Annexure S:
Infrastructure Technical Study

SydneyOlympicPark

Infrastructure Master Plan

Multi-Discipline Report

Sydney Olympic Park

30 July 2024

Ref: 304001013

PREPARED FOR:

Sydney Olympic Park Authority (SOPA)

PREPARED BY:

Stantec Australia Pty Ltd

Stantec

Revision Schedule

Revision No.	Date	Description	Prepared by	Quality Reviewer	Independent Reviewer	Project Manager Final Approval
A	05 October 2023	Draft Report	Mitch Foster	Trent Stokes		Trent Stokes
B	03 November 2023	Final Report	Mitch Foster	Trent Stokes	Bobby Fitzgerald	Trent Stokes
C	16 January 2024	Final Report	Mitch Foster	Trent Stokes	Bobby Fitzgerald	Trent Stokes
D	16 February 2024	Updated Final Report	Mitch Foster	Trent Stokes	Bobby Fitzgerald	Trent Stokes
E	30 July 2024	Updated as per comments	Mitch Foster	Trent Stokes	Bobby Fitzgerald	Trent Stokes

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Contents

List of Tables

List of Figures

List of Appendices

1. Introduction

This report has been prepared by *Stantec Australia Pty Ltd* for the *Sydney Olympic Park Authority (SOPA)* to provide utility servicing advice and expertise to inform the infrastructure delivery process for the Sydney Olympic Park 2050 Master Plan. The purpose of this utility investigation is to review the existing network based on authority advice and Sydney Olympic Park's existing capacity to meet the needs of the future developments. Conceptual designs have also been prepared to demonstrate assumed upgrades needed to service all new developments.

The existing infrastructure of the Sydney Olympic Park currently services a vast range of infrastructure including low-rise commercial and industrial buildings, sports stadiums, high density residential and regional parklands. The current utility infrastructure is likely not designed to meet the demands of the future developments and will be analysed to provide information on where possible upgrades may be required.

While this information is based on previous experience and recommendations, final requirements around the adjustment or deviation of each utility network should be granted by the utility providers at a development stage closer to construction. The existing infrastructure to be analysed within this report includes potable water, wastewater, recycled water, electrical, gas, and telecommunications networks.

Figure 1-1 Sydney Olympic Park Site Location

1.1 Infrastructure Staging

The staging of each item of infrastructure has been aligned to the anticipated timing of the development of each site within the Sydney Olympic Park. Stage 1 includes enabling works, key streets and initial infrastructure that will be required to be delivered before the Sydney Metro West becomes operational. It is anticipated that developments within the Urban Centre near the Metro Station will be the first sites developed.

It is anticipated that utility infrastructure will be delivered concurrently when sites are developed. Clause 23 of Appendix 4 of the *State Environmental Planning Policy (Precincts—Central River City) 2021* outlines that development consent must not be granted unless the consent authority is satisfied that any public utility infrastructure that is essential for the proposed development is available or that adequate arrangements have been made. It is important to note the staging is indicative and is informed by the information available at the time of this report.

2. Existing Infrastructure

Section 2 details the utilities that currently exist within the Sydney Olympic Park. These are made from several different materials which include:

- **DICL** – Ductile Iron Concrete Lined
- **uPVC** – Unplasticized Poly Vinyl Chloride
- **CICL** – Cast Iron Concrete Lined
- **SCL** – Steel Cement Lined
- **oPVC** – Oriented Poly Vinyl Chloride
- **VC** – Vitrified Clay
- **GRP** – Glass Reinforced Plastic

2.1 Existing Potable Water Network

Source Information

To assess the existing potable water infrastructure for the Sydney Olympic Park development, the following documents and sources were reviewed:

- SOPA 2050 Master Plan
- Sydney Water Hydra Asset Database
- Design Criteria Guidelines Supplement - Sydney Water (2010)
- The Water Supply Code of Australia, WSA 03—2011-3.1, Sydney Water Edition Version 3 -2014 (WSA Code 2014)
- Sydney Water Growth Servicing Plan 2020-2025
- Before You Dig Australia (BYDA) completed 10/08/2023

Sydney Water have not provided access to their water infrastructure hydraulic models to assess the capacity of the existing potable water network to accommodate the Sydney Olympic Park development. This is typical of the Sydney Water process as hydraulic assessments are completed within Sydney Water applications further into the design stages of individual developments. The existing potable water network is detailed in **Appendix A**.

Urban Centre

The Sydney Olympic Park Urban Centre is bounded by Grand Parade, Australia Avenue, Sarah Durack Avenue, and Olympic Boulevard. The new developments will accommodate a variety of land uses, building densities and transport infrastructure. The Urban Centre has an existing Potable Water reticulation network with the size and material of each street listed below:

- Olympic Boulevard: DN375 DICL, DN250 DICL, DN200 DICL & DN150 DICL
- Herb Elliot Avenue: DN250 CICL
- Murray Rose Avenue: DN200 DICL
- Australia Avenue: DN250 DICL & DN300 DICL
- Figtree Drive: DN150 DICL & DN200 DICL

The DN400 SCL main close to the western side of Herb Elliot Avenue is the closest trunk main (main that delivers water from one area to another) that services the Urban Centre. It is also bounded by the DN300 DICL water main on the intersection of Murray Rose Avenue and Australia Avenue as well as the DN250 DICL water main on the intersection of Sarah Durack Avenue and Australia Avenue. The precinct is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 810m from the Urban Centre.

The Eastern Neighbourhood

The Eastern Neighbourhood is bounded by Bennelong Parkway, Australia Avenue and the Brickpit. The precinct will feature high-density residential areas as well as the opportunity for a potential new primary school. The Eastern Neighbourhood has an existing Potable Water reticulation network with the size and material of each street listed below:

- Australia Avenue: DN250 DICL & DN150 DICL
- Bennelong Parkway: DN150 DICL
- Murray Rose Avenue: DN150 DICL
- Parkview Drive: DN200 DICL & DN150 DICL

The DN400 SCL main close to the western side of Herb Elliot Avenue is the closest trunk main that services the Eastern Neighbourhood via the Urban Centre's reticulation network. The development area is also bounded by the DN250 DICL water main at the intersection of Bennelong Parkway and Australia Avenue as well as the DN300 DICL water main at the intersection of Australia Avenue and Murray Rose Avenue. The Eastern Neighbourhood is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 1300m south-west.

The Southern Neighbourhood

The Southern Neighbourhood is the southern entrance to the Sydney Olympic Park via the Western Motorway and Homebush Bay Drive. It is bounded by Sarah Durack Avenue, Shirley Strickland Avenue, Australia Avenue, and Olympic Boulevard. The Southern Neighbourhood borders with the Urban Centre, Sports and Civic Precinct, and Bicentennial Park. The Southern Neighbourhood has an existing Potable Water reticulation network with the size and material of each street listed below:

- Sarah Durack Avenue: DN150 DICL
- Olympic Boulevard: DN150 DICL
- Shire Strickland Avenue: DN200 DICL
- Australia Avenue: DN250 DICL

The DN400 SCL main close to the western side of Herb Elliot Avenue is the closest trunk main that services the Southern Neighbourhood via the Urban Centre's reticulation network. The Southern Neighbourhood is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 750m west.

Haslams Neighbourhood

The Haslams Neighbourhood forms part of the new residential developments at Sydney Olympic Park and is located at the western end of the Master Plan, on the edge of Haslams Creek and to the west of Sydney SuperDome. The neighbourhood is bounded by Hill Road, Pondage Link, Edwin Flack Avenue and Old Hill Link. The Haslams Neighbourhood has an existing Potable Water reticulation network with the size and material of each street listed below:

- Pondage Link: DN250 DICL
- Hill Road: DN250 DICL, DN375 DICL & DN150 DICL
- Old Hill Link: DN250 DICL
- Edwin Flack Avenue: DN200 DICL

The DN375 DICL main close to the intersection of Old Hill Link and Hill is the closest trunk main that services the Haslams Neighbourhood. The Haslams Neighbourhood is serviced by the DN900 CICL trunk main located on Western Motorway approximately 700m south-west.

Edwin Flack Neighbourhood

The Edwin Flack Neighbourhood is bounded by the Carter Street Precinct and Edwin Flack Avenue from Shale Street to Birnie Avenue. The neighbourhood is on the western edge of Sydney Olympic Park and acts as a transition between Sydney Olympic Park and Carter Street Precinct. It will feature a mix of residential and commercial developments, including student housing, tourist, and visitor accommodation, residential flat building as well as local services and businesses. The Edwin Flack Neighbourhood has an existing Potable Water reticulation network with the size and material of each street listed below:

- Edwin Flack Avenue: DN250 DICL
- Uhrig Road: DN300 CICL
- Grazier Street: DN200 uPVC
- Birnie Avenue: DN400 SCL

The DN400 SCL main at the intersection of Birnie Avenue and Edwin Flack Avenue is the closest trunk main that services the Edwin Flack Neighbourhood. The precinct is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 200m from the Edwin Flack Neighbourhood.

The Sports and Civic Precinct

The Sports and Civic Precinct is bounded by Dawn Fraser Avenue, Olympic Boulevard, Shirley Strickland Avenue, and Edwin Flack Avenue. It is located west of the Urban Centre and south of the Stadia Precinct which means it shares potable water infrastructure with bordering precincts. The existing precinct is home to world-class competitive sports facilities and aims to continue this purpose within the new development. To achieve this, the Sports and Civic Precinct will witness an expansion and redevelopment of existing infrastructure. The Sports and Civic Precinct has an existing Potable Water reticulation network with the size and material of each street listed below:

- Dawn Fraser Avenue: DN150 DICL
- Edwin Flack Avenue: DN250 DICL & DN150 DICL
- Shane Gould Avenue: DN400 SCL
- Olympic Boulevard: DN375 DICL, DN250 DICL & DN150 DICL
- Shirley Strickland Avenue: DN200 DICL

The DN400 SCL main is the closest trunk main that services the Sports and Civic Precinct. The Southern Neighbourhood is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 400m west.

