Bank Street Park
Blackwattle Bay / Tjerruing

SSD-53386706

Appendix AM

Infrastructure Delivery, Management & Staging Report (Mott MacDonald)

December 2023

MOTT MACDONALD

Bank St Park

Infrastructure Delivery, Management & Staging Plan Report

November 2023

Acknowledgment of Country

On behalf of Mott MacDonald, we would like to begin by acknowledging the Traditional Custodians of the land on which we meet today, and pay our respects to their Elders past and present.

We recognise and respect their cultural heritage, beliefs, continued connection to the land and water and commit to building a brighter future together.

Artwork by
Ben Gardiner Williams

Mott MacDonald
383 Kent Street
Sydney
NSW 2000
PO Box Q1678
QVB Sydney NSW 1230
Australia

T +61 (0)2 9098 6800
mottmac.com

Bank St Park

Infrastructure Delivery, Management & Staging Plan Report

November 2023

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	29/06/23	JL	JHL	DF	Preliminary Issue
B	04/08/23	JL	JHL	DF	Draft 1 Issue
C	20/10/23	JL	JHL	DF	Final Draft Report
D	27/11/23	JL	JHL	DF	Final Report

Document reference: 703100678-001

Information class: Standard

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Executive summary

Mott MacDonald has been engaged by Infrastructure NSW (INSW) to develop an infrastructure servicing assessment for the Bank Street Park development. This assessment will support the delivery of this site as it will identify opportunities, constraints, and risks related to services infrastructure. The scope of this report is to summarise the utility assets within the site, assess the development impact on these assets, and identify infrastructure upgrades required to support the development.

The proposed site is located at 1A-19 Bank Street, Pyrmont NSW, within the City of Sydney local government area (LGA) and includes harbour development in Blackwattle Bay.

Services

The site is currently serviced through the following means:

- **Potable Water:** Potable water is provided by Sydney Water through a number of existing mains on and adjacent to the site;
- **Sewer:** Wastewater facilities are provided by Sydney Water through a number of existing mains on and adjacent to the site;
- **Stormwater:** Stormwater assets are owned by City of Sydney LGA;
- **Electrical:** Electrical supply is provided by Ausgrid;
- **Gas:** Gas servicing is provided by Jemena Gas; and
- **Telecommunications:** Multiple telecommunications providers service the site including NBN, Nextgen, Optus/Uecomm, Telstra, Verizon, and Vocus.

Servicing Constraints

The main servicing constraints are:

- **Potable Water:** There are numerous water mains within the proposed site and along roads adjacent to the site boundary. The age, type, and conditions of these pipes vary significantly. The depths and positions of the existing key reticulation mains are also unknown;
- **Sewer:** The exact depths and positions of the existing reticulation mains are unknown;
- **Stormwater:** The exact depths, positions, and sizing of the existing pipes and pits within the network are unknown;
- **Electrical:** The exact depths and positions of the existing electrical reticulations mains are unknown;
- **Gas:** The exact depths and positions of the existing reticulation mains have not been confirmed; and
- **Telecommunications:** No servicing constraints.

Although the outcomes of this assessment are subject to the results of feasibility applications, it generally appears that there are mains available to service the site.

Additional Constraints

There are also other utility assets within close proximity to the site that may affect the development of this site. These assets are listed below:

- **Sydney Trains:** There is an existing Sydney Trains HV electrical cable that runs along Bank Street, close to the Glebe Island Bridge, and continues along Bowman Street.

1 Introduction

The purpose of this report is to describe the infrastructure servicing strategy for the proposed site, to support a State Significant Development Application (SSDA) for a new waterfront public park within Blackwattle Bay, to be known as Bank Street Park (SSD-53386706). Bank Street Park is located at 1A-19 Bank Street, Pyrmont on the shoreline of Tjerruing Blackwattle Bay and adjacent areas of Blackwattle Bay.

1.1 Blackwattle Bay Precinct

Bank Street Park forms part of the Blackwattle Bay Precinct, which is an area of predominantly government owned land located on the western edge of the Pyrmont Peninsula and adjoining the waters of Blackwattle Bay (Figure 1-1).

Figure 1-1 Blackwattle Bay Precinct
Source INSW

The precinct was rezoned in December 2022 to facilitate a new mixed-use community, providing for around 2,000 new residents and 5,600 new jobs, and creating a vibrant 24/7 economy. Updated planning and land use controls were incorporated into the Sydney Local Environmental Plan 2012, along with site specific design guidance in the *Blackwattle Bay Design Guidelines*.

A critical part of the Blackwattle Bay Precinct is the high quality public domain which includes a series of parks and open spaces connected by a foreshore promenade. Bank Street Park will bring new active and passive recreation uses into a unique park environment, catering for both existing and future communities in the vicinity.

1.2 Site Description

Bank Street Park is located at 1A-19 Bank Street, Pyrmont NSW within the City of Sydney local government area (LGA) and includes harbour development in Blackwattle Bay. The site area is 1.9 hectares (including 0.7 hectares harbour area). The relevant lot and deposited plans and the respective ownership for the site are detailed in Table 1-1 and shown in Figure 1-2.

Table 1-1 Summary of land title details of the site

Street address	Lot and Deposited Plan details	Ownership
1A Bank Street, Pyrmont NSW 2009	Lot 1 DP 85206 Lot 1 DP 188671	Transport for NSW
1-3 Bank Street, Pyrmont NSW 2009	Lots 1-2 DP 1089643 Lot 1 DP 439245	Infrastructure NSW
5 Bank Street, Pyrmont NSW 2009	Lot 20 DP 803159	Transport for NSW
7 Bank Street, Pyrmont NSW 2009	Lot 19 DP 803159	Transport for NSW
9 Bank Street, Pyrmont NSW 2009	Lot 21 DP 803159	Transport for NSW
11 Bank Street, Pyrmont NSW 2009	Lot 22 DP 803159	Transport for NSW
17-19 Bank Street, Pyrmont NSW 2009	Lots 5-6 DP 803160	Transport for NSW
Sydney Harbour	Lot 5 DP 1209992	Roads and Maritime Services (Transport for NSW)
Sydney Harbour	Lot 107 in DP 1076596	Transport for NSW
Part Bank Street Road reserve	N/A	City of Sydney Council

Bank Street Park is located on Gadigal Land, one of the twenty-nine clans of the great Eora Nation. It adjoins the foreshores of Glebe to the west and Pyrmont Bridge Road and Wentworth Park to the south.

Figure 1-2 Site Context Map
The indicative site location is outlined in red.
Source: SixMaps with Architectus edits (2023)

Figure 1-3 Bank Street Park site location within Blackwattle Bay State Significant Precinct
The indicative site location is outlined in red.
Source: Blackwattle Bay Design Guidelines with Architectus edits (2023)

1.3 Proposed Development

1.3.1 Overview

Development consent is being sought for a *recreation area* for the primary purpose of a *public park*, comprising:

- Site preparation works, including tree removal, earthworks, and remediation to facilitate the proposed use;
- Demolition of three existing buildings at 1-3 Bank Street;
- New and adapted facilities for community use, including:
    - o New single storey building to accommodate flexible community space, café, and marina office/store facilities, with green roof and photovoltaics;
    - o Adaptive reuse of Building D for public amenities, bin, and other storage;
    - o Boat launching ramp and pontoon for passive watercraft, including dragon boats and kayaks;
    - o Boat storage building with change facilities for dragon boat users with publicly accessible rooftop deck;
- Public domain works, including:
    - o 'Interpretation Garden' in existing building 'ruins' at 1-3 Bank Street;
    - o Split level foreshore promenade;
    - o Multi-purpose court with edge seating and partial fence;
    - o Nature-based inclusive playspace for ages 2-12;
    - o Fitness equipment;
    - o Public plaza and grassed open space areas;
    - o New tree plantings and planter beds;
    - o Public art, wayfinding and interpretative signage, lighting, bike parking and seating;
- Harbour works including:
    - o Overwater boardwalk;
    - o Land/water interface works, including sandstone terracing into water and support structure, to improve marine habitat;

  - Demolition and construction of a new timber launching ramp for dragon boats;
  - Kayak/passive craft pontoon; and
  - Restoration, repair, and alterations to the existing seawall for new stormwater outlets.
- Works to Bank Street Road reserve, including:
  - Road space reallocation to provide separated cycleway;
  - Cycleway transition to Bank Street to continue south as part of future works;
  - Reinstatement of existing on-street parallel parking;
  - Tree planting;
  - Accessible parking space; and
  - Loading zone adjacent 1-3 Bank Street.

