

APPENDIX P INFRASTRUCTURE SERVICES STRATEGY

Arup



Infrastructure NSW

Powerhouse Precinct Parramatta

Powerhouse SSDA report –
Infrastructure Services Strategy

PMH-ARP-REP-IS-0003

Issue 01 | 17 April 2020

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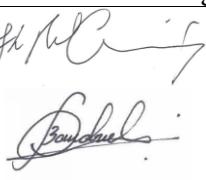
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Contents

	Page
1 Introduction	1
2 Background	2
3 Site Description	3
4 Overview of Proposed Development	5
5 Assessment Requirements	7
6 Utility Services Infrastructure	8
6.1 Existing Information	8
6.2 Scope of Utility Services Report	8
6.3 Protection of Existing Utility Services	9
6.4 Sewerage	9
6.5 Mains Water	11
6.6 Gas	12
6.7 Telecommunications	13
6.8 Electrical Infrastructure	22
7 Agency Consultations	27
8 Conclusion	28

1 Introduction

This report supports a State Significant Development (SSD) Development Application (DA) for the development of the Powerhouse Parramatta at 34-54 & 30B Phillip Street and 338 Church Street, Parramatta. The Powerhouse Parramatta is a museum (information and education facility) that has a capital investment value in excess of \$30 million and as such the DA is submitted to the Minister for Planning pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Infrastructure NSW is the proponent of the DA.

2 Background

The Powerhouse is Australia's contemporary museum for excellence and innovation in applied arts and sciences. The museum was established in 1879 in the Garden Palace which emerged from a history of 19th Century grand exhibition halls, including the Grand Palais. It currently encompasses the Powerhouse in Ultimo, Sydney Observatory in The Rocks and the Museums Discovery Centre in Castle Hill. The Powerhouse has occupied the Ultimo site since 1988.

Parramatta, in the heart of Western Sydney, is entering a period of rapid growth. It was identified in 2014's *A Plan for Growing Sydney* as the metropolis' emerging second Central Business District, with the provision of supporting social and cultural infrastructure regarded as integral to its success. The strategic importance of Parramatta as an economic and social capital for Sydney has been subsequently reinforced and further emphasised through its designation as the metropolitan centre of the Central City under the *Greater Sydney Region Plan*.

Powerhouse Parramatta will be the first State cultural institution to be located in Western Sydney – the geographical heart of Sydney. In December 2019, the Government announced the winning design, by Moreau Kusunoki and Genton, for the Powerhouse Parramatta from an international design competition.

Powerhouse Parramatta will establish a new paradigm for museums through the creation of an institution that is innately flexible. It will become a national and international destination renowned for its distinctive programs driven by original research and inspired by its expansive collections. It will be a place of collaboration, a mirror of its communities forever embedded in the contemporary identity of Greater Sydney and NSW.

3 Site Description

The site is located at the northern edge of the Parramatta CBD on the southern bank of the Parramatta River. It occupies an area of approximately 2.5 hectares and has extensive frontages to Phillip Street, Wilde Avenue and the Parramatta River. A small portion of the site extends along the foreshore of the Parramatta River to the west, close to the Lennox Street Bridge on Church Street. The site boundary is identified in Figures 1 and 2. The site excludes the GE Office Building at 32 Phillip Street.

The site is currently occupied by a number of buildings and structures, including:

- Riverbank Car Park – a four-level public car park
- Willow Grove – a two-storey villa of Victorian Italianate style constructed in the 1870s
- St George's Terrace – a two-storey terrace of seven houses fronting Phillip Street constructed in the 1880s
- 36 Phillip Street – a two-storey building comprising retail and business premises
- 40 Phillip Street – a two-storey building comprising retail and business premises
- 42 Phillip Street – a building set back from the street

The immediate context of the site comprises a range of land uses including office premises, retail premises, hotel, serviced apartments and residential apartments. To the north is the Parramatta River and open space corridor, beyond which are predominately residential uses. The Riverside Theatre is located to the north-west across the Parramatta River.



Figure 1- Aerial photograph of the site and its context

Source: Mark Merton Photography



Figure 2 - Site boundary, key existing features, and immediate local context

Source: Ethos Urban

4 Overview of Proposed Development

The Powerhouse was established in 1879, and Powerhouse Parramatta will radically return to its origins through the creation of seven presentation spaces of extraordinary scale that will enable the delivery of an ambitious, constantly changing program that provides new levels of access to Powerhouse Collection. The Powerhouse will set a new international benchmark in experiential learning through the creation of an immensely scaled 360-degree digital space, unique to Australia.

Powerhouse Parramatta will reflect the communities and cultures of one of Australia's fastest growing regions. It will hold First Nations culture at its core and set a new national benchmark in culturally diverse programming. The Powerhouse will be highly connected through multiple transport links, and integrate into the fine grain of the city.

Powerhouse Parramatta will be an active working precinct and include the Powerlab, which will enable researchers, scientists, artists and students from across regional NSW, Australia and around the world to collaborate and participate in Powerhouse programs. The Powerlab will feature digital studios to support music and screen industries alongside co-working spaces, life-long learning and community spaces. Integrated into the Powerlab will be a research kitchen and library that will support a NSW industry development program including archives and oral histories.

This application will deliver an iconic cultural institution for Parramatta in the heart of Sydney's Central City. The SSD DA seeks consent for the delivery of the Powerhouse Parramatta as a single stage, comprising:

- site preparation works, including the termination or relocation of site services and infrastructure, tree removal and the erection of site protection hoardings and fencing;
- demolition of existing buildings including the existing Riverbank Car Park, 'Willow Grove', 'St George's Terrace' and all other existing structures located on the site;
- construction of the Powerhouse Parramatta, including:
 - seven major public presentation spaces for the exhibition of Powerhouse Collection;
 - front and back-of-house spaces;
 - studio, co-working and collaboration spaces comprising the 'Powerlab', supported by 40 residences (serviced apartments) for scientists, researchers, students and artists, and 60 dormitory beds for school students;
 - education and community spaces for staff, researchers and the Powerlab residents, the community, and education and commercial hirers;

- commercial kitchen comprising the ‘Powerlab Kitchen’ used for cultural food programs, research, education and events;
 - film, photography, and postproduction studios that will connect communities with industry and content that will interpret the Powerhouse Collection;
 - public facing research library and archive for community, industry, students and researchers to access materials; and
 - a mix of retail spaces including food and drink tenancies with outdoor dining.
- operation and use of the Powerhouse Parramatta including use of the public domain provided on the site to support programs and functions;
 - maintenance of the existing vehicular access easement via Dirrabarri Lane, the removal of Oyster Lane and termination of George Khattar Lane, and the provision of a new vehicular access point to Wilde Avenue for loading;
 - public domain within the site including new public open space areas, landscaping and tree planting across the site; and
 - building identification signage.

The project does not seek consent for the carrying out of works outside of the site boundary, and in particular does not involve any alterations to the existing edge of the formed concrete edge of the Parramatta River or to the waterway itself.

5 Assessment Requirements

The Department of Planning, Industry and Environment have issued Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development. This report has been prepared having regard to the SEARs as follows:

SEAR	Where Addressed
14. Utilities The EIS shall: <ul style="list-style-type: none"> ● address the existing capacity and future requirements of the development for the provision of utilities, including staging of infrastructure in consultation with relevant agencies; ● detail impacts to any existing infrastructure assets of utility stakeholders during demolition/construction and any augmentation of infrastructure that may be required to accommodate the proposed development; and ● demonstrate coordination with the City of Parramatta and other agencies for an integrated approach that considers broader City River public domain outcomes. 	<ul style="list-style-type: none"> ● Section 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8 ● Section 6, 7, Appendix A, B, C, D , E ● Appendix C, D, E

Table 1 - SEARS Assessment Requirements

6 Utility Services Infrastructure

6.1 Existing Information

The utility services assessment for the project is largely based on ‘Dial Before You Dig (DBYD) information, existing utility surveys, and where possible discussions with utilities providers.

To date, as part of the competition phase and initial concept design phase Arup has been in contact with Endeavour Energy, Sydney Water and Jemena to obtain preliminary advice on the utility services infrastructure, record of communication has been included in Appendix C, D and E.

6.2 Scope of Utility Services Report

This utility services infrastructure report relates to the works required for the incoming utilities to service the new Powerhouse Museum. A summary of the required services connections for the development are shown in table 2.

Utility Service	Authority Name	Powerhouse connection requirements
Telecommunications	AAPT, Aarnet, NBN, Next Gen, Optus, Pipe Networks, Telstra, Verizon and Vocus	Dependent on the Museum’s carrier of choice.
Electrical Power	Endeavour Energy	High Voltage connection required (point and details of connection and reticulation to be confirmed and detailed with ASP3 design and Endeavour Energy approval)
Sewerage	Sydney Water	Sewer connections required (point and details of connection and reticulation to be confirmed with Sydney Water through a Water Services Coordinator)
Mains Water	Sydney Water	Mains water connection required (point and details of connection and reticulation to be confirmed with Sydney Water through a Water Services Coordinator)
Gas	Jemena	Gas connection required (point and details of connection and reticulation to be confirmed with Jemena once building demand is known)

Table 2 - Scope of Utilities Services

Stormwater is covered in the Arup Civil Stormwater and Flooding report

6.3 Protection of Existing Utility Services

As part of the initial investigation we have undertaken a desktop review of existing services using site observations and utility mapping information provided through Dial Before You Dig. In addition to utility diagrams, LTS have been appointed by INSW and are in the process of completing a more extensive survey of existing utilities surrounding the site.

A summary of our findings from of the above information is included in the following sections for each service, Appendix A and Appendix B.

The next steps are recommended to ensure existing utility services are adequately considered and protected as part of the works. These steps are subject to further development by the main contractor as part of the construction methodology plan for the project.

- Intrusive investigations to be undertaken where considered necessary to more accurately locate utilities and investigate unknown services and/ or potentially redundant services;
- Utility providers to be consulted to obtain any necessary consents to perform construction work in their vicinity and discuss necessary diversion and/or protection measures and connections for the proposed works;
- Utility technical and hazard requirements to be incorporated into the design and construction documentation;
- Safe work methods statements and inspection and test plans to be prepared by accredited contractors;
- Pre-start work checklists to be developed and implemented;
- Field safety inspectors to be present during critical works as determined by utility providers.

6.4 Sewerage

6.4.1 Existing

The development has Sydney Water Sewer infrastructure within the extent of the proposed works.

The infrastructure within and surrounding the site is as follows;

- Parramatta Riverbank – 525mm vitrified clay trunk sewer main flows East from Church Street to Wilde Avenue.
- Phillip Lane - 225mm salt glazed clay / vitrified clay sewer main flows North through the site and connects to the trunk main
- Phillip Street – 225mm vitrified clay sewer main flows North through the site and upsizes to 525mm before connecting to the trunk main. There is a 150mm vitrified clay sewer main which flows from West to East beneath the existing 36 – 40 Phillip Street building that connects to the 225mm sewer main.

- Wilde Avenue – 500mm cast iron cement lined sewer main flows south under Wilde Avenue Bridge before offsetting to run east along the Parramatta Riverbank
- Wilde Avenue – 450mm concrete sewer main flows south from the Parramatta Riverbank before offsetting to run East through the existing development parallel to Phillip St. There is a 150mm vitrified clay sewer main which flows from West to East beneath the existing 48 – 56 Phillip Street building that connects to the 450mm sewer main.

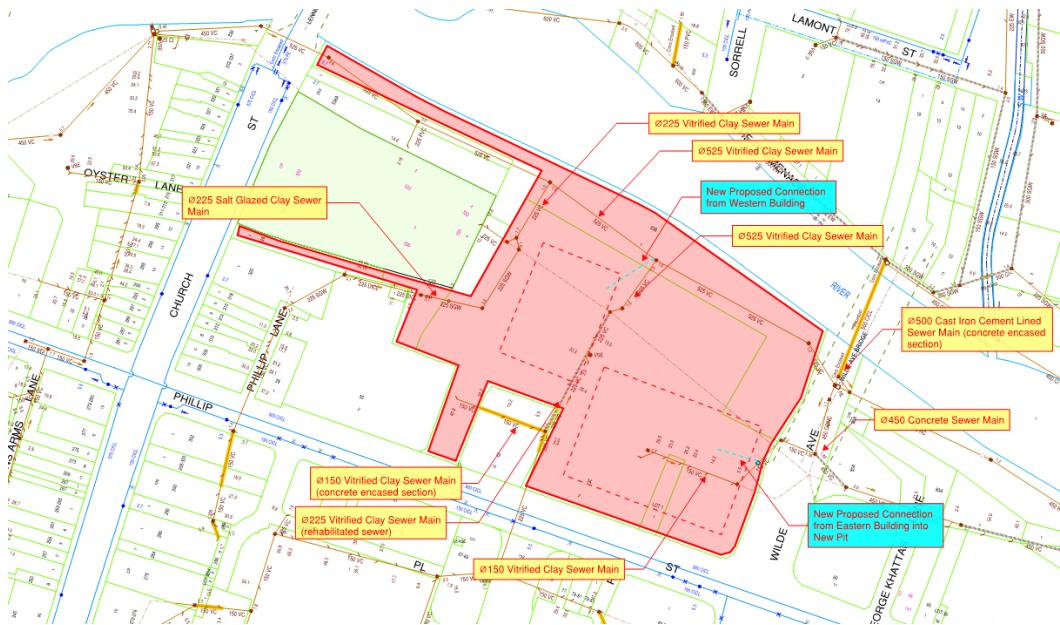


Figure 3 - Surrounding Sewer Infrastructure

We have requested an early Sydney Water project review to assess the potential impacts and requirements for building over or adjacent to the existing Sydney Water sewer mains, particularly the 525mm trunk sewer main which is a critical Sydney Water asset.

6.4.2 Proposed

New sewer connections will be required to service the development. It is envisaged a single connection will be provided for each building with a new connection made into an existing junction pit to the 525mm sewer main running adjacent to the Parramatta River to service the West building and a new connection made into the existing 150mm sewer main on the site draining towards Wilde Avenue to service the East building.

Through consultation with Sydney Water, Arup understand the expected loads for the new building can be accommodated within the capacity of the existing infrastructure however, diversion and protection works will be required where existing assets are impacted by the new development, particularly the 525mm trunk sewer main which is a critical Sydney Water asset.

Connections to existing buildings on the site being demolished will be disconnected and removed as part of the early works and site preparation.

Further survey and discussions with Sydney Water, through a Water Services Coordinator appointed by NSW will be required to determine the full extent of the required works once the buildings waste water demands are finalised.

6.5 Mains Water

6.5.1 Existing

The development has Sydney Water Mains Water infrastructure within the extent of the proposed works.

The infrastructure surrounding the site is as follows;

- Church Street and Lennox Bridge – 375mm polyethylene water main concrete encased, splits into a 375mm cast iron cement lined water main (west side of street) and a 150mm cast iron cement lined water main (east side of street)
- Phillip Street – 900mm cast iron cement lined trunk water main (centre line of street) and 150mm cast iron cement lined water main (south side of street)

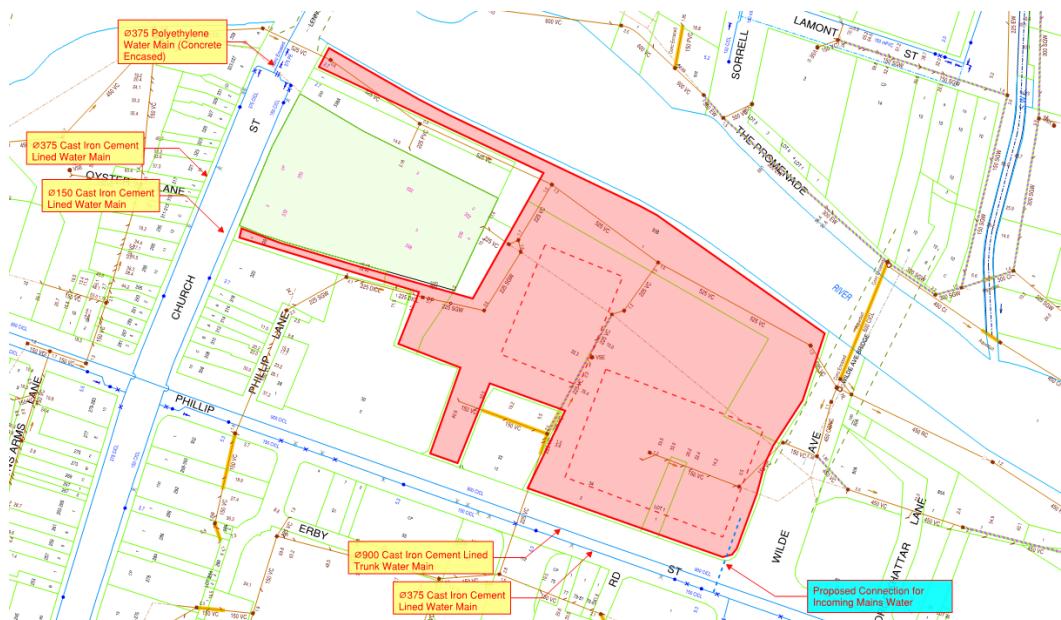


Figure 4 - Surrounding Mains Water Infrastructure

Through consultation with Sydney Water we understand Sydney Water and Parramatta City Council have future plans for a reticulated municipal recycled water main within the area that could serve the Powerhouse Precinct however, at this stage we do not have any documentation or proposal plans that outline the future strategy.

6.5.2 Proposed

A new incoming water supply connection will be required to service the development. It is envisaged the new connection will be via the 150mm water main at Phillip Street. Through consultation with Sydney Water and review of available pressure and flow within the main, Arup understand the expected loads for the new building would require amplification of the existing 150mm water main to furnish the buildings water demand.

Connections to existing buildings on the site being demolished will be disconnected and removed as part of the early works and site preparation.

Further survey and discussions with Sydney Water, through a Water Services Coordinator appointed by INSW will be required to determine the full extent of the required works once the buildings water demands are finalised.

6.6 Gas

6.6.1 Existing

The development has Jemena Gas infrastructure within the extent of the proposed works.

The infrastructure surrounding the site is as follows;

- Church Street – 75mm nylon medium pressure 7kPa gas main on eastern side of street and 75mm nylon 7kPa gas main on western side of street
- Phillip Street - 150mm steel high pressure 1050kPa gas main northern side of street, a 110mm nylon medium pressure network gas main and a 50mm nylon medium pressure secondary gas main runs on the southern side of street.
- Dirrabarri Lane - 100mm steel high pressure 1050kPa gas main with dedicated provision for future Powerhouse Precinct

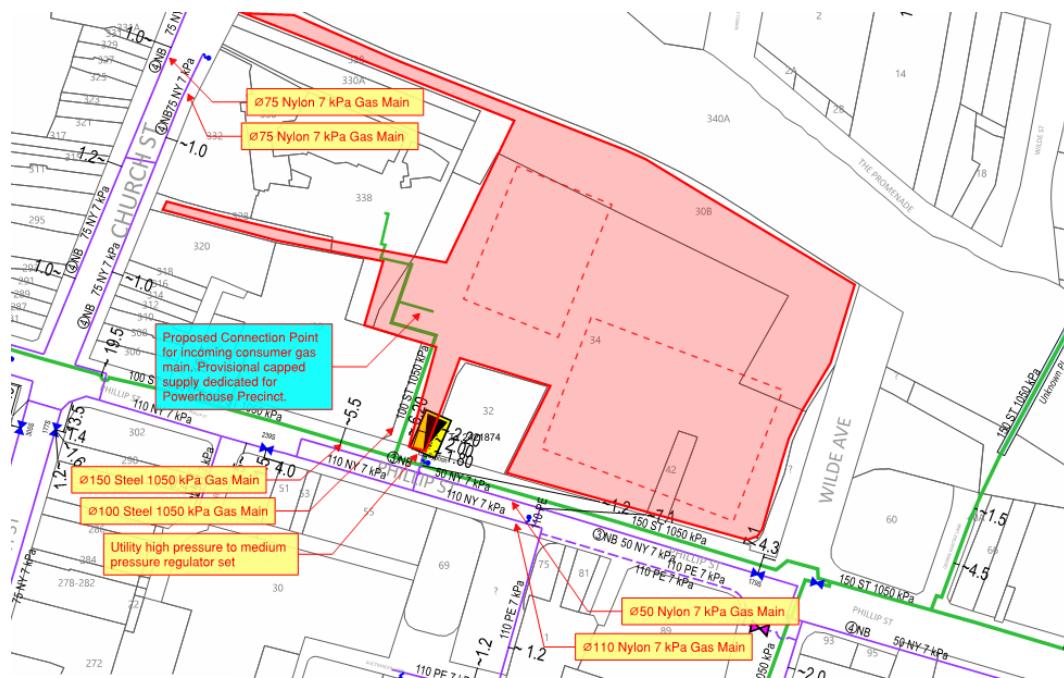


Figure 5 - Surrounding Utility Gas Infrastructure

6.6.2 Proposed

A new incoming gas supply connection will be required to service the development. Through consultation with Jemena, we understand a capped provisional 1050kPa high pressure gas supply located in Dirribarri Lane is dedicated for the new Powerhouse Precinct.

Connections to existing buildings on the site being demolished will be disconnected and removed as part of the early works and site preparation.

Once the buildings gas demand is confirmed, a formal application will be submitted to Jemena to determine the feasibility of connecting to their infrastructure and confirm the full extent of the required works.

6.7 Telecommunications

6.7.1 Existing

There are multiple telecommunications carriers with assets in the area to service surrounding sites. Carriers identified as having assets in the area are:

- AAPT;
- Aarnet;
- NBN;
- Next Gen;

- Optus;
- Pipe Networks;
- Telstra;
- Uecomm
- Verizon; and
- Vocus.

The following sections will provide an overview of the telecommunications service providers existing assets in relation to the proposed development site.

AAPT

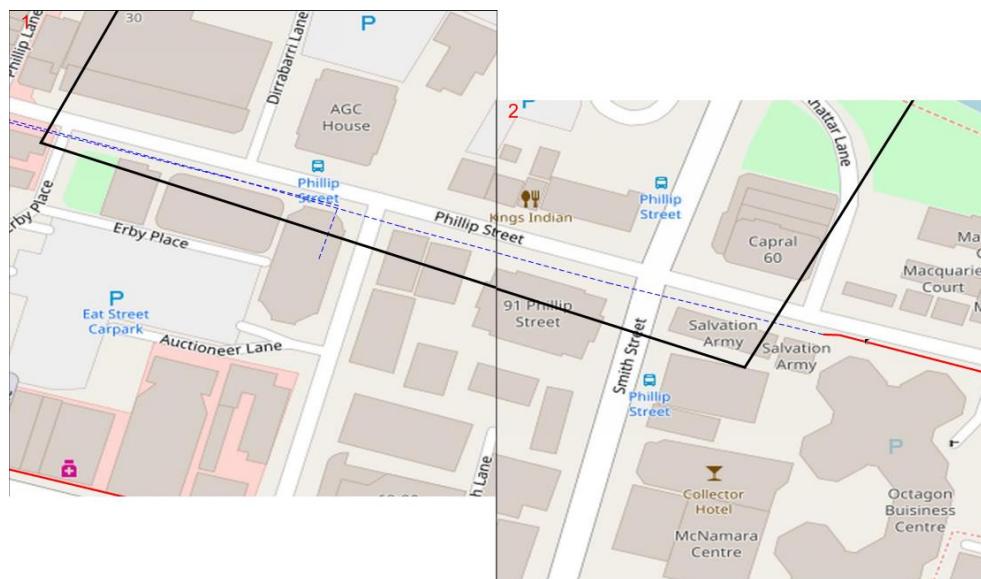


Figure 6 - AAPT DBYD Information

According to DBYD information received in Feb 2020, AAPT has assets in shared conduits on the south side of Phillip Street. It is not anticipated that the development will impact these assets.

AARNet

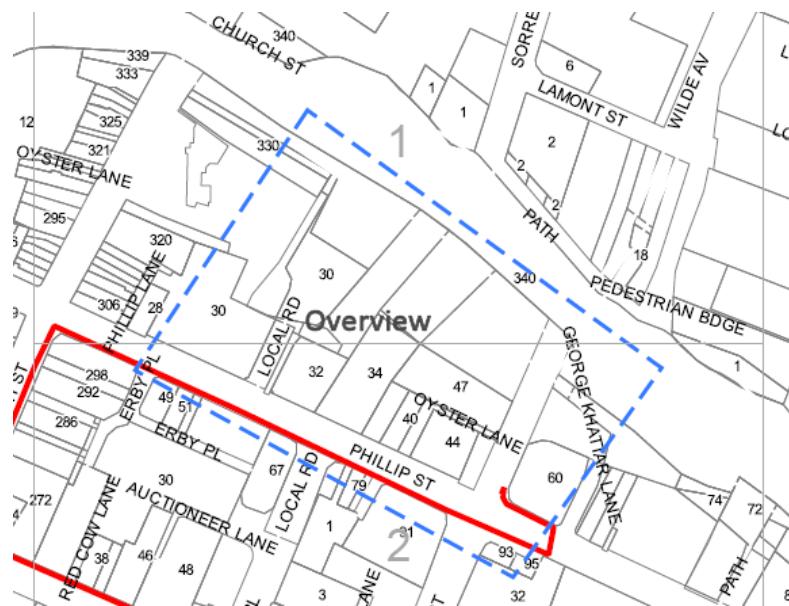


Figure 7 - AARNet DBYD Information

According to DBYD information received in Feb 2020, the Australian Academic Research Network (AARNet) has assets in on the south side of Phillip Street, and encroaches slightly up the Eastern side of Wilde Avenue. It is not anticipated that the development will impact these assets.

NBN

According to DBYD information received in Feb 2020, the National Broadband Network (NBN) has assets and a series of service pits along Phillip Street, and Wilde Avenue.

The NBN has existing lead-ins that reticulate into the site to service existing buildings. As part of the demolition process, this infrastructure will need to be disconnected and removed in consultation with NBN.

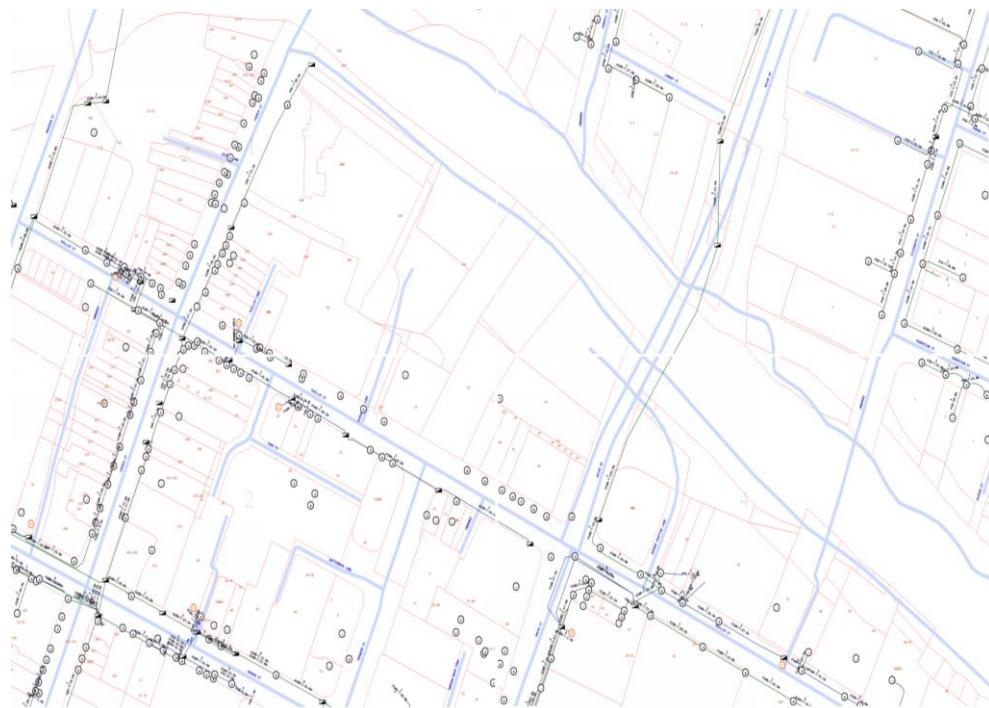
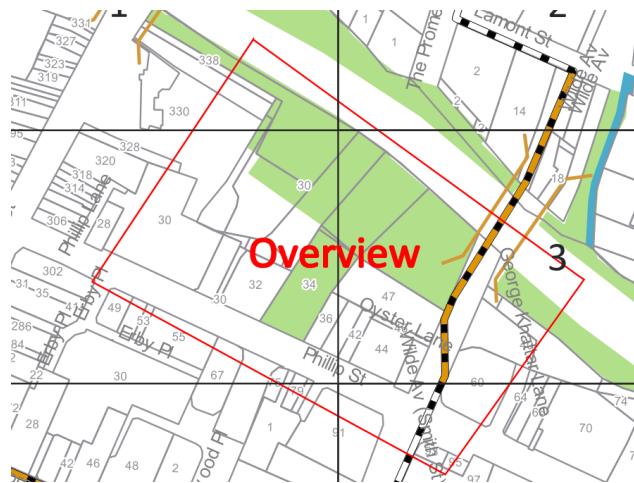


Figure 8 - NBN DBYD Information

Next Gen

According to DBYD information received in Feb 2020, Next Gen has assets in shared and dedicated conduits along Wilde Avenue.

While it is not expected that the development will encroach on Next Gen's assets on Wilde Avenue, a detailed site survey of the area is to be undertaken prior to excavation works to ensure assets are not impacted.



Optus assets on the southern side of Phillip Street are in shared conduits while the assets on the northern side of Phillip Street are in dedicated Optus Conduits and service pits.

Optus has existing lead-ins from Phillip Street that reticulate into the site to service existing buildings. As part of the demolition process, this infrastructure will need to be disconnected and removed in consultation with Optus.

A detailed site survey of the Phillip Street frontage is to be undertaken prior to excavation works to ensure Optus assets are not impacted.

It is not anticipated that the development will impact Optus' assets on Wilde Avenue as they are located primarily on the Eastern side of the street.

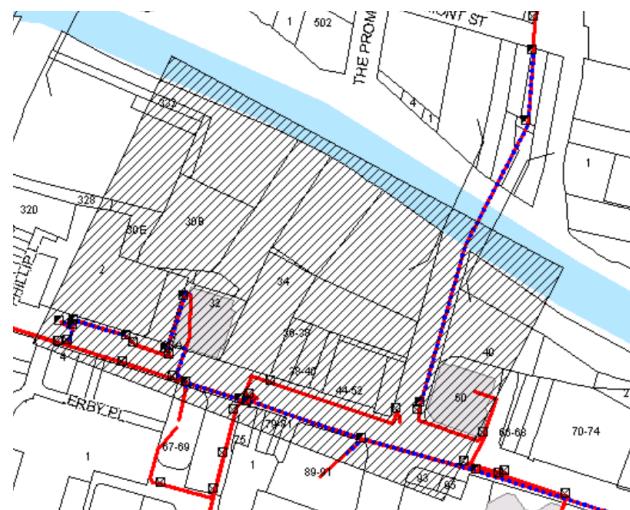


Figure 10 - Optus DBYD Information

Uecomm

According to DBYD information received in Feb 2020, the Uecomm has assets in on the southern intersection of Phillip Street & Wilde Avenue. It is not anticipated that the development will impact these assets.



Figure 11 - Uecomm DBYD Information

Pipe Networks

According to DBYD information received in Feb 2020, the Pipe Networks has limited assets in dedicated infrastructure on Phillip Street. It is not anticipated that the development will impact these assets.

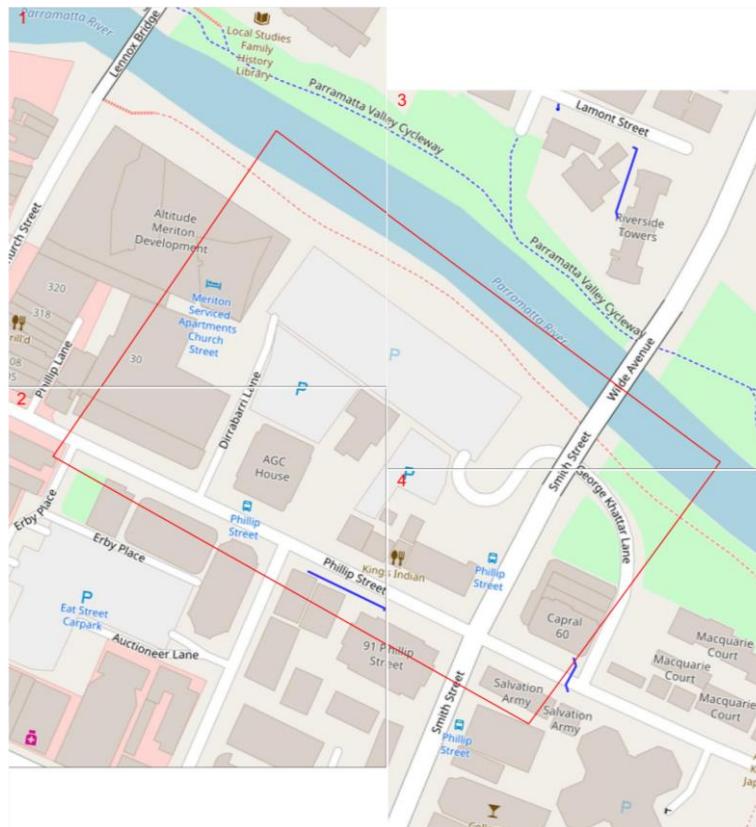


Figure 12 - Pipe Networks DBYD Information

Telstra

According to DBYD information received in Feb 2020, Telstra has assets and a series of service pits along Phillip Street, and Wilde Avenue.

Telstra's conduits are also likely to be used by other carriers, so any impact on Telstra infrastructure may also affect other carriers.

Telstra has a series of existing lead-ins that reticulate into the site to service existing buildings. As part of the demolition process, this infrastructure will need to be disconnected and removed in consultation with Telstra.



Figure 13 - Telstra DBYD Information - cabling

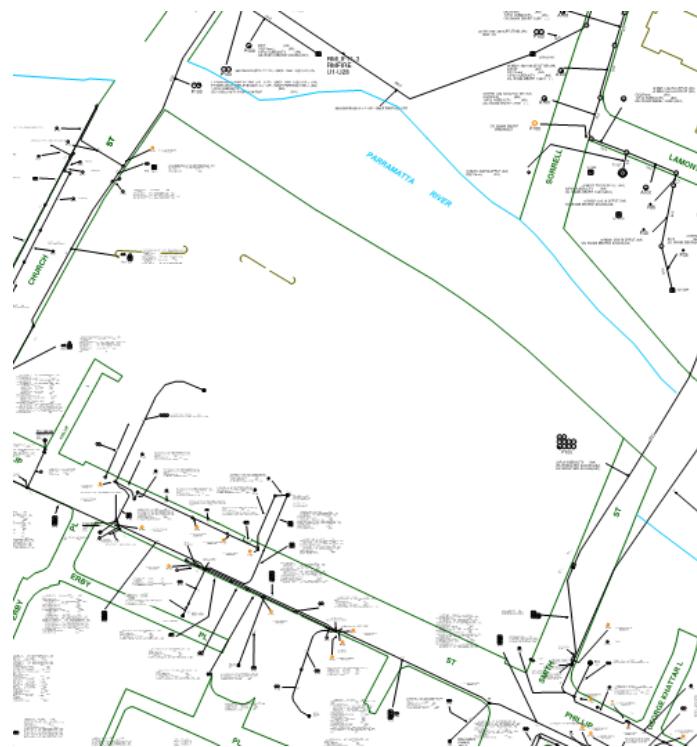


Figure 14 - Telstra DBYD Information – Mains cabling

Uecommm

According to DBYD information received in Feb 2020, the Uecom has assets in on the southern intersection of Phillip Street & Wilde Avenue. It is not anticipated that the development will impact these assets.

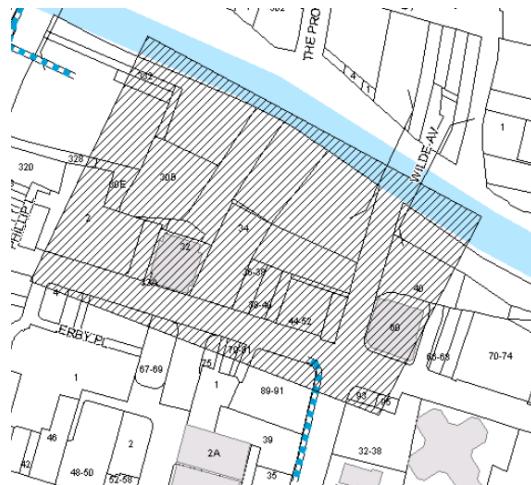


Figure 15 - Uecom DBYD Information

Verizon

According to DBYD information received in Feb 2020, the Verizon has limited assets in dedicated infrastructure on Phillip Street. Whilst Verizon's DBYD information is limited in its accuracy, it is not anticipated that the development will impact these assets.

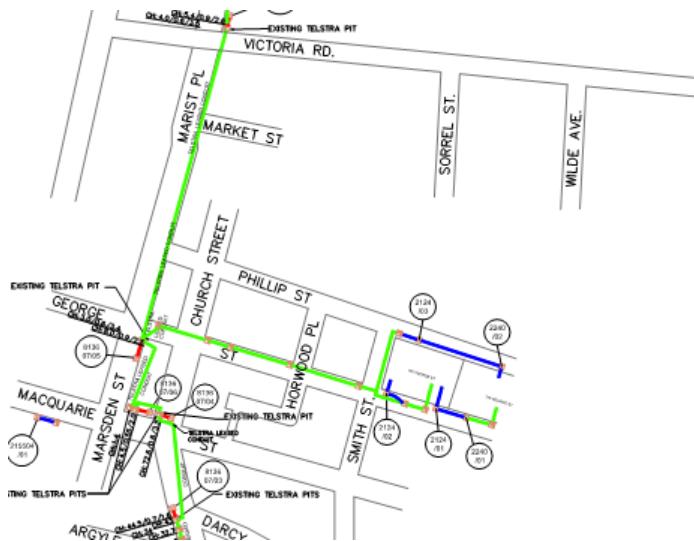


Figure 16 - Verizon DBYD Information

Vocus

According to DBYD information received in Feb 2020, Vocus has assets on Phillip Street ad Wilde Avenue that are beyond the site of the project. It is not anticipated that the development will impact these assets.

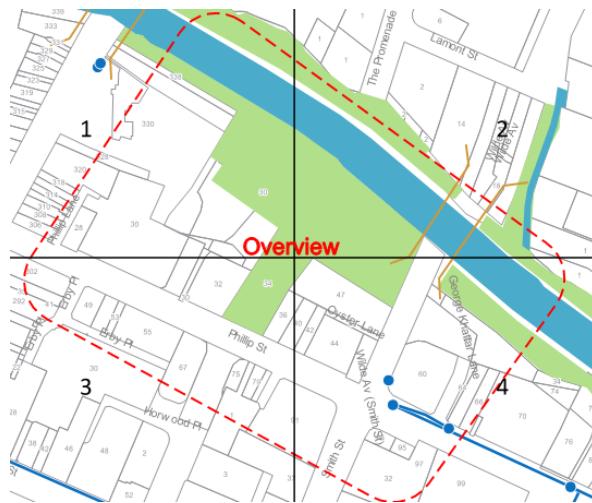


Figure 17 - Vocus DBYD Information

6.7.2 Proposed

New telecommunications lead-in's will be required for the development. Diverse lead-in's will be required for redundancy and it is envisaged the connection points will be on Wilde Avenue and Phillip Street.

Specific lead-in details will be dependent on the Museum's carrier of choice, however, internal conduits and lead-in pathways will be required within the site to the property boundary in order to enable connectivity into the carrier network.

6.8 Electrical Infrastructure

Endeavour energy is the electrical services authority responsible for the operation and maintenance of the existing electrical infrastructure local to the proposed development.

Application was submitted to power supply authority (Endeavour Energy) on 13th of March 2020 to obtain preliminary advice on the power supply infrastructure development requirements.

Endeavour Energy preliminary supply offer (Model standing offer) was received on 23rd of March 2020 which will be progressed further during design development, this is included in Appendix C for details.

Details of the existing electrical infrastructure and proposed servicing strategy is provided in following sections.

6.8.1 Existing Electrical Infrastructure

Based on review of Endeavour Energy Dial Before You Dig (DBYD) documents, High Voltage (HV) and Low Voltage (LV) services available in a close proximity to proposed development area on Wilde Avenue (East side of the proposed site) and Phillips street (South side of the site).

Based on the model standing offer from Endeavour energy dated 23rd of March 2020, there is capacity for the proposed estimated load from the existing underground network in the local area (within Wilde avenue HV network and in Phillips street HV network). Existing

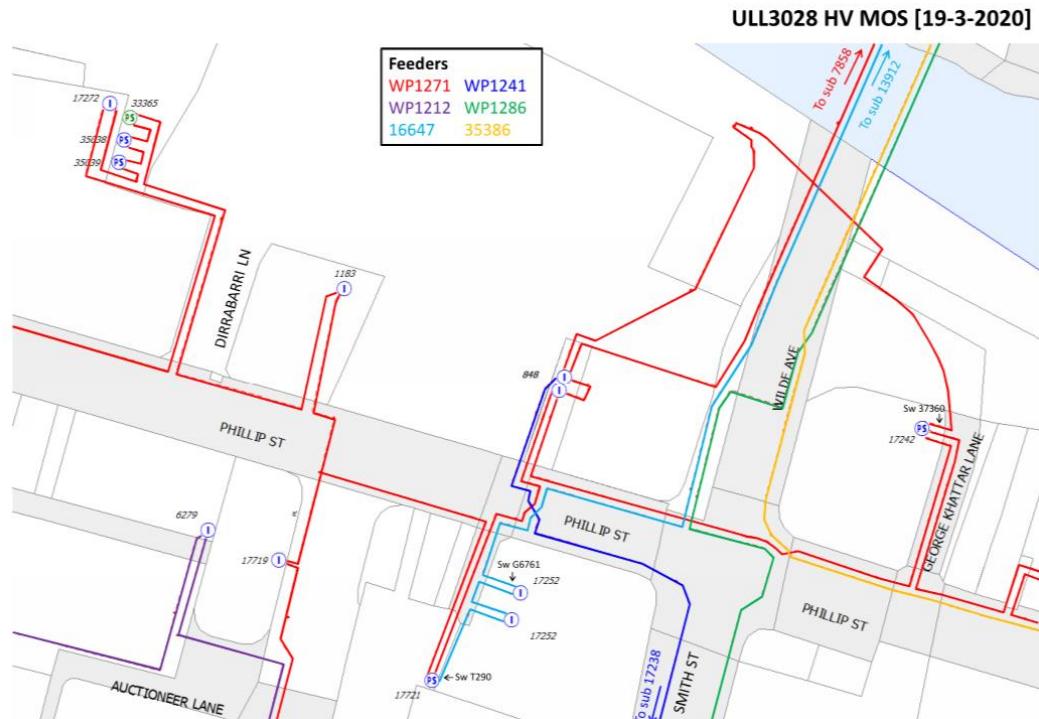


Figure 16 – Existing HV/LV network arrangement

Further there is an existing substation (#848) located within the proposed building foot print of the Eastern building. And is to be relocated or demolished.

6.8.2 Proposed

A preliminary assessment of the estimated electricity demand for the development has been conducted to assist in determining the required infrastructure upgrades that may be required.

The projected net change to peak electricity demand is based on AS3000.2018 table C3 and as per the Competition stage VA/SQM power allowance for presentation space areas. The preliminary calculated maximum demand for the proposed development is estimated at 4.3 MVA based on the current design of the building. This equates to approximately 3 off 1500kVA distribution kiosk substations.

Based on a site analysis considering access to major roads for HV infrastructure development and proximity to Parramatta river bank we have identified few different location options for the proposed kiosk substations. We have eliminated the option to have a chamber substation on site due to space and access constraints we have within the proposed building ground floor footprint.

Our proposal was submitted to Endeavour energy for review with the preliminary power supply application and received the Model standing offer from Endeavour Energy which meets the proposed infrastructure design criteria.

Proposed network augmentation arrangement to provide power to proposed development is detailed in Figure 17.

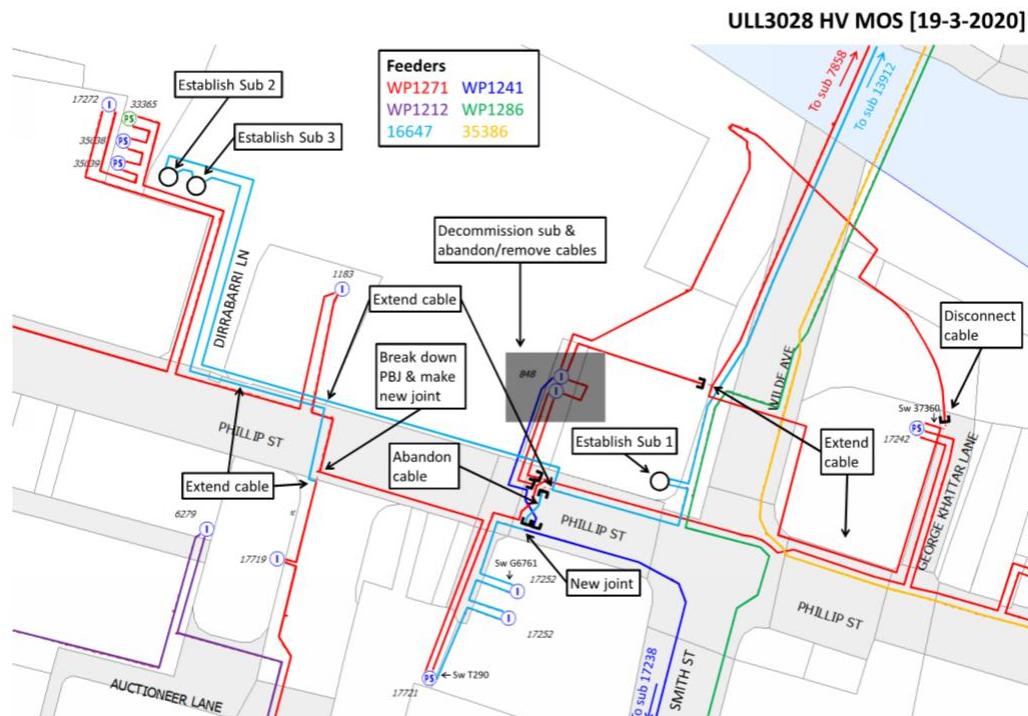


Figure 17 – Proposed Network Augmentation

We are in the process of engaging a Level 3 Accredited Services Provider (ASP) for the project to proceed with the proposed design to meet the Endeavour energy design requirements and to obtain the design certification.

6.8.3 Servicing Strategy

Based on the Endeavour Energy model standing offer, it is anticipated that existing substation #848 located inside the development within proposed building B foot print to be decommissioned and removed.

Further, we have identified some existing Endeavour Energy assets which we may have to consider relocating due to proximity to proposed buildings. Concept plan of the relocation of existing electrical services based on Endeavour Energy dial before you dig (DBYD) documents can be found in Appendix A

Provision of power to the site is expected to be an extension of 11kV network from Phillip St and Wilde Avenue to new pad mount substations as outlined in Figure 18. The design to be further developed and submitted for Endeavour Energy review and certification via a Level 3 ASP consultant.

