Appendix FF

Utilities and infrastructure report

Parramatta Over and Adjacent Station Development Utilities and Infrastructure Report

Appendix FF

October 2022



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Glossary

Term	Definition
ADWF	Average Dry Weather Flow
Concept and Stage 1 CSSI Approval	Application SSI-10038 including all major civil construction works between Westmead and The Bays, including station excavation and tunnelling, associated with the Sydney Metro West line
Concept SSDA	A concept development application as defined in section 4.22 of the EP&A Act. It is a development application that sets out the concept for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications
Council	City of Parramatta
DA	Development Application
DCP	Development Control Plan
DPE	Department of Planning and Environment
EP	Equivalent Population
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
ESD	Ecologically sustainable design
GANSW	NSW Government Architect's Office
GFA	Gross floor area
HLFC	High level feature code
MDD	Maximum day demand
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State environmental planning policy
SEPP 55	State environmental planning policy No 55 - remediation of land
SEPP 65	State environmental planning policy No. 65 – design quality of residential apartment development
Stage 2 CSSI Application	Application SSI-19238057, including major civil construction works between The Bays and Hunter Street Station
Stage 3 CSSI Application	Application SSI-22765520, including rail infrastructure, stations, precincts and operation of the Sydney Metro West line
Sydney Metro West	Construction and operation of a metro rail line and associated stations between Westmead and the Sydney CBD as described in section 1.1

Executive summary

This Utilities and Infrastructure Servicing Assessment supports a Concept State Significant Development Application (Concept SSDA) submitted to the Department of Planning and Environment pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Concept SSDA is made under section 4.22 of the EP&A Act.

Sydney Metro is seeking to secure concept approval for an over station development (OSD) and adjacent station development (ASD) on the Parramatta Station site (referred to as the 'proposed development'). The proposed development will comprise three new commercial office buildings (Buildings A, C, D), and one new residential building (Building B).

The Concept SSDA seeks consent for a building envelope and mixed-use purposes, maximum building height, a maximum gross floor area (GFA), pedestrian and vehicular access, circulation arrangements and associated car parking, and the strategies and design parameters for the future detailed design of the proposed development.

This assessment relates to the works required for the Integrated Station Development (ISD); works associated to the Metro line itself are not included within this report except where utility coordination is required. 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.

Services

The site is currently serviced through the following means:

- **Stormwater:** Runoff from the local catchment area is collected by the City of Parramatta stormwater assets. Further information on the stormwater servicing can be found in the Integrated Water Management and Water Quality Report. (Appendix X of the EIS)
- **Wastewater:** Wastewater facilities servicing is provided by Sydney Water through the North Head Sewage Treatment Plant network
- **Potable Water:** Drinking water is provided by Sydney Water (SWC) from the Prospect East Water Delivery System which is supplied by gravity from the Prospect Water Filtration Plant
- **Telecommunications:** A number of different telecommunications providers currently service the site, including AARNet, NBN, Nextgen, Optus, Telstra, TPG, Verizon and Vocus
- **Electrical:** Electricity to the site is provided by Endeavour Energy. Transport for NSW also own electrical infrastructure within the vicinity of the works
- **Gas:** Jemena currently supplies gas to the area through existing gas mains.

Indicative demand

Demand modelling has been based on the indicative development yields listed in section 3.1 of this report for the purpose of considering lead-in utility infrastructure requirements. A summary of the results is presented below:

- Wastewater: Average Dry Weather Flow (ADWF) including BASIX reduction of 13.5L/s Total Demand
- Potable Water: Maximum Daily Demand including BASIX of 1130kL/day Total Demand
- **Telecommunications:** No demand has been calculated for telecommunications infrastructure as it cannot be estimated in the same way as other utilities
- Electrical: Peak Demand including 0.8 Diversity Factor of 15.5MVA Total Demand
- **Gas:** Daily Demand including BASIX of 410m³/day, noting commercial and retail usage excluded for the purposes of this estimate due to varying demand and are to be updated in later revisions of the report.

Servicing constraints

Key servicing constraints for this development include:

• referrals will be made as part of future detailed SSD applications

Sustainable development initiatives

A separate Ecologically Sustainable Development (ESD) Report (Appendix S of the EIS) has been developed for this site. Key initiatives that may be applicable to this report are listed below. These will be investigated and developed as the design progresses, including evaluation of impact on indicative demands.

- Implementation of passive and active design measures to minimise consumption of energy
- Minimise the quantity of stormwater run-off
- Reduce the consumption of potable water, including the harvesting and reuse of rainwater and stormwater
- Install dual plumbing systems and make provision for a future ready connection to a recycled water network.

1 Introduction

1.1 Sydney Metro West

Sydney Metro West will double rail capacity between Greater Parramatta and the Sydney Central Business District (CBD), transforming Sydney for generations to come. The once in a century infrastructure investment will have a target travel time of about 20 minutes between Parramatta and the Sydney CBD, link new communities to rail services and support employment growth and housing supply.

Stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street (Sydney CBD).



Sydney Metro West station locations are shown in Figure 1-1.

Figure 1-1 Sydney Metro West

1.2 Background and planning context

Sydney Metro is seeking to deliver Parramatta metro station under a two-part planning approval process. The station infrastructure is to be delivered under a Critical State Significant Infrastructure (CSSI) application subject to provisions under division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). While the over and adjacent station developments are to be delivered under a State Significant Development (SSD) subject to the provisions of part 4 of the EP&A Act.

1.2.1 Critical State Significant Infrastructure

The State Significant Infrastructure (SSI) planning approval process for the Sydney Metro West metro line, including delivery of station infrastructure, has been broken down into a number of planning application stages, comprising the following:

 Concept and Stage 1 CSSI Approval (SSI-10038) – All major civil construction works between Westmead and The Bays including station excavation, tunnelling and demolition of existing buildings (approved 11 March 2021)

- Stage 2 CSSI Application (SSI- 19238057) All major civil construction works between The Bays and Sydney CBD (approved 24 August 2022)
- Stage 3 CSSI Application (SSI- 22765520) Tunnel fit-out, construction of stations, ancillary facilities and station precincts between Westmead and the Sydney CBD, and operation and maintenance of the Sydney Metro West line (under assessment, lodged).

1.2.2 State Significant Development Application

The SSDA will be undertaken as a staged development with the subject Concept State Significant Development Application (Concept SSDA) being consistent with the meaning under section 4.22 of the EP&A Act and seeking conceptual approval for a building envelope, land uses, maximum building heights, a maximum gross floor area, pedestrian and vehicle access, vertical circulation arrangements and associated car parking. A subsequent Detailed SSD/s is to be prepared by a future development partner which will seek consent for detailed design and construction of the development.

1.3 Purpose and scope

This Utilities and Infrastructure Servicing Assessment report supports a Concept SSDA submitted to the Department of Planning and Environment (DPE) pursuant to part 4 of the EP&A Act. The Concept SSDA is made under section 4.22 of the EP&A Act.

This report has been prepared to specifically respond to the Secretary's Environmental Assessment Requirements (SEARs) issued for the Concept SSDA on 22 February 2022 which states that the environmental impact statement is to address the following requirements shown in Table 1-1.

Key Issue	SEARs	Where addressed
21. Infrastructure Requirements and Utilities	 In consultation with relevant service providers: assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site. 	Throughout this report.
	 identify any infrastructure upgrades required on-site and off-site to facilitate the development and any arrangements to ensure to upgrades will be implemented on time and be maintained. 	
	 provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be co- ordinated, funded and delivered to facilitate the development. 	
	 address any requirements in respect of designated state public infrastructure. 	

2 The site and proposal

2.1 Site location and description

The subject application is in the Parramatta CBD, in the City of Parramatta Local Government Area (LGA). It is within the city block bounded by George Street, Church Street, Smith Street, and Macquarie Street.

The site presents a 164m long frontage to Macquarie Street, 125m frontage to George Street, 48m frontage to Church Street, and 15.5m frontage to Smith Street (in the form of Macquarie Lane).

The site location is shown in Figure 2-1 and Table 2-1.



Figure 2-1 Parramatta Metro Station precinct location

As described in Table 2-1, the site comprises fourteen different allotments of varying sizes. It is irregular in shape, with a total area of approximately 24,899m²

Table 2-1 Site legal description

Street Address	Legal Description
41-59 George Street	Lot 10 in DP858392
45A George Street	Lot 2 in DP701456
61B George Street	Lot 1 in DP607181
71 George Street	Lot 100 in DP607789
220 Church Street	Lot 1 in DP1041242
222 Church Street	Lot 1 in DP702291
232 Church Street	Lot 1 in DP651992
236 Church Street	Lot 1 in DP128437
238 Church Street	Lot 2 in DP591454
48 Macquarie Street	Lot B in DP394050
58-60 Macquarie Street	Lot 1 in DP399104
62-64 Macquarie Street	Lot AY in DP400258
68 Macquarie Street	Lot 1 in DP711982
70 Macquarie Street	Lot E DP 402952
72 Macquarie Street	Lot 3 in DP218510
74 Macquarie Street	Lot H in DP405846

2.2 Overview of this proposal

The Concept SSDA will seek consent for four building envelopes as detailed in Table 2-2 and Figure 2-2.