The Stadia Precinct

The Stadia Precinct is bounded by Kevin Coombs Avenue, Australia Avenue, Grand Parade, Cathy Freeman Park, Dawn Fraser Avenue, and Edwin Flack Avenue. It is located to the north of The Sports and Civic Precinct and south of the Haslams Neighbourhood. The Stadia Precinct hosts sports and entertainment events and continues to be the home of the Royal Easter Show which can witness over 100,000 people attend in a single day. The Stadia Precinct has an existing Potable Water reticulation network with the size and material of each street listed below:

- Dawn Fraser Avenue: DN150 DICL
- Edwin Flack Avenue: DN250 DICL & DN200 DICL
- Kevin Coombs Avenue: DN250 DICL
- Olympic Boulevard: DN200 DICL
- Australia Avenue: DN300 DICL

The DN400 SCL main at the intersection of Shane Gould Avenue and Edwin Flack Avenue is the closest trunk main that services the Stadia Precinct. The northern side of the Stadia Precinct is close to the DN375 DICL main that services Haslams Neighbourhood. Via both trunk mains, the precinct is serviced by the DN900 CICL trunk main located on the Western Motorway approximately 600m from the Stadia Precinct.

2.2 Existing Recycled Water Network

Source Information

To assess the existing recycled water infrastructure for the Sydney Olympic Park development, the following documents and sources were reviewed:

- SOPA 2050 Master Plan
- Sydney Water Hydra Asset Database
- Design Criteria Guidelines Supplement - Sydney Water (2010)
- The Water Supply Code of Australia, WSA 03—2011-3.1, Sydney Water Edition Version 3 -2014 (WSA Code 2014)
- Sydney Water Growth Servicing Plan 2020-2025
- Before You Dig Australia (BYDA) completed 10/08/2023

Sydney Water have not provided access to their water infrastructure hydraulic models to assess the capacity of the existing potable water network to accommodate the Sydney Olympic Park development. This is typical of the Sydney Water process as hydraulic assessments are completed within Sydney Water applications further into design stages of individual developments.

Making new connections into Sydney Water's recycled water network is feasible as the Sydney Olympic Park is currently serviced with recycled water. The capacity of the network must be confirmed by Sydney Water at a later stage within applications submitted by developers. The existing recycled water network is detailed in **Appendix A.**

Urban Centre

The Urban Centre's recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Murray Rose Avenue. The main then extends south along Australia Avenue via a DN375 DICL main. This main connects to the DN200 CICL main in Herb Elliot Avenue and the DN150 DICL main in Figtree Drive.

The Eastern Neighbourhood

The Eastern Neighbourhood's recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Murray Rose Avenue. This main connects to the DN150 uPVC main in Murray Rose Avenue, the DN100 uPVC main in Parkview Drive and the DN150 oPVC main in Bennelong Parkway.

The Southern Neighbourhood

The Southern Neighbourhood's recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Murray Rose Avenue. The main is downsized to a DN375 at the intersection of Bennelong Parkway and Australia Avenue. The main further downsizes along Australia Avenue to the DN300 DICL, then on Shirley Strickland Avenue to the DN250 DICL and again on Olympic Boulevard to the DN150 DICL.

Haslams Neighbourhood

The Haslams Neighbourhood recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Marjorie Jackson Parkway. The main is downsized to a DN200 DICL along Kevin Coombs Avenue and services the neighbourhood via the DN200 DICL and DN150 DICL reticulation mains.

Edwin Flack Neighbourhood

The Edwin Flack Neighbourhood recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Kevin Coombs Avenue. The main downsizes along the chainage and provides frontage to the neighbourhood with a DN300 DICL in Edwin Flack Avenue. There is currently no recycled water main that fronts the northern lots of Edwin Flack Neighbourhood. The Sydney Water Major Works process (see Section 3.1.2) would be required to extend the DN300 DICL main at the intersection of Edwin Flack Avenue and Dawn Fraser Avenue.

The Sports and Civic Precinct

The Sports and Civic Precinct recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Marjorie Jackson Parkway. The main is downsized to a DN375 DICL in Murray Rose Avenue and again to a DN300 DICL in Dawn Fraser Avenue.

The Stadia Precinct

The Stadia Precinct recycled water network is fed from the DN450 DICL main at the intersection of Australia Avenue and Kevin Coombs Avenue. The main is downsized to a DN300 DICL along Kevin Coombs Avenue and Olympic Boulevard and provides frontage to Stadium Australia (Accor Stadium) via the DN300 DICL main in Dawn Fraser Avenue. The DN150 DICL main provides frontage to Sydney SuperDome along Kevin Coombs Avenue.

2.3 Existing Wastewater Network

With respect to analysing the feasibility of sewer serviceability to all development sites, the key consideration is the portion of the sites which can be drained via gravity. It is assumed that all development sites can be serviced via gravity and the proposed finish levels will need to be considered during design phase. These designs will be dependent on the new levels of the development areas and will be similar to the stormwater drainage design. The existing wastewater infrastructure is documented with **Appendix A**. The existing sewer catchment plan is documented within **Appendix B**.

Source Information

To assess the existing wastewater infrastructure for the Sydney Olympic Park development, the following documents and sources were reviewed:

- SOPA 2050 Master Plan
- Sewerage Code of Australia, WSA 02—2002-2.2, Sydney Water Edition 1, Version 4 (WSA Code)
- Sewerage Pump Station Code of Australia, WSA 02—2002-2.2, Sydney Water Edition 1, Version 4 (WSA SPS Code)
- Pressure Sewerage Code of Australia, WSA 07—2007-1.1 (WSA PS Code)
- Sydney Water Growth Servicing Plan 2020-2025
- Before You Dig Australia (BYDA) completed 10/08/2023

Urban Centre

The existing sewer mains in the Urban Centre are all gravity fed to the DN900 GRP sewer main that is just east of Australia Avenue**.** The Urban Centre forms part of Catchment 1A, where all gravity sewer mains drain to the intersection of Bennelong Parkway and Australian Avenue. The Urban Centre has an existing wastewater reticulation network with the size and material of each street listed below:

- Murray Rose Avenue (north): DN150 VC, DN225 VC, DN300 VC
- Herb Eliot Avenue: DN300 VC, DN150 VC (services lots on Figtree Drive)
- Sarah Durack Avenue: DN225 VC, DN225 PVC
- Dawn Fraser Avenue: DN225 PVC

The Eastern Neighbourhood

The existing sewer mains in the Eastern Neighbourhood all drain to the DN900 GRP sewer main that is just east of Australia Avenue and drains north-to-south. The DN900 GRP sewer main drains to the south boundary of the neighbourhood and continues south along Australia Avenue. The wastewater network will be designed in accordance with road levels determined through detailed civil design further into the development of the precinct.

The Eastern Neighbourhood forms part of Catchment 1A, where all gravity sewer mains drain to the intersection of Bennelong Parkway and Australian Avenue. The Urban Centre has an existing wastewater reticulation network with the size and material of each street listed below:

- Sewer Trunk Main: DN900 GRP, DN750 GRP, 584x838 Concrete Encased
- Murray Rose Avenue: DN225 PVC
- Bennelong Parkway: DN375 VC
- Australia Avenue: DN375 PVC, DN150 VC (Urban Centre flows through this main)

The Southern Neighbourhood

The existing sewer mains in the Southern Neighbourhood are all gravity fed via the DN525 VC main to the DN900 GRP sewer main that is adjacent to Australia Avenue and drains north-to-south**.** The DN900 GRP sewer main drains to the intersection of Homebush Bay Drive and Australia Avenue and continues south along Underwood Road. The wastewater network will be designed in accordance with road levels determined through detailed civil design further into the development of the precinct.

The Southern Neighbourhood forms part of Catchment 1B, where all gravity sewer mains drain to the intersection of Homebush Bay Drive and Australia Avenue. The respective catchment area has sewerage that flows from the developments to the south of the Western Motorway. The Southern Neighbourhood has an existing wastewater reticulation network with the size and material of each street listed below:

- Olympic Boulevard: DN225 PVC
- Shirley Strickland Avenue: DN525VC
- Australia Avenue: DN150 DICL Sewer Rising Main, DN600x990 CONC

Haslams Neighbourhood

The Haslams Neighbourhood is currently used for industrial purposes where most flows are directed via a DN375 sewer rising main along Kevin Coombs Avenue which enters the DN900 gravity network in Australia Avenue, see **Appendix A.** The wastewater network will be designed in accordance with road levels determined through detailed civil design further into the development of the precinct.

The Haslams Neighbourhood forms part of Catchment 2A, where flows from Catchment 2B, 2C and 2D are also directed towards the sewer pump station. The Haslams Neighbourhood has an existing wastewater reticulation network with the size and material of each street listed below:

- Hill Road: Private sewer rising main
- Pondage Link: DN450 GRP
- Intersection of Pondage Link and Edwin Flack Avenue: Sewer Pump Station 1082 (SPS1082)
- Edwin Flack Avenue: DN250 sewer rising main

Edwin Flack Neighbourhood

The northern lots along Edwin Flack Avenue have limited access to the wastewater network and rely on reticulation mains from the Carter Street Precinct and Haslams Neighbourhood. The lots to the south of Uhrig Road also have limited access to the wastewater network. The Edwin Flack Neighbourhood forms part of Catchment 3A, where wastewater is directed west towards the Carter Street Precinct. The Edwin Flack Neighbourhood has an existing wastewater reticulation network with the size and material of each street listed below:

- Edwin Flack Avenue (south): DN225 PVC
- Edwin Flack Avenue (north): DN225 VC (crosses Edwin Flack Avenue and services the Stadia Precinct)
- Edwin Flack Avenue (north): DN150 VC (flows towards SPS1082)

The Sports and Civic Precinct

The Sports and Civic Precinct forms parts of Catchment 2D and Catchment 1B. This means that flows from the precinct are directed towards two separate catchment locations. The wastewater from the northern portion of the precinct, where the new school, Sydney Aquatics Centre expansion, and the New State or regionally significant cultural centre will be located, is directed to the sewer rising main along Olympic Boulevard and is pumped to the sewer pump station SPS1082 in the Haslams Neighbourhood. The wastewater from the southern portion of the precinct is gravity fed to the DN900 trunk main along Australia Avenue**.** The Sports and Civic Precinct has an existing wastewater reticulation network with the size and material of each street listed below:

- Athletics Track: DN225 VC, DN300 GRP (delivered to the sewer pressure main)
- Shirley Strickland Avenue: DN450 VC, DN525VC
- Rod Laver Drive: DN225 VC, DN150 VC

The Stadia Precinct

The Stadia Precinct is the entertainment and events destination within Sydney Olympic Park and contains landmark stadiums such as Stadium Australia and Sydney SuperDome. The Stadia Precinct forms part of Catchment 2A, 2B and 2C where all wastewater flows are directed either by gravity or pressure to the sewer pump station SPS1082 near the intersection of Pondage Link and Edwin Flack Avenue. The existing capacity of the network and downstream pump stations will need to be modelled during detailed design. The Stadia Precinct has an existing wastewater reticulation network with the size and material of each street listed below:

- Stadium Australia: DN225 VC, DN225 VC (circumnavigates the stadium)
- Olympic Boulevard: DN375 VC (transitions from a pressurized main to a gravity main)
- Kevin Coombs Avenue: DN250 DICL (rising main), DN375 DICL (rising main)
- Australia Avenue: DN450 GRP, DN750 GRP

2.4 Existing Electrical Network

The existing electrical infrastructure at Sydney Olympic Park forms the foundation of the current power supply system. It consists of an 11kV feeder connected to three zone substations: ZN1610 Homebush Bay, ZN36000

Olympic Park, and ZN2466 Flemington. These zone substations receive power supply at a higher voltage level of 132kV.