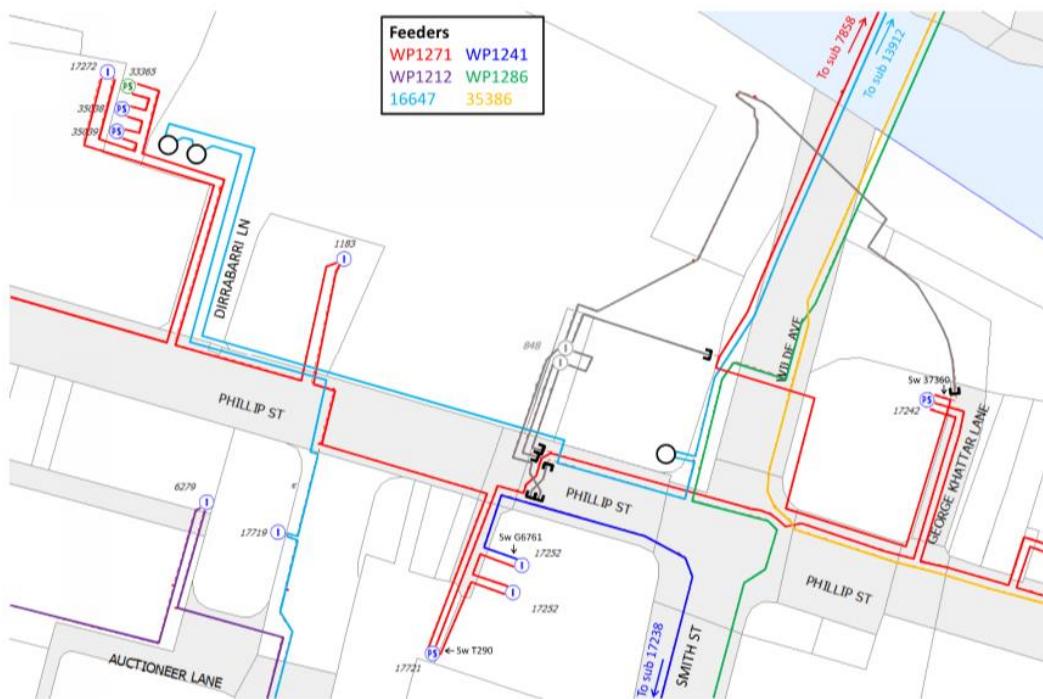


Figure 18 – Final Network arrangement

Temporary servicing of the site during construction would be able to be achieved by other substations in the vicinity (substation 13912) however this needs to be discussed and agreed with Endeavour Energy.

6.8.4 Future Work Plan

Power infrastructure design plans are to be further developed by a Level 3 ASP consultant to satisfy the scope outlined in the Endeavour Energy Model standing offer to confirm the electricity servicing arrangements for the proposed Powerhouse Parramatta.

Design to be developed to install 3 off new 1500kVA kiosk substations as detailed to feed power to the proposed Power House Parramatta development. 2 off kiosk to be located on the western side of the development and 1 off 1500kVA kiosk to be located on the Eastern side of the development adjacent to Wild avenue.

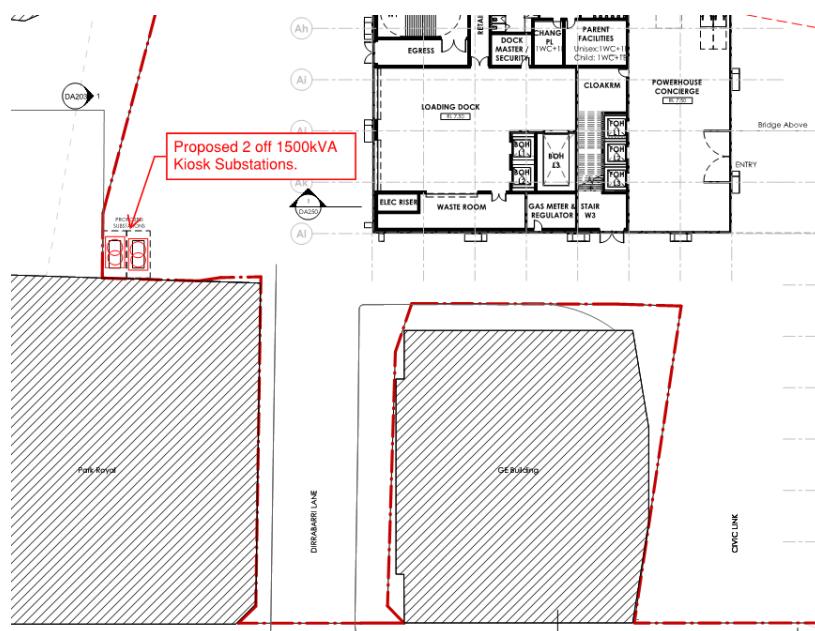


Figure 19 - 2off 1500kVA kiosks on Western side of the development.

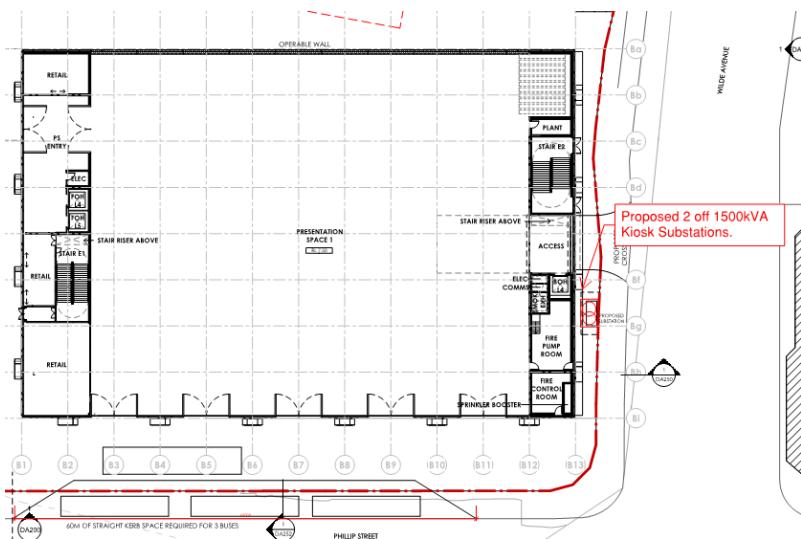


Figure 20 - 2off 1500kVA kiosks on Eastern side of the development.

An assets relocation application to be submitted to power supply authority (Endeavour Energy) to initiate the relocation of existing endeavour energy assets (which may not be redundant due to proposed demolition of existing buildings).

Substation #848 within the proposed development area will need to be demolished or relocated to a location agreed with Endeavour Energy.

7 Agency Consultations

To date, as part of the competition phase and pre-concept design phase, there have been number of consultations carried out with the utility providers, record of correspondence with the utilities providers is in Appendix C, D and E of this report.

Endeavour Energy

- Preliminary application submitted on 13/03/2020.
- Endeavour Energy Model standing offer received on 23/03/2020
- Currently working on the process to engage a Level 3 Accredited services provider (ASP) to further develop the design to follow the Endeavour Energy design certification process.

Sydney Water

- An initial Sydney Water Infrastructure meeting was held on 02/04/2020, meeting minutes were issued following the meeting on 08/04/2020, updated presentation slides including pressure and flow information was issued on 09/04/2020

Jemena

- Initial Jemena confirmation of available capacity and proposed connection point was received on 07/04/2020

Telecommunication Utilities

- Following review of the DBYD information, it appears the site has sufficient surrounding telecommunications utilities to services the new development. As such applications are typically deferred to the design development stage of the project.

8 Conclusion

Available survey, utilities records and DBYD information for the site and surrounding area has been reviewed in the context of the proposed Powerhouse Parramatta development.

Utilities existing within and around the precinct have been identified and assessed, and it has been determined that enabling works will be required to facilitate preparation of the site. Enabling works such as disconnection and diversion of any existing services will be conducted as part of the overall project construction works.

As part of the preliminary investigations Arup has been in contact with the key utility services providers to initiate the infrastructure design process based on the scheme as it is developing.

As part of the detailed design phase we will continue to meet with the utilities providers and present proposals for servicing the site to further develop the infrastructure servicing strategies. From early discussions and review of the existing work around utilities to the subject site, it is expected that a number of augmentation and amplification works will be required to facilitate servicing of the new development and to limit any impact the new development has on the existing infrastructure. The extent of any potential augmentation and amplification works are to be confirmed with utilities service providers.

Noting the context of the new works with respect to the existing utilities and the profile of the new Powerhouse Parramatta, we recommend that a Level 3 ASP designer and Sydney Water, Water Services Coordinator be appointed by Infrastructure NSW early in the project design phases to limit the impact of any approvals risk or abortive work to the developing scheme.

Key mitigation measures to ensure existing utility services are adequately considered and protected as part of the works are summarised below. Prior to construction, this process will be further developed by the appointed contractor to suit the staging and construction methodology plan for the project.

Mitigation Measure	Status
Desktop investigation and review of existing services using DBYD information and site observations.	Complete.
Obtain utility company as built records where possible.	Complete.
Intrusive investigations will be undertaken where considered necessary to more accurately locate utilities and investigate unknown services and/ or potentially redundant services.	To be completed by contractor during construction phase.

Mitigation Measure	Status
Utility providers will be consulted to obtain any necessary consents to perform construction work in their vicinity and discuss necessary diversion and/or protection measures and connections for the proposed works	To be completed as part of detailed design and carried over to the contractor during construction phase.
Utility technical and hazard requirements will be incorporated into the design and construction documentation.	To be completed as part of design development and contractor during construction phase.
Safe work methods statements and inspection and test plans will be prepared by accredited contractors.	To be completed by contractor during construction phase.
Pre-start work checklists will be developed and implemented.	To be completed by contractor during construction phase.
Field safety inspectors will be present during critical works as determined by utility providers.	To be completed by contractor during construction phase.

Table 3 – Key Utilities Protection Mitigation Measures

Appendix A: DBYD Information

The following information has been obtained from a Dial Before You Dig Search capturing the extent of the proposed development and area surrounding the site.

Sydney Water

Guide to reading Sydney Water DBYD Plans



Legend

Sewer		Property Details	
Sewer Main (with flow arrow & size type text)	225 PVC	Boundary Line	
Disused Main		Easement Line	25
Rising Main		House Number	6
Maintenance Hole (with upstream depth to invert)	1.7	Lot Number	26
Sub-surface chamber		Proposed Land	10 27 28 12
Maintenance Hole with Overflow chamber		Sydney Water Heritage Site (please call 132 092 and ask for the Heritage Unit)	
Ventshaft EDUCT			
Ventshaft INDUCT			
Property Connection Point (with chainage to downstream MH)	101		
Concrete Encased Section	Concrete Encased		
Terminal Maintenance Shaft	TMS		
Maintenance Shaft	MS		
Rodding Point			
Lamphole			
Vertical	VERT		
Pumping Station	SP0882		
Sewer Rehabilitation			
Pressure Sewer		Water	
Pressure Sewer Main		WaterMain - Potable (with size type text)	200 PVC
Pump Unit (Alarm, Electrical Cable, Pump Unit)	A	Disconnected Main - Potable	
Property Valve Boundary Assembly		Proposed Main - Potable	
Stop Valve	*	Water Main - Recycled	
Reducer / Taper		Special Supply Conditions - Potable	
Flushing Point	R	Special Supply Conditions - Recycled	
		Restrained Joints - Potable	
		Restrained Joints - Recycled	
		Hydrant	
		Maintenance Hole	
		Stop Valve	*
		Stop Vale with By-pass	*
		Stop Valve with Tapers	*
		Closed Stop Valve	*
		Air Valve	→
		Valve	□
		Scour	⊗
		Reducer / Taper	+
		Vertical Bends	×
		Reservoir	🌐
		Recycled Water is shown as per Potable above. Colour as indicated	*
Vacuum Sewer		Private Mains	
Pressure Sewer Main		Potable Water Main	
Division Valve		Recycled Water Main	
Vacuum Chamber		Sewer Main	
Clean Out Point		Symbols for Private Mains shown grey	
Stormwater			
Stormwater Pipe			
Stormwater Channel			
Stormwater Gully			
Stormwater Maintenance Hole			



Asset Information



Pipe Types

ABS	Acrylonitrile Butadiene Styrene	AC	Asbestos Cement
BRICK	Brick	CI	Cast Iron
CICL	Cast Iron Cement Lined	CONC	Concrete
COPPER	Copper	DI	Ductile Iron
DICL	Ductile Iron Cement (mortar) Lined	DIPL	Ductile Iron Polymeric Lined
EW	Earthenware	FIBG	Fibreglass
FL BAR	Forged Locking Bar	GI	Galvanised Iron
GRP	Glass Reinforced Plastics	HDPE	High Density Polyethylene
MS	Mild Steel	MSCL	Mild Steel Cement Lined
PE	Polyethylene	PC	Polymer Concrete
PP	Polypropylene	PVC	Polyvinylchloride
PVC - M	Polyvinylchloride, Modified	PVC - O	Polyvinylchloride, Oriented
PVC - U	Polyvinylchloride, Unplasticised	RC	Reinforced Concrete
RC-PL	Reinforced Concrete Plastics Lined	S	Steel
SCL	Steel Cement (mortar) Lined	SCL IBL	Steel Cement Lined Internal Bitumen Lined
SGW	Salt Glazed Ware	SPL	Steel Polymeric Lined
SS	Stainless Steel	STONE	Stone
VC	Vitrified Clay	WI	Wrought Iron
WS	Woodstave		

Further Information

Please consult the [Dial Before You Dig enquiries](#) page on the Sydney Water website

For general enquiries please call the Customer Contact Centre on **132 092**

In an emergency, or to notify Sydney Water of damage or threats to its structures, call **13 20 90** (24 hours, 7 days)



IMPORTANT INFORMATION - DIAL BEFORE YOU DIG

Attention: You must read the information below

The material provided or made available to you by Sydney Water (including on the Sydney Water website) in relation to your Dial Before You Dig enquiry (**Information**) is provided on each of the following conditions, which you are taken to have accepted by using the Information:

- 1 The Information has been generated by an automated system based on the area highlighted in the "Locality Indication Only" window on your Caller Confirmation. It is your responsibility to ensure that the dig site is properly defined when submitting your Dial Before You Dig enquiry and, if the Information does not match the dig site, to resubmit your enquiry for the correct dig site.
- 2 Neither Sydney Water nor Dial Before You Dig make any representation or give any guarantee, warranty or undertaking (express or implied) as to the currency, accuracy, completeness, effectiveness or reliability of the Information. The Information, including Sydney Water plans and work-as-executed diagrams, amongst other things:
 - (a) may not show all existing structures, including Sydney Water's pipelines, particularly in relation to newer developments and in relation to structures owned by parties who do not participate in the Dial Before You Dig service;
 - (b) may be out of date and not show changes to surface levels, road alignments, fences, buildings and the like;
 - (c) is approximate only and is therefore not suitable for scaling purposes; and
 - (d) does not show locations of property services (often called house service lines) belonging to or servicing individual customers, which are usually connected to Sydney Water's structures.
- 3 You are responsible for, amongst other things:
 - (a) exposing underground structures, including Sydney Water's pipelines, by pot-holing using hand-held tools or vacuum techniques so as to determine the precise location and extent of structures before any mechanical means of excavation are used;
 - (b) the safe and proper excavation of and for underground works and structures, including having regard to the fact that asbestos cement pipelines, which can pose a risk to health, may form part of Sydney Water's water and sewerage reticulation systems;
 - (c) protecting underground structures, including Sydney Water's pipelines, from damage and interference;
 - (d) maintaining minimum clearances between Sydney Water's structures and structures belonging to others;
 - (e) ensuring that backfilling of excavation work in the vicinity of Sydney Water's structures complies with Sydney Water's standards contained on its website or otherwise communicated to you;
 - (f) notifying Sydney Water immediately of any damage caused or threat of damage to Sydney Water's structures;
 - (g) ensuring that plans are approved by Sydney Water (usually signified by stamping) prior to landscaping or building over or in the vicinity of any Sydney Water structure; and
 - (h) ensuring that the Information is used only for the purposes for which Sydney Water and Dial Before You Dig intended.

- 4 You acknowledge that you use the Information at your own risk. In consideration for the provision of the Dial Before You Dig service and the Information by Sydney Water and Dial Before You Dig, to the fullest extent permitted by law:
- (a) all conditions and guarantees concerning the Information (whether as to quality, outcome, fitness, care, skill or otherwise) expressed or implied by statute, common law, equity, trade, custom or usage or otherwise are expressly excluded and to the extent that those statutory guarantees cannot be excluded, the liability of Sydney Water and Dial Before You Dig to you is limited to either of the following as nominated by Sydney Water in its discretion, which you agree is your only remedy:
 - (i) the supplying of the Information again; or
 - (ii) payment of the cost of having the Information supplied again;
 - (b) in no event will Sydney Water or Dial Before You Dig be liable for, and you release Sydney Water and Dial Before You Dig from, any Loss arising from or in connection with the Information, including the use of or inability to use the Information and delay in the provision of the Information:
 - (i) whether arising under statute or in contract, tort or any other legal doctrine, including any negligent act, omission or default (including wilful default) by Sydney Water or Dial Before You Dig; and
 - (ii) regardless of whether Sydney Water or Dial Before You Dig are or ought to have been aware of, or advised of, the possibility of such loss, costs or damages;
 - (c) you will indemnify Sydney Water and Dial Before You Dig against any Loss arising from or in connection with Sydney Water providing incorrect or incomplete information to you in connection with the Dial Before You Dig service; and
 - (d) you assume all risks associated with the use of the Dial Before You Dig and Sydney Water websites, including risk to your computer, software or data being damaged by any virus, and you release and discharge Sydney Water and Dial Before You Dig from all Loss which might arise in respect of your use of the websites.

- 5 **Sydney Water** means Sydney Water Corporation and its employees, agents, representatives and contractors. **Dial Before You Dig** means Dial Before You Dig Incorporated and its employees, agents, representatives and contractors. References to **“you”** include references to your employees, agents, representatives, contractors and anyone else using the Information. References to **“Loss”** include any loss, cost, expense, claim, liability or damage (including arising in connection with personal injury, death or any damage to or loss of property and economic or consequential loss, lost profits, loss of revenue, loss of management time, opportunity costs or special damages). To the extent of any inconsistency, the conditions in this document will prevail over any other information provided to you by Sydney Water and Dial Before You Dig.

In an emergency, or to notify Sydney Water of damage or threats to its structures, call 13 20 90 (24 hours, 7 days)

Further information and guidance is available in the Building Development and Plumbing section of Sydney Water's website at www.sydneywater.com.au, where you will find the following documents under 'Dial Before You Dig':

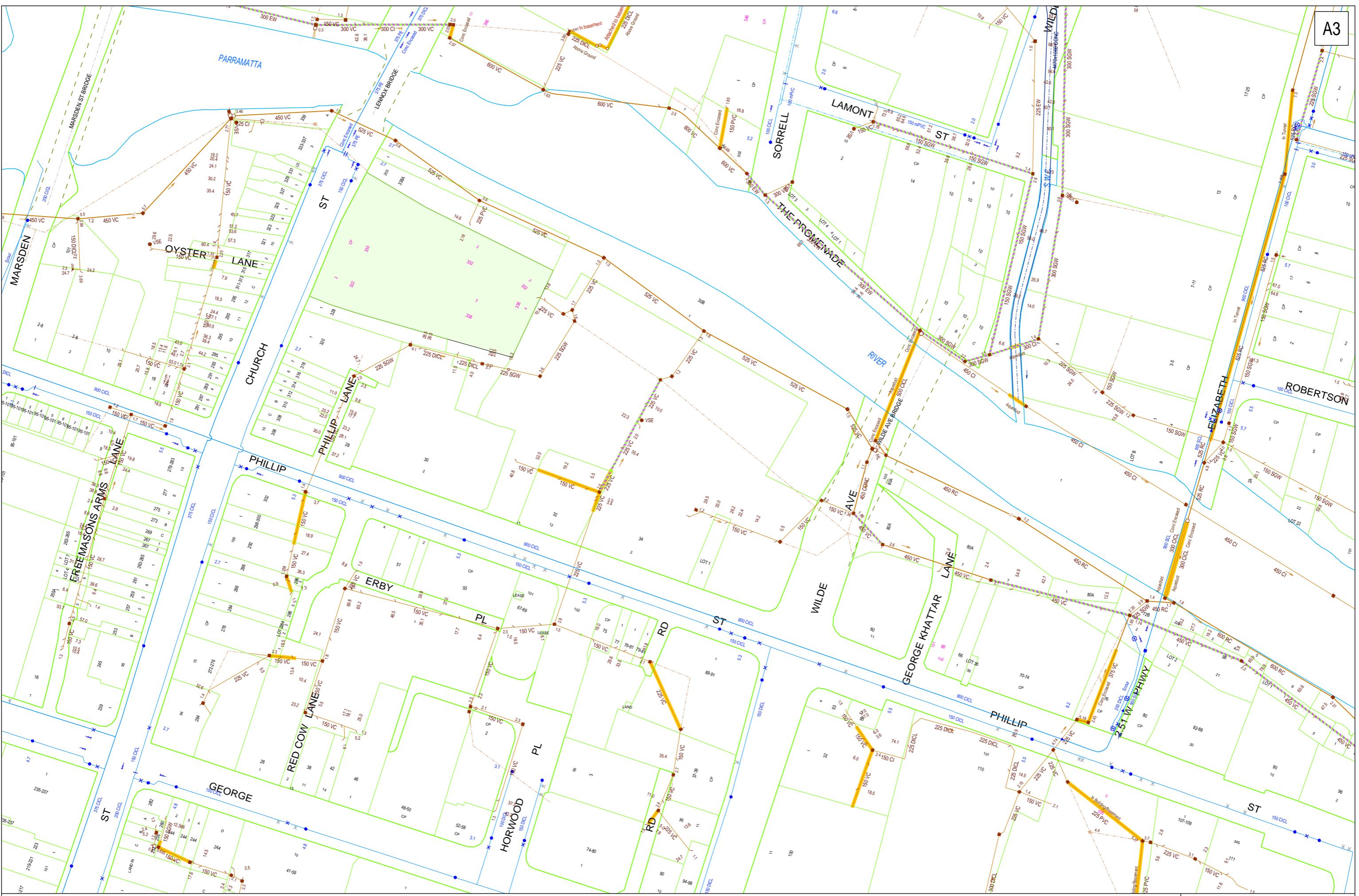
- Avoid Damaging Water and Sewer Pipelines
- Water Main Symbols
- Depths of Mains
- Guidelines for Building Over/Adjacent to Sydney Water Assets
- Clearances Between Underground Services

Or call **13 20 92** for Customer Enquires.

Note: The lodging of enquiries via www.1100.com.au will enable you to receive colour plans in PDF format 24 hours a day, 7 days a week via email.

This communication is confidential. If you are not the intended recipient, please destroy all copies immediately. Sydney Water Corporation prohibits unauthorised copying or distribution of this communication.

A3



DBYD Address:
n/a Wilde Ave
Paramatta NSW 2150

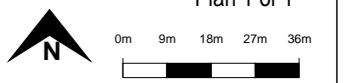
DBYD Job No: 19067032
DBYD Sequence No: 94984420

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SYDNEY WATER CORPORATION

Scale: 1:1500
Date of Production: 19/02/2020

Plan 1 of 1



Jemena



Network Protection

High Pressure - Assets Affected

In reply to your enquiry, there are **High Pressure Gas Mains** in the vicinity of your intended work, as generally illustrated on the attached map. There may also be other mains or services at the location, as discussed in the warning below. For an explanation of the map, please see the key below.

The following excavations guidelines apply:

Excavation Guidelines:

Prior to **any** excavations in this area, you **must** contact the High Pressure Response Coordinator on **1300 665 380**. (**Appointments will be coordinated with availability of a Jemena Representative**) to arrange a survey. For all works in the vicinity of High Pressure Gas Mains you must arrange for a Jemena Representative to attend and supervise all excavations. Charges apply for attendance of any works outside the hours of 7am to 4pm, Monday to Friday ("Standard Business Hours") and for any attendance during Standard Business Hours that is longer than 2 hours.

In accordance with clause 34(5) of the Gas Supply (Safety and Network Management) Regulation 2013 (NSW), you should be informed that all excavation, (including pot-holing by hand to confirm the location of pipes) should be performed in accordance with "**Work Near Underground Assets Guideline**" published in 2007 by the Work Cover Authority.

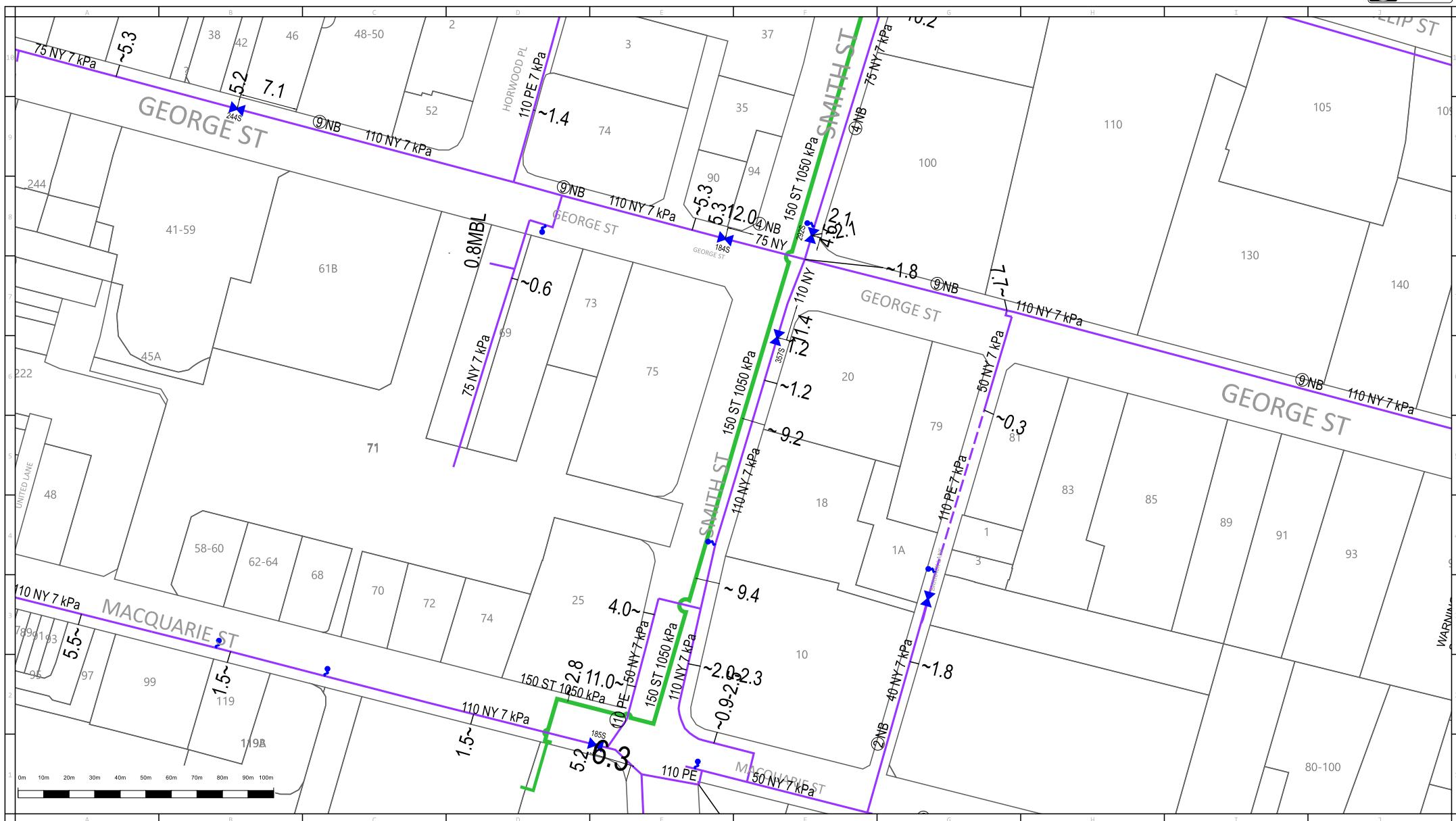
A copy of this Guideline is available at: www.workcover.nsw.gov.au

KEY							
Main	In Service	Proposed	High Pressure Main & Pipeline	In Service	Proposed	Fittings, Valves & Regulators	
Unknown Pressure	—	---	Critical Main (Treat as High Pressure Main)	● ● ●	—	Regulator Set	
Distribution - 2 kPa	—	---	Secondary Network - 1050 kPa	—	- - -	Regulator Station	
Distribution - 7 kPa	—	---	Isolated Steel Main	—	- - -	Automatic Line Break	
Distribution - 30 kPa	—	---	Primary - 3500 kPa	—	—	Valve	
Distribution - 100 kPa	—	---	JGN Trunk - 4000 to 14500 kPa	- - -	—	Valve	
Distribution - 210 kPa	—	---	Transmission	- - -	—	Siphon	
Distribution - 300 kPa	—	---	50mm Nylon main inserted into 6 inch (Nominal Bore) Cast Iron Main	⑥NB 50MM NY	—		
Distribution - 400 kPa	—	---	32mm Nylon main inserted into 50mm Steel Main	⑤0MM 32MM NY	—		
Proposed Isolate (coloured according to kPa)	██████████	—	~1.5 = Distance in metres of Main from Boundary Line				
Isolated Service	—	---	MBK = Metres Back of Kerb MFL = Metres from Fence Line				
Conduit or Casing	—	—					
Size & Material	100 PVC						
(PL - Plastic, PVC, PE, NY, ST)							

Warning: The enclosed plans show the position of Jemena Gas Networks (NSW) Ltd's underground gas mains and installations in public gazetted roads only. **Individual customers' services and services belonging to other third parties are not included** on these plans. These plans have been prepared solely for the use of Jemena Gas Networks (NSW) Ltd and Jemena Asset Management Pty Ltd (together "**Jemena**") and any reliance placed on these plans by you is entirely at your own risk. The plans may show the position of underground mains and installations relative to fences, buildings etc., as they existed at the time the mains etc were installed. The plans may not have been updated to take account of any subsequent change in the location or style of those features since the time at which the plans were initially prepared. Jemena makes no warranty as to the accuracy or completeness of the enclosed plans and does not assume any duty of care to you nor any responsibility for the accuracy, adequacy, suitability or completeness of the plans or for any error, omission, lack of detail, transmission failure or corruption in the information provided. Jemena does not accept any responsibility for any loss that you or anyone else may suffer in connection with the provision of these plans, however that loss may arise (including whether or not arising from the negligence of Jemena, its employees, agents, officers or contractors). The recipient of these plans must use their own care and diligence in carrying out their works and must carry out further surveys to locate services at their work site. Persons excavating or carrying out other earthworks will be held responsible for any damage caused to Jemena's underground mains and equipment. Jemena advises that you may be required to carry out potholing by hand if required by a Jemena Representative to confirm the location of Jemena's main and installations. This must also be performed by you under the supervision of a Jemena Representative and be carried out in accordance with the Working Near Underground Assets Guideline published in 2007 by Work Cover Authority

In case of Emergency Phone 131 909 (24 hours)

Admin
1300 880 906



WARNING: This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

	Main	In Service	Proposed
Unknown Pressure	—	—	—
Distribution - 2 kPa	yellow	yellow	—
Distribution - 7 kPa	purple	—	—
Distribution - 30 kPa	red	—	—
Distribution - 100 kPa	teal	—	—
Distribution - 210 kPa	blue	—	—
Distribution - 300 kPa	orange	—	—
Distribution - 400 kPa	dark brown	—	—

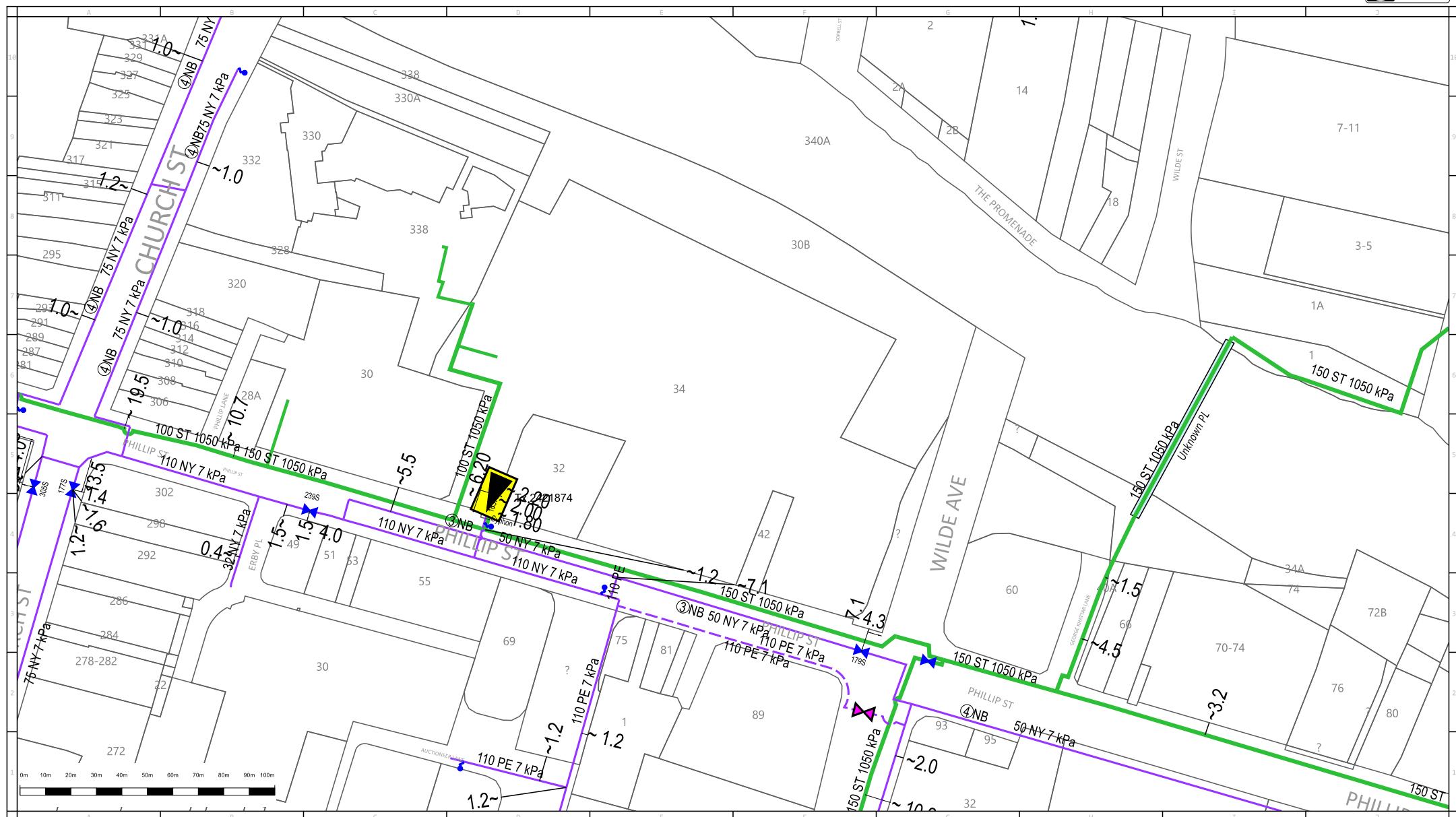
- Main
- Proposed Isolate
(coloured according to kPa) 
- Isolated Service
- Conduit or Casing
- Size & Material
- (PL - Plastic, PVC, PE, NY, ST)

High Pressure Main & Pipeline
Critical Main (Treat as High Pressure Main)
Secondary Network - 1050 kPa
Isolated Steel Main (Treat as High Pressure Main)
Primary - 3500 kPa
JGN Trunk - 7000 kPa
Transmission

In Service	Proposed	Fittings, Valves & Regulators
		Siphon
		Valve
		Regulator Set
		Regulator Station
		Automatic Line Break Valve

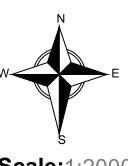
Distance in metres of Main from Boundary Line	~ 1.5
MBK = Metres Back of Kerb	
MFL = Metres from Fenceline	
50mm Nylon main inserted in 6 inch (Nominal Bore) East Iron Main	(B)NB 50MM NY
32mm Nylon main inserted into 50mm Steel Main	(E)MM 32MM NY

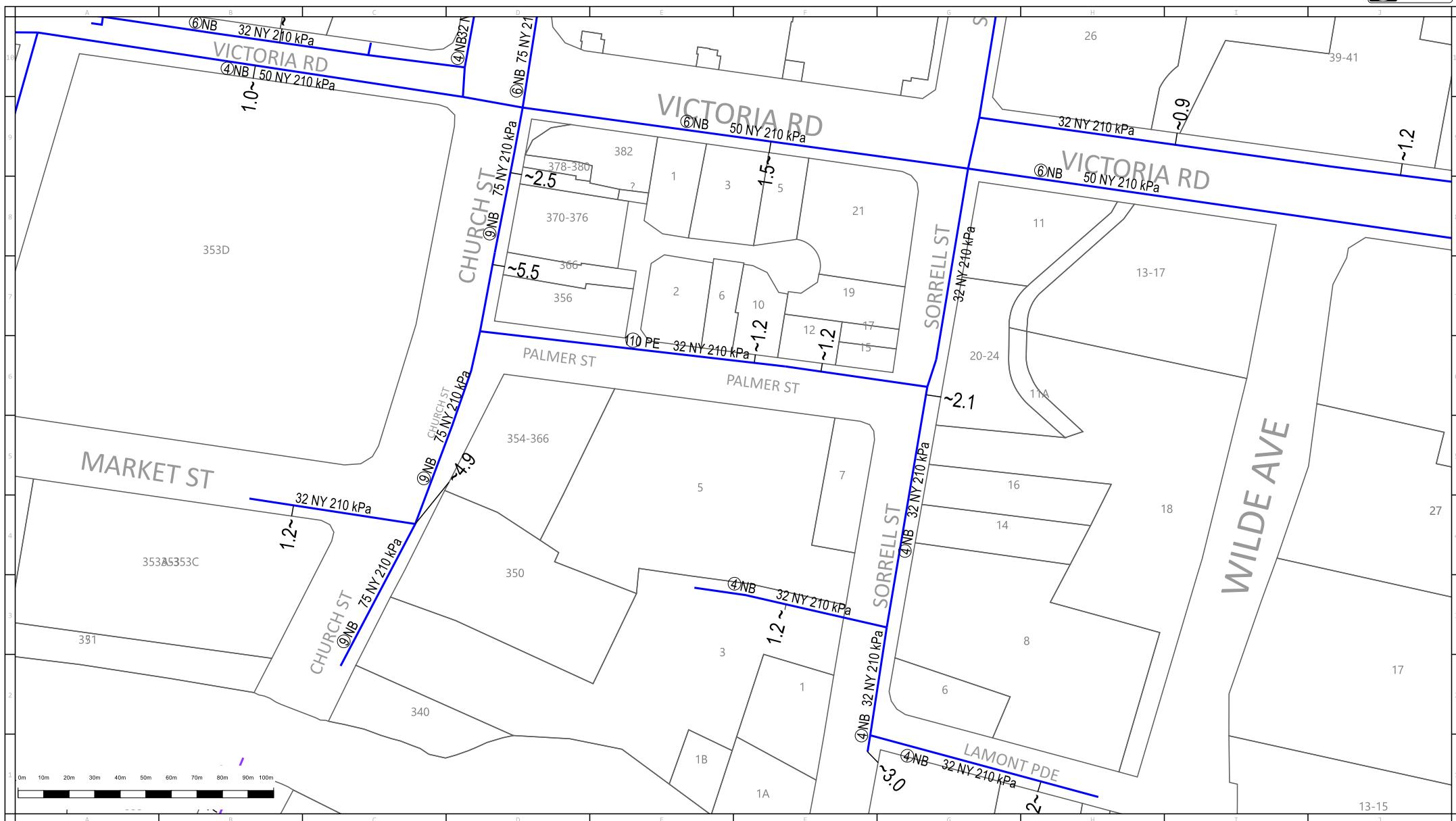
Issue Date: 19/02/2020
DBYD Seq No: 94984419
DBYD Job No: 19067032



WARNING: This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

Issue Date: 19/02/2020
DBYD Seq No: 94984419
DBYD Job No: 19067032

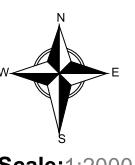




WARNING: This is a representation of Jemena Gas Networks underground assets only and may not indicate all assets in the area. It must not be used for the purpose of exact asset location in order to undertake any type of excavation. This plan is diagrammatic only, and distances scaled from this plan may not be accurate. Please read all conditions and information on the attached information sheet. This extract is subject to those conditions. The information contained on this plan is only valid for 28 days from the date of issue.

Main	In Service	Proposed	Main	High Pressure Main & Pipeline	In Service	Proposed	Fittings, Valves & Regulators
Unknown Pressure	-----	-----	Proposed Isolate (coloured according to kPa)	██████████	Critical Main (Treat as High Pressure Main)	██████████	Siphon
Distribution - 2 kPa	----	----	Isolated Service	-----	Secondary Network - 1050 kPa	---	Valve
Distribution - 7 kPa	-----	-----	Conduit or Casing	██████████	Isolated Steel Main (Treat as High Pressure Main)	-----	Regulator Set
Distribution - 30 kPa	-----	-----	Size & Material (PL - Plastic, PVC, PE, NY, ST)	100 PVC	Primary - 3500 kPa	██████████	Regulator Station
Distribution - 100 kPa	-----	-----			JGN Trunk - 7000 kPa	██████████	Automatic Line Break Valve
Distribution - 210 kPa	-----	-----			Transmission	██████████	
Distribution - 300 kPa	-----	-----					
Distribution - 400 kPa	-----	-----					

Issue Date: 19/02/2020
DBYD Seq No: 94984419
DBYD Job No: 19067032



Electrical – Endeavour Energy

WARNING

- All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty (**20**) working days of the original plan issue date.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organic-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

INFORMATION PROVIDED BY ENDEAVOUR ENERGY

- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
- Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

DISCLAIMER

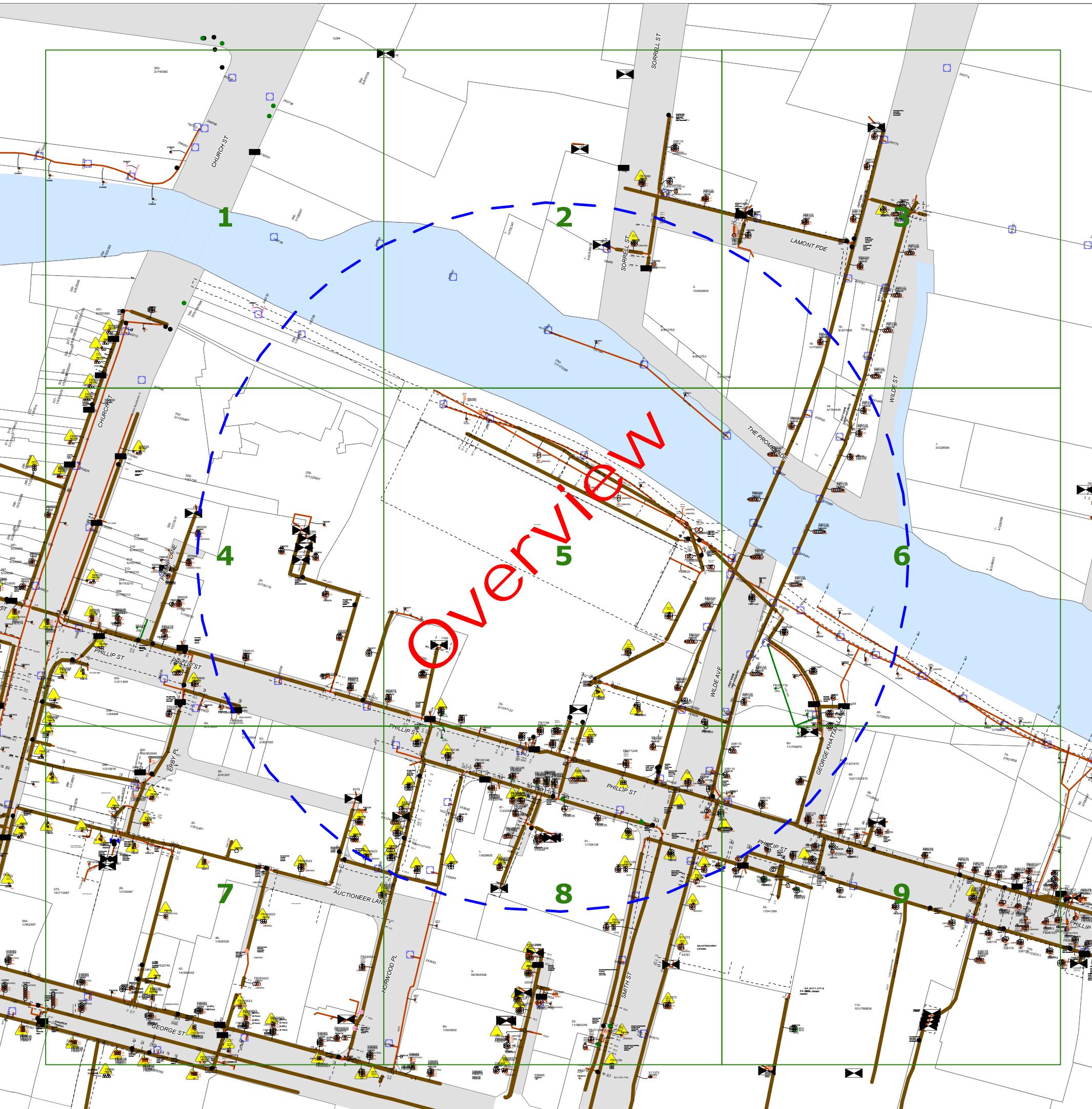
Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.


