	–	–
Financial assistance – local roads component	1058	1,142	1,148	–	–
Payment in advance - future year allocation ⁽¹⁾					
Financial assistance – general component	1058	3,373	3,280	–	–
Financial assistance – local roads component	1058	1,212	1,191	–	–
Amount recognised as income during current year		8,912	8,783	–	–
Specific purpose					
Aged care	1058	–	3	–	–
Bushfire and emergency services	1058	170	170	–	–
Better waste and recycling	1058	218	217	–	–
Child care	1058	5,372	4,132	–	–
Community care	1058	86	198	–	–
Cultural services	1058	340	470	–	–
Drainage	1058	88	30	–	77
Employment and training programs	1058	2	25	–	–
Library	1058	556	468	50	86
LIRS subsidy	1058	588	478	–	–
Recreation and culture	1058	53	–	–	–
Street lighting	1058	813	798	–	–
Town Planning	1058	300	2,500	–	–
Transport	1058	–	–	–	–
- Roads to recovery	1058	–	–	1,431	950
- Other roads and bridges	1058	235	462	4,566	13,858
- Other	1058	1,286	996	3,161	1,262
Total grants		19,019	19,730	9,208	16,233
Grant revenue is attributable to:					
- Commonwealth funding		13,921	12,367	1,707	1,003
- State funding		4,958	7,066	7,482	15,230
- Other funding		140	297	19	–
		19,019	19,730	9,208	16,233

(1) \$4,585m of the 2020-2021 Financial Assistance Grant from State Government was received by Council in June 2020 and hence is reported as 2019-20 income although it relates to 2020-2021 financial year

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	Notes	AASB	Operating 2020	Operating 2019	Capital 2020	Capital 2019
(e) Contributions						
Developer contributions:						
(s7.4 & s7.11 - EP&A Act, s64 of the LGA):						
Cash contributions						
S 7.11 – contributions towards amenities/services		1058	–	–	41,055	41,079
Total developer contributions – cash			–	–	41,055	41,079
Non-cash contributions						
S 7.11 – contributions towards amenities/services		1058	–	–	–	1,882
Total developer contributions non-cash			–	–	–	1,882
Total developer contributions	26		–	–	41,055	42,961
Other contributions:						
Cash contributions						
Roads and bridges		1058	–	–	2,685	1,604
Other		1058	228	74	–	1,144
Total other contributions – cash			228	74	2,685	2,748
Non-cash contributions						
Dedications – subdivisions (other than by s7.11) ¹		1058	–	–	43,710	30,207
Land Under Roads		1058	–	–	2,189	2,515
Total other contributions – non-cash			–	–	45,899	32,722
Total other contributions			228	74	48,584	35,470
Total contributions			228	74	89,639	78,431
TOTAL GRANTS AND CONTRIBUTIONS			19,247	19,804	98,847	94,664

Accounting policy for grants and contributions

Accounting policy from 1 July 2019

Grant income under AASB 15

Where grant income arises from an agreement which is enforceable and contains sufficiently specific performance obligations then the revenue are recognised when control of each performance obligations is satisfied.

The performance obligations are varied based on the agreement but include [provide details of performance obligations within AASB 15 grants e.g. events, vaccinations]. Payment terms vary depending on the terms of the grant, cash is received upfront for some grants and on the achievement of certain payment milestones for others.

Each performance obligation is considered to ensure that the revenue recognition reflects the transfer of control and within grant agreements there may be some performance obligations where control transfers at a point in time and others which have continuous transfer of control over the life of the contract.

Where control is transferred over time, generally the input methods being either costs or time incurred are deemed to be the most appropriate methods to reflect the transfer of benefit.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

Grant income

Assets arising from grants in the scope of AASB 1058 is recognised at the assets fair value when the asset is received. Councils considers whether there are any related liability or equity items associated with the asset which are recognised in accordance with the relevant accounting standard.

Once the assets and liabilities have been recognised then income is recognised for any remaining asset value at the time that the asset is received

Capital grants

Capital grants received to enable Council to acquire or construct an item of infrastructure, property, plant and equipment to identified specifications which will be under Council's control and which is enforceable are recognised as revenue as and when the obligation to construct or purchase is completed.

For construction projects, this is generally as the construction progresses in accordance with costs incurred since this is deemed to be the most appropriate measure of the completeness of the construction project as there is no profit margin.

For acquisitions of assets, the revenue is recognised when the asset is acquired and controlled by the Council.

Contributions

Council has obligations to provide facilities from contribution revenues levied on developers under the provisions of Section 7.11 and 7.12 of the Environment Planning Act 1979. Whilst Council generally incorporates these amounts as part of a Development Consents Order, such developer contributions are only recognised as income upon their physical receipt by Council, due to the possibility that individual development consents may not be acted upon by the applicant and accordingly would not be payable to Council.

Developer contributions may only be expended for the purposes for which the contributions were required but the Council may apply contributions according to the priorities established in work schedules. A detailed note relating to developer contributions can be found at Note 26.

Control over grants and contributions is normally obtained upon their receipt (or acquittal) and is valued at the fair value of the granted or contributed asset at the date of transfer.

Accounting policy prior to 1 July 2019

Control over grants and contributions is normally obtained upon their receipt (or acquittal) and revenue is recognised at this time and is valued at the fair value of the granted or contributed asset at the date of transfer.

Where grants or contributions recognised as revenues during the financial year were obtained on condition that they be expended in a particular manner, or used over a particular period, and those conditions were un-discharged at reporting date, the unused grant or contribution is disclosed below.

A liability is recognised in respect of revenue that is reciprocal in nature to the extent that the requisite service has not been provided at reporting date.

⁽¹⁾ Refer Note 10 v(iii) for valuation methodology

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	2020	2019
(f) Unspent grants and contributions – external restrictions ^{1., 2.}		
Certain grants and contributions are obtained by Council on condition that they be spent in a specified manner due to externally imposed restrictions.		
Operating grants		
Unexpended at the close of the previous reporting period	6,155	1,588
operating grants recognised as income in the current period but not yet spent	378	2,955
operating grants received for the provision of goods and services in a future period	3,543	–
operating grants recognised in a previous reporting period now spent	(3,609)	(484)
operating grants received in a previous reporting period now spent and recognised as income	–	–
Unexpended and held as externally restricted assets (operating grants)	6,467	4,059
Capital grants		
Capital grants recognised as income in the current period that have not been spent	15,963	18,472
capital grants recognised as income in the current period but not yet spent	770	2,540
capital grants received for the provision of goods and services in a future period	55	–
capital grants recognised in a previous reporting period now spent	(2,582)	(2,953)
capital grants received in a previous reporting period now spent and recognised as income	–	–
Unexpended and held as externally restricted assets (capital grants)	14,206	18,059
Contributions		
Contributions recognised as income in the current period that have not been spent	3,956	1,336
contributions recognised as income in the current period but not yet spent	2,685	2,670
contributions received for the provision of goods and services in a future period	603	–
contributions recognised as income in the current period obtained in respect of a future rating identified by Council for the purpose of establishing a rate	–	–
contributions recognised in a previous reporting period now spent	(176)	(50)
Unexpended and held as externally restricted assets (contributions)	7,068	3,956

(1.) Contributors can place restrictions on the application of funds to assist in ensuring that the intended outcomes of the particular program are met. Examples of such conditions are the requirement to provide annual acquittals of expenditure or to return funds at the end of a specific period.

(2.) Contributions received have been for specific project objectives. Funds can only be expended on these programs over the nominated period. Any balance outstanding is refundable.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 3. Revenue from continuing operations (continued)

\$ '000	AASB 15 2020	AASB 1058 2020
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(g) Disaggregation of material revenue streams

The following shows the revenue recognition pattern for the material revenue streams of Council.

Revenue recognition at a point in time

Rates and annual charges	–	137,631
Financial assistance grants	–	8,912
User charges and fees	14,898	–
Grant revenue and non-developer contributions	–	22,079
Fines	–	2,427
External Works	–	2,328
	<u>14,898</u>	<u>173,377</u>

Revenue recognised over time

Grant revenue	<u>147</u>	<u>–</u>
	<u>147</u>	<u>7,320</u>

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 4. Interest and investment revenue

\$ '000	2020	2019
Interest on financial assets measured at amortised cost		
– Overdue rates and annual charges	478	431
– Cash and investments	5,517	7,682
Fair value adjustments		
– Fair valuation movements in investments (at Fair Value through Profit and Loss)	325	865
Total interest and investment income	6,320	8,978
Interest revenue is attributable to:		
Unrestricted investments/financial assets:		
Overdue rates and annual charges (general fund)	478	431
General Council cash and investments	1,693	2,674
Restricted investments/funds – external:		
Development contributions		
– Section 7.11 – interest on investments	3,329	4,521
– Section 7.11 – share of fair value gain/(loss) on investments	190	510
Domestic waste management operations	408	555
Other externally restricted assets	222	287
Total interest and investment revenue	6,320	8,978

Accounting policy for interest and investment revenue

Council is permitted to set interest rate payable on overdue rates and charges but not exceeding the maximum determined by the Office of Local Government within the Department of Planning, Industry and Environment in accordance with section 566(3) of the Local Government Act 1993. For this reporting period, Council applied the maximum permissible interest rate of 7.5% (comparative interest rate for last year was 7.5%).

Interest on cash and investment is recognised using the effective interest rate at the date that interest is earned.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations

\$ '000	2020	2019
(a) Employee benefits and on-costs		
Salaries and wages	62,991	59,380
Travel expenses	85	195
Employee leave entitlements (ELE)	10,206	10,212
Superannuation – defined contribution plans	6,339	6,067
Superannuation – defined benefit plans	342	370
Workers' compensation insurance	1,463	1,639
Fringe benefit tax (FBT)	340	382
Training costs (other than salaries and wages)	441	366
Other	605	686
Less: capitalised costs	(5,904)	(6,116)
TOTAL EMPLOYEE COSTS EXPENSED	76,908	73,181

Number of 'full-time equivalent' employees (FTE) at year end	761	773
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Accounting policy for employee benefits and on-costs

Employee benefit expenses are recorded when the service has been provided by the employee. Salaries and on-costs relating to Council staff directly involved in managing and delivery of capital projects are charged to respective projects.

Retirement benefit obligations

All employees of the council are entitled to benefits on retirement, disability or death. Council contributes to various defined benefit plans and defined contribution plans on behalf of its employees.

Superannuation plans

Contributions to defined contribution plans are recognised as an expense as they become payable. Prepaid contributions are recognised as an asset to the extent that a cash refund or a reduction in the future payments is available.

Defined Benefit Plan**(a) Funding agreements and method used to determine the entity's rate of contributions and any minimum funding requirements**

Council participates in the pooled employer sponsored defined benefits of the Local Government Superannuation Scheme. Pooled Employers are required to pay standard employer contributions and additional lump sum contributions to the Fund. The standard employer contributions were determined using the new entrant rate method under which a contribution rate sufficient to fund the total benefits over the working life-time of a typical new entrant is calculated. The current standard employer contribution rates are:

Division B: 1.9 times employee contribution for non-180 Point Members; Nil for 180 Point Members*

Division C: 2.5% salaries

Division D: 1.64 times employee contribution

*For 180 Point Members, Employers are required to contribute 7% of salaries to these members' accumulation accounts, which are paid in addition to members' defined benefits

The additional lump sum contribution for each Pooled Employer is a share of the total additional contributions of \$40 million from 1 July 2019 to 30 June 2021, apportioned according to each employer's share of the accrued liabilities as at 30 June 2019. These additional lump sum contributions are used to fund the deficit of assets to accrued liabilities as at 30 June 2020

The adequacy of contributions is assessed at each triennial actuarial investigation and monitored annually between triennials.

(b) Extent to which the entity can be liable to the plan for other entities' obligations under the terms and conditions of the multi-employer plan.

As stated above, each sponsoring employer is exposed to the actuarial risks associated with current and former employees of other sponsoring employers and hence shares in the associated gains and losses.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations (continued)

However, there is no relief under the Fund's trust deed for employers to walk away from their defined benefit obligations. Under limited circumstances, an employer may withdraw from the plan when there are no active members, or full payment of outstanding additional contributions. There is no provision for allocation of any surplus which may be present at the date of withdrawal of the entity.

(c) Description of any agreed allocation of a deficit or surplus on:

(i) Wind-up of the plan - there are no specific provisions under the Fund's trust deed dealing with deficits or surplus on wind-up.

(ii) The entity's withdrawal from the plan - there is no provision for allocation of any surplus which may be present at the date of withdrawal of an employer.

(d) Further information relating to reasons for accounting for the pooled employer fund as a defined contribution plan:

(i) The fact that the plan is a defined benefit plan.

(ii) The reasons why sufficient information is not available to enable the entity to account for the plan as a defined benefit plan are:

- assets are not segregated within the sub-group according to the employees of each sponsoring employer;
- the contribution rates have been the same for all sponsoring employers and have not varied for each employer according to the experience relating to the employees of that employer;
- benefits for employees of all sponsoring employers are determined according to the same formulae and without regard to the sponsoring employer; and
- the same actuarial assumptions are currently used in respect of the employees of each sponsoring employer.

Given the factors set out above, each sponsoring employer is exposed to the actuarial risks associated with current and former employees of other sponsoring employers and hence shares in the associated gains and losses (to the extent that they are not borne by the members).

As such there is insufficient reliable information to allow each sponsoring employer to account for its proportionate share of the defined benefit obligation, sub-group assets and costs associated with the sub-group in the same way as it would be for a single employer sponsored defined benefit plan.

(iii) The expected contributions to the plan for the next annual reporting period is \$ 580,238.08.

(iv) Information about any deficit or surplus in the plan that may affect the amount of future contributions, including the basis used to determine that deficit or surplus and the implications, if any, for the entity

The estimated employer reserves financial position for the Pooled Employers at 30 June 2020 is:

Employer reserves only*	\$ millions	Asset Coverage
Assets	1,695.2	
Past Service Liabilities	1,773.2	95.6%
Vested Benefits	1,757.5	96.5%

*excluding member accounts and reserves in both assets and liabilities.

The key economic long term assumptions used to calculate the present value of accrued benefits are:

Investment return: 5.75% per annum

Salary inflation*: 3.5% per annum

Increase in CPI: 2.5% per annum

*plus promotional increases

The contribution requirement may vary from the current rates if the overall sub-group experience is not in line with the actuarial assumptions in determining the funding program; however, any adjustment to the funding program would be the same for all sponsoring employers in the Pooled Employers.

The share of the surplus in the scheme is about 0.61%.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations (continued)

Additional contributions are estimated to remain in place until 30 June 2021 i.e. \$245,800 additional contributions remaining. However the Trustee will be reviewing the financial position of the fund on an annual basis and will provide updates.

(v) Indication of the level of participation of the entity in the plan compared with other participating entities

The amount of employer contributions to the defined benefit section of the Fund and recognised as an expense for the year ending 30 June 2020 was \$574,441.62. The last valuation of the Fund was performed by Mr Richard Boyfield (Fellow of the Institute of Actuaries of Australia) on 31 December 2019, relating to the period ending 30 June 2020.

\$ '000	2020	2019
(b) Borrowing costs		
(i) Interest bearing liability costs		
Interest on leases	220	—
Interest on loans	1,584	1,517
Total interest bearing liability costs	1,804	1,517
Less: capitalised costs	—	(108)
Total interest bearing liability costs expensed	1,804	1,409
(ii) Other borrowing costs		
Fair value adjustments on recognition of advances and deferred debtors		
Amortisation on interest free (and favourable) loans to Council	116	215
Total other borrowing costs	116	215
TOTAL BORROWING COSTS EXPENSED	1,920	1,624

Accounting policy for borrowing costs

Interest on loans is recognised on an accrual basis. When the debt arrangement is interest free or includes a discount, notional interest payable is calculated and amortised using the effective interest rate method.

Borrowing costs incurred for the construction of any qualifying asset are capitalised during the period of time that is required to complete and prepare the asset for its intended use or sale. Other borrowing costs are expensed as incurred.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations (continued)

\$ '000	2020	2019
(c) Materials and contracts		
Raw materials and consumables	61,449	50,610
Contractor and consultancy costs	90,614	93,535
Auditors remuneration	159	155
Legal expenses:		
– Planning and development	465	481
– Other	619	384
Expenses from short-term leases	351	–
Expenses from leases of low value assets	402	–
Variable lease expense relating to usage	418	–
Operating leases expense :		
– Operating lease rentals	–	2,205
Total materials and contracts	154,477	147,370
Less: capitalised costs	(93,325)	(91,621)
TOTAL MATERIALS AND CONTRACTS	61,152	55,749

Accounting policy for materials and contracts

Expenses are recorded on an accruals basis as the council receives the goods or services.

Operating leases (2019 only)

Leases in which a significant portion of the risks and rewards of ownership are not transferred to Council as lessee are classified as operating leases. Payments made under operating leases (net of any incentives received from the lessor) are charged to the income statement on a straight-line basis over the period of the lease.

Auditor remuneration

During the year, the following fees were incurred for services provided by the auditor of Council, related practices and non-related audit firms

Auditors of the Council - NSW Auditor-General:**Audit and other assurance services**

Audit and review of financial statements	159	155
Remuneration for audit and other assurance services	159	155
Total Auditor-General remuneration	159	155

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations (continued)

\$ '000	Notes	2020	2019
(d) Depreciation, amortisation and impairment of non-financial assets			
Depreciation and amortisation			
Plant and equipment		2,041	2,107
Office equipment		531	433
Furniture and fittings		181	173
Land improvements (depreciable)		5	5
Infrastructure:	10		
– Buildings – non-specialised		7,532	7,060
– Other structures		153	142
– Roads		18,557	19,969
– Stormwater drainage		5,613	4,713
– Other open space/recreational assets		3,166	3,257
Right of use assets	13	2,241	–
Other assets:			
– Heritage collections		164	164
– Library books		696	690
Intangible assets	11	286	532
Total gross depreciation and amortisation costs		41,166	39,245
Total depreciation and amortisation costs		41,166	39,245
Impairment / revaluation decrement of IPP&E			
Other assets:			
– Land under roads (Fair Value Decrement)		–	2,048
Total gross IPP&E impairment / revaluation decrement costs / (reversals)		–	2,048
Total IPP&E impairment / revaluation decrement costs / (reversals) charged to Income Statement		–	2,048
TOTAL DEPRECIATION, AMORTISATION AND IMPAIRMENT FOR NON-FINANCIAL ASSETS		41,166	41,293

Accounting policy for depreciation, amortisation and impairment expenses of non-financial assets

Depreciation and amortisation

Depreciation and amortisation are calculated using the straight line method to allocate their cost, net of their residual values, over their estimated useful lives. Useful lives are included in Note 10 for IPPE assets,

Impairment of non-financial assets

Council assets held at fair value that are not held primarily for their ability to generate net cash flow, and that are deemed to be specialised, are no longer required to be tested for impairment under AASB 136. This is because these assets are assessed on an annual basis to ensure that the carrying amount is not materially different from fair value and therefore an impairment loss would be captured during their assessment.

Intangible assets that have an indefinite useful life, or are not yet available for use, are tested annually for impairment, or more frequently if events or changes in circumstances indicate that they might be impaired.

Other assets that do not meet the criteria above are tested for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable amount is the higher of an asset's fair value less costs to sell and value in use.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 5. Expenses from continuing operations (continued)

For the purposes of assessing impairment, assets are grouped at the lowest levels for which there are separately identifiable cash inflows that are largely independent of the cash inflows from other assets or groups of assets (cash-generating units). Non-financial assets that suffered an impairment are reviewed for possible reversal of the impairment at each reporting date.

Impairment losses for revalued assets are firstly offset against the amount in the revaluation surplus for the class of asset, with only the excess to be recognised in the Income Statement.