The 11kV feeder serves as the primary distribution network, delivering electricity from the zone substations to various facilities and buildings within Sydney Olympic Park. This feeder is responsible for supplying power to meet the current demand requirements of the area.

The three zone substations play a crucial role in receiving power from the higher voltage transmission network and stepping it down to 11kV for distribution. Each zone substation serves a designated area within the Olympic Park site and acts as a distribution hub for the surrounding facilities.

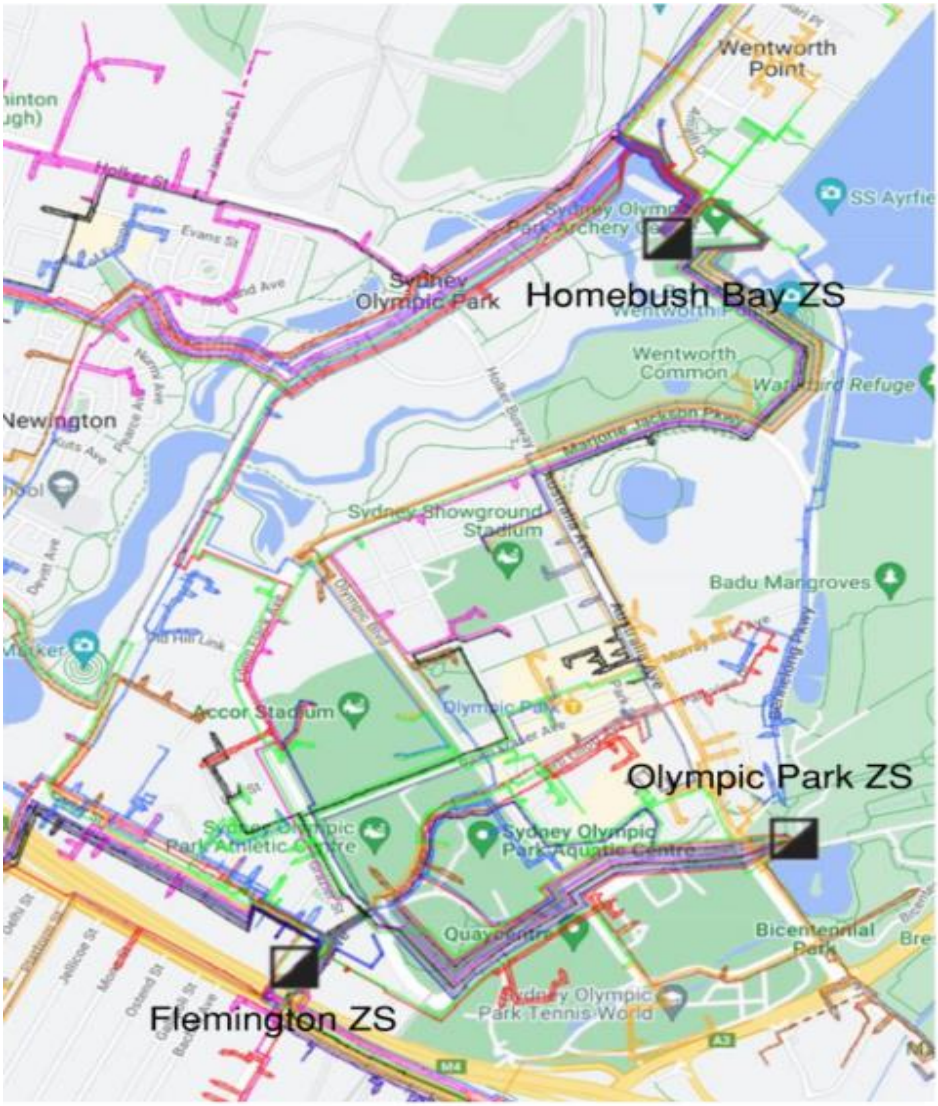

Figure 2-1 Sydney Olympic Park Zone Substations

Figure 2-2 Sports and Civic, Southern Neighbourhood - Electrical Network

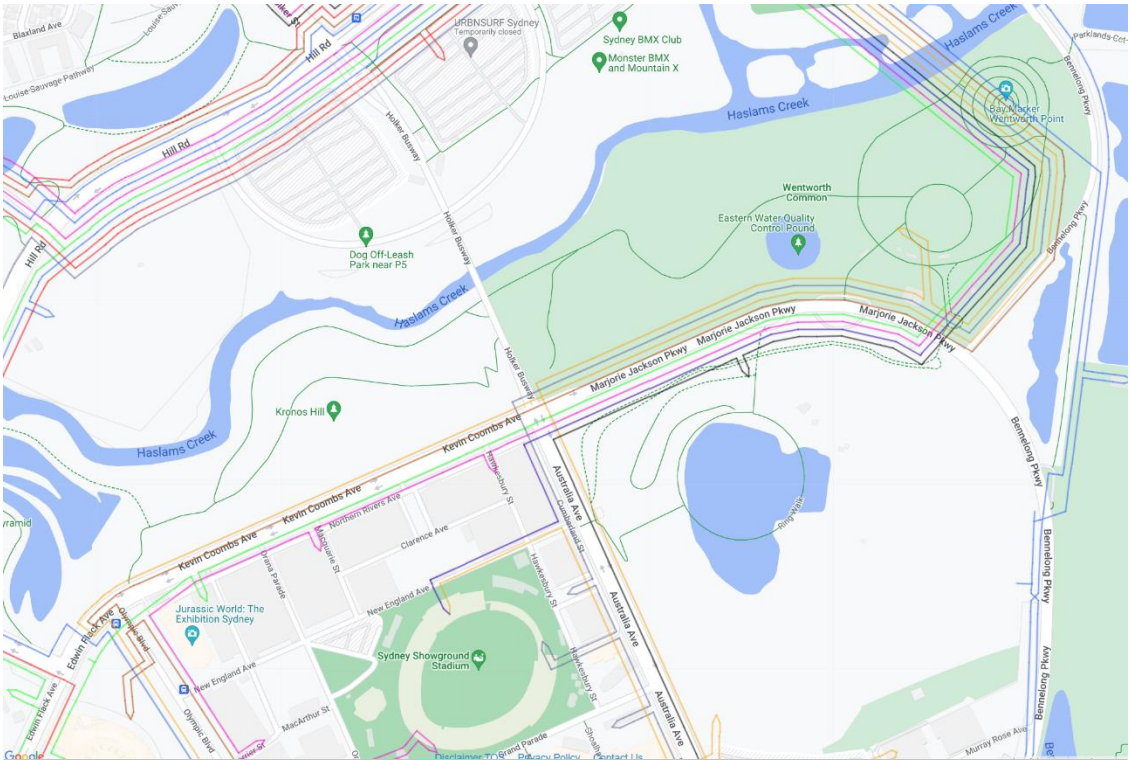

Figure 2-3 Stadia Precinct and Urban Centre Neighbourhood – Electrical Network

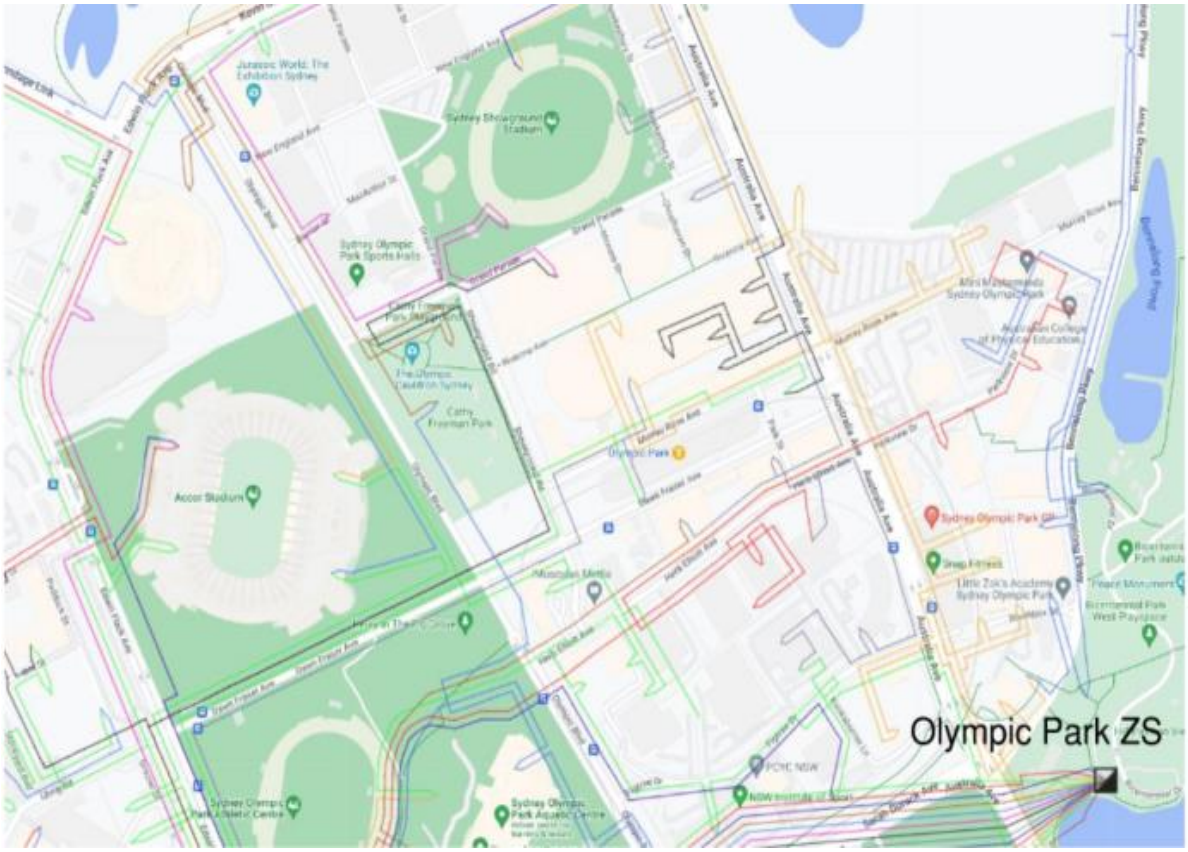

Figure 2-4 Extension of Stadia Precinct and Urban Centre Neighbourhood – Electrical Network

2.5 Existing Telecommunications Network

Telecommunications servicing provided by NBN Co is available in the Sydney Olympic Park area and serves as a key provider of high-speed broadband services. As a national wholesale network, NBN Co offers a robust and scalable infrastructure capable of meeting the telecommunication needs of Sydney Olympic Park's developments.

