



Moore Point, Liverpool

Utilities & Infrastructure Servicing Report 10 May 2024



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Moore Point Precinct

Utilities & Infrastructure Servicing Assessment

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Acknowledgement of Country

We acknowledge the Darug and Tharawal Nations, the Traditional Custodians of the land on which Moore Point will be built. We pay our respects to First Nations Elders past, present and emerging.

Artist - Tom Avery https://kurranulla.org.au/artists/

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Introduction

This Utilities and Infrastructure Servicing Assessment has been prepared by Mott MacDonald on behalf of the Joint Landowners Group in relation to the planning proposal at Moore Point, Liverpool (PP-2022-1602).

Vision

In preparing the planning proposal, the JLG have developed the following vision for Moore Point:

Liverpool has the ambition to be the next Great River City of the world. A city where the Georges River is its beating heart unifying both sides of the river into a pulsating riverfront experience.

The Moore Point vision will shape the city's eastern bank into an internationally renowned destination loved by locals and visitors alike. Reimagined riverfront parklands, river pools, creative heritage quarter and marketplace inspire our people and residents to be the most productive, most happy, and most healthy people on the planet.

The proposal will create the first truly integrated riverfront development at scale. At the heart of this attraction will be a revitalised riverbank which will undergo an ecological transformation and create a natural, healthy, and vibrant river ecosystem.

The river will also offer a diverse range of recreational opportunities, providing activities that meet the needs of a diverse community, and which encourages an active outdoor lifestyle.

Gateway Conditions & Key Utilities Responses

The gateway conditions related to utilities and infrastructure servicing and planning proposal responses are addressed in the table below:

Table 0-1 Gateway Conditions & Responses

GATEWAY CONDITION	RESPONSE		
1. The planning proposal, reports and studies are to be	updated to:		
 a. include the whole Moore Point precinct (as defined in the planning proposal); 	The staging discussion, demand assessments, and utilities drawings have been updated to reflect the latest masterplan/precinct extents. Refer to the following sections and figures within this report: • Section 4 • Section 7.2.5 • Section 7.3.4 • Section 7.5.4 • Figure 3-1 • Figure 4-1 • Figure 7-1 • Figure 7-2 • Figure 7-2 • Figure 7-3 • Figure 7-6 • Figure 7-7 • Figure 7-7 • Figure 7-7 • Figure 7-10 • Figure 7-11 • Figure 7-12 • Figure 7-14		

GATEWAY CONDITION		RESPONSE		
		• Figure 7-16		
		• Figure 7-17		
b.	have consistent dwelling and job numbers;	The demand assessments throughout this report have been updated with the latest dwelling numbers. Refer to the following sections within this report: • Section 7.2.5		
		Section 7.3.4		
		Section 7.5.4		
С.	refer to the same Master Plan;	All figures and utilities drawings throughout the report have been updated to show to the same Master Plan. Refer to the following figures within this report: • Figure 0-2 • Figure 0-3 • Figure 3-1 • Figure 4-1 • Figure 7-1 • Figure 7-2 • Figure 7-2 • Figure 7-3 • Figure 7-6 • Figure 7-7 • Figure 7-7 • Figure 7-8 • Figure 7-10 • Figure 7-11 • Figure 7-12 • Figure 7-14 • Figure 7-16		
d.	remove references to the Metro station;	All references to the Metro station have been removed from this report.		
e.	reflect the Employment Zone Reform terminology for Business zones;	This item is not relevant to the utility drawings and report.		
f. 2. To sa - section	update mapping to; i. Amend the Height of Buildings Map to show building heights in meters; ii. Amend the FSR map in accordance with the findings of the Urban Design study referred to below; iii. Amend the zoning map to show the RE1 applicable to riparian zones to be at least 40m wide, and other open spaces as appropriate zones; iv. Propose any amendments to the heritage map; v. Propose a key sites map showing the location of any school sites. attisfy: n 9.1 Direction 4.3 Flood Prone Land, commendations of the 2022 NSW/ Elocal Inquiries	These items are not shown on utilities drawings. All drawings and figures throughout this report have been amended to show the latest masterplan.		
- the red - recom the follo	mendations of the 2022 INSW Flood Inquiry, a mendations made by the Flood Planning Advice wing must be undertaken, and the planning prop	anu Panel, osal updated as necessary to reflect the outcomes of:		
c. Provi be prov if wider	de further detail how critical infrastructure will ided above the PMF for all residents (including network upgrades are required);	Details on how critical infrastructure will be provided above the PMF for all residents has been captured within Section 6 of this report.		

About Moore Point

Moore Point is the largest privately-led urban renewal project in Australia, led by a Joint Landowner Group (JLG) comprised of Coronation Property Co and Learnac Property Group.

The 31.4 hectares site, set within the Liverpool Collaboration Area (LCA), is a unique opportunity to deliver a model for urban renewal at a metropolitan scale consistent with the strategic priorities of Government, it will be a catalyst for Liverpool City Council (Council) to realise its objectives for the LCA and the Western Parkland City.

When delivered, Moore Point will consolidate Liverpool's role as Australia's a great river city, providing a high-quality living and working environment for future generations. It will deliver homes, jobs, and open space up to 2056, in a highly accessible location with unparalleled recreational amenity along the Georges River and Lake Moore.

At a glance, Moore Point will deliver:

- Approximately 11,000 dwellings set within distance of Liverpool CBD and LCA,
- A significant contribution of employment generating floorspace and associated jobs to complement the expansion of Liverpool CBD, and
- Over 10 hectares of publicly accessible open space supported by bridge crossings from Liverpool CBD to a fully accessible Georges River foreshore and Haigh Park.

The site plays a critical role in fulfilling the connectivity, liveability, productivity, and sustainability priorities of the LCA and support the vision to make Liverpool Australia's next great river city. These include:

- New housing and jobs within a highly accessible location (five minutes' walk to Liverpool CBD and transport interchange) via new bridge crossings over the Georges River. This will support active and sustainable modes of travel within the LCA.
- Critical links from the CBD and LCA to the Georges River, Haigh Park, and Lake Moore. This will support the creation of a new interconnected high-performance green and blue infrastructure network, which will support healthy urban growth.
- A genuine riverside precinct with high levels of activation, amenity, and accessibility, facilitating Council's vision of celebrating the river and prioritising great places for people.
- A diverse range of new and enhanced social and civic infrastructure outcomes to benefit both current and future generations

The Proposal

The planning proposal seeks to amend the Liverpool Local Environmental Plan 2008 (the LEP) to transform the zoning from industrial to mixed-use and public recreation, including changes to floor space ratio, height of buildings and site-specific provisions.

In response to the Gateway conditions, the planning proposal and supporting structure plan has been updated. The planning proposal has enhanced and improved many of the key elements of the originally endorsed Structure Plan and planning proposal by Council on 25 November 2020 meeting including:

- Celebrating Heritage Enhanced heritage response, including the retention of the heritage grid, Factory 1 and the Administration Building with partial retention of Factory 2 and adaptive reuse of additional outbuildings along the Georges River foreshore.
- Foreshore Park Embellishment of a new 5.5 hectare linear foreshore park and completing the missing link between Lighthorse Park and Haigh Park.
- Bridges and Community Anchors Creation of new pedestrian bridges to Liverpool CBD and LCA, facilitating access from the wider area to a 1,000 capacity primary school, community facilities and retail amenity.
- Street Hierarchy and Boulevards A new movement and access network to facilitate active transport from Georges River to Lake Moore and a ring road to support vehicular movement.

• Pedestrian Lanes and Pocket Parks – Creation of a diverse range of pocket parks, passive open space areas and pedestrian laneways between blocks to enhance access to open space, views, and access to the waterfront.

The JLG engaged Yerrabingin in 2021 to prepare an Indigenous Narrative Report. The report establishes Connecting with Country themes for the revised masterplan and public domain. This includes bringing river ecology up and over into the foreshore, including restoration of endemic/native species through naturalised revetment treatment that will support habitat.

The revised planning proposal has been informed by a suite of interdisciplinary technical consultants through an iterative process to ensure the creation of a successful place that comprehensively addresses the Gateway conditions.



Figure 0-1 Design Process

A summary of the lodged planning proposal and the updates are provided in Table 0-2.

Table 0-2 Endorsed & Updated Proposal & Masterplan

Element	Endorsed Proposal and Masterplan (November 2020)*	Updated Proposal and Masterplan (April 2024)
Land Use	B4 Mixed Use B6 Enterprise Corridor RE1 Public Recreation	MU1 Mixed Use RE1 Public Recreation
Floor Space Ratio	4.2:1 and 3.5:1	4:1
Height	RL 108 and RL 136	Various to a maximum RL 136
Public Open Space	24% (76,995m ²)	34.50% (108,600m ²)
Gross Floor Area	Non-residential – 249,364m ²	Non-residential - 346,463m ²
	Residential – 1,038,728m ²	Residential - 912,985m ²
	Total – 1,288,092m ²	Total – 1,259,448m ²
Dwellings	12,220	10,742
Population	<u>26,884</u>	21,484

The figures represented in this table pertain to land owned and under the control of the JLG – it does not include the entire Georges River North Precinct



* The alignment of the northern pedestrian bridge over the Georges River is subject to further discussions with affected landowners.

Figure 0-2 Landscape Masterplan (Source: Turf Design Studio)

The Site

Moore Point is located east of Liverpool CBD across the Georges River in the suburb of Moorebank. It is located within the LCA and comprises 31.4 hectares of the 38 hectare Georges River North Precinct.