1.3.2 Key Area Schedule & Calculations

The areas of the buildings within the development are shown in the table below:

Table 1-2 Buildings & Structures Schedule & Calculations

Item	Area (GFA)
Building D	
Bin store	35 m^2
Placemaking store	37 m^2
Amenities	61 m^2
Total	133 m^2
Community, Marina Facilities, and Café Building	
Café / Kiosk	58 m^2
Marina store	120 m^2
Marine office	71 m^2
Community space	133 m^2
Amenities	33 m^2
Plant	10 m^2
Total	425 m^2
Dragon Boat Building	
Boat store	420 m^2
General store	64 m^2
Total	484 m^2

1.3.3 Planning Secretary's Environmental Assessments Requirements

This report has been prepared in response to the relevant requirements outlined within the Planning Secretary's Environmental Assessments Requirements (SEARs) issued on 11 May 2023 for application SSD-53386706. Table 1-3 addresses the relevant SEARs requirements and provides a project response.

Table 1-3 Secretary's Environmental Assessments Requirements

SEARS Item No.	SEARs Issue & Assessment Requirements	Relevant report sections
21	In consultation with relevant service providers:	

SEARS Item No.	SEARs Issue & Assessment Requirements	Relevant report sections
21	- assess the impacts of the development on existing utility infrastructure and service provider assets surrounding the site.	Section 4.4 Section 5.4 Section 7.4 Section 8.4 Section 9.4
21	- identify any infrastructure required on-site and off-site to facilitate the development and any arrangements to ensure that the upgrades will be implemented on time and be maintained.	Section 3.1 Section 4.4 Section 5.4 Section 7.4 Section 8.4 Section 9.4
21	- provide an infrastructure delivery and staging plan, including a description of how infrastructure requirements would be coordinated, funded, and delivered to facilitate the development.	Section 4.4 Section 5.4 Section 7.4 Section 8.4 Section 9.4

2 Assessment Methodology

2.1 Desktop Investigation

This infrastructure strategy report is based on information received as a result of desktop investigations through 'Before You Dig Australia' (BYDA) enquiries and previous utility reports. Utility information obtained from authority advice was reviewed and has been consolidated within this report and displayed on numerous plans, which can be found throughout the report. A gap analysis and advice on further investigations is required in future design stages.

2.2 Utility Assessments

The methodology undertaken for the utility assessments for the site is as follows:

- Mapping the existing utilities within the site boundary;
- Identification of optimal locations for utility connections through assessing existing utility capacities; and
- Preliminary evaluation of potential constraints for the project.

2.3 Sustainability Initiatives

All utility works are to be coordinated with any local government/authority utility sustainability measures. For further information about recommended sustainability initiatives, refer to Section 10.

2.4 Utility Authority Consultation

Feasibility applications, with projected demands, were developed and submitted to utility authorities to ensure:

- Incorporation of utility agency advice on servicing options, routes, timings, costs, and timings for delivery; and
- Continual coordination around any changes to demand assessments and detailing of any further assessments or studies required to confirm supply methods (e.g., water or wastewater modelling).

2.5 Identifying Next Steps

The following steps are to be undertaken in the next design stage:

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

3 Desktop Investigation

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

- 'Before You Dig Australia' Enquires (Enquiry date: 19/6/23)

Table 3-1 shows a summary of the identified utility services within and adjacent to the site:

Table 3-1 Summary of Identified Utility Services

Utility	Authority Name
Potable Water	Sydney Water
Sewer	Sydney Water
Stormwater	City of Sydney
Electrical	Ausgrid
Communications	AARNet Pty Ltd Nsw
Communications	NBN Co NswAct
Communications	Nextgen NCC - NSW
Communications	Optus and or Uecomm Nsw
Communications	Telstra NSW Central
Communications	TPG Telecom (NSW)
Communications	Verizon Business (Nsw)
Communications	Vocus Communications 2
Gas	Jemena Gas
Transport	Sydney Trains Central

3.1 Infrastructure Required On-Site Off-Site

Table 3-2 Summary of Required Infrastructure

Utility	Required (Y/N)	On-Site (Y/N)	Lead-in Upgrade Required (Y/N)
Potable Water	Y	Y	N[1]
Sewer	Y	Y	N[1]
Stormwater	Y	Y	Refer Flood Report
Electrical	Y	Y	N[1]
Communications	Y	Y	N[1]
Gas	N	Y	N

[1]*Note assessment is based on demand calculations and previous rezoning utility advice and would be subject to a connection application to each authority.*

4 Potable Water

4.1 Existing Assets

The existing potable water infrastructure in the Bank Street site has been identified based on Before You Dig Australia (BYDA) records and is owned by Sydney Water. These records indicate that there are numerous potable water mains within and adjacent to the site boundary. The key existing potable water mains on site include:

- DN 180 PE main along the southeast side of Bank Street;
- DN 250 uPVC along the east side of Bowman Street; and
- DN 250 DICL main across Bowman Street, at the intersection with Glebe Island Bridge.

The depths and positions of these mains are unknown. Further investigation is required to determine the exact existing layout.