Item	Description
Building use	Building A: Commercial and retail
	Building B: Residential and retail
	Building C: Commercial
	Building D: Commercial and retail
Building Height (Number of storeys)	Building A: 38 storeys
	Building B: 33 storeys
	Building C: 26 storeys
	Building D: 25 storeys
Gross Floor Area (m ²)	Building A: 78,700
	Building B: 20,000
	Building C: 35,950
	Building D: 55,350
	TOTAL: 190,000
Car parking spaces	455

Table 2-2 Parramatta proposed development overview



OSD & ASD Concept SSD Building Envelope - Includes OSD & ASD Areas inside the CSSI 'shell' below ground and in the podium levels

Figure 2-2 Proposed development

Heritage Interface Zone - refer to Design Guidelines.

3 Scope of assessment

3.1 Assessment methodology

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



Desktop investigation:

- desktop investigation through 'Dial Before You Dig' enquiries of existing utility services
- review of utility information obtained from site surveys
- review of authority utility information (i.e., GIS databases)
- gap analysis and advice on further investigations required.

Co-ordination with enabling works:

• assessment of opportunities for coordination with station services to be undertaken in a separate State Significant Infrastructure (SSI) approvals process.

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 building and station 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 co-ordination 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.

3.2 Consultation with utility authority

Baseline demand calculations have been undertaken and feasibility applications to the utility authorities prepared according to the development yields shown in this report. The responses received from utility authorities have been summarised in Table 3-1 below.

Utility authority	Issue date	Status
Ausgrid	23 rd June 2021	Pending
Jemena	23 rd June 2021	Received on 12 th October 2021
Sydney Water	23 rd June 2021	Received on 16 th March 2022
NBN Co.	23 rd June 2021	Pending
Endeavour Energy	23 rd June 2021	Received on 13 th October 2021

Table 3-1 Utility consultation

While the development yields are still being finalised, indicative development profiles based on the architectural targets were provided to estimate the future servicing demand. The development profiles for Parramatta, as used for the initial feasibility applications to utility authorities, are shown in Table 3-2 below.

Table 3-2 Indicative development yields

Residential	Commercial	Retail	Total	Development
Apartments (No.)	GFA (m²)	GFA (m²)	GFA (m²)	Timeframe
250	150,000	20,000	195,000	Development timeframe is subject to market

Notes:

1. The station box and station servicing building are not included in this development profile and have been calculated separately.

2. 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 of the proposed development continues.

3.3 Sustainability initiatives

There are a range of potential sustainability initiatives that are being considered for the proposed development works that may impact the demand calculations and servicing of the proposed development.

A separate Ecologically Sustainable Development (ESD) Report (Appendix S of the EIS) has been developed for this site. Key initiatives that may be applicable to this report are listed below. These will be investigated and developed as the design progresses, including evaluation of impact on indicative demands.

- implementation of passive and active design measures to minimise consumption of energy
- minimise the quantity of stormwater run-off
- reduce the consumption of potable water, including the harvesting and reuse of rainwater and stormwater
- install dual plumbing systems and make provision for a future ready connection to a recycled water network.

These are still under investigation as the design progresses but have been included to ensure that they are fully considered in future design stages. 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.

4 Desktop investigation

This report details the investigation of existing utilities in the vicinity of the development, the likely points of future connection to the utilities; and associated potential upgrades or augmentation that may be required. The basis for the investigation of the existing utilities in the vicinity of the site was a 'Dial Before You Dig' (DBYD) enquiry that was undertaken in January 2018. This report does not consider any utility infrastructure outside the enquiry boundary and its potential relationship to, or impact on the supply of utility services to the site.

While preliminary development staging and sequencing information has formed the basis of consultation with utility providers to date, the final staging of utility works, and the protection of assets is dependent on detailed construction staging and shall be developed in detail at a later stage of the planning and design process.

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

- 'Dial Before You Dig' (DBYD) Enquires
- Utility Authority GIS systems
- Site utility surveys
- Information provided from utility agencies.

Table 4-1 below shows a summary of the identified utility services adjacent to the precinct from the DBYD enquiry.

Authority Name	Utility Type	Potential Impacts
AARNet Pty Ltd, NSW	Telecommunications	Yes
City of Parramatta	Council/Shire	Yes
Endeavour Energy	Electricity	Yes
Jemena Gas West	Gas & Petroleum	Yes
NBN Co, NSW Act	Telecommunications	Yes
Nextgen, NCC - NSW	Telecommunications	Yes
Optus and/or Uecomm, NSW	Telecommunications	Yes
Sydney Water Corporation	Sewage, Potable Water, Stormwater	Yes
Telstra NSW, Central	Telecommunications	Yes
TPG Telecom (NSW)	Telecommunications	Yes
Transport for NSW	Electricity	Yes
Verizon Business (NSW)	Telecommunications	Yes
Vocus Communications	Telecommunications	Yes

Table 4-1 Existing utility providers within the Parramatta Development Precinct

As this report is for the proposed development, this table does not include the utility services for the Sydney Metro West works unless required for ISD co-ordination purposes.

A combined services plan for the site has been developed in Table 4-1 which shows:

- existing utility arrangements within the precinct area
- potential constraints with the utility servicing and crossings
- potential proposed building connection points.