There are also Telstra assets which run along all existing roads within the site. The costs associated with any required adjustment to these assets resulting from the development of the Precincts will need to be borne by the Developer(s).

NBN Co's online services indicate that communication services are available at the site, available areas seen highlighted purple within **Figure 2-5.** The volume of new developments within the Sydney Olympic Park area consists of over 7,000 premises. This area has also had services delivered to existing buildings via Brownfield rollout which enable NBN Co further capacity to service new development.

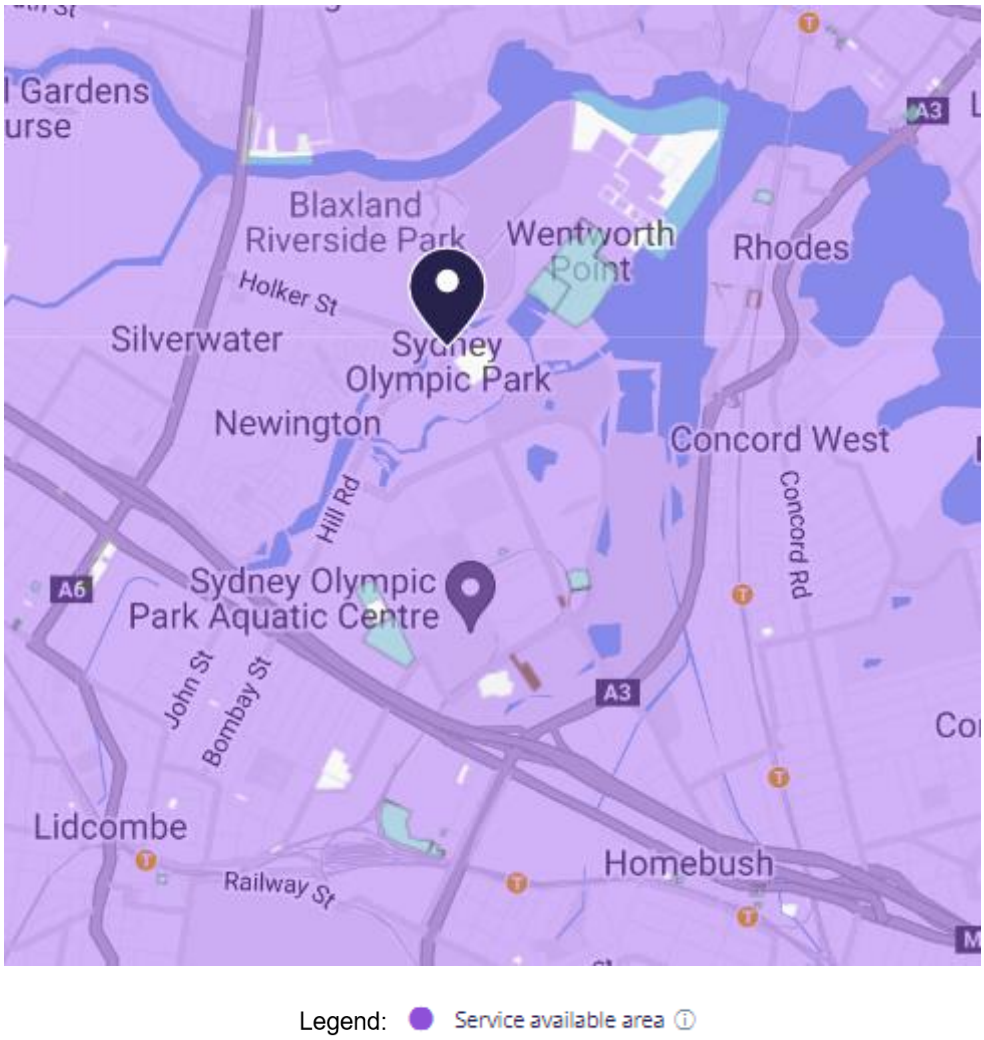

Figure 2-5 NBN Coverage Map

2.6 Existing Gas Network

Source Information

To assess the existing gas infrastructure within the Sydney Olympic Park, the following documents and sources were reviewed:

- Before You Dig Australia (BYDA) completed 10/08/2023
- Contact with the utility provider Jemena.

Urban Centre Neighbourhood

- 559 Steel 3500 kPa High Pressure Gas Main running down Sarah Durack Avenue;
- 100 Steel 1050 kPa High Pressure Gas Main running down Sarah Durack Avenue;
- 75 Nylon 210kPa Medium Pressure Gas Main running down Figtree Drive;
- 75 Nylon 210 kPa Medium Pressure Gas Main running down Olympic Boulevard;
- 110 Nylon 210kPa Medium Pressure Gas Main in Dawn Fraser Avenue;
- 63 Polyethylene 210 kPa Medium Pressure Gas Main in Herb Elliot Avenue;
- 75 Nylon 210kPa Medium Pressure Gas Main in Australia Avenue;
- 150 Steel 1050kPa High Pressure Gas Main at the intersection of Herb Elliot Avenue and Olympic Boulevard.

Eastern Neighbourhood

- 110 Nylon 210 kPa Medium Pressure Gas Main running down Murray Rose Avenue;
- 100 Steel 1050 kPa Isolate Main (High Pressure) running down Bennelong Parkway;
- 50 Nylon 210 Kpa Medium Pressure Gas Main partially running along Bennelong Parkway;
- 63 Polyethylene 210 kPa Medium Pressure running down Bennelong Parkway;
- 50 Nylon 210 Kpa Medium Pressure Gas Main running down Australia Avenue;

Southern Neighbourhood

- 559 Steel 3500 kPa High Pressure Gas Main running down Sarah Durak Avenue;
- 100 Steel 1050 kPa High Pressure Gas Main running down Sarah Durak Avenue;
- 50 Nylon 210 kPa Medium Pressure Gas main running down Australia Avenue;
- 50 Copper 210kPa Medium Pressure Gas main running across Olympic Boulevard.

Haslams Neighbourhood

- 150 Steel 1050 kPa Isolated Gas Main running along Old Hill Link;
- 100 Steel 1050 kPa High Pressure Gas Main running along Hill Road;
- 150 Steel 1050 kPa High Pressure Gas Main running down Hill Road;
- 150 Steel 1050 kPa High Pressure Gas Main running along Pondage Link;
- 50 Nylon 210 kPa Medium Pressure Gas Main running down Kevin Coombs Avenue.

Edwin Flack Neighbourhood

- 110 Nylon 210 kPa Medium Pressure Gas Main running down Uhrig Road;
- 110 Nylon 210 kPa Medium Pressure Gas Main running down Edwin Flack Avenue;
- 150 Steel 1050 kPa High Pressure Gas Main along Birnie Avenue;

Sports and Civic Precinct

- 559 Steel 3500 kPa High Pressure Gas main running down Sarah Durak Avenue;
- 100 Steel 1050 kPa High Pressure Gas Main running down Sarah Durak Avenue;
- 75 Nylon 210 kPa Medium Pressure Gas Main running along Olympic Boulevard;
- 100 Steel 1050 kPa High Pressure Gas Main running down Birnie Avenue;
- 150 Steel 1050 kPa High Pressure Gas Main running along Shane Gould Avenue.

Stadia Precinct

- 50 Nylon 210 kPa Medium Pressure Gas Main running down Kevin Coombs Avenue;
- 150 Steel 1050 kPa High Pressure Gas Main running along Olympic Boulevard;
- 75 Nylon 210 kPa Medium Pressure Gas Main running down Australia Avenue;
- 110 Nylon 210 kPa Medium Pressure Gas Main running down Australia Avenue;
- 75 Nylon 210 kPa Medium Pressure Gas Main running along Olympic Boulevard;
- 110 Nylon 210 kPa Medium Pressure Gas Main running along Dawn Fraser Avenue;

3. Concept Networks

Chapter 3, and Appendices C and E feature conceptual designs and anticipated servicing requirements for potable water, recycled water, sewer, electrical, and telecommunications. These are assumptions formed through analysis of existing utility provider guidelines and past project experience. Stantec Australia Pty Ltd cannot guarantee that the adjustments highlighted will be the final requirements provided by the utility providers. Specific developmental requirements will be specified to developers at detailed design stages by the respective providers.

3.1 Sydney Water Process

All civil developments within the Greater Sydney Area require input from Sydney Water. This may be in the form of creating new infrastructure, the modification of existing assets, or the protection of Sydney Water pipes. An overview of the Sydney Water process can be found within **Section 3.1.1**.

3.1.1 Overview

Table 3-1: Sydney Water Process Overview (Sydney Water Asset Adjustment and Protection Manual)

Phase	Description
Concept	High level review of project, potential assets impacted identified, planning approvals assessed.
Define	A water service coordinator is appointed, the formal application is made, system capability assessment undertaken, and a Letter of requirements issued.
Design	An approved designer prepares plans for Sydney Water to review, based on approved standards and the conditions in the Letter of requirements.
Delivery	Procurement, construction, shutdowns, connections, and inspections.
Finalisation	Explains what is required to complete the works, including fees, documents, and quality control reviews.