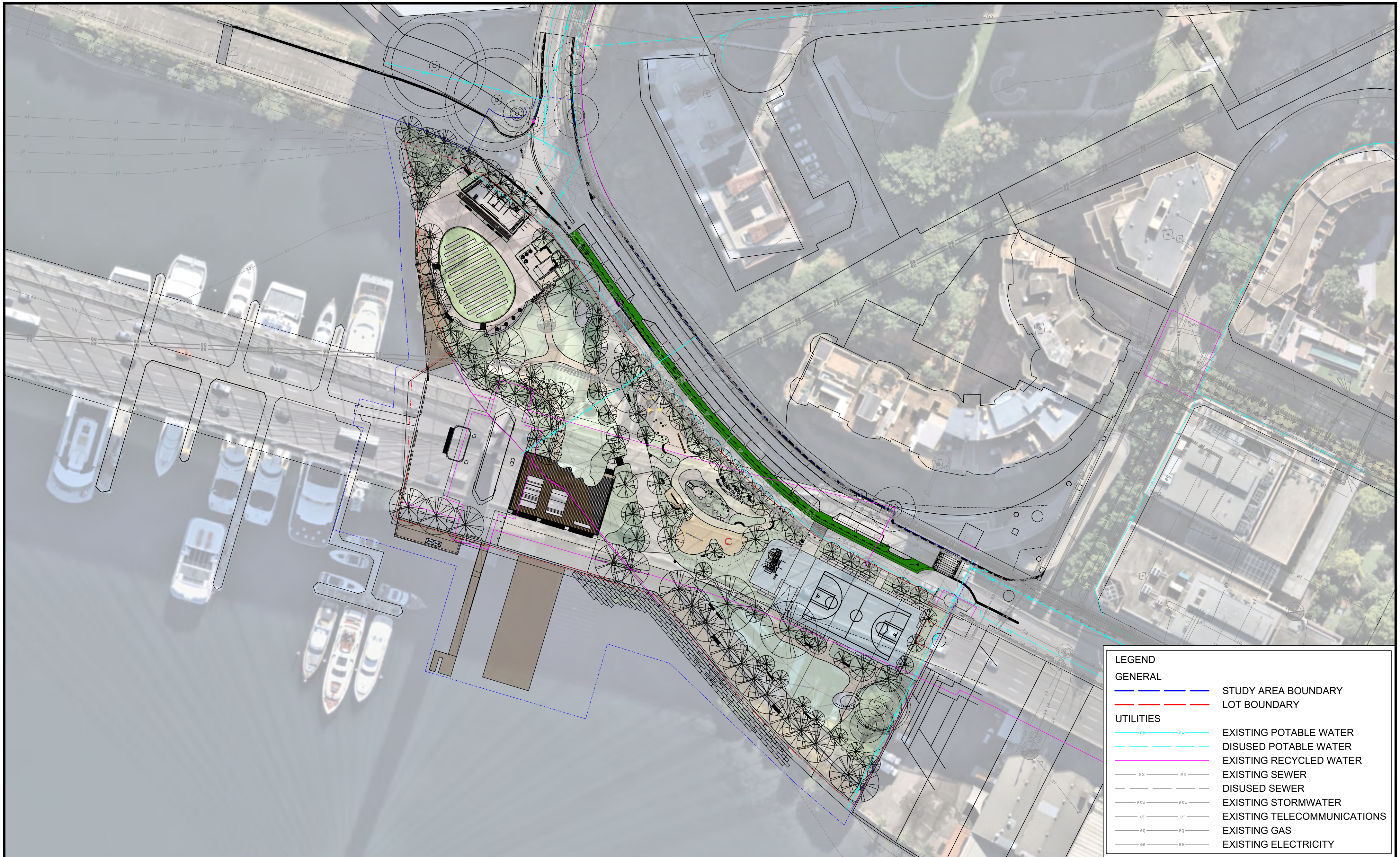
It should be noted that there are multiple disconnected water mains at the intersection of Bowman Street and Bank Street. Additionally, the BYDA enquiry indicates that there are private potable water mains within the site, at:

- On Bowman Street, at the north site boundary
- Across Bank Street and in 22 Bank Street
- Along Bank Street, at the southeast side boundary; and
- Across Bank Street and in 6 Bank Street.

There are also multiple existing recycled water mains within and adjacent to the site. These are located along and across Bank Street, as well as on the Western Distributor. Further investigation is required to determine the exact existing layout as well as condition of these mains. Further investigation is also required to confirm if these mains are currently in use.

It should be noted that this only considers mains identified by Sydney Water. There is potential that private or infrastructure from other utility authorities exist on site. However, no records of such infrastructure have been made available for this study and have not been identified from BYDA enquiries.

The existing potable water network is shown in Figure 4-1.



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MOTT MACDONALD
Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client: Architectus

Title: Bank Street Park
Utility Plans
Combined Utilities Plan - Water

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Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

Scale at A1	Status	Rev	Security
1:500	PRE	B	STD

Drawing Number: -

Figure 4-1 Existing Potable Water Plan

4.2 Demand Assessment

An assessment of the estimated increase in potable water demand generated from the Bank Street development has been conducted to determine the required infrastructure upgrades associated with the development.

Demand forecasting and profiles were developed for the study area. Individual project areas have been based on the proposed net lettable area (NLA) for all development types. The following assumptions have been made for the potable water demand calculations:

- The irrigation demand for the landscaping areas is assumed to be 0.4kL/m^2/year. Upon conversion, it is assumed that the irrigation demand is based on a net area;
- The NLA is 80% of the gross floor area (GFA); and
- Apart from Building D, the Community, Marina Facilities, and Café Building, and the Dragon Boat Building, and all other proposed development areas have been assumed to be “landscaping” areas.

It should also be noted that the closest demand rates have been adopted where specific demand rates are not available.

Demand estimates for potable water have been calculated using the Design Criteria Guidelines Supplement for Single Reticulation System (Sydney Water, 2014) and is based on maximum daily demand.

A summary of the water demand unit rates adopted is presented in Table 4-1.

Table 4-1 Potable Water Demand Unit Rates

Proposed Development	Land Use	Design Criteria	Units	Potable Water Demand
Building D	Suburban Commercial	Max Day Demand	kL/Nha/day	41
Community, Marina Facilities, and Café Building	Light Industrial	Max Day Demand	kL/Nha/day	40
Dragon Boat Building	Suburban Commercial	Max Day Demand	kL/Nha/day	41
Landscaping	Irrigation	Max Day Demand	kL/Nha/day	10.96

The Maximum Daily Demand (MDD) of the proposed development has been calculated as 12.51kL/Day. These results and a breakdown of the potable water demand for individual development types is provided in the table below.

Table 4-2 Potable Water Demand Breakdown

Item	Assumed Land Use	Design Criteria	Unit	Demand / Unit	Estimated Demand
Building D	Suburban Commercial	Max Day Demand	kL/Nha/day	41	0.44
Community, Marina Facilities, and Café Building	Light Industrial	Max Day Demand	kL/Nha/day	40	1.36

Item	Assumed Land Use	Design Criteria	Unit	Demand / Unit	Estimated Demand
Dragon Boat Building	Suburban Commercial	Max Day Demand	kL/Nha/day	41	1.59
Landscaping	Irrigation	Max Day Demand	kL/Nha/day	10.96	9.13
				Total (kL / Day: Max Day Demand)	**12.51**
				Total (kL / Day: Max Day Demand) (-15%)	**10.64**
				Total (kL / Day: Max Day Demand) (+15%)	**14.39**

4.3 Service Authority Consultation

As part of the rezoning, utility feasibility assessments were undertaken. Refer to AECOM's *Blackwattle Bay State Significant Precinct Utilities and Infrastructure Servicing Report*. Based on these findings, there were no issues identified at the development site. Utility applications will be completed as a part of subsequent design stages for detail design.

4.4 Delivery & Staging Plan

The staging and delivery of potable water is shown in the plan below:

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Sydney, NSW 2000
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Scale at A1	Status	Rev	Security
1:500	PRE	B	STD

Drawing Number
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Figure 4-2 Staging & Delivery of Potable Water

4.5 Next Steps

Further discussion, post SSDA, is to be undertaken with Sydney Water to confirm lead-in infrastructure requirements and pressures of existing potable water services. The key next steps in progressing the delivery of potable water infrastructure through detailed design, including the formal approval process for Sydney Water infrastructure consists of the following:

1. Undertake hydraulic modelling to confirm the extent of any lead-in infrastructure upgrades required – Post SSDA;
2. Undertake site investigations to confirm the layout and extent of existing on-site infrastructure (including non- Sydney Water infrastructure) – Post SSDA;
3. Develop an overall water master plan for the Bank Street development site including staging considerations and agree this with Sydney Water – Post SSDA;
4. Develop diversion strategy (including any interim works to suit staging) and protection/build-over requirements for infrastructure that cannot be diverted - Post SSDA;
5. Establish a Head Deed to be signed by required parties (Sydney Water, Designer, WSC, Developer, Constructor) – As a part of detailed design;
6. Submit application/s for individual detailed design packages to Sydney Water with drawing of proposed works in stages, Section 73– As a part of detailed design;
7. WSC to issue of Notice of Requirements (NOR) with their requirements for water main layout, sizing and funding matters confirmed– As a part of detailed design; and
8. Detailed design to be progressed based on the NOR and submitted to Sydney Water for approval – As a part of detailed design.