These services are shown only schematically and are subject to further development in subsequent design phases as the architectural and services design develops (Figure 4-1).

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



Figure 4-1 Combined existing services plan

LEGEND

EXISTING SERVICES

-	Gha
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	ELECTRICAL UNDERGR
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SROUND - LOW VOLTAGE GROUND - HIGH VOLTAGE GROUND - 11kV GROUND - 132KV AD - 33kV COMMS - FIBRE (OPTUS) COMMS - FIBRE COMMS - FIBRE (TELSTRA) STORMWATER WATER

NOTES

ALL EXISTING UTILITY SERVICES LAYOUTS ARE INDICATIVE ONLY. SITE INVESTIGATIONS ARE REQUIRED TO CONFIRM LOCATIONS. SURVEY MAY INDICATE ADDITIONAL EXISTING MAINS REQUIRING DIVERSION TO AVOID IMPACTING THE PROPOSED DEVELOPMENT FOOTPRINTS.

SEWER

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5 Co-ordination with enabling works

As part of the CSSI approval, the following utility protection, amendment or relocation works will be undertaken. A summary of identified utilities enabling works has been provided in the sections below.

These works will be undertaken prior to any planning works proposed as part of this application. The enabling works are still being fully developed and are subject to change.

5.1 Endeavour Energy

There are a number of electrical designs at Parramatta station development site. Refer to Table 5-1 below.

Table 5-1 Endeavour Energy Designs

Design	Design stage	Design name	Description
Construction Por	wer		
HV Feeder for Road Header & Construction power	Certified	UCL10311_CERTIFIED_AMD A	HV feeder to supply the road headers and construction supply
Impacted Asset	Design – Sl	MW Enabling Works Scope – Exc	luded from WTP scope
Substation relocations including HV & LV cables	Certified	ARP4186_Detailed Design_20210409_Rev 2	Decommissioning of 5x substations, decommissioning of streetlights & the installation of a new switching station. (NOTE: to be completed by the Enabling Works Contractor and has been included for reference only)
ARP4186 Design Brief	Certified	ARP4186 Design Brief v3.0	100% detailed design for new switching station to supply S837 awaiting feedback from Endeavour Energy.

5.2 Sydney Water

The proposed metro alignment and station excavation footprint have been used to identify affected Sydney Water assets. This initial desktop assessment by others is summarised in below in Table 5-2.

Table 5-2 Sydney Water affec	ted assets summary
------------------------------	--------------------

SWC asset type	Asset diversion required	Asset to be disused and removed	Asset to be protected	Asset not affected	BPA application
Potable Water	0	3	1	0	1

SWC asset type	Asset diversion required	Asset to be disused and removed	Asset to be protected	Asset not affected	BPA application
Wastewater	6	0	7	0	7
Stormwater	0	0	0	0	0
Recycled	0	0	0	0	0

Following initial desktop investigations, Sydney Metro West Water Services Coordinators completed adjustment and deviation designs for all Sydney Water assets clashing with the proposed station box excavation footprint. These adjustment and deviation designs are summarised below Table 5-3.

Table 5-3 Sydney Water adjustment and deviation design

Location	Design stage	Design name
Parramatta	Certified	CASE184903PW-D
Parramatta	Detailed	CASE184903WW-D

5.3 Parramatta City Council

The City of Parramatta have drainage assets in streets adjacent to the site, none of which are impacted by the current design.

5.4 Jemena

One Jemena asset will be impacted within the Parramatta metro station construction site. Initial clash assessment carried out by Jemena has indicated that the clash identified will not require relocation works and this gas main will be abandoned. The Parramatta Enabling Works Contractor is responsible to organise Jemena cut and cap.

5.5 Telecommunications

Sydney Metro West Parramatta Enabling Works Contractor is responsible for coordinating and relocating Optus asset that is impacted in Horwood Place at Parramatta (refer to Table 5-4 below) and decommissioning the telecommunication lead-in cables feeding into the Parramatta site.

Location	Treatment	Comms	Design name	Start date	Construction completion date
Parramatta	Relocation	Optus	P1062985_Optu s_Parra_Design _27012021	April 2021	24 Oct 2022

6 Utility assessments

6.1 Stormwater

6.1.1 Existing assets

Stormwater assets in the area are maintained by City of Parramatta Council. The desktop information indicates the presence of a number of stormwater assets in the area. These assets are summarised in the following paragraphs.

A separate stormwater assessment has been undertaken SSD EIS - Water Quality, Flooding Report - Parramatta metro station (Appendix T of the EIS). The existing stormwater arrangement is shown below in Figure 6-1 for the purposes of coordination with the utility services.





6.1.2 Proposed stormwater works

Potential stormwater works include re-arrangement of the drainage network that falls within the construction area. The final state will have additional storm drain connections through the site connecting into the systems on George Street, Smith Street and Macquarie Street.