The site is defined by the Georges River along the western and northern edge and Lake Moore along the eastern edge. Part of the site contains heritage items including the Former MM Cables Factory and Cable Makers Australia Factory Pty Ltd Group, including inter-war administration building, factory, and interiors.

This planning proposal has been prepared and lodged by Coronation Property Co and Leamac Property Group, known as the Joint Landowner Group. The land subject of the planning proposal relates to the land owned and under the control of the JLG, as defined in Figure 0-3 and Table 0-3. Land owned/under the ownership of Coronation Property Co is filled blue in the figure below and land owned/under the ownership of Leamac Property Group is filled orange.

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- Leamac sites
- Coronation sites
- Planning Proposal boundaryGeorges River North Boundary

Figure 0-3 Land Application

Table 0-3 Land Subject to Planning Proposal

Address	Legal Description
Coronation Property Co	
361 Newbridge Road, Moorebank	Lot 101 DP 827141
6 Bridges Road, Moorebank	Lot 10 DP 875626
8 Bridges Road, Moorebank	Lot 111 DP 1133744
16 Bridges Road, Moorebank	Lot 1 DP 329572
11 Bridges Road, Moorebank	Lot 201 DP1009044
5 Bridges Road, Moorebank	Lot 100 DP 775780
Leamac Property Group	
3 Bridges Road, Moorebank	Lot 200 DP 1009044

Assessment and Findings

This Utilities & Infrastructure Servicing Assessment has concluded that servicing is available to the site with indicative connections for each service being:

- A new wastewater gravity connection from the proposed development plant room to the existing Sydney Water pump station [SP0287]
- Potential upgrade or relocation of the existing Sydney Water sewer pump station [SP0287]

- New connections to the existing Sydney Water potable mains on Haigh Avenue, Newbridge Road, and Bridges Road along with any required amplification works
- New low or high voltage conduits through the site feeding to the development site connecting to the existing Newbridge Road and Bridges Road conduits
- Potential new connections to the existing telecommunications infrastructure on Newbridge Road and Haigh Avenue
- Potential new connections to the existing Jemena mains on Newbridge Road and Bridges Road.

Additionally, there is a strong case for precinct utility systems such as embedded networks, rainwater harvesting, and recycled water. These precinct systems will continue to be explored in subsequent design stages based on feedback with council and utility authorities.

1 Summary and Scope of Assessment

This Utilities & Infrastructure Servicing Assessment has been undertaken to satisfy the associated planning requirements. The scope of this report is to:

- Summarise existing utility infrastructure and consider required relocations and/or upgrade works to service the proposed development
- Present options related to the potential energy networks, as well as mobility outcomes.

The utility planning requirements are summarised below along with the location where they have been addressed within this report. This report identifies preliminary development staging and utility authority consultation, the final staging and delivery of utility infrastructure will form part of subsequent design stages.

The site is currently serviced through the following means:

- **Stormwater:** Stormwater runoff flows towards Georges River surrounding the site. Further information on the stormwater servicing can be found in the *Water Cycle Management Statement for Planning Proposal PP-2022-1602 (Northrop 2024)*
- Wastewater: Wastewater servicing is provided by Sydney Water Corporation (SWC) which is directed to the Liverpool Water Recycling Plant for secondary treatment before transporting recycled water to Malabar and/or re-used at Liverpool Golf Course and Warwick Farm Racecourse
- **Potable Water:** Drinking water is provided by SWC from Prospect South Water Delivery System sourced from Warragamba Dam
- **Telecommunications:** Some telecommunications providers have assets in the vicinity of the site including AARNet, Telstra, Nextgen, Superloop, Optus, TPG, Uecomm, Vocus and NBN Co
- **Electrical:** Low voltage electrical supply is provided by Endeavour Energy via the Moorebank Zone Substation
- Gas: Gas supply is provided by Jemena West ultimately via the Eastern Gas Pipeline.

Indicative building services demand modelling has been undertaken for the purpose of considering leadin utility infrastructure requirements based on the latest available property development yields in Gross Floor Area (GFA) as shown in Section 2.1 below. However, it is noted that these will change as part of the normal design development process. A summary of the demand modelling is provided in Table 1-1 below.

, , , ,	
Service Type	Total Demand Range ¹
Wastewater	219 – 297
(L/s - Average Dry Weather Flow including BASIX)	
Potable Water (kL/day - Maximum Daily Demand including BASIX)	5840 - 7901
Telecommunications	Unable to be calculated. Outcomes of the feasibility application to be incorporated into later revisions of the report.
Electrical	53 – 71
(MVA - Peak Demand including 0.8 Diversity Factor)	
Gas	14860 – 20105
(m ³ /day - Daily Demand including BASIX)	

Table 1-1 Summary of Indicative Development Demand Values

¹Demand values provided in the table are considered to be accurate to within ±15% (although greater inaccuracies are possible due to the level of design). Demand values are to be updated when development yields are updated.

Key servicing constraints for this development include:

- **Wastewater:** Limited capacity in the existing sewer pumping station and likely amplification required of lead-in wastewater mains with potential future opportunity for a recycled water network. Protection works on Bridges Rd for DN750 and DN900 existing sewer mains.
- **Potable Water:** Potential localised upgrades to provide required firefighting pressure and potable water ring main redundancy but current capacity in the main network
- **Telecommunications:** Backhaul of new feeder cables to the nearest exchange
- Electrical: Endeavor Energy has noted that the total required load of the entire development is beyond their 10-year load forecasting window and that the final supply arrangement cannot be determined at this stage of the project. However, preliminary analysis has identified that, presently, capacity can be made for the 20-year development period. Additionally, they have advised that four (4) double-cabled 11kV underground feeders will be required from their Moorebank Zone Substation to the relevant locations on site.
- **Gas:** DN200 1050kPa high pressure gas main located on Bridges Rd will require protection as impacted from proposed road works.

A number of sustainability initiatives are being investigated for Moore Point Precinct such as:

- Smart Infrastructure
- Embedded networks
- Stormwater harvesting and reuse systems
- Recycled blackwater
- Water efficient fixtures and fittings

Further details on precinct utilities are contained within the Sustainability Statement.

2 Assessment Methodology

The utilities and infrastructure servicing assessment methodology are summarised in the flow chart as shown below:



Desktop investigation:

- Desktop investigation through 'Dial Before You Dig' enquiries and previous utility reports
- Review of utility information obtained from site surveys and previous authority advice
- Gap analysis and advice on further investigations required.

Undertaking utility assessments:

- Undertake demand modelling to determine utility demand rates based on the intended use and using authority demand rates
- Consider building specific utility demand draws and the effects of changes in building use such as decreased electrical usage or changes to gas demand.

Incorporating sustainability initiatives:

- Incorporate precinct initiatives including BASIX and any other selected sustainability (e.g., Green Star Ratings or NABERS)
- Coordination with any precinct wide utility sustainability measures.

Utility authority consultation:

- Development and submission of feasibility applications to each utility authority with projected demands
- Incorporation of utility agency advice around servicing options, routes, timings, costs, and timings for delivery.
- Continual coordination around any changes to demand assessments and detailing of any further assessments or studies required to confirm supply methods (e.g., water or wastewater modelling).

Identifying next steps:

- Plans of potential utility relocations, supply points and potential constraints
- Detailing of further investigations or additional works required during subsequent design stages
- Confirmation of the feasibility of obtaining utility servicing for the development.

2.1 Utility Consultation

Previous authority advice was received for the Precinct and is contained within the *Services Infrastructure Report (ADW Johnson, 2020)*. This advice was used for the purposes of the utility assessments within this report however a new feasibility application was submitted to Sydney Water to address the following items:

- Updated demand modelling
- To further discuss opportunities for recycled water
- To discuss the sewer pump station and potential alternatives for future design stages.

This application is contained within Appendix A.

Development profiles based on the architectural targets have been provided to estimate the future servicing demand. The development profiles for Moore Point are shown in Table 2-1 below.

Table 2-1 Demand Assessment Development Profiles (17th April 2024)

Investigation Site	Residential Apartments (No.)	Indicative Residential Space GFA (m²)	Indicative Commercial Space GFA (m ²)	Indicative Other Space GFA (m ²)
Moore Point	10,742	912,985	328,516	17,947

Please note, the residential, commercial, and retail GFA figures are provided for the purposes of assessing the required utility infrastructure upgrades and are subject to change as the architectural design continues.

3 Desktop Investigation

As a part of this investigation, utility information was obtained from a number of sources:

- 'Before You Dig Australia' Enquires
- Utility Authority GIS systems
- Information provided by utility agencies.

Table 3-1 below shows a summary of the identified utility services adjacent to the Precinct:

Utility Type	Authority Name	Potential Impacts
Telecommunications	AARNet	Yes
Electrical	ARTC NSW	Yes
Electrical	Endeavour Energy	Yes
Gas	Jemena Gas West	Yes
Stormwater	Liverpool City Council	Yes
Telecommunications	NBN Co NswAct	Yes
Telecommunications	Nextgen NCC	Yes
Telecommunications	Optus/Uecomm	Yes
Telecommunications	Superloop (Australia)	Yes
Electrical	Sydney Trains	Yes
Water and Wastewater	Sydney Water	Yes
Telecommunications	Telstra	Yes
Telecommunications	TPG Telecom	Yes
Electrical	TransGrid	Yes
Electrical	TfNSW	Yes
Telecommunications	Vocus Communications	Yes

Table 3-1 Summary of Identified Utility Services

A combined services plan for the site has been developed in Figure 3-1 which shows:

- Indicative connections to existing utility services
- Potential constraints with the utility servicing and crossings
- Potential building connection points.