It is noted that the above is for delivery of the water network through the street network, depending on the strata arrangement individual buildings will still need to make separate applications for each connection.

5 Sewer

5.1 Existing Assets

The existing wastewater infrastructure in the Bank Street site has been identified based on Before You Dig Australia (BYDA) records and is owned by Sydney Water. These records indicate that there are numerous wastewater mains within and adjacent to the site boundary. The key existing wastewater mains on site include:

- DN 300 PVC main along Bank Street;
- DN 225 PVC main along Bowman Street; and
- DN 225 VC main at intersection of Bowman Street and Bank Street (in close proximity to Glebe Island Bridge).

The depths and positions of these mains are unknown. Further investigation is required, as a part of detailed design, to determine the exact existing layout; this should be an investigation of the levels of the existing infrastructure from manhole surveys.

Additionally, there is a disused sewer main across Bank Street, near the southeast site boundary.

Wastewater from the site gravitates towards Sewage Pumping Station No.2 (SP0002), which is located at the corner of Wattle Street and Pyrmont Bridge Road. Wastewater is then pumped from this station and gravitates towards Ultimo Sewage Pumping Station No.1 (SP0001) on Harris Street. The wastewater is then discharged to the Bondi Ocean Outfall Sewer and arrives at the Bondi Sewage Treatment Plant. This plant is of a primary treatment level, has a discharge volume limit of 680ML/day, and discharges to a deepwater ocean outfall located 2.2km from the shoreline.

It should be noted that this only considers mains within the Sydney Water network. There is potential that private or infrastructure from other utility authorities exist on site. However, no records of such infrastructure have been made available for this study and have not been identified from BYDA enquiries.

The existing wastewater network is shown in Figure 5-1.

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MOTT MACDONALD
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Scale at A1	Status	Rev	Security
1:500	PRE	B	STD

Drawing Number: -

Figure 5-1 Wastewater Plan

5.2 Demand Assessment

An assessment of the estimated sewer loading resulting from the Bank Street development has been undertaken to assist in determining the required infrastructure upgrades. Servicing forecasting and profiles have been based on gross floor areas of all developments.

Apart from Building D, the Community, Marina Facilities, and Café Building, and the Dragon Boat Building, all other proposed development areas have been assumed to be “landscaping” areas. It should be noted that the closest demand rates have been adopted where specific demand rates are not available.

The design criteria used to forecast future sewer loading are taken from the Sydney Water Area Planning Design Criteria Guide: WSA 02-2002-3.0 (Sewer Code of Australia) and is expressed as an Equivalent Population for a particular land use. These are summarised below.

Table 5-1 Wastewater Loading Unit Rates

Proposed Development	Land Use	Design Criteria	Units	Wastewater Loading
Building D	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75
Community, Marina Facilities, and Café Building	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75
Dragon Boat Building	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75
Landscaping	Parks / gardens / reserves	Average Dry Weather Flow	EP/ha (gross)	20

The Average Dry Weather Flow (ADWF) per Equivalent Population (EP) has been taken as 150 L/day or 0.0017L/s (ADWF(L/s) = 0.0017 * EP.

It is estimated that, during peak demand, the wastewater discharge will be 0.05L/s. These results and a breakdown of the sewer loading for individual development types is provided in the table below.

Table 5-2 Wastewater Loading Breakdown

Item	Assumed Land Use	Design Criteria	Unit	Demand / Unit	Estimated Demand
Building D	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75	1.00
Community, Marina Facilities, and Café Building	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75	3.19
Dragon Boat Building	Local commercial	Average Dry Weather Flow	EP/ha (gross)	75	3.63
Landscaping	Parks / gardens / reserves	Average Dry Weather Flow	EP/ha (gross)	20	20.83
			Total (Equivalent Population)		**28.64**

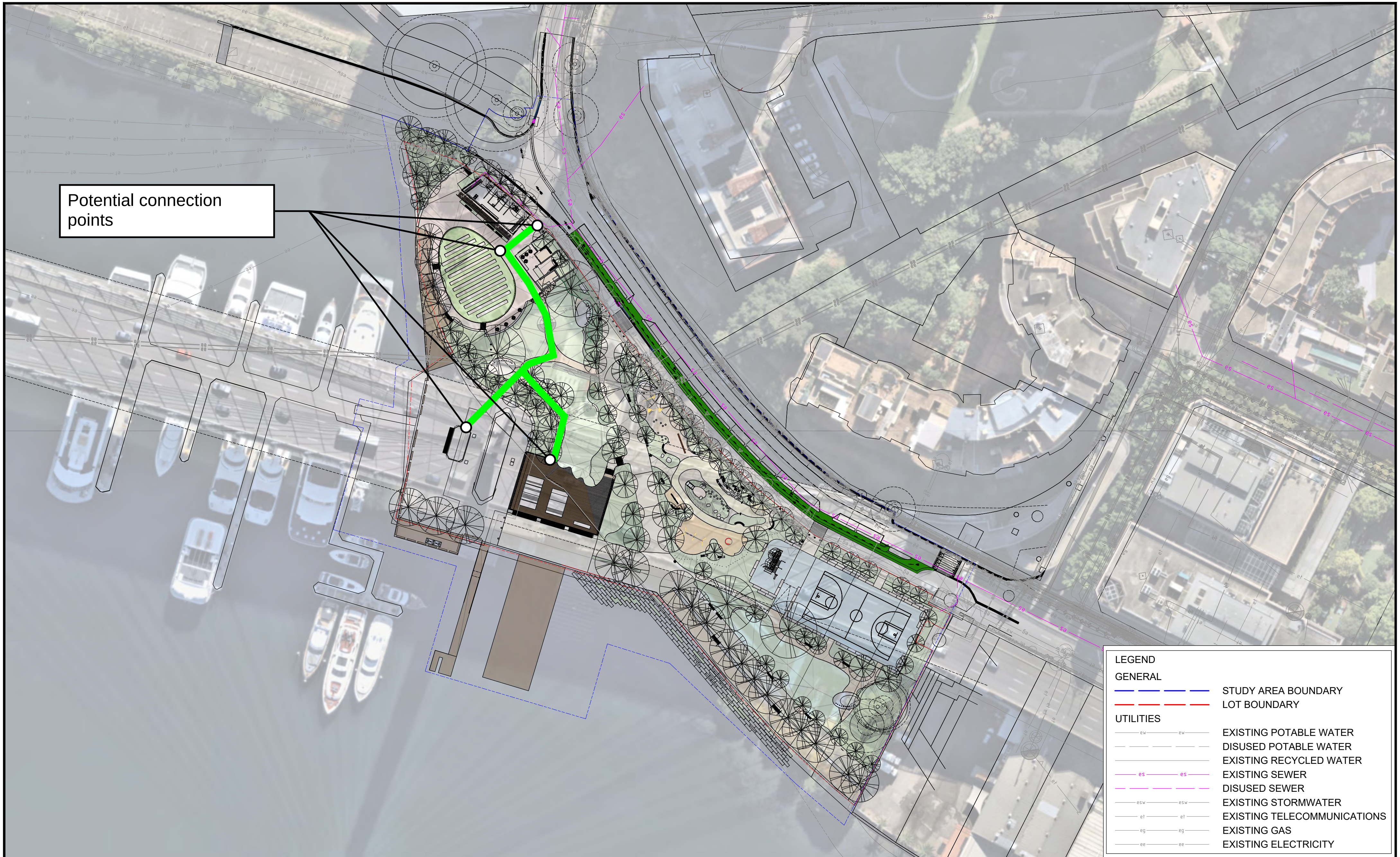
Item	Assumed Land Use	Design Criteria	Unit	Demand / Unit	Estimated Demand
				Total (L/s: Average Dry Weather Flow)	**0.05**
				Total (L/s: Average Dry Weather Flow) (-15%)	**0.04**
				Total (L/s: Average Dry Weather Flow) (+15%)	**0.06**

5.3 Service Authority Consultation

As part of the rezoning, utility feasibility assessments were undertaken. Refer to AECOM's *Blackwattle Bay State Significant Precinct Utilities and Infrastructure Servicing Report*. Based on these findings, there were no issues identified at the development site. Utility applications will be completed as a part of subsequent design stages for detail design.