6.2 Wastewater

6.2.1 Background

Sydney Water wastewater facilities service Parramatta which is processed through the North Head Sewage Treatment Plant Network which has a capacity of 336 ML/d and services an area of 452km² (Figure 6-2).



Figure 6-2 Sydney Water Sewer Catchment Plan (Sydney Water, 2021)

6.2.2 Existing assets

Wastewater servicing is provided by Sydney Water, the desktop information indicates the presence of a number of Sydney Water sewage assets in the surrounding area.

These are summarised in Table 6-1. The existing assets are shown below in Figure 6-3.

Metro_ID	Size (D <u>N)</u>	Configuration	Material	Treatment	Location
WW-02-030	225	Reticulation, Gravity	SGW	Relocate	Northwest corner of site (Church St / George St)
WW-02-050	150	Reticulation, Gravity	VC	Relocate	Northwest corner of site (Church St/George St)
WW-02-060	150	Reticulation, Gravity	VC	Relocate	Northwest corner of site (Church St/George St)
WW-02-070	225	Reticulation, Gravity	SGW	Relocate	Along Macquarie Ln off Smith St
WW-02-010	150	Reticulation, Gravity	VC	Protect	Northwest corner of site (Church St/George St)
WW-02-020	150	Property Connection Sewer, Gravity	VC	Protect	Northwest corner of site (Church St/George St)
WW-02-040	150	Reticulation, Gravity	VC	Protect	Along United Ln off Macquarie St
WW-02-080	150	Reticulation, Gravity	VC	Protect	Along Macquarie Ln off Smith St
WW-02-090	225	Reticulation, Gravity	VC	Protect	Along Macquarie Ln off Smith St
WW-02-100	225	Reticulation, Gravity	VC	Protect	Feeding into site from Macquarie St towards Macquarie Ln
WW-02-110	150	Reticulation, Gravity	VC	Protect	Along Macquarie Ln off Smith St
WW-02-120	225	Reticulation, Gravity	VC	Protect	Along Macquarie Ln off Smith St
WW-02-130	150	Reticulation, Gravity	VC	Protect	Along Macquarie Ln off Smith St
WW-02-140	225	Reticulation, Gravity	PVC	Protect	Along Macquarie Ln off Smith St

Table 6-1 Existing Sydney Water owned wastewater assets that are in service



Figure 6-3 Existing Sydney Water wastewater network

6.2.3 Proposed wastewater servicing and relocations

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

• relocation of the wastewater lines within the proposed Parramatta metro station box site. These works will be carried out under the CSSI approval.

An indication of the proposed relocations is shown in Figure 6-4.



Figure 6-4 Indicative proposed sewer relocations and connections

The proposed wastewater relocations and potential new building connections are still under development and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Sydney Water.

6.2.4 Demand assessment

Development demand assessment

An assessment of estimated sewer loading resulting from the development in Parramatta is being undertaken to assist in determining the required infrastructure upgrades. Demand forecasting and profiles have been based on the average number of residential dwellings, and GFA for retail and commercial development based on the development yields in section 2.

The design criteria used to forecast future sewer loading are taken from the Sydney Water Area Planning Design Criteria Guide: WSA 02-2014-3.1 (Sewer Code of Australia) and is expressed as an Equivalent Population for a particular land use. The BASIX reduction has been taken from the Building Sustainability Index targets. The land uses and Equivalent Population (EP) used for calculations are summarised in Table 6-2.

A high-level demand assessment was undertaken based on the indicative building development yield provided in section 3.2 of this report. This development yield was used for the purposes of utilities infrastructure assessments and feasibility applications only and the final architectural designs should be used to confirm the building details. This demand assessment is summarised in Table 6-3.

Under BASIX requirement, new residential developments are required to reduce wastewater loading by 40% (since the BASIX amendment was introduced in 2006) compared to the average NSW dwelling.

Table 6-2 Land uses and equivalent populations used for wastewater development demand calculations

Land use	Units	EP per unit	Source
Commercial - high density commercial	EP/ha (net lettable)	500	WSA 02-2014, Appendix A
Residential - single Occupancy High Density Dwelling	EP/dwelling	2.5	WSA 02-2014, Appendix A
Retail - Local Commercial	EP/ha (gross)	75	WSA 02-2014, Appendix A
ADWF	L/s/EP	0.0017	
BASIX reduction (apartments only)	%	40	Building Sustainability Index

Table 6-3 Estimated ADWF for wastewater including BASIX (L/s)

Location	Residential (incl. BASIX)	Commercial and retail	Total (L/s)
Estimated ADWF for Building B, C, and D	0.6	6.9	7.5
Estimated ADWF for Building A	0	5.8	5.8
Total	0.6	12.7	13.3

Note: station demand has not been accounted for in the total demand as it forms part of the CSSI approval and is outside the scope of the Concept SSD application.