Please note that these services are shown only schematically and are subject to further development in subsequent design phases as the architectural and services design develops.

It is also important that this report has been developed to show potential servicing points and the number and type of utility connections to the building will depend on the ultimate ownership and stratum.



Figure 3-1 Combined Services Plan for Existing Utility Assets

4 Staging Discussion

As a part of the Moore Point Precinct works, the following utility servicing works will potentially be undertaken:

- New electrical feeder cables to provide construction power to the site
- New sewer pipe connections
- Potential relocation of sewer pipes and removal of existing sewer pipes under proposed development lots
- Potential upgrade and/or relocation to Sydney Water pumping station
- Relocation of existing power lines
- Removal of existing electrical conduits under proposed development lots
- Connections to existing gas mains
- New stormwater drainage works for the proposed new construction site access roads
- Removal of existing telecommunication property connections under proposed development lots.

The current indicative staging is shown below in Figure 4-1 below.



Figure 4-1 Indicative Staging Plan

The following items are essential when considering the staging of the development lots in relation to utility infrastructure:

- The road network should be constructed with sufficient sized mains and spare conduit capacity to service the full development build-out, this will prevent costly road reconfiguration and restoration in the future
- Future utility supply capacity cannot be locked in, this report addresses planning requirements however throughout the design of the Precinct continual utility investigation per stage is required to ensure capacity of lead-in infrastructure
- There may be the opportunity to reduce the requirement for lead-in infrastructure upgrades as a result of precinct utility servicing options.

5 External works - Proposed Intersection Works on Newbridge Rd

The following works have been proposed for Newbridge Rd:

- Upgrade of Bridges Rd and Newbridge Rd intersection; and
- New signalised intersection at Anchor PI and Newbridge Rd.

The intersection upgrade works are summarised in Sections 5.1 and 5.2 – for further details refer to Figure 5-1 and Figure 5-2. The works will be delivered as separate packages from the precinct and are only noted for reference and coordination. These upgrades are likely to have a significant impact on works required for the precinct and greater LGA and further understanding on how works will be conducted in conjunction with these upgrades is required as part of this planning proposal as well. It should be noted that these upgrades may change as required based on the development staging and wider development works within the area.

Additionally, finalisation of the intersection designs will require additional coordination and approval from government agencies. The design and feasibility is indicative and a result of transport SIDRA modelling.

5.1 Bridges Rd & Newbridge Rd Intersection

The intersection of Bridges Rd and Newbridge Rd, which is located on the south side of the precinct, is to be upgraded with the following:

- Verges along Heathcote Rd, Moorebank Ave, and Newbridge Rd;
- High-entry left-turn lane onto Newbridge Rd;
- T-intersection at Moorebank Ave and Heathcote Rd;
- Additional lanes on Moorebank Ave and Newbridge Rd;
- Left turn slip lane into Heathcote Rd; and
- Four-way intersection between Newbridge Rd, Moorebank Ave, and Bridges Rd.

5.2 Anchor PI & Newbridge Rd Intersection

The new signalised intersection of Anchor PI and Newbridge Rd, which is located on the southeast side of the precinct, will include the following works:

- Multi-lane road (Anchor PI) connecting Bridges Rd and Newbridge Rd;
- Verge at Newbridge Rd and Anchor Pl intersection;
- Kerb adjustments along Newbridge Rd and Kelso Cres/Field Cl; and
- Lane adjustments to Newbridge Rd, on east side of Anchor Pl.

5.3 Proposed External Utilities Works

Due to the proposed roadworks, all existing utilities that are located within the proposed roadworks extents have been relocated to be within the new footpath extents of Newbridge Rd. Refer to Figure 5-1 and Figure 5-2 for further details. It should be noted that these relocations are preliminary only and are subject to change with updates to the roadworks design and consultation with TfNSW and the relevant utility authorities.



Figure 5-1 External Utilities Works (Newbridge Rd & Bridges Rd Intersection)



Figure 5-2 External Utilities Works (Newbridge Rd & Anchor PI Intersection)

6 Critical Infrastructure Under PMF

6.1 Introduction & Flooding Assessment

This section of the report responds to Condition 2(c) of the Gateway Determination issued by the Department of Planning and Environment dated 3 April 2023. Condition 2(c) states:

• Provide further detail how critical infrastructure will be above the PMF for all residents (including if wider network upgrades are required);

Critical utility infrastructure includes electrical substations, wastewater management stations, water reservoirs and telecommunication towers and base stations. Moore Point Precinct is proposed within a flood prone area adjacent to Georges River, as such, flood response evacuation plans and provisions are being explored in this section of this report.

Northrop has prepared a civil concept design package for planning proposal. The proposed precinct layout, showing the road network, is shown in the extract of the general arrangement plan in Figure 6-1.



Figure 6-1 Moore Point Precinct Proposed Layout (Northrop, 2023)

According to the Advisian Flood Impact Assessment (2024) developed for the Moore Point Precinct Masterplan, the 1% AEP (or 1 in 100 year) flood level varies between 9.2m AHD (upstream) to 8.4m

AHD (downstream), while the Probable Maximum Flood level varies between 12.15m AHD to 11.98m AHD on the east side of the entire precinct. Figure 6-2 shows the 1% AEP flood extents in the existing condition and Figure 6-3 shows the PMF flood levels.



Figure 6-2 1% AEP Flood Levels in Existing Condition (Advisian, 2024)



Figure 6-3 PMF Flood Levels in Existing Condition (Advisian, 2024)

Based on Northrop civil concept design, the 1% AEP and PMF flood levels for the proposed conditions were assessed by Advisian. The flood map of the post-development conditions shows that the precinct is mostly flood free for the 1% AEP storm events. In the PMF, all the roads and open space around the

precinct including Bridges Rd and Newbridge Rd are flood affected with levels reaching up to 12.19m AHD.

Figure 6-4 and Figure 6-5 show the flood levels for the post-development condition for the 1% AEP and PMF storm events respectively. For further information on the flood impact assessment and flood maps refer to the Moore Point Precinct Flood Impact Assessment (Advisian, 2024).



Figure 6-4 1% AEP Flood Levels for Post-Development Conditions (Advisian, 2024)



Figure 6-5 PMF Flood Levels in Post-Development Conditions (Advisian, 2024)

6.2 Key Utility Response Measures

Moore Point Precinct contains a number of different land use developments with various land use risk categories. This section specifically covers the impact on flooding on the utilities and services supply to the site, in particular response to Gateway Condition 2(c):

Provide further detail how critical infrastructure will be provided above the PMF for all residents (including if wider network upgrades are required)

As a part of the precinct development the following utility response measures have been developed and will be required to be addressed at DA stages:

• Placement of trunk CSR routes on main roads set at a minimum of the 1% AEP level The precinct has been designed such that the major combined services route (CSR) follows the main entrance road for the precinct. This ensures that key services are located on the highest points of the site with reticulation off-takes to service individual building lots.

• Installation of key infrastructure within low-risk flood areas Key building infrastructure such as electrical substations will be designed in accordance with the local utility authority guidelines to ensure that they are located in low-risk flood areas outside of the 1% AEP flood extents.

Internal building provision for Shelter-in-place for PMF

It is acknowledged that the two utility response measures account for flood events up to the 1% AEP, however it is noted that the previously mentioned utility services to the precinct may still be disrupted during larger flood events particularly as they rely on connections external to the precinct that may be subject to higher flows and longer periods of flood affectation. It should also be noted that other areas of the network are already inundated.

It is demonstrated in the Flood Emergency Response Plan 2024 (Advisian) that evacuation by vehicle or foot are two viable options for the Moore Point Precinct. Any residents and visitors that chose to remain within the site will have adequate options for sheltering in place at locations that are above the predicted PMF. For these refugees access to onsite systems to

provide power, water and sewerage services would be required.

Key controls for PMF events includes:

- o Backup generators for areas sheltering-in-place,
- Storage of potable water,
- Ensuring any water pumps for carparking are powered by backup generators located above the PMF,
- Any water pumps for potable water are located above the PMF with separate pumps for retail and residential uses,
- o Overflow facility to accommodate sewer discharge from each superlot,
- Communications provided through mobile phone networks.
- Inclusion of utility supply in the Flood Emergency Response Plan (FERP)
 The continuation of critical building services should be located within the FERP. This is included
 in the Moore Point Precinct FERP prepared by Worley Consulting (Feb 2024) which details the
 requirement of back up of infrastructures to be provided for areas above the PMF event. For
 further information on the Flood Emergency Response Plan refer to FERP developed by Worley
 Consulting dated February 2024.

The establishment of these controls is consistent with flood planning contained within similar flood affected areas of Sydney and will ensure that critical infrastructure will be provided above the PMF for all residents. With the inclusion of the above planning controls, condition 2(c) of the Gateway Determination will be satisfied.

It is noted that no wider network upgrades are required beyond the placement of trunk services within the main entrance road as supply cannot be guaranteed by utility providers during an event above a 1% AEP.

7 Utility Assessments

7.1 Stormwater

7.1.1 Existing Assets

Stormwater assets in the area are maintained by Liverpool City Council and Sydney Water. The desktop information indicates the presence of several informal stormwater assets in the area.