\$ '000	2020	2019
(e) Other expenses		
Repairs and maintenance	3,862	3,583
Street lighting	2,727	3,180
Insurance	1,829	1,563
Electricity and heating	1,707	1,848
Donations, contributions and assistance to other organisations (Section 356)	792	668
Subscriptions and publications	502	461
Bank charges	445	444
Postage	368	337
Councillor expenses – councillors' fees	335	326
Advertising	311	341
Telephone and communications	289	665
Contributions/levies to other levels of government		
– NSW fire brigade levy	1,404	1,333
– NSW rural fire service levy	290	242
– Sydney Water	674	688
– Emergency services levy (includes FRNSW, SES, and RFS levies)	314	289
– Australian communication authority	201	119
– Department of planning levy	148	145
Printing and stationery	227	262
Bad and doubtful debts	294	444
Councillor expenses – mayoral fee	89	86
Councillors' expenses (incl. mayor) – other (excluding fees above)	71	120
Travel expenses	12	–
Other	245	127
Total other expenses	17,136	17,271
Less: capitalised costs	(172)	(180)
TOTAL OTHER EXPENSES	16,964	17,091

Accounting policy for other expenses

Other expenses are recorded on an accruals basis as the Council receives the goods or services.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 6. Gain or loss from disposal of assets

\$ '000	Notes	2020	2019
Property (excl. investment property)			
Proceeds from disposal – property		10,000	–
Less: carrying amount of property assets disposed		(4,311)	(610)
Net gain/(loss) on disposal		5,689	(610)
Plant and equipment			
	10		
Proceeds from disposal – plant and equipment		220	205
Less: carrying amount of plant and equipment assets disposed		(19)	(16)
Net gain/(loss) on disposal		201	189
Infrastructure			
	10		
Proceeds from disposal – infrastructure		–	81
Less: carrying amount of infrastructure assets disposed		(4,369)	(10,119)
Net gain/(loss) on disposal		(4,369)	(10,038)
Investments			
	7(b)		
Proceeds from disposal/redemptions/maturities – investments		112,014	70,637
Less: carrying amount of investments sold/redeemed/matured		(112,000)	(70,500)
Net gain/(loss) on disposal		14	137
Intangible assets			
	11		
Proceeds from disposal – intangible assets		–	–
Less: carrying amount of intangible assets sold/written off		(468)	–
Net gain/(loss) on disposal		(468)	–
Other (Library Books)			
Proceeds from disposal – Other – Library Books		–	–
Less: carrying amount of Other – Library Books assets disposed		(158)	(157)
Net gain/(loss) on disposal		(158)	(157)
NET GAIN/(LOSS) ON DISPOSAL OF ASSETS		909	(10,479)

Accounting policy for disposal of assets

Gains and losses on disposals are determined by comparing proceeds with carrying amount. These are included in the Income Statement.

The gain or loss on sale of an asset is determined when control of the asset has irrevocably passed to the buyer and the asset is de-recognised.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 7(a). Cash and cash equivalents

\$ '000	2020	2019
Cash and cash equivalents		
Cash on hand and at bank	2,248	1,395
Cash-equivalent assets		
– Deposits at call	41,901	16,184
– Managed funds	37,013	21,767
– Short-term deposits	33,000	46,000
Total cash and cash equivalents	114,162	85,346

Accounting policy for cash and cash equivalents

For Statement of Cash Flow presentation purposes, cash and cash equivalents include: cash on hand; deposits held at call with financial institutions; other short-term, highly liquid investments with original maturities of three months or less that are readily convertible to known amounts of cash and which are subject to an insignificant risk of changes in value; and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities on the Statement of Financial Position.

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Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 7(b). Investments

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
Investments				
a. 'Financial assets at fair value through profit and loss'				
– 'Designated at fair value on initial recognition'	20,663	140,805	5,025	125,725
b. 'Financial assets at amortised cost' / 'held to maturity'	8,000	17,000	20,000	35,000
Total Investments	28,663	157,805	25,025	160,725

TOTAL CASH ASSETS, CASH EQUIVALENTS AND INVESTMENTS

	142,825	157,805	110,371	160,725
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Financial assets at fair value through the profit and loss

Non-convertible debentures or floating rate notes	20,663	139,220	5,025	124,148
Mortgage backed securities	–	1,585	–	1,577
Total	20,663	140,805	5,025	125,725

Financial assets at amortised cost / held to maturity

Long term deposits	8,000	17,000	20,000	35,000
Total	8,000	17,000	20,000	35,000

Accounting policy for investments

Council has an approved Investment Policy in order to invest in accordance with (and to comply with) section 625 of the Local Government Act and section 212 of the Local Government (General) Regulations 2005. Investments are placed and managed in accordance with the policy and having particular regard to authorised investments prescribed under the Ministerial Local Government Investment Order. Council maintains its Investment Policy in compliance with the Act and ensures that it or its representatives exercise care, diligence and skill that a prudent person would exercise in investing Council funds.

Council's investment principles as set out in its investment policy is "to maximise returns while paying due consideration to matters of risk, liquidity and security for its investment".

Council amended its policy following revisions to the Ministerial Local Government Investment Order (the Order) arising from the Cole Inquiry recommendations. Certain investments the Council holds are no longer prescribed; however, they have been retained under grandfathering provisions of the Order. These will be disposed of when most financially advantageous to Council.

Financial assets

All recognised financial assets are subsequently measured in their entirety at either amortised cost or fair value, depending on the classification of the financial assets.

Classification

On initial recognition, Council classifies its financial assets into the following categories – those measured at:

- amortised cost
- fair value through profit and loss (FVTPL)
- fair value through other comprehensive income – equity instrument (FVOCI-equity)

Financial assets are not reclassified subsequent to their initial recognition.

Amortised cost

Assets measured at amortised cost are financial assets where:

- the business model is to hold assets to collect contractual cash flows, and
- the contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Council's financial assets measured at amortised cost comprise trade and other receivables, term deposits and cash and cash equivalents in the Statement of Financial Position.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 7(b). Investments (continued)

Subsequent to initial recognition, these assets are carried at amortised cost using the effective interest rate method less provision for impairment.

Interest income, impairment and gains or loss on de-recognition are recognised in profit or loss.

Financial assets through profit or loss

All financial assets not classified as measured at amortised cost or fair value through other comprehensive income as described above are measured at fair value through profit or loss.

Net gains or losses, including any interest or dividend income, are recognised in profit or loss.

Council's financial assets measured at fair value through profit or loss comprise investments in FRNs and NCDs in the Statement of Financial Position.

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Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 7(c). Restricted cash, cash equivalents and investments

\$ '000	2020	2020	2019	2019
	Current	Non-current	Current	Non-current
Total cash, cash equivalents and investments	142,825	157,805	110,371	160,725
attributable to:				
External restrictions	93,526	157,805	54,083	160,725
Internal restrictions	13,132	–	12,215	–
Unrestricted	36,167	–	44,073	–
	142,825	157,805	110,371	160,725

Details on restricted cash, cash equivalents and investments

Cash, cash equivalents and investments are restricted for prudent financial management purposes as follows:

External Restrictions:

- **Developer contributions** – 100% of cash Developer Contributions levied under Section 7.11 contribution plan, received but not yet expended in accordance with the contributions plan.
- **Unexpended grants** – 100% of cash grants received but not expended during the year are treated as restricted funds
- **Domestic Waste** – Any cash surplus from operations is held as a restricted asset to fund future capital expenditure or process improvements to the Domestic Waste collection business
- **Stormwater management** – 100% of funds received through the stormwater levy are set aside for various structural and non-structural programs used to reduce urban stormwater pollution. Unspent funds are held as restricted assets.
- **Better Waste and Recycling** – unspent funds received from the NSW Environment Protection Authority (EPA) under Waste Less Recycle More initiative.
- **City Development Fund** (formerly referred to as Town Improvement Fund) – 100% cash collected from this special rate levied on properties within Town Improvement District zone is set aside to fund special projects within the city precinct.
- **Collingwood House Restoration Works** – contributions collected under a Voluntary Planning Agreement arrangement towards restoration works at Collingwood House.
- **Edmondson Park** – unspent funds at reporting date from borrowings for Edmondson Park and other projects funded from borrowing under the Local Infrastructure Renewals Scheme are set aside to fund specific projects.
- **Environmental levy** – 100% cash collected from ratepayers are set aside to fund initiatives under Council's Environment Restoration Plan.
- **LIRS** – unspent funds received under NSW Local Infrastructure Renewals Scheme

Internal Restrictions:

- **Employee Leave Entitlements** – approximately 20% of the employee leave entitlement provision is set aside to fund extraordinary movements of staff. Normal annual payments of leave entitlements are funded from operating income.
- **General Property** – proceeds from sale of surplus land and buildings set aside for acquisition of other items of property
- **Insurance** – savings on insurance premiums and excess set aside to pay unexpected claims at a future date.
- **Moorebank Voluntary Acquisition** – cash set aside for acquisition of properties on a hazardous floodway alongside the Georges River.
- **Carnes Hill Stage 2** – Proceeds from disposal of 88 Kurrajong Road (DP 1236888) set aside for concept design and planning costs for Carnes Hill Stage 2 development.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 7(c). Restricted cash, cash equivalents and investments (continued)

- **Parking Strategy** – parking fees revenue collected in the city centre is set aside to fund initiatives that will improve car parking and transport in the CBD.
- **Loan** – unspent funds drawn down from a special purpose loan facility.

\$ '000	2020	2019
Details of restrictions		
External restrictions – included in liabilities		
Specific purpose unexpended grants – general fund	3,600	–
External restrictions – included in liabilities	3,600	–
External restrictions – other		
Developer contributions – general	195,724	159,603
Specific purpose unexpended grants – Capital	14,150	18,059
Domestic waste management	17,375	17,795
Environmental levy	5,771	5,017
Edmondson park reserve (unexpended loan)	2,726	2,672
Specific purpose unexpended grants – Operating	2,923	4,059
City development fund (previously TIF)	1,755	2,719
Better waste and recycling reserve	479	391
Stormwater management	358	307
Collingwood house restoration works	4	230
Other contributions reserve	6,466	3,956
External restrictions – other	247,731	214,808
Total external restrictions	251,331	214,808
Internal restrictions		
Loan Reserve	–	4,134
Carnes Hill stage 2 precinct development reserve	4,889	–
Employees leave entitlement	4,027	3,621
Insurance reserve	1,796	1,796
Parking strategy reserve	1,500	1,500
General property reserve	837	677
Moorebank voluntary acq reserve	83	487
Total internal restrictions	13,132	12,215
TOTAL RESTRICTIONS	264,463	227,023

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 8. Receivables

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
Purpose				
Rates and annual charges	7,798	40	6,498	15
Interest and extra charges	536	–	594	–
User charges and fees	3,846	–	3,286	–
Accrued revenues				
– Interest on investments	713	–	1,570	–
– Other income accruals	3,640	–	7,366	–
Net investment in finance lease	–	–	–	–
Government grants and subsidies	–	–	300	–
Net GST receivable	2,015	–	2,183	–
Other debtors	112	40	112	–
Total	18,660	80	21,909	15
Less: provision of impairment				
User charges and fees	(805)	–	(600)	–
Total provision for impairment – receivables	(805)	–	(600)	–
TOTAL NET RECEIVABLES	17,855	80	21,309	15
Externally restricted receivables				
Domestic waste management	1,978	–	1,724	–
Town improvement	98	–	52	–
Other				
– Environmental levy	111	–	96	–
Total external restrictions	2,187	–	1,872	–
Unrestricted receivables	15,668	80	19,437	15
TOTAL NET RECEIVABLES	17,855	80	21,309	15

\$ '000	2020	2019
Movement in provision for impairment of receivables		
Balance at the beginning of the year (calculated in accordance with AASB 139)	600	535
+ new provisions recognised during the year	702	444
Unused amounts reversed	(408)	(300)
– amounts already provided for and written off this year	(89)	(79)
Balance at the end of the year	805	600

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 8. Receivables (continued)

Accounting policy for receivables

Recognition and measurement

Receivables are included in current assets, except for those with maturities greater than 12 months after the reporting date which are classified as non-current assets.

Receivables are recognised initially at fair value and subsequently measured at amortised cost using the effective interest method, less provision for impairment. Receivables are generally due for settlement within 30 days.

Cash flows relating to short-term receivables are not discounted if the effect of discounting is immaterial.

Impairment

Impairment of financial assets measured at amortised cost is recognised on an expected credit loss (ECL) basis.

When determining whether the credit risk of a financial asset has increased significantly since initial recognition, and when estimating ECL, the Council considers reasonable and supportable information that is relevant and available without undue cost or effort. This includes both quantitative and qualitative information and analysis based on Council's historical experience and informed credit assessment, and including forward-looking information.

When considering the ECL for rates debtors, Council takes into account that unpaid rates represent a charge against the rateable property that will be recovered when the property is next sold. For non-rates debtors, Council uses the presumption that an asset which is more than 30 days past due has seen a significant increase in credit risk.

The Council uses the presentation that a financial asset is in default when:

- the other party is unlikely to pay its credit obligations to the Council in full, without recourse by the Council to actions such as realising security (if any is held) or
- the financial assets (for non-rates debtors) are more than 90 days past due.

Credit losses are measured as the present value of the difference between the cash flows due to the entity in accordance with the contract, and the cash flows expected to be received. This is applied using a probability weighted approach.

On initial recognition of the asset, an estimate of the expected credit losses for the next 12 months is recognised. Where the asset has experienced significant increase in credit risk then the lifetime losses are estimated and recognised.

Council uses the simplified approach for trade receivables where the expected lifetime credit losses are recognised on day 1.

There has been no change in the estimation techniques or significant assumptions made during the current reporting period.

The Council writes off a trade receivable when there is information indicating that the debtor is in severe financial difficulty and there is no realistic prospect of recovery, e.g. when the debtor has been placed under liquidation or has entered into bankruptcy proceedings, or when the receivables are over 365 days past due, whichever occurs first.

Where the Council renegotiates the terms of receivables due from certain customers, the new expected cash flows are discounted at the original effective interest rate and any resulting difference to the carrying value is recognised in profit or loss.

Rates and annual charges outstanding are secured against the property.

Liverpool City Council

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Notes to the Financial Statements
for the year ended 30 June 2020

Note 9. Inventories and other assets

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
(a) Inventories				
(i) Inventories at cost				
Stores and materials	232	–	122	–
Total inventories at cost	232	–	122	–
TOTAL INVENTORIES	232	–	122	–
(b) Other assets				
Prepayments	1,288	–	1,370	–
TOTAL OTHER ASSETS	1,288	–	1,370	–

Accounting policy for inventories and other assets

Council stocks common use items and the value of these items is held at cost, adjusted where applicable for any loss of service potential.

Inventory items are held at the lower of cost and net realisable value.

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 10. Infrastructure, property, plant and equipment

\$ '000	as at 30/06/19			Asset movements during the reporting period						as at 30/06/20		
	Gross carrying amount	Accumulated depreciation	Net carrying amount	Additions	Disposals	Depreciation expense	WIP transfers	Adjustments and transfers	Revaluation increments to equity (ARR)	Gross carrying amount	Accumulated depreciation	Net carrying amount
Capital work in progress	74,723	-	74,723	12,075	-	-	(28,340)	3,149	-	101,310	-	101,310
Plant and equipment	21,280	(15,860)	5,420	-	(3)	(2,041)	2,690	-	-	22,947	(16,881)	6,066
Office equipment	6,091	(4,241)	1,850	-	(15)	(531)	922	-	-	6,874	(4,648)	2,226
Furniture and fittings	3,180	(2,101)	1,059	-	-	(118)	127	-	-	3,287	(2,282)	1,005
Land:												
- Operational land	239,899	-	239,899	-	(4,006)	-	4,765	(606)	(1,551)	238,501	-	238,501
- Community land	305,299	-	305,299	-	-	-	-	-	12,436	317,735	-	317,735
- Crown land	44,919	-	44,919	-	-	-	-	-	(755)	44,164	-	44,164
- Land under roads (post 30/6/08)	19,939	-	19,939	-	2,189	-	-	-	-	22,128	-	22,128
Land improvements – non-depreciable	16,969	-	16,969	1,105	-	-	733	(1,838)	-	16,969	-	16,969
Land improvements – depreciable	342	(45)	297	-	-	(6)	-	-	-	342	(50)	292
Infrastructure:												
- Buildings – non-specialised	380,287	(155,860)	224,427	2,875	(30)	(7,532)	3,661	1,370	(599)	388,468	(164,569)	223,899
- Other structures	6,381	(899)	5,482	378	(46)	(153)	322	(223)	-	6,864	(1,051)	5,813
- Roads	1,438,394	(268,542)	1,169,852	12,345	(3,982)	(18,557)	12,124	(1,716)	(584)	1,488,371	(285,928)	1,202,445
- Stormwater drainage	629,946	(98,498)	531,448	2,001	(29)	(5,613)	35	(350)	(9)	646,328	(104,393)	541,935
- Other open space/recreational assets	77,547	(12,419)	65,128	1,009	(342)	(3,166)	243	214	-	79,549	(15,476)	64,073
Other assets:												
- Heritage collections	1,654	(1,213)	441	-	-	(164)	-	-	-	1,654	(1,377)	277
- Library books	5,055	(3,107)	1,958	-	(158)	(696)	718	-	-	4,587	(2,865)	1,822
Total infrastructure, property, plant and equipment	3,271,895	(562,785)	2,709,110	32,688	(8,854)	(38,639)	-	-	8,938	3,380,178	(599,518)	2,790,660

(1) Renewals are defined as the replacement of existing assets (as opposed to the acquisition of new assets).

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 10. Infrastructure, property, plant and equipment (continued)

	as at 30/09/18	Asset movements during the reporting period					as at 30/09/19
	Net carrying amount	Accumulated depreciation	Additions	Carrying value of disposals	Depreciation expense	Revaluation increments (decreases) recognised in P&L	Net carrying amount
			renewals ¹	new assets		in P&L	
Capital work in progress	48,645	-	21,800	46,193	-	-	74,723
Plant and equipment	19,703	(14,431)	-	(16)	(2,107)	130	21,280
Office equipment	4,987	(3,807)	-	-	(433)	2,271	6,091
Furniture and fittings	3,034	(1,928)	-	-	(173)	1,103	1,890
Land:						126	3,160
- Operational land	238,289	-	-	-	-	-	239,899
- Community land	348,916	-	-	-	-	-	305,299
- Crown land	-	-	-	-	-	-	44,919
- Land under roads (post 30/6/08)	17,946	-	-	(5)	(2,348)	-	19,939
- Land improvements - non-depreciable	16,969	-	2,971	(5)	-	-	16,969
- Land improvements - depreciable	342	(40)	-	-	(5)	-	342
Infrastructure:							
- Buildings - non-specialised	360,483	(142,925)	3,820	(605)	(7,060)	(45)	380,287
- Other structures	5,681	(812)	-	(171)	(142)	391	6,381
- Roads	1,313,413	(223,611)	28,532	(6,301)	(19,989)	19,806	1,438,394
- Stormwater drainage	523,670	(90,916)	18,196	(2,768)	(4,713)	(102)	629,946
- Other open space/recreational assets	91,275	(21,132)	7,633	(865)	(3,257)	(20,180)	77,547
Other assets:							
- Heritage collections	1,654	(1,049)	-	-	(164)	-	1,654
- Library books	5,690	(3,621)	-	(157)	(690)	-	5,065
Total infrastructure, property, plant and equipment	3,000,697	(504,272)	62,826	79,334	(36,713)	-	2,721,895
				(10,888)		122,474	2,709,110

(1) Renewals are defined as the replacement of existing assets (as opposed to the acquisition of new assets).