6.3 **Potable water**

6.3.1 Background

Potable water at the Parramatta metro station precinct is currently supplied by Sydney Water through the Potts Hill Water Delivery System.



Figure 6-5 Potts Hill Water Delivery System (Sydney Water Corporation, 2021)

6.3.2 Existing assets

Potable water servicing is provided by Sydney Water, the desktop information indicates the presence of a number of their assets in the surrounding area.

These are summarised in Table 6-4 below.

Metro_ID	Size (DN)	Material	Treatment	Location
PW-02-010	150	CICL	Decommission	On site off Horwood Pl
PW-02-020	150	CICL	Decommission	Along Horwood PI off Macquarie St
PW-02-030	150	DICL	Protect	Along United Ln off Macquarie St
PW-02-060	150	CICL	Protect	Along George St between Church St and Smith St
PW-02-090	300	DICL	Protect	Along Macquarie St between Smith St and Church St
PW-02-100	200	CICL	Protect	Along Church St between Macquarie St and George St
PW-02-040	100	DICL	Identified (No Works)	Along Horwood PI between Philip St and George St
PW-02-050	150	DICL	Identified (No Works)	Along Horwood PI between Philip St and George St
PW-02-070	150	CICL	Identified (No Works)	Along Smith St between Macquarie St and George St
PW-02-080	300	DICL	Identified (No Works)	Corner of Smith and Macquarie St
PW-02-110	375	DICL	Identified (No Works)	Along Church St between Macquarie St and George St
PW-02-120	150	DICL	Identified (No Works)	Along Smith St between Phillip St and George St

Table 6-4 Existing Sydney Water owned potable water assets that are in service

The existing potable water assets are shown below in Figure 6-6.



Figure 6-6 Existing Sydney Water potable water network

6.3.3 Proposed water servicing and relocations

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

 Relocation and abandonment of the potable water lines within the Parramatta metro station construction site. These works will be carried out under the CSSI approval.

An indication of the proposed relocations/connections is shown in Figure 6-7.



Figure 6-7 Indicative proposed water relocations and connections

The proposed potable water relocations and potential new building connections are still under development and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Sydney Water.

6.3.4 Demand assessment

Development demand assessment

A high-level demand assessment was undertaken based on the indicative building development yields (detailed in Section 2). This development yield has been referenced for the purposes of utilities infrastructure assessments only and is indicative and subject to further design development.

The estimated potable water demand was calculated based on the standard unit rates (summarised in Table 6-5) and the development yields. The Net Lettable Area (NLA) was assumed to be 80% of the Gross Floor Area. Calculated values are summarised in Table 6-6.

 Table 6-5 Land uses and demand rates used for potable water development demand calculations

Land use	Unit	Demand rate	Source
Commercial - City High Rise Commercial	kL/ha/day	63	Water System Planning Guideline, Section 3, Table 3-2
Residential - Multi-unit (>140 Units/ha)	kL/unit/day	0.8	Water System Planning Guideline, Section 3, Table 3-2
Retail – Suburban Commercial	kL/ha/day	41	Water System Planning Guideline, Section 3, Table 3-2
BASIX reduction (apartments only)	%	40	Building Sustainability Index

Table 6-6 Estimated Maximum Day Demand (MDD) for Potable Water including BASIX (kL/day)

Location	Residential (incl. BASIX)	Commercial and retail	Total (kL/day)
Estimated ADWF for Building B, C and D	120	546	666
Estimated ADWF for Building A	0	456	456
Totals	120	1002	1122

Station demand

The potable water demand for Parramatta metro station was calculated based on current design parameters and the Traffic & Transport Planning's Passengers movement as per 2056 AM Peak Hour + 15% Station Movements (October 2020) – Transfer, Entry & Exit Model. The quantities and associated load may vary as detail design is developed. The following assumptions were used in the calculations:

- allowance of 3% of (daily) total passengers using toilets and handwash basins during peak and off-peak
- 95% of total water usage to discharge to sewer except cooling tower make-up demands
- 50,000L/day for cooling Tower make-up water supply
- allowance of 20% spare flow capacity
- fixture outlets for new/temporary fixtures with minimum WELS Star Rating of 6.

The proposed potable water demand for Parramatta metro station was estimated to be 70kL/Day and 84 kL/Day with an allowance of 20% spare flow capacity.

Please note that the station box demand has been included in this assessment for reference only and has not been accounted for in the total demand as it forms part of a the CSSI Approval.

6.4 Telecommunications

6.4.1 Existing assets

Telecommunications servicing is provided by AARNet Pty Ltd, NBN Co., Nextgen, Optus/Uecomm, Telstra. TPG, Verizon, and Vocus. The desktop information indicates the presence of a number of telecommunications assets in the surrounding area.