LEGEND

- | | |
|--------|-----------------------------|
| ○ or ■ | Street light column |
| ■ | Padmount substation |
| □ or ■ | Overground pillar (O.G.Box) |
| ☒ | Underground pit |
| — | Duct run |
| — | Cable run |
| ○○○ | Typical duct section |
| ▲ | Asbestos warning |


NOT TO SCALE

DBYD Sequence No.:	93955496
Issued Date:	20/01/2020



WARNING

- All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty (**20**) working days of the original plan issue date.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organic-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

INFORMATION PROVIDED BY ENDEAVOUR ENERGY

- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
- Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

DISCLAIMER

Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

WARNING
 THIS EXCAVATION IS IN THE VICINITY OF
 ENDEAVOUR ENERGY TRANSMISSION, PILOT,
 COMMUNICATION OR FIBRE OPTIC CABLES
 PLEASE RING 9853 7121 or MOB. 0407 468 626
4 WORKING DAYS BEFORE COMMENCING WORK

LEGEND

- | | | |
|--|--|-----------------------------|
| | | Street light column |
| | | Padmount substation |
| | | Overground pillar (O.G.Box) |
| | | Underground pit |
| | | Duct run |
| | | Cable run |
| | | Typical duct section |
| | | Asbestos warning |


NOT TO SCALE

DBYD Sequence No.:	93955496
Issued Date:	20/01/2020



Endeavour Energy

WARNING

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DISCLAIMER

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WARNING

**THIS EXCAVATION IS IN THE VICINITY OF
ENDEAVOUR ENERGY TRANSMISSION, PILOT,
COMMUNICATION OR FIBRE OPTIC CABLES
PLEASE RING 9853 7121 OR MOB. 0407 468 626**

LEGEND

-  or  Street light column
 -  Padmount substation
 -  Or  Overground pillar (O.G.Box)
 -  Underground pit
 -  Duct run
 -  Cable run
 -  Typical duct section
 -  Asbestos warning

N

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NOT TO SCALE

DBYD Sequence No.:	93955496
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Cadastre: © Land and Property Information 2015, 2016



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4 WORKING DAYS BEFORE COMMENCING WORK

LEGEND

- | | | | |
|--|----------------------|---------------------|-----------------------------|
| | or | | Street light column |
| | | Padmount substation | |
| | or | | Overground pillar (O.G.Box) |
| | | Underground pit | |
| | Duct run | | |
| | Cable run | | |
| | Typical duct section | | |
| | Asbestos warning | | |

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NOT TO SCALE

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Issued Date:	20/01/2020

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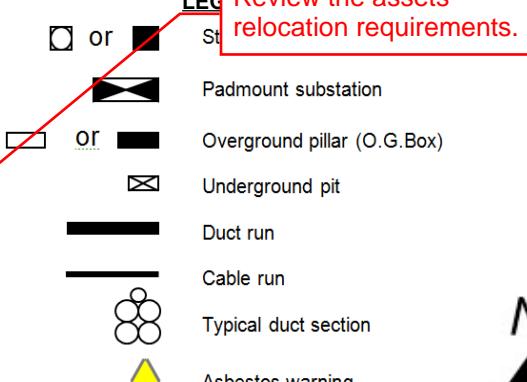
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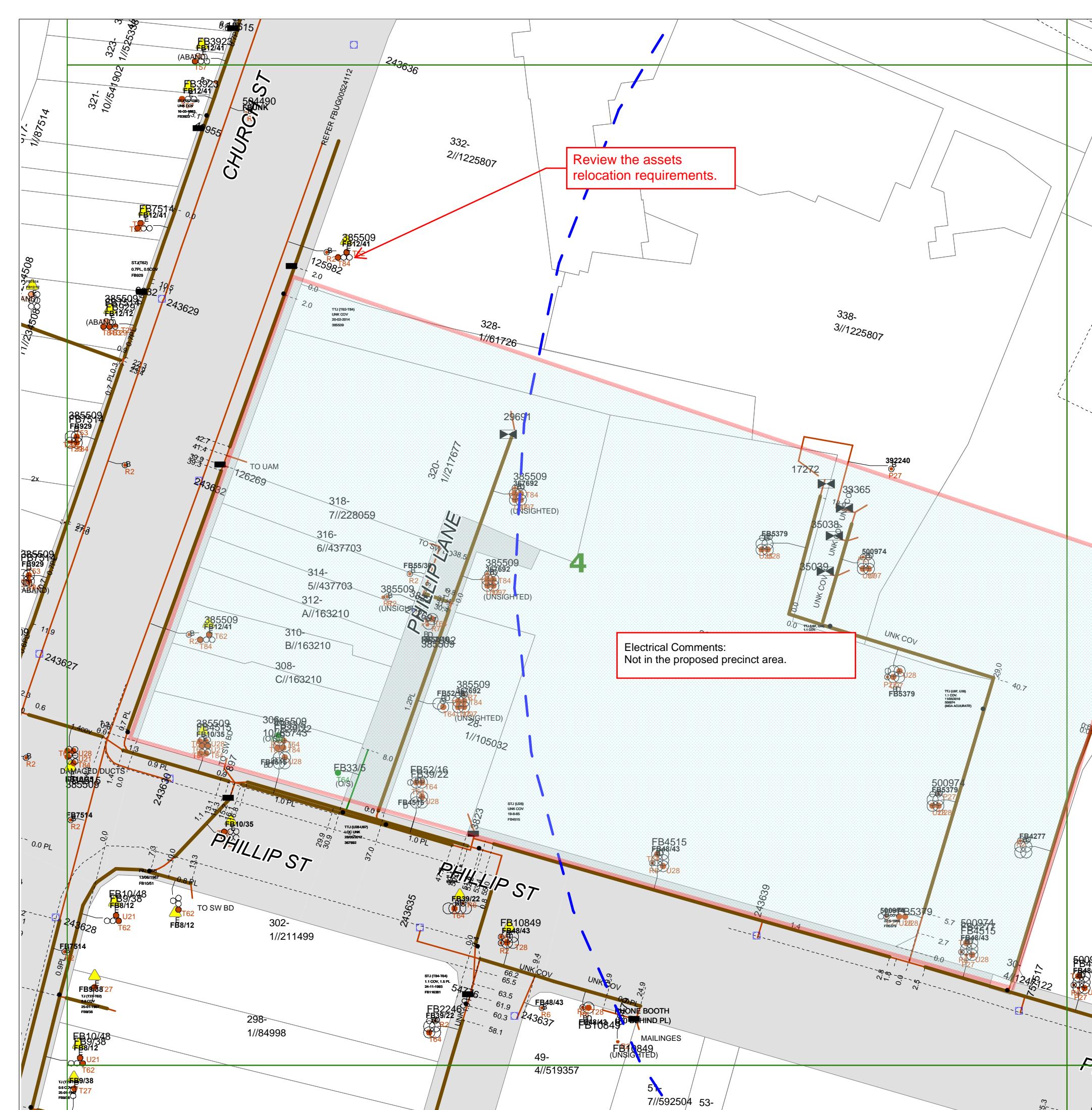
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4 WORKING DAYS BEFORE COMMENCING WORK

Review the assets relocation requirements.


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LEGEND

- | | | |
|--|--|-----------------------------|
| | | Street light column |
| | | Padmount substation |
| | | Overground pillar (O.G.Box) |
| | | Underground pit |
| | | Duct run |
| | | Cable run |
| | | Typical duct section |
| | | Asbestos warning |


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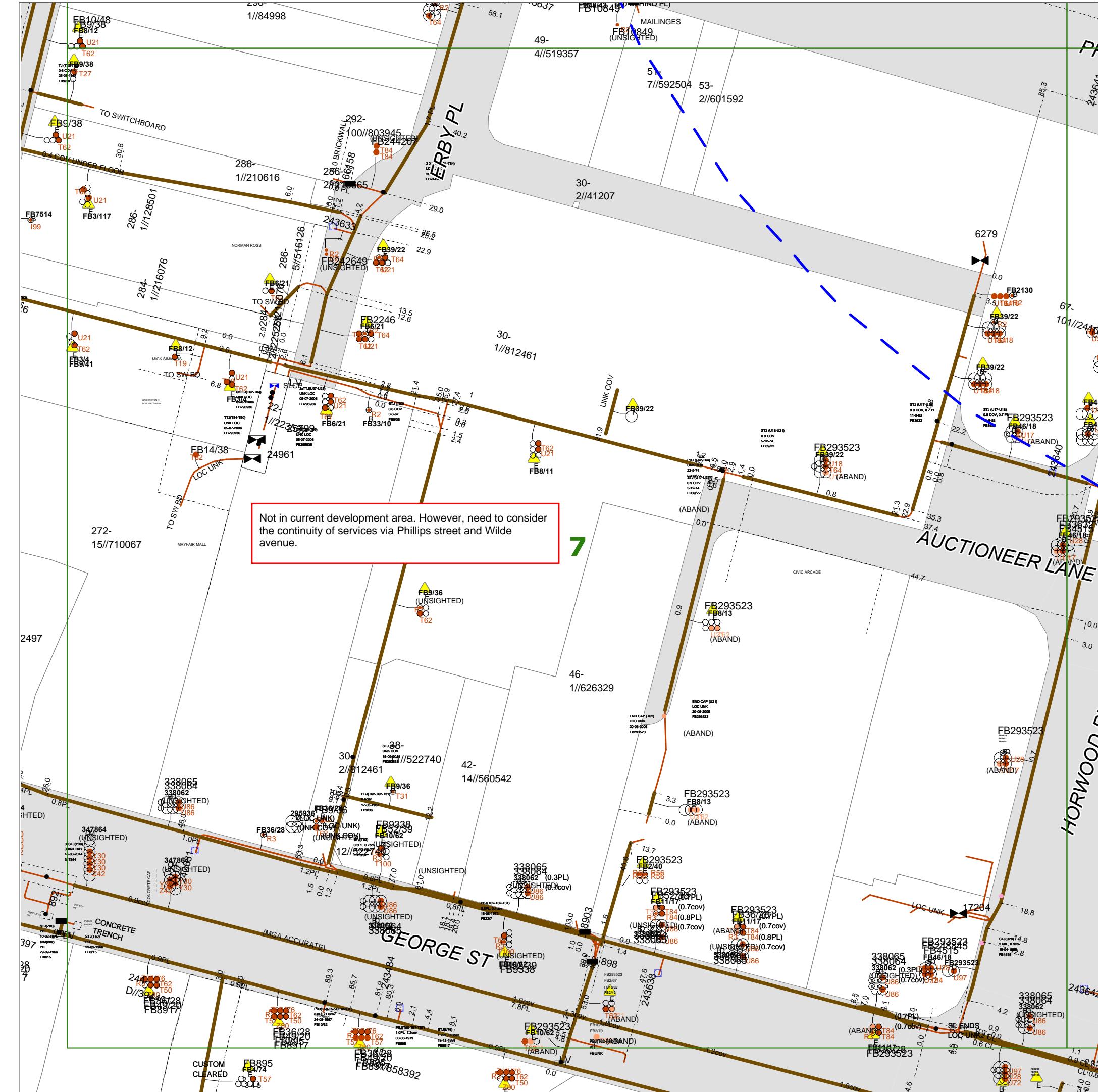
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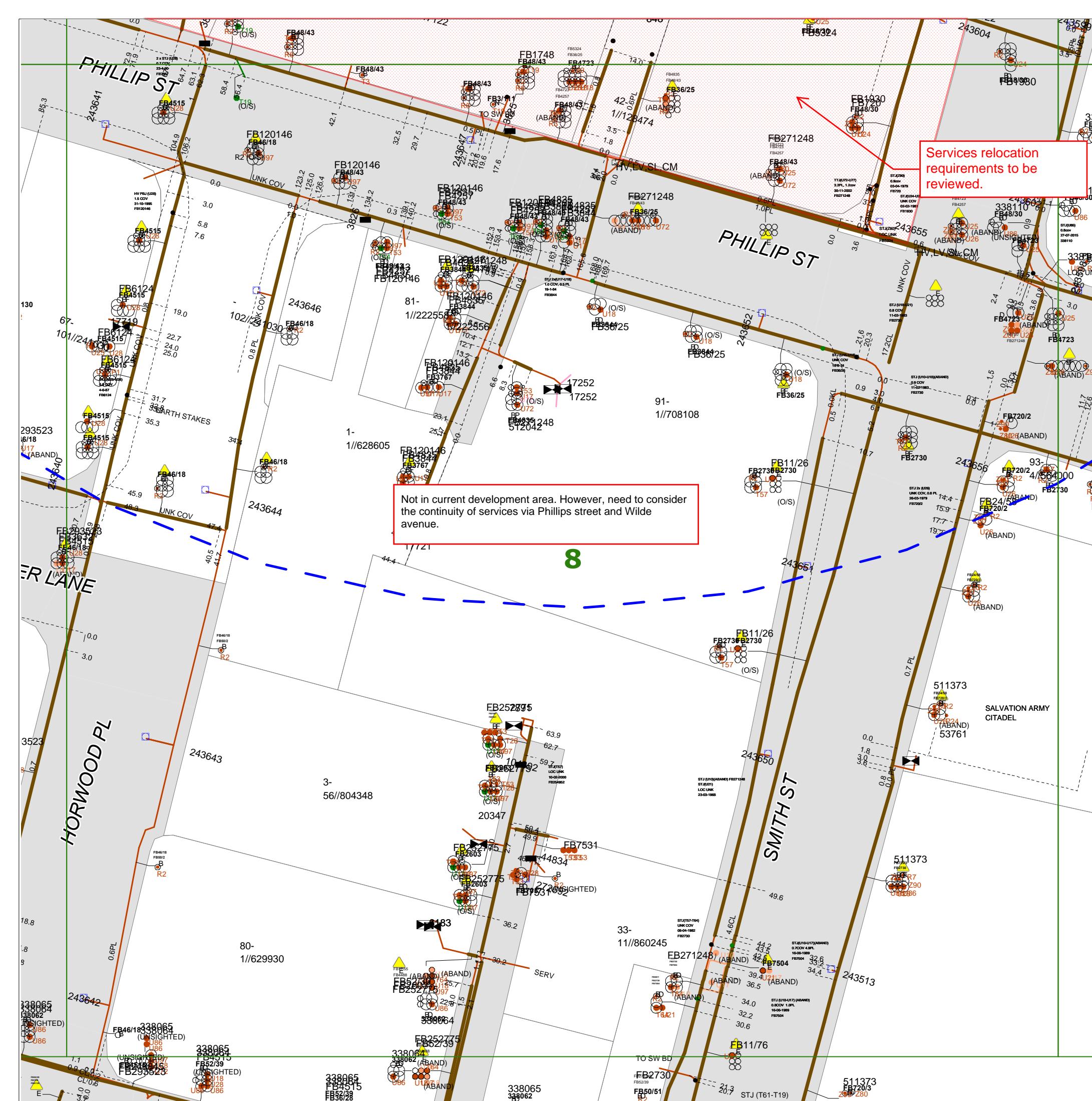
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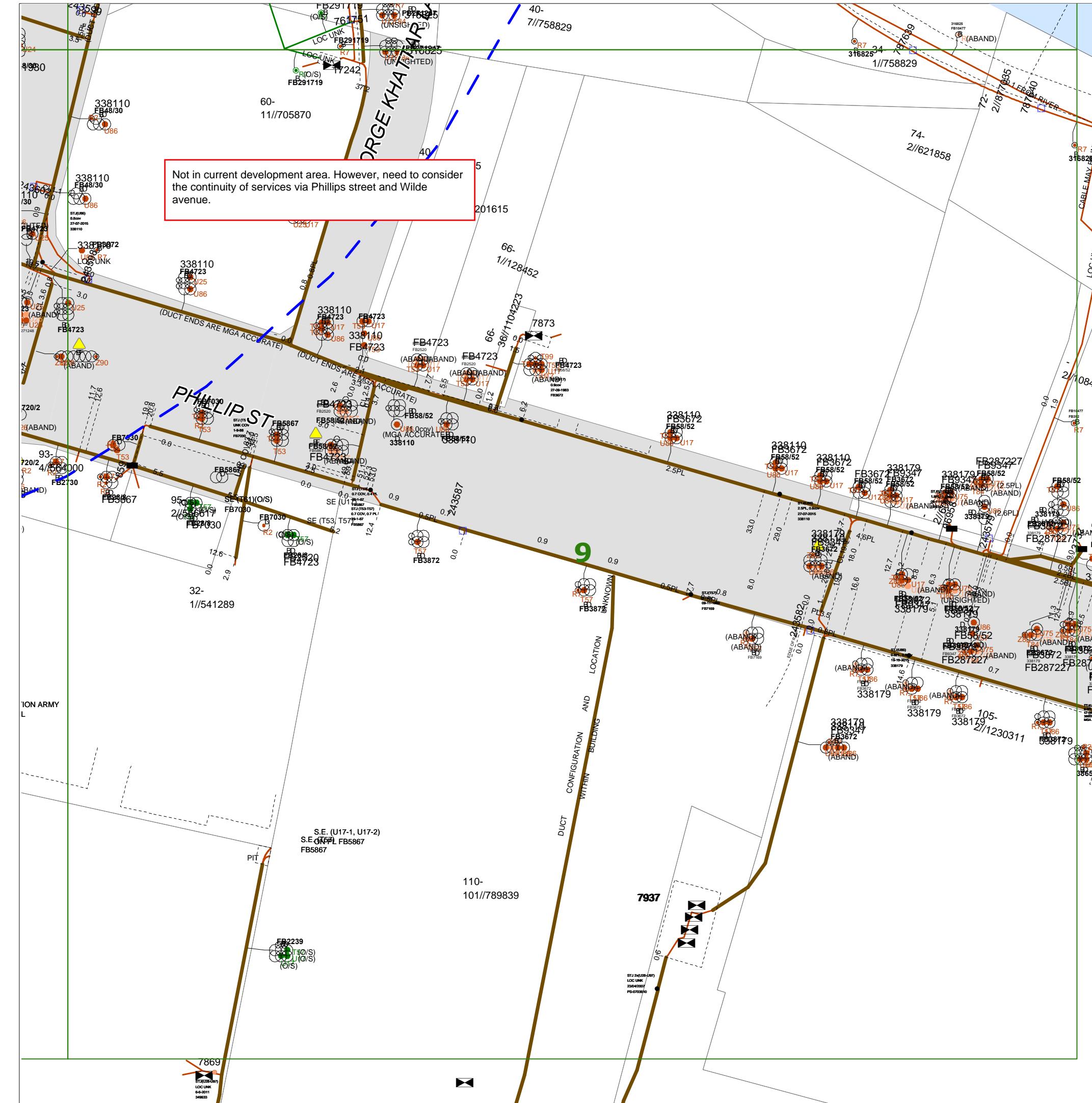
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Telecommunications - AAPT



Response Cover Letter

Date: 19/02/2020

AAPT (PowerTel) Limited
GPO Box 7041 Sydney 2001
Phone: 1800 786 306
A/H: 1800 786 306

To:

Mr GABRIEL CHEUNG Customer ID: 2229067
Arup
LEVEL 5 151 CLARENCE STREET
SYDNEY NSW 2000

Email: gabriel.h.cheung@arup.com
Phone: 0293209320
Fax: Not Supplied
Mobile: Not Supplied



Dear Mr GABRIEL CHEUNG

The following is our response to your Dial Before You Dig enquiry.

AAPT ASSETS ARE AFFECTED BY YOUR ENQUIRY 94984414

Sequence Number: 94984414

Location: Wilde Ave
Parramatta
NSW
2150

Commencement Date: 15/07/2020

In relation to your enquiry at the above address, AAPT (PowerTel) advises as follows.

The records of AAPT (PowerTel) Limited disclose that there are underground FIBRE OPTIC / TELECOMMUNICATIONS cables in the vicinity of the above enquiry.

Your enquiry has been dispatched to an AAPT (PowerTel) Route Technician who will contact you ASAP with further information regarding the exact location of the AAPT (PowerTel) network.

Should the scope of your work or the area of your work change, please contact as below to receive further advice. Due to continued network expansion, the network information can only be considered valid and accurate for 28 days from issue.

AAPT will seek compensation for any damage to its network through negligence or ignorance of duty of care. Should you require any further information, please contact as below:

AAPT
Ph: 1800 786 306

DUTY OF CARE

Due to the nature of underground cables and the age of some cables and records the accuracy and/or completeness of the information cannot be guaranteed and, accordingly, they are indicative only and as a result AAPT (PowerTel) does not accept any responsibility for any inaccuracies of its plans. They should not be solely relied upon when undertaking underground works. It is also inaccurate to assume that fibre optic cables follow straight lines and careful onsite investigations are essential to locate an assets exact position.

The following minimum clearances must be maintained.

- 1) 300mm when laying asset's inline, horizontal or vertical.**
- 2) 500mm when operating vibrating equipment. Eg: Vibrating plates.**
- 3) 1000mm when operating mechanical excavators or Jackhammers.**

ON SITE LOCATING OF AAPT'S (POWERTEL) CABLING AND INFRASTRUCTURE MUST BE CONDUCTED BY AAPT'S (POWERTEL) PERSONNEL ONLY. AAPT (POWERTEL) WILL USE ALL LEGAL MEANS TO SEEK DAMAGES AND ANY OTHER REMEDIES AVAILABLE TO IT IN THE EVENT THAT ITS CABLE OR ANY OTHER NETWORK INFRASTRUCTURE IS DAMAGED BY YOU OR YOUR PERSONNEL AND/OR CONTRACTORS. IT IS AN OFFENCE TO OPEN ANY AAPT'S (POWERTEL) PITS OR MANHOLES AND/OR ANY ASSOCIATED INFRASTRUCTURE BELONGING TO OR PART OF AAPT'S (POWERTEL) NETWORK

Due to the inherent dangers associated with excavation in the vicinity of underground cables, precautions should be taken in the undertaking of any underground works, including (but not limited to) the following.

All excavation sites should be examined for underground cables by careful hand excavation. Cable cover slabs & Manhole covers must not be disturbed. Hand excavation needs to be undertaken with extreme care to minimise the possibility of damage to the cable.

EG: Blades of hand equipment should be orientated parallel to the line of the cable rather than digging across the cable.

All personnel must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.

All excavations must be undertaken in accordance with the relevant legislation and regulations.

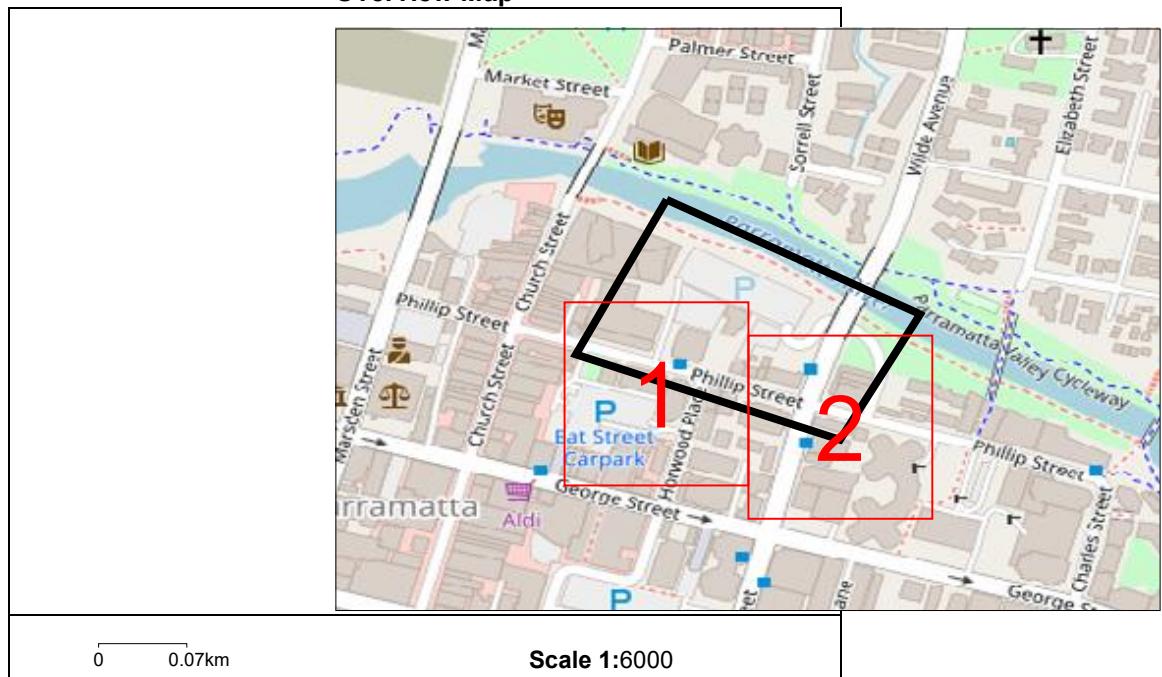
ANY DAMAGE TO AAPT (POWERTEL) NETWORK MUST BE REPORTED IMMEDIATELY TO 1800 786 306

Any information provided is valid only for 28 days from the date of issue of this document.

If the work operations extend beyond this period, or if the designs are altered in any way, you are requested to re-submit your proposal for re-assessment by contacting Dial Before You Dig ph:1100 or www.dialbeforeyoudig.com.au

Onsite visits by AAPT (PowerTel) agents may incur costs, this would solely depend on the type and extent of the work to be carried out.
EG: Major roadwork's, network relocation's, Large planning and design work's.

Overview Map



AAPT (for information specific to this job only) PH 1800 786 306



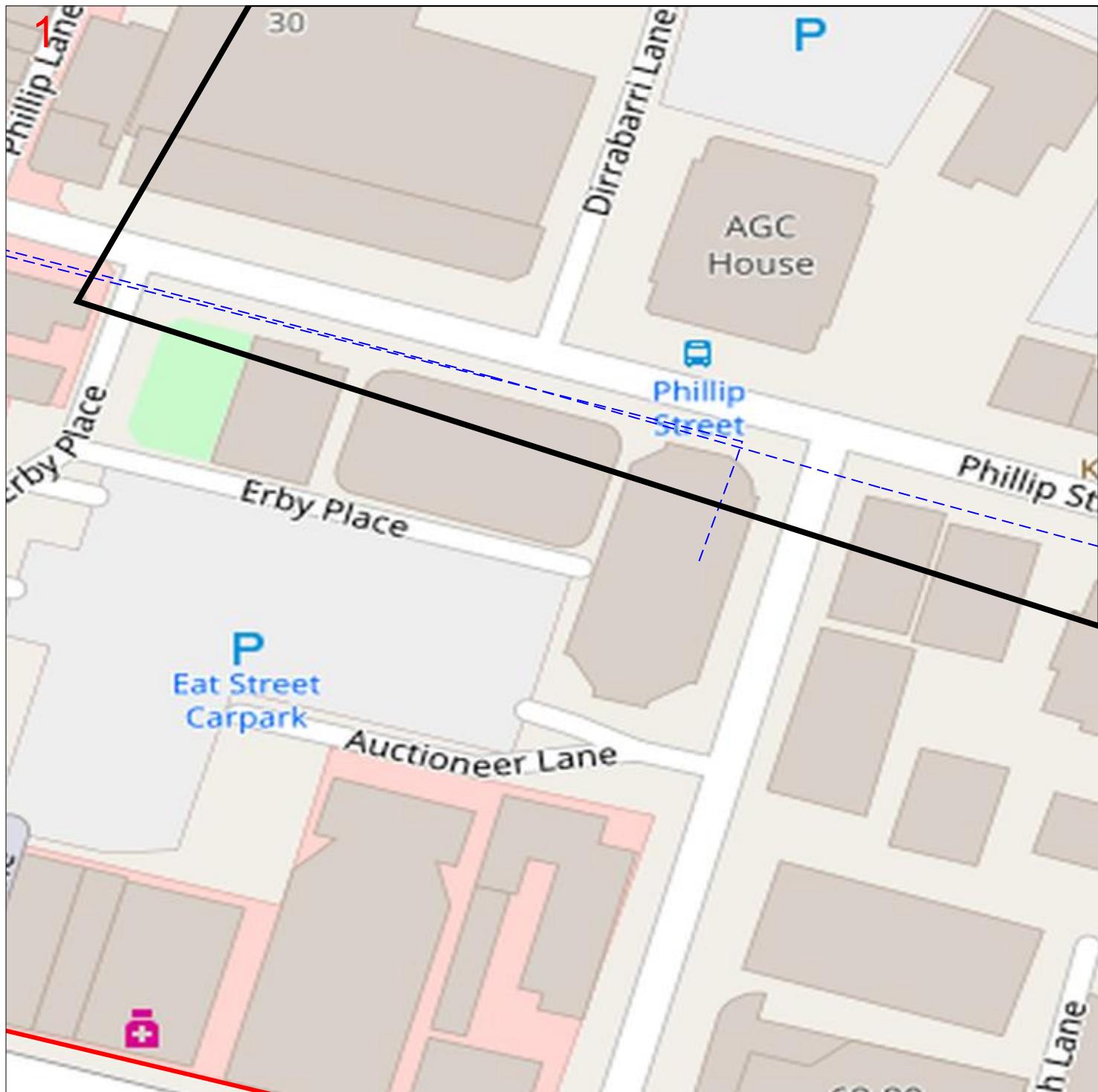
The Essential First Step.



PowerTel
Simply Business



AAPT (PowerTel) Limited GPO Box 7041 Sydney 2001
Phone: 1800 786 306 A/H 1800 786 306



Enquiry Number: 94984414

Map Sheet: 1

Scale: 1:750

0 0.008km

LEGEND:

- DBYD Work Area
- AAPT Duct
- Non AAPT Duct
- AAPT Manhole



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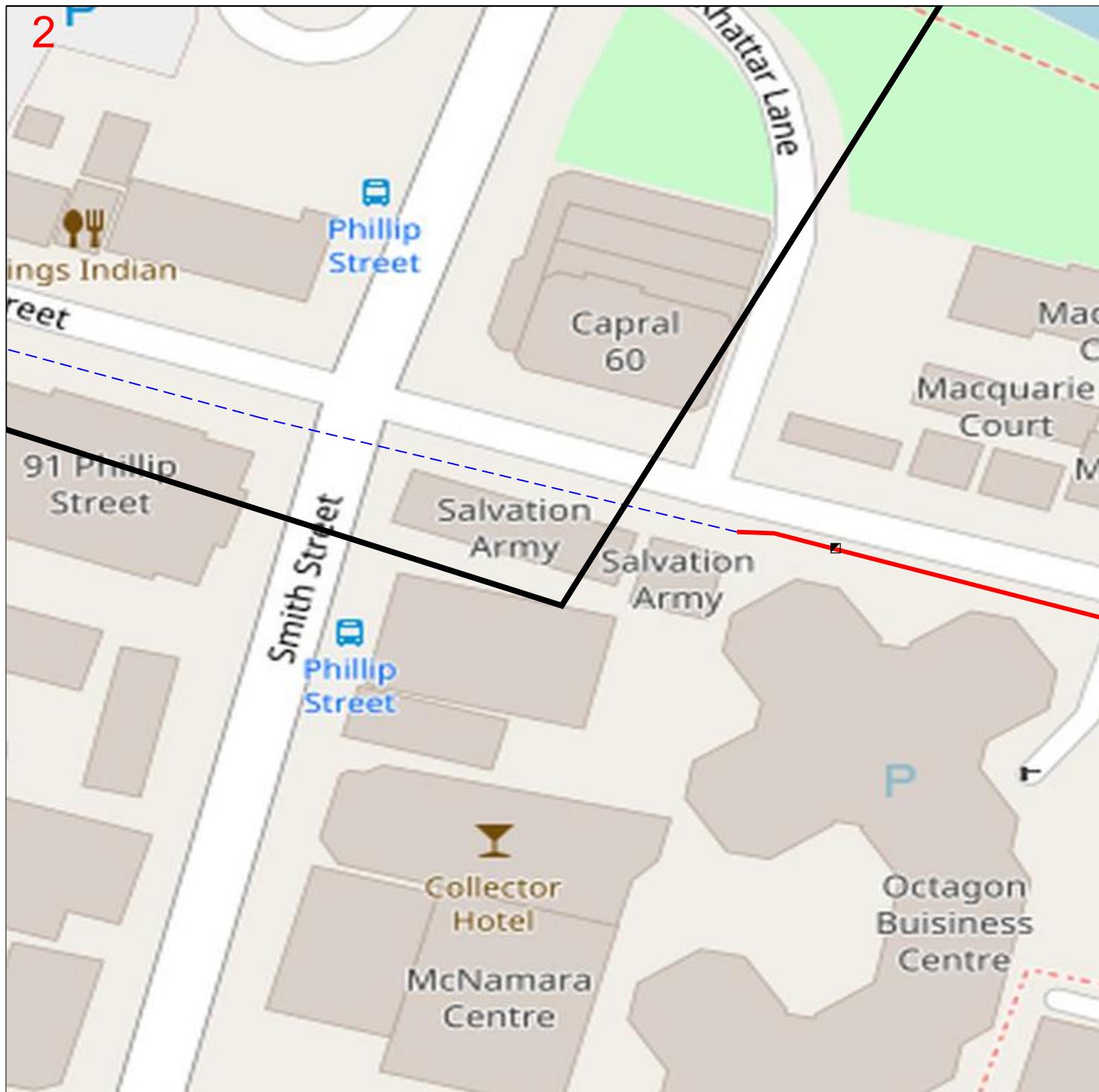


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Map Sheet: 2

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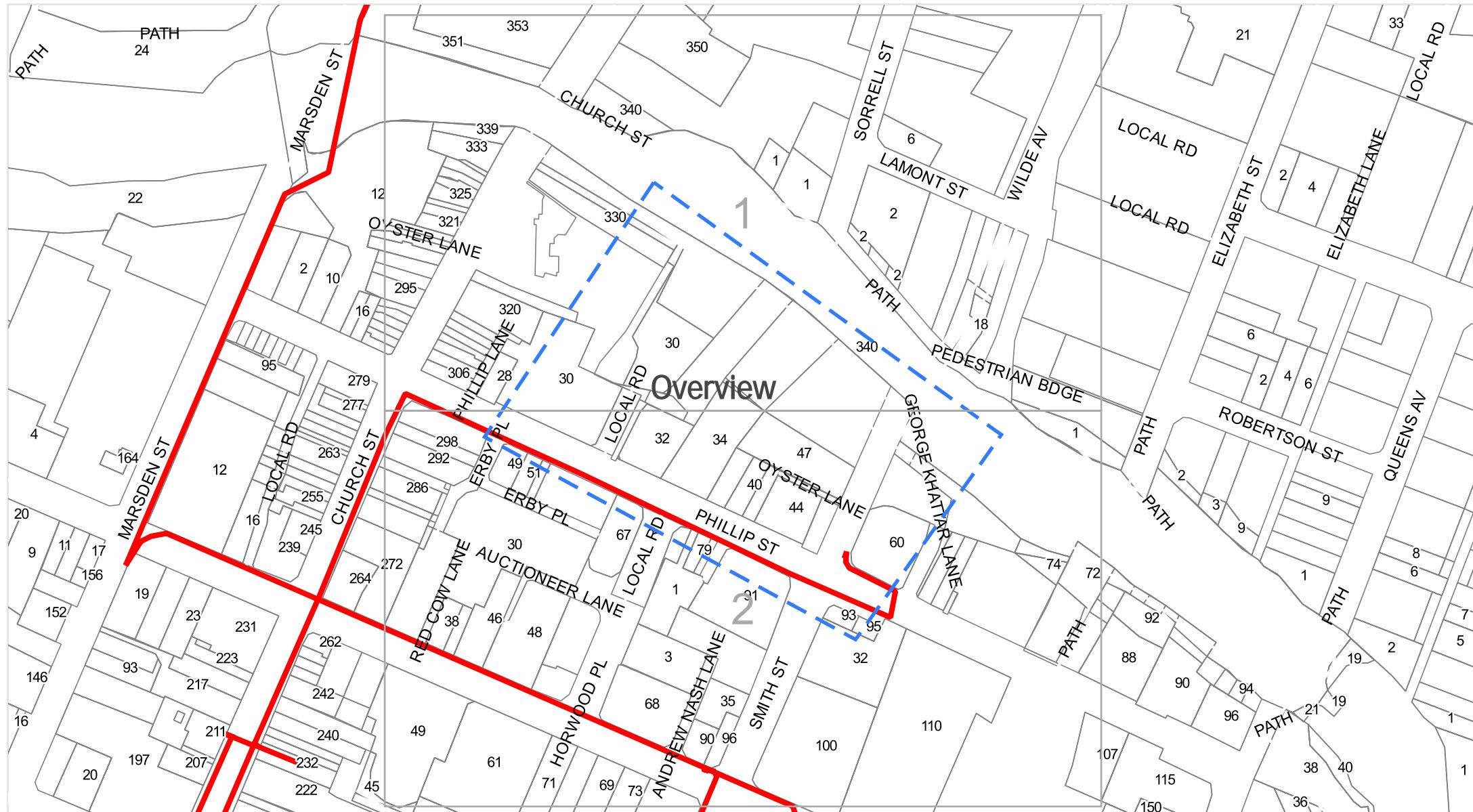
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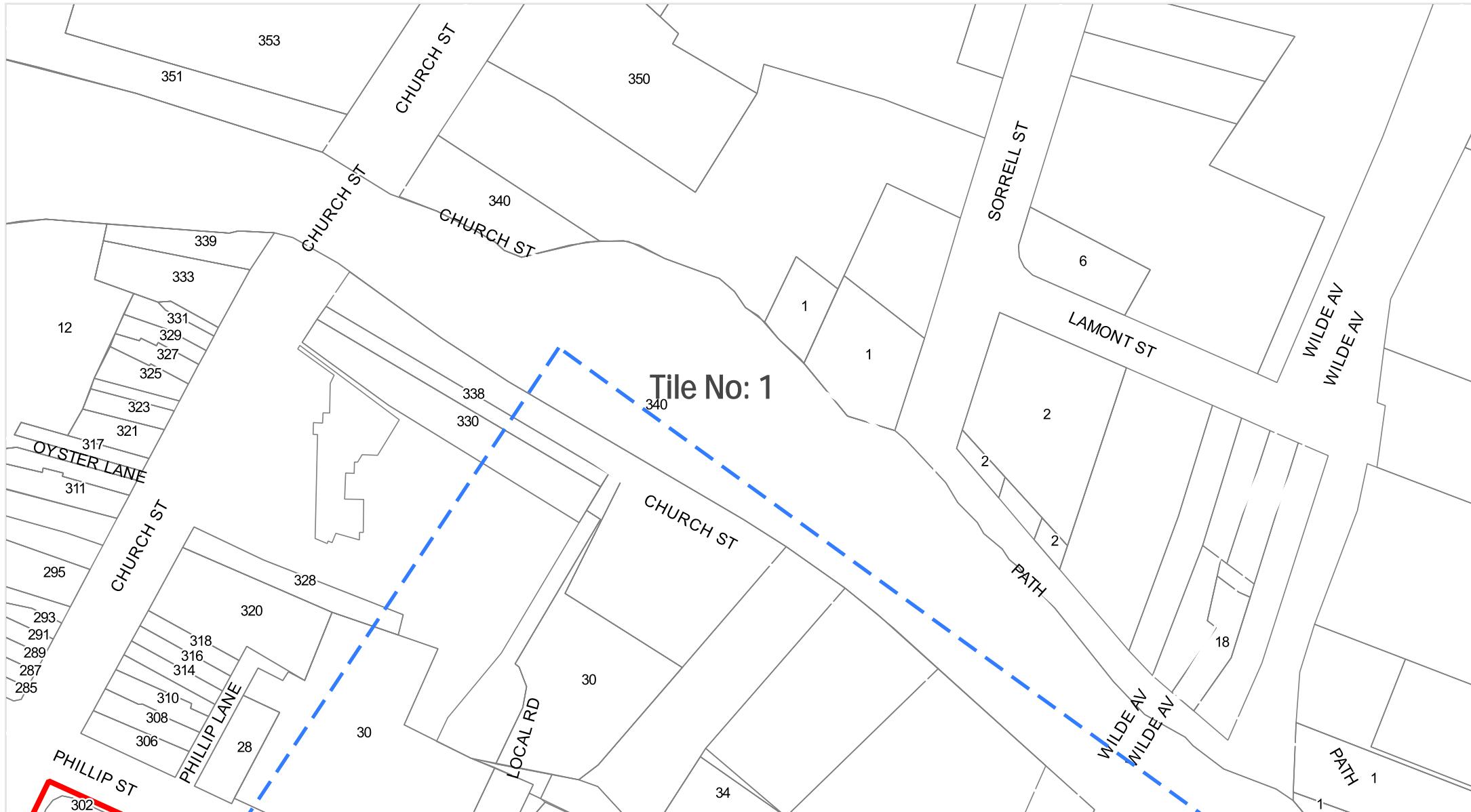
Telecommunications - Aarnet



Legend | Scale: 1:3075

- Enquiry Area
- AARNet Fibre Optic Assets
- AARNet Power Assets
- Cadastre

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Legend | Scale: 1:1500

- Enquiry Area
- AARNet Fibre Optic Assets
- AARNet Power Assets
- Cadastre

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Legend | Scale: 1:1500



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- AARNet Power Assets
- Cadastre

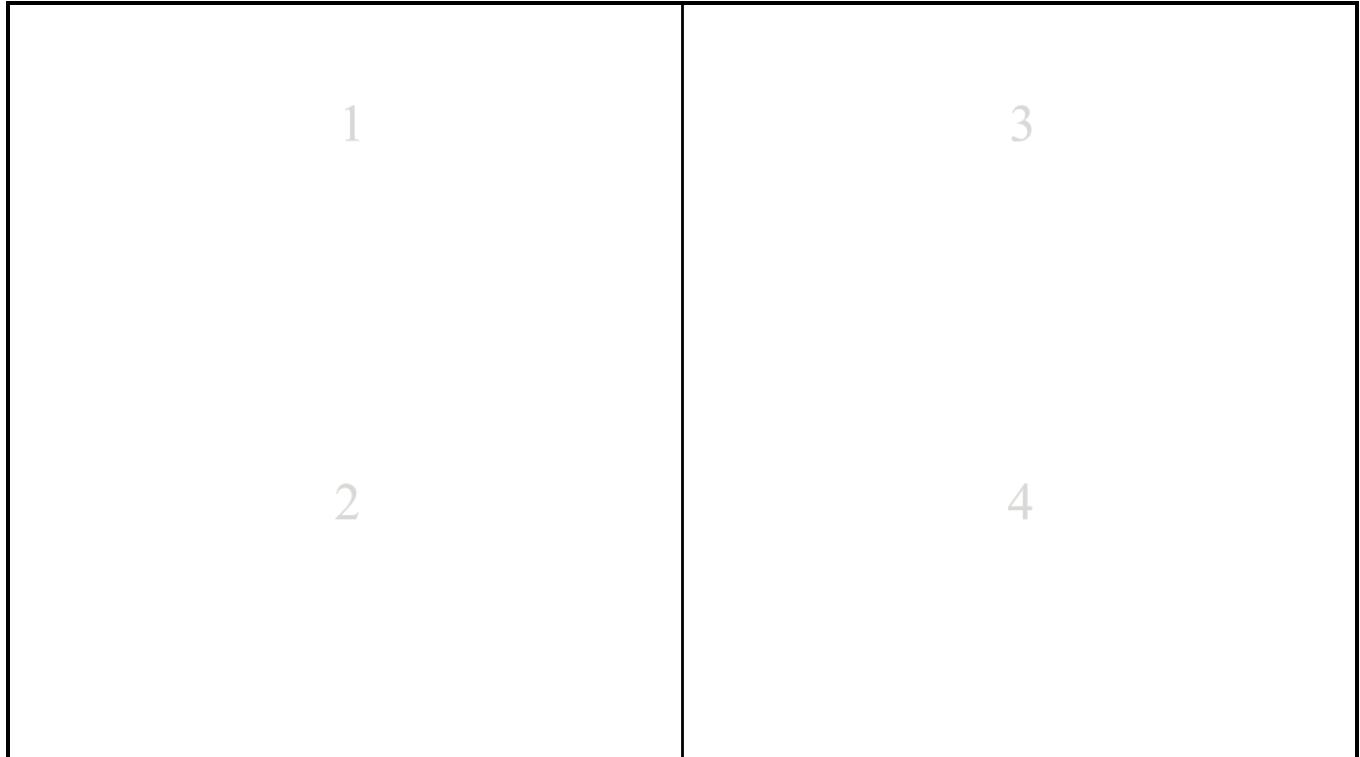
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Telecommunications – NBN



Indicative Plans

Issue Date:	19/02/2020	 A logo for "DIAL BEFORE YOU DIG" with the website www.1100.com.au. It features a red circle with a white "X" over a silhouette of a person digging with a shovel.
Location:	Wilde Ave , Parramatta , NSW , 2150	