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 10. Infrastructure, property, plant and equipment (continued)

Accounting policy for infrastructure, property, plant and equipment

(i) Acquisition of assets

Council's non-current assets are progressively revalued (over a 5-year period) in accordance with the fair valuation policy as mandated by the Office of Local Government within the Department of Planning, Industry and Environment.

At reporting date, the following classes of infrastructure, property, plant and equipment were stated at their fair value:

- Plant and equipment (as approximated by depreciated historical cost)
- Office equipment (as approximated by depreciated historical cost)
- Furniture & Fittings (as approximated by depreciated historical cost)
- Operational land: unrestricted (external valuation)
- Operational land: zoned with restrictions (external valuation)
- Community land (external valuation)
- Land under roads: post 30 June 2008 - (Internal valuation)
- Land improvements (as approximated by depreciated historical cost)
- Buildings – specialised/non-specialised (internal valuation)
- Other structures (Internal and external valuation)
- Road assets - roads, bridges and footpaths (Internal and external valuation)
- Bulk earthworks (Internal and external valuation)
- Drainage assets (Internal and external valuation)
- Other open space/recreational assets (Internal and external valuation)
- Other assets (as approximated by depreciated historical cost)

(ii) Initial recognition

On initial recognition, an asset's cost is measured at its fair value, plus all expenditure that is directly attributable to the acquisition. Where infrastructure, property, plant and equipment assets are acquired for no cost or for an amount other than cost, the assets are recognised in the financial statements at their fair value at acquisition date – being the amount that the asset could have been exchanged between knowledgeable willing parties in an arm's length transaction.

(iii) Subsequent costs

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits associated with the item will flow to Council and the cost of the item can be measured reliably. All other repairs and maintenance are charged to the income statement during the financial period in which they are incurred.

(iv) Asset revaluations (including indexation)

In accounting for asset revaluations relating to infrastructure, property, plant and equipment:

- increases in the combined carrying amounts of asset classes arising on revaluation are credited to the asset revaluation reserve,
 - to the extent that a net asset class increase reverses a decrease previously recognised via the profit or loss, then increase is first recognised in profit or loss,
 - net decreases that reverse previous increases of the same asset class are first charged against revaluation reserves directly in equity to the extent of the remaining reserve attributable to the asset, with all other decreases charged to the Income Statement.
- Council assesses at each reporting date whether there is any indication that a revalued asset's carrying amount may differ materially from that which would be determined if the asset were revalued at the reporting date. If any such indication exists, Council determines the asset's fair value and revalues the asset to that amount. Desktop valuation of roads, bridges, footpaths and drainage assets was performed as at 30 June 2018 that resulted in indices applied to their carrying values. Council used producer price index to adjust the carrying amounts. Full revaluations are undertaken for all assets on a 5-year cycle. Assets were last comprehensively revalued as per below:

Roads, bridges, footpaths, drainage, bulk earth works, other road assets - 30 June 2019

Other structures, Other Open Space/recreational assets - 30 June 2019

Land under roads - 30 June 2017

Community land - 30 June 2017

Crown land - 30 June 2018

Operational land and buildings - 30 June 2018

(v) Capitalisation thresholds

Items of infrastructure, property, plant and equipment costing in excess of \$1000 are capitalised.

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 10. Infrastructure, property, plant and equipment (continued)

(vi) Depreciation

Depreciation on Council's infrastructure, property, plant and equipment assets is calculated using the straight-line method in order to allocate an asset's cost (net of residual values) over its estimated useful life. Land is not depreciated. Estimated useful lives for Council's I,PP&E include:

Plant and equipment	5 to 10 years
Office equipment	5 to 10 years
Furniture & Fittings	5 to 10 years
Land improvements	100 years
Buildings	20 to 100 years
Other structures	3 to 20 years
Road assets	15 to 100 years
Bulk earthworks	Infinite
Drainage	100 years
Open Space recreational assets	5 to 20 years
Other assets	5 to 20 years

All asset useful lives are reviewed and adjusted (if appropriate) at each reporting date. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount - refer note 10 (a) (xii) on asset impairment.

(vii) Disposal and derecognition

An item of property, plant and equipment is derecognised upon disposal or when no further future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in Council's Income Statement in the year the asset is derecognised.

(viii) Dedicated Assets

Section 93F of the Environment Planning Act 1979 (NSW) provides NSW Councils a legal framework to enter into planning agreements. These are voluntary agreements where the developer may dedicate land, pay monetary contributions, or provide a material public benefit (or a combination of these) which the council must then apply toward a public purpose. These assets are valued at asset replacement unit rates. The value of such assets received during the reporting year is included in the Income Statement as "Grants & Contributions provided for capital purposes" and forms part of Council's asset base at reporting date.

(ix) Land

Land (other than land under roads) is in accordance with Part 2 of Chapter 6 of the Local Government Act (1993) classified as either operational or community.

Land under roads

Land under roads is land under roadways and road reserves including land under footpaths, nature strips and median strips.

Council has elected not to recognise land under roads acquired before 1 July 2008 in accordance with AASB 1051 Land Under Roads.

Land under roads acquired after 1 July 2008 is recognised in accordance with AASB 116 Property, Plant and Equipment.

Council uses average unit value of the land within council area to value land under roads. Land value is determined by the Valuer General and discounted by 90% using Englobo method to reflect the restricted use of land under roads.

The value of land under roads dedicated to Council in the current year is included in Income Statement as "Grants & Contributions provided for Capital Purposes" and forms part of Council's asset base at reporting date.

Crown reserves

Crown reserves under Council's care and control are recognised as assets of the council.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 10. Infrastructure, property, plant and equipment (continued)

While ownership of the reserves remains with the Crown, Council retains operational control of the reserves and is responsible for their maintenance and use in accordance with the specific purposes to which the reserves are dedicated.

Improvements on Crown reserves are also recorded as assets, while maintenance costs incurred by Council and revenues relating to the reserves are recognised within Council's Income Statement.

Impairment of assets

All Council's I,PP&E is subject to an annual assessment of impairment.

Assets that are subject to amortisation are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable.

An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount.

The recoverable amount is the higher of an asset's fair value less costs to sell and value in use.

Where an asset is not held principally for cash-generating purposes (for example infrastructure assets) and would be replaced if the Council was deprived of it, then depreciated replacement cost is used as value in use, otherwise value in use is estimated by using a discounted cash flow model.

Rural Fire Service assets

Under section 119 of the Rural Fires Act 1997, 'all fire fighting equipment purchased or constructed wholly or from money to the credit of the Fund is to be vested in the council of the area for or on behalf of which the fire fighting equipment has been purchased or constructed'.

At present, the accounting for such fire fighting equipment is not treated in a consistent manner across all Councils.

The carrying value of RFS assets is not material and excluded in the financial statements.

Liverpool City Council

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for the year ended 30 June 2020

Note 11. Intangible assets

Intangible assets are as follows:

\$ '000	2020	2019
Software		
Opening values at 1 July		
Gross book value	4,418	4,091
Accumulated amortisation	(3,171)	(2,777)
Net book value – opening balance	1,247	1,314
Movements for the year		
– Other movements	2,439	13
– Purchases	1,047	452
– Amortisation charges	(286)	(532)
– Gross book value written off	(3,533)	(138)
– Accumulated amortisation charges written off	543	138
Closing values at 30 June		
Gross book value	1,924	4,418
Accumulated amortisation	(467)	(3,171)
Total software – net book value	1,457	1,247
TOTAL INTANGIBLE ASSETS – NET BOOK VALUE	1,457	1,247

Accounting policy for intangible assets

IT development and software

Costs incurred in developing products or systems and costs incurred in acquiring software and licenses that will contribute to future period financial benefits through revenue generation and/or cost reduction are capitalised to software and systems.

Costs capitalised include external direct costs of materials and service, direct payroll, and payroll related costs of employees' time spent on the project.

Amortisation is calculated on a straight line basis over periods generally ranging from three to five years.

IT development costs include only those costs directly attributable to the development phase and are only recognised following completion of technical feasibility, and where Council has an intention and ability to use the asset.

Liverpool City Council

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for the year ended 30 June 2020

Note 12. Contract assets and liabilities

\$ '000	Notes	2020 Current	2020 Non-current
Contract liabilities			
Grants and contributions received in advance:			
Unexpended capital grants (to construct Council controlled assets)	(i)	55	—
Unexpended operating grants (received prior to performance obligation being satisfied)	(ii)	3,512	31
Unexpended capital contributions (to construct Council controlled assets)	(i)	—	10
Unexpended operating contributions (received prior to performance obligation being satisfied)	(ii)	594	—
Total grants received in advance		4,161	41
User fees and charges received in advance:			
Other		810	222
Total user fees and charges received in advance		810	222
Total contract liabilities		4,971	263

Notes

(i) Council has received funding to construct assets including sporting facilities, bridges, library and other infrastructure. The funds received are under an enforceable contract which require Council to construct an identified asset which will be under Council's control on completion. The revenue is recognised as Council constructs the asset and the contract liability reflects the funding received which cannot yet be recognised as revenue. The revenue is expected to be recognised in the next 12 months.

(ii) The contract liability relates to grants received prior to the revenue recognition criteria in AASB 15 being satisfied since the performance obligations are ongoing.

\$ '000	2020
---------	------

(ii) Revenue recognised (during the financial year) from opening contract liability balances

Grants and contributions received in advance:	
Capital grants (to construct Council controlled assets)	—
Operating grants (received prior to performance obligation being satisfied)	—
Capital contributions (to construct Council controlled assets)	—
Operating contributions (received prior to performance obligation being satisfied)	—
User Fees and Charges received in advance:	
Other	—
Total Revenue recognised during the financial year that was included in the contract liability balance at the beginning of the period	—

Significant changes in contract assets and liabilities

The contract liabilities have arisen on adoption of AASB 15 and AASB 1058. Previously income received in advance was recognised for reciprocal contracts. The increase in a contract liability is primarily due to grants in the scope of AASB 15 and capital grants received by Council to acquire or construct assets which will be under Council's control. Previously, revenue was recognised on receipt of the funds.

Accounting policy for contract assets and liabilities

Where the amounts billed to customers are based on the achievement of various milestones established in the contract, the amounts recognised as revenue in a given period do not necessarily coincide with the amounts billed to or certified by the customer.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 12. Contract assets and liabilities (continued)

When a performance obligation is satisfied by transferring a promised good or service to the customer before the customer pays consideration or before the payment is due, Council presents the work in progress as a contract asset, unless the rights to that amount of consideration are unconditional, in which case Council recognises a receivable.

When an amount of consideration is received from a customer / fund provider prior to Council transferring a good or service to the customer, Council presents the funds which exceed revenue recognised as a contract liability.

Note 13. Leases

The Council has applied AASB 16 using the modified retrospective (cumulative catch-up) method and therefore the comparative information has not been restated and continues to be reported under AASB 117 and related Interpretations.

(i) Council as a lessee

Council has leases over a range of assets including land and buildings, vehicles, machinery and IT equipment. Information relating to the leases in place and associated balances and transactions is provided below.

Buildings

Council leases land and buildings for their corporate offices and other buildings; the leases are generally between 2 and 7 years and some of them include a renewal option to allow Council to renew for up to twice the noncancellable lease term at their discretion.

The building leases contains an annual pricing mechanism based on either fixed increases or CPI movements at each anniversary of the lease inception.

Vehicles

Council leases vehicles and equipment with lease terms varying from 2 to 3 years; the lease payments are fixed during the lease term and there is generally no renewal option.

Office and IT equipment

Leases for office and IT equipment are generally for low value assets, except for significant items such as photocopiers. The leases are for between 3 and 4 years with no renewal option, the payments are fixed, however some of the leases include variable payments based on usage.

Extension options

Council includes options in the building leases to provide flexibility and certainty to Council operations and reduce costs of moving premises; and the extension options are at Council's discretion.

At commencement date and each subsequent reporting date, Council assesses where it is reasonably certain that the extension options will be exercised.

There are no potential future lease payments which are not included in lease liabilities as Council has assessed that the exercise of the option is not reasonably certain.

\$ '000	Land and Buildings	Vehicles	Office and IT Equipment	Total
Opening balance at 30 June 2019	–	–	–	–
Adoption of AASB 16 at 1 July 2019 – first time lease recognition	7,032	973	165	8,170
Additions to right-of-use assets	21	1,290	–	1,311
Depreciation charge	(1,223)	(977)	(41)	(2,241)
Impairment of right-of-use assets	–	–	–	–
Balance at 30 June 2020	5,829	1,287	124	7,240

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 13. Leases (continued)

\$ '000	2020 Current	2020 Non-current
(b) Lease liabilities		
Lease liabilities	1,943	5,278
TOTAL LEASE LIABILITIES	1,943	5,278

(i) The maturity analysis

The maturity analysis of lease liabilities based on contractual undiscounted cash flows is shown in the table below:

\$ '000	< 1 year	1 – 5 years	> 5 years	Total	Total per Statement of Financial Position
Cash flows	2,129	4,924	695	7,748	7,221
\$ '000					2020

(c) Income Statement

The amounts recognised in the Income Statement relating to leases where Council is a lessee are shown below:

Interest on lease liabilities	220
Variable lease payments based on usage not included in the measurement of lease liabilities	418
Depreciation of right of use assets	2,241
Expenses relating to short-term leases	351
Expenses relating to low-value leases	402
	3,632

(d) Statement of Cash Flows

Total cash outflow for leases	2,956
	2,956

Accounting policy

Accounting policies under AASB 16 – applicable from 1 July 2019

At inception of a contract, Council assesses whether a lease exists – i.e. does the contract convey the right to control the use of an identified asset for a period of time in exchange for consideration?

Council has elected not to separate non-lease components from lease components for any class of asset and has accounted for payments as a single component.

At the lease commencement, Council recognises a right-of-use asset and associated lease liability for the lease term. The lease term includes extension periods where Council believes it is reasonably certain that the option will be exercised.

The right-of-use asset is measured using the cost model where cost on initial recognition comprises: the lease liability, initial direct costs, prepaid lease payments, estimated cost of removal and restoration, less any lease incentives. The right-of-use

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 13. Leases (continued)

is depreciated over the lease term on a straight-line basis and assessed for impairment in accordance with the impairment of asset accounting policy.

The lease liability is initially recognised at the present value of the remaining lease payments at the commencement of the lease. The discount rate is the rate implicit in the lease, however where this cannot be readily determined then the Council's incremental borrowing rate for a similar term with similar security is used.

Subsequent to initial recognition, the lease liability is measured at amortised cost using the effective interest rate method. The lease liability is re-measured when there is a lease modification, or change in estimate of the lease term or index upon which the lease payments are based (e.g. CPI).

Where the lease liability is re-measured, the right-of-use asset is adjusted to reflect the re-measurement.

Exceptions to lease accounting

Council has applied the exceptions to lease accounting for both short-term leases (i.e. leases with a term of less than or equal to 12 months) and leases of low-value assets. Council recognises the payments associated with these leases as an expense on a straight-line basis over the lease term.

Leases at significantly below market value / concessionary leases

Council has elected to measure the right of use asset arising from the concessionary leases at cost which is based on the associated lease liability at initial recognition.

Accounting policy under AASB 117 and associated Accounting Interpretations (2019 only)

Refer to Note 5c and Note 16.

(ii) Council as a lessor

(e) Operating leases

The amounts recognised in the Income Statement relating to operating leases where Council is a lessor are shown below:

\$ '000	2020
(i) Operating lease income	
Rental properties	
Lease income (excluding variable lease payments not dependent on an index or rate)	3,243
Other lease income	
Leaseback fees - council vehicles	932
Total income relating to operating leases	4,175

(iv) Maturity analysis of contractual lease income

Maturity analysis of future lease income receivable showing the undiscounted lease payments to be received after reporting date for operating leases:

< 1 year	2,610
1-2 years	2,432
2-3 years	2,266
Total undiscounted contractual lease income receivable	7,308

Accounting policy

When Council is a lessor, the lease is classified as either an operating or finance lease at inception date, based on whether substantially all of the risks and rewards incidental to ownership of the asset have been transferred to the lessee. If the risks and rewards have been transferred then the lease is classified as a finance lease, otherwise it is an operating lease.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 13. Leases (continued)

When Council has a sub-lease over an asset and is the intermediate lessor then the head lease and sub-lease are accounted for separately. The classification of the sub-lease is based on the right-of-use asset which arises from the head lease rather than the useful life of the underlying asset.

If the lease contains lease and non-lease components then the non-lease components are accounted for in accordance with AASB 15 *Revenue from Contracts with Customers*.

The lease income is recognised on a straight-line basis over the lease term.

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Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 14. Payables and borrowings

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
Payables				
Goods and services – operating expenditure	13,769	–	11,746	–
Accrued expenses:				
– Borrowings	227	–	227	–
– Other expenditure accruals	5,799	–	3,159	–
Advances	25	–	30	–
Security bonds, deposits and retentions	1,102	9,285	1,979	7,487
Prepaid rates	1,253	–	1,062	–
Total payables	22,175	9,285	18,203	7,487
Income received in advance				
Payments received in advance	–	–	597	–
Total income received in advance	–	–	597	–
Borrowings				
Loans – secured ⁽¹⁾	6,190	32,087	7,421	38,277
Total borrowings	6,190	32,087	7,421	38,277
TOTAL PAYABLES AND BORROWINGS	28,365	41,372	26,221	45,764

⁽¹⁾ Loans are secured over the general rating income of Council.

Disclosures on liability interest rate risk exposures, fair value disclosures and security can be found in Note 21.

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
(a) Payables and borrowings relating to restricted assets				
Externally restricted assets				
LIRS borrowings	2,395	8,531	3,773	10,926
Payables and borrowings relating to externally restricted assets	2,395	8,531	3,773	10,926
Total payables and borrowings relating to restricted assets	2,395	8,531	3,773	10,926
Total payables and borrowings relating to unrestricted assets	25,970	32,841	22,448	34,838
TOTAL PAYABLES AND BORROWINGS	28,365	41,372	26,221	45,764

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 14. Payables and borrowings (continued)

\$ '000	2020	2019
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(b) Current payables and borrowings not anticipated to be settled within the next twelve months

The following liabilities, even though classified as current, are not expected to be settled in the next 12 months.

Payables – security bonds, deposits and retentions	276	495
Total payables and borrowings	276	495

(c) Changes in liabilities arising from financing activities

	as at 30/06/19		Non-cash changes				as at 30/06/20
\$ '000	Opening Balance	Cash flows	Acquisition	Fair value changes	Acquisition due to change in accounting policy	Other non-cash movement	Closing balance
Loans – secured	45,698	(7,421)	–	–	–	–	38,277
Lease liabilities	–	7,221	–	–	–	–	7,221
TOTAL	45,698	(200)	–	–	–	–	45,498

	as at 30/06/18		Non-cash changes				as at 30/06/19
\$ '000	Opening Balance	Cash flows	Acquisition	Fair value changes	Other non-cash movement		Closing balance
Loans – secured	32,707	12,775	–	–	216		45,698
TOTAL	32,707	12,775	–	–	216		45,698

\$ '000	2020	2019
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(d) Financing arrangements

(i) Unrestricted access was available at balance date to the following lines of credit:

Bank overdraft facilities	500	500
Credit cards/purchase cards	6,550	6,550
Standby credit facilities	3,500	3,500
Bank Guarantees	5,000	3,500
Total financing arrangements	15,550	14,050

Drawn facilities as at balance date:

– Credit cards/purchase cards	6	144
– Bank Guarantees	3,534	3,341
Total drawn financing arrangements	3,540	3,485

Undrawn facilities as at balance date:

– Bank overdraft facilities	500	500
– Credit cards/purchase cards	6,544	6,406
– Standby credit facilities	3,500	3,500
– Bank Guarantees	1,466	159
Total undrawn financing arrangements	12,010	10,565

Breaches and defaults

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 14. Payables and borrowings (continued)

During the current and prior year, there were no defaults or breaches on any of the loan terms and conditions, including repayments.