For detailed explanations of each step in the Sydney Water Process, please refer to the following document provided by Sydney Water:

Sydney Water Asset Adjustment and Protection Manual

https://www.sydneywater.com.au/content/dam/sydneywater/documents/sydney-water-asset-adjustment-and-protection-manual.pdf

3.1.2 Key Sydney Water Definitions

Major Works – Refers to the full design and construction management procedures for major infrastructure installation which requires review and approval from Sydney Water. Consists of any development which lie outside the limitations of Minor Works.

Minor Works – Refers to a set scope of works which can be completed under the jurisdiction of a Water Service Coordinator (WSC) due to the low-risk nature of the construction activities. Minor Works can only be completed on sewer assets with materials such as Polyvinyl Chloride (PVC) and Vitrified Clay (VC).

Water Service Coordinator (WSC) – A Water Service Coordinator is a third-party company who liaise between Sydney Water and the Developer.

3.1.3 Sydney Water Applications

There are five different types of applications that can be submitted to Sydney Water:

1. Section 73 Application
    a. Complying
    b. Development
    c. Anticipated Requirements
2. Adjustment and Deviation Application
3. Minor Extension Application
4. Feasibility Application
5. Building Plan Approval
    a. In Scope Building Plan Approval (BPA)
    b. Out of Scope Building Plan Approval (BPA)

Summaries of these applications are detailed below:

Section 73 Application

Section 73 Applications are made to Sydney Water for the creation of new infrastructure for the servicing of newly developed land. The scope of developments which are covered by Section 73 Applications occurring within the Sydney Olympic Park include the following:

- Complying:

  A Complying Section 73 refers to the simple developments in which Major Works are not required. The key requirements for a Complying Section 73 are ensuring the development already has a water and sewer connection or is fronted by water and sewer assets so that a connection can be made via Minor Works. This is for all lots being created as part of the Development Application (DA).

- Development:

  A Development Section 73 involves the larger subdivision works in which the full Major Works process is required. This is to provide the developments with connections to the Sydney Water network if they are not already available to connect to.

- Anticipated Requirements:

  An Anticipated Requirements application is for a Development Section 73 however the DA is yet to be issued by council.

Adjustment and Deviation Application

Adjustment and Deviation applications are for the modification of existing Sydney Water infrastructure which is impacted by any proposed development. Common types of development scenarios include design surface cuts which result in insufficient cover over their asset, any civil component clashes with existing assets, or when a development requires additional capacity which creates the need for upgrades to existing infrastructure.

Minor Extension Application

Minor Extension applications are commonly utilised for the delivery of lead-in infrastructure to service current or future developments which do not have adjacent Sydney Water assets.

Feasibility Application

Feasibility applications are utilised for future developments in which the developer would like to identify the Sydney Water servicing requirements for their proposed site.

Building Plan Approvals

Building Plan Approvals are required when a development is going to have an impact on existing Sydney Water infrastructure. Analysis is required to determine if protection measures are required, or construction limitations must be enforced to ensure that the Sydney Water assets are not damaged during construction. A BPA will be required to be obtained to meeting a Sydney Water condition within a DA for the Construction Certificate (CC). If not covered within the DA, it will be highlighted as part of Sydney Water's Notice of Requirements within the Section 73 process.

- **In Scope Building Plan Approval (BPA)**

  In Scope BPA's are an assessment which can be completed by a Water Service Coordinator (WSC) for sewer assets only up to and equal to DN300 in size for certain materials. For all other assets an Out of Scope BPA would be required.

- **Out of Scope Building Plan Approval (BPA)**

  An Out of Scope BPA assessment is an analysis which needs to be completed by Sydney Water due to the asset in question being of critical nature to their network. Out of Scope BPA's are also required when completing civil works associated with basement construction, retaining walls greater than 3.0m in height or retaining a backfill greater than 1.0m, and any works adjacent to a Sydney Water easement.

Most, if not all developments within the Greater Sydney Area will need to submit at least one of these applications to Sydney Water to determine if they are able to service the development with potable water, wastewater, or recycled water. Each application has different timeframes for completion which is based on the complexity of the work required. These applications are submitted by a WSC engaged by the developer closer to the design stages.

3.2 Sydney Water Feasibility Application

As mentioned within Section 3.1.3, Sydney Water Feasibility Applications are used to identify potential Sydney Water servicing requirements for future projects. These letters are to be used as a guide only and provide general information about what the requirements may be if developers within the Sydney Olympic Park apply for a Section 73 from Sydney Water.

A Feasibility Letter covering the Sydney Olympic Park was received from Sydney Water on March 11th, 2024 (seen within **Appendix D**). Advice on the water and sewer capacity is as per the below:

Section 4.1 Water

- The development is located within the Silverwater Gravity Water Supply Zone. The area was identified for growth and development in the Greater Parramatta and the Olympic Peninsula Sub-Regional Plan (GPOP) 2018.
- The GPOP 2018 report identified a number of augmentations, particular the amplification of the WP0332 pump station. The upgrade water completed in 2021. **Hence, the Silverwater Gravity Water Supply Zone has capacity to supply the proposed development**.
- The advice is applicable based on the information provided. The project demand of the development should be provided at Section 73 stage for detailed assessment.

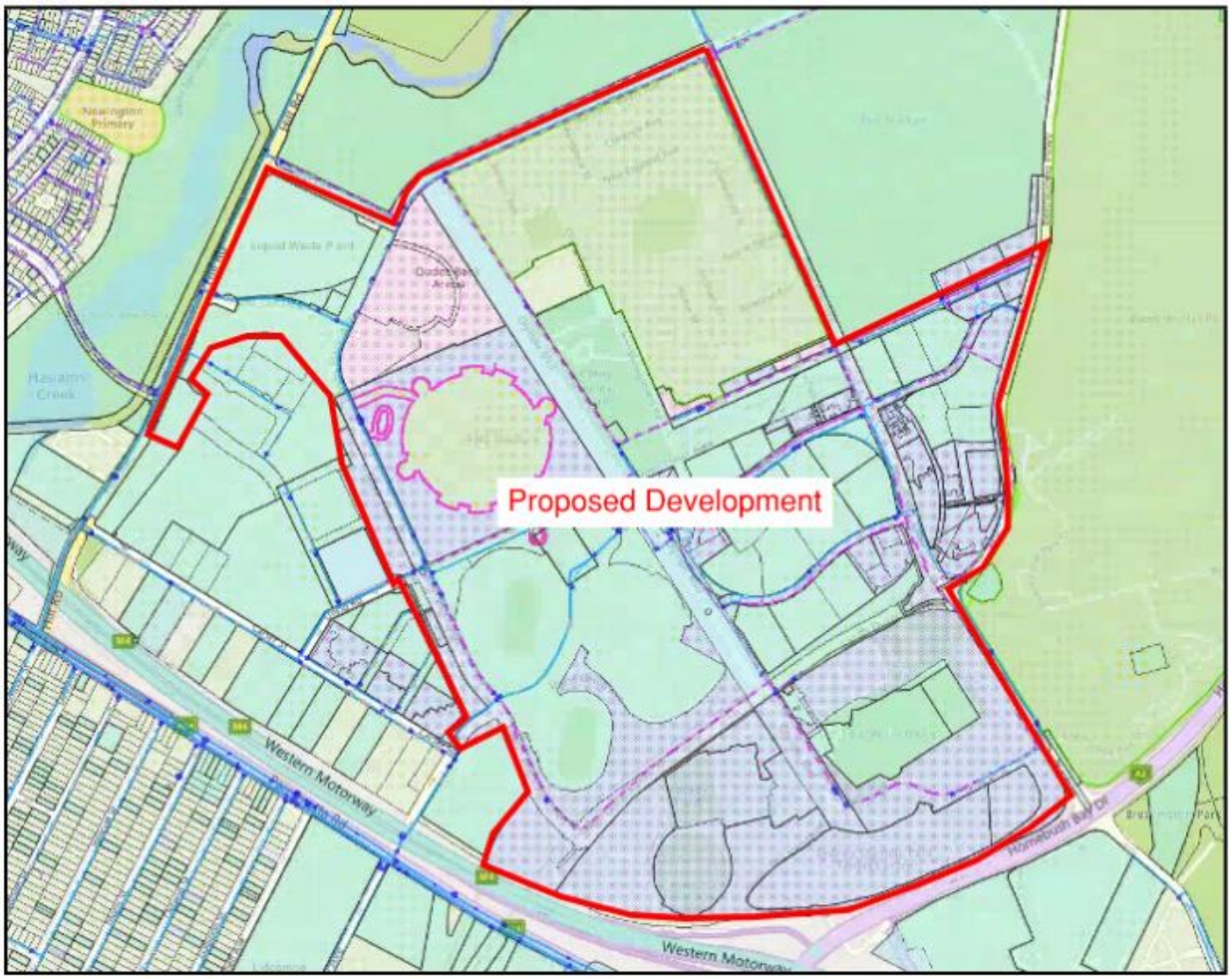

Figure 3-1 Proposed Development and Recommended Water Pipeline Connection (Appendix D)

Section 4.2 Sewer

- The proposed development lies in Homebush SCAMP. GPOP subregional plan 2018 looked at the short-term strategy and has identified network amplifications required in the future to support the significant growth projected with Sydney Olympic Park area.
- However, the infrastructure augmentation proposed under GPOP to service the Sydney Olympic Park was reassessed recently. The assessment has validated the duplication of Strathfield Submain and renewal of rising mains of SP0041.
- The relining of rising main of SP0041 is currently underway under Sydney Water renewal programme and will be completed by the end of 2025.
- The duplication of Strathfield Carrier is in its early design phase and is likely to be completed by 2030.
- The application will be reassessed when detailed development information, such as staged development yield and timing are available.