These are summarised in Table 7-1:

Table 7-1 Existing stormwater assets

OWNER	SIZE	Туре	LOCATION
Liverpool City Council	-	Pit and pipe network	Bridges Road
Liverpool City Council	-	Pit and pipe network	Haigh Avenue

A separate stormwater assessment has been undertaken in *Water Cycle Management Statement for Planning Proposal PP-2022-1602 (Northrop 2024)*. Existing assets have been shown below in Figure 7-1 for coordination purposes.

7.1.2 Proposed Stormwater Works

While the full details are contained within the *Water Cycle Management Statement for Planning Proposal PP-2022-1602*, a summary of potential stormwater works is summarised below.

- New road stormwater drainage for the proposed new Precinct streets.
- A potential Water Sensitive Urban Design corridor to accommodate and treat existing overland flow through the site, as well as precinct bio-basins.



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Figure 7-1 Existing stormwater assets

7.2 Wastewater

7.2.1 Background

Wastewater servicing is provided by Sydney Water and directed to the Malabar Wastewater Treatment plant before discharging into the deep-water ocean outfall. The local sewer catchments are shown below in Figure 7-2.



Figure 7-2 Sydney Water Sewer Catchment Plan (Sydney Water, 2021)

Recycled water is serviced by the Liverpool Recycled Water Plant which is located approximately 1km northeast from the Moore Point Precinct site. The plant uses secondary treatment (includes screening, de-gritting, primary sedimentation, ponding, and chlorination). The treated wastewater is transported to Malabar and is re-used at the Liverpool golf course and Warwick Farm racecourse. The plant supplies to Fairfield Water Recycling Plant under Rosehill Recycled Water Scheme. Occasionally the plant discharges to Georges River in wet weather. The sewer network crossing Georges River from Bridges Road is connected to the Recycled Water Plant.

7.2.2 Existing Assets

The desktop information indicates the presence of several Sydney Water sewage assets in the surrounding area, these are summarised in Table 7-2.

Table 7-2 Existing Sydney Water sewage assets

OWNER	HLFC	SIZE	MATERIAL/TYPE	LOCATION		
		(DN)				
Sydney Water	Sewage	-	Sewer pumping station [SP0287]	Northeast of the proposed Precinct development		
Sydney Water	Sewer	900	Concrete main	Along the southern side of Bridges Road		
Sydney Water	Sewer	750	SCL Sewer rising main	Along the northern side of Bridges Road		
Sydney Water	Sewer	800	PE sewer rising main	Crossing Georges River to Liverpool Recycled Water Treatment Plant		
Sydney Water	Sewer	710	PE sewer rising main	Crossing Georges River to Liverpool Recycled Water Treatment Plant		
Sydney Water	Sewer	450	CICL Rising main	Crossing Georges River		
Sydney Water	Sewer	750	Concrete Gravity main	Crossing Georges River		
Sydney Water	Sewer	225	VC reticulation sewer	South of the proposed Precinct development site		

The existing assets are shown below in Figure 7-2.



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Figure 7-2 Existing Wastewater Assets
7.2.3 Proposed Wastewater Servicing and Relocations

To allow for construction and servicing of the development, the following alteration works are potentially required as part of Precinct early works:

- A new wastewater gravity connection from the development site to adjacent wastewater mains on Bridges Road.
- A new wastewater gravity connection from the proposed development plant room to the existing Sydney Water sewer pump station [SP0287].
- Potential upgrade or relocation of the existing Sydney Water sewer pump station [SP0287].
- Relocation of DN750 SCL sewer main and DN900 concrete sewer main under proposed Lot 9 and Lot 26 to new corridor between the proposed lot development.
- Existing sewer mains on Precinct area to be removed.

The proposed wastewater relocations and potential new building connections are shown below in Figure 7-3. It is important to note that these designs are schematic only and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Sydney Water.

Specific connection locations will be detailed following consultation with Sydney Water. Additional connection points would affect the building services spatial provisions within the development.

Sydney Water Sewer Pumping Station Relocation/Upgrade

JLG has been in consultation with WSce (WSC) regarding the Moore Point Precinct development in December 2023. Details of the meeting minutes can be found in Appendix B of the report. It was discussed in the meeting that the gravity network including the two trunk carriers on Bridges Rd has capacity for the development which require business as usual extension for developer servicing of lots and flows. However, the Sewer Pump Station (SPS) does not have spare capacity for the development.

It was noted that, without the impact of the Moore Point redevelopment, the existing sewer pump station is non-compliant as it does not have any emergency capacity and therefore cannot contain wet weather flows. Therefore, the sewer pump station will need to be upgraded and the JLG are investigating the possibility of integrating a blackwater recycling treatment plant to reduce reliance on the SWC asset and create a sustainable, self-sufficient precinct. Refer to Appendix B – Utility Authority Consultation – Sewer Pump Station Correspondence for further details.

In the situation where the upgrade works do not fit within the existing sewer pump station lot boundary, then a case to relocate the pump station may be required. As the existing sewer pump station located within the proposed Precinct development is owned by Sydney Water Corporation (SWC), any decision to relocate this should be done in consultation SWC. The general framework and engagement process has been outlined below:

- **Feasibility application** letter to be lodged with Sydney Water to initiate and investigate the feasibility of the pumping station relocation. This is to provide details around the development Masterplan and information on the proposed pumping station (e.g., proposed location, projected servicing demand, hydraulic loads, and access arrangements) to justify the relocation.
- **Commercial agreements** will need to be reached between the JLG and the Sydney Water Growth Planning & Commercial Frameworks Team on the relocation process and costs. Land exchange agreements and access arrangements will need to be discussed and confirmed with the Sydney Water Property Group.
- The process of designing a new pumping station will be completed by a new consultant/contractor. Completing the installation and commissioning will fall under **complex** works which has a typical two-year lead time based on current SWC processes.

Mott MacDonald | Confidential | Moore Point Precinct Utilities & Infrastructure Servicing Assessment Protection & Relocation of DN750 and DN900 Sewer Mains

Multiple buildings have been proposed on top of existing Sydney Water DN750 and DN900 wastewater mains. Due to their size, partial relocation of these mains will be required where the mains cross proposed buildings. Additionally, due to the amount of proposed fill over Bridges Rd, protection via concrete encasement and a concrete bridging slab has been proposed along this road to protect these existing mains. It should be noted that bridging slab protection assumes the slab is required when the proposed fill exceeds 0.3m.

Refer to Figure 7-3 for sewer main relocation and bridging slab extents. It should also be noted that relocation and protection works associated with these assets should be done in consultation with Sydney Water and will be refined/completed during subsequent stages.



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Figure 7-3 Potential new building sewer connection

7.2.4 Demand Assessment

A high-level demand assessment was undertaken for the site based on the indicative building development yields detailed in Section 2.1. This development yield has been referenced for the purposes of utilities infrastructure assessments only and the final architectural designs should be used to confirm the building details.

The estimated wastewater demand was calculated based on standard unit rates summarised in Figure 7-3 below and the indicative development yields.

The design criteria used to forecast future wastewater loading has been taken from the Sydney Water Area *Planning Design Criteria Guide: WSA 02-2002-3.0 (Sewer Code of Australia)* which is expressed as an Equivalent Population for a particular land use. The Average Dry Weather Flow (ADWF) per Equivalent Population (EP) has been taken as 150 L/day or 0.0017L/s (ADWF(L/s) = 0.0017 * EP. A BASIX reduction of 40% has been included within these calculations and applied to the residential portion of this development.

Table 7-3 Sewer Design Loading Criteria

Land Use	Design Criteria	Unit	Demand Rate	Source
Residential – High density multi storey apartments	Average Dry Weather Flow	EP/ha (gross)	375 – 4500 ¹	Gravity Sewerage Code of Australia, WSA 02-2014- (Water Services Association, Version 3.1, 2014), Appendix A
Commercial – High density commercial	Average Dry Weather Flow	EP/ha (gross)	300 – 800 ¹	Gravity Sewerage Code of Australia, WSA 02-2014- (Water Services Association, Version 3.1, 2014), Appendix A
Other Area – Local commercial	Average Dry Weather Flow	EP/ha (gross)	75	Gravity Sewerage Code of Australia, WSA 02-2014- (Water Services Association, Version 3.1, 2014), Appendix A

¹ The average of the ranges for "High density multi storey apartments" and "High density commercial" land uses have been utilised for calculations

Lot 15 and parts of Lots 5, 9, 14, 16, 17, and 20 are classified as "Other Area". This land use type consists of community facilities, mixed use spaces, open spaces, an education block, and heritage blocks. It should be noted that for this land use type, the closest demand rate has been adopted due to the variety of spaces and the limited number of authority demand rates available for calculations. The "local commercial" land use has been assumed for lots classified as "other".

7.2.5 Forecast Demand

The Moore Point Precinct development has been classified as comprising 'high-density dwelling'.

Under the proposed development scenario, the mean ADWF has been estimated to be approximately 258L/s. Considering a $\pm 15\%$ range in development yields, the ADWF could range between 219 - 297L/s allowing for BASIX for residential dwellings only.

Aspirational targets of achieving a Water NABERS ratings and other sustainability initiatives are not reflected in the following demand assessment.

Total (L/s: Average Dry Weather Flow) - including BASIX for Residential						
Moore Point Precinct	Stage 1	Stage 2	Stage 3			
Estimated Demand	99.91	79.41	78.62			
Estimated Demand (Cumulative)	99.91	179.31	257.94			

Table 7-4 Estimated Average	Dry Weather Flow (ADWF)



Figure 7-4 Average Dry Weather Flow (Including BASIX)

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7.3 Potable Water

7.3.1 Background

Potable water at the Moore Point Precinct is currently supplied by Sydney Water through the Potts Hill Water Delivery System.