Security over loans

In accordance with Section 229 of the Local Government (General) Regulation 2005, (NSW), all loans are secured as a charge of Council's general income.

Bank overdrafts

During the current and prior year, Council did not use its bank overdraft facility.

Accounting policy for payables and borrowings

Council measures all financial liabilities initially at fair value less transaction costs, subsequently financial liabilities are measured at amortised cost using the effective interest rate method.

The financial liabilities of the Council comprises trade payables, bank and other loans and finance lease liabilities.

Payables

These amounts represent liabilities for goods and services provided to the council prior to the end of financial year that are unpaid. The amounts are unsecured and are usually paid within 30 days of recognition.

Borrowings

Borrowings are initially recognised at fair value, net of transaction costs incurred. Borrowings are subsequently measured at amortised cost. Any difference between the proceeds (net of transaction costs) and the redemption amount is recognised in the Income Statement over the period of the borrowings using the effective-interest method. Fees paid on the establishment of loan facilities are recognised as transaction costs of the loan to the extent that it is probable that some or all of the facility will be drawn down. In this case, the fee is deferred until the drawdown occurs. To the extent that there is no evidence that it is probable that some or all of the facility will be drawn down, the fee is capitalised as a prepayment for liquidity services and amortised over the period of the facility to which it relates.

Borrowings are removed from the Statement of Financial Position when the obligation specified in the contract is discharged, cancelled or expired. The difference between the carrying amount of a financial liability that has been extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognised in other income or finance cost.

Borrowings are classified as current liabilities unless Council has an unconditional right to defer settlement of the liability for at least 12 months after the reporting date.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 15. Provisions

\$ '000	2020 Current	2020 Non-current	2019 Current	2019 Non-current
Provisions				
Employee benefits				
Annual leave	7,838	–	6,679	–
Sick leave	202	–	196	–
Long service leave	11,684	879	11,520	399
Other leave	1,365	–	1,343	–
Sub-total – aggregate employee benefits	21,089	879	19,738	399
Asset remediation/restoration:				
Site Contamination	3,008	–	4,925	–
Sub-total – asset remediation/restoration	3,008	–	4,925	–
Other provisions				
Self insurance – workers compensation	760	2,230	620	1,800
Other	771	277	2,453	–
Sub-total – other provisions	1,531	2,507	3,073	1,800
TOTAL PROVISIONS	25,628	3,386	27,736	2,199

\$ '000	2020	2019
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(a) Current provisions not anticipated to be settled within the next twelve months

The following provisions, even though classified as current, are not expected to be settled in the next 12 months.

Provisions – employees benefits	15,817	14,653
	<u>15,817</u>	<u>14,653</u>

(b) Description of and movements in non-employee benefit provisions

\$ '000	Other provisions			Total
	Self insurance	Asset remediation	Other	
2020				
At beginning of year	2,420	4,925	2,453	9,798
Additional provisions	570	—	543	1,113
Amounts used (payments)	—	(1,917)	(1,948)	(3,865)
Total other provisions at end of year	2,990	3,008	1,048	7,046
2019				
At beginning of year	1,450	2,500	1,902	5,852
Additional provisions	970	4,000	1,193	6,163
Amounts used (payments)	—	(1,575)	(642)	(2,217)
Total other provisions at end of year	2,420	4,925	2,453	9,798

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 15. Provisions (continued)

Nature and purpose of non-employee benefit provisions

Hazardous Waste Remediation/Site Contamination

Various sites within the Liverpool LGA were identified as contaminated with hazardous waste and requires appropriate Environment Protection and Authority (EP&A) approved remediation procedures. Provision is made for estimated costs to carry out identified works.

Self-insurance: Workers Compensation

Council is a licenced self-insurer for the purposes of workers compensation and as such is required to demonstrate to the State Insurance Regulatory Authority (SIRA) its financial viability to meet its outstanding claims liability. Provision for self-insurance is based on annual actuarial valuation. Council engaged David G Hart Consulting Pty Ltd to conduct valuation of its outstanding claims liability as at 30 June 2020. The estimated liability is projected based on Council's current and past claims in accordance with SIRA estimation guidelines. Following SIRA's assessment of the actuarial report, Council is also required to provide a bank guarantee as security against its outstanding claims liability – refer Note 20 (1).

Other

Council has recognised estimated costs of other known obligations at the end of reporting period.

Accounting policy for provisions

Provisions are recognised when Council has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources will be required to settle the obligation, and the amount has been reliably estimated.

Where there are a number of similar obligations, the likelihood that an outflow will be required in settlement is determined by considering the class of obligations as a whole. A provision is recognised even if the likelihood of an outflow with respect to any one item included in the same class of obligations may be small.

Provisions are measured at the present value of management's best estimate of the expenditure required to settle the present obligation at the reporting date. The discount rate used to determine the present value reflects current market assessments of the time value of money and the risks specific to the liability. The increase in the provision due to the passage of time is recognised as interest expense.

Employee benefits

Short-term obligations

Liabilities for wages and salaries (including non-monetary benefits, annual leave and accumulating sick leave expected to be wholly settled within 12 months after the end of the period in which the employees render the related service) are recognised in respect of employees' services up to the end of the reporting period and are measured at the amounts expected to be paid when the liabilities are settled. The liability for annual leave and accumulating sick leave is recognised in the provision for employee benefits. All other short-term employee benefit obligations are presented as payables.

Other long-term employee benefit obligations

The liability for long-service leave and annual leave that is not expected to be wholly settled within 12 months after the end of the period in which the employees render the related service is recognised in the provision for employee benefits and measured as the present value of expected future payments to be made in respect of services provided by employees up to the end of the reporting period using the projected unit credit method. Consideration is given to expected future wage and salary levels, experience of employee departures, and periods of service. Expected future payments are discounted using market yields at the end of the reporting period on national government bonds with terms to maturity and currency that match, as closely as possible, the estimated future cash outflows.

The obligations are presented as current liabilities in the Statement of Financial Position if the council does not have an unconditional right to defer settlement for at least 12 months after the reporting date, regardless of when the actual settlement is expected to occur.

On-costs

The employee benefit provisions include the aggregate on-cost liabilities that will arise when payment of current employee benefits is made in future periods.

These amounts include superannuation, payroll tax and workers compensation expenses which will be payable upon the future payment of certain leave liabilities which employees are entitled to at the reporting period.

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors

(a) Nature and purpose of reserves

Infrastructure, property, plant and equipment revaluation reserve

The infrastructure, property, plant and equipment revaluation reserve is used to record increments / decrements of non-current asset values due to their revaluation.

(b) Changes in accounting policies due to adoption of new accounting standards

During the year ended 30 June 2020, the Council has adopted AASB 15 *Revenue from Contracts with Customers*, AASB 1058 *Income of Not-for-profit Entities* and AASB 16 *Leases* using the modified retrospective (cumulative catch-up) method and therefore the comparative information for the year ended 30 June 2019 has not been restated and continues to comply with AASB 111 *Construction Contracts*, AASB 117 *Leases*, AASB 118 *Revenue*, AASB 1004 *Contributions* and associated Accounting Interpretations.

All adjustments on adoption of AASB 15 and AASB 1058 have been taken to retained earnings at 1 July 2019.

The impacts of adopting these standards and associated transition disclosures are provided below.

(ii) AASB 15 and AASB 1058

The following approach has been applied on transition to AASB 15 and AASB 1058

- Council has not adopted the completed contract expedient and therefore has not excluded revenue which was fully recognised in previous years in accordance with the former accounting standards and pronouncements
- Council has retrospectively restated contracts for modifications that occurred before 1 July 2019 unless such contract modification were minor.

Costs incurred in fulfilling customer contracts

Prior to adopting AASB 15 Council would recognise direct costs associated with fulfilling customer contracts as expenses when incurred, as they did not qualify for recognition as assets under any other accounting standards. Under AASB 15, as these costs relate directly to the contracts, generate resources used in satisfying the contracts, and are expected to be recovered, they are capitalised as 'costs to fulfil a contract' assets and released through profit and loss on the same basis as the revenue is recognised.

Revenue recognition from contract modifications

In relation to contract modifications, AASB 15 requires customer approval, which is a more prudent criteria than the probability requirement in the previous standards and has resulted in deferral of revenue where unapproved works have been performed.

Transfer of control to a customer – over time or at a point in time

AASB 15 has specific criteria regarding whether control is transferred over time or at a point in time. The entity has reviewed its contracts and concluded that the criteria for recognition over time is not met in some circumstances. In such cases, revenue and related production costs will be recognised at the delivery of each separate performance obligation instead of over the contract using a single margin.

Principal v agent

Prior to adoption of AASB 15, the Council had assessed that they were a principal in transactions where another party was involved in providing the goods or services including pass-through grants.

Under AASB 15, the indicators of a principal have changed and there are now a number of performance obligations within grant agreements where the Council is acting as an agent since the only obligation is to transfer the funds to a third party. The result is that Council can only recognise the "commission" to which they are entitled rather than the gross revenue and expenses. There is no change to reported profit.

Licences

Council has reviewed the licences it grants and considers that all licences are either short-term or low value and elects to recognise all revenue from licences up-front rather than spreading them over the life of the licence.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors (continued)**Prepaid rates**

Under AASB 1004, rates were recorded as revenue at the earliest of receipt of the funds from the ratepayer and the beginning of the rating period. Under AASB 1058, prepaid rates are recognised as a financial liability until the beginning of the rating period.

Grants – operating

Under AASB 1004, most grant income was recognised as revenue on receipt. Under AASB 15, where an agreement is enforceable and contains sufficiently specific performance obligations, the revenue is either recognised over time as the work is performed, or recognised at the point in time that the control of the services passes to the customer.

Grants – capital

Under AASB 1004, most grant monies were recorded as revenue on receipt. Under AASB 1058, where Council has received assets (including cash) to acquire or construct a non-financial asset, the asset is to be controlled by Council and the contract is enforceable, then the asset is recognised as a contract liability on receipt and recorded as revenue as the performance obligation to acquire or construct the asset is completed.

Changes in presentation

In addition to the above changes in accounting policies, the Council has also amended the presentation of certain items to align them with the requirements of AASB 15 and AASB 1058:

	Balance at 1 July 2019
\$ '000	
Opening contract balances at 1 July 2019	
Contract assets	
– Under AASB 15	–
– Under AASB 1058	–
Total Contract assets	–
Contract liabilities	
– Under AASB 15	18
– Under AASB 1058	–
Total Contract liabilities	18

Comparison of financial statement line items under AASB 15 compared to previous standards for the current year

The following tables show the impact of adopting AASB 15 and AASB 1058 on the Council's financial statements for the year ended 30 June 2020.

Statement of Financial Position

	Carrying amount per Statement of Financial Position under AASB 15 and AASB 1058	Reclassific- ation	Remeasur- ement	Carrying amount under previous revenue standards	Notes
\$ '000					
Current assets					
Cash and cash equivalents	114,162	–	–	114,162	
Investments	28,663	–	–	28,663	
Receivables	17,855	–	–	17,855	
Inventories	232	–	–	232	

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors (continued)

\$ '000	Carrying amount per Statement of Financial Position under AASB 15 and AASB 1058	Reclassification	Remeasurement	Carrying amount under previous revenue standards	Notes
Other	1,288	—	—	1,288	
Total current assets	162,200	—	—	162,200	
Current liabilities					
Payables	22,175	—	—	22,175	
Income received in advance	—	—	—	—	(i)
Contract liabilities	4,971	—	(4,971)	—	(i)
Lease liabilities	1,943	—	(1,943)	—	
Borrowings	6,190	—	—	6,190	
Provisions	25,628	—	—	25,628	
Total current liabilities	60,907	—	(6,914)	53,993	
Non-current assets					
Investments	157,805	—	—	157,805	
Receivables	80	—	—	80	
Infrastructure, property, plant and equipment	2,790,660	—	—	2,790,660	
Intangible assets	1,457	—	—	1,457	
Right of use assets	7,240	—	—	7,240	
Investments accounted for using equity method	7,112	—	—	7,112	
Total non-current assets	2,964,354	—	—	2,964,354	
Non-current liabilities					
Payables	9,285	—	—	9,285	
Contract liabilities	263	—	(263)	—	
Lease liabilities	5,278	—	(5,278)	—	
Borrowings	32,087	—	—	32,087	
Provisions	3,386	—	(277)	3,109	
Total Non-current liabilities	50,299	—	(5,818)	44,481	
Net assets	3,015,348	—	12,732	3,028,080	
Equity					
Accumulated surplus	1,917,503	(118)	198	1,917,583	
Revaluation reserves	1,097,845	—	—	1,097,845	
Council equity interest	3,015,348	(118)	198	3,015,428	
Total equity	3,015,348	(118)	198	3,015,428	

(i) Transfer of part of the contract liability to income received in advance and elimination of contract liability which arises under AASB 15 for funds received to construct an asset to be controlled by Council and other funds under AASB 15 which have been received prior to the satisfaction of performance obligations.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors (continued)**Income Statement**

\$ '000	Income Statement and comprehensive income under AASB 15 and AASB 1058	Reclassification	Remeasurement	Income Statement and comprehensive income under previous revenue standards	Notes
Income from continuing operations					
Rates and annual charges	137,631	—	—	137,631	
User charges and fees	14,988	—	—	14,988	
Other revenues	11,394	—	—	11,394	
Grants and contributions provided for operating purposes	19,247	(135)	—	19,112	
Grants and contributions provided for capital purposes	98,847	—	—	98,847	
Interest and investment income	6,320	—	—	6,320	
Net gains from the disposal of assets	909	—	—	909	
Rental income	4,175	118	—	4,293	
Net share of interests in joint ventures and associates using the equity method	437	—	—	437	
Total Income from continuing operations	293,948	(17)	—	293,931	
Expenses from continuing operations					
Employee benefits and on-costs	76,908	—	—	76,908	
Borrowing costs	1,920	—	—	1,920	
Materials and contracts	61,152	—	—	61,152	
Depreciation and amortisation	41,166	—	—	41,166	
Other expenses	16,964	—	—	16,964	
Total Expenses from continuing operations	198,110	—	—	198,110	
Total Operating result from continuing operations	95,838	(17)	—	95,821	
Net operating result for the year	95,838	(17)	—	95,821	
Total comprehensive income	104,776	—	—	104,776	

(i) Difference in revenue between recognition on receipt under the old standards and as / when performance obligations are met under new standards.

(ii) Difference in costs incurred to fulfil a contract and the amortisation during the year.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors (continued)

Adjustments to the current year figures for the year ended 30 June 2020

Statement of Financial Position

\$ '000	Original Balance 1 July, 2019	Impact Increase/ (decrease)	Restated Balance 1 July, 2019
Contract assets	—	—	—
Total assets	—	—	—
Contract liabilities	—	(18)	(18)
Total liabilities	—	(18)	(18)
Accumulated surplus	—	18	18
Total equity	—	18	18

(iii) AASB 16 Leases

Council as a lessee

Under AASB 117, Council assessed whether leases were operating or finance leases, based on its assessment of whether the significant risks and rewards of ownership had been transferred to Council or remained with the lessor. Under AASB 16, there is no differentiation between finance and operating leases for the lessee and therefore all leases which meet the definition of a lease are recognised on the statement of financial position (except for short-term leases and leases of low-value assets).

Council has used the exception to lease accounting for short-term leases and leases of low-value assets, and the lease expense relating to these leases is recognised in the Income Statement on a straight-line basis.

Practical expedients used on transition

AASB 16 includes a number of practical expedients which can be used on transition. Council has used the following expedients:

- Contracts which had previously been assessed as not containing leases under AASB 117 were not re-assessed on transition to AASB 16.
- Lease liabilities have been discounted using the Council's incremental borrowing rate at 1 July 2019.
- Right-of-use assets at 1 July 2019 have been measured at an amount equal to the lease liability adjusted by the any prepaid or accrued lease payments.
- A single discount rate was applied to all leases with similar characteristics.
- The right-of-use asset was adjusted by the existing onerous lease provision (where relevant) at 30 June 2019 rather than perform impairment testing of the right-of-use asset.
- Excluded leases with an expiry date prior to 30 June 2020 from the Statement of Financial Position, and lease expenses for these leases have been recorded on a straight-line basis over the remaining term.
- Used hindsight when determining the lease term if the contract contains options to extend or terminate the lease.

Financial statement impact of adoption of AASB 16

Council has recognised right-of-use assets and lease liabilities of \$ 8.17 m at 1 July 2019 for leases previously classified as operating leases, or leases that are significantly below market value which were previously off balance sheet.

The weighted average lessee's incremental borrowing rate applied to lease liabilities at 1 July 2019 was 4%.

\$ '000	Balance at 1 July 2019
Operating lease commitments at 30 June 2019 per Council financial statements	10,461

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 16. Accumulated surplus, revaluation reserves, changes in accounting policies, changes in accounting estimates and errors (continued)

\$ '000	Balance at 1 July 2019
Reconciliation of lease liabilities recognised on adoption of AASB 16 Leases	
Operating lease commitments discounted using the incremental borrowing rate at 1 July 2019	10,166
Less:	
Leases for low-value assets included in commitments note	(1,318)
Other	(972)
Lease liabilities recognised at 1 July 2019	7,876

Council as a lessor

For the arrangements where Council is a lessor, there are no significant accounting policy changes on adoption of AASB 16 except for sub-leases, which have now been classified in relation to the right-of-use asset under the head lease rather than the underlying asset.

Adjustments to the current year figures for the year ended 30 June 2020**Statement of Financial Position**

\$ '000	Original Balance 1 July, 2019	Impact Increase/ (decrease)	Restated Balance 1 July, 2019
Rights-of-use assets	–	8,170	8,170
Total assets	–	8,170	8,170
Payables – accrued interest on leases (30/6/2019)	–	(17)	(17)
Leases	–	8,187	8,187
Total liabilities	–	8,170	8,170
Accumulated surplus	–	63	63
Total equity	–	63	–

(c) Changes in accounting estimates**Nature and effect of changes in accounting estimates on current year**

Council made no changes in accounting estimates during the year.

Note 17. Statement of cash flow information

\$ '000	Notes	2020	2019
(a) Reconciliation of cash and cash equivalents			
Total cash and cash equivalents per Statement of Financial Position	7(a)	114,162	85,346
Balance as per the Statement of Cash Flows		114,162	85,346

(b) Reconciliation of net operating result to cash provided from operating activities

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 17. Statement of cash flow information (continued)

\$ '000	2020	2019
Net operating result from Income Statement	95,838	96,475
Adjust for non-cash items:		
Depreciation and amortisation	41,166	39,245
Net losses/(gains) on disposal of assets	(909)	10,479
Non-cash capital grants and contributions	(45,899)	(34,604)
Adoption of AASB 15/1058	18	–
Losses/(gains) recognised on fair value re-measurements through the P&L:		
– Investments classified as 'at fair value' or 'held for trading'	(325)	(865)
– Revaluation decrements / impairments of IPP&E direct to P&L	–	2,048
– Other (New Assets Recognised in Operational Land)	–	(1,072)
Amortisation of premiums, discounts and prior period fair valuations		
– Interest exp. on interest-free loans received by Council (previously fair valued)	116	215
Share of net (profits)/losses of associates/joint ventures using the equity method	(437)	(708)
+/- Movement in operating assets and liabilities and other cash items:		
Decrease/(increase) in receivables	3,184	(3,644)
Increase/(decrease) in provision for impairment of receivables	205	65
Decrease/(increase) in inventories	(110)	15
Decrease/(increase) in other current assets	82	334
Increase/(decrease) in payables	2,023	(1,464)
Increase/(decrease) in accrued interest payable	–	123
Increase/(decrease) in other accrued expenses payable	2,640	(2,855)
Increase/(decrease) in other liabilities	510	(411)
Increase/(decrease) in contract liabilities	5,234	–
Increase/(decrease) in provision for employee benefits	1,831	2,031
Increase/(decrease) in other provisions	(2,752)	3,946
Net cash provided from/(used in) operating activities from the Statement of Cash Flows	102,415	109,353

(c) Non-cash investing and financing activities

Dedications	45,899	32,722
Section 7.11 Contribution in Kind	–	1,882
Total non-cash investing and financing activities	45,899	34,604

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 18. Interests in other entities

\$ '000	Council's share of net income		Council's share of net assets	
	2020	2019	2020	2019
Joint ventures	437	708	7,112	8,142
Total	437	708	7,112	8,142

(a) Controlled entities (subsidiaries) – being entities and operations controlled by Council

Council has no interest in any controlled entities.