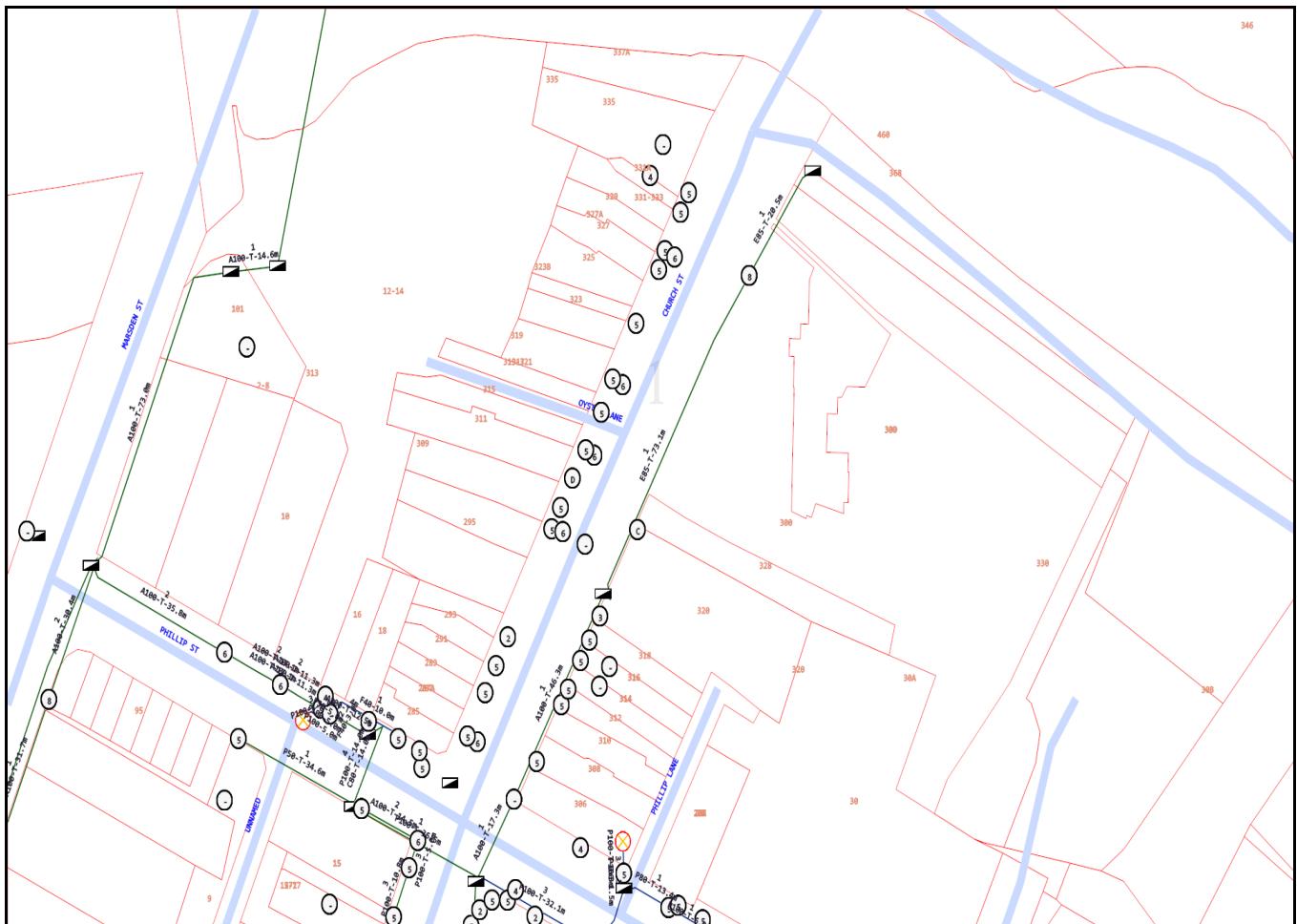


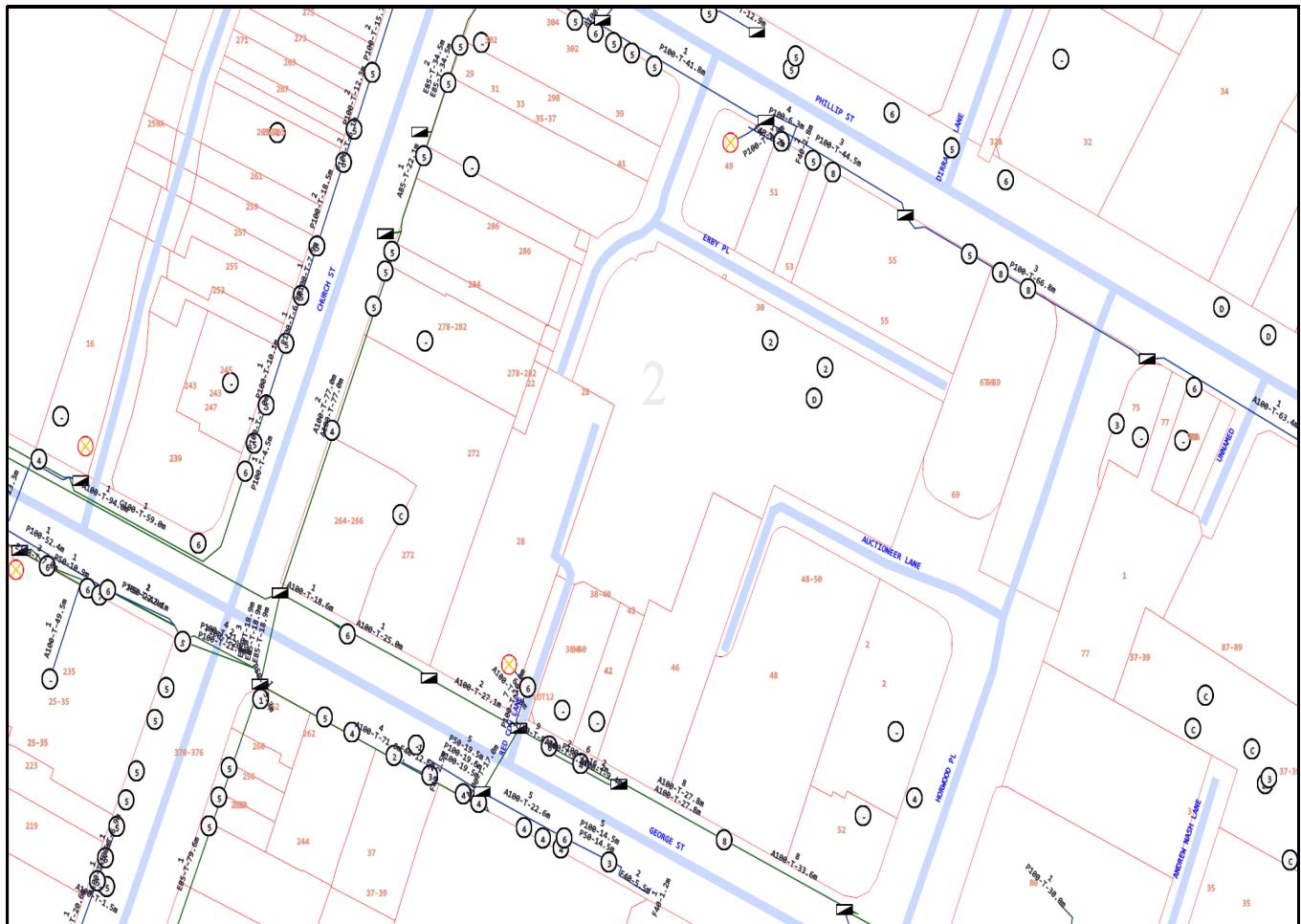


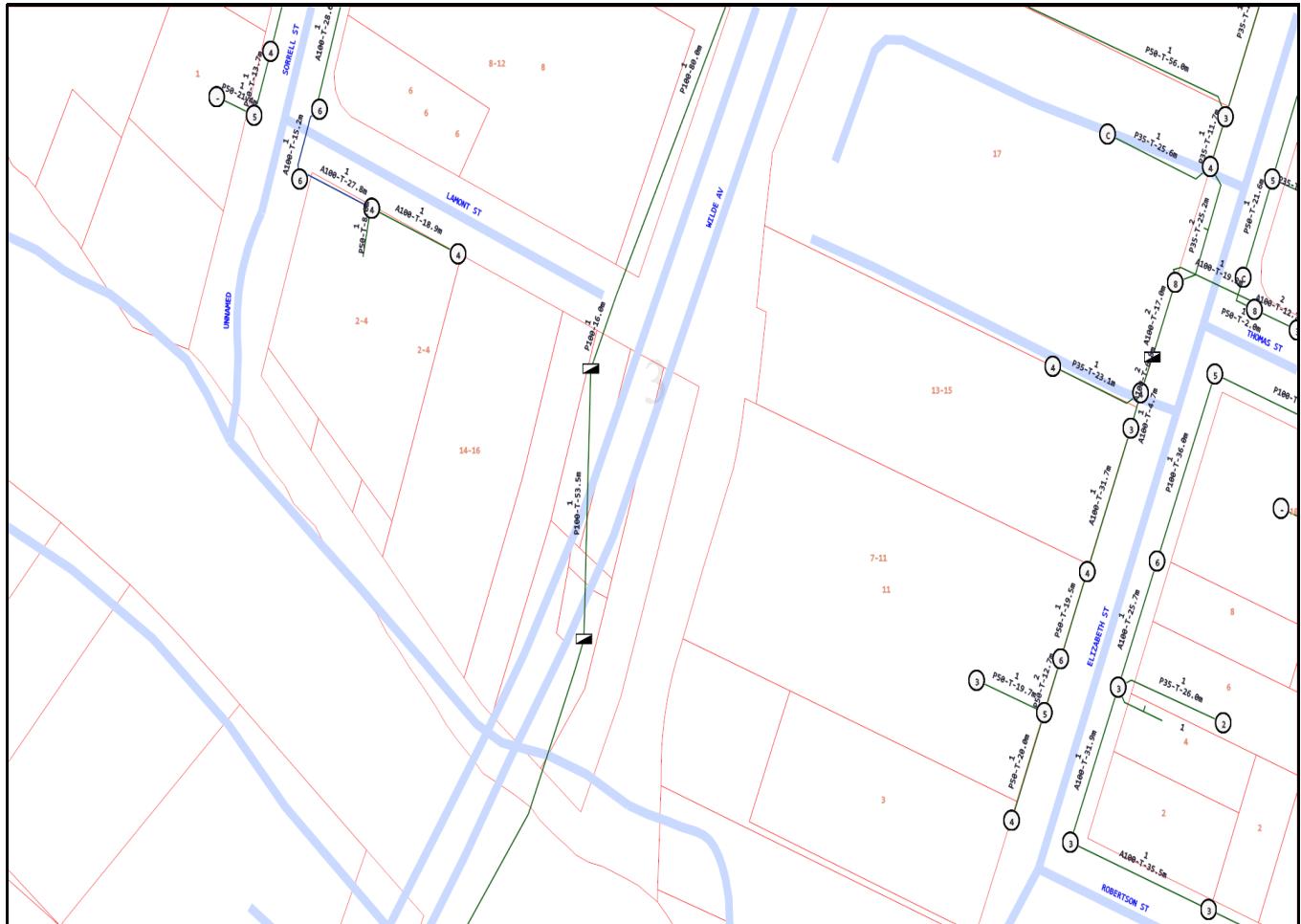
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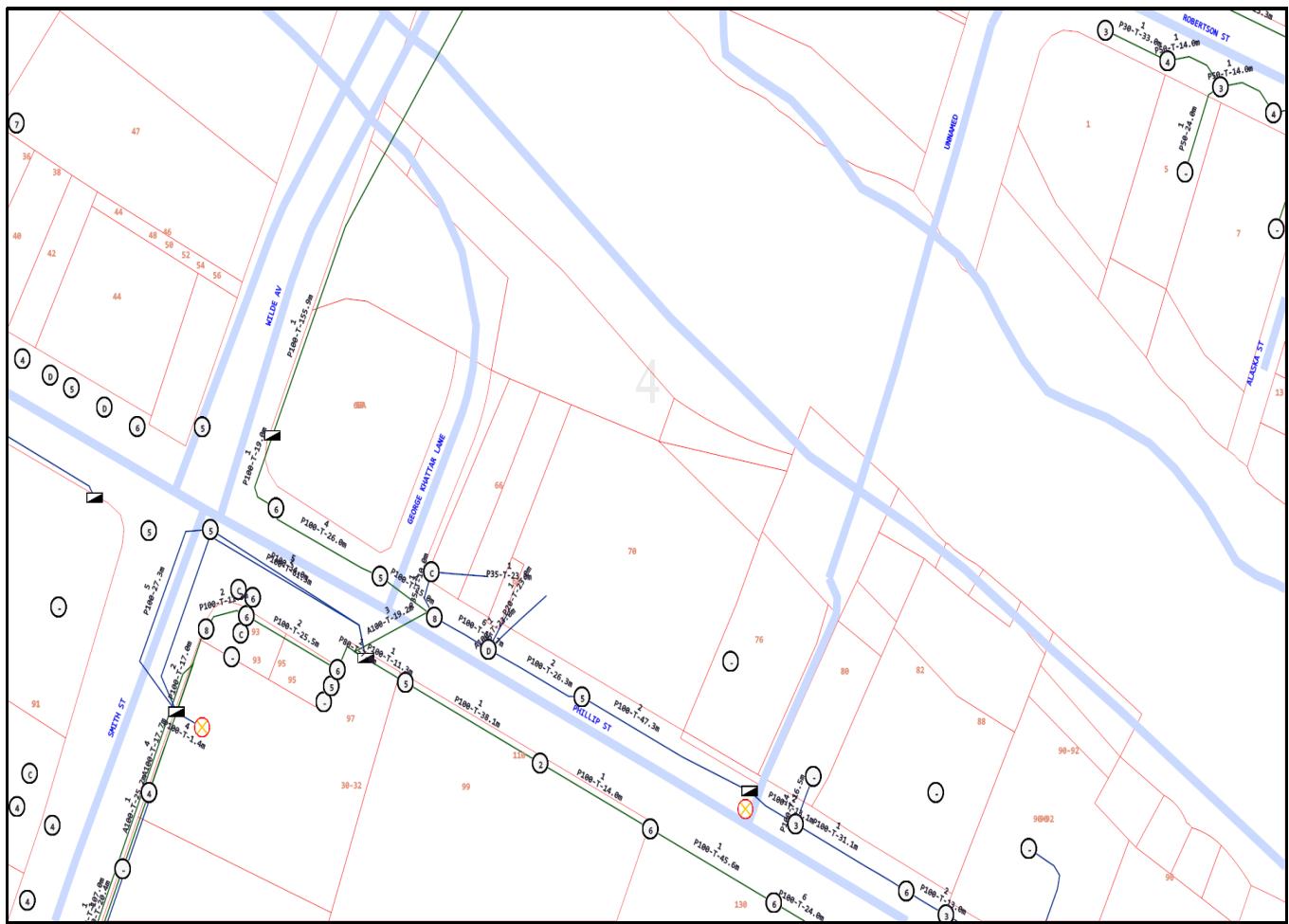


	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m





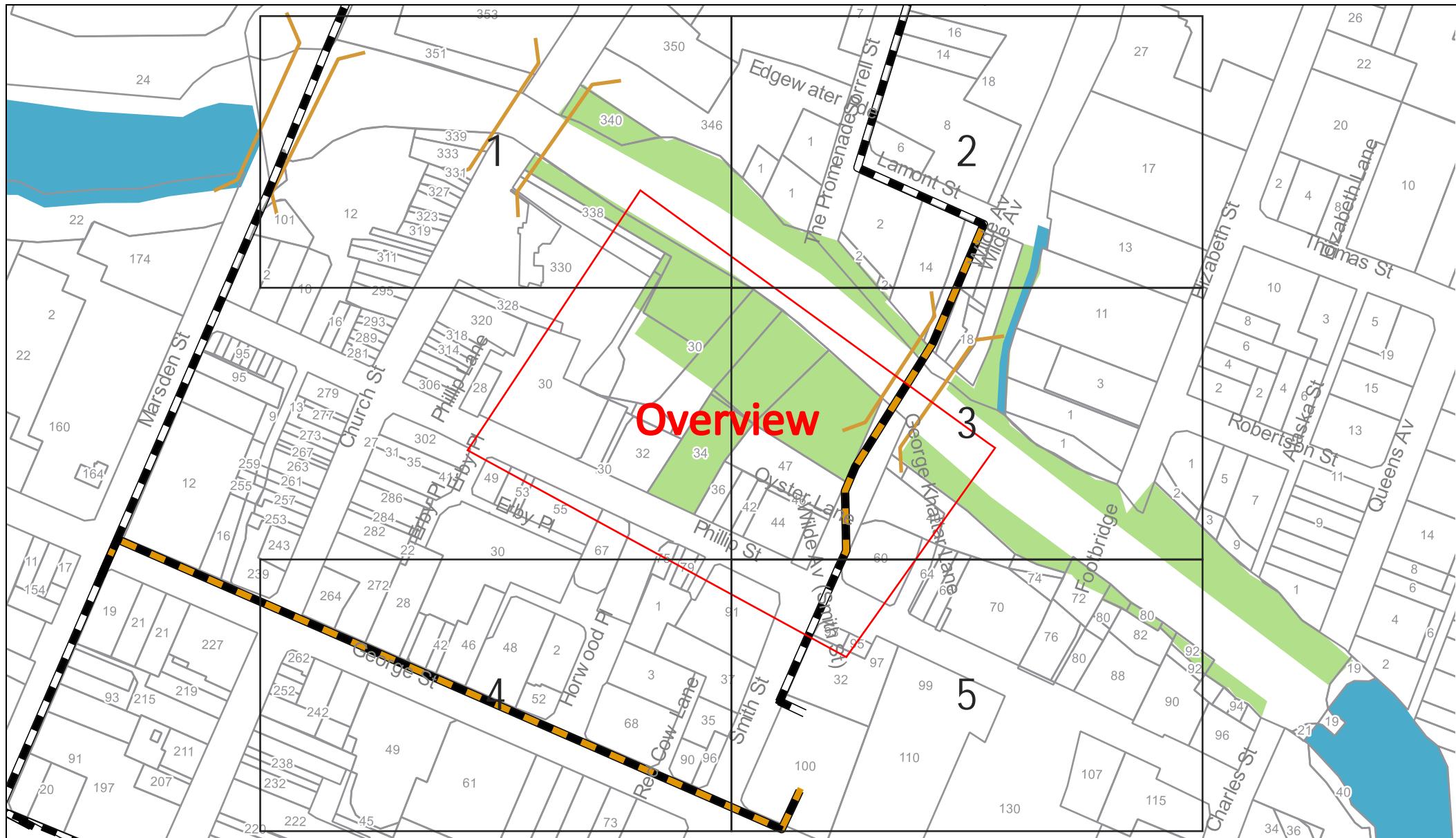




Emergency Contacts

You must immediately report any damage to nbn™ network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Telecommunications – Next Gen



Sequence Number: 94984413

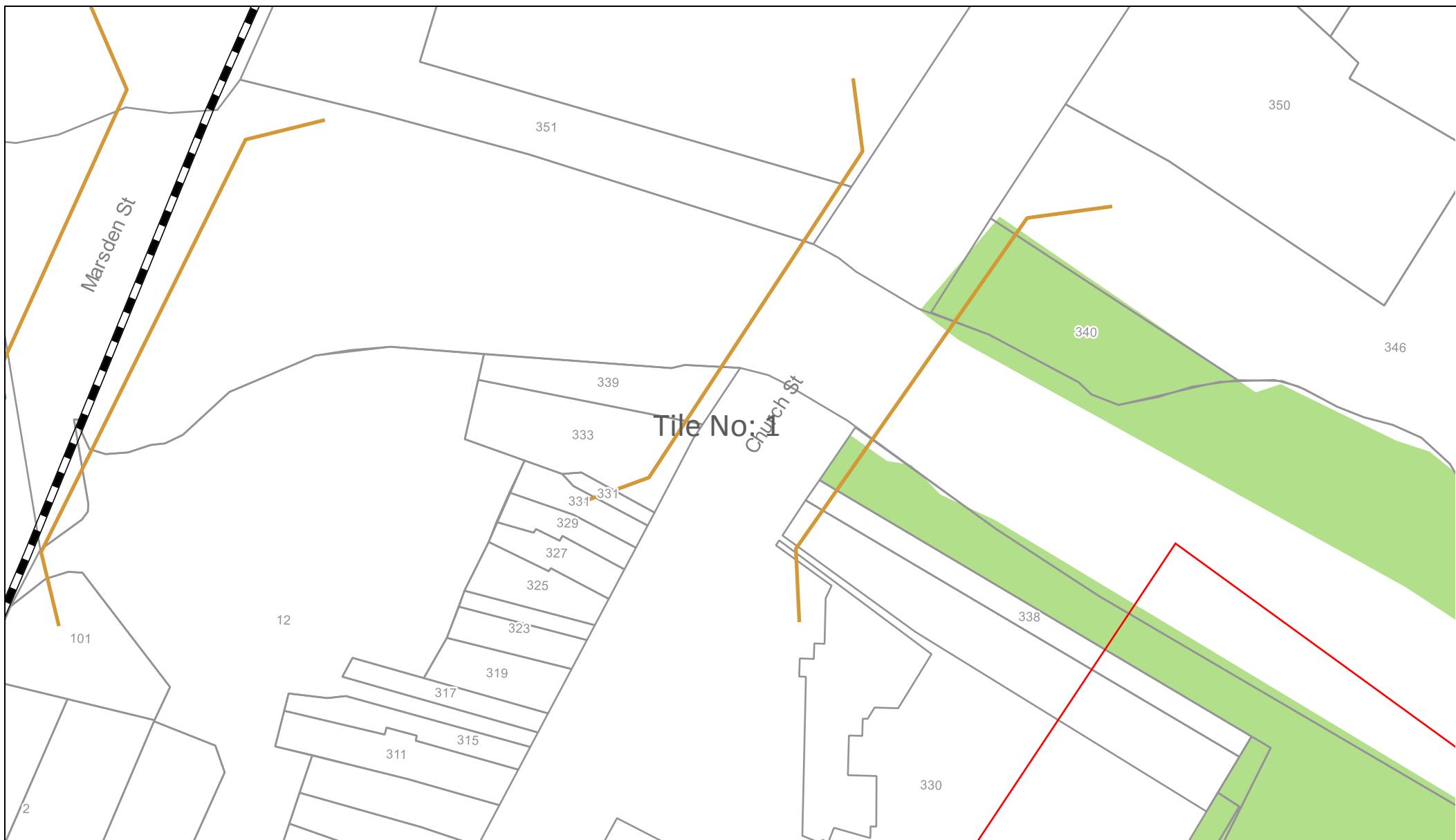
Date: 19/02/2020

LEGEND

Digsite	Assets
<input type="checkbox"/>	Area
	Cable
	3rd Party Duct
	Marker Post

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.





DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

Digsite	Assets
	Area
	Cable
	3rd Party Duct
	Marker Post



DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

Digsite	Assets
	Area
	Cable
	3rd Party Duct
	Marker Post



Sequence Number: 94984413

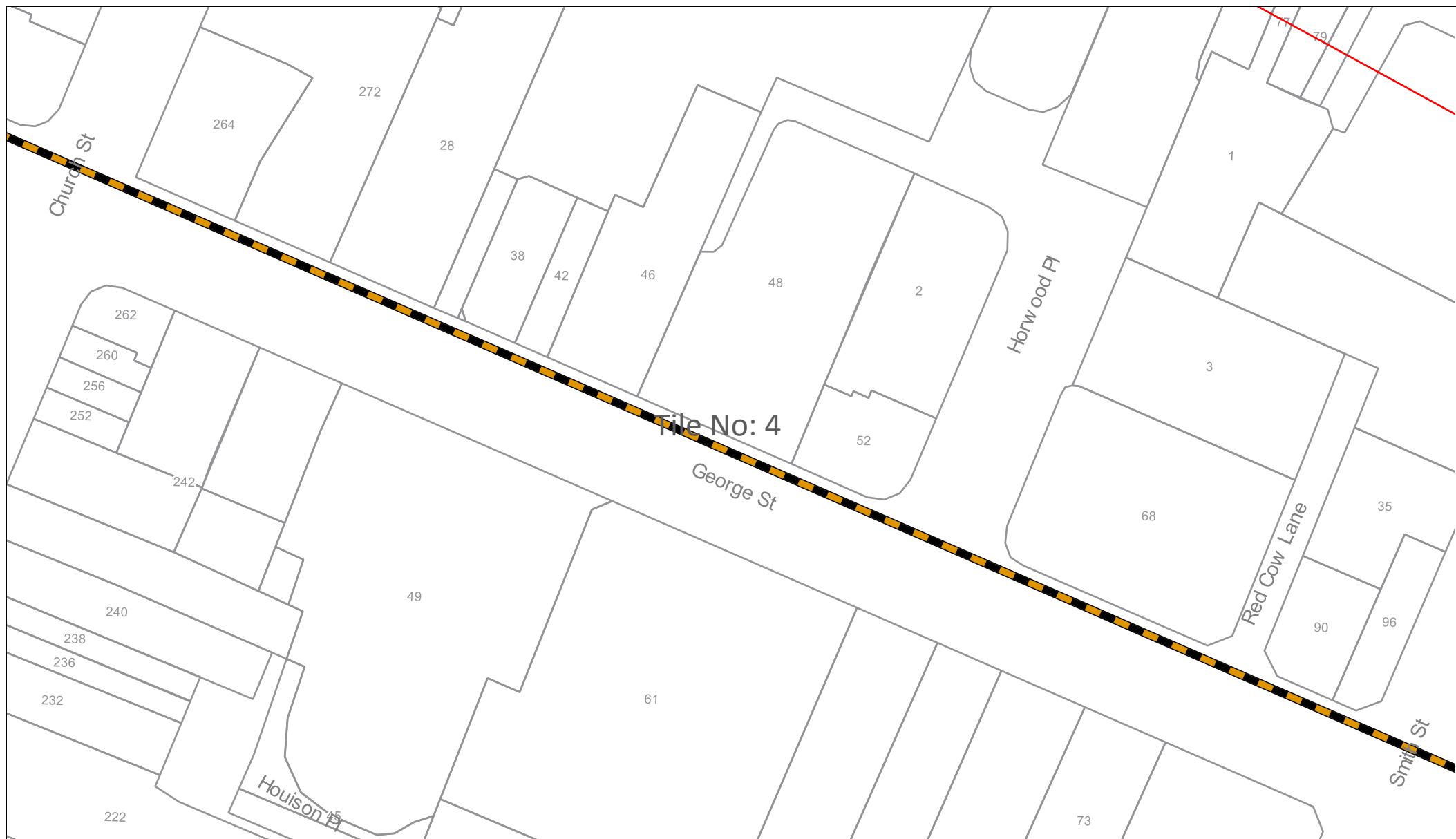
Date: 19/02/2020

LEGEND

Digsite	Assets
	Area
	Cable
	3rd Party Duct
	Marker Post

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.





Sequence Number: 94984413

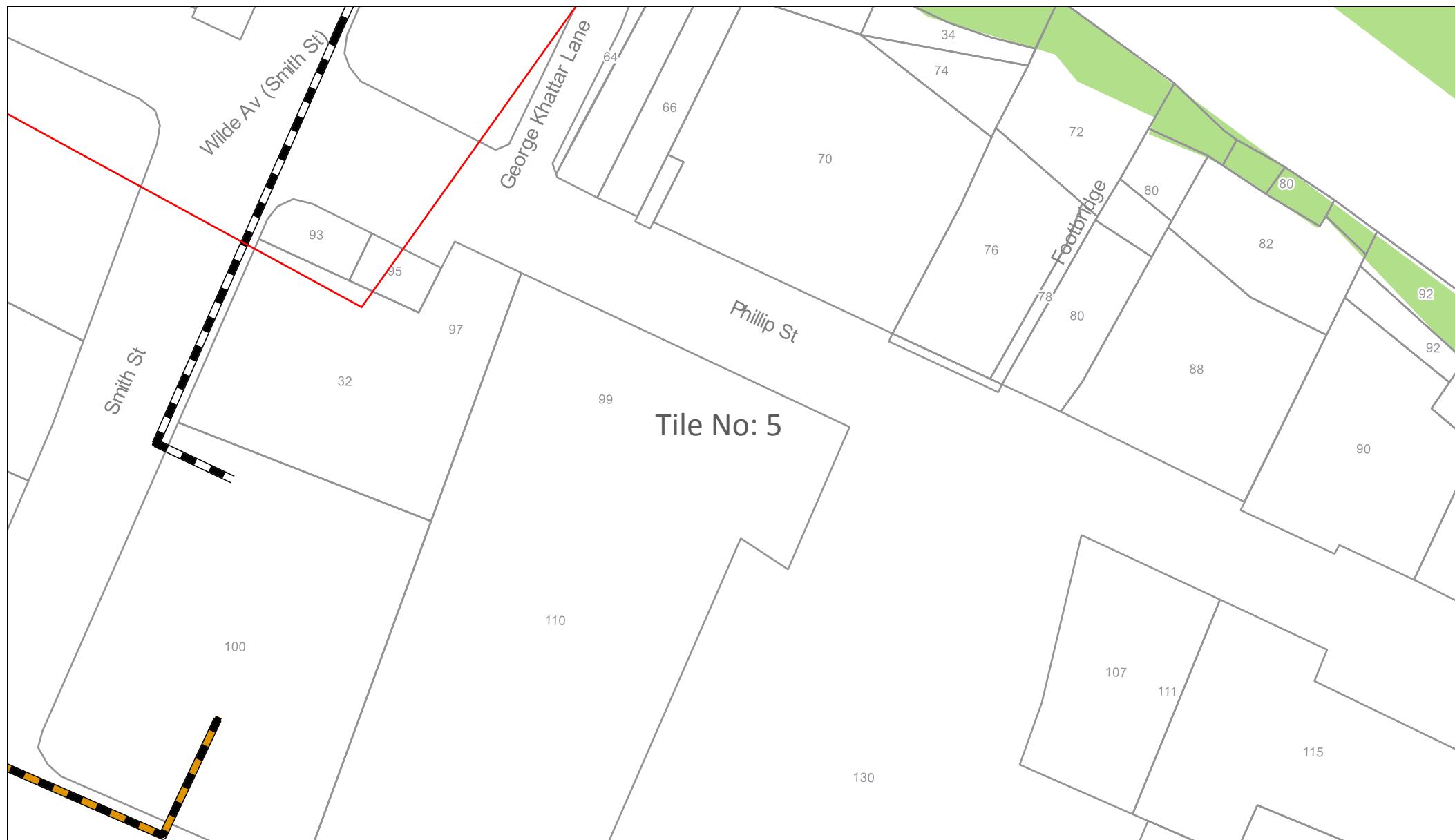
Date: 19/02/2020

LEGEND

Digsite	Assets
	Area
	Cable
	3rd Party Duct
	Marker Post

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.





Sequence Number: 94984413

Date: 19/02/2020

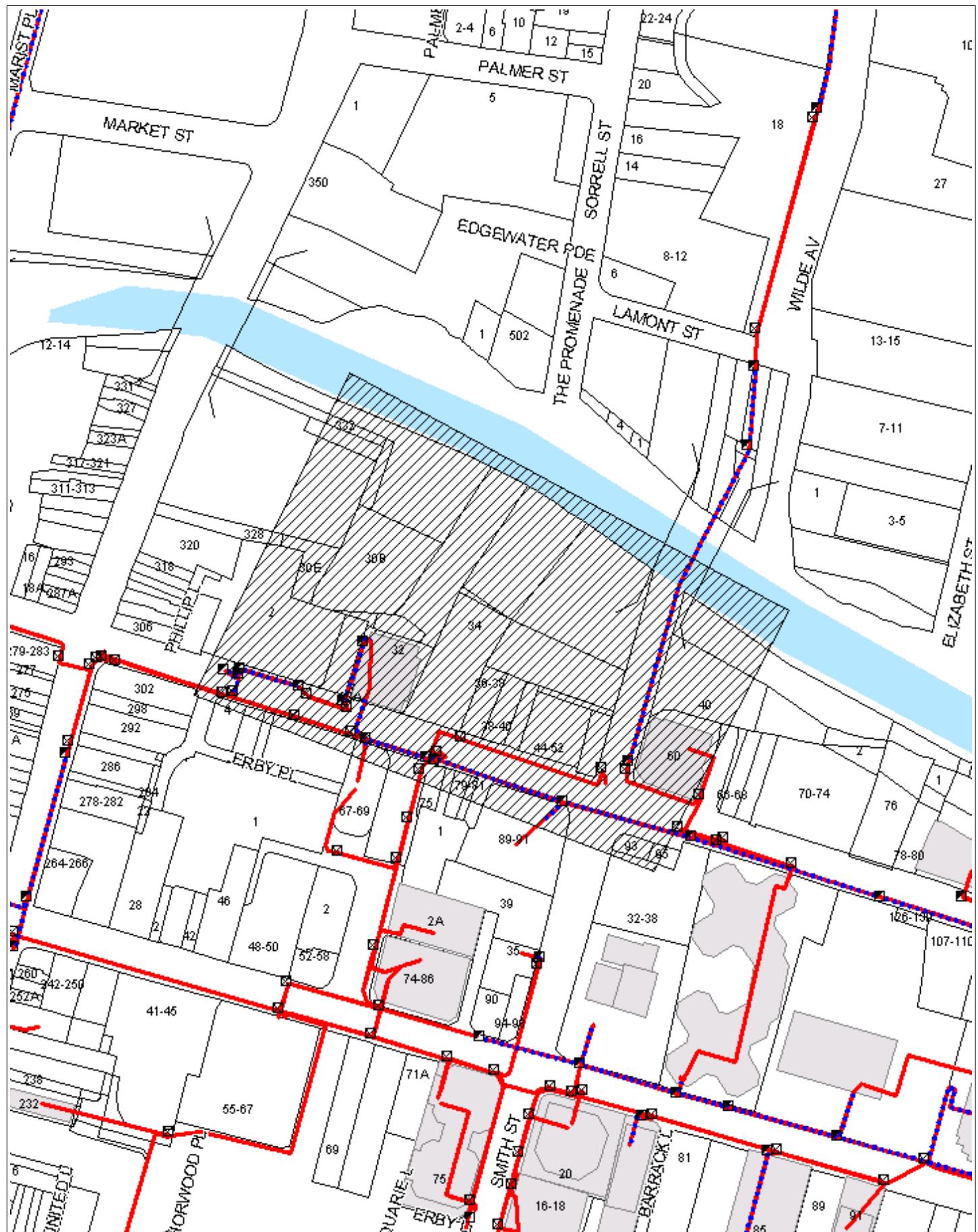
DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

Digsite	Assets
	Area
	Cable
	3rd Party Duct
	Marker Post

Telecommunications – Optus



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Optus Plans and information supplied are valid for 30 days from the date of issue. If this timeline has elapsed please raise a new enquiry.

Sequence Number: 94984418

Date Generated: 19/02/2020

OPTUS yes

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au

Email: Help.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208



Telecommunications – Pipe Networks



Response Cover Letter

Date: 19/02/2020

PIPE Networks
Level 17, 127 Creek St
Brisbane QLD 4000
Phone: +61 732339895
Fax: +61 732339880

To:

Mr GABRIEL CHEUNG - Customer ID: 2229067
Arup - Mr GABRIEL CHEUNG
LEVEL 5 151 CLARENCE STREET
SYDNEY
NSW
2000

Email: gabriel.h.cheung@arup.com
Phone: 0293209320
Fax: Not Supplied
Mobile: Not Supplied

Dear Mr GABRIEL CHEUNG

The following is our response to your Dial Before You Dig enquiry.

Assets Affected: PIPE Networks

Sequence Number: 94984415

Location: Wilde Ave
Parramatta
NSW
2150

Commencement Date: 15/07/2020

Please read over the attached documents for more information about your enquiry.

DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence.

Note: If the works fall in an area that adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



Level 17, PIPE Networks House, 127 Creek Street, Brisbane 4000
PH:(07) 3233 9895 FAX:(07) 3233 9880

Attention: Mr GABRIEL CHEUNG
Fax: Not Supplied
DBYD Enquiry Number: 94984415

Date: 19/02/2020

Location: Wilde Ave
Parramatta
NSW
2150

DBYD ENQUIRY RETURN:

PIPE Networks **DOES** own or operate telecommunications network infrastructure within the area detailed above.

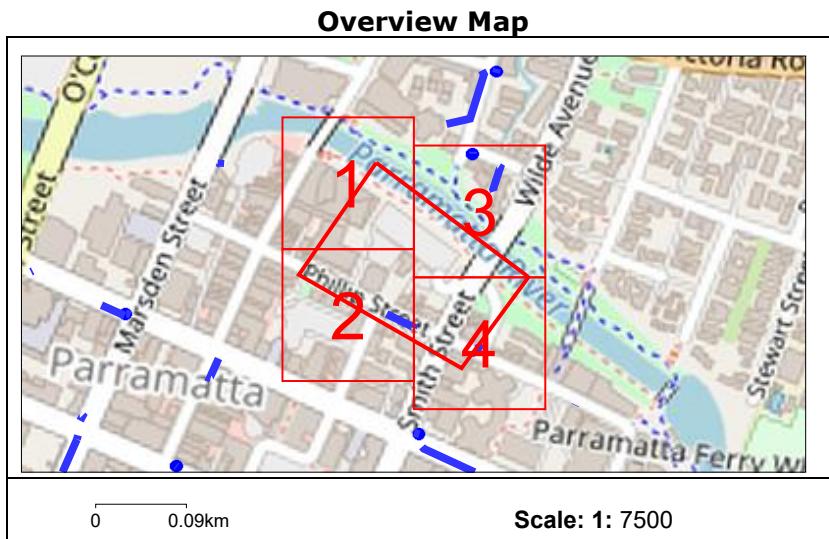
The affected network **is contained in the PIPE Networks duct network** and can be found on **PIPE Networks** own network plans.

This network is vital to our operations and as such, it is critical that no works commence within the area until a PIPE Networks representative has contacted you.

A PIPE Networks representative will contact you within 24 hours to further discuss your intended works. If you do not hear from PIPE networks within 24hours please call us for assistance.

Due to continued network expansion, this network information can only be considered valid and accurate for 28 days from issue.

PIPE Networks will seek compensation for any damage to its network through negligence or ignorance of your duty of care.



PIPE Networks (for information specific to this job only)

Ph (07) 3233 9895

Email: dbyd@pipednetworks.com

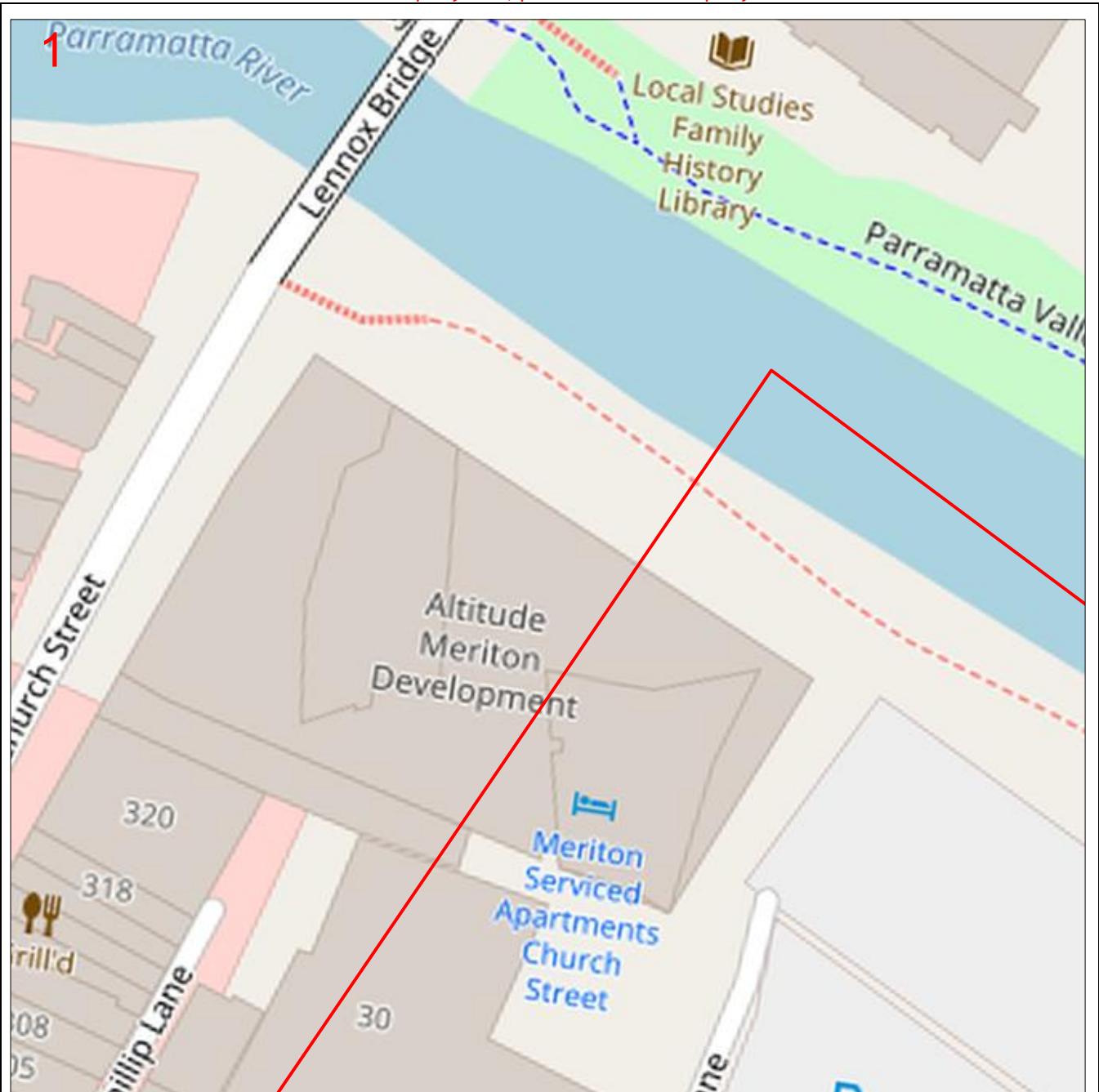
DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence.

Note: If the works fall in an area that adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 94984415

Map Sheet: 1

Scale: 1:750

0 0.008km

LEGEND
DBYD Request Area Asset

Line
 Area

Manhole
 Duct



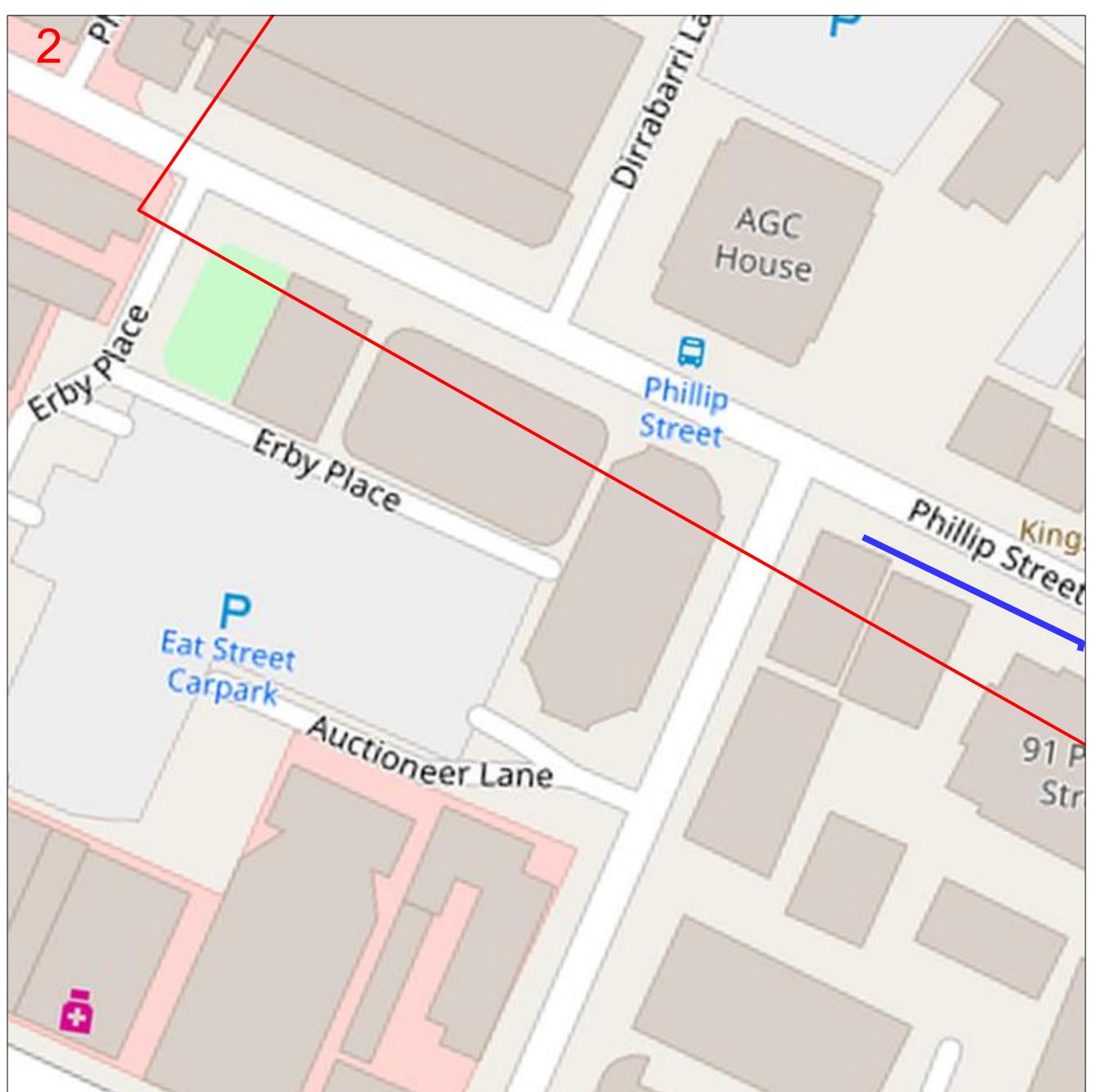
DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 94984415

Map Sheet: 2

Scale: 1:750

0 0.008km

LEGEND
DBYD Request Area Asset

Line
Area

Manhole
Duct

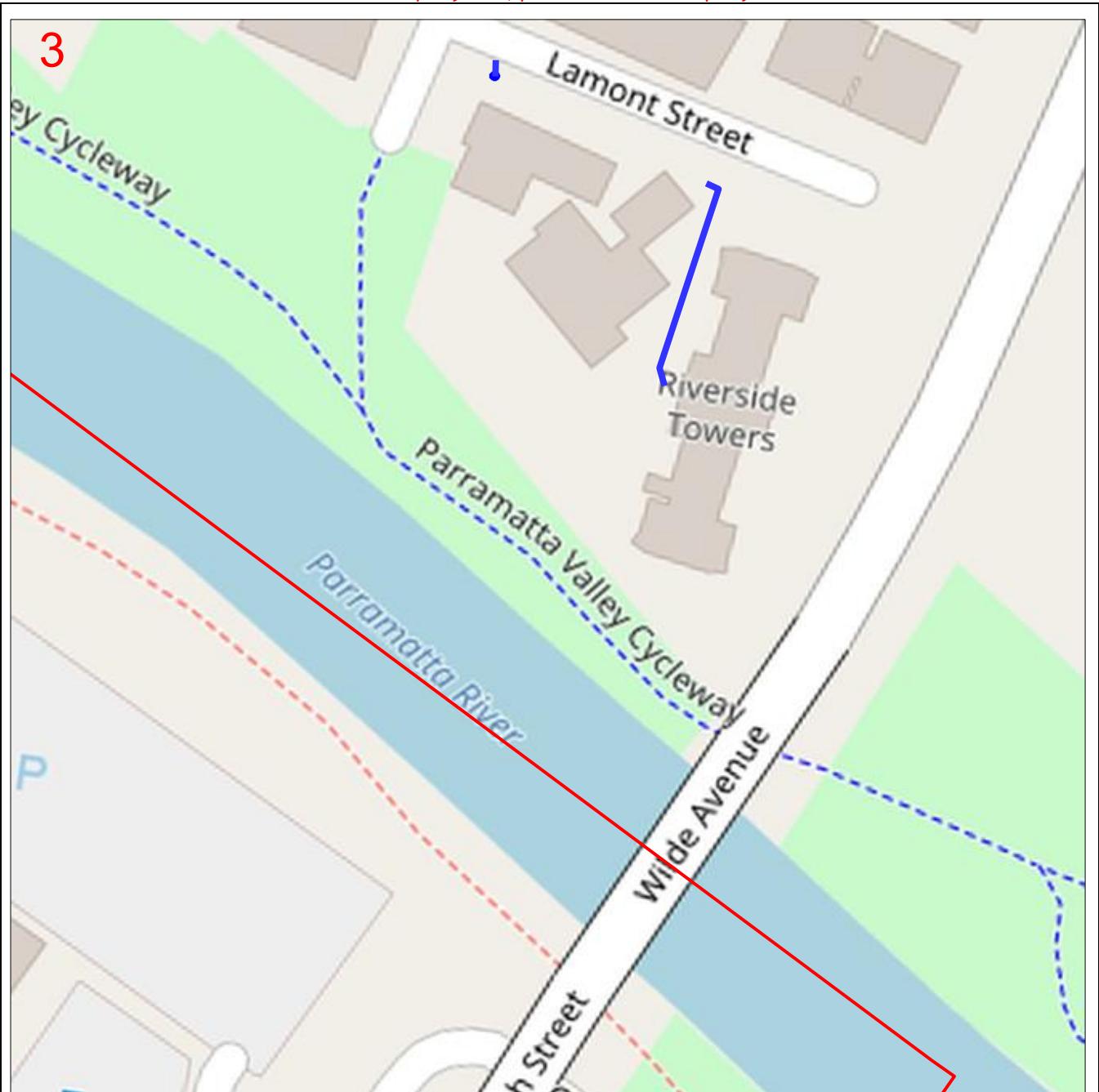


DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 94984415

Map Sheet: 3

Scale: 1:750

0 0.008km

LEGEND
DBYD Request Area Asset

 Line
 Area

 Manhole
 Duct



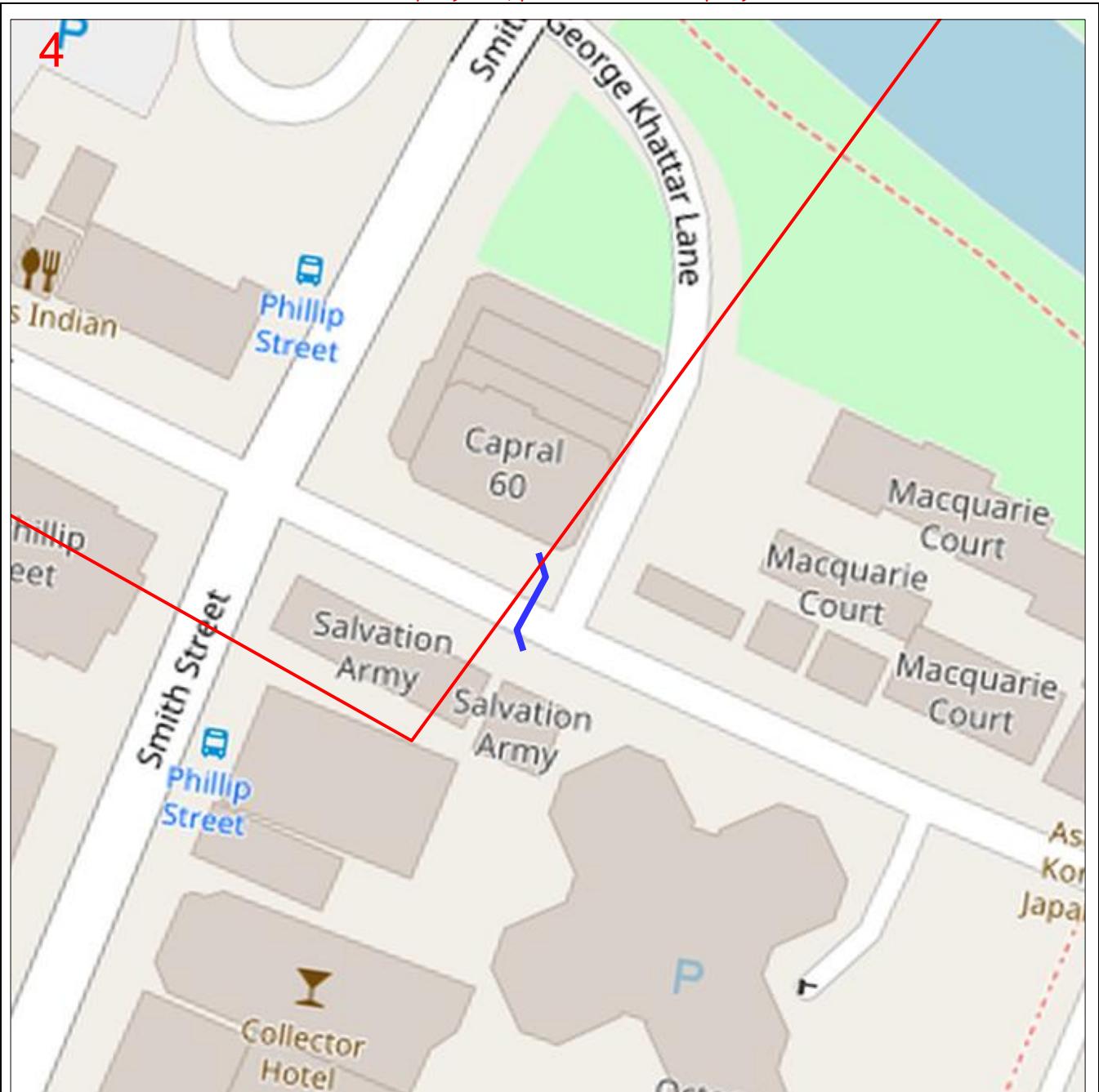
DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**



Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 94984415

Map Sheet: 4

Scale: 1:750

0 0.008km

LEGEND
DBYD Request Area Asset

Line
 Area

Manhole
 Duct



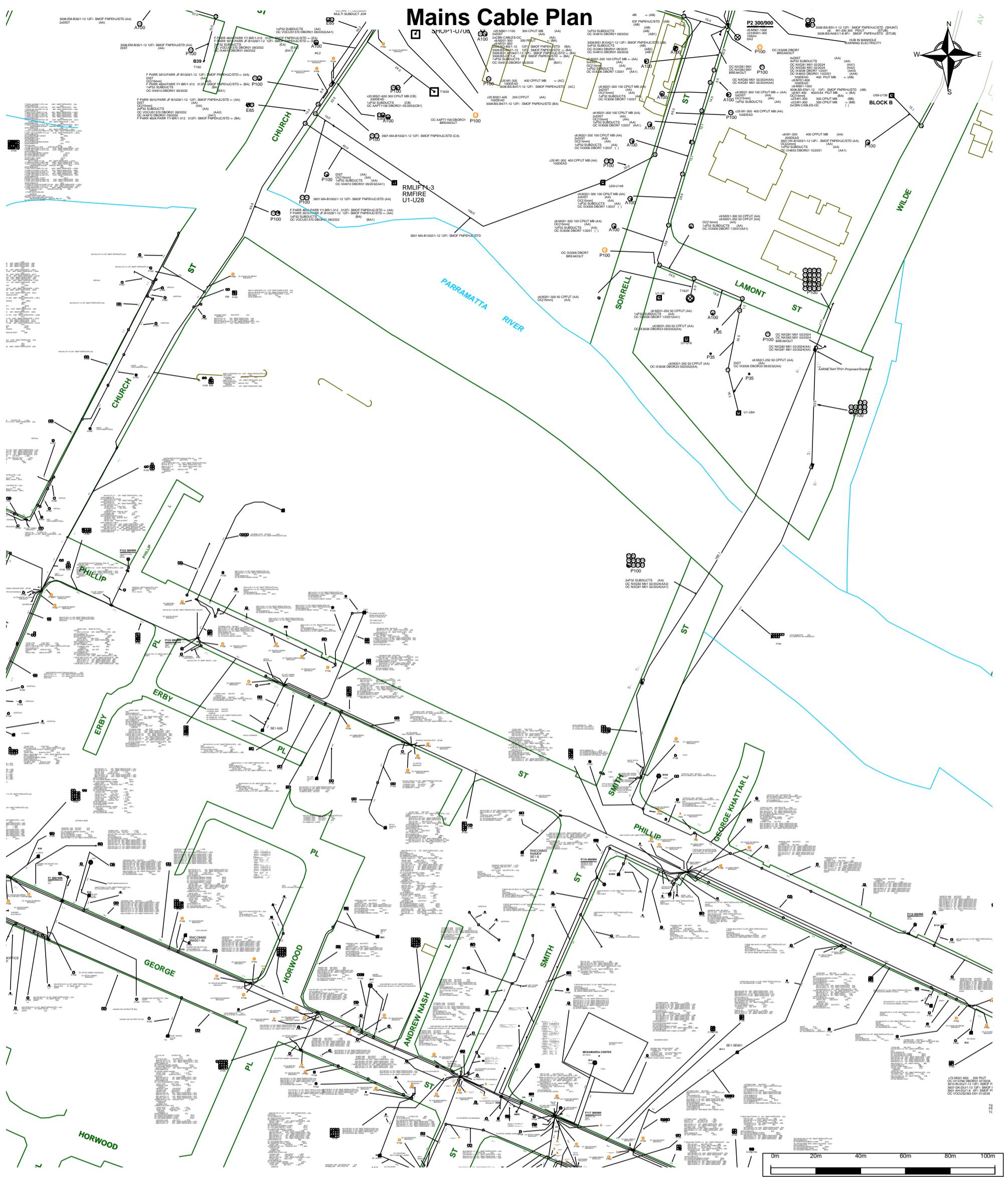
DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

Note: If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time. **NO WORKS TO COMMENCE PRIOR TO INSPECTION.**

Telecommunications – Telstra

Cable Plan





For all Telstra DBYD plan enquiries -
email - Telstra.Plans@team.telstra.com
For urgent onsite contact only - ph 1800 653 935 (bus hrs)

TELSTRA CORPORATION LIMITED A.C.N. 051 775 556

Generated On 19/02/2020 15:09:17

Sequence Number: 94984417

**CAUTION: Critical Network Route in plot area.
DO NOT PROCEED with any excavation prior to
seeking advice from Telstra Plan Services on :
1800 653 935**

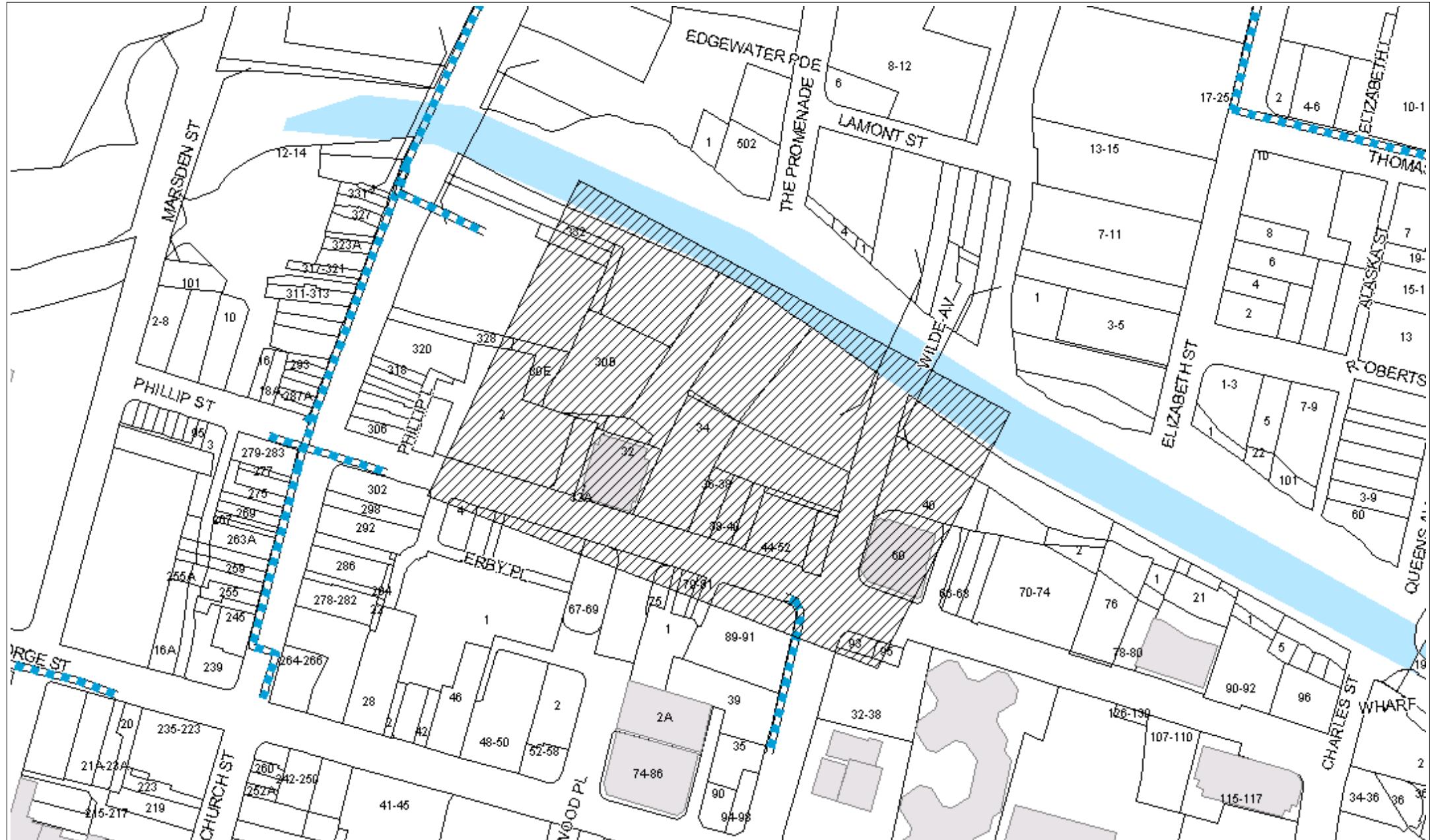
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Telecommunications – Uecomm

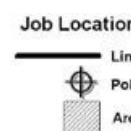


**Uecomm
Cable Uecomm Underground**

Scale: #INSERT MAP SCALE#

Printed On: 19/02/2020

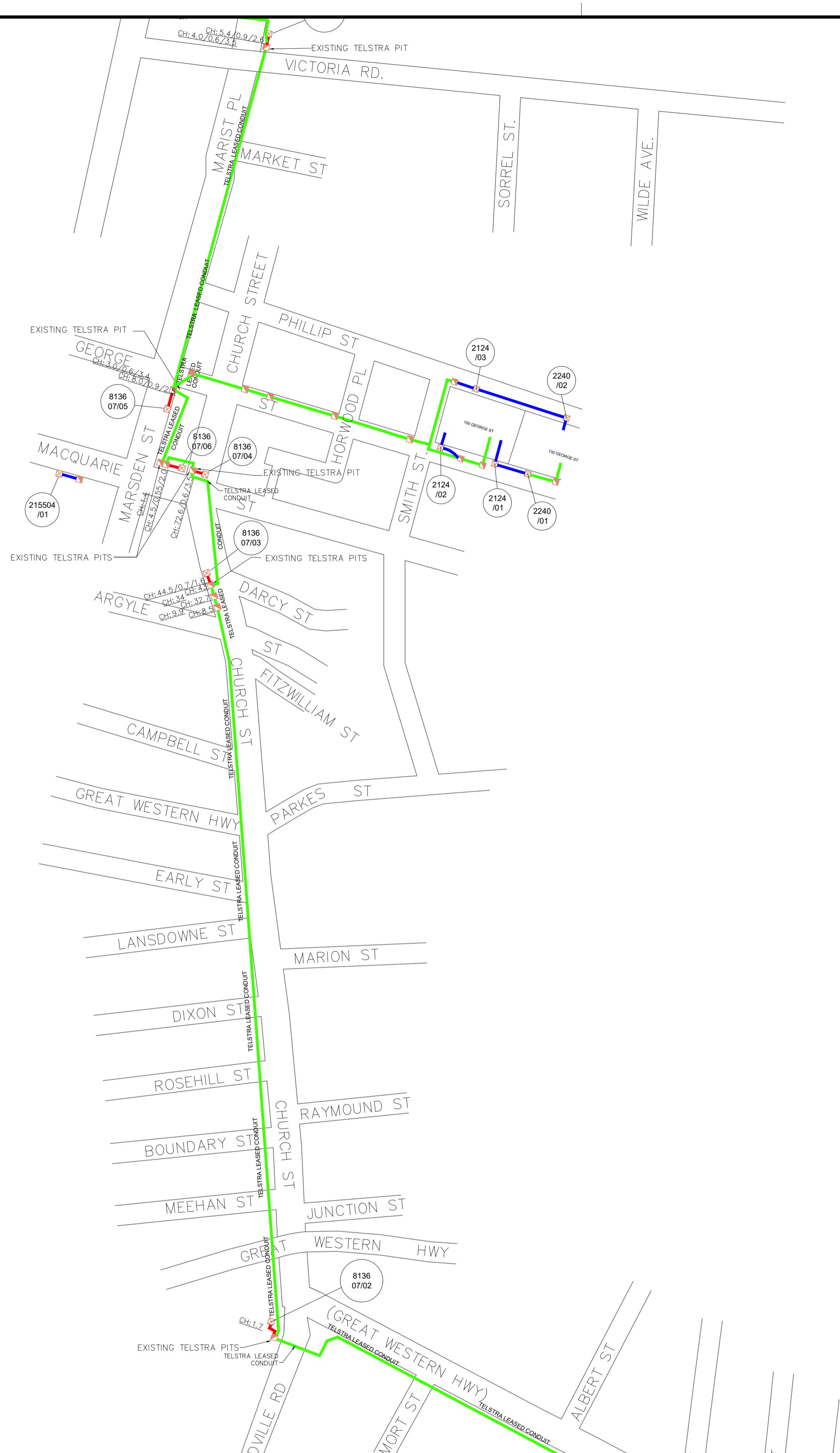
Sequence Number: 94984418
Location: Wilde Ave



Underground Asset
 — Line
 - - - Point
 ■ Area

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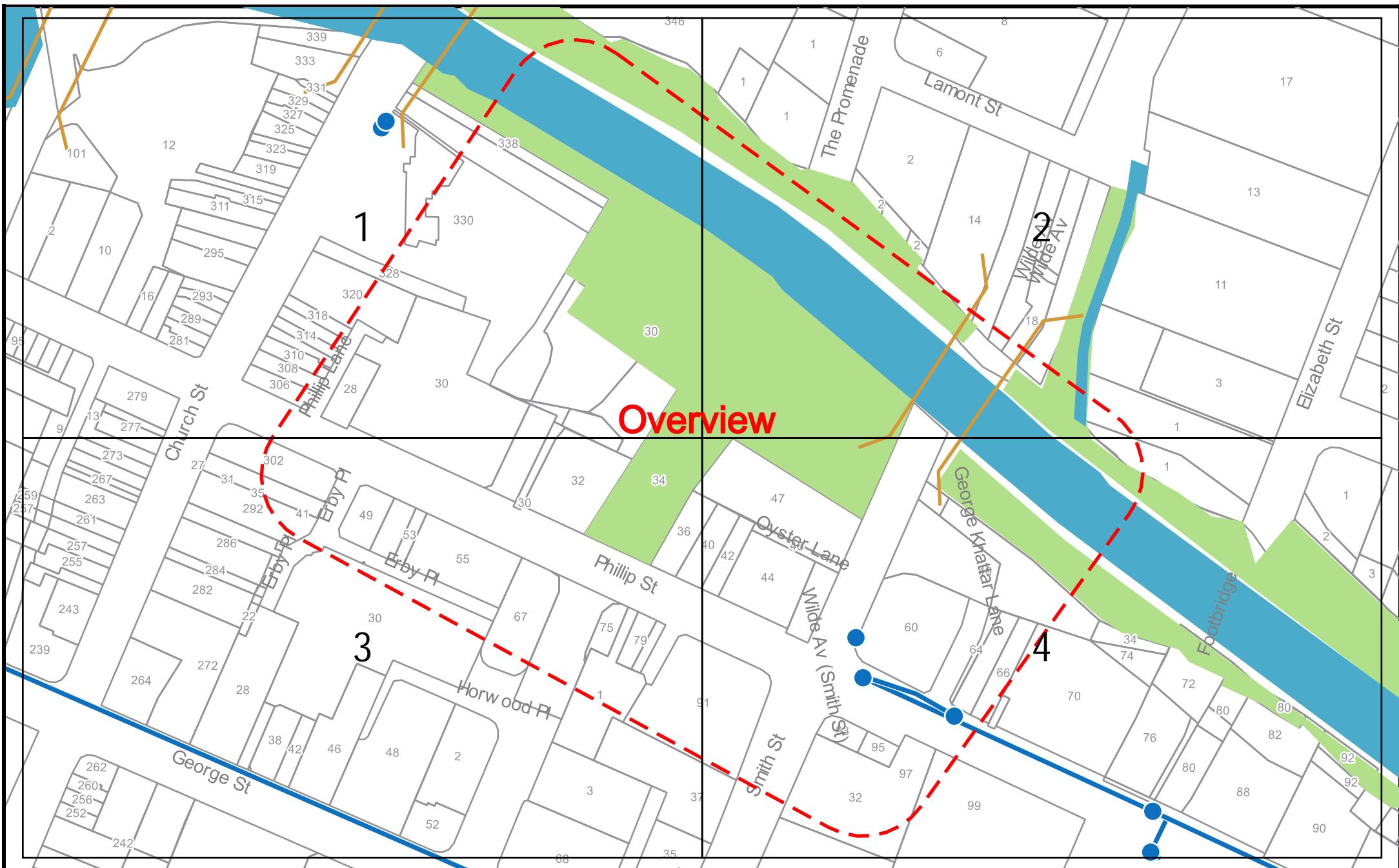
Telecommunications – Verizon


LEGEND

- VERIZON DUCT
- VERIZON DUCT
- TELSTRA DUCT
- ☒ VERIZON PIT
- ☒ TELSTRA PIT

C2	22/05/17	REMOVING THE TELSTRA DUCT	S.LAM	P.SPEAR	
C1	26/1/05				
Do not scale this drawing. Information on this document is proprietary & shall not be used, copied, reproduced or disclosed in whole or in part without written consent of Verizon.					
PROJEC	Verizon	PARRAMATTA SOUTH NETWORK	DRAWN	CHECKED	APPROVED
DRAWING TITLE:					
PARRAMATTA SOUTH					REVISION:
SHEET 2 OF 8					C2
DRAWING NUMBER			SCALE	SIZE	
VZ			N.T.S.	A1	

Telecommunications - Vocus



SEQUENCE NUMBER: 94984423

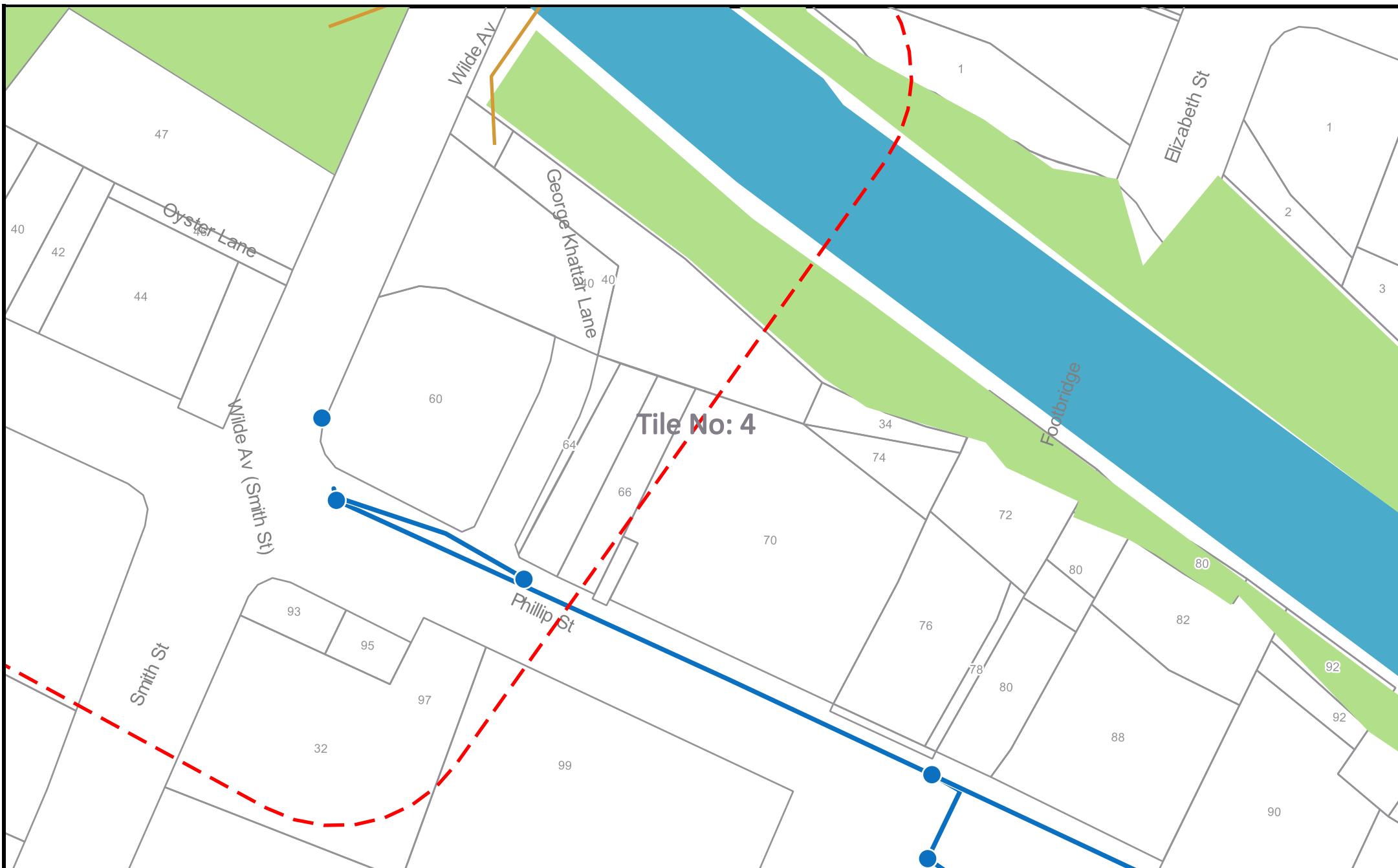
JOB NUMBER: 19067032

ADDRESS: Wilde Ave, Parramatta, NSW 2150

LEGEND

● Vocus Group Pit
— Vocus Group Conduit

SCALE: 1:2050



VOCUS
communications



SEQUENCE NUMBER: 94984423

JOB NUMBER: 19067032

ADDRESS: Wilde Ave, Parramatta, NSW 2150

LEGEND



Vocus Group Pit
Vocus Group Conduit

SCALE: 1:1000

Appendix B: Current Utility Survey Plans

Initial survey information completed by LTS Lockley Surveyors NSW dated 13th June 2019 was provided by to Arup by INSW, subsequent survey was received on 13th March 2020 following comments and request for further information by Arup and MKG.

The survey information provided to date has been very useful in verifying key asset information which is otherwise not provided in the DBYD or utility records such as the depth of the 525mm trunk sewer main. However, further survey work is required to provide conclusive record of all existing key services within the extent of the proposed development and surrounding site area, we understand this survey work is ongoing.

Terrence Tang

From: Chris Ives <ChrisI@lockley.com.au>
Sent: Wednesday, 1 April 2020 8:32 AM
To: Terrence Tang
Cc: Damian Maguire
Subject: [External] RE: Powerhouse - sewer survey
Attachments: 41692 012 Sewer Manhole Markup Amended 1-04-20.pdf

Hi Terrence,
Please find attached amended manhole markup.

Kind Regards

Chris Ives

Manager | Registered Surveyor

0448 279 017 | (02) 9499 9805 or 1300 587 000

Suite 1 Level 1 810 Pacific Hwy Gordon | Locked Bag 5 Gordon NSW 2072 | www.ltsl.com.au



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From: Terrence Tang <Terrence.Tang@arup.com>
Sent: Monday, 23 March 2020 5:04 PM
To: Chris Ives <ChrisI@lockley.com.au>
Subject: RE: Powerhouse - sewer survey

Hi Chris – No problem, thanks for updating me.

Thanks,

Terrence Tang
Civil Engineer | NSW & ACT Transport

Arup
Level 5, 151 Clarence Street, Sydney NSW 2000 Australia
t: +61 02 9320 9320 d: +61 02 9320 9297
www.arup.com

From: Chris Ives <ChrisI@lockley.com.au>
Sent: Monday, 23 March 2020 4:57 PM
To: Terrence Tang <Terrence.Tang@arup.com>
Subject: [External] RE: Powerhouse - sewer survey

Hi Terrence,
Please wait for my corrected markup. I need to re-check our surveyors invert measurements.

Please don't hesitate to contact me if you require further information.

Kind Regards

Chris Ives

Manager | Registered Surveyor

0448 279 017 | (02) 9499 9805 or 1300 587 000

Suite 1 Level 1 810 Pacific Hwy Gordon | Locked Bag 5 Gordon NSW 2072 | www.ltsl.com.au



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From: Chris Ives
Sent: Monday, 23 March 2020 4:51 PM
To: Terrence Tang <Terrence.Tang@arup.com>
Cc: Ricardo Costa <Ricardo.Costa@arup.com>; Duncan Crook <Duncan.Crook@arup.com>; Enrico Zara <Enrico.Zara@arup.com>; Hannah.Slater@infrastructure.nsw.gov.au; Damian Maguire <DamianM@lockley.com.au>
Subject: RE: Powerhouse - sewer survey

Hi Terrence,
Please find attached markup of sewer manhole invert levels as requested below.

Please don't hesitate to contact me if you require further information.

Kind Regards

Chris Ives

Manager | Registered Surveyor

0448 279 017 | (02) 9499 9805 or 1300 587 000

Suite 1 Level 1 810 Pacific Hwy Gordon | Locked Bag 5 Gordon NSW 2072 | www.ltsl.com.au



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From: Terrence Tang <Terrence.Tang@arup.com>

Sent: Thursday, 19 March 2020 12:18 PM

To: Chris Ives <ChrisI@lockley.com.au>

Cc: Ricardo Costa <Ricardo.Costa@arup.com>; Duncan Crook <Duncan.Crook@arup.com>; Enrico Zara

<Enrico.Zara@arup.com>; Hannah.Slater@infrastructure.nsw.gov.au; Damian Maguire <DamianM@lockley.com.au>

Subject: RE: Powerhouse - sewer survey

Hi Chris,

Thanks for the prompt response – we would need this information as soon as possible Would we be able to prioritize this sewer, please?

Just a mark-up for now would be fine.

Thanks for your help,

Terrence Tang

Civil Engineer | NSW & ACT Transport

Arup

Level 5, 151 Clarence Street, Sydney NSW 2000 Australia

t: +61 02 9320 9320 d: +61 02 9320 9297

www.arup.com

From: Chris Ives <ChrisI@lockley.com.au>

Sent: Thursday, 19 March 2020 12:10 PM

To: Terrence Tang <Terrence.Tang@arup.com>

Cc: Ricardo Costa <Ricardo.Costa@arup.com>; Duncan Crook <Duncan.Crook@arup.com>; Enrico Zara

<Enrico.Zara@arup.com>; Hannah.Slater@infrastructure.nsw.gov.au; Damian Maguire <DamianM@lockley.com.au>

Subject: [External] RE: Powerhouse - sewer survey

Hi Terrence,

We are still in the process of undertaking the remainder of the field survey.

When would you need this information by and would you want another preliminary drawing or will just a markup of the below be sufficient?

Please don't hesitate to contact me if you require further information.

Kind Regards

Chris Ives



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From: Terrence Tang <Terrence.Tang@arup.com>

Sent: Thursday, 19 March 2020 11:40 AM

To: Chris Ives <ChrisI@lockley.com.au>

Cc: Ricardo Costa <Ricardo.Costa@arup.com>; Duncan Crook <Duncan.Crook@arup.com>; Enrico Zara <Enrico.Zara@arup.com>; Hannah.Slater@infrastructure.nsw.gov.au

Subject: Powerhouse - sewer survey

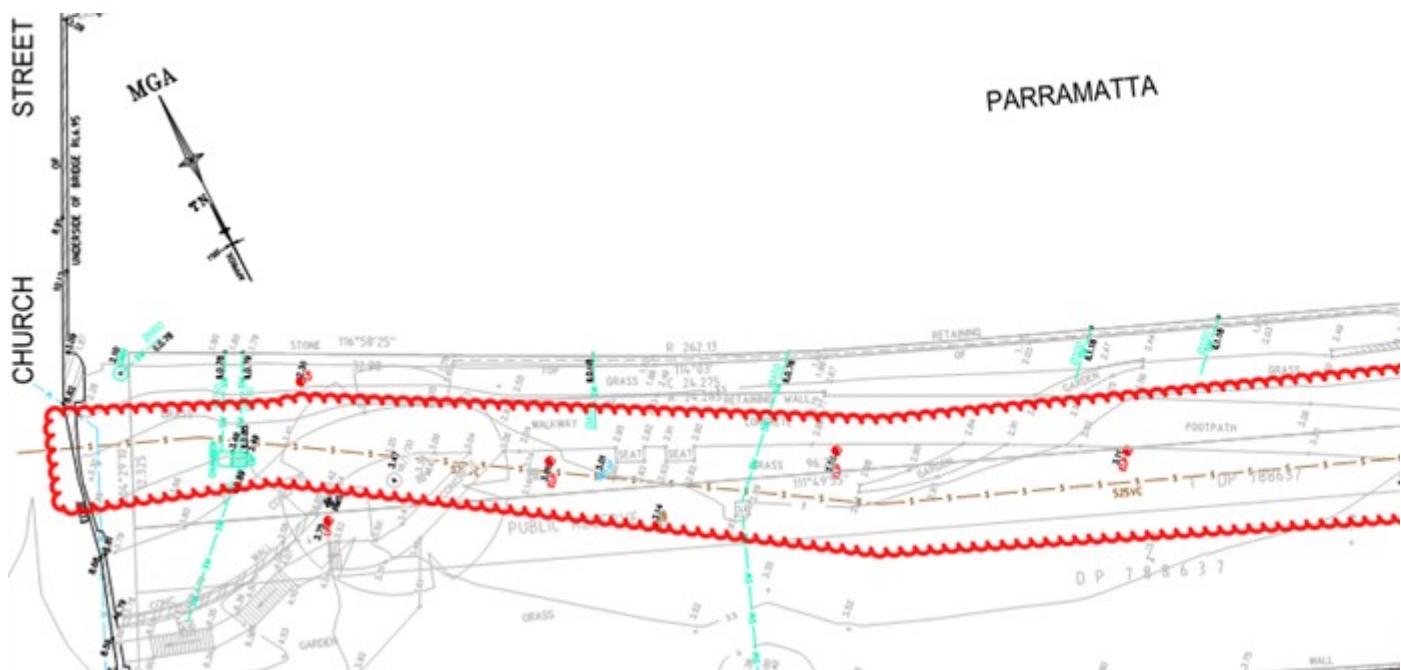
Hi Chris,

I understand LTS is currently undertaking more detailed survey of the site. But would it be possible to provide us with the invert levels of the existing sewer (if it has been done yet) as per below snapshot, please?

If it hasn't been surveyed yet, would you be able to please let us know when this will be done?

Thank you,

Terrence



Arup

Level 5, 151 Clarence Street, Sydney NSW 2000 Australia

t: +61 02 9320 9320 d: +61 02 9320 9297

www.arup.com

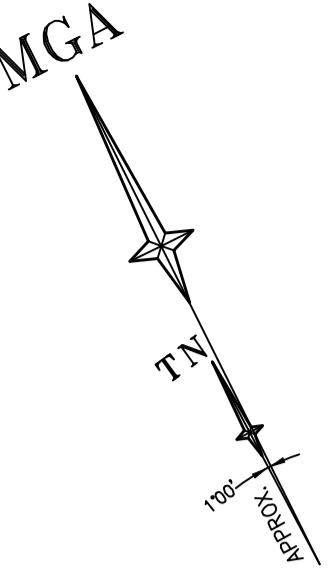
Electronic mail messages entering and leaving Arup business systems are scanned for viruses and acceptability of content.

SHEET 9

SP 50396



SHEET 10



STREET

CHURCH

PARRAMATTA

RIVER

LEGEND

BENCH MARK	▲
OPTUS PIT	■ OP
TELSTRA PIT	■ TEL
ELECTRIC LIGHT POLE	● ELP
ELECTRICITY BOX	■ EBOX
PIT WITH CONCRETE LID	□ CLID
PIT WITH METAL LID	□ MLID
RUBBISH BIN	○ BIN
TRAFFIC LIGHT	■ TL
STREET SIGN	☒ SS
BOLLARD	○ BOL
PARKING METER	○ PKM
ROAD TRAFFIC AUTHORITY	☒ RTA
GRADED INLET PIT	■ GIP
KERB INLET PIT	■ KIP
SEWER INSPECTION POINT	○ SIP
SEWER VENT	● SEV
SEWER MANHOLE	○ SMH
SEWER MAST	○ SEWM
HYDRANT	■ HYD
WATER METER	■ WM
WATER TAP	☒ TAP
WATER VALVE	◆ WV
GAS LID	□ GLID
GAS VALVE	☒ GAS
GAS PLAQUE	☒ PLQ
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
GAS	— G —
TELSTRA	— T —
WATER	— W —
STORMWATER	— SW —
STORMWATER (APPROX. POSITION)	— SW —
SEWER	— S —
ELECTRICITY (OVERHEAD)	— P —
ELECTRICITY (U.GROUND)	— E —
OPTUS	— OP —
OPTICAL FIBRE	— OF —
TELSTRA (DETECTED)	— T(D) —
ELECTRICITY (DETECTED)	— E(D) —
GAS (DETECTED)	— G(D) —
WATER (DETECTED)	— W(D) —

SHEET LEGEND

SHEET 1 BOUNDARY DEFINITIONS
 SHEETS 2-6 EASEMENTS
 SHEET 7-14 DETAIL & LEVEL SURVEY

- NOTES:-
1. THE BOUNDARIES HAVE NOT BEEN MARKED
 2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE OFFICE OF LAND & PROPERTY INFORMATION (NSW) AND ARE SUBJECT TO FINAL SURVEY
 3. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM SSM76647 R.L. 8.235 (A.H.D.) IN WILDE AVENUE
 4. CONTOUR INTERVAL 0.5 m
 5. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
 6. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
 7. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELs. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
 8. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
 9. 8/4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
 10. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
 11. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH

PRELIMINARY

0 8 12 16 24 32 40
SCALE 1:400 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
Revision Date Description Reference
Registered Surveyor NSW

LTS
LOCKLEY
Registered Surveyor NSW
www.ltsl.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client INFRASTRUCTURE NEW SOUTH WALES
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

TITLE PLAN

datum AHD reference number 41692 011DT
site Area AS SHOWN scale 1:400 date of survey 18/06/19
LGA CITY OF PARRAMATTA sheet OF 14

MGA
TN
150' 30'
Norden

STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

- (A) RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH (DP1031459)
- (B) RIGHT OF CARRIAGEWAY 12.31 WIDE, 5 WIDE & VARIABLE WIDTH (DP1031459)
- (C) RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH (DP1031459)
- (D) RIGHT OF CARRIAGEWAY 12.31 WIDE, 5 WIDE & VARIABLE WIDTH (DP1031459)
- (E) EASEMENT FOR UNDERGROUND CABLES 1 WIDE & VARIABLE WIDTH (DP1031459)
- (F) EASEMENT FOR RIGHT OF ACCESS & RIGHT OF MANOEUVRING VARIABLE WIDTH (DP1031459)
- (G) EASEMENT FOR ACCESS & USE VARIABLE WIDTH (DP1031459)
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- (X) EASEMENT FOR GAS MAIN 1 WIDE AND VARIABLE WIDTH (DP 1235084)
- (ED) RIGHT OF ACCESS VARIABLE WIDTH (DP 1233317)
- (EE) EASEMENT FOR UNDERGROUND CABLES VARIABLE WIDTH (DP 1233317)

NOTES:-

- (P) DENOTES THAT PART OF THE RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH DENOTED (A) & THAT PART OF THE RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH DENOTED (C) WHICH ARE LIMITED IN HEIGHT TO A HORIZONTAL PLANE AT RL9.30 & ARE UNLIMITED IN DEPTH
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PRELIMINARY

0 8 12 16 24 32 40
SCALE 1:400 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

Revision Date Description Reference

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41692 012
Client INFRASTRUCTURE NEW SOUTH WALES
Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
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P 1300 587 000
F 02 9499 7760
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA
Registered Surveyor NSW
www.lts.com.au



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Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA
Registered Surveyor NSW
www.lts.com.au

EASEMENTS

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 2
OF 14

MGA
TN
150' 30'
Norden

STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

SCALE 1:400 @ A1

- (A) RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH (DP1031459)
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PRELIMINARY

D	00/00/00	-	00	THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:	LTS	Client INFRASTRUCTURE NEW SOUTH WALES	datum AHD	reference 41692 011DT
C	00/00/00	-	00			Drawing title		
B	00/00/00	-	00			PLAN OF DETAIL AND LEVELS OVER LAND AT THE		
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012			CORNER OF PHILLIP STREET & WILDE AVENUE,		
Revision	Date	Description	Reference			PARRAMATTA	site Area AS SHOWN	scale 1:400 @A1 date of survey 18/06/19
							LGA CITY OF PARRAMATTA	SHEET OF 14 3

Registered Surveyor NSW
www.lts.com.au

Suite 1, Level 1
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MGA
TN
150' 30'
Norden

STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

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PRELIMINARY

0 8 12 16 24 32 40
SCALE 1:400 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

Revision Date Description Reference

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Registered Surveyors NSW
www.lts.com.au

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Client INFRASTRUCTURE NEW SOUTH WALES
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

EASEMENTS

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 4
OF 14

MGA
TN
150' 30'
Norden

STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

PRELIMINARY

EASEMENTS

0 8 12 16 24 32 40
SCALE 1:400 @ A1

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(Q)

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NOTES:-

- (P)
- (Q)

D	00/00/00	-	00
C	00/00/00	-	00
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A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

Revision Date Description Reference

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41692 012
Client INFRASTRUCTURE NEW SOUTH WALES
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
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Registered Surveyor NSW
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datum
AHD
site Area
AS SHOWN
LGA
CITY OF PARRAMATTA
reference
scale
1:400
@A1
date of survey
18/06/19
SHEET
OF 14
5

MGA
TN
150' 30'
Norden

STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

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PRELIMINARY

0 8 12 16 24 32 40
SCALE 1:400 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

Revision Date Description Reference

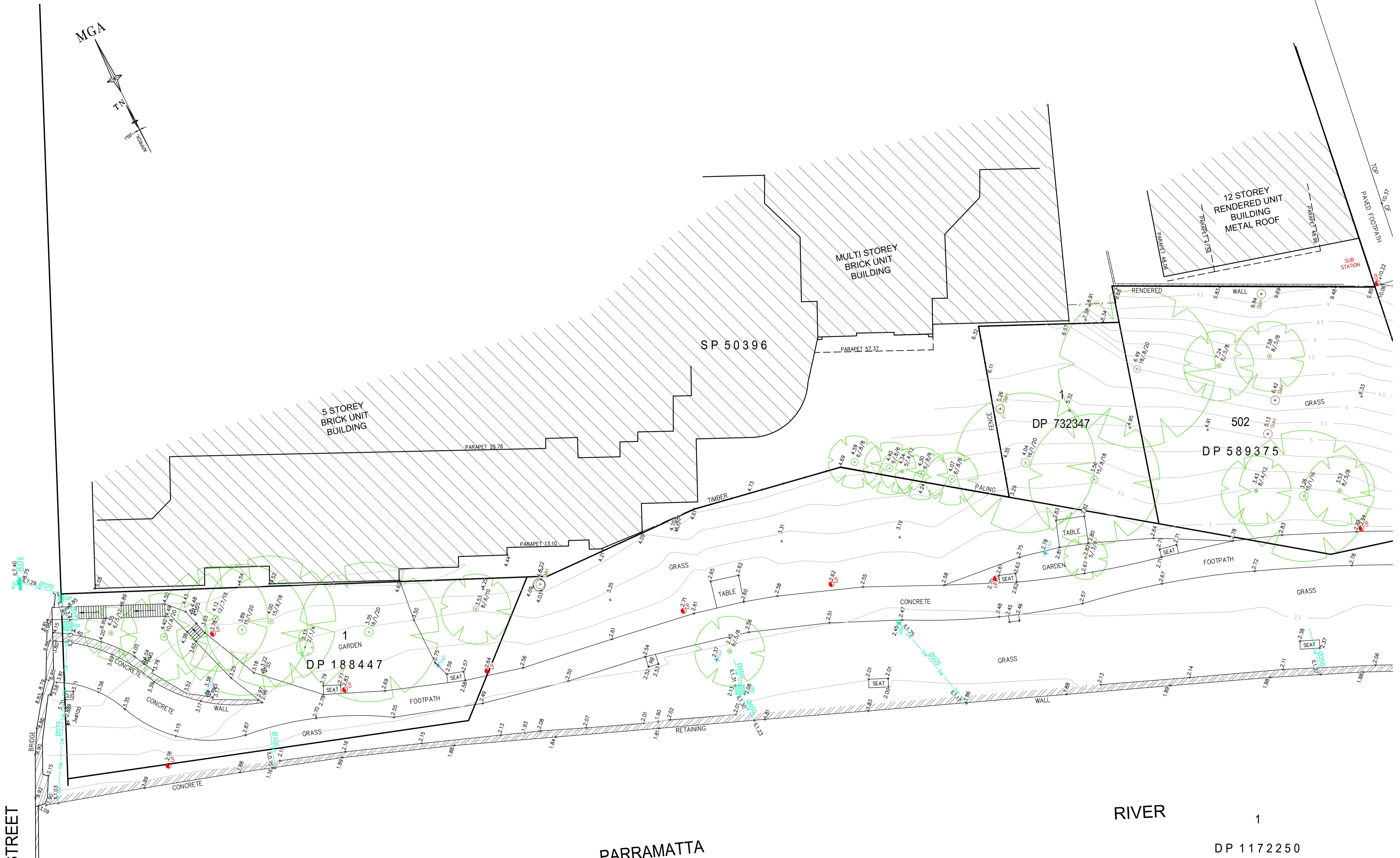
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
41692 012
Registered Surveyor NSW
www.lts.com.au

LTS
LOCKLEY
Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client INFRASTRUCTURE NEW SOUTH WALES
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

EASEMENTS

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 6
OF 14



0 4 6 8 12 16 20
SCALE 1:200 @ A1

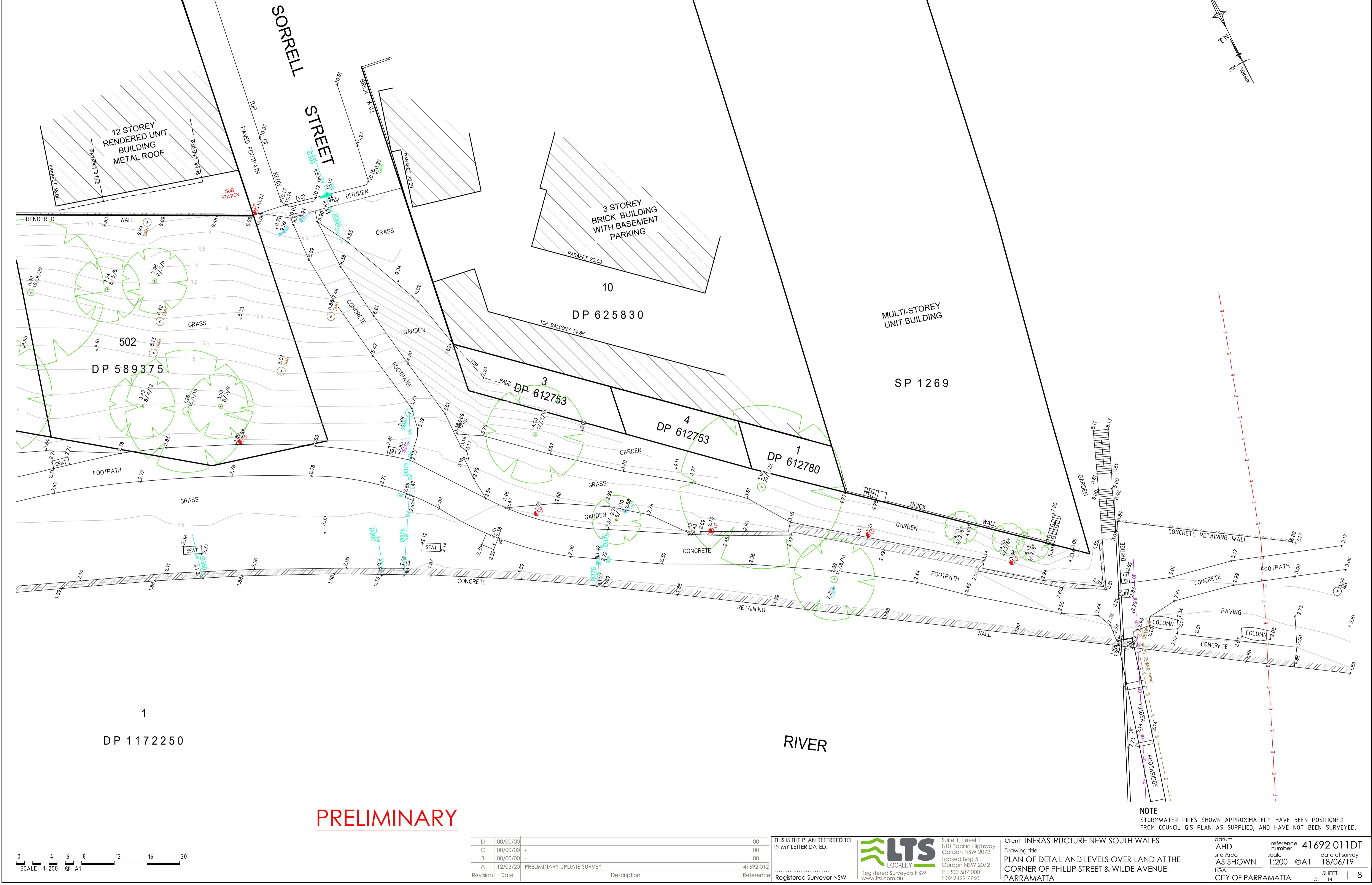
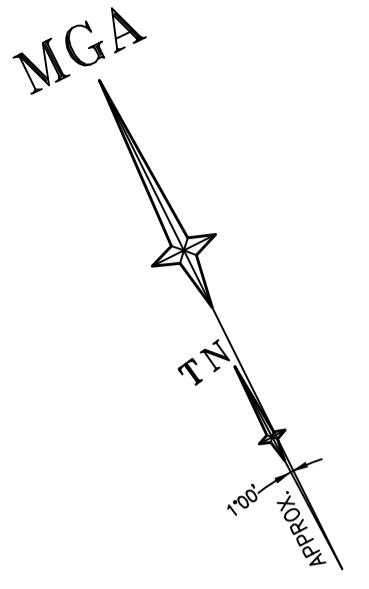
D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	12/03/20	PRELIMINARY UPDATE SURVEY	41692 012

Revision Date Description Reference
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CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:200 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 7
OF 14



PARRAMATT

RIVER

DP 1172250

STREET CHURCH

MGA

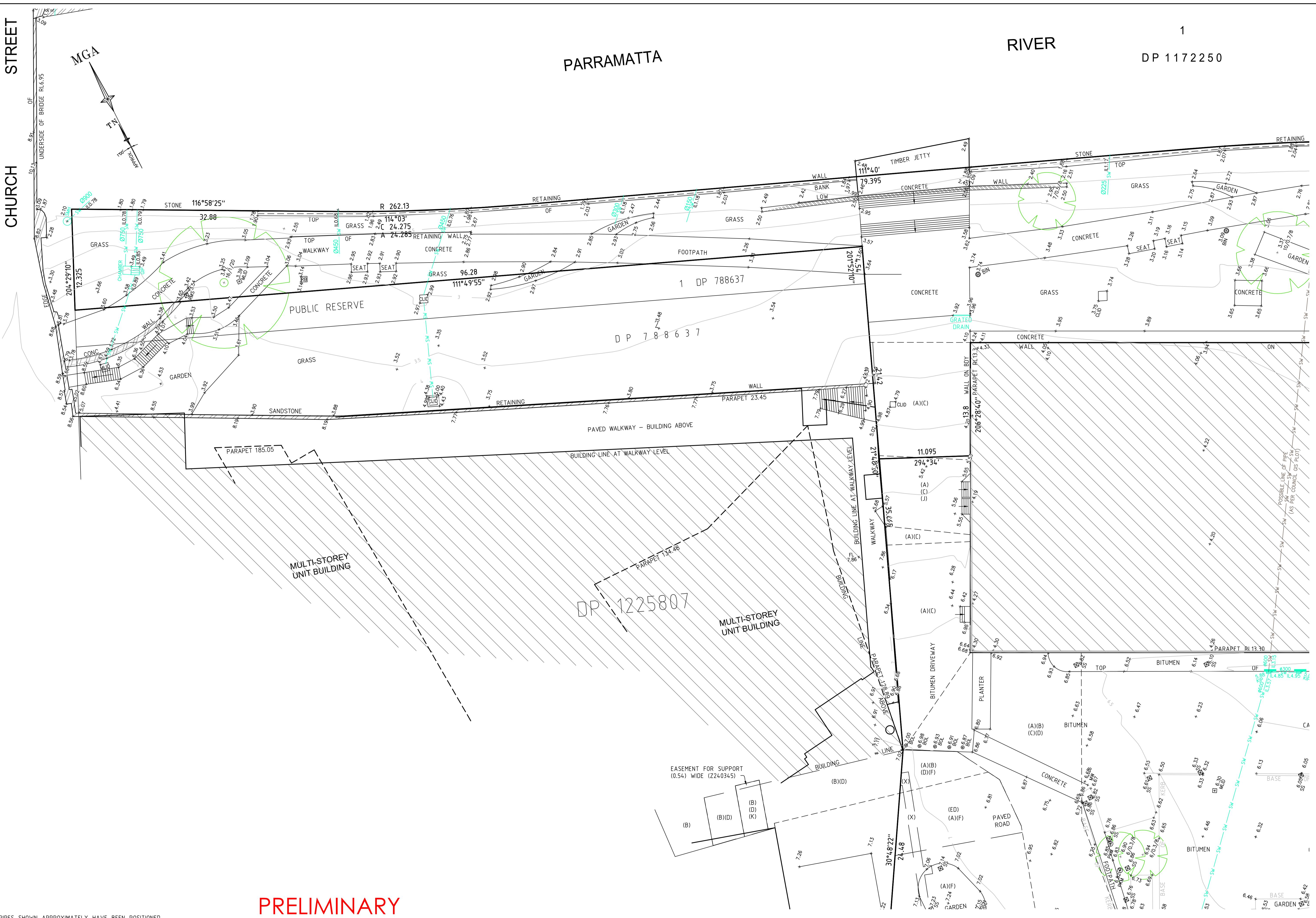
13

CHURCH

STORMWATER PIPES SHOWN APPROXIMATELY HAVE BEEN POSITIONED FROM COUNCIL GIS PLAN AS SUPPLIED, AND HAVE NOT BEEN SURVEYED.