Figure 7-5 Prospect South Delivery System

Water is sourced from several water sources including Coxs, Kowmung, Nattai, Wingecarribee, Wollondilly and Warragamba rivers which are stored at Warragamba Dam. When required during droughts, additional sources include Cataract, Cordeaux, Avon and Nepean rivers and Shoalhaven River System. The water is treated at the Prospect Water Filtration Plant before transported to Prospect South reservoirs where it is delivered to the local areas via gravity or a pumping station where necessary.

Sydney Water currently does not provide recycled water to the Moore Point Precinct site. However, options to utilise the adjacent water treatment facilities / pump station to provide a recycled water treatment system are being explored by the JLG.

7.3.2 Existing Assets

Potable Water servicing is provided by Sydney Water, the desktop information indicates the presence of several Sydney Water assets in the surrounding area. These are summarised in Table 7-5 below:

Table 7-5 Existing Sydney Water Potable Water Assets

OWNER	HLFC	SIZE (DN)	MATERIAL	LOCATION
Sydney Water	Water	200	CICL	Along Bridges Road from Newbridge Road
Sydney Water	Water	150	mPVC	From Bridges Road to end of the proposed road at 8 Bridges Road
Sydney Water	Water	300	CICL	From Haigh Avenue to Bridges Road Along Newbridge Road
Sydney Water	Water	250	CICL	From Bridges Road to Kelso Crescent Along Newbridge Road
Sydney Water	Water	375	CICL	At the intersection of Bridges Road and Newbridge Road

The existing assets are shown below in Figure 7-6.



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Figure 7-6 Existing Potable Water Assets

7.3.3 Proposed Water Servicing and Relocations

To allow for construction and servicing of the development, the following alteration works are potentially required:

- New connections to the existing Sydney Water potable mains on Newbridge Road and Bridges Road along with any required amplification works
- A new internal potable water network line with a connection to the proposed development lots

The proposed potable water relocations and potential new building connections are shown below in Figure 7-7. It is important to note that these designs are schematic only and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Sydney Water.

Additionally, the opportunity to provide a recycled water treatment system is being explored with Sydney Water. While this assessment is still being undertaken to ascertain the viability, a figure of how this system could operate in the Precinct is contained below in Figure 7-8.

Specific connection locations will be detailed following consultation with Sydney Water. Additional connection points would affect the building services spatial provisions within the development.



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Figure 7-7 Potential new building water supply connection



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Figure 7-8 Potential new recycled water supply connection

7.3.4 Demand Assessment

A high-level demand assessment was undertaken based on the indicative building development yields detailed in Section 2.1. This development yield has been referenced for the purposes of utilities infrastructure assessments only and the final architectural designs should be used to confirm the building details.

The estimated potable water demand was calculated based on the standard unit rates summarised in Table 7-6 below and the development yields. The Net Lettable Area (NLA) was assumed to be 80% of the Gross Floor Area. A BASIX reduction of 40% as per the Building Sustainability Index Targets has also been adopted.

The Moore Point Precinct development has been classified as comprising 'high-density dwellings'.

Lot 15 and parts of Lots 5, 9, 14, 16, 17, and 20 are classified as "Other Area". This land use type consists of community facilities, mixed use spaces, open spaces, an education block, and heritage blocks. It should be noted that for this land use type, the closest demand rate has been adopted due to the variety of spaces and the limited number of authority demand rates available for calculations. The "suburban commercial" land use has been assumed for lots classified as "other".

Land Use	Design Criteria	Unit	Demand Rate	Source
Residential – Multi-unit (>140 units/net/ha)	Max Day Demand	kL/unit/day	0.8	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-2
Commercial – City high rise commercial	Max Day Demand	kL/Nha/day	63	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-3
Other Area – Suburban Commercial	Max Day Demand	kL/Nha/day	41	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-3

Table 7-6 Potable Water Design Loading Criteria

Under the proposed development scenario, the total max day demand (kL/day) has been estimated to be approximately 6871kL/day including BASIX reduction. Considering a $\pm 15\%$ range in development yields, the total max day demand could range between 5840 - 7901kL/day.

Aspirational targets of achieving a Water NABERS ratings and other sustainability initiatives are not reflected in the following demand assessment.

Table 7-7 Estimated Total Potable Max Day Demand

Total (kL / Day: Max Day Demand)	- including I	BASIX for R	esidential
Moore Point Precinct	Stage 1	Stage 2	Stage 3
Estimated Demand	2621	2106	2144
Estimated Demand (Cumulative)	2621	4727	6871





7.3.5 Service Authority Consultation

A feasibility application has been submitted to Sydney Water. JLG is in consultation with WSCE regarding the SPS upgrade, servicing requirements and demand estimation. The consultation process is ongoing.

7.4 **Telecommunications**

7.4.1 Existing Assets

Telecommunications servicing is provided by Telstra, NBN Co, Optus, Uecomm, and Vocus. The desktop information indicates the presence of several telecommunications assets in the surrounding area.

These are summarised in Table 7-8:

Table 7-8 Existing Telecommunications Assets	Table 7-8	Existing	Telecomn	nunications	Assets
---	-----------	----------	----------	-------------	--------

OWNER	Туре	SIZE (DN)	LOCATION
Telstra	Conduit	20-100	Along Bridges Road
Telstra	Conduit	35	Bridges road through the Moore Point Precinct area
Telstra	Conduit	100	Newbridge Road
Telstra	Conduit	70	Newbridge Road
Telstra	Conduit	100	Newbridge Road
Telstra	Conduit	30-50	Newbridge Road
Telstra	Conduit	50	Running from Newbridge Road through the Moore Point Precinct Site
Telstra	Aerial	-	Running through the middle of the Moore point Precinct Site
Telstra	Above Ground Pillar	2x	Bridges Road
Telstra	Above Ground Pillar	4x	Haigh Avenue
Telstra	Footway access pits	-	Newbridge Road
NBN	Conduit	100	Haigh Avenue through the Moore Point Precinct area
NBN	Conduit	100	Haigh Avenue
NBN	Conduit	100	Along the Bridges Road and the Proposed Road at 8 Bridges Road
NBN	Conduit	100	Newbridge Road
Uecomm	Conduit	-	Newbridge Road from Haigh Avenue to Kelso Crescent
Optus	Footway access pits	-	Newbridge Road from Haigh Avenue to Kelso Crescent
Vocus	Footway access pit	-	361 Newbridge Road

The existing assets are shown below in Figure 7-10.



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Figure 7-10 Existing Telecommunications Assets

7.4.2 Proposed Telecommunications Servicing and Relocations

To allow for construction and servicing of the development, the following alteration works are required:

- Potential new connections to the existing telecommunications infrastructure on Newbridge Road and Haigh Avenue.
- New internal telecommunications lines running through the proposed development including the foreshore public domain areas for CCTV connection.
- Removal or relocation of existing telecommunication lines that run under proposed lots.
- Potential off-site works to provide new fibre optic cables from the nearest Telstra or NBN exchange.

The proposed telecommunication relocations and potential new building connections are shown below in Figure 7-11. It is important to note that these designs are schematic only and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Telstra.

For the purposes of this initial utility services assessment, it has also been assumed that the proposed development will consist of a single lot with a single telecommunications connection.

7.4.3 Demand Assessment

No demand assessment has been undertaken for this service however advice on the quantity and type of connections will be ascertained via the feasibility application process with the telecommunications authorities. Telecommunication connections will be confirmed as the building services design develops and will be coordinated with service providers.

7.4.4 Service Authority Consultation

The following telecommunications servicing requirements have been confirmed with NBN:

- NBN will enter into agreements with the developer entities to supply fibre to the premises (FTTP) within the developments, as well as any non-premises where required.
- NBN new developments can cater for the full capacity to this development to allow for a true fibre to the premise solution for each 10,742 residential dwellings and a total commercial area of 328,516m² that NBN will monitor, maintain, and expand as the precinct grows and demand is required (as well as any non-premises identified during the planning phase).
- NBN already has fibre infrastructure in the region and will expand those to service the development as well as upgrading infrastructure to support future growth as identified in the planning phase.
- Capacity to cater for the development will be brought from Terminus St, as shown below:



- No backhaul costs will be incurred as additional for this development as NBN already has a point of interconnect located 1km from the site. Removal of the network will be required however, no relocation will be required until the development is at Stage 1 (2026 2036).
- NBN does not require funding arrangements for upgrades to their network, as they maintain, monitor, and support their network and their future roadmaps allow for future growth, capacity, and technology upgrades.
- NBN requires a minimum 6 months from acceptance to plan their program of work into developer timings.



Figure 7-11 Potential new building telecommunications connection

7.5 Electrical

7.5.1 Existing Assets

Electrical servicing is provided by Endeavour Energy, the desktop information indicates the presence of several Endeavour Energy assets in the surrounding area.

These are summarised in Table 7-9:

Table 7-9 Existing Electrical Assets

OWNER	Туре	LOCATION
Endeavour Energy	10 x Pad mounted sub stations Asset ID:	Moore Point Precinct Site
Endeavour Energy	Electric poles with street lighting	Bridges Road
Endeavour Energy	Street lighting ducts	Bridges Road
Endeavour Energy	11kV Distribution lines	Along Bridges Road connecting to Liverpool Hospital
Endeavour Energy	11kV Distribution lines	Newbridge road
Endeavour Energy	33kV Sub-Transmission lines	Newbridge road

The existing assets are shown below in Figure 7-12.