(b) Joint arrangements

Interests in joint ventures are accounted for using the equity method in accordance with AASB128 Investments in Associates and Joint Ventures. Under this method, the investment is initially recognised as a cost and the carrying amount is increased or decreased to recognise the Council's share of the profit or loss and other comprehensive income of the joint venture after the date of acquisition.

If the Council's share of losses of a joint venture equals or exceeds its interest in the joint venture, the Council discontinues recognising its share of further losses.

The Council's share in the joint venture's gains or losses arising from transactions between itself and its joint venture are eliminated.

Adjustments are made to the joint venture's accounting policies where they are different from those of the Council for the purpose of the consolidated financial statements.

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 18. Interests in other entities (continued)

(a) Net carrying amounts – Council's share

\$ '000	Nature of relationship	Measurement method	2020	2019
Civic Risk Mutual	Joint Venture	Equity Accounting	670	629
Civic Risk West	Joint Venture	Equity Accounting	6,441	7,513
Total carrying amounts – material joint ventures			7,111	8,142

(b) Details

	Principal activity	Place of business
Civic Risk	Self Insurance	601 High Street, Penrith NSW 2750
Civic Risk West	Self Insurance	601 High Street, Penrith NSW 2750

(c) Relevant interests and fair values

\$ '000	Quoted fair value		Interest in outputs		Interest in ownership		Proportion of voting power	
	2020	2019	2020	2019	2020	2019	2020	2019
Civic Risk	670	629	9.4%	9.1%	9.4%	9.1%	5.3%	5.9%
Civic Risk West	6,441	7,513	15.3%	15.9%	15.3%	15.9%	7.7%	9.1%

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 18. Interests in other entities (continued)

(d) Summarised financial information for joint ventures

\$ '000	Civic Risk 2020	2019	Civic Risk West 2020	2019
Statement of financial position				
Current assets				
Cash and cash equivalents	6,177	1,813	14,665	2,961
Other current assets	5,924	7,215	15,584	27,371
Non-current assets	5,102	5,368	33,048	36,522
Current liabilities				
Current financial liabilities (excluding trade and other payables and provisions)	(5,923)	(4,827)	(8,617)	(740)
Other current liabilities	(490)	(346)	(4,561)	(6,657)
Non-current liabilities				
Non-current financial liabilities (excluding trade and other payables and provisions)	(3,635)	(2,279)	(7,999)	(12,116)
Net assets	27,251	21,848	84,474	86,367
Reconciliation of the carrying amount				
Opening net assets (1 July)	6,944	8,468	47,340	41,761
Other adjustments to equity	—	—	1,467	—
Profit/(loss) for the period	211	(1,524)	3,181	5,579
Closing net assets	7,155	6,944	51,988	47,340
Council's share of net assets (%)	9.4%	9.1%	15.3%	15.9%
Council's share of net assets (\$)	2,562	629	12,925	7,513
Statement of comprehensive income				
Income	14,679	11,320	7,969	9,918
Interest income	205	448	1,321	3,623
Interest expense	—	—	(18)	(18)
Other expenses	(14,673)	(13,292)	(6,091)	(7,944)
Profit/(loss) from continuing operations	211	(1,524)	3,181	5,579
Profit/(loss) for the period	211	(1,524)	3,181	5,579
Total comprehensive income	211	(1,524)	3,181	5,579
Share of income – Council (%)	9.4%	9.1%	15.3%	15.9%
Profit/(loss) – Council (\$)	20	(139)	487	887
Total comprehensive income – Council (\$)	20	(139)	487	887
Dividends received by Council	1,467	—	—	—
Summarised Statement of cash flows				
Cash flows from operating activities	1,614	2,904	(1,887)	2,439
Cash flows from investing activities	2,750	(2,250)	12,681	(2,500)
Net increase (decrease) in cash and cash equivalents	4,364	654	10,794	(61)

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 19. Commitments

\$ '000	2020	2019
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(a) Capital commitments (exclusive of GST)

Capital expenditure committed for at the reporting date but not recognised in the financial statements as liabilities:

Property, plant and equipment

Liverpool Civic Place	194,129	195,500
Buildings	4,474	8,331
Car Parks	–	289
Drainage	771	1,013
Parks	23,940	511
Roads	9,030	5,177
Other – IT Equipment	2,999	1,968
Other – Land Improvement	222	–
Other – Office Furniture and Fixture	303	–
Other – Plant and Fleet	2,572	–
Total commitments	238,440	212,789

These expenditures are payable as follows:

Within the next year	44,511	22,789
Later than one year and not later than 5 years	193,929	190,000
Total payable	238,440	212,789

Sources for funding of capital commitments:

Unrestricted general funds	23,920	21,155
Sect 64 and 7.11 funds/reserves	8,232	2,842
Unexpended grants	18,919	1,499
Externally restricted reserves	1,371	236
Internally restricted reserves	4,498	5,557
Loan Borrowings	177,000	170,000
Developer Rights/DA Fees	4,500	11,500
Total sources of funding	238,440	212,789

(b) Non-cancellable operating lease commitments

a. Commitments under non-cancellable operating leases at the reporting date, but not recognised as liabilities are payable:

Within the next year	–	2,653
Later than one year and not later than 5 years	–	5,928
Later than 5 years	–	1,880
Total non-cancellable operating lease commitments	–	10,461

b. Non-cancellable operating leases include the following assets:

Refer to Note 13 for information relating to leases for 2020.

Office Rentals, Motor Vehicle Leases and Property Lease

Contingent Rentals may be payable depending on the condition of items or usage during the lease term.

Conditions relating to finance and operating leases:

– All finance agreements are secured only against the leased asset.

– No lease agreements impose any financial restrictions on Council regarding future debt etc.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 20. Contingencies

The following assets and liabilities do not qualify for recognition in the Statement of Financial Position, but their knowledge and disclosure is considered relevant to the users of Council's financial report.

LIABILITIES NOT RECOGNISED

1. Guarantees

• Civic Risk West and Civic Risk Mutual

Council is member of Civic Risk West and Civic Risk Mutual schemes providing insurance to Local Government.

Membership includes the potential to share in either the net assets or liabilities of the fund depending on its past performance. Council's share of the Net Assets and Liabilities reflects Council's contributions to the pool and the result of insurance claims within each of the Fund Years.

The future realisation and finalisation of claims incurred but not reported to 30 June this year may result in future liabilities or benefits as a result of past events that Council will be required to fund or share in respectively.

• Bank Guarantees

Workers Compensation Self Insurance

Council is a self-insurer for Workers Compensation and as a condition of its self-insurance license requires either a Term Deposit or Bank Guarantee to be held based on Actuarial Assessment.

Council Actuarial Assessment as at 30 June this year recommended that the current Bank Guarantee of \$2.31 million be increased to \$3.05 million. At the time of preparing the Annual Financial Statements the actuarial assessment and the recommended increase had not been reviewed and confirmed by State Insurance Regulatory Authority (SIRA).

Sydney Water Corporation

Council undertakes various roadworks in the Liverpool LGA which may, in some instances, require relocating Water mains belonging to Sydney Water Corporation. Prior to commencement of the work Council is required to lodge a bank guarantee or provide a cash bond to Sydney Water Corporation. As at 30 June 2020, Sydney Water Corporation held bank guarantees for a total amount of \$1.221 million issued in its favour by Council bank.

2. Other liabilities

(i) Third party claims

The Council is involved from time to time in various claims incidental to the ordinary course of business including claims for damages relating to its services.

1. Council has identified future claims resulting from its planning and compliance determinations. Council and its legal representatives are working with affected developers and land-owners to resolve disagreements and compensation claims. At the time of reporting a reliable estimate of potential liability is not available.
2. Council is continuing to identify sites within the local government area containing hazardous materials which require remediation works. Cost to Council to carry out these works is not known.
3. Council has been notified of Common Law Works Compensation Claim proceedings. Cost of compensation for economic loss due to on-going incapacity to work as a result of the injury at work is not known.
4. Council in collaboration with NSW State Government is participating in Moorebank Voluntary Acquisition Scheme which involves progressive acquisition of 175 properties within the floodway of the Georges River. To date Council has purchased 116 properties and 59 properties remain to be purchased to complete the scheme and is currently projected to take another 50-70 years. The cost of acquisition is shared by the Council (33%) and NSW State Government (67%). All the time of reporting a reliable cost exposure to Council is not available.

(ii) Potential land acquisitions due to planning restrictions imposed by Council

Council has classified a number of privately owned land parcels as Local Open Space or Bushland.

As a result, where notified in writing by the various owners, Council will be required to purchase these land parcels.

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 20. Contingencies (continued)

At reporting date, reliable estimates as to the value of any potential liability (& subsequent land asset) from such potential acquisitions has not been possible.

ASSETS NOT RECOGNISED

(i) Land under roads

As permitted under AASB 1051, Council has elected not to bring to account Land under Roads that it owned or controlled up to & including 30 June 2008.

(ii) Infringement notices/fines

Fines & Penalty Income, the result of Council issuing Infringement Notices is followed up and collected by the Infringement Processing Bureau.

Council's revenue Recognition policy for such income at year end is to accrue a percentage of outstanding notices based on history or actual fines.

(iii) American Express Corporate Card Reward Points

Council earns reward points on its American Express Corporate Card Program and is only available for redemption for business travel and accommodation purposes. The value of points redeemed during the year is recognised as notional income and expenditure. At the end of reporting period, Council had accrued balance of 10.20 million points with an estimated value of \$ 0.051 million which was not recognised as an asset.

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Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 21. Financial risk management

Risk management

Council's activities expose it to a variety of financial risks including (1) price risk, (2) credit risk, (3) liquidity risk and (4) interest rate risk.

The Council's overall risk management program focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the financial performance of the Council.

Council does not engage in transactions expressed in foreign currencies and is therefore not subject to foreign currency risk.

Financial risk management is carried out by Council's finance section under policies approved by the Council.

A comparison by category of the carrying amounts and fair values of Council's financial assets and financial liabilities recognised in the financial statements is presented below.

\$ '000	Carrying value 2020	Carrying value 2019	Fair value 2020	Fair value 2019
Financial assets				
Measured at amortised cost				
Cash and cash equivalents	114,162	85,346	114,162	85,346
Receivables	17,935	19,141	17,935	19,141
Investments				
– 'Financial assets at amortised cost'	25,000	55,000	25,000	55,000
Fair value through profit and loss				
Investments				
– 'Designated at fair value on initial recognition'	161,468	130,750	161,468	130,750
Total financial assets	318,565	290,237	318,565	290,237
Financial liabilities				
Payables	31,460	25,690	31,460	25,690
Loans/advances	38,277	45,698	38,277	45,698
Lease liabilities	7,221	–	7,221	–
Total financial liabilities	76,958	71,388	76,958	71,388

Fair value is determined as follows:

- **Cash and cash equivalents, receivables, payables** – are estimated to be the carrying value that approximates market value.
- **Borrowings and held-to-maturity investments** – are based upon estimated future cash flows discounted by the current mkt interest rates applicable to assets and liabilities with similar risk profiles, unless quoted market prices are available.
- Financial assets classified (i) 'at fair value through profit and loss' or (ii) 'available-for-sale' – are based upon quoted market prices (in active markets for identical investments) at the reporting date or independent valuation.

Council's objective is to maximise its return on cash and investments whilst maintaining an adequate level of liquidity and preserving capital.

Council's finance area manages the cash and Investments portfolio with the assistance of independent advisors.

Council has an investment policy which complies with the Local Government Act 1993 and Minister's investment order 625. This policy is regularly reviewed by Council and it's staff and an investment report is tabled before Council on a monthly basis setting out the portfolio breakup and its performance as required by Local Government regulations.

The risks associated with the instruments held are:

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 21. Financial risk management (continued)

- **Price risk** – the risk that the capital value of Investments may fluctuate due to changes in market prices, whether these changes are caused by factors specific to individual financial instruments or their issuers or are caused by factors affecting similar instruments traded in a market.
- **Interest rate risk** – the risk that movements in interest rates could affect returns and income.
- **Liquidity risk** – the risk that Council will not be able to pay its debts as and when they fall due
- **Credit risk** – the risk that the investment counterparty will not complete their obligations particular to a financial instrument, resulting in a financial loss to Council – be it of a capital or income nature.

Council manages these risks (amongst other measures) by diversifying its portfolio and only purchasing investments with high credit ratings or capital guarantees.

Council also seeks advice from independent advisers before placing any funds in cash equivalents and investments.

(a) Market risk – price risk and interest rate risk

The following represents a summary of the sensitivity of Council's Income Statement and accumulated surplus (for the reporting period) due to a change in either the price of a financial asset or the interest rates applicable.

It is assumed that the change in interest rates would have been constant throughout the reporting period.

\$ '000	Increase of values/rates		Decrease of values/rates	
	Profit	Equity	Profit	Equity
2020				
Possible impact of a 10% movement in market values	16,147	16,174	(16,147)	(16,147)
Possible impact of a 1% movement in interest rates	2,428	2,428	(2,428)	(2,428)
2019				
Possible impact of a 10% movement in market values	13,074	13,074	(13,074)	(13,074)
Possible impact of a 1% movement in interest rates	1,701	1,701	(1,701)	(1,701)

(b) Credit risk

Council's major receivables comprise (i) rates and annual charges and (ii) user charges and fees.

The major risk associated with these receivables is credit risk – the risk that debts due and payable to Council may not be repaid in full.

Council manages this risk by monitoring outstanding debt and employing stringent debt recovery procedures. It also encourages ratepayers to pay their rates by the due date through incentives.

There are no significant concentrations of credit risk other than Council has significant credit risk exposures in its local area given the nature of the business.

The level of outstanding receivables is reported to Council monthly and benchmarks are set and monitored for acceptable collection performance.

The maximum exposure to credit risk at the reporting date is the carrying amount of each class of receivable in the financial statements.

Council makes suitable provision for doubtful receivables as required and carries out credit checks on most non-rate debtors.

There are no material receivables that have been subjected to a re-negotiation of repayment terms.

Credit risk profile

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 21. Financial risk management (continued)

Receivables – rates and annual charges

Credit risk on rates and annual charges is minimised by the ability of Council to secure a charge over the land relating to the debts – that is, the land can be sold to recover the debt. Council is also able to charge interest on overdue rates and annual charges at higher than market rates which further encourages the payment of debt.

\$ '000	Not yet overdue	< 1 year overdue	1 - 2 years overdue	2 - 5 years overdue	> 5 years overdue	Total
2020						
Gross carrying amount	–	5,981	678	714	465	7,838
2019						
Gross carrying amount	–	4,978	538	573	424	6,513

Receivables - non-rates and annual charges

Council applies the simplified approach for non-rates and annual charges debtors to provide for expected credit losses prescribed by AASB 9, which permits the use of the lifetime expected loss provision. To measure the expected credit losses, non-rates and annual charges debtors have been grouped based on shared credit risk characteristics and the days past due.

The loss allowance provision is determined as follows. The expected credit losses incorporate forward-looking information.

\$ '000	Not yet overdue	0 - 30 days overdue	31 - 60 days overdue	61 - 90 days overdue	> 91 days overdue	Total
2020						
Gross carrying amount	6,368	2,249	39	298	1,412	10,366
Expected loss rate (%)	0.00%	0.00%	0.00%	0.00%	57.01%	7.77%
ECL provision	–	–	–	–	805	805
2019						
Gross carrying amount	11,420	2,360	201	74	762	14,817
Expected loss rate (%)	0.00%	0.00%	0.00%	0.00%	78.74%	4.05%
ECL provision	–	–	–	–	600	600

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 21. Financial risk management (continued)

(c) Liquidity risk

Payables, lease liabilities and borrowings are both subject to liquidity risk – the risk that insufficient funds may be on hand to meet payment obligations as and when they fall due.

Council manages this risk by monitoring its cash flow requirements and liquidity levels and maintaining an adequate cash buffer.

Payment terms can (in extenuating circumstances) also be extended and overdraft facilities utilised as required.

Borrowings are also subject to interest rate risk – the risk that movements in interest rates could adversely affect funding costs and debt servicing requirements. Council manages this risk through diversification of borrowing types, maturities and interest rate structures. The finance team regularly reviews interest rate movements to determine if it would be advantageous to refinance or renegotiate part or all of the loan portfolio.

The timing of cash flows presented in the table below to settle financial liabilities reflects the earliest contractual settlement dates. The timing of expected outflows is not expected to be materially different from contracted cashflows.

The amounts disclosed in the table are the undiscounted contracted cash flows for non-lease liabilities and therefore the balances in the table may not equal the balances in the statement of financial position due to the effect of discounting.

\$ '000	Weighted average interest rate	Subject to no maturity	≤ 1 Year	payable in: 1 - 5 Years	> 5 Years	Total cash outflows	Actual carrying values
2020							
Trade/other payables	4.30%	10,387	19,820	–	–	30,207	30,207
Loans and advances	4.30%	–	7,521	27,950	7,701	43,172	38,277
Lease liabilities	4.30%	–	–	–	–	–	–
Total financial liabilities		10,387	27,341	27,950	7,701	73,379	68,484
2019							
Trade/other payables	4.52%	9,466	15,162	–	–	24,628	24,628
Loans and advances	4.52%	–	9,006	27,143	16,029	52,178	45,698
Total financial liabilities		9,466	24,168	27,143	16,029	76,806	70,326

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 22. Material budget variations

Council's original financial budget for 19/20 was adopted by the Council on 26/06/2019 and is unaudited.

While the Income Statement included in this General Purpose Financial Statements must disclose the original budget adopted by Council, the Local Government Act 1993 requires Council to review its financial budget on a quarterly basis, so that it is able to manage the various variations between actuals versus budget that invariably occur throughout the year.

This note sets out the details of **material variations** between Council's original budget and its actual results for the year as per the Income Statement – even though such variations may have been adjusted for during each quarterly budget review.

Material variations represent those variances between the original budget figure and the actual result that amount to **10%** or more.

Variation Key: **F** = Favourable budget variation, **U** = Unfavourable budget variation.

\$ '000	2020 Budget	2020 Actual	2020 Variance	
REVENUES				
Rates and annual charges	136,453	137,631	1,178	1% F
User charges and fees	20,001	14,988	(5,013)	(25)% U
The variation is mainly due to decline in developer and other Council business activities following COVID 19.				
Other revenues	9,011	11,394	2,383	26% F
The variation is mainly due to receipt of ex-gratia payment from Moorebank Intermodal Company.				
Operating grants and contributions	16,885	19,247	2,362	14% F
The variation is mainly due to increased childcare grant funding to compensate for waiver of fees following COVID 19.				
Capital grants and contributions	102,938	98,847	(4,091)	(4)% U
Interest and investment revenue	7,748	6,320	(1,428)	(18)% U
The variation is mainly due to lower market interest yields on cash investments.				
Net gains from disposal of assets	8,753	909	(7,844)	(90)% U
The variation mainly comprised of the following:				
- \$4.3m loss on disposal of road infrastructure as part of the renewals process				
- \$1.9m delay in disposal of 24 Scott Street				
- \$0.9m loss on disposal of buildings & library books				
Rental income	4,432	4,175	(257)	(6)% U
Joint ventures and associates – net profits	600	437	(163)	(27)% U
The variation is due to re-adjustment of Councils share of equity post distribution of surplus contributions.				