PRELIMINAR

1



D	00/00/00	-
C	00/00/00	-
B	00/00/00	-
A	12/03/20	PRELIMINARY UPDATE SURVEY
Revision	Date	Description

	00	THIS IS THE PLAN R
	00	IN MY LETTER DATE
	00	
	41692 012	
	Reference



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ver NSW

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LOCKLEY
Registered Surveyors NSW
www.lts.com.au

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Gordon NSW 2072
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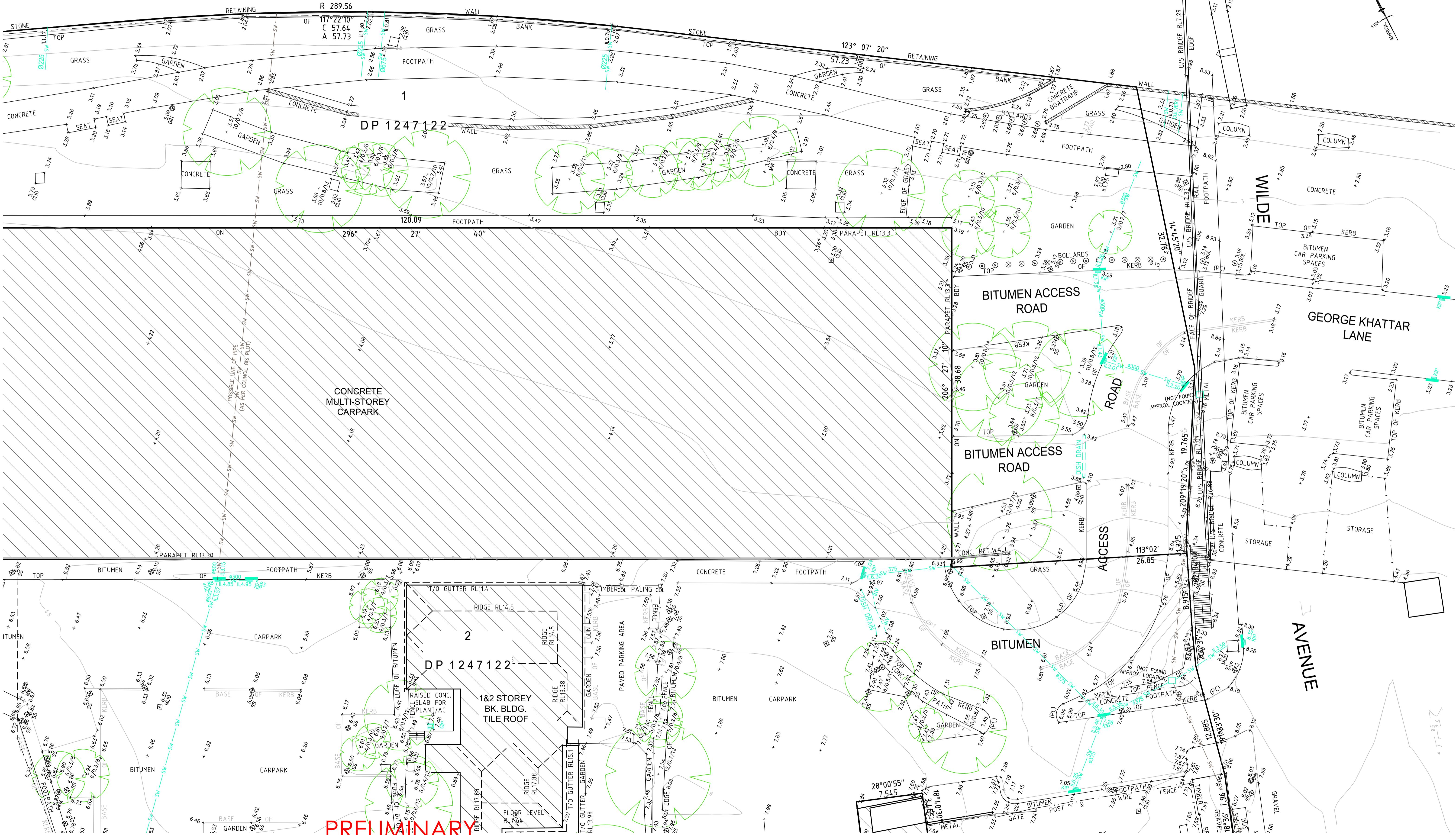
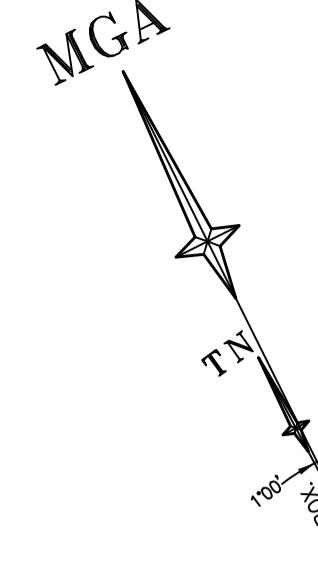
Client INFRASTRUCTURE NEW SOUTH WALES
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PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

datum AHD	reference number	41692 011DT
site Area AS SHOWN	scale 1:200	date of survey 18/06/19
LGA CITY OF PARRAMATTA	SHEET 05/14	9

DP 1172250

PARRAMATTA

RIVER





0 4 6 8 12 16 20
SCALE 1:200 @ A1

D	00/00/00 -	00
C	00/00/00 -	00
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Revision Date Description Reference
Registered Surveyor NSW

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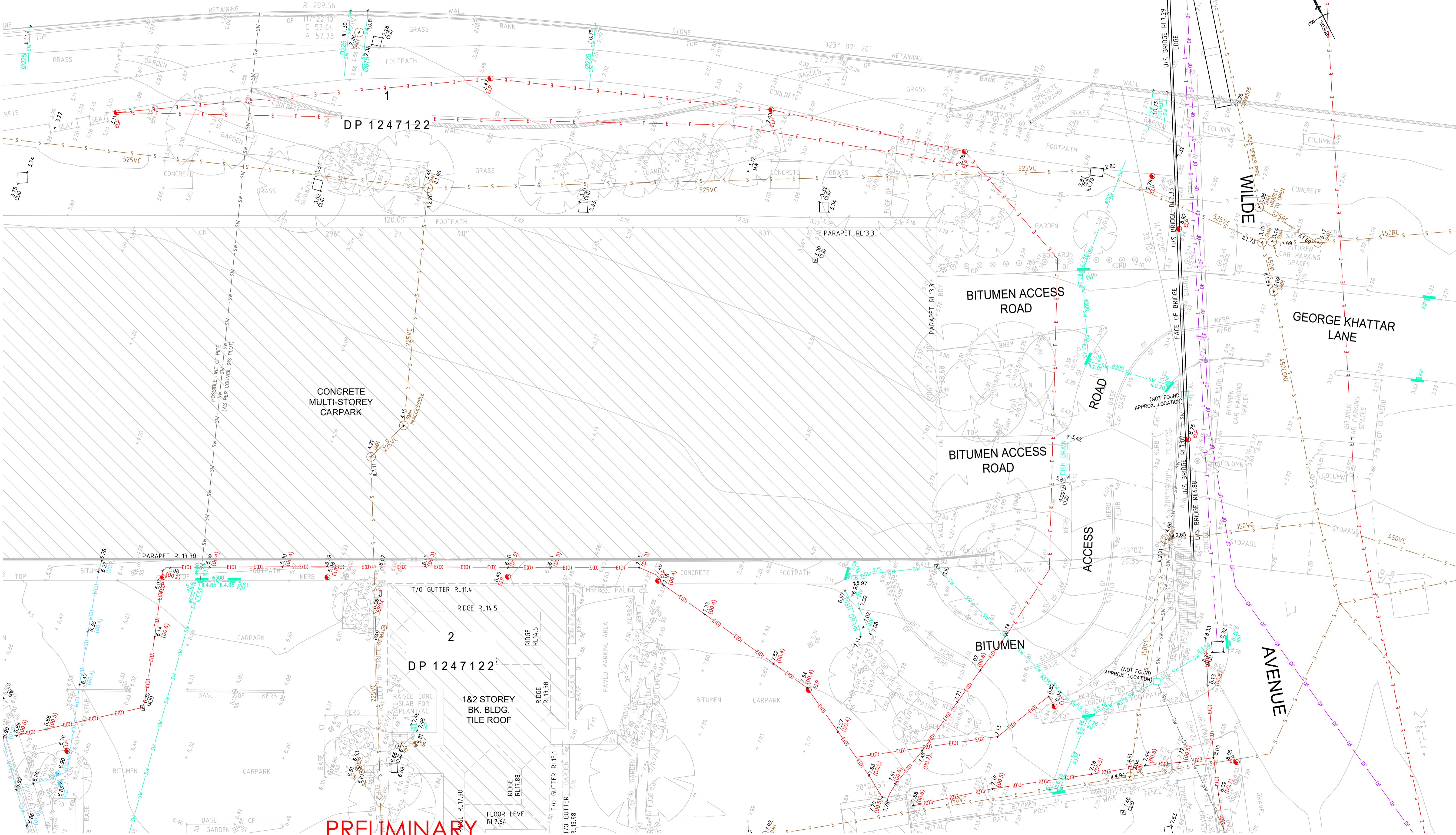
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datum AHD
site Area AS SHOWN
scale 1:200 @A1
date of survey 18/06/19
reference 41692 011DT
LGA CITY OF PARRAMATTA
sheet OF 14

PARRAMATTA

RIVER

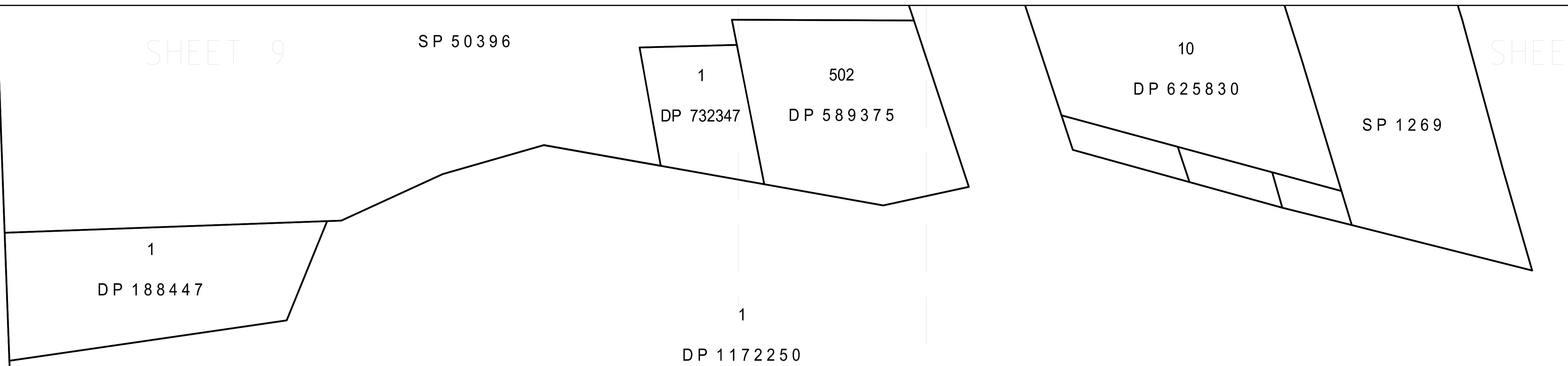


SP 50396

General

- . Survey to be a consolidated drawing which captures where correct, existing DBYD utility information and previous survey information.
- . Each service to be colour coded to match legend.
- . Survey to capture full extent of in ground services within the extent of survey scope
- . Where pits are shown with the no connection, survey is to capture full extent existing services
- . Please provide updated survey in CAD format with 3D levels in MGA coordinate system
- . Please provide surface triangulation as a TIN either 12d or CAD compatible)

CHURCH STREET



PARRAMATTA

RIVER

LEGEND

BENCH MARK	▲
OPTUS PIT	■ OP
TELSTRA PIT	■ TEL
ELECTRIC LIGHT POLE	● ELP
ELECTRICITY BOX	☒ EBOX
PIT WITH CONCRETE LID	□ CLID
PIT WITH METAL LID	□ MLID
RUBBISH BIN	○ BIN
TRAFFIC LIGHT	■ TL
STREET SIGN	☒ SS
BOLLARD	○ BOL
PARKING METER	⊕ PKM
ROAD TRAFFIC AUTHORITY	☒ RTA
GRATED INLET PIT	☒ GIP
KERB INLET PIT	■ KIP
SEWER INSPECTION POINT	○ SIP
SEWER VENT	● SEV
SEWER MANHOLE	○ SMH
SEWER MAST	○ SEWM
HYDRANT	■ HYD
WATER METER	■ WM
WATER TAP	☒ TAP
WATER VALVE	◆ WV
GAS LID	□ GLID
GAS VALVE	☒ GAS
GAS PLAQUE	☒ PLQ
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
GAS	— G —
TELSTRA	— T —
WATER	— W —
STORMWATER	— SW —
STORMWATER (APPROX. POSITION)	— SW —
SEWER	— S —
ELECTRICITY (OVERHEAD)	— P —
ELECTRICITY (U'GROUND)	— E —
OPTUS	— OP —
OPTICAL FIBRE	— OF —
TELSTRA (DETECTED)	— T(D) —
ELECTRICITY (DETECTED)	— E(D) —
GAS (DETECTED)	— G(D) —
WATER (DETECTED)	— W(D) —

Please include two corners coordinates as an insertion point. No more than 1km apart . Perhaps located at the corners of the boundary.

NP 1225807

SHEET LEGEND

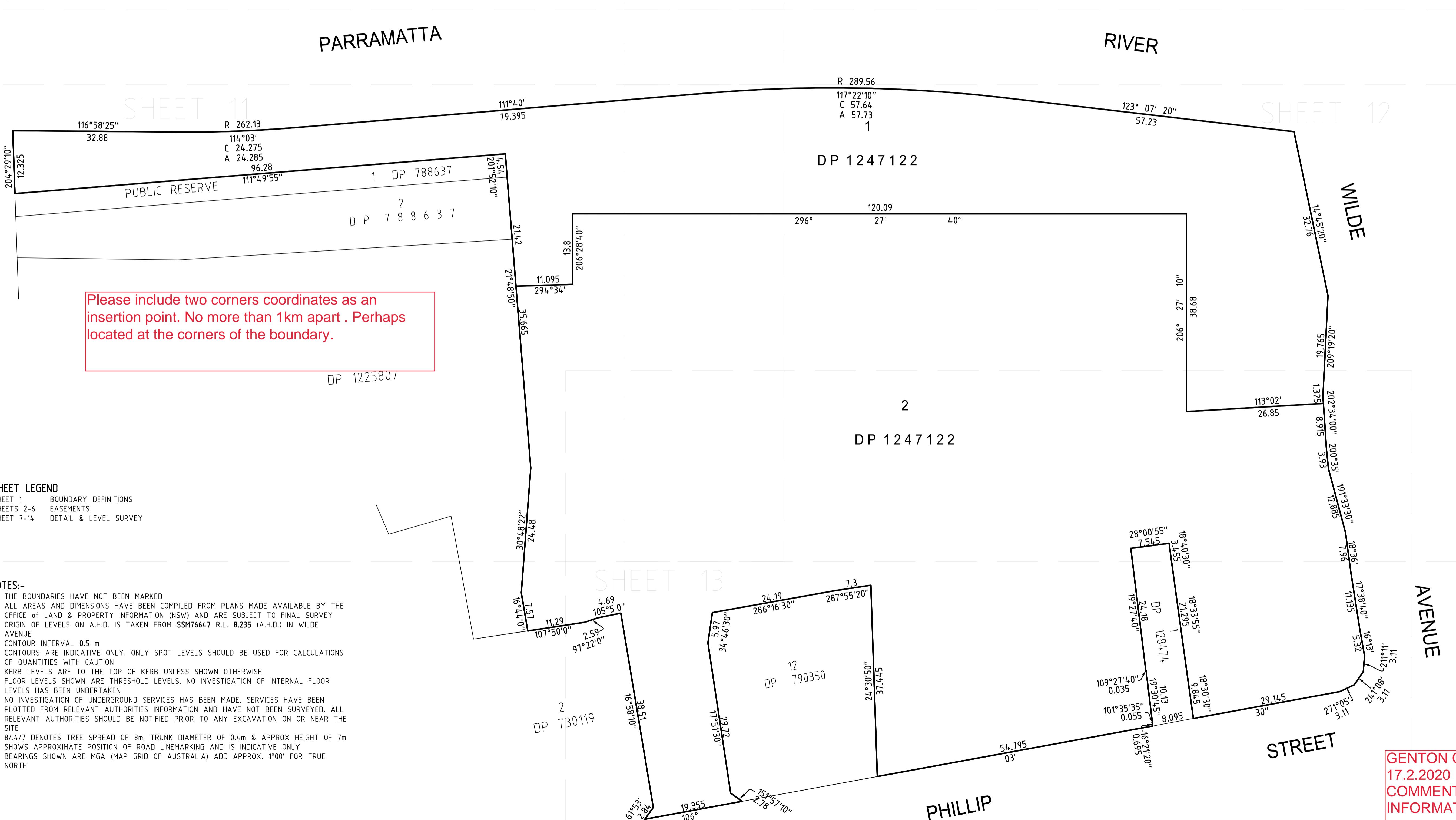
SHEET LEGEND

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 1. THE BOUNDARIES HAVE NOT BEEN MARKED
 2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE OFFICE OF LAND & PROPERTY INFORMATION (NSW) AND ARE SUBJECT TO FINAL SURVEY
 3. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM **SSM76647** R.L. **8.235** (A.H.D.) IN WILDE AVENUE
 4. CONTOUR INTERVAL **0.5 m**
 5. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
 6. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
 7. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
 8. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
 9. 8/4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
 10. SHOWS APPROXIMATE POSITION OF ROAD LINEMARKING AND IS INDICATIVE ONLY
 11. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH



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1, Level 1
Pacific Highway
London NSW 2072
P.O. Box 5
London NSW 2072
00 587 000
0422 776 000

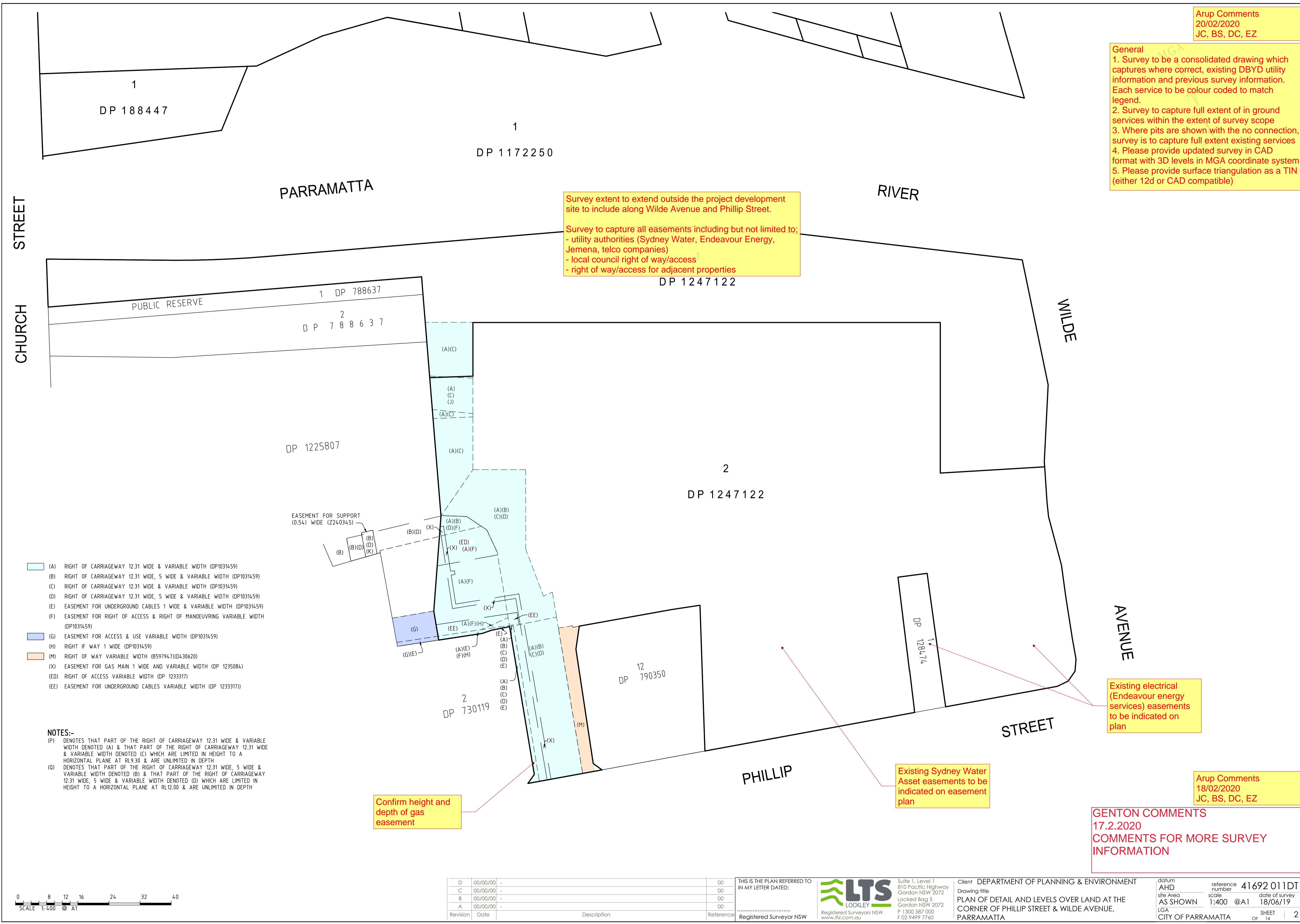
Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
**PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA.**

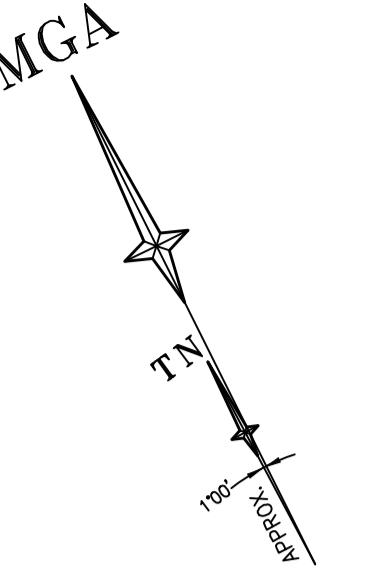
ENTON COMMENTS

2.2.2020

COMMENTS FOR MORE SURVEY INFORMATION

General
 1. Survey to be a consolidated drawing which captures where correct, existing DBYD utility information and previous survey information. Each service to be colour coded to match legend.
 2. Survey to capture full extent of in ground services within the extent of survey scope
 3. Where pits are shown with no connection, survey is to capture full extent existing services
 4. Please provide updated survey in CAD format with 3D levels in MGA coordinate system
 5. Please provide surface triangulation as a TIN (either 12d or CAD compatible)





STREET

PARRAMATTA

RIVER

CHURCH

WILDE

AVENUE

STREET

PHILLIP

DP 1225807

1
DP 1247122

2
DP 1247122

DP 128474

12
DP 790350

1 DP 788637
2
DP 788637

PUBLIC RESERVE

EASEMENT FOR SUPPORT
(0.54) WIDE (Z240345)

- (A) RIGHT OF CARRIAGEWAY 12.31 WIDE & VARIABLE WIDTH (DP1031459)
- (B) RIGHT OF CARRIAGEWAY 12.31 WIDE, 5 WIDE & VARIABLE WIDTH (DP1031459)
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- (ED) RIGHT OF ACCESS VARIABLE WIDTH (DP 1233317)
- (EE) EASEMENT FOR UNDERGROUND CABLES VARIABLE WIDTH (DP 1233317)

NOTES:-

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0 8 12 16 24 32 40
SCALE 1:400 @ A1

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C	00/00/00	-	00
B	00/00/00	-	00
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Revision Date Description Reference

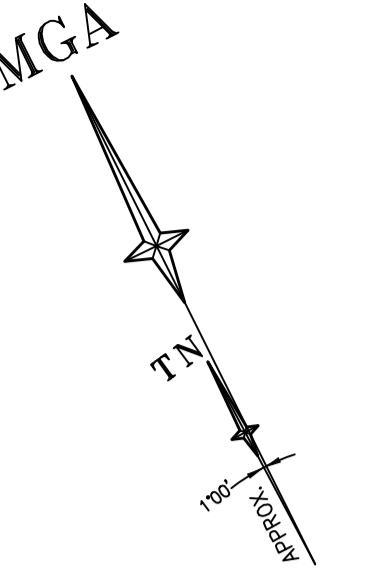
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW
www.lts.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

GENTON COMMENTS
17.2.2020
COMMENTS FOR MORE SURVEY INFORMATION

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET OF 14 3



STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

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0 8 12 16 24 32 40
SCALE 1:400 @ A1

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C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00

Revision Date Description Reference

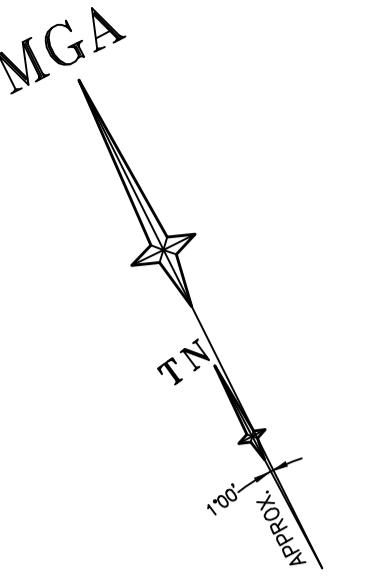
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW
www.lts.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

GENTON COMMENTS
17.2.2020
COMMENTS FOR MORE SURVEY INFORMATION

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 4
OF 14



STREET

PARRAMATTA

RIVER

CHURCH

WILDE

AVENUE

STREET

PHILLIP

DP 1225807

1
DP 1247122

2
DP 1247122

DP 128474

12
DP 790350

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DP 788637

PUBLIC RESERVE

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0 8 12 16 24 32 40
SCALE 1:400 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
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Revision Date Description Reference

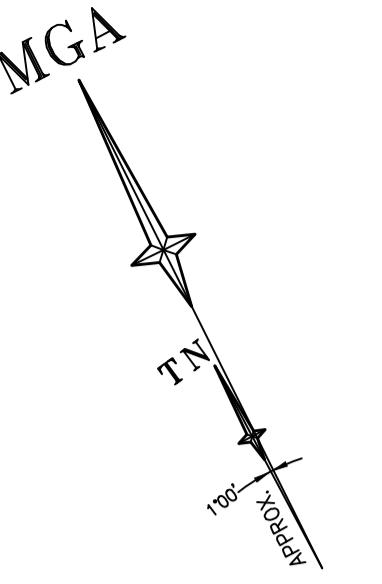
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW
www.lts.com.au

Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

GENTON COMMENTS
17.2.2020
COMMENTS FOR MORE SURVEY INFORMATION

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 5
OF 14



STREET

CHURCH

PARRAMATTA

RIVER

WILDE

AVENUE

STREET

PHILLIP

DP 1225807

EASEMENT FOR SUPPORT
(0.54) WIDE (Z240345)

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0 8 12 16 24 32 40
SCALE 1:400 @ A1

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Revision Date Description Reference

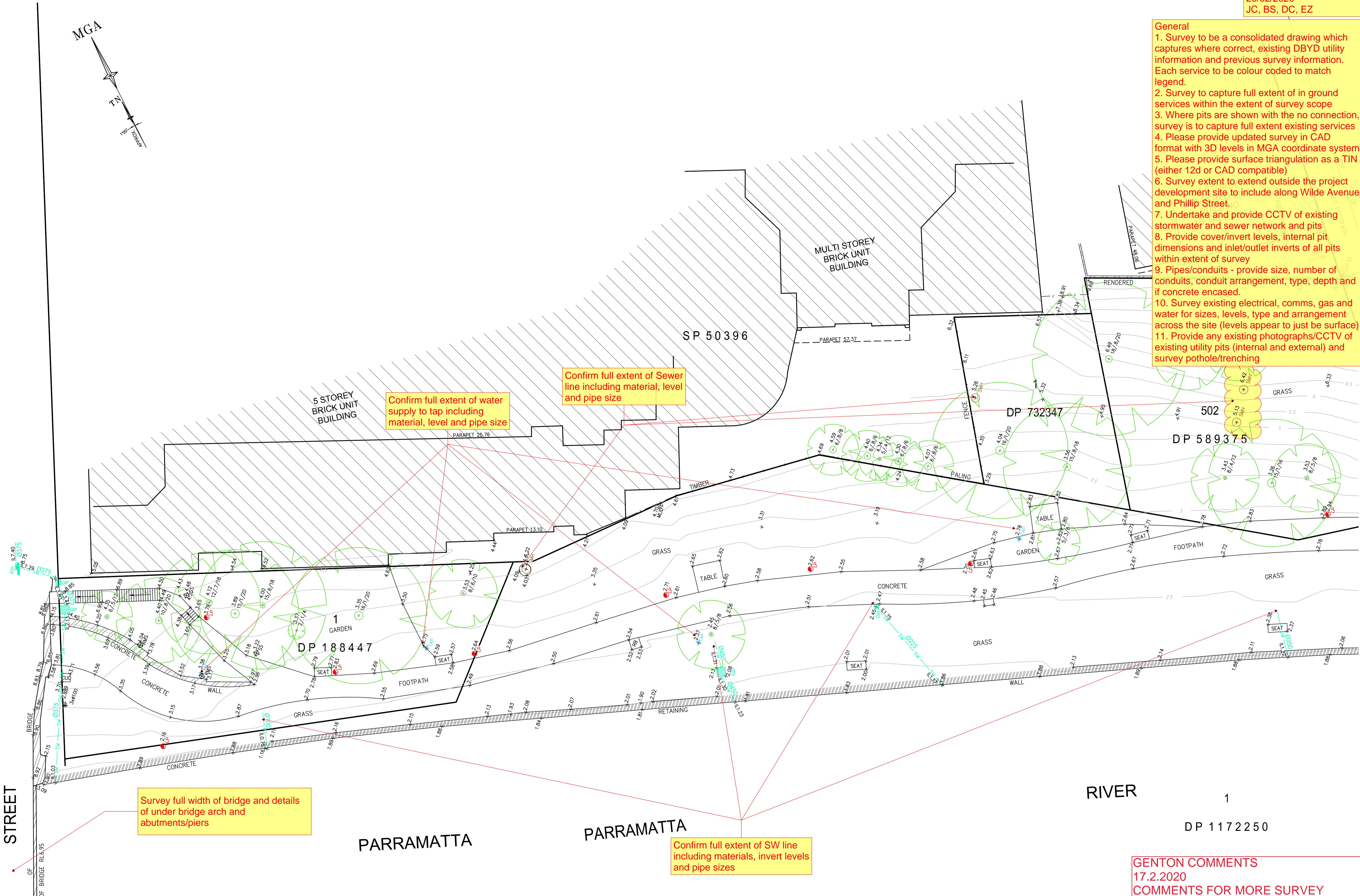
THIS IS THE PLAN REFERRED TO
IN MY LETTER DATED:
.....
Registered Surveyor NSW
www.lts.com.au

LTS
LOCKLEY
Suite 1, Level 1
810 Pacific Highway
Gordon NSW 2072
Locked Bag 5
Gordon NSW 2072
P 1300 587 000
F 02 9499 7760

Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
CORNER OF PHILLIP STREET & WILDE AVENUE,
PARRAMATTA

GENTON COMMENTS
17.2.2020
COMMENTS FOR MORE SURVEY INFORMATION

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:400 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET 6
OF 14



NOTE
STORMWATER PIPES SHOWN APPROXIMATELY HAVE BEEN POSITIONED FROM COUNCIL GIS PLAN AS SUPPLIED, AND HAVE NOT BEEN SURVEYED.

SCALE 1:200 @ A1

D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00

Revision Date Description Reference

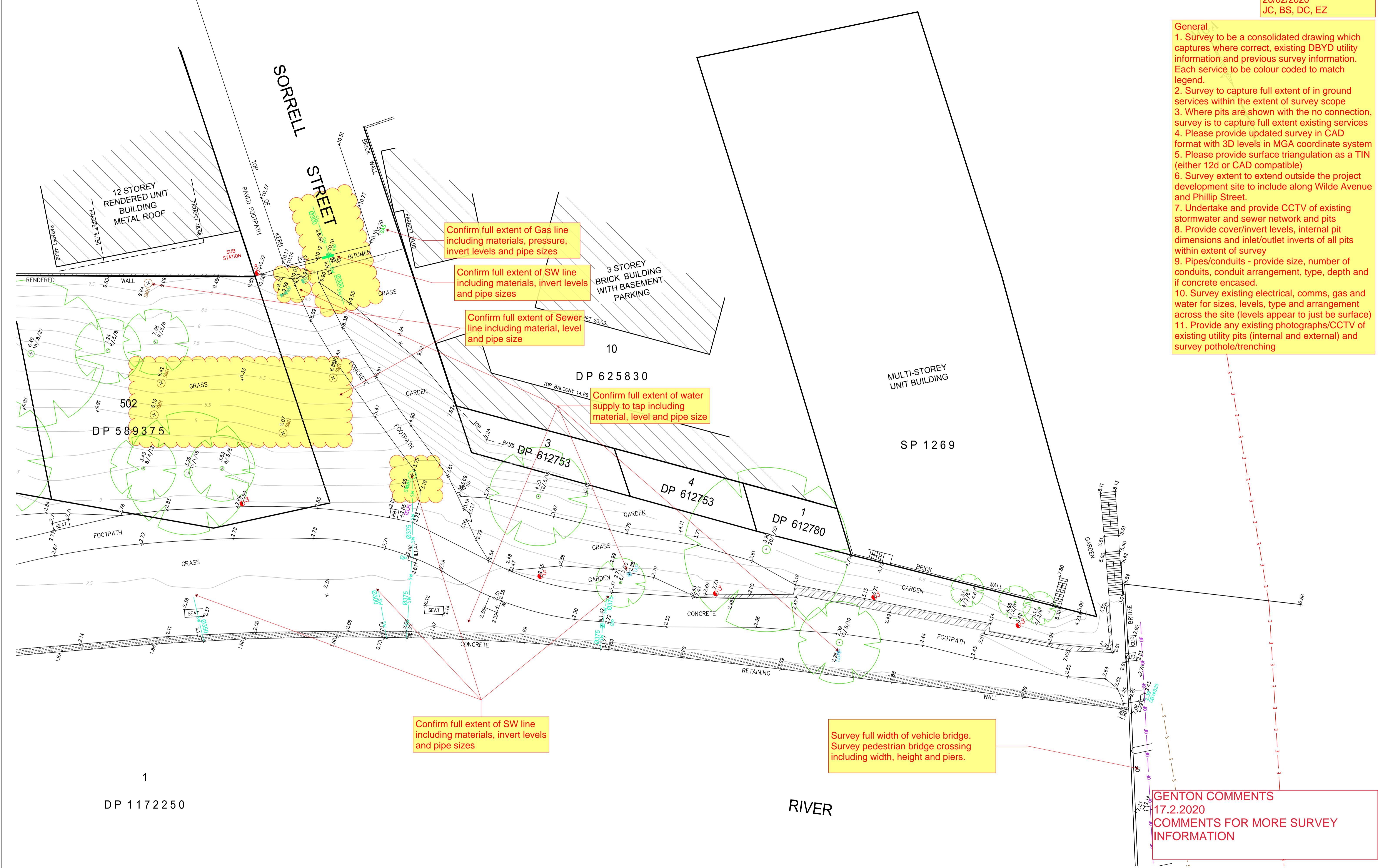
THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:
.....
Registered Surveyor NSW
www.lts.com.au



Suite 1, Level 1
810 Pacific Highway
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Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE CORNER OF PHILLIP STREET & WILDE AVENUE, PARRAMATTA

datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:200 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET OF 14

- General**
- Survey to be a consolidated drawing which captures where correct, existing DBYD utility information and previous survey information. Each service to be colour coded to match legend.
 - Survey to capture full extent of in ground services within the extent of survey scope
 - Where pits are shown with no connection, survey is to capture full extent existing services
 - Please provide updated survey in CAD format with 3D levels in MGA coordinate system
 - Please provide surface triangulation as a TIN (either 12d or CAD compatible)
 - Survey extent to extend outside the project development site to include along Wilde Avenue and Phillip Street.
 - Undertake and provide CCTV of existing stormwater and sewer network and pits
 - Provide cover/invert levels, internal pit dimensions and inlet/outlet inverts of all pits within extent of survey
 - Pipes/conduits - provide size, number of conduits, conduit arrangement, type, depth and if concrete encased.
 - Survey existing electrical, comms, gas and water for sizes, levels, type and arrangement across the site (levels appear to just be surface)
 - Provide any existing photographs/CCTV of existing utility pits (internal and external) and survey pothole/trenching

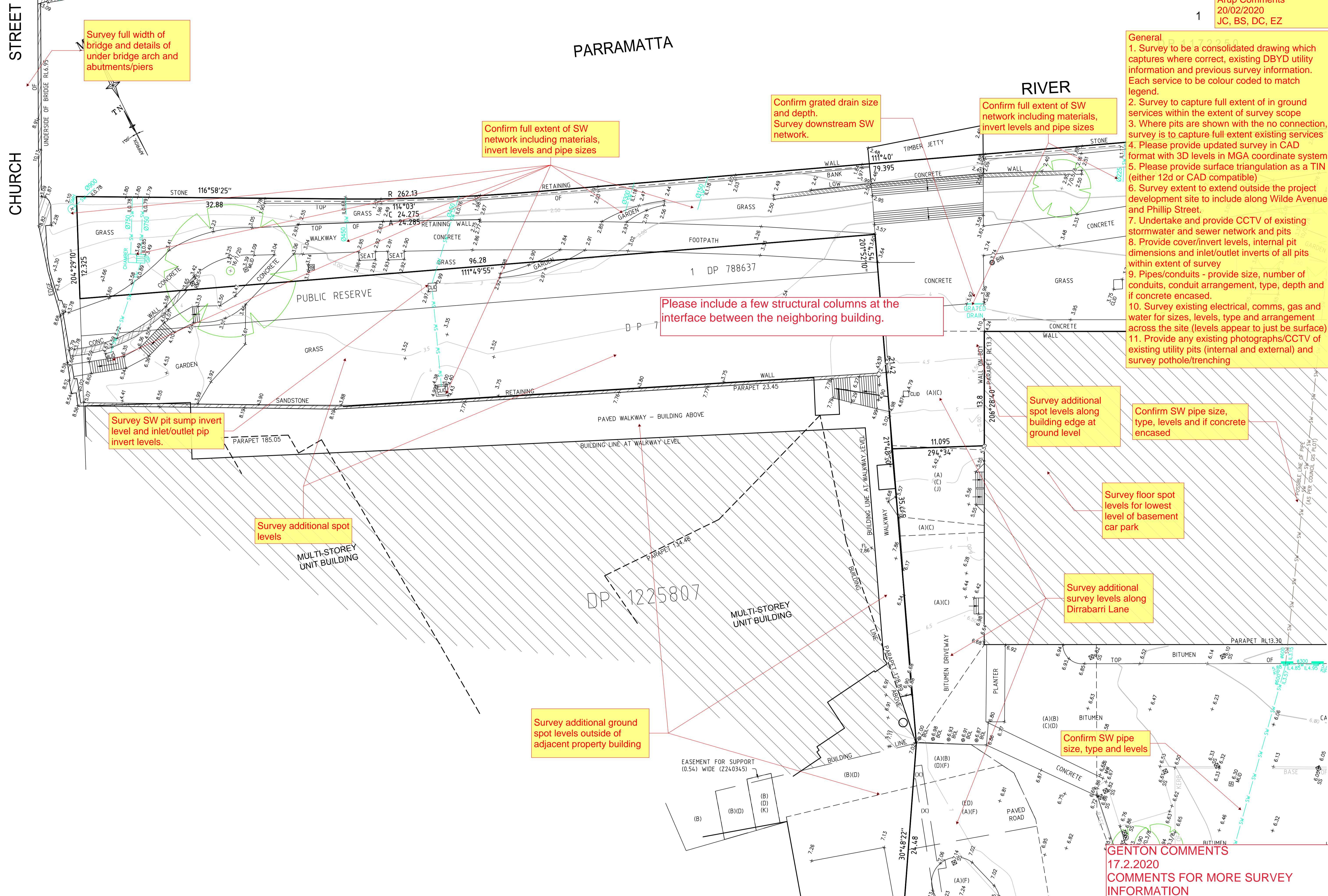


NOTE
STORMWATER PIPES SHOWN APPROXIMATELY HAVE BEEN POSITIONED
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D	00/00/00	-	00
C	00/00/00	-	00
B	00/00/00	-	00
A	00/00/00	-	00
Revision	Date	Description	Reference

THIS IS THE PLAN REFERRED TO
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LTS
Locked Bag 5
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P 1300 587 000
F 02 9499 7760
Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE
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Suite 1, Level 1
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LGA CITY OF PARRAMATTA SHEET OF 14



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SCALE 1:200 @ A1

D	00/00/00	-	00
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Client DEPARTMENT OF PLANNING & ENVIRONMENT
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datum AHD reference 41692 011DT
site Area AS SHOWN scale 1:200 @A1 date of survey 18/06/19
LGA CITY OF PARRAMATTA SHEET OF 14

1

PARRAMATTA

DP 1172250

Confirm SW outlet invert level

Confirm full extent of SW network including materials, invert levels and pipe sizes

Survey of Wilde avenue including both sides of road kerbs, kerb invert, SW networks (pipes and KIPs), road line marking, signs and all other surface features

Survey full width of vehicle bridge.
Survey pedestrian bridge crossing including width, height and piers.