Figure 3-2 Sydney Olympic Park Site and Wastewater Network

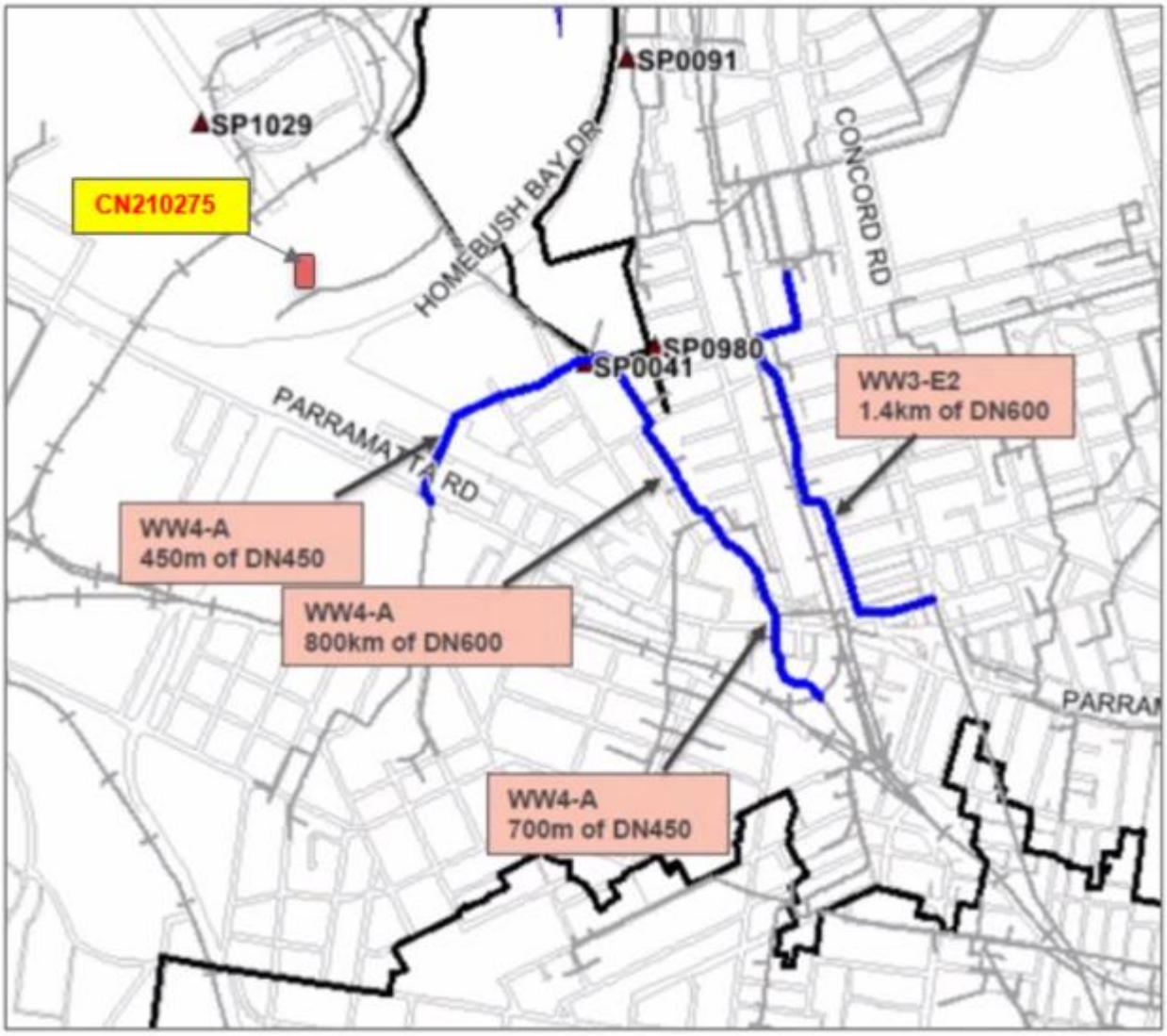

Figure 3-3 Proposed Amplification Downstream of SP0041 (GPOP) (Appendix D)

The above advice provided within Sydney Water's Feasibility Letter is a guide only. The information was accurate at the date of receival only. Sydney Water have not allocated any system capacity to the Sydney Olympic Park developments based on their investigation into the provided Feasibility Letter. Where there is system capacity, it may be fully utilised by the time a Consent is obtained. The requirements applied to any approved development proposal may differ significantly in the future since the original advice was issued.

The full Sydney Water Feasibility Letter can be found within **Appendix D**.

3.3 Concept Potable Water Network

It is recommended by Sydney Water that integrated water management provision via dual-pipe controls are investigated for this development in line with the wider Greater Parramatta and the Olympic Peninsula (GPOP) recycled water initiatives. They have stated that further planning is needed to assess scale and timing of future amplification. This would require detailed development information, such as staged development yield and timing. All costs of recycled water network development will be borne by the developer(s), covered in more detail within Section 6.1.1.

Recommendations regarding the upgrade of existing infrastructure for potable and recycled water are based on **Figure 3-4** sourced from the Water Supply Code of Australia.

The conclusion on the pipe sizing shall be based on hydraulic modelling and subject to Sydney Water approval. The concept network is subject to Sydney Water approvals and are based on assumptions and Sydney Waters standards. This design is to be continually updated through the Infrastructure Master Plan as the future road designs become finalised and Sydney Water provide feedback.

General Assumptions:

- DN100 water mains are suitable for the side streets due to fire fighting and hydrant spacing guidelines.
- Potable water mains will be required in all new roads and side streets. Pipe sizing shall be based on hydraulic modelling, Sydney Water approval, and be designed at a later stage of the individual development's progression.

The concept potable water network is detailed in **Appendix E**.

TABLE SW 3.6

MINIMUM PIPE SIZES FOR DUAL SUPPLY DEVELOPMENTS

ZONING/DEVELOPMENT	MINIMUM PIPE SIZE (DN)	
	Drinking Water	Recycled Water
Low and medium density residential	100 (1)	100 (1)
High density residential (≥ 4 storeys)	150	150
Multiple developments of high density residential (≥ 8 storeys)	200	150 (2)
Industrial and commercial	150	150

NOTES:

1 *The Water Agency may authorise smaller pipe sizes to address issues such as water quality, provided that requirements for fire fighting supply are otherwise met.*

2 *Assumes fire fighting is supplied by the drinking water supply system.*

Figure 3-4 Minimum Pipe Sizes for Dual Supply Developments (WSA 03, 2011-3.1)

Urban Centre

The potable water main in Figtree Drive is the only existing main that requires an upgrade to a DN200. The future mains in the new roads will need to be a minimum DN200 or DN250 so that every development greater than 8 storeys has a frontage to one of these mains.

Urban Centre potable water network key assumptions:

- DN250 water mains will have sufficient capacity and pressure to service the precinct. If this is not the case the main along Olympic Boulevard will also need to be upsized and connected into the DN375 or DN400 main just north of the intersection of Olympic Boulevard and Herb Elliot Avenue.

The Eastern Neighbourhood

The DN150 potable water mains in Bennelong Drive and Murray Rose Avenue are the only existing mains that require an upgrade to a DN200. Developments that are greater than 8 storeys require a minimum DN200 connection to Sydney Water's network; all future mains constructed in the new roads will need to be to this minimum.

The Eastern Neighbourhood potable water network key assumptions:

- The potable water network is to service multiple high-density residential buildings and potentially a new primary school.

- DN200 and DN250 water mains will have sufficient capacity and pressure to service the precinct. If this is not the case the mains along Murray Rose Avenue and Parkview Drive will also need to be upsized.

The Southern Neighbourhood

The potable water mains in Olympic Boulevard and Sarah Durack Avenue are the only existing mains that require an upgrade to a DN200. The Sydney Water Major Works process would be required to provide a minimum DN200 frontage to the new developments on Sarah Durack Avenue.

The Southern Neighbourhood potable water network key assumptions:

- The potable water network is to service high density residential, commercial buildings, and sports facilities.
- DN200 and DN250 water mains will have sufficient capacity and pressure to service the precinct. If this is not the case the mains along Shirley Strickland Avenue and Australia Avenue will also need to be upsized.

Haslams Neighbourhood

The opportunity for the Haslams Neighbourhood is that the existing DN250 and DN200 mains will be able to remain, subject to Sydney Water approval. This means that the only upgrades required will be constructing mains in the new streets.

The Haslams Neighbourhood potable water network key assumptions:

- The potable water network is to service residential and mixed-use buildings from 6 to 16 storeys.
- DN200 and DN250 water mains will have sufficient capacity and pressure to service the precinct. If Sydney Water determine that this is not the case, they will provide requirements within specific applications submitted closer to detailed design

Edwin Flack Neighbourhood

The existing potable water network in Edwin Flack Neighbourhood will be able to remain, subject to Sydney Water approval.

The Edwin Flack Neighbourhood potable water network key assumptions:

- The potable water network is to service a mix of residential and commercial developments.
- DN250 water mains will have sufficient capacity and pressure to service the precinct. If Sydney Water determine that this is not the case, they will provide requirements within specific applications submitted closer to detailed design.

The Sports and Civic Precinct

The opportunity for the precinct is that the existing ≥ DN150 mains will be able to remain, subject to Sydney Water approval. Works will be required to provide a minimum DN150 frontage to all developments that use potable water. An assessment of the hydraulic capacity of the existing DN150 DICL main in Olympic Boulevard should be conducted by developers at a stage closer to detailed design.

The Sports and Civic Precinct potable water network key assumptions:

- The potable water network is to service industrial and commercial buildings only (≥8 storeys), no residential infrastructure.
- New infrastructure is capable of connecting in to the DN375 DICL & DN400 SCL trunk main;
- DN150 water mains will have sufficient capacity and pressure to service the buildings. If this is not the case the mains along Shirley Strickland Avenue and Australia Avenue will also need to be upsized.

The Stadia Precinct

The existing potable water network in the Stadia Precinct will be able to remain, subject to Sydney Water approval. An assessment of the hydraulic capacity of the existing DICL main in Edwin Flack Avenue should be conducted by developers at a stage closer to detailed design.

The Stadia Precinct potable water network key assumptions:

- The potable water network is to service industrial, commercial and residential buildings (≥8 storeys).
- New infrastructure is capable of connecting into the DN450 DICL trunk main.

3.4 Concept Recycled Water Network

Sydney Water stated in their initial Feasibility letter submitted for the Sydney Olympic Park 2030 Master Plan (see **Appendix D**) that they are currently assessing the viability of recycled water servicing for the GPOP, in line with the Greater Sydney Commission's draft Phase 1. They recommended in this letter that integrated water management provision via dual-pipe controls are being investigated for the master plan development in line with the wider GPOP recycled water initiatives.