5.4 Delivery & Staging Plan

The staging and delivery of wastewater is shown in the plan below:



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Scale at A1	Status	Rev	Security
1:500	PRE	B	STD

Drawing Number: -

Figure 5-2 Staging & Delivery of Wastewater

5.5 Next Steps

Further discussion, post-SSDA, is to be undertaken with Sydney Water to confirm lead-in infrastructure requirements and to check inverts of gravity pipes to ensure falls are achievable. The key next steps in progressing the delivery of sewer infrastructure through design development, including the formal approval process for Sydney Water infrastructure, consists of the following:

1. Undertake hydraulic modelling to confirm extent of any lead-in infrastructure upgrades required – Post SSDA;
2. Undertake site investigations to confirm the layout and extent of existing on-site infrastructure (including non- Sydney Water infrastructure) – Post SSDA;
3. Develop an overall wastewater master plan for the site including staging considerations and agree these with Sydney Water. Being a gravity service, this will need to include consideration of the depth of the existing sewer infrastructure to be maintained and/or connected to (based on manhole survey) and proposed grading of the site – Post SSDA;
4. Develop a diversion strategy (including any interim works to suit staging) and protection/build-over requirements for infrastructure that cannot be diverted – Post SSDA;
5. Establish a Head Deed to be signed by required parties (Sydney Water, Designer, WSC, Developer, Constructor) – As a part of detailed design;
6. Submit application/s for individual detailed design packages to Sydney Water with drawing of proposed works in stages, Section 73 – As a part of detailed design;
7. Sydney Water to issue of Notice of Requirements (NOR) with their requirements for water main layout, sizing and funding matters confirmed – As a part of detailed design; and
8. Detailed design to be progressed based on the NOR and submitted to Sydney Water for approval – As a part of detailed design.

It is noted that the above is for delivery of the wastewater network through the street network, depending on the strata arrangement individual buildings will still need to make separate applications for each connection.

6 Stormwater

6.1 Existing Assets

The existing stormwater infrastructure in the Bank Street site has been identified based on Before You Dig Australia (BYDA) records and is owned by the City of Sydney LGA. These records indicate that there are numerous stormwater conduits within and adjacent to the site boundary. The key existing stormwater conduits on site can be found:

- Along Bank Street, continuing onto the Glebe Island Bridge;
- Along Bowman Street, near intersection with Bank Street;
- Across Bank Street, continuing into 5 Bank Street;
- Across Bank Street, continuing into 17-19 Bank Street;
- Along Bank Street, near the southeast site boundary.

The depths, positions, and sizes of these conduits are unknown. Further investigation is required to determine the exact existing layout.

It should be noted that this only considers conduits within the City of Sydney network. There is potential that private or infrastructure from other utility authorities exist on site. However, no records of such infrastructure have been made available for this study and have not been identified from BYDA enquiries.

Refer to the *Bank Street Flood Risk and Impact Assessment* for further information.

The existing stormwater network is shown in Figure 6-1.

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MOTT MACDONALD
Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client
Architectus

Title
Bank Street Park
Utility Plans
Combined Utilities Plan - Stormwater

Designed	-	-	Eng check	D.Fettell	DF
Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

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Figure 6-1 Stormwater Plan

6.2 Demand Assessment

Further hydraulic assessment for this site is contained within the flooding report accompanying this SSDA.

7 Electricity

7.1 Existing Assets

The existing electrical infrastructure in the Bank Street site has been identified based on Before You Dig Australia (BYDA) records and is owned by Ausgrid. These records indicate that there are numerous electrical mains within and adjacent to the site boundary. The key existing electrical mains on site include:

- HV Cables (HV, Out of Service) along Bowman Street and Bank Street;
- Auxiliary Cable (Out of Service) along Bank Street and Bowman Street;
- Auxiliary Cable (In Service) along Bank Street;
- LV Cable (Mains, Out of Service) along Bowman Street, as well as along and across Bank Street;
- LV Cables (Mains, In Service) along Bowman and Bank Street;
- LV Cables (Street Lighting, In Service) along Bowman Street and Bank Street;
- LV Cables (Street Lighting, Out of Service) along Bank Street;
- HV Cables (TR, In Service) and auxiliary cables (In Service) across the site, from the east to west site boundaries; and
- HV Cables (HV, In Service) along and across Bank Street.

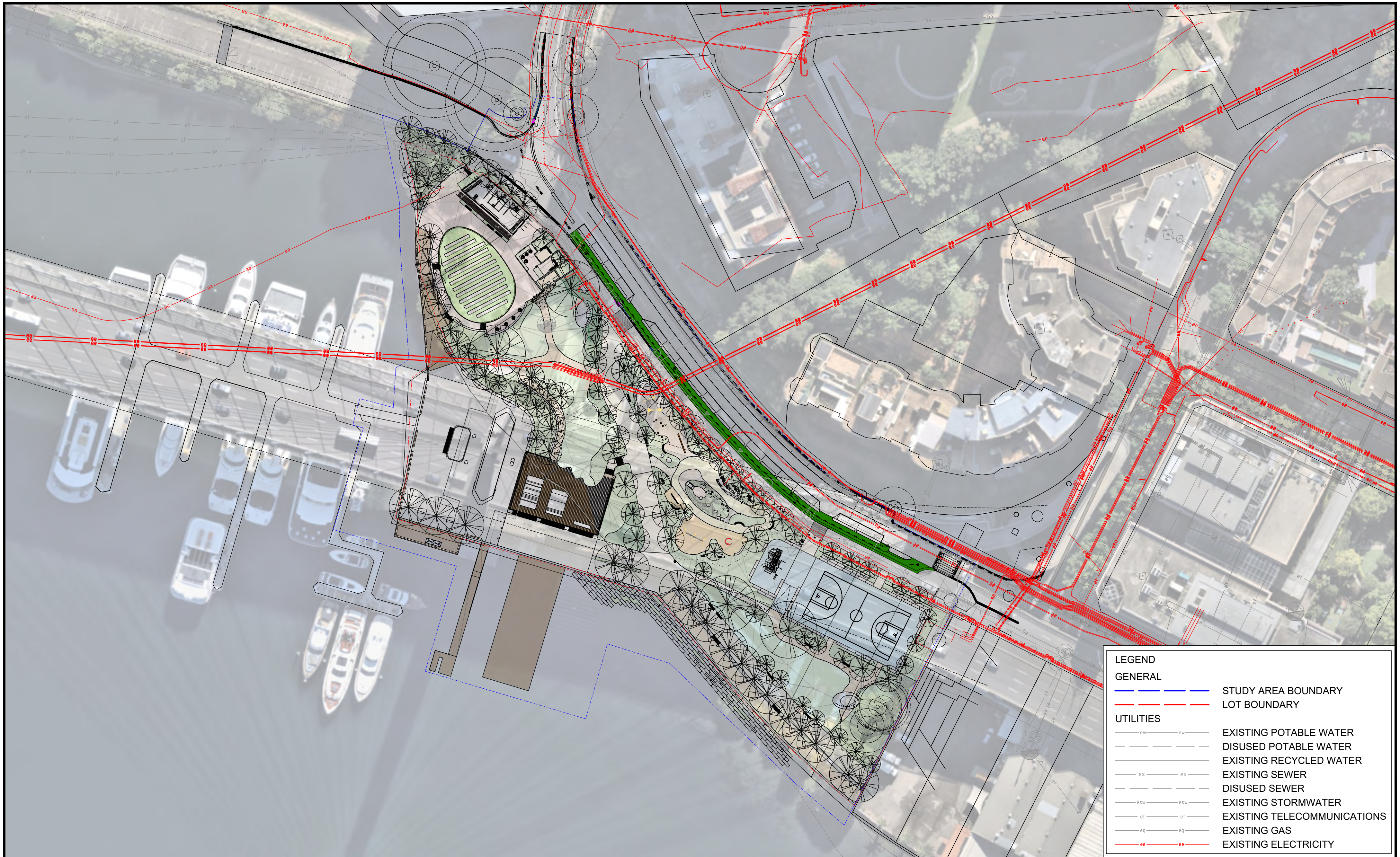
The depths and positions of these mains are unknown. Further investigation is required to determine the exact existing layout.