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	Level 40, 202 Kent Street			SCALE	CLIENT	TITLE	DRAWING INFORMATION	
M MOTT MACBONALD	Level 10, 383 Kent Street Sydney, NSW 2000 Australia NSW 1230, Australia PO Box Q1678, QVB Sydney T +61 (0)2 9098 6800 www.mottmac.com	Rev Date Description	Ch'k'd App	20 0 40 80m SCALE 1:2000 FULL SIZE A1		Moore Point Precinct Existing Utility Plans Electrical Plan	Drawn: J.Garbo Designed: J.Laokitichai Checked: W.Phan Approved: D.Fettell DRAWING NUMBER 424334-MMD-D	Revision: - Status: FOR APPROVAL Security: STD A-STG0-DR-0014

Figure 7-12 Existing Electrical Assets

7.5.2 Proposed Electrical Servicing and Relocations

To allow for construction and servicing of the development, the following alteration works are required:

- New low or high voltage conduits through the site feeding to the development site connecting it to the existing Newbridge Road and Bridges Road conduits.
- Removal or relocation of low or high voltage conduits that run under the proposed development lots.
- Four (4) double-cabled 11kV underground feeders from Moorebank Zone Substation to relevant locations within the development site.

7.5.3 Available Substation Capacity

The Moore Point Precinct is situated between the Moorebank zone substation and the Liverpool 11kV zone substation. 11 kV distribution lines run through the Moore Point Precinct site on Bridges Road. 11 kV distribution and 33 kV sub-transmission lines run along Newbridge Road.

In the Moore Point Precinct site there is approximately 30 MVA capacity. The capacity will need to be increased to cater for the increased energy consumption of the Moore Point site. Refer to Figure 7-13 for details.



Figure 7-13 Moore Point Substation Capacity



Figure 7-14 Potential new building electrical connection

7.5.4 Demand Assessment

A high-level demand assessment was undertaken based on the indicative building development yield detailed in Section 2.1. This development yield was referenced for the purposes of utilities infrastructure assessments only and the final architectural designs should be used to confirm the building details.

The estimated electrical demand was calculated based on standard unit rates summarised in Table 7-10 below and the development yields. The Net Lettable Area (NLA) was assumed to be 80% of the GFA.

Lot 15 and parts of Lots 5, 9, 14, 16, 17, and 20 are classified as "Other Area". This land use type consists of community facilities, mixed use spaces, open spaces, an education block, and heritage blocks. It should be noted that for this land use type, the closest demand rate has been adopted due to the variety of spaces and the limited number of authority demand rates available for calculations. The "Theatres, halls, etc – air-conditioned" land use has been assumed for lots classified as "other".

Additionally, an 80% diversity factor has been adopted where Ausgrid demand rates have been used, as Ausgrid rates do not consider diversity.

Table 7-10 Electrical Design Loading Criteria

Land Use	Design Criteria	Unit	Demand Rate	Source
Residential - Apartments	AD Maximum Demand	MVA/dwelling	0.0035	Endeavour Energy Growth Servicing Plan 2019 - Table 1
Commercial – Office – Electrical reheat zonal	Maximum Demand	MVA/m ²	0.00011	Ausgrid NS109 - Table 4 Guide to Typical Load Densities
Other Area – Theatres, halls, etc - Air-conditioned	Maximum Demand	MVA/m ²	0.0001	Ausgrid NS109 - Table 4 Guide to Typical Load Densities
Diversity Factor	N/A	%	80	AS3000

The proposed total electrical demand based on the development profile is estimated to range between 53 to 71MVA, including a 0.8 diversity factor.

Table 7-11 Estimated Total Electrical Demand (MVA)

Total (MVA) - including 0.8 Diversity Factor							
Moore Point Precinct	Stage 1	Stage 2	Stage 3				
Estimated Demand	23.23	18.86	19.78				
Estimated Demand (Cumulative)	23.23	42.09	61.87				





7.5.5 Service Authority Consultation

A feasibility application was submitted to Endeavour Energy, who has advised that the total required load of the entire development is beyond their 10-year load forecasting window and that the final supply arrangement cannot be determined at this early stage of the project.

Their preliminary analysis has identified that, presently, capacity can be made for the 20-year development period (2026 – 2046), which would equate to approximately 50MVA. However, it should be noted that Endeavour Energy does not reserve capacity as available capacity may be taken up by other non-related development and become exhausted before the Moore Point Precinct progresses through its 30+ year development staging.

Endeavour Energy has also advised that the project will need to run four (4) double-cabled 11kV underground feeders from their Moorebank Zone Substation to the relevant locations within the development site. These will be required in Stages 1 and 4 of the development.

7.6 Gas

7.6.1 Existing Assets

Gas servicing is provided by Jemena, the desktop information indicates the presence of several Jemena assets in the surrounding area.

These are summarised in Table 7-12:

Table 7-12 Existing gas assets

OWNER	HLFC	SIZE	Туре	LOCATION
Jemena	Gas	200 ST 1050kPa	High pressure main	Along Bridges Road from Newbridge Road to Liverpool Hospital. The gas main crosses the Moore Point Precinct and Georges River.
Jemena	Gas	100 ST 1050kPa	High pressure main	Newbridge Road from Bridges Road to Kelso Crescent

The existing assets are shown below in Figure 7-16.



s document should not be relied on or used in circumstances other than those for which it was originally prepared and for which Mott MacDonald s commissioned. Mott MacDonald accepts no responsibility for this document to any other party other than the person by whom it was commission

	Level 10, 383 Kent Street				SCALE	CLIENT			TITLE	DRAWING INFORMATION	
M M	Sydney, NSW 2000 Australia NSW 1230, Australia				20 0 40 80m	G		LEAMAC	Moore Point Precinct Existing Utility Plans Gas Plan	Drawn: J.Garbo Designed: J.Laokittichai Checked: W.Phan	Revision: - Status: FOR APPROVAL
MACDONALD	PO Box Q1678, QVB Sydney T +61 (0)2 9098 6800 www.mottmac.com	Rev Date	- Description	Ch'k'd App'	SCALE 1:2000 FULL SIZE A1	G	RONATION	PROPERTY GROUP	Gastian	Approved: D.Fettell DRAWING NUMBER 424334-MMD-D	Security: STD A-STG0-DR-0015

Figure 7-16 Existing Gas Assets

7.6.2 Proposed Gas Servicing and Relocations

To allow for construction and servicing of the development, the following alteration works are potentially required:

- Potential gas protection and/or relocation at upgraded Newbridge Rd and Bridges Rd intersection.
- Potential protection of existing DN200 ST 1050kPa high pressure gas mains on Bridges Rd with bridging slab.
- Potential relocation of existing DN200 ST 1050kPa that will run under the proposed new development (Lot 4) at the northeast corner of the site (adjacent to Haigh Park).

The proposed gas relocations and protection measures are shown below in Figure 7-17. It is important to note that these designs are schematic only and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Jemena.

We note that gas is a non-renewable resource and there is a strong desire to avoid gas connections where possible for this Precinct. However, for the purposes of the business-as-usual assessment we have shown a gas servicing network should it be required for future stages of development.

Specific connection locations will be detailed following consultation with Jemena. Additional connection points would affect the building services spatial provisions within the development.

7.6.3 Service Authority Consultation

An enquiry has been submitted to Jemena. We are currently waiting for feedback for this request.



	Lovel 10, 292 Kept Street		SCAL	E	CLIENT	TITLE	DRAWING INFORMATION	
м	Sydney, NSW 2000					Moore Point Precinct	Drawn: J.Garbo	Revision: P2
N	Australia			20 0 40 80m		Stage 1 - Utility Plans	Designed: J.Laokittichai	Status: PLANNING PROPOSAL
Man IVI	NSW 1230, Australia				ORONATION LEAMAC	Gas Plan - Proposed Development	Checked: W.Phan	Security CTD
MACDONALD	PO Box Q1678, QVB Sydney	P2 10/05/2024 ISSUE FOR PLANNING PROPOSAL	WP DF	SCALE 1:2000 FULL SIZE A1	PROPERTY GROUP		Approved: D.Fettell	Security. STD
	T +61 (0)2 9098 6800	P1 28/11/2023 ISSUE FOR INFORMATION ONLY	WP DF		_		DRAWING NUMBER	
	www.mottmac.com	Rev Date Description	Ch'k'd App'd			1	424334-MMD-DA	A-STG1-DR-0015

Figure 7-17 Potential new building gas connection

8 Coordination of Services

There are several standards and guidelines that specify trunk utility routes that are applicable to this precinct.

8.1 Streets Opening Conference Service Corridors

The NSW Streets Opening Coordination Council (SOCC) is a voluntary association of member organisations that have agreed to meet to resolve issues on a cooperative basis. The most widely used publication is the Guide to Codes and Practices for Street Opening (2018).

This guide is published to document industry practice and provide essential information and guidance on managing street openings for the provision of underground utility services, the typical allocation of utilities is shown below in Figure 8-1.



Figure 8-1 SOCC Utility Allocation

This section does not typically allow for the provision of precinct utilities or street trees and while elements of this have been used for the concept Utilities Services instead key elements from the Western Sydney Engineering & Street Design Manual have been used to better align with the Precinct goals.