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 22. Material budget variations

\$ '000	2020 Budget	2020 Actual	2020 Variance	
EXPENSES				
Employee benefits and on-costs	78,520	76,908	1,612	2% F
Borrowing costs	1,424	1,920	(496)	(35)% U
The variation is mainly due to recognition of interest on operating leases as requires under AASB 16.				
Materials and contracts	62,450	61,152	1,298	2% F
Depreciation and amortisation	40,672	41,166	(494)	(1)% U
Other expenses	19,245	16,964	2,281	12% F
The variation is mainly due to lower than budgeted expenditure on utilities, software and other miscellaneous costs.				
Net losses from disposal of assets	-	-	-	∞ F
Revaluation decrement / impairment of IPP&E	3,750	-	3,750	100% F
The variation comprised of the following: + \$3m loss on disposal of road infrastructure netted off against gain from disposal of assets; + \$0.8m budget savings from nil expenditure on revaluation of land bought for road purposes.				
STATEMENT OF CASH FLOWS				
Cash flows from operating activities	129,163	102,415	(26,748)	(21)% U
The variation is due to decrease in grants & contributions for capital purposes following COVID 19.				
Cash flows from investing activities	(190,001)	(63,865)	126,136	(66)% F
The variation comprised of the following: + \$66m hold on investments post COVID 19 to maintain liquidity; + \$60m lower than budget expenditure on IPPE.				
Cash flows from financing activities	(6,657)	(9,734)	(3,077)	46% U
The variation is due to reclassification of leasing expenditure following adoption of AASB 16.				

Liverpool City Council

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Notes to the Financial Statements for the year ended 30 June 2020

Note 23. Fair Value Measurement

The Council measures the following assets and liabilities at fair value on a recurring basis.

- Financial assets - Investments
- Infrastructure, property, plant and equipment

Fair value hierarchy

AASB 13 Fair Value Measurement requires all assets and liabilities measured at fair value to be assigned to a level in the fair value hierarchy as follows:

Level 1 - Unadjusted quoted prices in active markets for identical assets or liabilities that the entity can access at the measurement date.

Level 2 - Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.

Level 3 - Unobservable inputs for the asset or liability.

The table below shows the assigned level for each asset and liability held at fair value by the Council.

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Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 23. Fair Value Measurement (continued)

(1) Assets and liabilities that have been measured and recognised at fair values

2020	Date of latest valuation	Fair value measurement hierarchy			Total
		Level 1 Quoted prices in active mkts	Level 2 Significant observable inputs	Level 3 Significant unobservable inputs	
Recurring fair value measurements					
Financial assets					
Investments					
– 'Designated at fair value on initial recognition'					
		–	161,468	–	161,468
Total financial assets		–	161,468	–	161,468
Infrastructure, property, plant and equipment					
– Operational land		–	–	238,501	238,501
– Community land		–	–	361,899	361,899
– Land under roads		–	–	22,128	22,128
– Buildings (specialised and non-specialised)		–	–	223,899	223,899
– Roads, Bridges & Footpaths		–	–	1,202,445	1,202,445
– Storm water drainage		–	–	541,935	541,935
– Other assets		–	–	199,853	199,853
Total infrastructure, property, plant and equipment		–	–	2,790,660	2,790,660

2019	Date of latest valuation	Fair value measurement hierarchy			Total
		Level 1 Quoted prices in active mkts	Level 2 Significant observable inputs	Level 3 Significant unobservable inputs	
Recurring fair value measurements					
Financial assets					
Investments					
– 'Designated at fair value on initial recognition'					
		–	130,750	–	130,750
Total financial assets		–	130,750	–	130,750
Infrastructure, property, plant and equipment					
– Operational land		–	–	239,899	239,899
– Community land		–	–	350,218	350,218
– Land under roads		–	–	19,939	19,939
– Buildings (specialised and non-specialised)		–	–	224,427	224,427
– Roads, Bridges & Footpaths		–	–	1,169,852	1,169,852
– Storm water drainage		–	–	531,448	531,448
– Other assets		–	–	98,604	98,604
Total infrastructure, property, plant and equipment		–	–	2,634,387	2,634,387

Note that capital WIP is not included above since it is carried at cost.

Liverpool City Council

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Notes to the Financial Statements

for the year ended 30 June 2020

Note 23. Fair Value Measurement (continued)

(2) Valuation techniques used to derive level 2 and level 3 fair values

The Council's financial assets relate investments in Floating Rate Notes and Mortgage Backed Securities. Investments in Floating Rate Notes and Mortgage Backed Securities are reported at market values. The information included under 6(b) for Term Deposits is considered sufficient to meet the Fair Value disclosures requirements.

The Council does not have any liabilities which are fair valued.

Financial Assets - Investments

Investments are measured at Level 2 Inputs.

Investments in Floating Rate Notes and Reverse Back Mortgages are carried at fair value. Level 2 Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly.

The valuation method used for the reporting year for financial assets listed above is consistent with prior years' measurement techniques.

Infrastructure, property, plant and equipment (IPP&E)

Council reported Infrastructure, Property, Plant and Equipment using Level 3 Inputs- Unobservable inputs for which market data are not readily available.

Valuation processes

Council's infrastructure assets (Roads, Drainage, Bridges, Footpath and Parks assets) are annually indexed to reflect their current replacement cost (CRC). The written down value of Plant & Equipment, Office Equipment, Heritage and Library books are considered a close proxy for their fair values therefore are not revalued. Assets. A comprehensive revaluation of Infrastructure assets and Building, Community, Operational Land and Land under Roads assets is carried out every 5 years in accordance with the fair valuation policy as mandated by the Office of Local Government within the Department of Planning, Industry and Environment. Further details of the revaluations policy is provided under note 1(f).

Buildings

The Council engages external, independent and qualified valuers to determine the fair value of the Council's buildings. Buildings were last revalued in the 30 June 2018 financial year and the fair values were determined by Scott Fullarton Valuations Pty Ltd.

Gross Value of each building, which is obtained by applying a unit rate to a structure or a square metre rate to a building, based on its current replacement cost, which is the lowest cost of replacing the economic benefits of the existing asset using modern technology. The key unobservable input being the rate square metre has been benchmarked to construction costs of similar properties across the industry.

Land (Operational, Community and Land Under Road) The Council engages external, independent and qualified valuers to determine the fair value of Operational Land. Operational land was last revalued as at 30 June 2019.

Community Land is valued using the Valuer General Valuations and Land Under Road (LUR) is valued at the average unit rate derived from Valuer General (VG) land values discounted by 90%.

The fair value of Operational land has been determined by referencing it to current prices in an active market for similar properties. Where such information is not available, current prices in an active market for properties of different nature or recent prices of similar properties in less active markets, adjusted to reflect those differences are considered. Appropriate adjustments are also made for the inherent features of the property such as fire-prone, flood zonings and usability of the land.

The fair value for community land has been determined using the Valuer General (VG) land values and appropriate adjustments are also made for decline in value due to contamination.

Land under roads has been valued based on the average Valuer General (VG) land values discounted by 90%.

Each class of assets for Property Plant and Equipment are revalued on a 3 to 5 year cycle using various methods; Independent external valuation for Buildings, Operational Land and Land under Road, Valuer General land values for Community Land,

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 23. Fair Value Measurement (continued)

depreciated cost for Plant & Equipment, library books etc. Council uses external consultants for current replacement unit rates to fair value Infrastructure assets (Roads, Bridges Drainage etc.).

Current use of some of the assets noted above reflects the highest and best use.

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Liverpool City Council

Notes to the Financial Statements
for the year ended 30 June 2020

Note 24. Related party disclosures

Key management personnel

Key management personnel (KMP) of the Council are those persons having the authority and responsibility for planning, directing and controlling the activities of the council, directly or indirectly comprising of the following :

- (a) Mayor;
- (b) Councillors;
- (c) Chief Executive Officer;
- (d) Directors; and
- (e) The Responsible Accounting Officer

The aggregate amount of KMP compensation included in the Income Statement is:

\$ '000	2020	2019
Compensation:		
Short-term benefits	3,233	2,854
Post-employment benefits	251	216
Other long-term benefits	-	182
Termination benefits	216	-
Total	3,700	3,254

(b) Other transactions with KMP and their related parties/entities

Council has determined that there were no material transactions at arm's length with KMP and their related parties as part of Council delivering a public service objective (e.g. access to library or Council swimming pool by KMP).

Note 25. Events occurring after the reporting date

Council is unaware of any material or significant 'non-adjusting events' that should be disclosed.

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 26. Statement of developer contributions

Under the *Environmental Planning and Assessment Act 1979*, Council has significant obligations to provide Section 7.11 (contributions towards provision or improvement of amenities or services) infrastructure in new release areas.

It is possible that the funds contributed may be less than the cost of this infrastructure, requiring Council to borrow or use general revenue to fund the difference.

Summary of contributions and levies

	as at 30/06/19	Contributions received during the year			Interest earned in year	Expenditure during year	Internal borrowing (to)/from	as at 30/06/20	
\$ '000	Opening Balance	Cash	Non-cash	Held as restricted asset				Cumulative internal borrowings due/(payable)	
Drainage	26,938	11,871	-	485	(5,140)	-	-	34,154	-
Parking	6,748	8	-	117	(658)	-	-	6,215	-
Roads & Traffic Facilities	4,445	6,593	-	351	3,641	-	-	15,030	-
Local Open Space	40,780	17,604	-	880	(2,162)	-	-	57,102	-
Embellishment of Local Open Space	29,566	3,211	-	543	(3,746)	-	-	29,566	-
Community Facilities (Local)	30,113	413	-	543	32	-	-	31,101	-
Community Facilities (District)	5,027	680	-	97	6	-	-	5,810	-
Tree Planting Other	6,763	42	-	121	7	-	-	6,933	-
Professional & Legal Fees (Other)	2,088	207	-	39	(4)	-	-	2,330	-
Administration Fees	(1,195)	316	-	4	(246)	-	-	(1,121)	-
Implementation	3,979	108	-	72	4	-	-	4,163	-
Other- Moorebank Intermodal	4,359	-	-	78	4	-	-	4,441	-
\$7.11 contributions – under a plan	159,603	41,053	-	3,330	(8,262)	-	-	195,724	-
Total \$7.11 and \$7.12 revenue under plans	159,603	41,053	-	3,330	(8,262)	-	-	195,724	-
Total contributions	159,603	41,053	-	3,330	(8,262)	-	-	195,724	-

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 26. Statement of developer contributions (continued)

	as at 30/06/19		as at 30/06/20	
	Opening Balance	Contributions received during the year	Expenditure during year	Cumulative Internal borrowings due/(payable)
\$ '000		Cash Non-cash	Interest earned in year	Held as restricted asset
S7.11 Contributions – under a plan¹				
CONTRIBUTION PLAN – Liverpool City Centre Contribution Plan				
Parking	6,748	8	117	6,215
Community Facilities (District)	472	251	1	735
Roads & Traffic Facilities	–	1,216	14	1,230
Embellishment of Local Open Space	12,348	566	227	13,144
Total	19,568	2,041	389	21,324
CONTRIBUTION PLAN – 2009 Plan				
Drainage	10,742	7,325	223	18,290
Roads & Traffic Facilities	(9,473)	3,772	86	(644)
Local Open Space	9,546	2,574	238	11,842
Community Facilities (Local)	24,575	119	442	25,162
Community Facilities (District)	4,555	429	86	5,075
Embellishment of Local Open Space	10,077	2,201	186	8,783
Tree Planting Other	6,763	42	121	6,933
Professional & Legal Fees (Other)	1,706	191	32	1,926
Administration Fees	(954)	159	1	(888)
Implementation	3,979	108	72	4,163
Total	61,516	16,920	1,487	80,650
CONTRIBUTION PLAN – Edmondson Park				
Drainage	5,443	98	97	5,644
Roads & Traffic Facilities	10,514	727	184	10,766
Local Open Space	2,780	1,257	46	2,410
Community Facilities (Local)	5,056	66	91	5,218
Embellishment of Local Open Space	6,489	290	118	6,828
Professional & Legal Fees (Other)	382	16	7	404
Administration Fees	(359)	5	–	(377)
Total	30,305	2,459	543	30,893

Liverpool City Council

Notes to the Financial Statements

for the year ended 30 June 2020

Note 26. Statement of developer contributions (continued)

	as at 30/06/19	Contributions received during the year			Interest earned in year	Expenditure during year	Internal borrowing (to)/from	as at 30/06/20	
\$ '000	Opening Balance	Cash	Non-cash	Held as restricted asset				Cumulative internal borrowings due/(payable)	
CONTRIBUTION PLAN – Austral Leppington North									
Drainage	5,784	3,744	-	-	69	(4,960)	-	4,647	-
Community Facilities (Local)	482	228	-	-	10	1	-	721	-
Roads & Traffic Facilities	1,873	633	-	-	38	(673)	-	1,871	-
Local Open Space	26,084	13,148	-	-	547	25	-	39,804	-
Embellishment of Local Open Space	543	123	-	-	10	1	-	677	-
Administration Fees	86	140	-	-	2	(111)	-	117	-
Total	34,852	18,016	-	-	676	(5,707)	-	47,837	-
CONTRIBUTION PLAN NUMBER – Moorebank Intermodal									
Other- Moorebank Intermodal	4,359	-	-	-	78	4	-	4,441	-
Total	4,359	-	-	-	78	4	-	4,441	-
CONTRIBUTION PLAN NUMBER - East Leppington									
Drainage	4,969	704	-	-	96	(204)	-	5,565	-
Roads & Traffic Facilities	1,531	245	-	-	29	2	-	1,807	-
Local Open Space	2,370	625	-	-	49	2	-	3,046	-
Embellishment of Local Open Space	101	31	-	-	2	-	-	134	-
Administration Fees	32	12	-	-	1	(18)	-	27	-
Total	9,003	1,617	-	-	177	(218)	-	10,579	-

(1) Council levies Section 7.11 & 7.12/ 7.11 & 7.12A Contributions upon various development across the Council area through the required Contributions Plans. As part of these Plans, Council has received funds for which it will be required to expend the monies in accordance with those Plans. As well, these Plans indicate proposed future expenditure to be undertaken by Council, which will be funded by making levies and receiving funds in future years or where a shortfall exists by the use of Council's General Funds. These future expenses do not yet qualify as liabilities as of the Reporting Date, but represent Council's intention to spend funds in the matter and timing set out in those Plans.

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 27(a). Statement of performance measures – consolidated results

\$ '000	Amounts 2020	Indicator 2020	2019	Prior periods 2018	2017	Benchmark
1. Operating performance ratio						
Total continuing operating revenue excluding capital grants and contributions less operating expenses ^{1,2}	(4,680)	(2.42)%	6.39%	5.43%	2.40%	>0.00%
Total continuing operating revenue excluding capital grants and contributions ¹	193,430					
2. Own source operating revenue ratio						
Total continuing operating revenue excluding all grants and contributions ¹	174,183	59.60%	61.11%	55.18%	54.52%	>60.00%
Total continuing operating revenue	292,277					
3. Unrestricted current ratio						
Current assets less all external restrictions	66,487	1.71x	2.20x	2.11x	1.94x	>1.50x
Current liabilities less specific purpose liabilities	38,819					
4. Debt service cover ratio						
Operating result before capital excluding interest and depreciation/impairment/amortisation ¹	38,406	3.30x	6.42x	6.42x	4.71x	>2.00x
Principal repayments (Statement of Cash Flows) plus borrowing costs (Income Statement)	11,654					
5. Rates, annual charges, interest and extra charges outstanding percentage						
Rates, annual and extra charges outstanding	8,374	5.77%	5.17%	4.61%	4.30%	<5.00%
Rates, annual and extra charges collectible	145,216					
6. Cash expense cover ratio						
Current year's cash and cash equivalents plus all term deposits	139,162	9.46	10.29	15.16	8.50	>3.00
Monthly payments from cash flow of operating and financing activities	14,711	mths	mths	mths	mths	mths

(1) Excludes fair value increments on investment properties, reversal of revaluation decrements, reversal of impairment losses on receivables, net gain on sale of assets and net share of interests in joint ventures and associates using the equity method and includes pensioner rate subsidies

(2) Excludes impairment/revaluation decrements of IPPE, fair value decrements on investment properties, net loss on disposal of assets and net loss on share of interests in joint ventures and associates using the equity method

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements
for the year ended 30 June 2020

Note 27(b). Statement of performance measures – consolidated results (graphs)

1. Operating performance ratio



Benchmark: — > 0.00%

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of operating performance ratio

This ratio measures Council's achievement of containing operating expenditure within operating revenue.

Commentary on 2019/20 result

2019/20 ratio (2.42)%

The operating performance ratio for this year was significantly impacted by COVID 19 pandemic. On a 3-year average, however, Council achieved 2.9% operating performance ratio compared to > 0% benchmark to demonstrate financial sustainability.

Ratio achieves benchmark

Ratio is outside benchmark

2. Own source operating revenue ratio



Benchmark: — > 60.00%

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of own source operating revenue ratio

This ratio measures fiscal flexibility. It is the degree of reliance on external funding sources such as operating grants and contributions.

Commentary on 2019/20 result

2019/20 ratio 59.60%

Own source operating revenue as a percentage of total operating revenue is adversely impacted by significant levels of developer contributions (both cash & non-cash) which is reflective of the growth activities in the LGA.

Ratio achieves benchmark

Ratio is outside benchmark

3. Unrestricted current ratio



Benchmark: — > 1.50x

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of unrestricted current ratio

To assess the adequacy of working capital and its ability to satisfy obligations in the short term for the unrestricted activities of Council.

Commentary on 2019/20 result

2019/20 ratio 1.71x

The unrestricted current ratio remained above industry benchmark demonstrating the fact that Council's liquidity is good and it can readily pay its debts as they fall due.

Ratio achieves benchmark

Ratio is outside benchmark

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 27(b). Statement of performance measures – consolidated results (graphs)

4. Debt service cover ratio



Benchmark: — > 2.00x

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of debt service cover ratio

This ratio measures the availability of operating cash to service debt including interest, principal and lease payments

Commentary on 2019/20 result

2019/20 ratio 3.30x

Despite the impact of COVID 19 on income, Council maintained its ability to service its debt obligation at above industry benchmark level.

Ratio achieves benchmark

Ratio is outside benchmark

5. Rates, annual charges, interest and extra charges outstanding percentage



Benchmark: — < 5.00%

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of rates, annual charges, interest and extra charges outstanding percentage

To assess the impact of uncollected rates and annual charges on Council's liquidity and the adequacy of recovery efforts.

Commentary on 2019/20 result

2019/20 ratio 5.77%

An industry trend of ratepayers deferring their rate payment to a later date was observed last year. COVID 19 further fuelled the trend with Council recording outstanding debt ratio outside the benchmark.

Ratio achieves benchmark

Ratio is outside benchmark

6. Cash expense cover ratio



Benchmark: — > 3.00mths

Source of benchmark: Code of Accounting Practice and Financial Reporting #28

Purpose of cash expense cover ratio

This liquidity ratio indicates the number of months a Council can continue paying for its immediate expenses without additional cash inflow.