The recycled water network will be used to supply the non-potable water for irrigation, car washing, toilets, water features, washing machines and cooling towers.

The conclusion on the pipe sizing shall be based on hydraulic modelling and subject to Sydney Water approval. The concept network is subject to Sydney Water approvals and are based on assumptions and Sydney Water's standards. This design is to be continually updated through the Infrastructure Master Plan as the future road designs become finalised and Sydney Water provide feedback.

General Assumptions:

- Recycled water mains will be required in all new roads and side streets. Pipe sizing shall be based on hydraulic modelling, Sydney Water approval, and designed at a later stage in the project.
- Sydney Olympic Park Authority (SOPA) are dedicated to providing dual supply to all buildings within the 2050 Master Plan.

Urban Centre

The Urban Centre recycled water network is similar to the above concept potable water network with only minor changes:

- The DN100 DICL main in Figtree Drive will be required to be upsized to a DN150 or a DN200 main due to the size of the development.
- Due to the size of the recycled water main in Australia Avenue the Urban Centre is not constrained for servicing and will be able to service the required upgraded mains along Figtree Drive, Herb Elliot Avenue and the new mains within the new roads of the Urban Centre.
- New recycled water infrastructure will need to be designed and constructed in the proposed Street UC06 and Street UC09.

The Eastern Neighbourhood

The opportunity for the precinct is that the existing ≥DN150 mains will be able to remain, subject to Sydney Water approval. Sydney Water Major Works will be required to provide a minimum DN150 frontage to all residential buildings. The recycled water network is similar to the above proposed potable water network with the following changes:

- The DN100 uPVC main in Parkview Drive will be required to be upsized to a DN150 or a DN200 main due to the size/nature of the development.

- The DN90 PE main in Bennelong Parkway will be required to be upsized to a DN150 or a DN200 main due to the size/nature of the development.

The Eastern Neighbourhood recycled water network key assumptions:

- The recycled water network is to service high-density residential and commercial buildings, and potentially a new primary school.
- Buildings on Betty Cuthbert Avenue can currently be serviced from nearby recycled water mains.
- The DN375 DICL recycled water main on Australia Avenue has capacity to service upgrades and all new mains within the new roads of the Eastern Neighbourhood.

The Southern Neighbourhood

The existing recycled water network in the Southern Neighbourhood will be able to remain, subject to Sydney Water approval. Sydney Water Major Works will be required to provide a minimum DN150 frontage to all lots. The DN150 DICL main on Sarah Durack Avenue to be extended to Australia Avenue.

The Southern Neighbourhood recycled water network key assumptions:

- The DN150 DICL main in Sarah Durack Avenue is able to provide adequate recycled water frontage to building '2SN'
- The DN300 DICL main in Australia Avenue is able to provide adequate recycled water frontage to the residential buildings within '4SN'.

Haslams Neighbourhood

The opportunity for the precinct is that the existing ≥DN150 mains will be able to remain, subject to Sydney Water approval. Sydney Water Major Works will be required to provide a minimum DN150 frontage to all buildings. The recycled water network is similar to the above concept potable water network with the following changes:

- The DN150 DICL main in Edwin Flack Avenue will be required to undergo the Sydney Water Major Works process to supply recycled water to the mixed-use building '7HN' as indicated in the 2050 Master Plan.
- Recycled water mains will need to be laid in the new streets.

Haslams Neighbourhood recycled water network key assumptions:

- The DN200 DICL main in Hill Road can provide adequate recycled water frontage to new residential buildings '1HN', '2HN' and 3HN' as indicated in the 2050 Master Plan.
- The public open space 'OSHN 02' is able to be serviced by the DN150 DICL main in Edwin Flack Avenue and no extensions are required.
- The capacity of the recycled water reticulation network downstream of the Haslams Neighbourhood and outside of the SOPA Master Plan works boundary will not be severely affected by the development.

Edwin Flack Neighbourhood

The existing recycled water network in the Edwin Flack Neighbourhood will be able to remain, subject to Sydney Water approval. The recycled water network is similar to the above concept potable water network with the following changes:

- Sydney Water Major works will be required to provide recycled water frontage to the northern buildings of the Edwin Flack Neighbourhood. It is recommended that the DN350 DICL main in Edwin Flack Avenue to be extended to front the residential buildings '1EF' and '2EF' as indicated in the 2050 Master Plan. A minimum pipe size of DN150 is advised to service the buildings.

Edwin Flack Neighbourhood recycled water network key assumptions:

- The Edwin Flack Neighbourhood includes both residential and commercial developments.

- The proposed buildings on Edwin Flack Avenue, to the south of Dawn Fraser Avenue, can connect to the existing DN300 DICL main.

The Sports and Civic Precinct

The existing recycled water network in the Sports and Civic Precinct will be able to remain, subject to Sydney Water approval. The recycled water network is similar to the above proposed potable water network with the following changes:

- Sydney Water Minor Works will be required to connect the new school (6SC) to the existing DN300DICL main in Sarah Durack Avenue.

The Sports and Civic Precinct recycled water network key assumptions:

- The upgrade, development, or re-development of buildings within the Sports and Civic Precinct is all non-residential.
- All existing infrastructure is connected to the recycled water network.
- Due to the size of the recycled water reticulation network the Sports and Civic Precinct is not constrained for servicing and will be able to service the new mains within the new roads of the Sports and Civic Precinct.

The Stadia Precinct

The existing recycled water network in the Stadia Precinct will be able to remain, subject to Sydney Water approval. Sydney Water Major Works are not required to service the Stadia Precinct, excluding mains in the new roads and side streets.

The Stadia Precinct recycled water network key assumptions:

- Recycled water reticulation ≤DN50 to be verified with a licensed plumber;
- All existing infrastructure is connected to the recycled water network;
- All new infrastructure has access to the recycled water reticulation network.

3.5 Concept Wastewater Network

The concept wastewater network has been detailed in **Appendix C.**

The concept wastewater network is subject to Sydney Water approvals prior to each individual site's development. The development lies within Homebush SCAMP and Sydney Water have identified some dry weather amplification downstream. It is anticipated that the future developments will require adjustments and deviations of the existing Sydney Water network. Assumptions within this concept wastewater plan are based on previous experience with Sydney Water projects and requirements. These requirements cannot be confirmed until applications are made to Sydney Water closer to design stage, where they will advise on what reticulation needs to be constructed to service each development. The costs of these requirements will be funded by the developers.

Recommendations to upsize existing mains or sizing new mains is based on **Figure 3-5**. Sewer modelling at a later stage is required to understand the capacity of the Sydney Water network. This design is to be continually updated through the Infrastructure Master Plan as the future road designs become finalised and Sydney Water provide development specific feedback.

General Assumptions:

- All developments must have a sewer main that is the right size and can be used for connection.
- The sewer is needed to have a point of connection within the development boundary.

TABLE 4.4
MAXIMUM EP FOR RETICULATION SEWERS

Pipe size	Grade		Maximum EP
DN 150	1 in 170	0.59%	500
	1 in 150	0.67%	550
	1 in 125	0.80%	625
	1 in 100	1.00%	725
	1 in 80	1.25%	850
	1 in 60	1.67%	1,050
DN 225	1 in 270	0.37%	1,600
	1 in 250	0.40%	1,700
	1 in 200	0.50%	1,950
	1 in 150	0.67%	2,350
	1 in 125	0.80%	2,650
	1 in 100	1.00%	3,025
	1 in 80	1.25%	3,450
	1 in 60	1.67%	4,100
DN 300	1 in 370	0.27%	3,225
	1 in 250	0.40%	5,000
	1 in 200	0.50%	4,650
	1 in 150	0.67%	5,500
	1 in 125	0.80%	6,100
	1 in 100	1.00%	6,950
	1 in 80	1.25%	7,900
	1 in 60	1.67%	9,300

Figure 3-5 Maximum EP For Reticulation Sewers (WSA 03, 2011-3.1)

Urban Centre

To accommodate developments proposed under Master Plan 2050, new mains may need to be constructed in Figtree Drive, Streets UC07, UC08 and UC09 as well as along Australia Avenue. Based off this assessment no existing mains will need to be upgraded. There is potential for Sydney Water Minor Extensions required off the mains detailed above so that each development has a Property Connection Sewer (PCS).

The Eastern Neighbourhood

Desktop analysis identifies that no existing mains will need to be upgraded. The new mains that will need to be constructed are in Parkview Drive, Betty Cuthbert Avenue and Streets EN04 and EN05. There is potential for minor extensions required off the mains detailed above so that each development has a Property Connection Sewer (PCS).

The Southern Neighbourhood

There are several developments occurring along Sarah Durack Avenue that will require connection into the Sydney Water wastewater network. As the only main near these developments is a sewer rising main (pressured sewer), Sydney Water will need to advise on whether connections should be made into that, or by creation of a new gravity main to feed to Olympic Boulevard. This will occur within a Sydney Water application submitted at further design stages.

The new main that will need to be constructed is in Street SN01 and should connect into the gravity network along Olympic Boulevard. The developments within 4SN will require individual Property Connection Sewers.

It is assumed that 1SN and 2SN are currently serviced by the DN225 PVC on Olympic Boulevard. If wastewater from 1SN, 2SN and 4SN flow into the existing DN225 PVC on Olympic Boulevard, it is recommended to upsize the main to a DN300. This adjustment and deviation of the DN225 PVC sewer main will need to be confirmed by Sydney Water at a later stage. The developer(s) that will be connecting into the network will need to pay for this assumed amplification.

Haslams Neighbourhood

This potential future development envisaged by Master Plan 2050 for Haslams Neighbourhood promotes a new residential hub that provides close access to the Urban Centre, public transport, and the Carter Street precinct. All new residential developments will require access to the wastewater network via a Property Connection Sewer (PCS). The new mains that will need to be constructed are in the new streets HN01, HN02 and HN03, Hill Road and Old Hill Road. The direction of the flows will need to be confirmed during detailed design.

Haslams Neighbourhood wastewater network key assumptions:

- The private sewer main along Hill Road can be used to service the developments 1HN and 2HN.
- All flows are directed to the sewer pump station (SPS1082), excluding those serviced by the private main.