Confirm full extent of SW line including materials, invert levels, pipe sizes and culvert dimensions

Confirm SW pipe size, type, levels and if concrete encased

Confirm what is inside pits and extent of related networks

Validate location of pipe.
Confirm full extent of SW line including materials, invert levels and pipe sizes

CONCRETE MULTI-STORY CARPARK

Survey floor spot levels for lowest level of basement car park

Survey additional spot levels along building edge at ground level
Confirm full extent of SW line including materials, invert levels and pipe sizes

Survey Wilde avenue overbridge piers below. Also include George Khatar parking and ground features under bridge

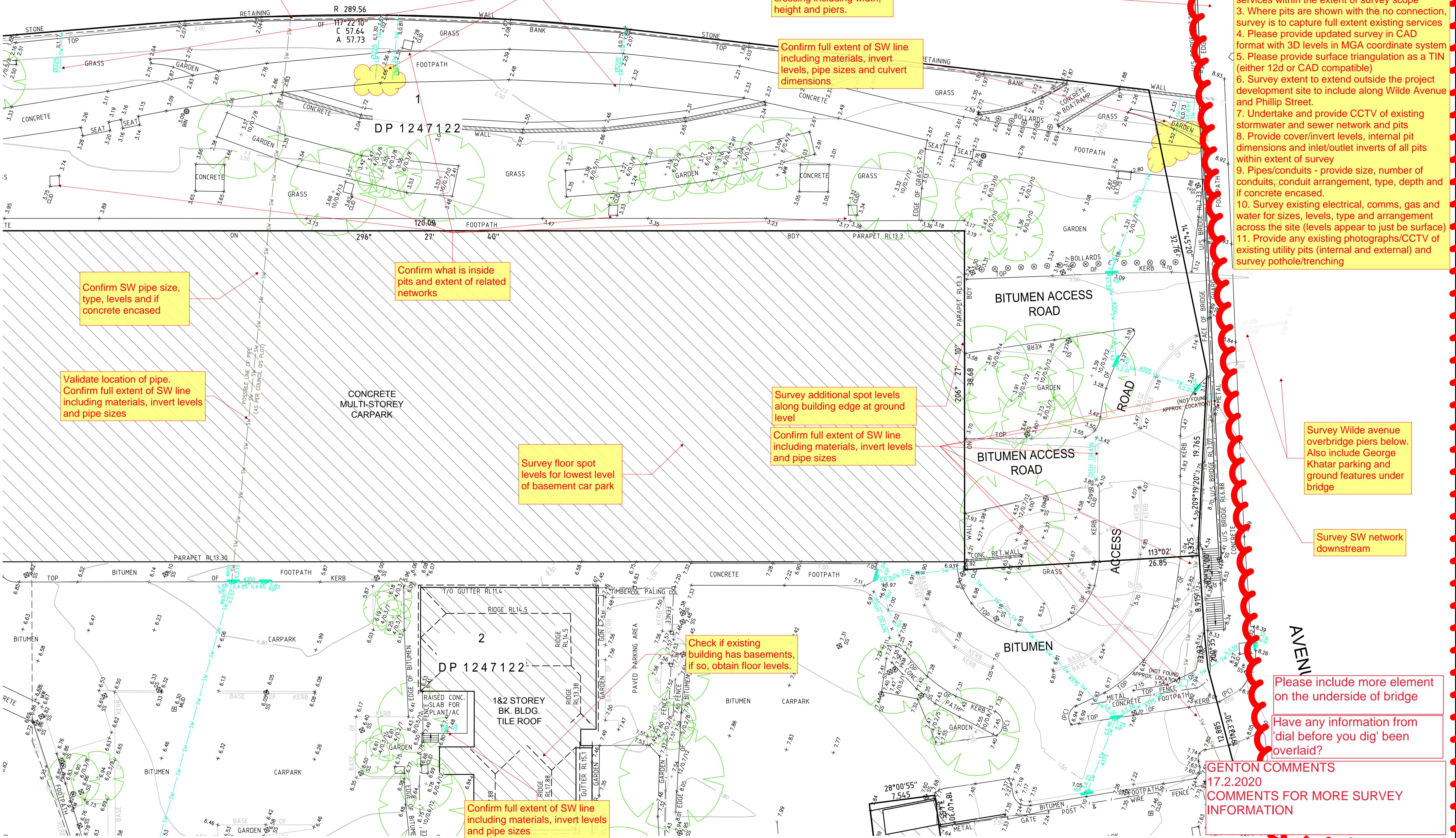
Survey SW network downstream

Please include more element on the underside of bridge

Have any information from 'dial before you dig' been overlaid?

GENTON COMMENTS

17.2.2020
COMMENTS FOR MORE SURVEY INFORMATION



NOTE

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SCALE 1:200 @ A1

D 00/00/00 -

C 00/00/00 -

B 00/00/00 -

A 00/00/00 -

Revision

Date

Description

Reference

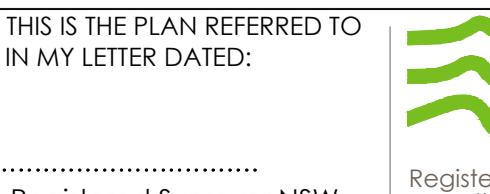
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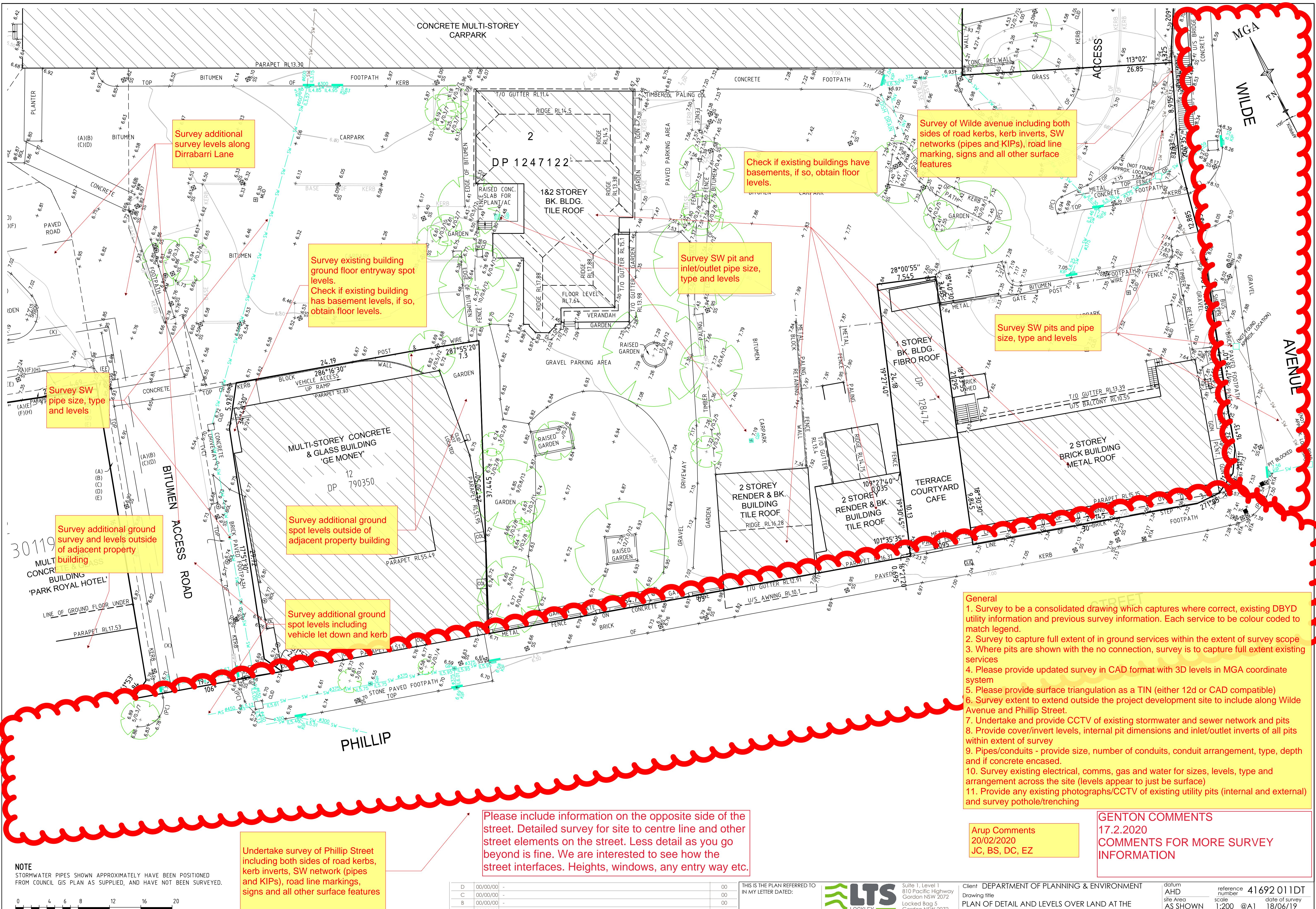
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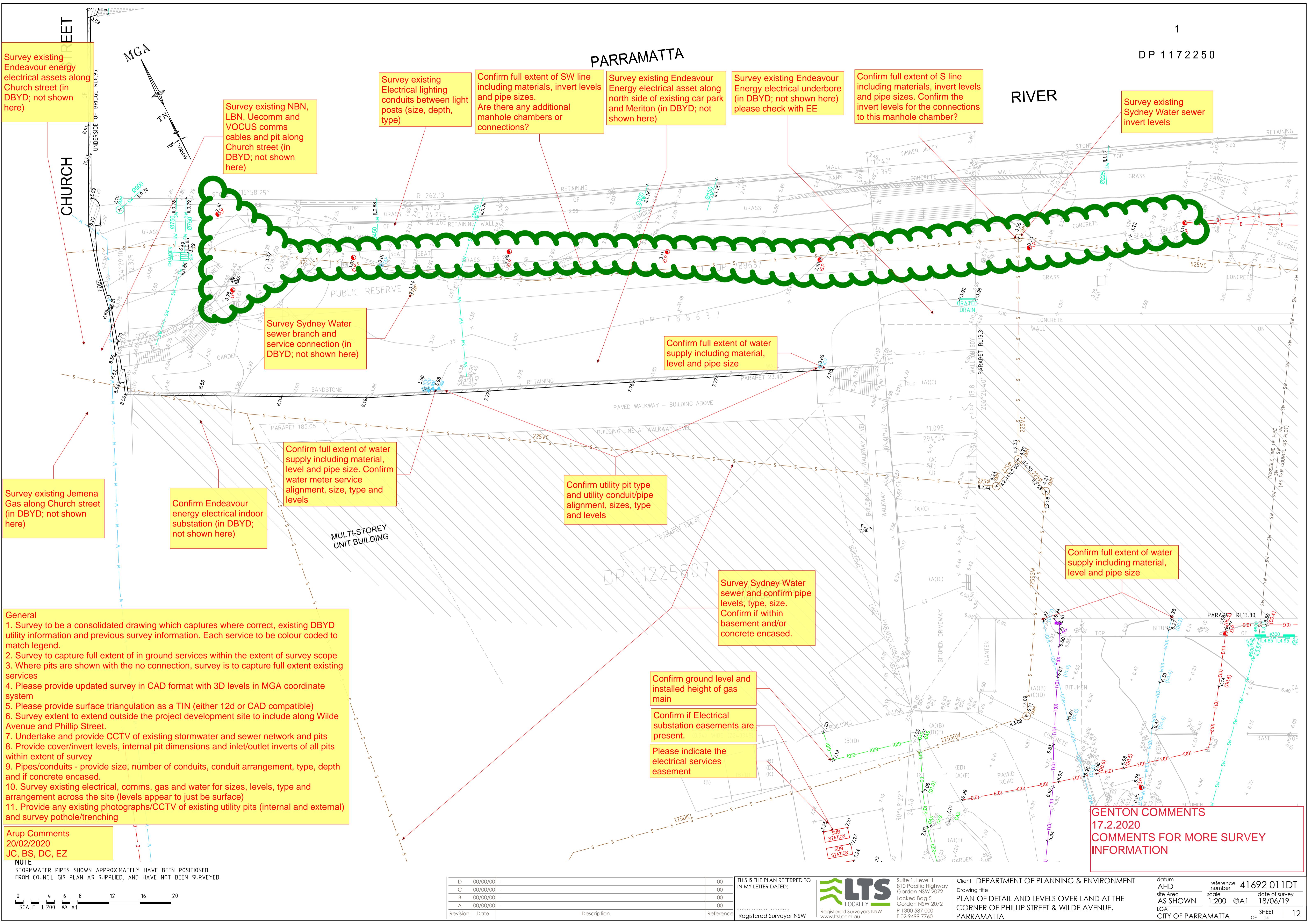


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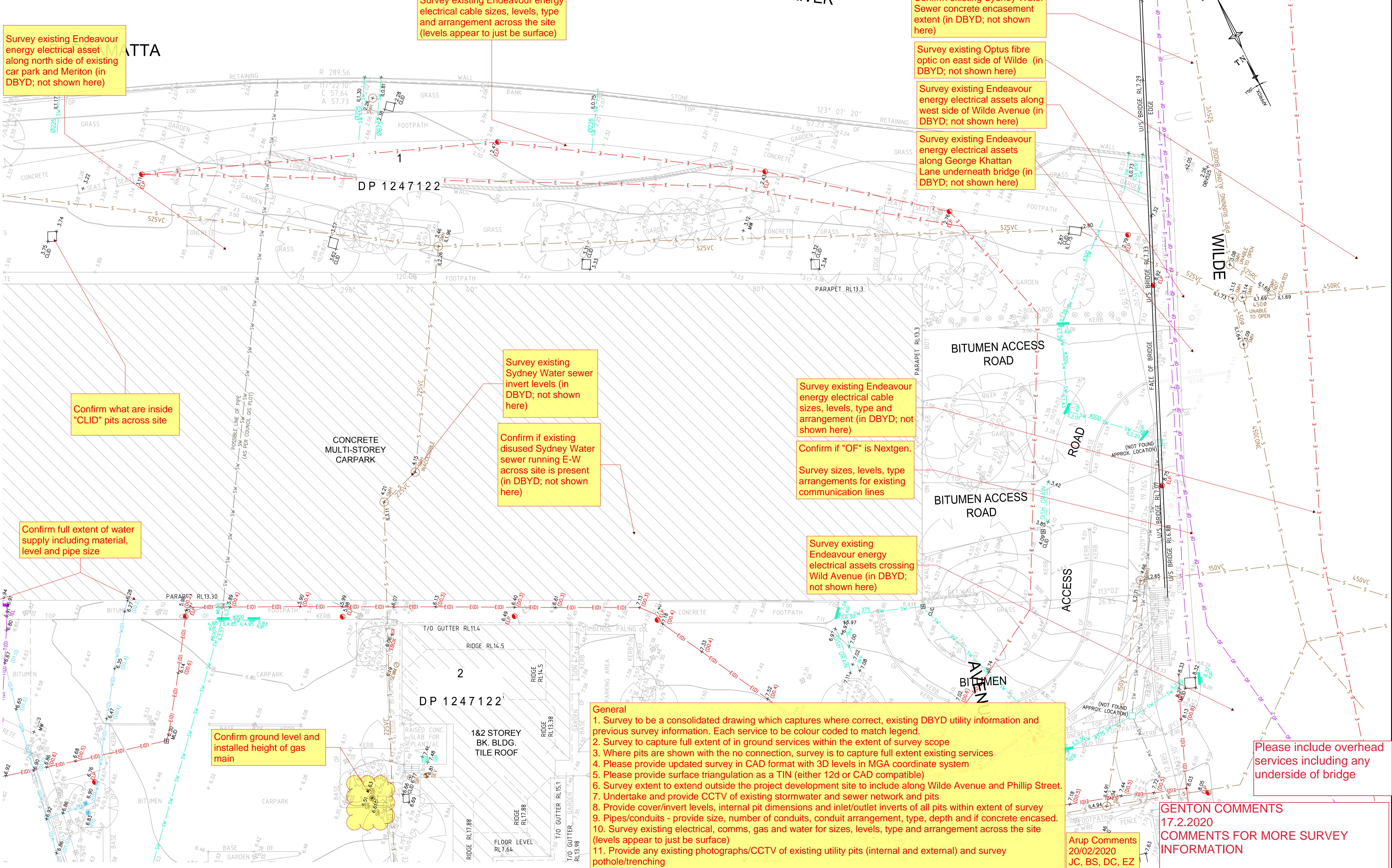
Client DEPARTMENT OF PLANNING & ENVIRONMENT
Drawing title
PLAN OF DETAIL AND LEVELS OVER LAND AT THE CORNER OF PHILLIP STREET & WILDE AVENUE, PARRAMATTA

datum AHD
site Area AS SHOWN
scale 1:200 @A1
date of survey 18/06/19
reference number 41692 011DT
LGA CITY OF PARRAMATTA
sheet OF 14



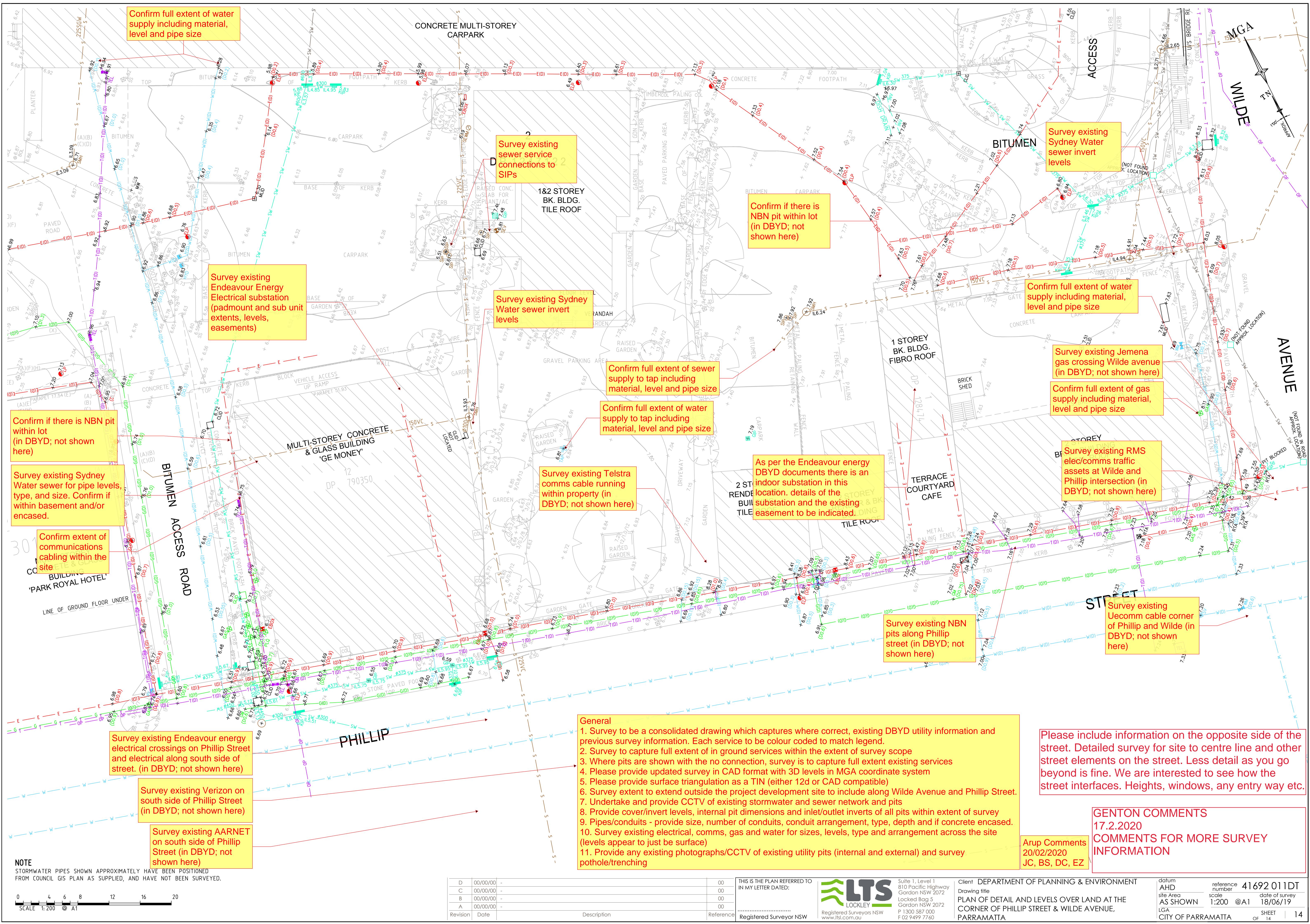


DP 1172250



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B	00/00/00	-	00
A	00/00/00	-	00

Revision Date Description Reference



Appendix C: Electrical Services – Endeavour Energy Supply Offer (Model standing offer)

In response to the submitted preliminary power supply application to Endeavour Energy to initiate the power supply infrastructure to site, this model standing offer was issued on 23rd of March 2020.



23 March 2020

Endeavour Energy Ref: ULL3028 – 2020/00397/001

Customer Ref:

Arup Pty Ltd
151 Clarence Street
SYDNEY NSW 2000

Attention: Karl Bicevskis

CONNECTION OFFER – STANDARD CONNECTION SERVICE

ULL3028 – LOT 1,1&2, DP 128474,1247122, Connection of Load Application: Phillip Street, PARRAMATTA

Thank you for your application providing information of the proposed development at the above location. Your application has been registered under the above reference number. Please quote this reference number on all future correspondence.

This connection offer is made in accordance with the Terms and Conditions of the Model Standing Offer for a Standard Connection Service available on our website. To accept this offer, please complete the enclosed Notice of Advice form and obtain your Level 3 Accredited Service Provider (ASP) signature on the form prior to returning it to Endeavour Energy.

Endeavour Energy has completed a preliminary desk top assessment of the information provided in your application and issued an enclosed Supply Offer. Your next step is to obtain the services of a Level 3 ASP to prepare and provide an electrical design to Endeavour Energy in the form of a Proposed Method of Supply. This activity is customer funded contestable work and you will need to pay for it. An estimate of fees related to review of your design is attached.

A list of the Accredited Service Providers is available at the NSW Trade and Investment website: <https://energysaver.nsw.gov.au/households/you-and-energy-providers/installing-or-altering-your-electricity-service> or can be obtained via phone 13 77 88.

Please note under the National Electricity Rules (NER) customer may choose to enter into a negotiated agreement. A negotiation framework describing this process is available on our website.

Should you have any enquiries regarding your application please contact the undersigned.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Albert Lo".

Albert Lo
Contestable Works Engineer
Ph: 9853 7939
Fax: 9853 7925
Email: cwtech@endeavourenergy.com.au

23 March 2020

Endeavour Energy Ref: ULL3028 – 2020/00397/001

Endeavour Energy
PO Box 811
Seven Hills NSW 1730
cwadmin@endeavourenergy.com.au

Attention: Contestable Works Administrator

NOTICE OF ADVICE

**APPOINTMENT OF ACCREDITED DESIGNER FOR THE PROPOSED DEVELOPMENT AT:
LOT 1,1&2, DP 128474, 1247122, PHILLIP STREET, PARRAMATTA**

*** Please complete and return when a Level 3 Service Provider has been nominated***

Please accept this letter as notification that I intend to proceed with the development described above. I own or am developing the land and works on the land, (and/or where relevant on public land). I intend to supply this development to Endeavour Energy requirements.

By signing this Notice of Advice I am accepting the Terms and Conditions of Endeavour Energy's Model Standing Offer for a Standard Connection Service.

- Electricity Supply to Developments.

The Level 3 Service Provider appointed is:.....

The Fees will be Paid to Endeavour Energy by:

.....
Signature of Level 3 ASP

.....
Name of Level 3 ASP

.....
Signature of Applicant/ Applicant's Representative

.....
Name of Applicant/ Applicant's Representative

.....
Date

.....
Company Name

The signatory warrants that they are authorised to execute this Application.

APPLICATION NO: ULL3028

DATE: 23 March 2020

SUBJECT: SUPPLY OFFER FOR

Phillip Street, PARRAMATTA

Endeavour Energy has carried out a desk top assessment and has prepared the attached Supply Offer for this development.

The supply offer will assist your Level 3 ASP to develop the most efficient solution to meet your needs whilst complying with Endeavour Energy's standards and with the Terms and Conditions of the Model Standing Offer for a Standard Connection Service. Please find below a list of some requirements that will need to be addressed by your nominated Level 3 ASP.

- Field visit to verify physical details
- Trench length
- Cable length
- Length of cable using existing ducts
- Length of new ducts required to be installed
- Substation location shown on a preliminary sketch and HV switchgear numbers
- Types and number of poles to be replaced or installed
- Complexity of trenching (ie rock, under-bore, commercial area etc)
- Earthing requirements and complexity
- Overhead construction and isolation point requirements
- Asset Valuation form must be completed including any extraordinary costing requirements
- Environmental issues addressed in a fully documented Environmental Assessment
- Generation requirements
- Rail Crossing requirements

A sketch of the proposed design utilising the GIS as a base must be returned with the above information.

This Supply Offer is part of the Connection Offer for a Standard Connection Service and is valid for three (3) months from the date of issue.

Where this Connection Offer has lapsed, you or your Level 3 ASP must contact Endeavour Energy with the request to extend the Connection Offer. Endeavour Energy will assess your request and will inform you of the outcome. It must be recognised that the network is being constantly extended/augmented as new customers get connected. This means that for your Connection Offer to be extended, your Supply Offer may require alteration. If this is the case, additional fees to cover administrative costs may apply.

The fees applicable to this phase of the project will need to be paid prior to design certification and are outlined in the Network Price List available on the Endeavour Energy website.

23 March 2020

Endeavour Energy Ref: ULL3028 – 2020/00397/001

SUPPLY OFFER

(Based on a desktop assessment)

Development Details & Applicant's Assessed Load:

Application made for 6,371A/phase for 3 phase connection to supply Power House Museum 32 residential units in Phillip Street PARRAMATTA .

Endeavour Energy Assessed Load:

Applicant's maximum demand calculations = 6,371A/Phase or 4.414MVA

Development & Site Plans received

Memo with Site Plans received.

Network Constraints & Limitations

From the desktop assessment, the proposed substation no.1 (corner of Phillip St & Wilde Ave) has to be located 6m from all road intersections. It appears that the location of substation no.1 could pose an issue for the loading/ unloading of the PM substation from a standard EE heavy vehicle from the road. The ASP designer is to investigate and provide a solution as to ensure heavy vehicle access to the substation complies with Clause 7.1.2.4 of MCI 0006.

For substation nos.2 & 3, they are located inside the property and dispensation request is to be submitted as part of the Method of Supply by Level 3 ASP. Supporting documents such as Traffic Management Plan showing how a Standard EE heavy vehicle able to access to the substation from the street vice visa, and access way and unloading/ loading area to comply Clause 7.1.2.4 of MCI 0006

The proposed substation locations (Sub nos. 1 – 3) could be in the flood zone. Level 3 ASP is to investigate and to determine the level at the top of the transformer footing as to ensure the proposed substation is located above 1-in-100 years flood level.

Please engage a Level 3 Accredited Service Provider (ASP) to investigate the supply options including substation location and provide a Method of Supply to supply your development.

HV/LV Connection Point & Connection Asset Requirements

1. Establish New Sub 1 at the corner of Phillip St & Wilde Ave.
2. Establish New Sub 2 & New Sub 3 as per proposed location at Dirrabarri Ln.
3. Loop New Sub 1 into cable between Subs 13912 & 17252.
4. Cut cable between New Sub 1 & Sub 17252 at the Northern side of the Phillip St road crossing. Extend this cable with 11kV 300mm² Cu XLPE cable West along Phillip St to new Sub 2 via Dirrabarri Ln.
5. Lay 11kV 300mm² Cu XLPE cable between New Sub 2 & New Sub 3.
6. Break down existing parallel branch joint on Phillip St between Subs 1183, 17719 & 17721.
7. Establish new joint on existing cables between Subs 1183 & 17721.

8. Extend cable from Sub 17719 with 11kV 300mm² Cu XLPE cable to New Sub 3.
9. Disconnect & abandon cable from Sw 37360 @ Sub 17242.
10. Cut cable between Subs 7858 & 848, extend end from Sub 7858 to Sw 37360 @ Sub 17242 with 11kV 240mm² Cu XLPE.
11. Cut cable between New Sub 1 & Sub 17252 at the Southern side of the Phillip St road crossing.
12. Cut cable between Subs 848 & 17238 at the Southern side of the Phillip St road crossing.
13. Establish new joint on cables from Subs 17252 & 17238.
14. Cut cable between Subs 17721 & 848 at the Northern side of the Phillip St road crossing.
15. Cut cable between Subs 848 and 17242, join end from Sub 17242 to cable from Sub 17721.
16. Carry out switching:
 - a. Close Sw 37360 @ Sub 17242.
 - b. Close Sw T290 @ Sub 17721.
 - c. Open Sw G6761 @ Sub 17252.
17. All efforts are to be made to reduce the total number of joints. Ensure the new joints are located 15m away from all intersections.
18. Endeavour Energy may request additional ducts depending on where the design requires trenching.

Connection Options:

The scope of works is to be undertaken in accordance with the Terms and Conditions of the Model Standing Offer for a Standard Connection Service and must comply with all relevant regulations, Endeavour Energy policies and network standards.

23 March 2020

Endeavour Energy Ref: ULL3028 – 2020/00397/001

Initial Funding Arrangements

Endeavour Energy Supplied Materials:

Nil

Endeavour Energy Funded and Constructed:

Nil

Endeavour Energy Funded and Level1 ASP Constructed – Reimbursement Paid by Endeavour Energy

Nil

Reimbursement to be paid to Endeavour Energy by Customer:

Nil

Customer Funded Monopoly Services:

Network switching, commissioning, contractor inspection, ancillary fees, etc.

Customer Funded Contestable Works:

All other works required

ANCILLARY FEE ESTIMATE

(for assessment of the Proposed Method of Supply and approval of the Design)



CAP No. : ULL3028 File No: 2020/00397/001

Proposed Location: Lot 1,1&2, DP 128474,1247122, Phillip Street
PARRAMATTA

Detailed below is the **estimate** of the proportion of applicable Ancillary Network Services Fees (GST Inclusive) related to design assessment for your information only. The final fees for this phase of the project will be sent to you with a Design Brief. Ancillary Network Services Fees will also apply for the construction and connection phase of the project (e.g., site establishment fee). These fees will be conveyed to you after the receipt of a signed Letter of Intent indicating that you will proceed with the construction phase of the project.

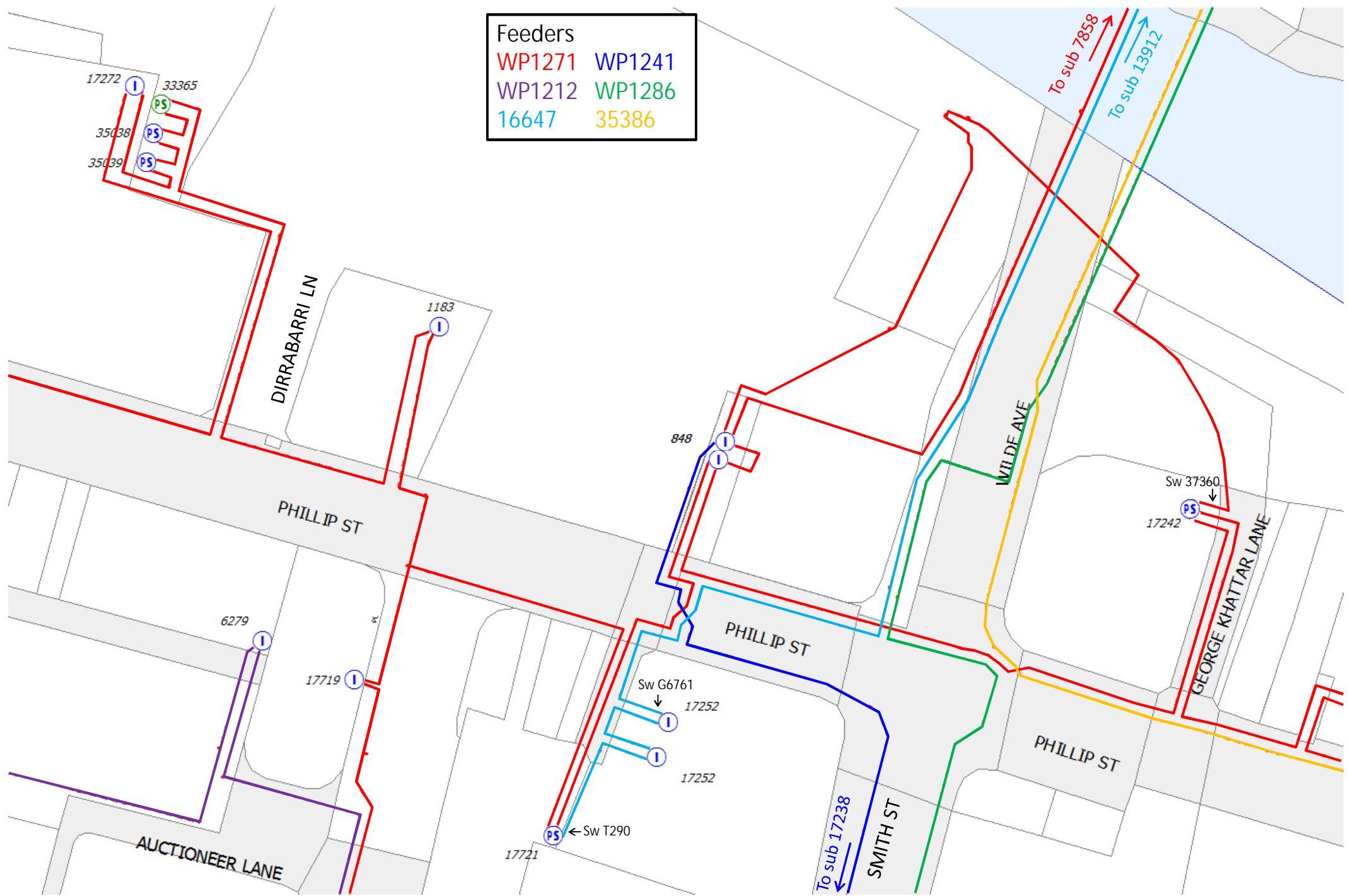
Administration Fee	23-03-2020	\$342.87
Design Certification Fee	23-03-2020	\$2592.31
Design Information Fee	23-03-2020	\$3456.42
Standard Connection Offer Fee	23-03-2020	\$259.22
Estimate Total (inc GST)		\$6650.82

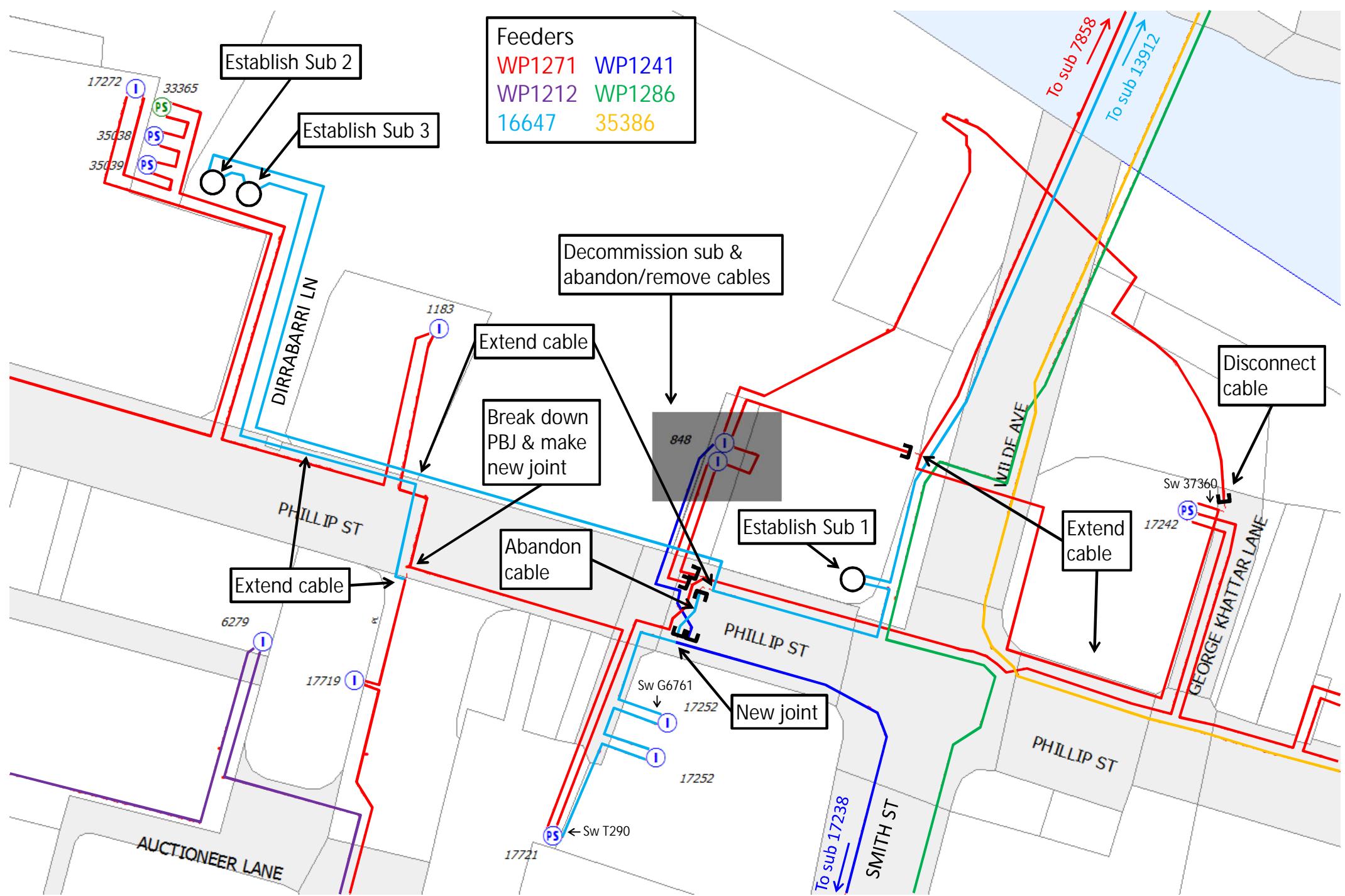
Where Endeavour Energy assets may need to be placed on private property, property easements will be required. Urgent action should be taken to create easements so that timely acquisition and registration with the Land and Property Information (NSW) can be completed.

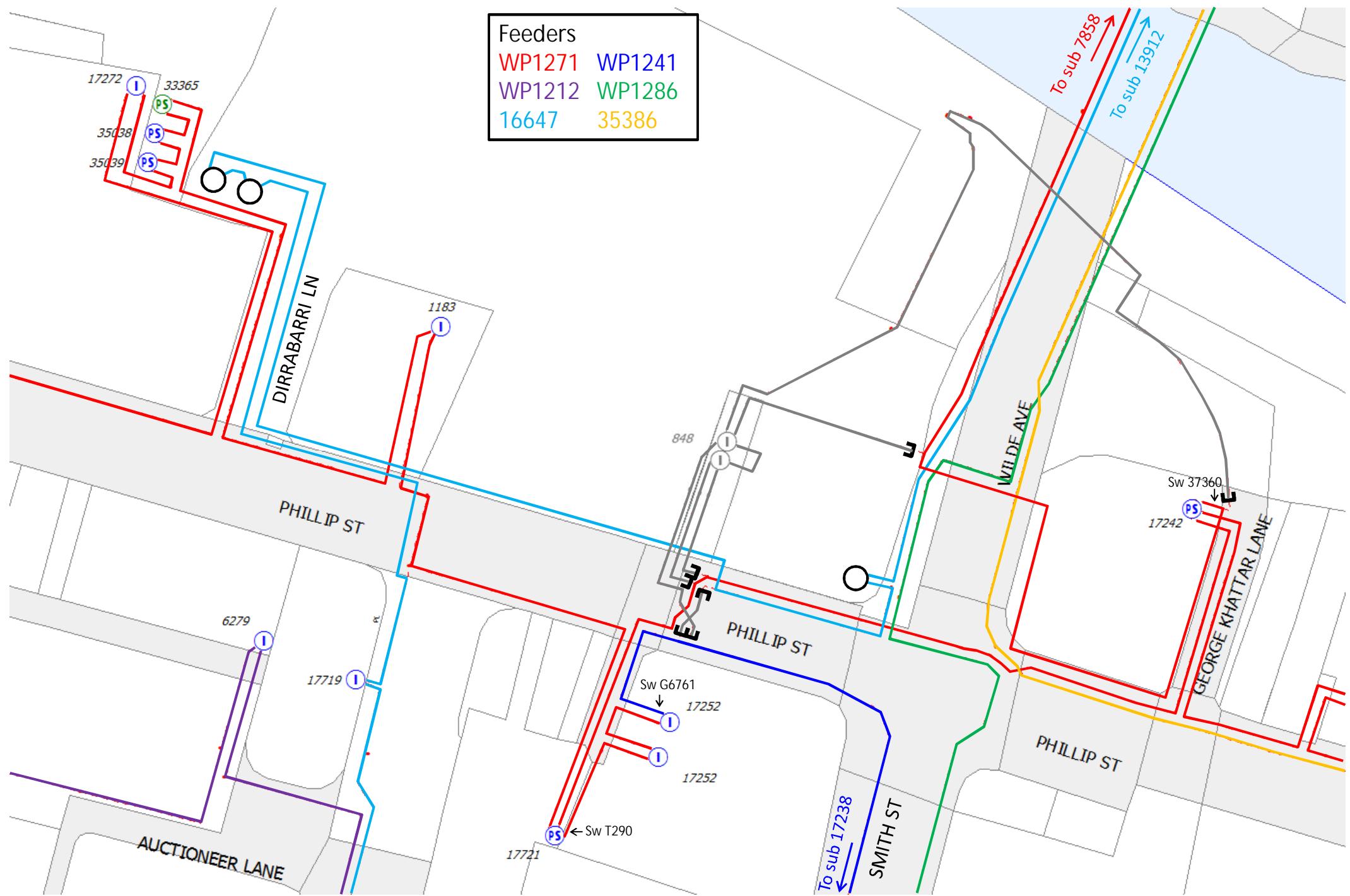
Endeavour Energy will accept a property tenure bond while the property owner is in the process of creating the easement. The property tenure bond will be returned after the easement has been registered.

Please do not make any fee payment at this time.

Once the design fee amount has been finalised Endeavour Energy will send a request for the fees and property tenure bond payment (if required) to your nominated Level 3 Accredited Service Provider.







Appendix D: Sydney Water Record of Correspondence

The following is a record of communication between Arup and Sydney Water during the pre-concept design phase.

From: Jake Cherniayeff
Sent: Thursday, 9 April 2020 1:45 PM
To: 'edbie.villanueva@sydneywater.com.au'; 'RINCHEVAL, MADELINE'
Cc: 'Tom Kennedy'; 'Hannah Slater'; 'Simon Pagett'; Julian Soper; Enrico Zara; Alexander Zhang; Terrence Tang; Claire Moore; Duncan Crook; 'Angelica GIANNOULATOU'; 'Leigh Woodley'
Subject: RE: Powerhouse Precinct Sydney Water Infrastructure Meeting
Attachments: 200409 MAAS Incoming Utilities Strategy_Sydney Water.pdf

Hi Ebdie, Madeline,

Further to the below, we have now received and reviewed Sydney Water pressure and flow information for the existing water mains at Church St and Phillip St. It might be that the building loads are reduced as the design develops, in particular for fire protection but based on the loads where they currently stand, amplification of the 150mm main in Phillip St would be required to furnish the development.

Estimated Building Loads

Total Loading (LU)*	Domestic Water Peak Flow (L/s)	Mechanical Loads (L/s)	Fire Protection (L/s)	Irrigation (L/s)	Total Combined Flow (L/s)	Main Connection Size (mm)	Typical Domestic Demand (kL)	Peak Daily Demand (kL)
2346	11.00	0.5	70	1.50	83	200 dia, 2.2 m/s	124	145

* Loading units obtained from Institute of Plumbing Design Guide

I have updated the presentation slides based on this information and included the pressure flow information.

Let me know if you have any comments on the minutes issued yesterday so I can finalise and re-circulate.

Best regards,

Jake Cherniayeff

Senior Engineer | Sydney Building Services
Arup

From: Jake Cherniayeff
Sent: Wednesday, 8 April 2020 4:57 PM
To: 'edbie.villanueva@sydneywater.com.au' <edbie.villanueva@sydneywater.com.au>; 'RINCHEVAL, MADELINE' <MADELINE.RINCHEVAL@sydneywater.com.au>
Cc: Tom Kennedy <tom@gtkconsulting.com.au>; 'Hannah Slater' <Hannah.Slater@infrastructure.nsw.gov.au>; 'Simon Pagett' <simon.pagett@infrastructure.nsw.gov.au>; Julian Soper <Julian.Soper@arup.com>; Enrico Zara <Enrico.Zara@arup.com>; Alexander Zhang <Alexander.Zhang@arup.com>; Terrence Tang <Terrence.Tang@arup.com>; Claire Moore <Claire.Moore@arup.com>; Duncan Crook <Duncan.Crook@arup.com>; Angelica GIANNOULATOU <angelica.giannoulatou@moreaukusunoki.com>; Leigh Woodley <leigh.woodley@genton.com.au>
Subject: RE: Powerhouse Precinct Sydney Water Infrastructure Meeting [Filed 08 Apr 2020 16:57]

Hi Edbie, Madeline,

Thanks again for your time last Thursday, it was an invaluable discussion for us to understand more about the Sydney Water assets surrounding the site and get your initial thoughts on the utilities strategy as it stands. We are very appreciative of Sydney Water's time and interest in the project at this early stage.

I've attached Arup's presentation slides and minutes of the meeting. Could you please let me know if we need to add or amend the minutes, or otherwise confirm the minutes capture our discussions accurately.

We will send through a pack of information separately to allow you to commence your high level review.

Best regards,

Jake Cherniayeff

Senior Engineer | Sydney Building Services
Arup

-----Original Appointment-----

From: Jake Cherniayeff

Sent: Monday, 30 March 2020 2:22 PM

To: Jake Cherniayeff; Alexander Zhang; Terrence Tang; Claire Moore; Duncan Crook;
edbie.villanueva@sydneywater.com.au; RINCHEVAL, MADELINE

Subject: Powerhouse Precinct Sydney Water Infrastructure Meeting

When: Thursday, 2 April 2020 2:00 PM-2:45 PM (UTC+10:00) Canberra, Melbourne, Sydney.

Where: Teams

All,

Initial meeting with Sydney Water to discuss the Powerhouse Precinct project at Parramatta and impact to Sydney Water assets.

The meeting can be accessed via the teams link below.