Commentary on 2019/20 result

2019/20 ratio 9.46 mths

The code only accounts for cash on hand and term deposits when calculating this ratio. Floating Rate Notes (FRN's) which are more liquid form of investment compared to term deposits are excluded. A further decrease in the ratio compared to last year represents shift in Council's investment portfolio in favour of FRN's. Notwithstanding this, Council's cash expense cover ratio is significantly higher than industry benchmark

Ratio achieves benchmark

Ratio is outside benchmark

Liverpool City Council

Financial Statements 2020

Notes to the Financial Statements

for the year ended 30 June 2020

Note 28. Council information and contact details

Note 28. Council information and contact details

Principal place of business:

33 Moore Street
Liverpool NSW 2170

Contact details

Mailing Address:

Locked Bag 7064
Liverpool BC NSW 1871

Telephone: 1300 362 170

Opening hours:

8:30am - 5:00pm
Monday to Friday

Internet: <http://www.liverpool.nsw.gov.au>

Email: lcc@liverpool.nsw.gov.au

Officers

A/Chief Executive Officer

Dr Eddie Jackson

Responsible Accounting Officer

Vishwa Nandan

Public Officer

Ellen Whittingstall

Auditors

Audit Office of New South Wales
Level 19, Tower 2 Darling Park, 201 Sussex Street, Sydney
New South Wales 2000

Elected members

Mayor

Wendy Waller

Councillors

Ali Karrib
Tony Hadchiti
Charisma Kaliyanda
Kareem Rhodes
Gus Balloot
Mazhar Hadid
Nathan Hagarty
Tina Ayyad
Geoff Shelton
Peter Harle

Other information

ABN: 84 181 182 471

Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements
for the year ended 30 June 2020

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Liverpool City Council

Financial Statements 2020

General Purpose Financial Statements
for the year ended 30 June 2020

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Liverpool City Council

SPECIAL PURPOSE FINANCIAL STATEMENTS
for the year ended 30 June 2020

Liverpool City Council

Special Purpose Financial Statements 2020

Special Purpose Financial Statements for the year ended 30 June 2020

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Income Statement – Carpark	4
Statement of Financial Position – Carpark	5
Note 1 – Significant Accounting Policies	6
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Background

- i. These Special Purpose Financial Statements have been prepared for the use by both Council and the Office of Local Government within the Department of Planning, Industry and Environment in fulfilling their requirements under National Competition Policy.
- ii. The principle of competitive neutrality is based on the concept of a 'level playing field' between persons/entities competing in a market place, particularly between private and public sector competitors.

Essentially, the principle is that government businesses, whether Commonwealth, state or local, should operate without net competitive advantages over other businesses as a result of their public ownership.
- iii. For Council, the principle of competitive neutrality and public reporting applies only to declared business activities.

These include (a) those activities classified by the Australian Bureau of Statistics as business activities being water supply, sewerage services, abattoirs, gas production and reticulation, and (b) those activities with a turnover of more than \$2 million that Council has formally declared as a business activity (defined as Category 1 activities).
- iv. In preparing these financial statements for Council's self-classified Category 1 businesses and ABS-defined activities, councils must (a) adopt a corporatisation model and (b) apply full cost attribution including tax-equivalent regime payments and debt guarantee fees (where the business benefits from Council's borrowing position by comparison with commercial rates).

Liverpool City Council

Special Purpose Financial Statements 2020

Special Purpose Financial Statements

for the year ended 30 June 2020

Statement by Councillors and Management made pursuant to the Local Government Code of Accounting Practice and Financial Reporting

The attached Special Purpose Financial Statements have been prepared in accordance with:

- the NSW Government Policy Statement 'Application of National Competition Policy to Local Government',
- the Division of Local Government Guidelines 'Pricing and Costing for Council Businesses – A Guide to Competitive Neutrality',
- the Local Government Code of Accounting Practice and Financial Reporting,

To the best of our knowledge and belief, these statements:

- present fairly the operating result and financial position for each of Council's declared business activities for the year, and
- accord with Council's accounting and other records.

We are not aware of any matter that would render these statements false or misleading in any way.

Signed in accordance with a resolution of Council made on 25 November 2020

Wendy Waller
Mayor
25 November 2020

Mazhar Hadid
Deputy Mayor
25 November 2020

Dr Eddie Jackson
A/Chief Executive Officer
25 November 2020

Vishwa Nadan
Responsible Accounting Officer
25 November 2020

Liverpool City Council

Special Purpose Financial Statements 2020

Income Statement – Carpark

for the year ended 30 June 2020

\$ '000	2020 Category 2	2019 Category 2
Income from continuing operations		
User charges	1,494	1,715
Total income from continuing operations	1,494	1,715
Expenses from continuing operations		
Employee benefits and on-costs	72	70
Notional Rates and Financial costs	686	739
Materials and contracts	100	141
Depreciation, amortisation and impairment	231	337
Overheads	75	34
Other expenses	74	74
Total expenses from continuing operations	1,238	1,395
Surplus (deficit) from continuing operations before capital amounts	256	320
Surplus (deficit) from continuing operations after capital amounts	256	320
Surplus (deficit) from all operations before tax	256	320
Less: corporate taxation equivalent (27.5%) [based on result before capital]	(70)	(88)
SURPLUS (DEFICIT) AFTER TAX	186	232
Plus Opening accumulated surplus	35	(285)
Plus adjustments for amounts unpaid:		
– Corporate taxation equivalent	70	88
Closing accumulated surplus	291	35
Return on capital %	3.2%	3.6%
Subsidy from Council	–	–

Liverpool City Council

Special Purpose Financial Statements 2020

Statement of Financial Position – Carpark
as at 30 June 2020

	2020 Category 2	2019 ¹ Category 2 Restated
\$ '000		
ASSETS		
Non-current assets		
Infrastructure, property, plant and equipment	29,384	29,579
Total non-current assets	29,384	29,579
TOTAL ASSETS	29,384	29,579
LIABILITIES		
Current liabilities		
Notional Borrowings	22,627	23,284
Provisions	38	34
Total current liabilities	22,665	23,318
Non-current liabilities		
Payables	3,223	3,021
Total non-current liabilities	3,223	3,021
TOTAL LIABILITIES	25,888	26,339
NET ASSETS	3,496	3,240
EQUITY		
Accumulated surplus	291	35
Revaluation reserves	3,205	3,205
TOTAL EQUITY	3,496	3,240

⁽¹⁾ Restatement has occurred on comparatives

Liverpool City Council

Special Purpose Financial Statements 2020

Notes to the Special Purpose Financial Statements

for the year ended 30 June 2020

Note 1. Significant Accounting Policies

A statement summarising the supplemental accounting policies adopted in the preparation of the Special Purpose Financial Statements (SPFS) for National Competition Policy (NCP) reporting purposes follows.

These financial statements are SPFS prepared for use by Council and the Office of Local Government within the Department of Planning, Industry and Environment. For the purposes of these statements, the Council is a non-reporting not-for-profit entity.

The figures presented in these Special Purpose Financial Statements have been prepared in accordance with the recognition and measurement criteria of relevant Australian Accounting Standards, other authoritative pronouncements of the Australian Accounting Standards Board (AASB) and Australian Accounting Interpretations.

The disclosures in these Special Purpose Financial Statements have been prepared in accordance with the Local Government Act 1993 (NSW), the *Local Government (General) Regulation 2005*, and the Local Government Code of Accounting Practice and Financial Reporting.

The statements are prepared on an accruals basis. They are based on historic costs and do not take into account changing money values or, except where specifically stated, current values of non-current assets. Certain taxes and other costs, appropriately described, have been imputed for the purposes of the National Competition Policy.

The Statement of Financial Position includes notional assets/liabilities receivable from/payable to Council's general fund. These balances reflect a notional intra-entity funding arrangement with the declared business activities.

National Competition Policy

Council has adopted the principle of 'competitive neutrality' in its business activities as part of the National Competition Policy which is being applied throughout Australia at all levels of government.

The framework for its application is set out in the June 1996 NSW government policy statement titled 'Application of National Competition Policy to Local Government'.

The *Pricing and Costing for Council Businesses, A Guide to Competitive Neutrality* issued by the Office of Local Government within the Department of Planning, Industry and Environment in July 1997 has also been adopted.

The pricing and costing guidelines outline the process for identifying and allocating costs to activities and provide a standard for disclosure requirements.

These disclosures are reflected in Council's pricing and/or financial reporting systems and include taxation equivalents, Council subsidies, return on investments (rate of return), and dividends paid.

Declared business activities

In accordance with *Pricing and Costing for Council Businesses – A Guide to Competitive Neutrality*, Council has declared that the following are to be considered as business activities:

Category 1

(where gross operating turnover is over \$2 million)

NIL

Category 2

(where gross operating turnover is less than \$2 million)

Carpark - Warren Service Way

Monetary amounts

Amounts shown in the financial statements are in Australian dollars and rounded to the nearest one thousand dollars.

Liverpool City Council

Special Purpose Financial Statements 2020

Notes to the Special Purpose Financial Statements

for the year ended 30 June 2020

Note 1. Significant Accounting Policies (continued)

(i) Taxation equivalent charges

Council is liable to pay various taxes and financial duties. Where this is the case, they are disclosed as a cost of operations just like all other costs.

However, where Council does not pay some taxes which are generally paid by private sector businesses, such as income tax, these equivalent tax payments have been applied to all Council-nominated business activities and are reflected in Special Purpose Financial Statements.

For the purposes of disclosing comparative information relevant to the private sector equivalent, the following taxation equivalents have been applied to all Council-nominated business activities (this does not include Council's non-business activities):

Notional rate applied (%)

Corporate income tax rate – 27.5%

Payroll tax – 5.45% on the value of taxable salaries and wages in excess of \$900,000.

Income tax

An income tax equivalent has been applied on the profits of the business activities.

Whilst income tax is not a specific cost for the purpose of pricing a good or service, it needs to be taken into account in terms of assessing the rate of return required on capital invested.

Accordingly, the return on capital invested is set at a pre-tax level – gain/(loss) from ordinary activities before capital amounts, as would be applied by a private sector competitor. That is, it should include a provision equivalent to the corporate income tax rate, currently 27.5%.

Income tax is only applied where a gain/ (loss) from ordinary activities before capital amounts has been achieved.

Since the taxation equivalent is notional – that is, it is payable to Council as the 'owner' of business operations – it represents an internal payment and has no effect on the operations of the Council. Accordingly, there is no need for disclosure of internal charges in the SPFS.

The rate applied of 27.5% is/is not the equivalent company tax rate prevalent at reporting date. No adjustments have been made for variations that have occurred during the year.

Local government rates and charges

A calculation of the equivalent rates and charges payable on all category 1 businesses has been applied to all land assets owned or exclusively used by the business activity.

Loan and debt guarantee fees

The debt guarantee fee is designed to ensure that council business activities face 'true' commercial borrowing costs in line with private sector competitors.

In order to calculate a debt guarantee fee, Council has determined what the differential borrowing rate would have been between the commercial rate and Council's borrowing rate for its business activities.

The reinstated income and expense include notional financing cost for rates and taxes. Notional financing cost was calculated @ 2.82% based on Tcorp rates on the Written Down Value of Land and Building.

(ii) Subsidies

Government policy requires that subsidies provided to customers, and the funding of those subsidies, must be explicitly disclosed.

Liverpool City Council

Special Purpose Financial Statements 2020

Notes to the Special Purpose Financial Statements for the year ended 30 June 2020

Note 1. Significant Accounting Policies (continued)

Subsidies occur when Council provides services on a less-than-cost-recovery basis. This option is exercised on a range of services in order for Council to meet its community service obligations.

Accordingly, 'subsidies disclosed' (in relation to National Competition Policy) represents the difference between revenue generated from 'rate of return' pricing and revenue generated from prices set by Council in any given financial year.

The overall effect of subsidies is contained within the Income Statement of each reported business activity.

(iii) Return on investments (rate of return)

The NCP policy statement requires that councils with Category 1 businesses 'would be expected to generate a return on capital funds employed that is comparable to rates of return for private businesses operating in a similar field'.

Such funds are subsequently available for meeting commitments or financing future investment strategies.

The actual rate of return achieved by each business activity is disclosed at the foot of each respective Income Statement.

The rate of return is calculated as follows:

Operating result before capital income + interest expense

Written down value of I,PP&E as at 30 June

As a minimum, business activities should generate a return equal to the Commonwealth 10 year bond rate which is 0.88% at 30/6/20.

(iv) Dividends

Council is not required to pay dividends to either itself (as owner of a range of businesses) or to any external entities.

Comparative Information

The comparative in the financials has been restated to correctly show the value of Car Park Building and Land.

Previously the Special Purpose Financial Statements were prepared on the assumption that the assets were leased by the Council and a notional lease payment was included in the expenses.

Opening Equity within the comparatives were restated going back to 2016 and income and expenses of the car park was recalculated, based on the council owning the car parking building and land.

The notional 30% overheads is based on State Government Overhead ratio.

Liverpool City Council

Special Purpose Financial Statements 2020

Special Purpose Financial Statements
for the year ended 30 June 2020

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Liverpool City Council

SPECIAL SCHEDULES
for the year ended 30 June 2020

Liverpool City Council

Special Schedules 2020

Special Schedules

for the year ended 30 June 2020

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Background

These Special Schedules have been designed to meet the requirements of special purpose users such as;

- the NSW Grants Commission
- the Australian Bureau of Statistics (ABS),
- the Office of Local Government within the Department of Planning, Industry and Environment

The financial data is collected for various uses including;

- the allocation of Financial Assistance Grants,
- the incorporation of Local Government financial figures in national statistics,
- the monitoring of loan approvals,
- the allocation of borrowing rights, and
- the monitoring of the financial activities of specific services.

Liverpool City Council

Special Schedules 2020

Permissible income for general rates

\$ '000	Notes	Calculation 2020/21	Calculation 2019/20
Notional general income calculation ¹			
Last year notional general income yield	a	103,541	99,241
Plus or minus adjustments ²	b	1,413	1,785
Notional general income	$c = a + b$	104,954	101,026
Permissible income calculation			
Or rate peg percentage	e	2.60%	2.70%
Or plus rate peg amount	$i = e \times (c + g)$	2,729	2,728
Sub-total	$k = (c + g + h + i + j)$	107,683	103,754
Plus (or minus) last year's carry forward total	l	2	16
Less valuation objections claimed in the previous year	m	(13)	(221)
Sub-total	$n = (k + m)$	(11)	(205)
Total permissible income	$o = k + n$	107,672	103,549
Less notional general income yield	p	107,662	103,541
Catch-up or (excess) result	$q = o - p$	10	8
Plus income lost due to valuation objections claimed ⁴	r	—	13
Less unused catch-up ⁵	s	—	(19)
Carry forward to next year ⁶	$t = q + r + s$	10	2

Notes

- (1) The notional general income will not reconcile with rate income in the financial statements in the corresponding year. The statements are reported on an accrual accounting basis which include amounts that relate to prior years' rates income.
- (2) Adjustments account for changes in the number of assessments and any increase or decrease in land value occurring during the year. The adjustments are called 'supplementary valuations' as defined in the Valuation of Land Act 1916.
- (4) Valuation objections are unexpected changes in land values as a result of land owners successfully objecting to the land value issued by the Valuer-General. Councils can claim the value of the income lost due to valuation objections in any single year.
- (5) Unused catch-up amounts will be deducted if they are not caught up within 2 years. Usually councils will have a nominal carry forward figure. These amounts can be adjusted for in setting the rates in a future year.
- (6) Carry forward amounts which are in excess (an amount that exceeds the permissible income) require ministerial approval by order published in the NSW Government Gazette in accordance with section 512 of the Local Government Act 1993. The OLG will extract these amounts from Council's Permissible income for general rates Statement in the financial data return (FDR) to administer this process.

Liverpool City Council

Report on Infrastructure Assets

as at 30 June 2020

Asset Class	Asset Category	Estimated cost to bring assets agreed level of to satisfactory service set by Council maintenance *		2019/20 Required maintenance \$ '000	2019/20 Actual maintenance \$ '000	Net carrying amount \$ '000	Gross replacement cost (GRC) \$ '000	Assets in condition as a percentage of gross replacement cost				
		\$ '000	\$ '000					1	2	3	4	5
(a) Report on Infrastructure Assets - Values												
Buildings	Admin Building	-	-	621	792	39,610	59,156	2.0%	26.0%	71.0%	0.0%	1.0%
	Aquatic Centres	224	224	573	1,031	20,486	47,763	0.0%	1.0%	98.0%	1.0%	0.0%
	Bush Fire / SES	463	463	45	89	2,304	4,281	44.0%	30.0%	3.0%	23.0%	0.0%
	Childcare Centres	66	66	169	349	8,102	14,096	0.0%	79.0%	20.0%	1.0%	0.0%
	Commercial Properties	-	-	126	10	367	12,556	50.0%	0.0%	50.0%	0.0%	0.0%
	Community Centres	445	445	847	1,108	47,358	80,695	28.0%	50.0%	16.0%	5.0%	1.0%
	Heritage Buildings	190	190	565	201	37,452	53,780	59.0%	27.0%	14.0%	0.0%	0.0%
	Other	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	Libraries, Museums	-	-	386	188	23,970	32,188	85.0%	15.0%	0.0%	0.0%	0.0%
	Multi Level Car Parks	-	-	285	172	14,602	28,452	0.0%	65.0%	35.0%	0.0%	0.0%
	Parks Buildings / Structures	655	655	459	137	25,990	45,865	15.0%	42.0%	40.0%	3.0%	0.0%
	Works Depot	2,310	2,310	96	485	3,657	9,635	37.0%	0.0%	12.0%	51.0%	0.0%
	Sub-total	4,353	4,353	4,172	4,562	223,898	388,467	26.1%	32.4%	38.1%	3.1%	0.4%
	Other structures	Other structures	-	-	-	-	5,813	6,864	0.0%	0.0%	0.0%	0.0%
Sub-total		-	-	-	-	5,813	6,864	0.0%	0.0%	0.0%	0.0%	100.0%
Roads	Sealed roads	-	-	9,518	9,252	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	Roads Formation	-	-	-	-	54,640	68,226	100.0%	0.0%	0.0%	0.0%	0.0%
	Sealed Roads Surface	19,930	19,930	-	-	112,563	140,133	37.0%	38.0%	12.0%	2.0%	11.0%
	Sealed Roads Structure	18,558	18,558	-	-	525,060	656,923	0.0%	15.0%	67.0%	14.0%	4.0%
	Kerb and Gutter	555	555	1,218	267	177,879	221,377	24.0%	41.0%	34.0%	1.0%	0.0%
	Footpaths	208	208	917	801	127,918	152,910	44.0%	27.0%	29.0%	0.0%	0.0%
	Bridges	2,155	2,155	757	72	60,370	75,666	30.0%	39.0%	25.0%	6.0%	0.0%
	Bulk earthworks	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	Other	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	Road Structures	569	569	511	384	66,743	82,546	20.0%	56.0%	22.0%	1.0%	1.0%
	Road Furniture	260	260	-	-	40,573	45,244	54.0%	25.0%	19.0%	1.0%	1.0%
	Off Street Carparks	110	110	91	11	14,497	18,240	23.0%	38.0%	38.0%	1.0%	0.0%
	Sub-total	42,345	42,345	13,012	10,787	1,180,243	1,461,265	21.1%	25.9%	43.1%	7.0%	2.9%
	Other	Other	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%
Reticulation Pipe		3,418	3,418	933	690	431,778	518,455	40.0%	29.0%	29.0%	0.0%	2.0%