SYDNEY METRO WEST George Str Chruch Street LEGEND EXISTING OPTUS FIBRE UG Horwood Place 0 EXISTING OPTUS EXISTING TELSTRA FIBRE UG EXISTING TELSTRA FIBRE OH EXISTING TPG CABLE EXISTINGVOCUS FIBRE UG Macquarie Street EXISTING UECOMM FIBRE UG PROPOSED STATION BOX NOTES PROPOSED CONSTRUCTION BOUNDARY (EIS 3) HERITAGE SITE 1:2,000 sydney METRO Parramatta Station NSW 0.1 Kilometers 0.05

The existing assets are shown below in Figure 6-8.

Figure 6-8 Existing telecommunications network

6.4.2 Proposed telecommunications servicing and relocations

To allow for construction and servicing of the development, alteration work may be required to provide services into the development buildings.

An indication of the proposed relocations/connections is shown in Figure 6-9.



Figure 6-9 Indicative proposed telecommunications relocations and connections

The proposed telecommunication relocations and potential new building connections are still under development and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with the various authorities.

6.4.3 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 telecommunication authorities. Telecommunication connections will be confirmed as the building services design develops and will be coordinated with service providers.

6.5 Electrical

6.5.1 Existing assets

Electrical servicing is provided by Endeavor Energy. The desktop information indicates the presence of a number of Endeavor Energy assets in the surrounding area.

These are summarised below:

- a number of UG HV and LV conduits along Macquarie Street, Church Street, George Street and Smith Street.
- endeavour substation and switchgears.

The existing assets are shown below in Figure 6-10.



Figure 6-10 Existing electrical network

6.5.2 **Proposed electrical servicing and relocations**

To allow for construction and servicing of the development, alteration work may be required to provide services into the development buildings.

SYDNEY METRO WEST NOTES LOCATIONS ARE Horw LEGEND PROPOSED ELECTRICAL CABLE/CONNECTION EXISTING ELECTRICAL TO BE ABANDONED X X PROPOSED DEVELOPMEN 1:2.000 sydney Parramatta Station NSW METRO 0.05 0.1 Kilometers

An indication of the proposed relocations/connections is shown in Figure 6-11.

Figure 6-11 Indicative proposed electrical relocations and connections

The proposed electrical relocations and potential new building connections are still under development and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Endeavour Energy.

6.5.3 Demand assessment

A high-level demand assessment was undertaken based on the indicative building development yield, this development yield was used for the purposes of utilities infrastructure assessments only and the final architectural designs should be used to confirm the building details. The land uses and demand rates used for calculations are summarised in Table 6-7 and Table 6-8.

Table 6-7 Land uses and demand rates used for development electrical demand calculations

Land use	Design criteria	Unit	Demand rate	Source
Residential - Apartments	Peak Demand	kVA/dwelling	3.5	Endeavour Energy Growth Servicing Plan 2019 - Table 1
Commercial – Office – Electrical reheat zonal	Peak Demand	kV/Am²	0.1	Ausgrid NS109 - Table 4 Guide to Typical Load Densities
Retail – Shops air conditioned	Peak Demand	kV/Am ²	0.1	Ausgrid NS109 - Table 4 Guide to Typical Load Densities
Diversity Factor	N/A	%	80	AS3000

Table 6-8 Estimated electrical peak demand, including 0.8 diversity factor (MVA)

Location	Residential	Commercial and retail (incl. 0.8 Diversity Factor)	Total (MVA)
Estimated Peak Demand for Building B, C and D	0.9	7.9	8.8
Estimated Peak Demand for Building A	0	6.5	6.5
Totals	0.9	14.4	15.3

6.6 Gas

6.6.1 Existing assets

Gas servicing is provided by Jemena, the desktop information indicates the presence of a number of Jemena assets in the surrounding area indicated in Table 6-9.