Edwin Flack Neighbourhood

The temporary residential and commercial development along Edwin Flack Neighbourhood requires the extension of nearby wastewater assets to ensure each lot has a PCS. The new mains that will need to be constructed are:

- Along Paddock Street on the west side of the new developments. The proposed main will connect to the existing DN225 VC near the intersection of Uhrig Road and Edwin Flack Avenue.
- In Edwin Flack Avenue on the west side of 5EF and 6EF. This main will extend from the existing DN225 PVC and drain towards the intersection of Uhrig Road and Edwin Flack Avenue.

Edwin Flack Neighbourhood wastewater network key assumptions:

- The reticulation network within the Carter Street Precinct has sufficient capacity;
- The sewer pump station (SPS1082) within the Haslams Neighbourhood has sufficient capacity.

The Sports and Civic Precinct

Home to world class competitive sport venues, the Sports and Civic Precinct will require upgrades and extensions to the existing wastewater network. The new mains that will need to be constructed are:

- Along Sarah Durack Avenue to service the new school facility (6SC) and other recreational site. The minimum size of the main should be DN225 to service the school.
- In the new street SC03 to support the upgrades of the Aquatic Centre, Athletics track and hockey field above the surface parking.

The Sports and Civic Precinct wastewater network key assumptions:

- Property connections are the responsibility of the lot owner.

The Stadia Precinct

This potential future development envisaged by Master Plan 2050 will witness upgrades along Olympic Boulevard and areas around the stadium with retail uses, outdoor dining, and temporary accommodation. New commercial developments are proposed under Master Plan 2050 which will ultimately increase the wastewater demand. All proposed developments currently have access to the wastewater network, see **Appendix C.** Sewer modelling is required in the developed design stage to understand the capacity of the network.

3.6 Concept Electrical Network

Stantec has conducted a maximum demand study based on the gross floor area (GFA) for the site and has estimated the projected maximum demand load to be 106.7 MVA. It is important to note that this load represents

the total expected demand after the redevelopment of the site and does not add to the existing load, as the new development will replace it.

Table 3-2 Maximum Demand Load

Area Description	GFA (sqm)	Lighting (VA/sqm)	Power (VA/sqm)	Mech (VA/sqm)	Total (MVA)
Residential	1167409	5	30	5	46.7
Commercial	384866	10	50	40	38.5
Retail	90741	20	50	30	9.1
Civic	23611	10	50	40	2.4
Education / Health	68702	10	50	40	6.9
Events / Tourism / Sports	262034	50	40	30	31.4
Arts / Industry	35741	10	30	40	2.9
Hotel / Student	168293	10	50	50	18.5
Parking	107964	10	40	0	5.4

Max. Demand load (MVA)	106.7
Max. Demand load (A)	164971.3

We have officially submitted a technical inquiry to Ausgrid concerning the anticipated capacity requirements for the future expansion, which is estimated at 106.7 MVA. The objective of this inquiry is to obtain guidance from Ausgrid on the most effective means to provide the necessary power supply for this development. We have specifically asked for information regarding the current state of zone substations and their available spare capacity to accommodate the new development.

Ausgrid has confirmed that the options outlined in the System Planning Advice issued on April 6, 2022, which account for a total load of 65 MVA with 'N-1' reliability, remain valid for the SOPA 2050 Master Plan.

According to Ausgrid's System Planning Advice, it has been determined that the maximum anticipated load of 65 MVA for the year 2030 will be met by the Olympic Park zone substation. The remaining 41.7 MVA for 2050 Master Plan will be supplied by the Flemington Zone substation if the 2030 Master Plan load is integrated into the network. This necessitates the installation of a third transformer and an 11kV switch group at the Flemington Zone substation to accommodate the additional loads. (**Appendix F** provides details of the System Planning Advice from Ausgrid and the corresponding email received on October 31, 2023.)

In summary, it is evident that modifications to the existing electrical network at Sydney Olympic Park will be necessary to meet the future requirements of the fully developed Sydney Olympic Park. These recommended changes encompass upgrades to feeders, expansion of zone substations, collaboration with Ausgrid, the implementation of smart grid technologies, and the integration of renewable energy sources. These measures are essential to ensure the reliability, resilience, and sustainability of the electrical infrastructure for SOPA.

Importantly, these modifications are consistent with the guidance from utility authorities, the Master Plan 2050, and the anticipated maximum demand load.

3.7 Concept Telecommunications Network

In order to address the communication requirements for the upcoming development at Sydney Olympic Park, NBN Co has officially affirmed that their existing network incorporates additional capacity designed to accommodate future developments in the SOPA area. The foundational infrastructure concept includes provisions for NBN connections to each of the planned structures. Initial preparatory work will be necessary to facilitate these connections, and NBN Co has affirmed their capability to furnish connections for all forthcoming developments.

The ownership and upkeep of these telecommunication utilities will remain the responsibility of the utility providers, which are Telstra, NBN, Optus, TPG, UECOMM, Verizon, and Vocus. Each provider will assume ownership, administration, and maintenance of their specific telecommunications infrastructure within Sydney Olympic Park.

In the course of our inquiry, it was ascertained that NBN is the existing supplier for the proposed precincts. NBN has conveyed their readiness to engage with developers to enhance and expand the network as needed to support the future planned structures. This collaborative approach will ensure that telecommunications services can adapt to the evolving needs of Sydney Olympic Park's residents, businesses, and visitors.

3.8 Future of the Natural Gas Network

The NSW Government has set a target for net zero carbon emissions to be accomplished by the year 2050. Sydney Olympic Park Authority have committed to meeting this target by 2030 and to have 100% of supplied energy through renewable sources by the year 2050. To achieve these targets the use of fossil-fuels will be discontinued.

The existing natural gas network, as outlined in Section 0, will need to be decommissioned in consultation with Jemena, the asset owner and operator, and the tenancies/facilities that utilise the network. As the natural gas network is heavily embedded into the existing infrastructure within the precinct with various uses from residential and commercial heating to hospitality kitchens, the transition process will need to occur over a period of time, with the target for completion, the year 2030 as previously stated.

4. Consultation with Utility Providers

The above concept networks for utilities and telecommunications are all high-level approximations for the proposed Sydney Olympic Park and the utility authorities will need to have consistent communication throughout the design and construction phase. Initial departments contacted within the utility authorities include:

- Sydney Water – Business Development
- Jemena – Network Development
- Ausgrid – Operations Department
- NBN – New Developments

5. Compliance Principles

Developers must follow a combination of Australian standards, codes, and utility authority guidelines when designing any new developments within Australia. These include but are not limited to:

1. Water and sewerage systems shall be designed in accordance with the following standards:
    a. WSA – 02 Gravity Sewerage Code of Australia;
    b. WSA – 03 Water Supply Code of Australia;
    c. Sydney Water Standards and Requirements;
    d. AS/NZS 3500 – Plumbing and Drainage – Water Services.
2. Recycled water systems shall be designed in accordance with the following standards:
    a. WSA – 03 Water Supply Code of Australia;
    b. AS/NZS 3500 – Plumbing and Drainage – Water Services.
3. Gas systems shall be decommissioned in accordance with:
    a. Jemena Standards;
    b. AS 4645 – Gas distribution networks.
4. The electrical system shall be designed in accordance with the following standards:
    a. AS3000 – Electrical Installations
    b. AS3008 – Electrical Installations – Selections of Cables
5. Communications systems shall be designed in accordance with SOPA's Technical Specification for ICT Communications Installations and Routine Maintenance Work. Where communications services are owned by third parties liaise with the owner with respect to the removal and reinstatement of the cabling.

6. Utility Funding of Infrastructure

6.1 Non-SOPA Infrastructure

6.1.1 Sydney Water

Connections into the Sydney Water network are completed at the cost of the developer(s). Sydney Water typically advise within their Notice of Requirements (NOR) letter that construction of all works require the developer to pay project management, survey, design, and construction costs directly to their providers.

In specific scenarios, Sydney Water may reimburse the developer for some or all of the costs of delivering certain infrastructure. The key principles underlying Sydney Water procurement are:

- Value for money;
- Efficient and effective;
- Probity and equity;
- Effective competition;

Developers will fund the design, construction, and commissioning stages of infrastructure. When the developer transfers ownership of this infrastructure to Sydney Water, they will pay the developer for infrastructure funded under the *Funding Infrastructure to Service Growth Policy*.

Sydney Water's criteria for funding is as follows:

a) The developer will fund 100% of any minimum reticulation that serves the developer's land exclusively, and hand it over to Sydney Water free of charge;

b) The developer and Sydney Water will each fund 50% of any minimum reticulation that serves other land, as well as the developer's land.

c) Sydney Water will fund 100% of lead-in and lead-out mains the serve other developers' land;

d) Sydney Water will fund 100% of costs to upsize reticulation mains above minimum reticulation;

e) Sydney Water will fund 100% of major infrastructure, such as pumping stations, storage reservoirs or treatment plants.

Sydney Water also specify guidelines that detail the minimum requirements for procurement that developers (including NSW Government agencies and utilities) must demonstrate, when seeking reimbursement of costs under the Sydney Water's *Funding Infrastructure to service growth policy* (see below).

Funding Infrastructure to Service Growth Policy:

https://www.sydneywater.com.au/content/dam/sydneywater/documents/funding-infrastructure-to-service-growth.pdf

6.1.2 Jemena

Since the Natural Gas network is not going to expand as part of the Sydney Olympic Park 2050 Master Plan this information is not applicable.

6.1.3 NBN

NBN will pay for and provide the proposed network to all future development within Sydney Olympic Park as part of the Sydney Olympic Park 2050 Master Plan.

6.1.4 Ausgrid

At the time of writing Ausgrid have submitted a planning offer for SOPA to review and propose any requirements for all future development within Sydney Olympic Park as part of the Sydney Olympic Park 2050 Master Plan.

The planning estimates are based on approximate Ausgrid standard costs (in Real 2020/21 dollars) for an assumed final arrangement and required works. (**Appendix F** provides details of the System Planning Advice from Ausgrid and the corresponding email received on October 31, 2023.). The planning estimates are only preliminary planning estimates and do not include any costs for easements or property acquisitions. The planning estimates have assumed that the most direct feeder routes are obtained, and where it is not possible these planning estimates will not be valid.

The accuracy level of the estimates below is +/-40% and the discount rate used to calculate NPC is 2.99%.

The estimated approx. non-contestable HV infrastructure augmentation upgrade will cost around $24 million for both 2030 master plan (65MVA) and 2050 master plan (41.7MVA).