Best regards,

Jake Cherniayeff

Senior Engineer | Sydney Building Services

Arup

Barrack Place, 151 Clarence Street Sydney NSW Australia 2000

d: +61 02 9320 9922 t: + 61 02 9320 9320

www.arup.com

Connect with Arup on [LinkedIn](#)

Follow [@ArupGroup](#)

[Join Microsoft Teams Meeting](#)

[Learn more about Teams](#) | [Meeting options](#)

Project title	Powerhouse Precinct Parramatta	Job number 273467-00
Meeting name and number	Sydney Water Infrastructure Impact Meeting 001/20	File reference MOM_UT_SW_001
Location	Microsoft Teams	Time and date 2.00PM 2 April 2020
Purpose of meeting	Present Utilities Infrastructure Strategy to Sydney Water for comment and guidance on capacities and their anticipated requirements for the project.	
Present	Madeline Rinchevel (MR), Sydney Water Edbie Villanueva (EV), Sydney Water Claire Moore (CM), Arup Duncan Crook (DC), Arup Terrence Tang (TT), Arup Jake Cherniayeff (JC), Arup Alex Zhang (AZ), Arup	
Apologies	None	
Circulation	Those present Tom Kennedy, Hannah Slater, Simon Pagett, INSW Enrico Zara, Julian Sopa, Arup Angelica Giannoulatou, MK Leigh Woodley, Genton	

- Action
- 1. Introduction and Project Overview**

Sydney Water agree their involvement from early on in the design process will help to limit approvals risk and impacts to both the precinct and Sydney Water's assets

 - 1.1 Arup introduced their team**

Hydraulic and Fire Services Engineering

 - Jake Cherniayeff *H&F Lead*
 - Alex Zhang *H&F Engineer*

Civil Engineering

Claire Moore *Flooding Lead*

Prepared by	Jake Cherniayeff
Date of circulation	8 April 2020
Date of next meeting	TBD

Minutes

Project title	Job number	Date of Meeting
Powerhouse Precinct Parramatta	273467-00	2 April 2020

Action

Duncan Crook *Civil Lead*
Terrence Tang *Civil Engineer*

1.2 Stormwater Flood Study Overview (Duncan Crook)

- Site is high risk and becomes inundated with flood water from both mainstream and overland flooding
- We are mindful of existing flood conditions, this is being explored in the ongoing flood study
- We are aware of overland flows from South - Phillip St which drains through site in the pre-development condition
- Significant rising flood water from Parramatta river at 1% AEP event
- Arup provided a brief overview of proposed stormwater management strategy
 - Propose new stormwater trunk main down Dirrabarri Lane with outlet connections into Parramatta River. Proposed stormwater connections to avoid impacting the existing DN525 trunk sewer requiring a BOA application.
 - Maintain flood storage near the river to mitigate risk of adverse flooding impacts to buildings adjacent to the flood plain
- Sydney Water comments
 - Sydney Water been involved in similar studies in North Sydney, while Sydney Water is not the stormwater asset owner in this case, they are familiar with similar projects where the 1% AEP event conditions have been managed with a similar approach
 - Arup share the concern around flood affectation and actively developing the design with this risk in mind

1.3 Sewer Infrastructure Strategy (Jake Cherniayeff)

- Overview of surrounding sewer infrastructure
 - Multiple Sydney Water sewer mains running through the site
 - 525mm Sydney Water trunk sewer main runs parallel to Parramatta River, currently within proximity of new building foundations -this is a critical Sydney Water asset
- Proposed connection strategy
 - Current concept is for two connections, one into the 525mm trunk main adjacent the river bank and another into the 150mm main within Wilde Avenue
- Sydney Water comments
 - Sydney Water don't foresee any issues with the building loads provided

Minutes

Project title	Job number	Date of Meeting
Powerhouse Precinct Parramatta	273467-00	2 April 2020

Action

1.4 Mains Water Connection Strategy (Jake Cherniayeff)

- Overview of surrounding mains water infrastructure
 - Mains water available for connection in Church St and Phillip St
 - We understand there are future plans for a Sydney Water recycled water main and request details and planned online dates for this
- Proposed connection strategy
 - Preferred connection is via Phillip St, adjacent to Wilde Avenue
 - Provisions can be made within the building for connection of future recycled mains. The requirement for recycled water use within the building will be driven by planning and ESD requirements.
- Sydney Water comments
 - Sydney Water generally happy with building loads

1.5 Summary and Recommendations

- At this early stage, Sydney Water can provide a feasibility study for the project, this would go through the same consultation process and capacity checks typically coordinated by a WSC. This can include a review of the anticipated project requirements with internal stakeholders. Such a study would only be valid for the day its issued due to the potential for future network changes. Sydney Water have undertaken a similar study recently for the Sydney Football Stadium
- Typically a Section 73 cannot be lodged until a DA or SSDA number has been issued. The Section 73 application must be through a registered Sydney Water WSC
- Sydney Water can provide information and plans for future reclaimed water main within the Parramatta area
- Sydney Water Summary of Key Risks
 - Availability of assets for connection, feasibility study strongly recommended
 - Parramatta Recycled water main might not be available, Sydney Water to confirm
- Building over or adjacent to live Sydney Water Sewer Mains
 - Trunk mains are a critical asset
 - Stormwater construction likely to impact trunk sewer where crossing - generally we will seek to align new stormwater below

Minutes

Project title	Job number	Date of Meeting
Powerhouse Precinct Parramatta	273467-00	2 April 2020

-
- | Action |
|---|
| the existing sewer matching the existing stormwater configuration |
| <ul style="list-style-type: none">○ In some areas, adjustment of levels or new public domain elements may require protection or local adjustment of sewer subject to the nature of works once confirmed by the architectural team.○ Our objective is to minimise impacts and maintain the sewer on its existing alignment as is as far as possible however, we are aware that the current proposals may mean some works are necessary. Arup asked for details of the likely measures needed if affects are identified○ Sydney Water described the approval process required for building adjacent to or over Sydney Water Sewer○ Sydney Water mentioned that an informal review of any proposals for building adjacent to or over the trunk sewer can be undertaken before DA but that the advice would be a high level review and non-binding, which would not replace the formal approval process that would require a Water Services Coordinator. The purpose of this review is to understand if adjustments to the sewer are likely to be required○ Sydney Water require the following documents for an informal review:<ul style="list-style-type: none">▪ Plans and sections▪ Settlement contours (pre and post work survey and CCTV of sewer)▪ Work methodology statements▪ Geotechnical reports noting existing sensitive ground condition▪ Building waste water strategy |
| <ul style="list-style-type: none">● Sydney Water noted that engineering reviews are currently experiencing significant backlog due to large growth in Sydney and current staff workload● Madeline and Ebdie agreed to expedite turn-around of preliminary planning advice where possible |

2. Key Actions

- | | |
|---|-------------------|
| <ul style="list-style-type: none">● Arup to provide Sydney Water with details of the development proposals in proximity to the existing sewer● Sydney Water to undertake high level review of proposals and provide some commentary around advice and recommendations● Sydney Water to provide details of future recycled water main in the Parramatta Region | DC, TT, JC |
| | MR, EV |
| | MR, EV |

Minutes

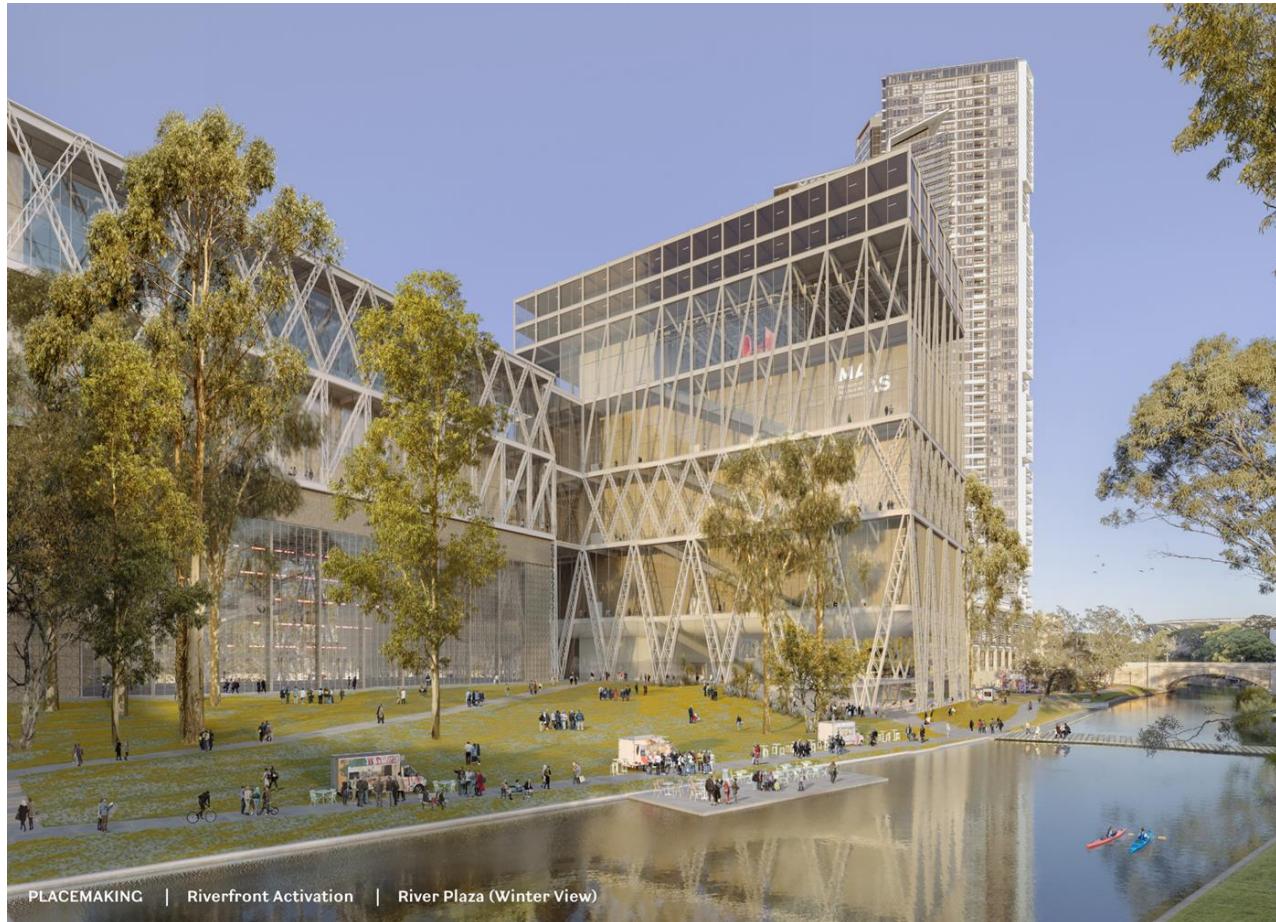
Project title	Job number	Date of Meeting
Powerhouse Precinct Parramatta	273467-00	2 April 2020

- | Action |
|--|
| • Design team to update Sydney Water and follow up with another meeting as the project design progresses |
| DC, JC |

Powerhouse Precinct Parramatta

Incoming Utilities Servicing Strategy

9th April 2020



PLACEMAKING | Riverfront Activation | River Plaza (Winter View)

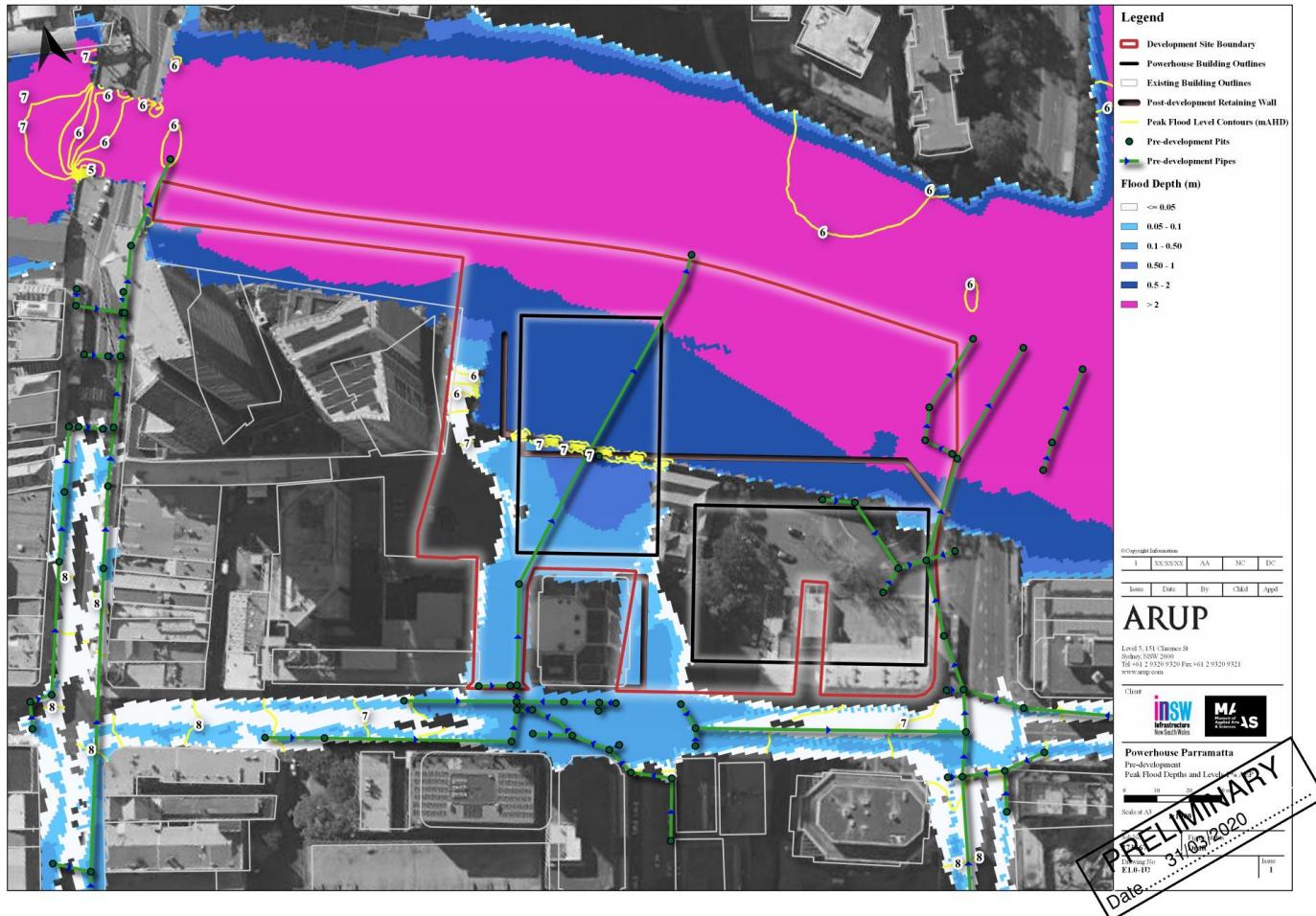
Site and Context



Parramatta City Council

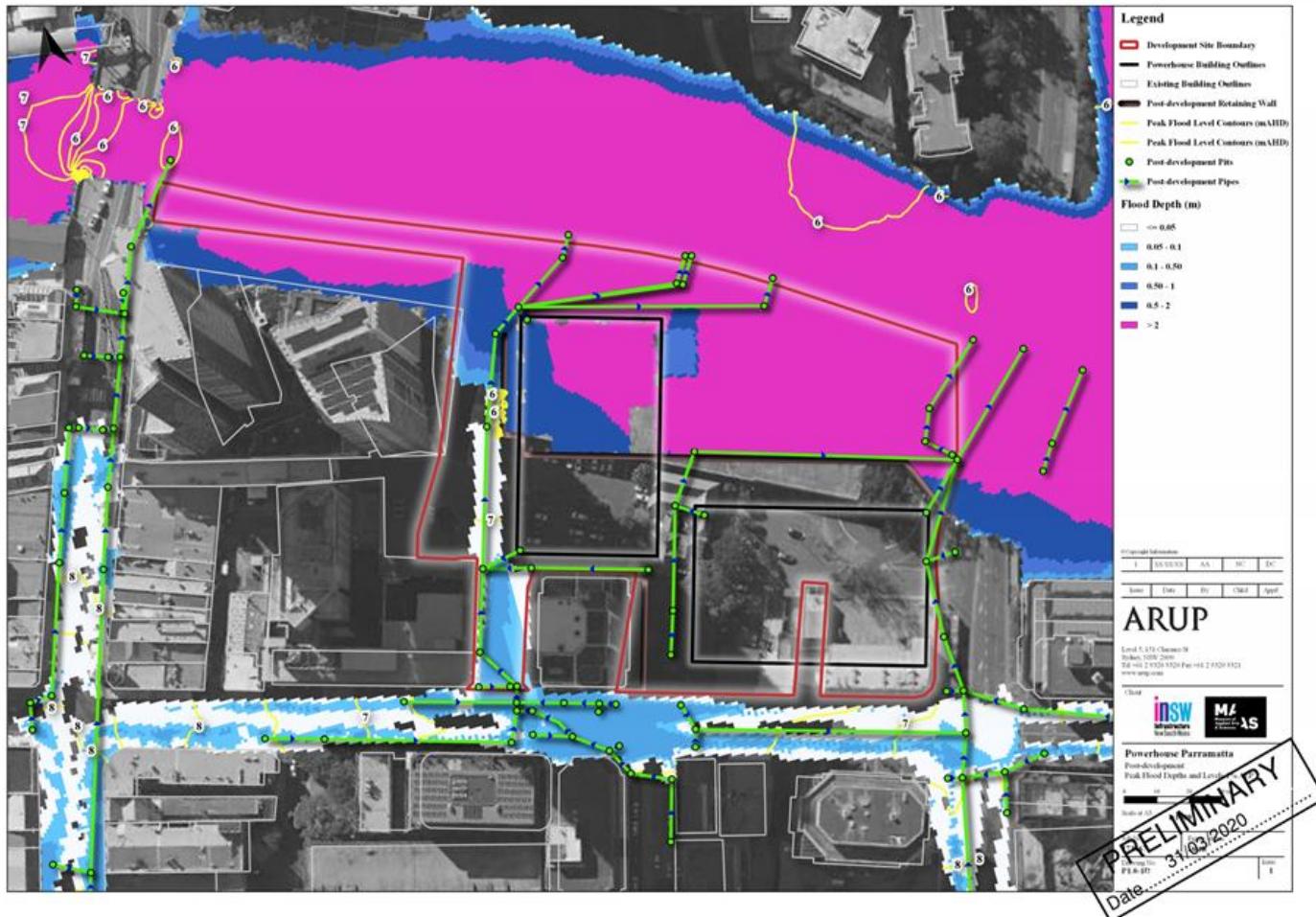
Stormwater Flood Study

Pre-Development at 1% AEP

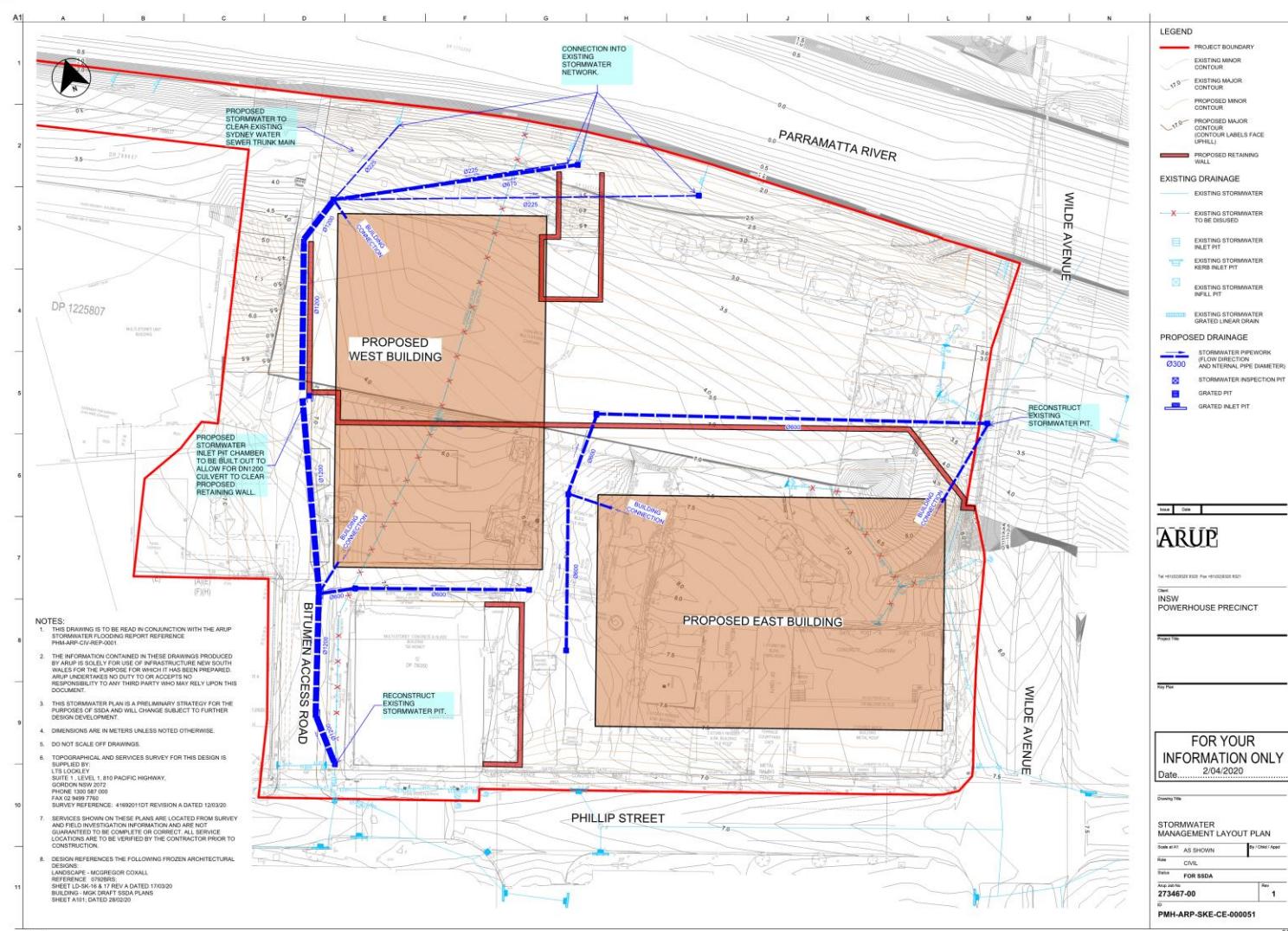


Stormwater Flood Study

Post-Development at 1% AEP



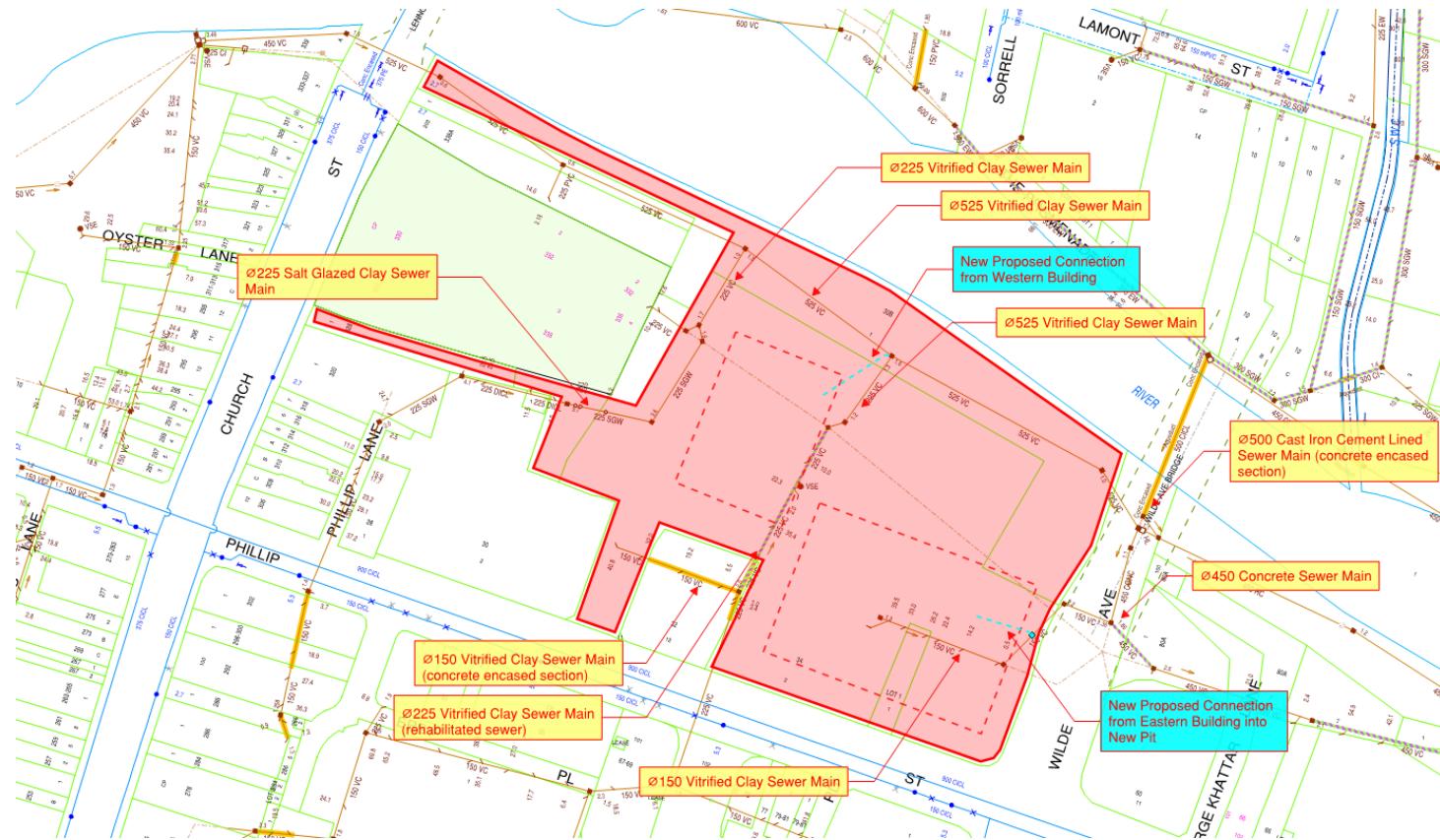
Stormwater Management Layout



ARUP

Sydney Water

Proposed Sewer Connections



ARUP

Sewer

Surrounding Infrastructure

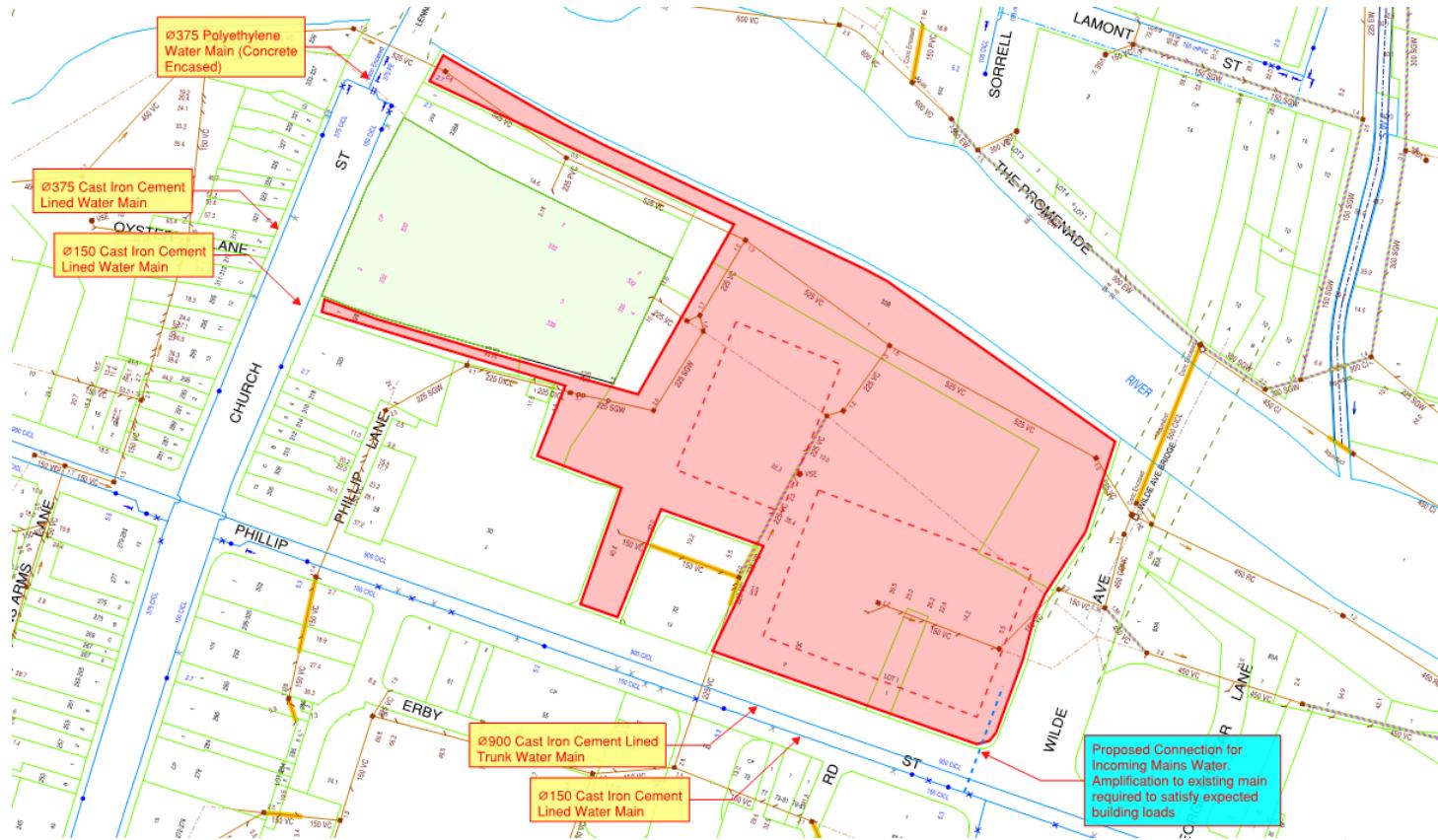
- Parramatta Riverbank – 525mm vitrified clay trunk sewer main
- Phillip Lane - 225mm salt glazed clay / vitrified clay sewer main
- Phillip Street – 225mm vitrified clay sewer main upsizes to 525mm before connecting to the trunk main. A 150mm vitrified clay sewer main beneath the existing 36 – 40 Phillip Street building that connects to the 225mm sewer main.
- Wilde Avenue – 500mm cast iron cement lined sewer main
- Wilde Avenue – 450mm concrete sewer main, a 150mm vitrified clay sewer main beneath the existing 48 – 56 Phillip Street building that connects to the 450mm sewer main.

Estimated Building Load

Building	Total Loading (DU)*	Peak Flow (L/s)	Main Connection Size	Typical Total Daily Demand (kL)	Peak Total Daily Demand (kL)
West	377	17	150 mm @ 1 in 60, 1.28 m/s	93	108
East	324	13	150 mm @ 1 in 60, 1.20 m/s		

* Discharge units obtained from Institute of Plumbing Design Guide

Proposed Water Connection



Mains Water

Surrounding Infrastructure

- Church Street and Lennox Bridge— 375mm polyethylene water main concrete encased, splits into a 375mm cast iron cement lined water main (west side of street) and a 150mm cast iron cement lined water main (east side of street)
- Phillip Street – 900mm cast iron cement lined trunk water main (centre line of street) and 150mm cast iron cement lined water main (south side of street). Amplification of 150mm main required to suit new loads.
- **We understand Sydney Water and Parramatta City Council have future plans for a municipality recycled mains water reticulation within the area that could serve the Powerhouse Precinct however, at this stage we do not have any documentation or proposal plans that outline the future strategy.**

Estimated Building Loads

Total Loading (LU)*	Domestic Water Peak Flow (L/s)	Mechanical Loads (L/s)	Fire Protection (L/s)	Irrigation (L/s)	Total Combined Flow (L/s)	Main Connection Size (mm)	Typical Domestic Demand (kL)	Peak Daily Demand (kL)
2346	11.00	0.5	70	1.50	83	200 dia, 2.2 m/s	124	145

* Loading units obtained from Institute of Plumbing Design Guide

Mains Water

Sydney Water Pressure Flow and Information

Statement of Available Pressure and Flow



Elena Longo
201 Kent Street
Sydney, 2000

Attention: Elena Longo

Date: 20/03/2020

Pressure & Flow Application Number: 828762
Your Pressure Inquiry Dated: 2020-03-06

Property Address: 34 Phillip Street, Parramatta 2150

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Phillip Street	Side of Street: South
Distance & Direction from Nearest Cross Street	140 metres West from Smith Street
Approximate Ground Level (AHD):	8 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	54 metre head
Minimum Pressure	38 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	38
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	40 39 38 37 36 34 31 26
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30 40 50 67	37 36 36 34 33 32 28 23 13
Maximum Permissible Flow		

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au

Statement of Available Pressure and Flow



Elena Longo
201 Kent Street
Sydney, 2000

Attention: Elena Longo

Date: 20/03/2020

Pressure & Flow Application Number: 828884
Your Pressure Inquiry Dated: 2020-03-06
Property Address: 30B Phillip Street, Parramatta 2150

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Church Street	Side of Street: West
Distance & Direction from Nearest Cross Street	135 metres North from Phillip Street
Approximate Ground Level (AHD):	7 metres
Nominal Size of Water Main (DN):	375 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	55 metre head
Minimum Pressure	41 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations (Two hose reels simultaneously)	0.66	41
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	42 42 42 42 42 42 41 41
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30 40 50 120	40 40 40 40 40 40 40 39 38
Maximum Permissible Flow		

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au

Statement of Available Pressure and Flow



Elena Longo
201 Kent Street
Sydney, 2000

Attention: Elena Longo

Date: 20/03/2020

Pressure & Flow Application Number: 828864
Your Pressure Inquiry Dated: 2020-03-06
Property Address: 30B Phillip Street, Parramatta 2150

The expected maximum and minimum pressures available in the water main given below relate to modelled existing demand conditions, either with or without extra flows for emergency fire fighting, and are not to be construed as availability for normal domestic supply for any proposed development.

ASSUMED CONNECTION DETAILS

Street Name: Church Street	Side of Street: East
Distance & Direction from Nearest Cross Street	135 metres North from Phillip Street
Approximate Ground Level (AHD):	7 metres
Nominal Size of Water Main (DN):	150 mm

EXPECTED WATER MAIN PRESSURES AT CONNECTION POINT

Normal Supply Conditions	
Maximum Pressure	55 metre head
Minimum Pressure	40 metre head

WITH PROPERTY FIRE PREVENTION SYSTEM DEMANDS	Flow l/s	Pressure head m
Fire Hose Reel Installations	0.66	40
Fire Hydrant / Sprinkler Installations (Pressure expected to be maintained for 95% of the time)	5 10 15 20 26 30 40 50	42 42 42 42 42 41 41 40
Fire Installations based on peak demand (Pressure expected to be maintained with flows combined with peak demand in the water main)	5 10 15 20 26 30 40 50 120	40 40 40 40 40 40 40 39 38
Maximum Permissible Flow		

(Please refer to reverse side for Notes)

For any further inquiries regarding this application please email :

swtapin@sydneywater.com.au

Sydney Water Corporation ABN 49 776 225 038
1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au

ARUP

Appendix E Jemena Record of Correspondence

The following is a record of communication between Arup and Jemena during the pre-concept design phase.

From: Jake Cherniayeff
Sent: Monday, 6 April 2020 3:06 PM
To: 'Zachary Kennett'
Cc: Alexander Zhang
Subject: RE: Powerhouse Precinct Parramatta Incoming Gas Connection

Hi Zachary,

Thanks for getting back to me.

The decision to progress with electrically supplied plant has largely been influenced by the projects sustainability aspirations and the weighting of Greenstar points for all electric base build vs gas. Note this requirement is not yet fully confirmed and will be subject to finalisation of the brief and sustainability targets.

Thanks for confirming the available provisions and utility equipment required.

We will keep you in the loop as the design progresses.

Best regards,

Jake Cherniayeff

Senior Engineer | Sydney Building Services
Arup

From: Zachary Kennett <Zachary.Kennett@jemena.com.au>
Sent: Monday, 6 April 2020 10:04 AM
To: Jake Cherniayeff <Jake.Cherniayeff@arup.com>
Cc: Alexander Zhang <Alexander.Zhang@arup.com>
Subject: [External] RE: Powerhouse Precinct Parramatta Incoming Gas Connection

Hi Jake,

Neale has passed the below email onto me, the below stub was installed specifically for the proposed Powerhouse as there is limited capacity on the 7 kPa network in paramatta and this position highlighted below will be the point of connection for Precinct.

Do you know why they have chosen not to go with natural gas for the base build mech plant and hot water?

Preliminary recommendation based on the proposed loads would be a BRS215 boundary regulator will be provided reducing the pressure from 1050kPa to 5kPa (attached).

For the smaller pop up kiosks they will only require L8 meters and the larger kitchen will require a L174 (both also attached) which will reduce pressure from 5 to 2.75kPa.

Please let me know if you need any additional information.



Regards,

Zachary Kennett

Network Development Specialist – I&C

Jemena

99 Walker Street, North Sydney NSW 2060
PO Box 1220, North Sydney NSW 2059
Tel: 02 9867 7182 | 0409 608 399

www.jemena.com.au



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From: Jake Cherniayeff <Jake.Cherniayeff@arup.com>

Sent: Friday, 3 April 2020 5:00 PM

To: Neale Hilton <Neale.Hilton@jemena.com.au>

Cc: Alexander Zhang <Alexander.Zhang@arup.com>

Subject: Powerhouse Precinct Parramatta Incoming Gas Connection

CAUTION: This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and are expecting the content or attachment from the sender.

Hi Neale,

Hope you are keeping well.

We are currently in SSDA and Pre-Concept design phase for the Powerhouse Precinct at Parramatta which will house the new Museum of Applied Arts and Science.

We want to engage with Jemena early on in the project to understand current network capacities, future upgrades and limits on the supply connection. We have summarised the proposed gas utilities strategy in the attached document which outlines our investigations of the existing DBYD network map, proposed connection points and expected gas loads based on the brief and the current scheme.

The architectural scheme and indeed the brief are still evolving so the figures are very much a work in progress at this stage. The buildings mechanical and domestic hot water generation will be all electric, with gas being supplied only to commercial kitchen and F&B tenants. It is expected that we will provide unmetered capped connections to these areas for tenants to arrange their own billing with their preferred utility provider.

Could you please review the scheme and comment on the feasibility of the new connection and let us know if you foresee any unique requirements for the incoming gas supply as part of the development. We would also appreciate sizing of the boundary regulator and utility meters so we can allocate these spaces in the building.

We are available to meet virtually or discuss the project in more detail over the phone early next week if it would be useful.

Best regards,

Jake Cherniayeff

Senior Engineer | Sydney Building Services

Arup

Barrack Place, 151 Clarence Street Sydney NSW Australia 2000

d: +61 02 9320 9922 t: +61 02 9320 9320

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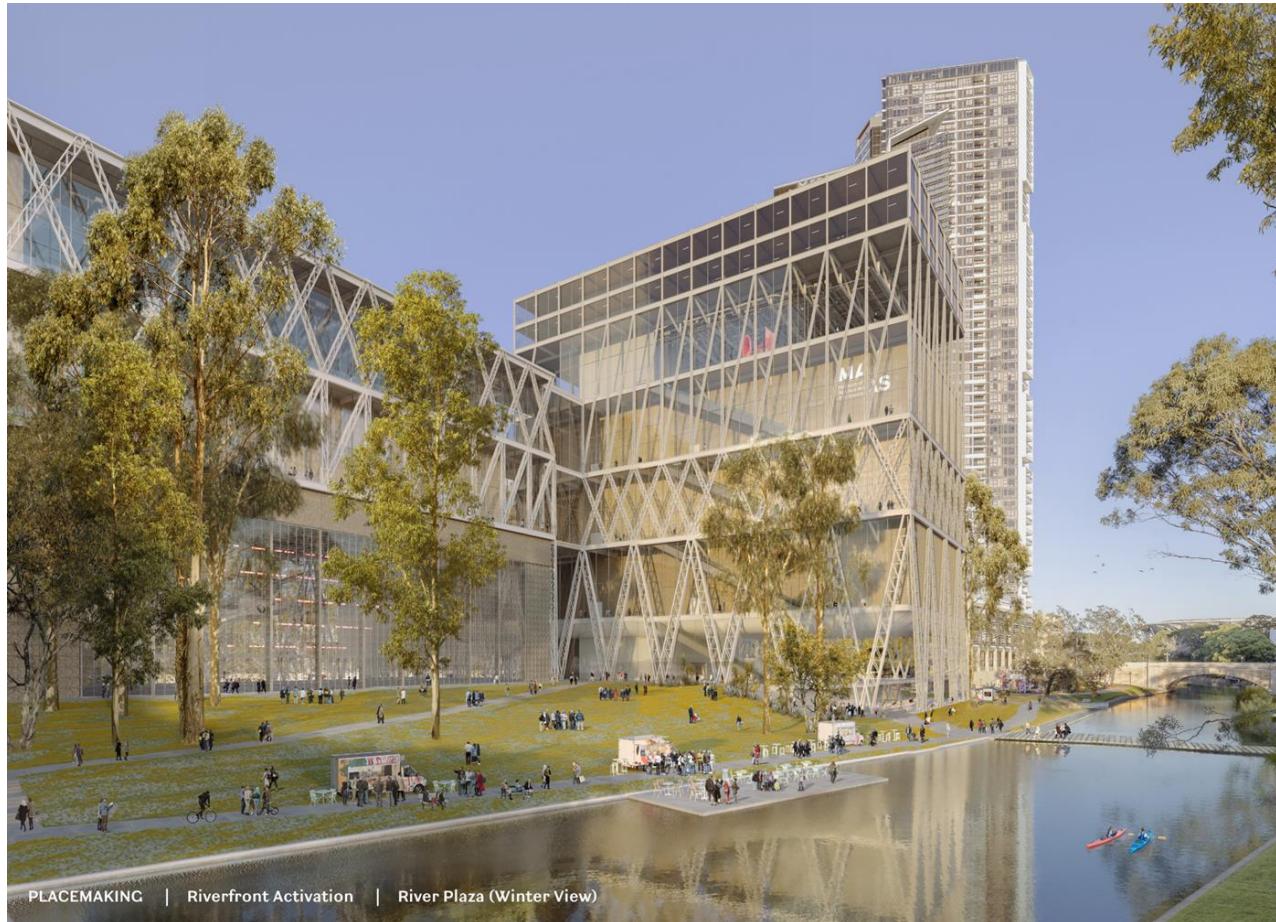
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Powerhouse Precinct Parramatta

Incoming Utilities Servicing Strategy

9th April 2020



PLACEMAKING | Riverfront Activation | River Plaza (Winter View)

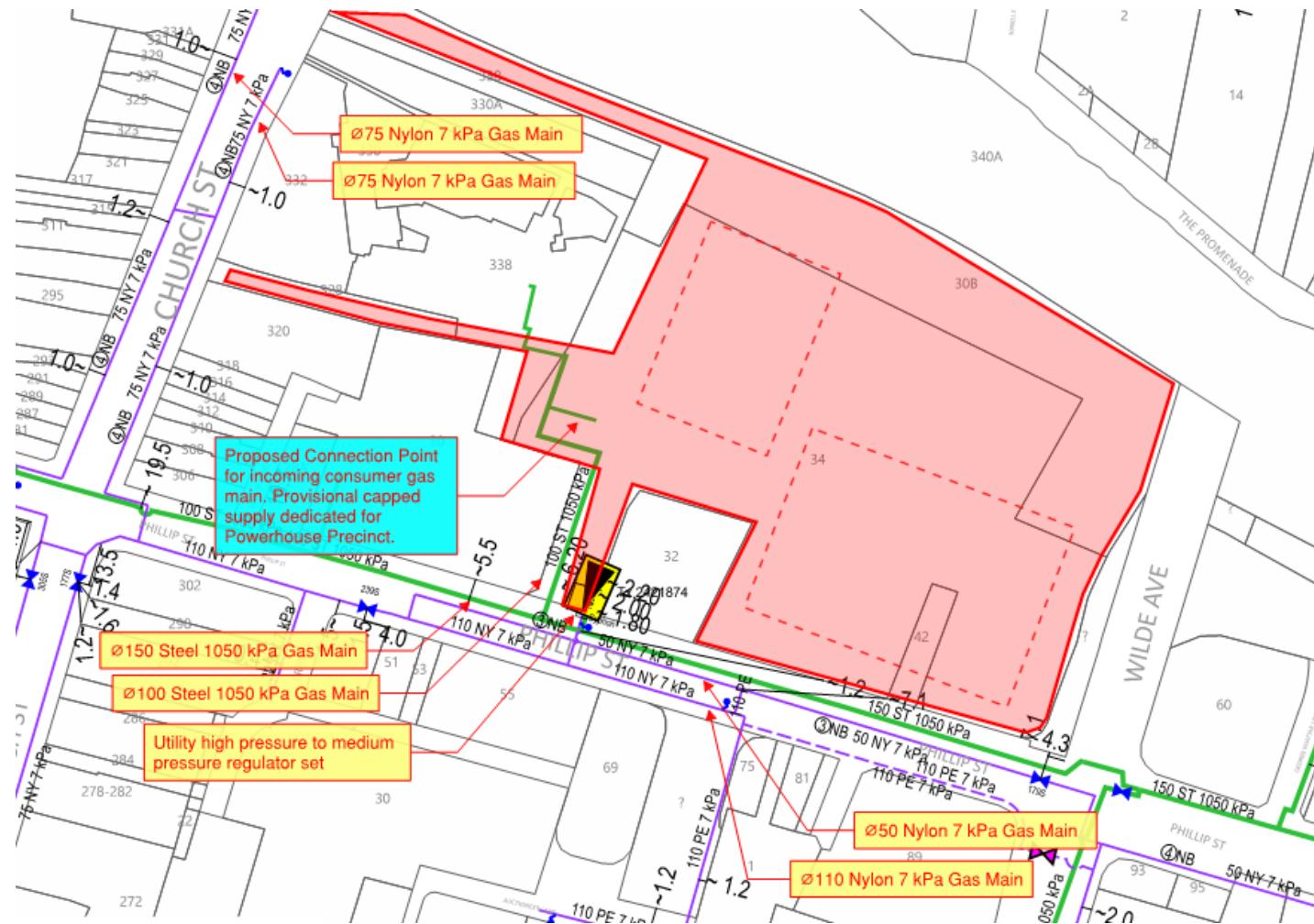
Site and Context



Jemena

ARUP

Proposed Gas Connection



ARUP

Gas Supply

Surrounding Infrastructure

- Church Street – 75mm nylon medium pressure 7kPa gas main on eastern side of street and 75mm nylon 7kPa gas main on western side of street
- Phillip Street - 150mm steel high pressure 1050kPa gas main northern side of street, a 110mm nylon medium pressure network gas main and a 50mm nylon medium pressure secondary gas main runs on the southern side of street.
- Dirrabarri Lane - 100mm steel high pressure 1050kPa gas main

Estimated Building Loads

Location	Use	Consumer Pressure (kPa)	Connection Size (mm)	Load (MJ/hr)	Qty	Total Load (MJ/hr)
West Building, Level 0.0	F+B Pop Up Kiosk	5kPa	40dia	250	10	2500
West building, Level 5.0	Powerlab Kitchen	5kPa	65dia	5000	1	5000