8.2 Western Sydney Engineering & Street Design Manual

As discussed as part of the Western Sydney City Deal, there has been a commitment to provide uniform LGA engineering design standards and best practices. The street design guidelines document the rationale for taking a new approach to street design as well as providing a framework on how to design cleaner, greener and safer streets for Western Sydney.

Two documents were released to facilitate this target:

- Western Sydney Engineering Design Manual December 2020
- Western Sydney Street Design Manual September 2020.

One of the key initiatives were indicative configurations of shared utilities trenches which better suit the design intent of the Western Sydney and the Street Design Manual. As we spoke about in the meeting the design intent of the street design manual better matches the design of Moore Point than the existing *Street's Opening Conference guidelines.*

Noting the combined services routes are still conceptual in nature, it is proposed to apply the principles of these design manuals to the Moore Point Precinct. A typical allocation based on these guidelines is shown below in Figure 8-2.



Figure 8-2 Western Sydney Engineering Manual Utility Allocation

It should be noted that the existing trunk sewer mains and high-pressure gas mains along Bridges Rd will not be contained within the nominated corridor or standard location, as they will ideally remain in their current locations.

9 Sustainability Initiatives

A separate Sustainability Statement has been prepared for this Precinct. However, key alignment between the proposed utility servicing outcomes and the Sustainability Statement has been undertaken.

The Sustainability Statement outlines the following potential initiatives:

- Smart Infrastructure
- Embedded networks
- Stormwater harvesting and reuse systems
- Recycled blackwater
- Water efficient fixtures and fittings

The eventual use of any of these sustainability initiatives will potentially reduce the type and quantity of required utility servicing and may also be used to assist in offsetting utility supply constraints. These are to be further investigated in future design stages in coordination with the building services design and relevant service authorities.

The following sections provide some detail on how the embedded networks initiative could apply to precinct utilities and the benefits of smart infrastructure.

9.1 Embedded Network

An embedded network has been selected to support the following for this precinct:

- Elimination of fossil fuel use
- Electrification of all stationary energy uses
- Supply of all stationary energy uses with renewable electricity generated on-site or off-site

It facilitates an effective and commercial response to precinct-level electrification as well as optimising of the HV incoming electrical feeder configuration.

Benefits of an embedded network include the ready integration of embedded generation and energy storage technologies, including electrical vehicle bi-directional capabilities.

9.2 Smart Infrastructure

As a part of the road network, it is recommended that sufficient space is allowed for future changes and improvements in telecommunications infrastructure beyond supplying building developments with internet connectivity.

Alongside the potential for public Wi-Fi, allowance for all street poles, bus shelters and TCS posts will enable future use of this infrastructure to the public benefit. Incorporation of smart devices can also play a key role, aside from ensuring safe streets fibre-to-poles allows for future adaptability and could be incorporated into a potential early warning system for items such as floods, bushfires, or other events.

Including fibre to the pole also allows for a large amount of future flexibility, including uses we cannot envision now. Whether community wi-fi networks or future noticeboards, smart traffic systems, electronic wayfinding, adaptive lighting, or many others

One potential option that has been trialled in Boston is the establishment of a shared telecommunications utilidor. This could potentially serve to "de-bundle" telecommunication providers from subducting with Telstra alone, democratises access to fibre for retailers and could be a shared access agreement to allow future start-ups or community fibre networks as shown in Figure 9-1 below.



Figure 9-1 Example Boston Smart Utilities Section

It should be noted that in the post-development scenario, the precinct will not experience significant flooding. However, should the development flood, fibre to the pole and smart technology can be utilised within flood prone areas to aid in evacuation planning and hazard detection. Within these areas, there is opportunity to further explore smart systems that could detect flood events and provide visual wayfinding for flood evacuation routes – potentially paired with a community Wi-Fi that allows for push notifications in the event of natural disasters.

Some examples where smart infrastructure has been used in disaster planning are summarised in the table below.

System	Description	Use Cases	Source
Bright Sites Smart Pole	 Delivers wireless network connections e.g., 4G LTE, 5G, Wi-Fi, Lo-RA Smart microphones equipped with advanced pattern recognition which can be triggered by noises associated with anti-social behaviour such as shouting, car alarms, breaking glass, or even gunshots. They then automatically brighten the light, record audio and alert emergency services. Air quality detection and hazard warning Traffic and mobility sensor Display screens can offer emergency services messaging Contains wireless network connection and speaker system so likely can be configured as an early warning system. 	Test programs in Eindhoven, San Jose, Hospitalet - Spain	 <u>Smart Poles: The Potential</u> <u>Building Blocks of Smart City</u> <u>Infrastructure (aeris.com)</u> <u>SmartPoles City of San Jose</u> (sanjoseca.gov) <u>New BrightSites smart pole by</u> <u>Signify turbocharges cities'</u> <u>smart city infrastructure and</u> <u>looks good doing it Signify</u> <u>Company Website</u>
ENE Hub Smart Node	Smart City Services	Used in Australian Precincts such as Royal Botanical Garden (Sydney), City of Canada Bay Council.	<u>Royal Botanic Garden,</u> <u>Sydney - ENE HUB (ene-hub.com)</u>
Bosch IOT Smart Building Evacuation System	 Utilises CCTV cameras with embedded video analytics and fire detection systems. Information from these cameras is then processed via an Internet of Things (IoT) software platform, which brings together all available data to calculate the optimal escape route. 	Utilised within the Bosch Singapore Campus	 <u>IoT use case: optimal</u> <u>emergency escape route</u> (bosch-si.com) <u>Bosch Singapore campus:</u> <u>smart building concept turned</u> <u>reality - YouTube</u>
Buenos Aires SAP HANA	 Uses a series of IOT enabled radar sensors in drainage pits and pipes to monitor water levels 	Buenos Aires	<u>Manage Disaster and Build</u> <u>Resilient Smart Cities Smart</u> <u>Cities Council</u>

 Table 9-1 Examples of Smart Infrastructure Used in Disaster Planning



10 Next Steps

10.1 Utility Servicing

This building design is subject to further design development, future work that is required to ensure adequate servicing includes:

- Further coordination with utility agencies on potential lead-in infrastructure connections and any amplifications of existing assets
- Further utility investigations, including slit trenching and obtaining Quality Level A survey information of existing utility assets, to confirm the location of existing assets and minimise impacts to the community during delivery of the Precinct
- Implementation of potential selected sustainability initiatives in the building design and revised demand modelling to determine the impacts on the required lead-in infrastructure
- Formal connection applications for utility services through appropriate channels such as Water Service Coordinators and Accredited Service Providers
- Development of formal utility relocation and connection packages to the utility agencies, including any protection details of existing utility assets, as required.

The JLG recognises the significant investment under way into decarbonisation of the electricity supply system and the part Moore Point must play in planning a transition to a net zero economy. This transition planning acknowledges a shift away from fossil fuel use for on-site stationary energy applications. The intent is that by the completion of the Precinct build out, the Precinct will be operating fossil fuel-free and connected to a decarbonised electricity supply system.

11 Conclusion

11.1.1 Assessment Summary

This Utilities & Infrastructure Servicing Assessment has concluded that servicing is available to the site. The main servicing constraints and utility works that may be required include:

- A new wastewater gravity connection from the proposed development plant room to the existing Sydney Water pump station [SP0287]
- Potential upgrade or relocation of the existing Sydney Water sewer pump station [SP0287]
- Potential protection of the existing DN750 and DN900 sewer mains and DN200 high pressure gas main on Bridges Rd with a concrete bridging slab
- Potential relocation of existing DN200 ST 1050kPa that will run under the proposed new development (Lot 4) at the northeast corner of the site (adjacent to Haigh Park).
- Potential relocation of DN750 SCL sewer main and DN900 concrete sewer main under proposed Lot 9 and Lot 26 to new corridor between the proposed lot development.
- New connections to the existing Sydney Water potable mains on Haigh Avenue, Newbridge Road, and Bridges Road along with any required amplification works
- New low or high voltage conduits through the site feeding to the development site connecting it to the existing Newbridge Road and Bridges Road conduits
- Potential new connections to the existing telecommunications infrastructure on Newbridge Road and Haigh Avenue
- Potential new connections to the existing Jemena mains on Newbridge Road and Bridges Road.

There is a strong case for a district thermal system along with other precinct utility systems such as embedded networks, rainwater harvesting, and recycled water. These precinct systems will continue to be explored in subsequent design stages based on feedback from the relevant council and utility authorities.

It should be noted that the above assessment will also continue to be developed in subsequent design stages in consultation with the relevant utility authority providers as connection applications are submitted.
Appendix A – Utility Authority Consultation – Feasibility Application



Subject

Moore Point Precinct Water and Wastewater Feasibility Application

То	Sydney Water
Prepared by	Winston Phan
Checked by	Jeffrey Chan
Approved by	Daniel Fettell
Our reference	424334
Office	Mott Macdonald Level 10 383 Kent Street Sydney NSW 2000 Australia
Date	26/11/2021

Your reference

1 Introduction

Moore Point Precinct site is envisaged to comprise up to thirty (30) separate built-form structures for an estimated 14,100 dwellings and commercial spaces. The proposed gross floor area (GFA) is approximately 1,566,000 m².

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 1-1

The site comprises several parcels of land owned by both Coronation Property and Leamac Property Group. Industrial operations make up most 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 Concept Master Plan application is made over approximately 40ha of land. The main access to the site is along Haig Ave, Newbridge Rd and Bridges Rd.