It should be noted that the above list only considers mains within the Ausgrid network. Other electrical assets on site include:

- City of Sydney:
    - Underground electrical conduits and cables along Bowman Street and Bank Street
- Sydney Trains:
    - HV Cable along Bank Street, in close proximity to Glebe Island Bridge, and continuing onto Bowman Street

There is potential that private or infrastructure from other utility authorities exist on site. However, no records of such infrastructure have been made available for this study and have not been identified from BYDA enquiries.

The existing electrical network is shown in Figure 7-1.



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Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client
Architectus

Title
Bank Street Park
Utility Plans
Combined Utilities Plan - Electrical

Designed	-	-	Eng check	D.Fettell	DF
Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

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Figure 7-1 Electrical Plan

7.2 Demand Assessment

An assessment of the estimated electrical demand for the Bank Street development has been undertaken to assist in determining the required infrastructure upgrades. Demand forecasting and profiles were developed based on AS3000 Table C3 rates and Ausgrid NS109 Table B, unless indicated otherwise. These are shown respectively in the tables below.

Table 7-1 AS3000:2007 – Table C3 Maximum Demand (non-domestic installations)

Type of occupancy		Energy demand	
		Range, VA/m^2	Average, VA/m^2
Offices	Light and Power	40-60	50
	Airconditioning		
	- cooling	30-40	35
	- reverse cycle	20-30	25
	- zonal reheat	40-60	50
	- variable volume	20	20
Carparks	Open air	0-10	5
	Basement	10-20	15
Retail shops	Light and power	40-100	70
	Airconditioning	20-40	30
Warehouses	Light and power	5-15	10
	Ventilation	5	5
	Special equipment	(use load details)	
Light industrial	Light and power	10-20	15
	Ventilation	10-20	15
	Airconditioning	30-50	40
	Special equipment	(use load details)	
Taverns, licensed clubs	Total	60-100	80
Theatres	Total	80-120	100

Table 7-2 Ausgrid NS109 – Table 4 Guide to Typical Load Densities

Type of Development		Range VA/m^2	Average VA/m^2
Offices -	- Not air-conditioned	40-60	50
	- air-conditioned - cooling only	70-100	85
	- reverse cycle	60-90	75
	- electrical reheat open areas	80-120	100
	- electrical reheat zonal or package units	90-130	110
	- variable volume	60-80	70
Car parking	- open air	0-10	5
	- ventilated	10-20	15
Warehousing	- unventilated	5-15	10
	- ventilated	10-20	15
Shops	- Not air-conditioned	40-100	70
	- air conditioned	60-140	100
Shopping centres (assumed air-conditioned shops)	- Not air-conditioned public areas	60-140	100
	- air conditioned public areas	80-160	120
Industrial	- light	10-20	15
	- if ventilated add	10-20	15
	- if air-conditioned add (see note)	30-50	40
Theatres, halls, etc	- ventilated	50-70	60
	- air-conditioned	80-120	100
Hotels, Taverns, Restaurants (Residential section, use Annexure C)		60-100	80

Electrical demand calculations have also been based on the NLA. The following assumptions have been made for these calculations:

- The NLA is 80% of the gross floor area (GFA); and
- Apart from Building D, the Community, Marina Facilities, and Café Building, and the Dragon Boat Building, all other proposed development areas have been assumed to be "landscaping" areas.

It should also be noted that the closest demand rates have been adopted where specific demand rates are not available.

The demand for peak usage was calculated to be approximately 0.08MVa. At this stage of the design, an 80% diversity factor has been used. These results and a breakdown of the electrical demand for individual development types is provided in the table below.

Table 7-3 Electrical Demand Breakdown

Item	Assumed Land Use	Design Criteria	Unit	Demand / Unit	Estimated Demand
Building D	Warehousing (Ventilated)	Maximum Demand	MVA/m2	0.000015	0.002
Community, Marina Facilities, and Café Building	Shops (Food)	Maximum Demand	MVA/m2	0.00015	0.051
Dragon Boat Building	Warehousing (Ventilated)	Maximum Demand	MVA/m2	0.000015	0.006
Landscaping	Car parking (Open air)	Maximum Demand	MVA/m2	0.000005	0.042
				Total (MVA)	**0.10**
				Total (MVA) - including 0.8 Diversity Factor	**0.08**
				Total (MVA) - including 0.8 Diversity Factor (-15%)	**0.07**
				Total (MVA) - including 0.8 Diversity Factor (+15%)	**0.09**

7.3 Service Authority Consultation

As part of the rezoning, utility feasibility assessments were undertaken. Refer to AECOM's *Blackwattle Bay State Significant Precinct Utilities and Infrastructure Servicing Report*. Based on these findings, there were no issues identified at the development site. Utility applications will be completed as a part of subsequent design stages for detail design.

7.4 Delivery & Staging Plan

The staging and delivery of electricity is shown in the plan below:

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MOTT MACDONALD
Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client: Architectus

Title: Bank Street Park
Utility Plans
Combined Utilities Plan - Electrical

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Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

Scale at A1	Status	Rev	Security
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Figure 7-2 Delivery & Staging of Electricity

7.5 Next Steps

The key next steps in progressing the delivery of electrical infrastructure through detailed design including the formal Ausgrid approval process consists of the following (in conjunction with further Ausgrid coordination and consultation with all stakeholders):

1. Undertake site investigations to confirm the layout and extent of existing services (including non-Ausgrid assets) – Post SSDA;
2. Confirm extent of existing infrastructure that can be abandoned and/or requires diversion – Post SSDA;
3. Develop duct masterplan and make submission to set up case with Ausgrid – Post SSDA;
4. Develop staged designs for delivery of the new infrastructure – As a part of detailed design;
5. Liaise with City of Sydney LGA to confirm requirements for undergrounding of existing infrastructure – Post SSDA;
6. Ausgrid to provide detailed requirements – As a part of detailed design;
7. Ausgrid to issue Design Information Pack (DIP), Design Contract & Deed of Agreement – As a part of detailed design; and
8. Submit detailed design of individual packages for approval – As a part of detailed design;

It is noted that the above is for delivery of the duct network through the street network. It is expected that the buildings will need to make separate applications for connection, including installation of new feeders. Additionally, it should also be noted that street lighting is under the control and maintenance of City of Sydney Council. However, no street lighting has been proposed as a part of this development.