Metro_ID	Owner	HLFC	Size (DN)	Material	Status	Treatment	Location
JE-02-010	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along Church St between Philip St and George St
JE-02-020	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along Church St between Philip St and George St
JE-02-030	Jemena	LP	50	Nylon	In Service	Identified (No works)	Along George St between Marsden St and Church St
JE-02-040	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along Church St between Macquarie St and George St
JE-02-050	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along Church St between Macquarie St and George St
JE-02-060	Jemena	LP	75	Nylon	In Service	Protect	Along Church St between Macquarie St and George St
JE-02-070	Jemena	LP	110	Nylon	In Service	Protect	Along Church St between Macquarie St and George St
JE-02-080	Jemena	LP	110	Nylon	In Service	Identified (No works)	Along Macquarie St between Smith St and Church St
JE-02-090	Jemena	LP	75	Nylon	In Service	Identified (No works)	Corner of Smith and Macquarie St
JE-02-100	Jemena	LP	110	PE	In Service	Identified (No works)	Corner of Smith and Macquarie St
JE-02-110	Jemena	LP	50	Nylon	In Service	Identified (No works)	Along Smith St between Macquarie St and George St
JE-02-120	Jemena	LP	50	Nylon	In Service	Identified (No works)	Along Macquarie St between Barrack Ln and Smith St
JE-02-130	Jemena	LP	50	Nylon	In Service	Protect	Along Horwood PI off George St
JE-02-140	Jemena	LP	75	Nylon	In Service	Relocate	Along Horwood PI off George St
JE-02-150	Jemena	LP	110	PE	In Service	Identified (No works)	Along Horwood PI between Philip St and George St
JE-02-160	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along George St between Church St and Smith St
JE-02-170	Jemena	LP	110	Nylon	In Service	Identified (No works)	Along George St between Church St and Smith St
JE-02-180	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along George St at the intersection of Smith St
JE-02-190	Jemena	LP	110	Nylon	In Service	Identified (No works)	Along George St at the intersection of Smith St
JE-02-200	Jemena	LP	150	Steel	Proposed	Identified (No works)	Along Macquarie St between Smith St and Church St
JE-02-210	Jemena	LP	110	Nylon	In Service	Identified (No works)	Along Smith St between Macquarie St and George St
JE-02-220	Jemena	LP	75	Nylon	In Service	Identified (No works)	Along Smith St between Phillip St and George St
JE-02-230	Jemena	HP	150	Steel	In Service	Identified (No works)	Along Macquarie St between Smith St and Church St
JE-02-230	Jemena	LP	150	Nylon	In Service	Identified (No works)	Along Church St between Macquarie St and George St

Table 6-9 Existing Jemena gas assets



The existing assets are shown below in Figure 6-12.

Figure 6-12 Existing gas network

6.6.2 Proposed gas servicing and relocations

To allow for construction and servicing of the development, alteration work may be required to provide services into the development buildings.

An indication of the proposed relocations/connections is shown in Figure 6-13.



Figure 6-13 Indicative proposed gas relocations and connections

The proposed gas relocations and potential new building connections are still under development and further work is required in subsequent design phases to confirm the final relocations and servicing arrangements in consultation with Jemena.

6.6.3 Demand assessment

A high-level demand assessment was undertaken based on the indicative building development yield, this development yield was used for the purposes of utilities infrastructure assessments only and the final architectural designs should be used to confirm the building details. The land uses and demand rates used for calculations are summarised in Table 6-10 and Table 6-11.

Land use	Design criteria	Unit	Demand rate	Source
Apartments	Daily Demand	m ³ /day/dwelling	2.17*	Jemena Guidelines
Commercial	Not included in	-		
Retail	Not included in	-		
BASIX reduction (apartments only)	-	%	25	Building Sustainability Index

Table 6-10 Land uses and demand rates for development gas demand calculations

*Based on 20GJ per year per apartment

Table 6-11 Estimated gas demand (m³/day)

Location	Residential (incl. BASIX)	Commercial and Retail	Total (m³/day)
Estimated Demand for Building B	407	ТВА	407
Estimated Demand for Building A, C, D	0	ТВА	-
Totals	407	ТВА	407

Commercial and retail usages have been excluded in this estimate due to varying demand. Updated demand estimates will be provided to Jemena as part of the future Detailed SSD applications.

7 Conclusion

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

- Existing stormwater services to be retained with new pit and pipe systems built to serve the public domain. Proposed buildings to connect directly to Council's stormwater network in George Street, Church Street and Macquarie Street.
- Preliminary feedback from Sydney Water indicates that the proposed development is within the Parramatta SCAMP. New connection will be made to the North towards George Street, while the existing connection in Smith Street have enough capacity but is in risk of overflow downstream. A Water Servicing Co-ordinator will be required for connection and relocation works.
- Preliminary feedback from Sydney Water indicates that the proposed development is within the Ryde Gravity WSZ, which have enough capacity to service the development. Water main in George Street require upsizing before connection while the main in Macquarie Street can be connected to directly.
- Existing telecommunication services to be made redundant in the public domain and new services to be provided into the new development buildings, with connection to George Street, Church Street and Macquarie Street.
- Preliminary feedback from Endeavour Energy indicates that the proposed development is within the West Parramatta ZS. Existing electrical services within the site to be made redundant and new hub feeder configurations are required to service both the station and development. Detailed connection arrangements are to be coordinated with Endeavour once development details for buildings are finalised.
- Preliminary feedback from Jemena indicates there are insufficient capacity for the low pressure mains within Church Street and Macquarie Street. Secondary pressure network along Smith Street can be connected to indirectly by the development. Further consultation will be required with Jemena once design progresses and load requirement finalises.

It should be noted that the above assessment is preliminary only and will be further developed upon consultation with utility providers.

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

- further coordination with utility agencies on lead-in infrastructure connections and any amplifications of existing assets
- further utility investigation including slit trenching and obtaining Quality Level A survey information of existing utility assets
- implementation of 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.