Liverpool City Council

Report on Infrastructure Assets - Values (continued)

as at 30 June 2020

Asset Class	Asset Category	Estimated cost			2019/20 Required maintenance ^(a)	2019/20 Actual maintenance	Net carrying amount	Gross replacement cost (GRC)	Assets in condition as a percentage of gross replacement cost				
		\$ '000	to bring assets to satisfactory standard	to bring to the agreed level of service set by Council					1	2	3	4	5
Stormwater drainage	Pits	141	141	141	119	276	58,954	65,980	47.0%	46.0%	6.0%	0.0%	1.0%
	Headwalls and Culverts	704	704	704	29	69	11,793	15,859	32.0%	15.0%	46.0%	5.0%	2.0%
	Basins	-	-	-	87	168	29,170	34,718	10.0%	58.0%	31.0%	1.0%	0.0%
	Gross Pollutant Traps	163	163	163	278	276	10,164	11,117	48.0%	51.0%	1.0%	0.0%	0.0%
Sub-total		4,426	4,426	4,426	1,446	1,479	541,859	646,129	39.0%	32.3%	26.7%	0.2%	1.8%
Open space / recreational assets	Swimming pools	-	-	-	-	-	-	-	0.0%	0.0%	0.0%	0.0%	0.0%
	Sporting Fields and Ovals	539	539	539	2,709	2,742	25,776	31,869	21.0%	64.0%	12.0%	2.0%	1.0%
	Parks Infrastructure Assets	247	247	247	3,537	3,427	34,327	39,962	35.0%	46.0%	18.0%	1.0%	0.0%
	Playground Equipment	461	461	461	700	685	26,750	35,024	26.0%	51.0%	20.0%	2.0%	1.0%
Sub-total		1,247	1,247	1,247	6,946	6,854	86,853	106,855	27.9%	53.0%	16.9%	1.5%	0.6%
TOTAL - ALL ASSETS		52,371	52,371	52,371	25,576	23,682	2,038,666	2,609,580	26.5%	29.5%	37.1%	4.5%	2.4%

(a) The level of service standards below and required maintenance is identified in Council's Asset Management Plan
Infrastructure asset condition assessment 'key'

- | | | |
|---|---------------------|---------------------------------------|
| 1 | Excellent/very good | No work required (normal maintenance) |
| 2 | Good | Only minor maintenance work required |
| 3 | Satisfactory | Maintenance work required |
| 4 | Poor | Renewal required |
| 5 | Very poor | Urgent renewal/upgrading required |

Liverpool City Council

Special Schedules 2020

Report on Infrastructure Assets (continued)

as at 30 June 2020

\$ '000	Amounts 2020	Indicator 2020	2019	Prior periods 2018	2017	Benchmark
Infrastructure asset performance indicators (consolidated) *						
Buildings and infrastructure renewals ratio ⁽¹⁾						
Asset renewals ⁽²⁾	26,306					
Depreciation, amortisation and impairment	35,021	75.11%	116.75%	94.79%	97.55%	>=100.00%
Infrastructure backlog ratio ⁽¹⁾						
Estimated cost to bring assets to a satisfactory standard	52,371					
Net carrying amount of infrastructure assets	2,038,165	2.57%	2.32%	2.60%	3.17%	<2.00%
Asset maintenance ratio						
Actual asset maintenance	23,682					
Required asset maintenance	25,576	92.59%	104.29%	105.90%	104.50%	>100.00%
Cost to bring assets to agreed service level						
Estimated cost to bring assets to an agreed service level set by Council	52,371	2.01%	1.83%	2.06%	2.49%	
Gross replacement cost	2,609,580					

(1) All asset performance indicators are calculated using classes identified in the previous table.

(1) Excludes Work In Progress (WIP)

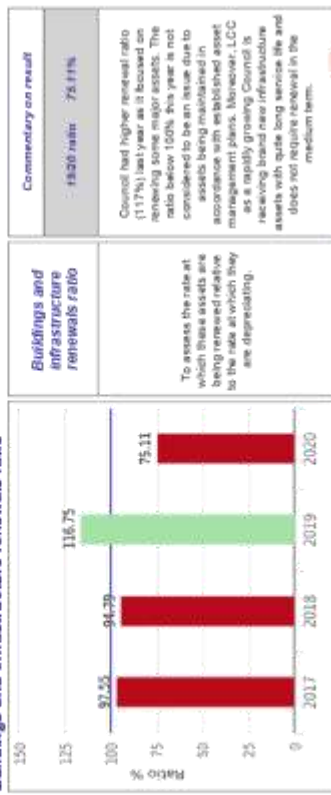
(2) Asset renewals represent the replacement and/or refurbishment of existing assets to an equivalent capacity/performance as opposed to the acquisition of new assets (or the refurbishment of old assets) that increases capacity/performance.

Liverpool City Council

Report on Infrastructure Assets (continued) as at 30 June 2020

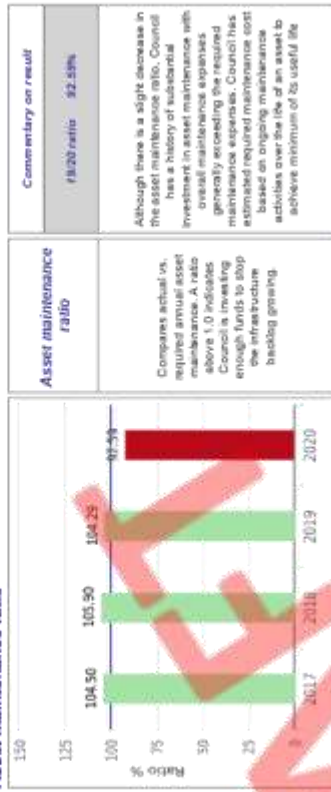
Special Schedules 2020

Buildings and infrastructure renewals ratio



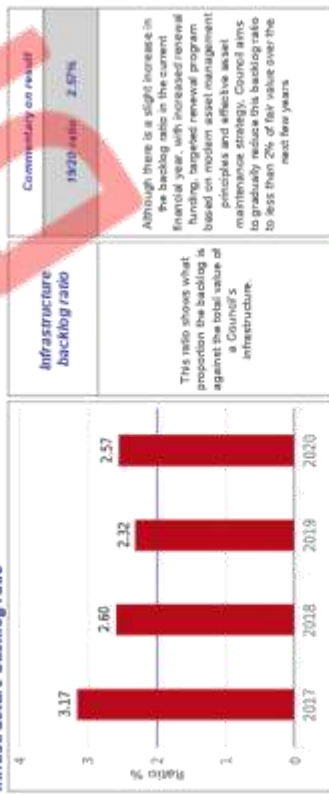
Ratio achieves benchmark
Ratio is outside benchmark

Asset maintenance ratio



Ratio achieves benchmark
Ratio is outside benchmark

Infrastructure backlog ratio



Ratio achieves benchmark
Ratio is outside benchmark

Cost to bring assets to agreed service level



Ratio achieves benchmark
Ratio is outside benchmark



Ms Wendy Waller
Mayor
Liverpool City Council
33 Moore Street
LIVERPOOL NSW 2170

Contact: Lawrissa Chan
Phone no: 02 9275 7255
Our ref: D2026196/1670

25 November 2020

Dear Mayor

**Report on the Conduct of the Audit
for the year ended 30 June 2020
Liverpool City Council**

I have audited the general purpose financial statements (GPFS) of the Liverpool City Council (the Council) for the year ended 30 June 2020 as required by section 415 of the *Local Government Act 1993* (the Act).

I expressed an unmodified opinion on the Council's GPFS.

This Report on the Conduct of the Audit (the Report) for the Council for the year ended 30 June 2020 is issued in accordance with section 417 of the Act. This Report should be read in conjunction with my audit opinion on the GPFS issued under section 417(2) of the Act.

SIGNIFICANT AUDIT ISSUES AND OBSERVATIONS

I identified the following significant audit issues and observations during my audit of the Council's financial statements. These matters will be included in the Management letter as high risk items in more detail:

Assessment of impairment for contaminated land

Management carried out a revaluation of community land but did not consider that some parcels of land were contaminated. This resulted in an overstatement of the value of community land by \$11 million, which was subsequently corrected. We have recommended that council implement a process for regularly assessing the impairment of contaminated land and that key assumptions are documented.

Liverpool Civic Place matters

We noted various matters in our review of the Liverpool Civic Place project. We have recommended that council:

- perform a comprehensive assessment over the contract with the developer to ensure the accounting implications are fully considered
- update the projected cashflows and net present value calculations for the project as there have been major events that would impact future cashflows, such as COVID-19 and the loss of a major tenant.

We acknowledge that council has already made a considered decision to proceed with the project, including major scope changes and subsequent cost increases. However, we have made recommendations around how the business case for the project could have been strengthened and ensuring value for money is appropriately considered. These recommendations are relevant for future projects that the council may undertake.

INCOME STATEMENT**Operating result**

	2020 \$m	2019 \$m	Variance %
Rates and annual charges revenue	137.6	131.1	↑ 5.0
Grants and contributions revenue	118.0	114.5	↑ 3.1
Operating result from continuing operations	95.8	96.5	↓ 0.7
Net operating result before capital grants and contributions	(3.0)	1.8	↓ 266.7

Rates and annual charges revenue increased by \$6.5 million (5.0 per cent) to \$137.6 million, mainly due to the 2.7 per cent rate peg increase and the rise in the total number of rateable properties.

Grants and contributions revenue increased by \$3.5 million (3.1 per cent) to \$118.0 million due to an increase in non-cash contributions.

Council's net operating result from continuing operations was a surplus of \$95.8 million, which was \$0.7 million lower than the 2018-19 net operating result. The decline in the net operating result was mainly due to impacts from the COVID-19 pandemic. This included a reduction in user charges and other revenue.

Council's net operating result before capital grants and contributions was a deficit of \$3 million, which was \$4.8 million lower than the prior year. The movement is mainly attributable to the overall decrease in operating revenue, as noted above.

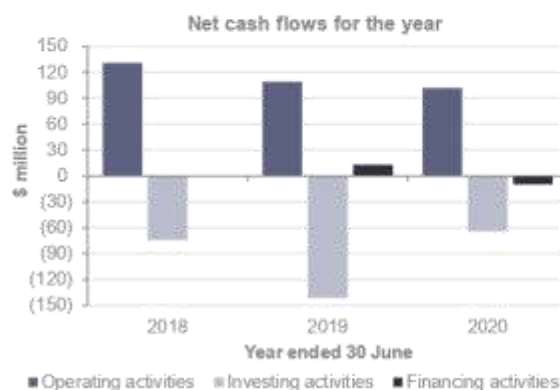
STATEMENT OF CASH FLOWS

Council's cash and cash equivalents was \$114.2 million (\$85.3 million in the prior year). There was a net increase in cash and cash equivalents of \$28.9 million at 30 June 2020.

Net cash inflows from operating activities decreased by \$6.9 million mainly due to a reduction in receipts from user charges and fees and an increase in payments for materials and contracts.

Net cash outflows from investing activities decreased by \$76.9 million mainly due to a reduction in purchases of infrastructure, property, plant and equipment and an increase in receipts from sale of investments.

Net cash inflows from financing activities decreased by \$22.5 million due to a reduction in receipts from borrowing and advances.



FINANCIAL POSITION

Cash and investments

Cash and investments	2020	2019	Commentary
	\$m	\$m	
External restrictions	251.3	214.8	<ul style="list-style-type: none"> Externally restricted cash and investments are restricted in their use by externally imposed requirements. Council's externally restricted cash and investments have increased by \$36.5 million primarily due to developer contributions. Internally restricted cash and investments have been restricted in their use by resolution or policy of Council to reflect identified program of works and any forward plans identified by Council. Council's internally restricted cash and investments have remained steady. Unrestricted cash of \$36.2 million was available to provide liquidity for the day-to-day operations of the Council.
Internal restrictions	13.1	12.2	
Unrestricted	36.2	44.1	
Cash and investments	300.6	271.1	

Debt

The Council has \$38.3 million of borrowings as at 30 June 2020 (2019: \$45.7 million). The Council has an aggregate overdraft facility limit of \$4.0 million as at 30 June 2020 (2019: \$4.0 million) which remained unutilised at the year-end.

PERFORMANCE

Performance measures

The following section provides an overview of the Council's performance against the performance measures and performance benchmarks set by the Office of Local Government (OLG) within the Department of Planning, Industry and Environment.

Operating performance ratio

The 'operating performance ratio' measures how well council contained operating expenditure within operating revenue (excluding capital grants and contributions, fair value adjustments, and reversal of revaluation decrements). The benchmark set by OLG is greater than zero per cent.

Council's operating performance ratio of -2.4 per cent is below the industry benchmark of zero per cent.

The operating performance ratio has decreased from the prior year mainly due to the overall decrease in operating revenue, predominantly due to the impacts of COVID-19.



Own source operating revenue ratio

The 'own source operating revenue ratio' measures council's fiscal flexibility and the degree to which it relies on external funding sources such as operating grants and contributions. The benchmark set by OLG is greater than 60 per cent.

Council's own source operating revenue ratio of 59.6 per cent is below the industry benchmark of 60 per cent.

The own source operating revenue ratio has decreased due to a reduction in operating revenue.

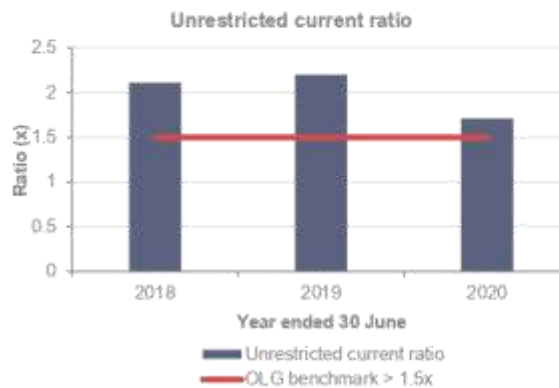


Unrestricted current ratio

The 'unrestricted current ratio' is specific to local government and represents council's ability to meet its short-term obligations as they fall due. The benchmark set by OLG is greater than 1.5 times.

Council's liquidity ratio of 1.7 times is above the industry benchmark of greater than 1.5 times.

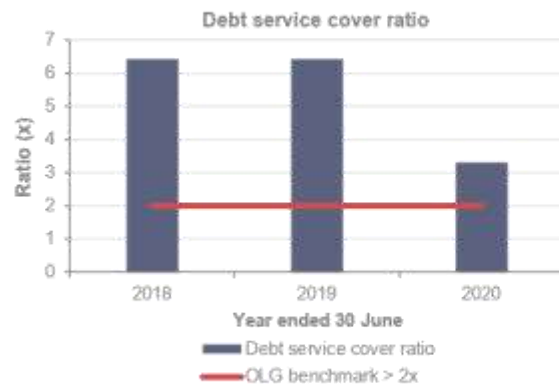
The unrestricted current ratio has decreased from prior year mainly due to the reduction in current assets less external restrictions.

**Debt service cover ratio**

The 'debt service cover ratio' measures the operating cash to service debt including interest, principal and lease payments. The benchmark set by OLG is greater than two times.

Council's debt service cover ratio of 3.3 times is above the industry benchmark of greater than 2 times.

The debt service cover ratio has decreased from the prior year due to the decline in the net operating result in 2019-20.

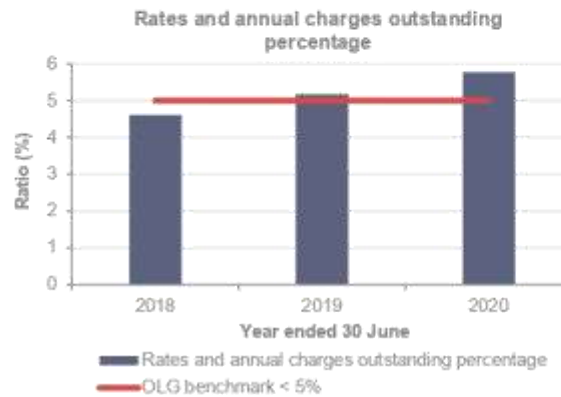


Rates and annual charges outstanding percentage

The 'rates and annual charges outstanding percentage' assesses the impact of uncollected rates and annual charges on council's liquidity and the adequacy of debt recovery efforts. The benchmark set by OLG is less than 5 per cent for metro councils.

Council's rates and annual charges outstanding percentage of 5.8 per cent does not meet the industry benchmark of less than 5 per cent for metropolitan councils.

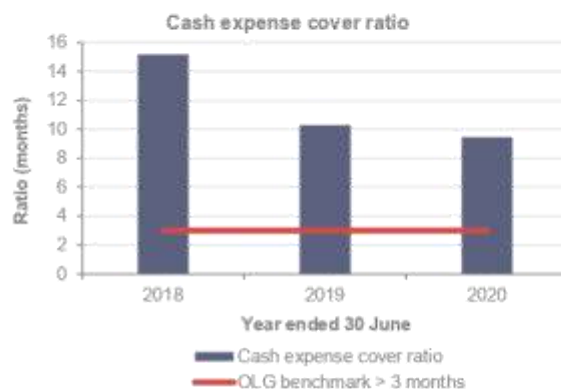
The rates and annual charges percentage has increased from the prior year as some ratepayers have experienced financial difficulties due to the impacts of COVID-19.

**Cash expense cover ratio**

This liquidity ratio indicates the number of months the council can continue paying for its immediate expenses without additional cash inflow. The benchmark set by OLG is greater than three months.

Council's cash expense cover ratio was 9.5 months, which is above the industry benchmark of greater than 3 months.

The cash expense cover ratio decreased compared with the prior year due to the increase in payments from operating and financing activities.

**Infrastructure, property, plant and equipment renewals**

Council has renewed \$32.7 million of assets in 2019–20 financial year, compared to \$62.8 million of assets in the prior year.

OTHER MATTERS

Impact of new accounting standards

AASB 15 'Revenue from Contracts with Customers' and AASB 1058 'Income for Not-for-Profit Entities'

Council adopted the new accounting standards AASB 15 'Contracts with Customers' and AASB 1058 'Income of Not-for-Profit Entities' (collectively referred to as the Revenue Standards) for the first time in their 2019–20 financial statements.

AASB 15 introduces a new approach to recognising revenue based on the principle that revenue is recognised when control of a good or service transfers to a customer. AASB 15 impacts the timing and amount of revenue recorded in a councils' financial statements, particularly for grant revenue. AASB 15 also increases the amount of disclosures required.

AASB 1058 prescribes how not-for-profit entities account for transactions conducted on non-commercial terms and the receipt of volunteer services. AASB 1058 significantly impacts the timing and amount of income recorded in a councils' financial statements, particularly for grant income and rates which are paid before the commencement of the rating period.

Council recognised an \$18,000 adjustment to opening accumulated surplus at 1 July 2019 on adoption of the new Revenue Standards. The Council disclosed the impact of adopting the new Revenue Standards in note 18.

AASB 16 'Leases'

Council adopted the new accounting standard AASB 16 'Leases' for the first time in their 2019–20 financial statements.

AASB 16 changes the way lessees treat operating leases for financial reporting. With a few exceptions, operating leases will now be recorded in the Statement of Financial Position as a right-of-use asset, with a corresponding lease liability.

AASB 16 results in lessees recording more assets and liabilities in the Statement of Financial Position and changes the timing and pattern of expenses recorded in the Income Statement.

Council recognised right-of-use assets and lease liabilities of \$8.2 million at 1 July 2019 on adoption of AASB 16. The Council disclosed the impact of adopting AASB 16 in note 16.

Legislative compliance

My audit procedures did not identify any instances of non-compliance with legislative requirements or a material deficiency in the Council's accounting records or financial statements. The Council's:

- accounting records were maintained in a manner and form to allow the GPFS to be prepared and effectively audited
- staff provided all accounting records and information relevant to the audit.



Lawrissa Chan
Director, Financial Audit

Delegate of the Auditor-General for New South Wales

cc: Eddie Jackson, A/Chief Executive Officer
Andrew McLeod, Chair of Audit, Risk and Improvement Committee
Jim Betts, Secretary of the Department of Planning, Industry and Environment