8 Gas

8.1 Existing Assets

The existing gas infrastructure in the Bank Street site has been identified based on Before You Dig Australia (BYDA) records and is owned by Jemena. These records indicate that there are numerous gas mains within and adjacent to the site boundary. The key existing gas main on site is the:

- 210kPa medium pressure gas main along Bank Street and Bowman Street.

The depth and position of this main is unknown. Further investigation is required to determine the exact existing layout.

There is potential that private or infrastructure from other utility authorities exist on site. However, no records of such infrastructure have been made available for this study and have not been identified from BYDA enquiries.

The existing gas network is shown in Figure 8-1.

LEGEND

GENERAL

(blue dashed line)	STUDY AREA BOUNDARY
(red dashed line)	LOT BOUNDARY

UTILITIES

ew ew	EXISTING POTABLE WATER
	DISUSED POTABLE WATER
	EXISTING RECYCLED WATER
es es	EXISTING SEWER
	DISUSED SEWER
esw esw	EXISTING STORMWATER
et et	EXISTING TELECOMMUNICATIONS
eg eg	EXISTING GAS
ee ee	EXISTING ELECTRICITY

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MOTT MACDONALD

Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client
Architectus

Title
Bank Street Park
Utility Plans
Combined Utilities Plan - Gas

Designed	-	-	Eng check	D.Fettell	DF
Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

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Figure 8-1 Gas Plan

8.2 Demand Assessment

No demand has been calculated for gas infrastructure as it is assumed that no gas servicing will be required for the development.

8.3 Service Authority Consultation

Gas infrastructure will not be delivered as a part of this development as it is assumed that no gas servicing will be required.

8.4 Delivery & Staging Plan

Gas infrastructure will not be delivered as a part of this development as it is assumed that no gas servicing will be required.

9 Telecommunications

9.1 Existing Assets

There are numerous telecommunications mains within the site with a majority of the mains located in roads within and adjacent to the site. The types and locations of these existing mains are summarised in the following sections.

The existing gas network is shown in Figure 9-1.

NBN

There are NBN trenches containing in-service/constructed cables along and across Bank Street as well as along Bowman Street. There is also a trench containing designed/planned cables along Bank Street, in close proximity to Quarry Master Drive.

Nextgen

There is a Nextgen cable and 3rd party duct that runs along Bank Street and Bowman Street.

Optus/ Uecomm

There is an Optus cable (in other utility conduit) along Bank Street and Bowman Street.

There is also an underground Uecomm asset located along Bank Street and Bowman Street.

Telstra

There are multiple Telstra conduits along and across both Bank Street and Bowman Street.

Verizon

There is a Telstra leased conduit along Bank Street and Bowman Street.

Vocus

There are Vocus Group pits on Bank Street, adjacent to 120 Bank Street. There is also a Vocus Group Conduit, along the Glebe Island Bridge, close to the north site boundary.

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MOTT MACDONALD

Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client
Architectus

Title
Bank Street Park
Utility Plans
Combined Utilities Plan - Telecommunications

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Drawn	J.Laokittichai	JL	Coordination	D.Fettell	DF
Dwg check	D.Fettell	DF	Approved	D. Fettell	DF

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Figure 9-1 Telecommunications Plan

9.2 Demand Assessment

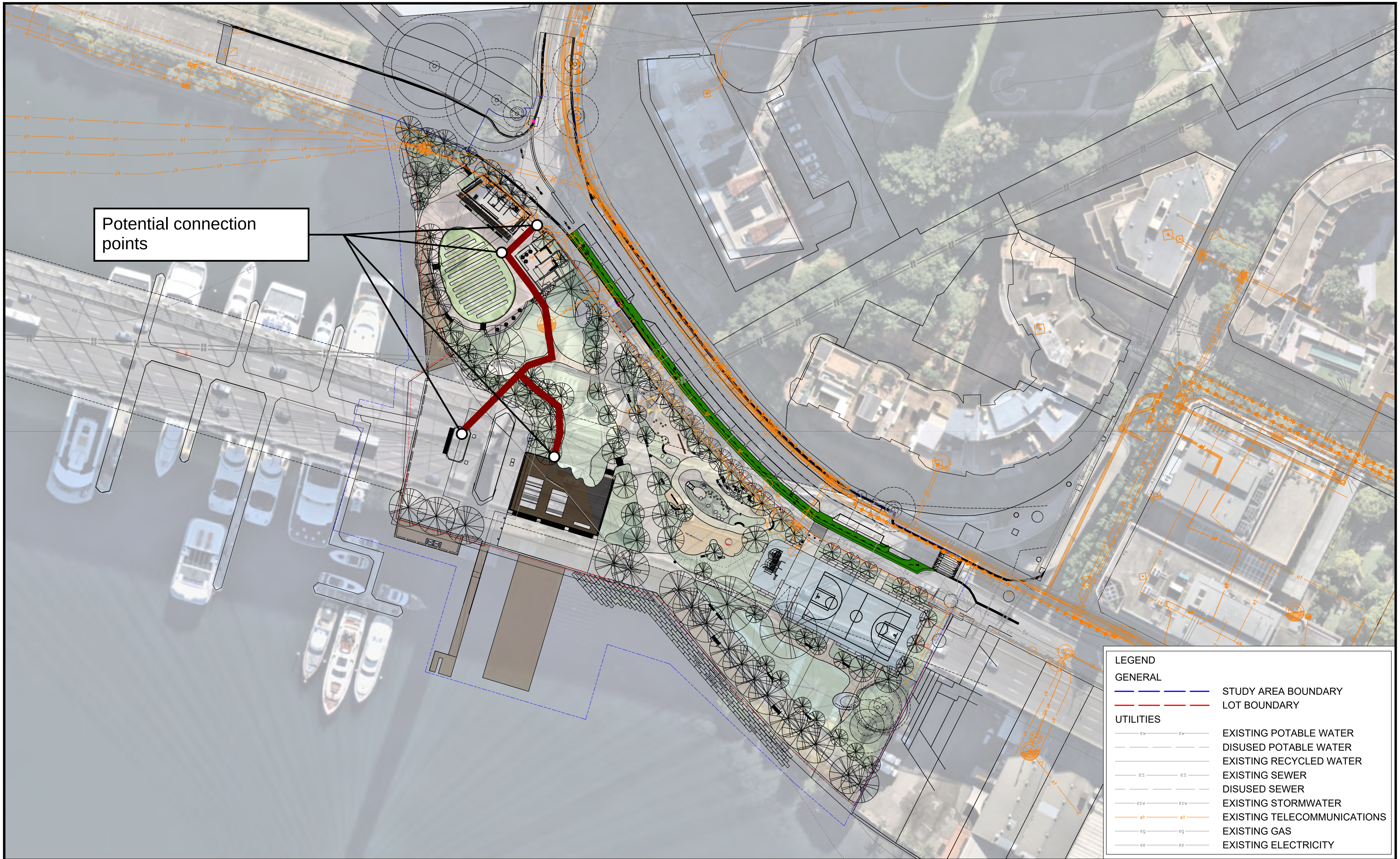
No demand has been calculated for telecommunications infrastructure as it cannot be estimated in the same way as other utilities.