Figure 1-1 Illustrative Locality Plan of the Moore Point Precinct

Table 1-1 below provides a breakdown of the latest approximate development yields for each Metro station site, including a breakdown of dwellings, commercial and retail space. Attachment A shows indicative extents for the site development. Furthermore, the details provided as part of this application have been provided to facilitate preliminary infrastructure studies only and are subject to change as the designs develop.

Development Stage	Residential Apartments ³ (No.)	Indicative Commercial Space GFA ² (m ²)	Indicative Retail Space GFA ² (m ²)	Development Timeframe (Year)
1	4,492	83,126.4	21,870	2026-2036
2	3,732	31,890.4	25,598.4	2036-2046
3	4,255	48,280	11,436	2046-2056
4	1,620	72,336	-	2056+
Total	14,099	235,632.8	58,904.4	-

Table 1-1 Indicative Development Growth (28th Oct 2021)

Note:

¹Apartment numbers and commercial/retail space figures are assumptions only and are subject to review. They are provided for the infrastructure capacity analysis only.

²An assumed 0.8 conversion factor from gross floor area (GFA) to net lettable area (NLA) has been applied.

³1 apartment = 85 sqm of Residential GFA

2 Potable Water and Wastewater Demand Rates

A preliminary assessment has been undertaken of the potential potable water and wastewater demand associated with the proposed developments.

Demand forecasting and profiles were developed for the study area and individual precincts based on the number of dwellings and gross floor area for retail and commercial development. The demand assessment considered the unit rates and BASIX reduction factors as summarised in Table 2-1 and Table 2-2.

Table 2-1 Potable Water Demand Unit Rate
--

Land Use	Design Criteria	Units	Potable Water Demand	Sources
Multi-Unit (>140 unit/net/ha) 6-12 storey apartment	Max Day Demand	kL/unit/day	0.8	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-2
City High Rise Commercial	Max Day Demand	kL/Nha/day	63	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-2
Suburban Commercial	Max Day Demand	kL/Nha/day	41	Water System Planning Guideline (Sydney Water, Version 1) Section 3, Table 3-2
BASIX Reduction (residential only)		%	40	Building Sustainability Index Targets

Table 2-2 Wastewater Demand Unit Rates

Land Use	Units	Wastewater Demand	Sources
Singleoccupancyhighdensitydwelling	EP/dwelling	2.5	Water Supply Code of Australia WSA 03-2011 - 3.1 (Sydney Water Edition 2014)
High Density Commercial	EP/ha	300	Water Supply Code of Australia WSA 03-2011 - 3.1 (Sydney Water Edition 2014)
Local Commercial	EP/ha	75	Water Supply Code of Australia WSA 03-2011 - 3.1 (Sydney Water Edition 2014)
Average Dry Weather Flow (ADWF)	L/s per EP	0.0017	Water Supply Code of Australia WSA 03-2011 - 3.1 (Sydney Water Edition 2014)
BASIX Reduction (residential only)	%	40	Building Sustainability Index Targets

3 Projected Water and Sewer Demand

Estimates for the potable water Maximum Day Demand (MDD) and the Average Dry Weather Flow (ADWF) for wastewater were developed using the development yields outlined in Section 1 and unit rates outlined in Section 2 for each station development. The BASIX reduction has also been applied to residential developments only, while commercial demand includes office and retail uses.

Table 3-1 summarises an estimate of the potable water Maximum Day Demand and Table 3-2 provides a summary of the ADWF estimates for wastewater. Please note that, as the design is still evolving, we believe it is appropriate to apply a $\pm 15\%$ factor to these numbers.

	Estima	Total		
Development Stage	Residential (incl. BASIX)	Commercial and Retail	(kL/day)	
1	2,156	613	2,769	
2	1,791	306	2,097	
3	2,043	351	2,394	
4	778	456	1,233	
Total	6,768	1,726	8,494	

Table 3-1 Estimated Cumulative Maximum Day Demand for Potable Water including BASIX (kL/day)

Table 3-2 Estimated ADWF for Wastewater including BASIX (L/s)

	Estimated V	Total	
Development Stage	Residential (incl. BASIX)	ASIX) Commercial and Retail	
1	11.5	4.5	16
2	9.5	2.0	11.5
3	10.9	2.6	13.5
4	4.1	3.7	7.8
Total	36.0	12.8	48.7

The above demand estimates do not allow for reductions in existing demand resulting from the demolition of existing land uses.

4 Sewer Pumping Station Upgrade or Relocation

Based on Dial Before You Dig (DBYD) plans, two existing Sydney Water Sewer Pump Stations have been identified as being located adjacent to the proposed precinct development. These are shown in Attachment A of this letter and include:

- SP0287 located north of the development accessible by Bridges Road; and
- SP0381 located east of the development off Newbridge road.

It is anticipated that the future precinct development will generate additional sewer loading to these assets as outlined in Section 3 and further understanding of their existing capacities and potential future upgrades will be required as part of this feasibility application.

5 Potential Recycled Water Connection

The proposed Moore Point Precinct is located approximately 500m south of the Liverpool Water Recycling Plant linked by a series of existing rising mains traversing underneath Georges River. The expected increase in wastewater demand from the development presents an opportunity for further recycled water adoption to meet Sydney Water as well as the precinct's ESD goals. However, further understanding of existing plant capacities and recycled water uses is needed.

6 Feasibility Assessment Request

As demonstrated in the demand estimate there is projected to be a significant impact on the water and wastewater infrastructure. As such Mott Macdonald seeks to engage with utility stakeholders to ensure the appropriate planning measures are implemented.

This request seeks to initiate the consultation and planning process by providing the initial water and wastewater demand estimates.

We welcome further discussion and collaboration as part of the precinct planning and are happy to meet with water and wastewater utilities authorities to discuss the implications of this feasibility application.

7 Attachments

Attachment	Title
А	Moore Point Precinct – Indicative Site Extents



Appendix B – Utility Authority Consultation – Sewer Pump Station Correspondence



Project	8297000 - Moore Point	
Subject	Meeting with Coronation/Lea Mac & Sydney Water to discuss the proj	ect.
Actions	1. Pradip; SPS dry weather flows	
	- Delivered Jan 2024	
	2. Coronation/ Lea Mac; basic guidance program for assessment	t alignment
	- Delivered Jan 2024	
	3. WSce; discharge loading based on program & two scenarios l	being
	a) without sewer mining	
	b) with sewer mining	
	- Delivered Q1 2024	
Location	Moore Point	
Date	20 th December 2023	
Attendees	Kathy Hansen	Sydney Water
	Nitin Kundap	Sydney Water
	Sean Pracey	Sydney Water
	Pradip	Svdnev Water
	Aras Labutis	Coronation
	Nicolle Harcombe	Coronation
	Rachel Harrison	
		WSce
	Tom Wise	WSce
		WSCe
Distribution	All present and Sydney Water	
Distribution		
Item No		Actions
item ito.		Actions
1	Introductions	Note
	General personal introductions	Note
	 Aras presented the general context of the development 	
	 And presented the general context of the development & planning status with the following key points 	
	Current plan consistent with development	
	nature & land use mix + floor space	
	• At pre-exhibition currently with some additional	
	inputs for the purpose of planning currently	
	being prepared and submitted	
	• A flooding process overview was provided.	
	The development is supported at all levels of government and	
	planning	
2.	Program	Sydney Water +
	 Sean asked about the potential program & the team 	Coronation
	asked when will the first discharge be plugged into the	
	Sydney Water wastewater network	
	 Aras provided an estimate of the potential look forward 	
	noting that there was some staging data provided to	
	noting that there was some staging data provided to Sydney Water to date, with the following key points	
	noting that there was some staging data provided to Sydney Water to date, with the following key points o Post exhibition period the team will address	



	 Calendar year 2024 - Q1 2025 should see approval Site commencement 2025 with a build duration of 24-36 months seeing a late 2027 early 2028 commencement of discharge for 250-500 dwellings and some non-residential GFA Sydney Water noted that switch on dates were important and that commencement of works were also important for "during construction" connections to the wastewater network 	
3	 Wastewater network constraints The gravity network including the two trunk carriers have capacity for the development, which will require business as usual extension for developer servicing of lots and flows The SPS does not have spare capacity for the development General SPS overview Built to a 1970 specification so any upgrades are laborious for example all power would need to be updated to modern standard if adjusted The Malabar licence conditions have changed, modelling has not been completed for these changed requirements, but the SPS will fail the new conditions based on current modelling The dry weather flow is currently okay The risk category and licence approach sees the SPS non compliant and not able to cater for any portion of the development without upgrade 	Note
4	 Demand estimation Overview of the demand estimation approach using benchmarking of similar properties with two option arrangements being 100% reliant on drinking water with 100% load to the wastewater network Reduced reliance on drinking water by introducing non-drinking water and sewer mining the wastewater network with an onsite STP Dry weather flows of the SPS - Pradip will provide these in Jan 2024 Sewer mining generally discussed which is currently being reviewed as an option 	Note



5	 Summary Tom provided a summary of the discussion and Sean noted Sydney Water's actions It was agreed the next meeting would be 13 or 14 Feb 2024 with WSce to send invite 	WSce/Sydney Water
6	 Development of a program The development of a simple program was discussed for the development delivery look ahead, It was agreed the program would include Stages Stage key dates such as Planning approval dates Stie establishment (ie construction amenities installed and connected) Site commencement Site completion & usage commences Development mix, dwelling numbers & non-res GFA to be delivered as part of each stage Aras/team to produce this program Sydney Water and WSce can then use this for data alignment and assessment as applicable. 	WSce/Sydney Water



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