9.3 Service Authority Consultation

As part of the rezoning, utility feasibility assessments were undertaken. Refer to AECOM's *Blackwattle Bay State Significant Precinct Utilities and Infrastructure Servicing Report*. Based on these findings, there were no issues identified at the development site. Utility applications will be completed as a part of subsequent design stages for detail design.

9.4 Delivery & Staging Plan

The staging and delivery of telecommunications is shown in the plan below:



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Level 10, 383 Kent Street
Sydney, NSW 2000
Australia
NSW 1230, Australia
PO Box Q1678, QVB Sydney
T +61 (0)2 9098 6800
W www.mottmac.com

Client
Architectus

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Figure 9-2 Delivery & Staging of Telecommunications

9.5 Next Steps

A formal agreement between NBN Co. and the developer will be entered prior to construction works commencing (this does not prevent designs from being approved). The next steps generally consist of the following:

1. Undertake site investigations to confirm the layout and extent of existing services (including private infrastructure associated with previous land-uses) – Post SSDA;
2. Liaise with existing telecommunication providers to confirm the requirement for diversion and/or relocation of their existing infrastructure – Post SSDA;
3. Initial application submitted to NBN Co. for supply of the site from their network – Post SSDA;
4. NBN Co. to confirm supply can be provided and provide draft agreement – As a part of detailed design;
5. Revisions of agreement where required – As a part of detailed design;
6. The developer to sign NBN Co. agreement – As a part of detailed design;
7. Liaise with existing telecommunication providers for quotes for diversions or abandonments including any interim works – As a part of detailed design; and
8. Submit detailed design of individual packages for approval – As a part of detailed design.

It is noted that the above is for delivery of the NBN pit and pipe network through the new street network, it is expected that the buildings will need to make separate applications for connection.

10 Sustainability Coordination

10.1 Precinct Scale Utilities

Blackwattle Bay Design Guidelines

The Blackwattle Bay Design Guidelines lists utility sustainability initiatives that can help mitigate increases in utility demands as a result of the development. The utilities-related provisions and their applicability to the development are shown in the table below:

Table 10-1 Blackwattle Bay Design Guidelines Assessment

Blackwattle Bay Design Guidelines Provision	Assessment
2.1 Locality Statement	
Sustainability	
Principle 4: Pursue leading edge sustainability outcomes including climate change resilience, improved water quality and restoration of natural ecosystems.	The supply of utilities to the park and associated buildings allows for the integration with any future precinct systems used on the remainder of the precinct. It also allows for connection to any building specific sustainability measures (such as solar PV) will providing ongoing utility connections.
Mixed Use Precinct	
Principle 16: Allow for co-existence and evolution of land uses over time.	The proposed connection supply allows for connection to existing utility systems on Bank St and can be re-used if spaces and the evolution of the land-use changes over time.
2.4 Staging & Delivery	
Objectives	
a. Ensure the redevelopment of Blackwattle Bay is planned and delivered in an orderly manner.	The infrastructure servicing strategy shows that there is sufficient capacity in existing networks and that utility supply to the park can be achieved within a planned and orderly manner.
b. Ensure the delivery of supporting public infrastructure, including utilities, parks, streets, public art, and community facilities as the population increases.	The proposed design includes supporting infrastructure including connection to existing utility assets on Bank St which can support the community facilities as the population increases
c. Ensure stormwater and other services are planned and implemented prior to works for the construction of new buildings so that land is made suitable for its intended use and adjacent areas are not adversely affected.	All required utility services as outlined in this report have nearby connections that ensure supply is available and can be implement prior to the works with no adverse impact on adjacent areas.
d. Ensure that the development of sites can occur independently to the greatest extent possible.	The supply of utilities to the proposed park and community buildings will be independent of supply to the remainder of the precinct

Blackwattle Bay Design Guidelines Provision	Assessment
e. Manage conflicts associated with existing land uses particularly the ongoing operation of the concrete batching plant through development staging.	As a part of the development utility supply, no changes or impacts to existing land-uses will be required
4 Environmental Management & Sustainability	
Water Management	
d. Reduce potable water use and incorporate rainwater use and water recycling	While potable water supply is available to the precinct and has been incorporated within the design to provide baseline supply, this does not preclude the use of rainwater for irrigation or future connections to any precinct water system.
4.2 Precinct Scale Utilities	
1. Investigations are to be undertaken into potential precinct-scale facilities, to determine how they can be included in the precinct prior to lodgement of the first development application on Government-owned land: ***a. Microgrid and grid-scale battery storage*** ***b. water recycling system.*** ***c. food organic waste facilities.*** ***d. precinct parking (decoupled, unbundled and/or consolidated)*** ***e. electric vehicle charging, grid-scale battery storage.***	The supply of utilities to the park and associated buildings allows for the integration with any future precinct systems used on the remainder of the precinct. It also allows for connection to any building specific sustainability measures (such as solar PV) will providing ongoing utility connections. Due to the relatively low utility demand requirements for the park and community buildings, there are limited opportunities for standalone precinct-scale utility systems. The infrastructure has been designed to coordinate with any future precinct systems installed as a part of later precinct build-outs.

Flux Consultants Environmental Sustainability Framework

Flux Consultants have developed an Environmental Sustainability Framework that defines precinct wide sustainability objectives that would also help mitigate increases in utility demands. The utilities-related objectives that may be considered post SSDA include:

- Avoiding reliance on fossil fuels for heating, hot water, or cooking and instead accelerate the shift to all-electric servicing to ensure alignment with a net-zero future;
- Accelerating the transition to electric mobility by providing the necessary infrastructure for electric vehicle charging in buildings, allowing private vehicles to be charged over time and avoiding increased maximum demand on the electricity grid;
- Prioritising best-in-market energy efficiency of buildings;
- Maximising on-site renewable energy opportunities and, where appropriate, supplementing with energy storage to enhance on-site use and reduce the impact on the local distribution network;
- Constructing the buildings to promote passive climate resilience and maintain minimum amenity levels during power interruptions;
- Incorporating well-designed natural ventilation;
- Adopting integrated urban water management strategies to reduce demands on Sydney's limited water catchment resources and maximise fit-for-purpose water use; and

- Designing the buildings in Blackwattle Bay to prioritise access to natural light, ventilation, and thermal and acoustic comfort.

Current Investigations

The opportunity for precinct-scale facilities to improve sustainability outcomes is currently being investigated by Infrastructure NSW on the basis that the development of the broader precinct will provide the critical mass of demand and utilisation required to catalyse investment. Bank Street Park will be integrated into potential future precinct scale utilities as a customer.

The initial investigations will outline the technical parameters, sustainability dividends, governance and community benefits sought, for market testing when Infrastructure NSW seeks a development partner for the existing Sydney Fish Markets site. The initial investigations will also outline the potential for any easements under Bank Street Park that might be beneficial for accessing harbour heat rejection, which will be addressed in subsequent approvals.

11 Conclusion

This Infrastructure Strategy Report has concluded that servicing is available to site with indicative connections for each service being:

- **Potable Water:** Connections can be made to the existing mains on Bank Street and Bowman Street;
- **Sewer:** Connections can be made to the existing mains on Bank Street and Bowman Street;
- **Stormwater:** Connections can be made to the existing mains on Bank Street and Bowman Street;
- **Electricity:** Connections can be made to the existing mains on Bank Street and Bowman Street;
- **Gas:** Connections can be made to the existing main on Bank Street and Bowman Street; and
- **Telecommunications:** Connections can be made with various telecommunication mains on Bank Street and Bowman Street.

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

It should also be noted the development should additionally consider impacts upon other utility assets owned by Sydney Trains as they are within and adjacent to the site. The details of these assets have been included in this report.