

**Elanor Investors Group**

## Warrawong Plaza

Electrical, Telecommunication, Sewerage and Water Network

### Capacity Assessment and Site Servicing Report

Reference: 296838

03 | 14 September 2023

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 296838

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# 1. Background

Arup has been engaged by Elanor Investors Group to undertake a desktop utilities capacity assessment and site servicing report to support the submission of a Planning Proposal relating to the proposed redevelopment of the Warrawong Plaza.

The purpose of this report is to investigate existing electrical, telecommunication, potable water and sewage infrastructure and provide comments on infrastructure requirements to facilitate the proposed development.

As the proposed site design is currently at planning stage, the advice contained within this report is intended to be high-level and conceptual in nature.

# 2. Introduction

## 2.1 Site and Location Description

Warrawong Plaza is located in Warrawong, within the Wollongong Local Government Area (LGA), approximately 6km south of the Wollongong CBD. The Site is located at 43-65 Cowper Street, Warrawong and comprises most of the block bounded by Cowper St to the north, Northcliffe Drive to south and King Street to the west. Proposed development site is located in a large, consolidated area of more than 7ha. (Lot A DP421454, Lot 2 DP571183, Lot 1 DP571183. Lot 1 DP217579, Lot 2 DP 216785 and Lot 2 DP535215) and owned by Elanor Investors Group (ENN).

The existing site comprises a two-level shopping centre with major retail tenants including Aldi, Big W, Coles, Hoyts, and JB Hifi. The Site is located within an urbanised context, with surrounding development includes a range of commercial/retail buildings, low and medium density residential development and open space.

NSW Land and Housing Corporation owns a large adjacent 1.5 ha site known as ‘Illawong Gardens’, which comprises comprising social housing that appears to be in relatively poor condition.



Figure 1: Site Plan

## 2.2 Proposed Development

The Warrawong Plaza redevelopment will comprise the redevelopment of the site into a mixed-use residential, commercial, and retail precinct. Refer to Figure 2 for the proposed re-development.

The subject Planning Proposal seeks consent for:

- An amendment to the land use zoning of the site (clause 2.1) from E2 Commercial Centre to MU1 Mixed Use.
- An amendment to the Height of Building Development Standard from 24 metres up to 75 metres (variable between 27m to 75m).
- Amendment to the Key Sites Map to identify 43-65 Cowper Street, Warrawong as “Area 10”.
- Inclusion of a Site-specific LEP clause 7.24 for the development of the subject Site.

Based on the current planning proposal, the redevelopment comprises of four stage development and an existing area being retained.

The proposed re-development site is well connected to existing infrastructure and amenities. The proposed development will deliver approximately 1258 dwellings and 58,000 sqm of non-residential floor space, across 4 main stages of work and will include the provision of 10% of the residential GFA as affordable housing.

Refer to Figure 3 and 4 for the proposed staging plans.



**Figure 2: Proposed Warrawong Mall Re-Development**

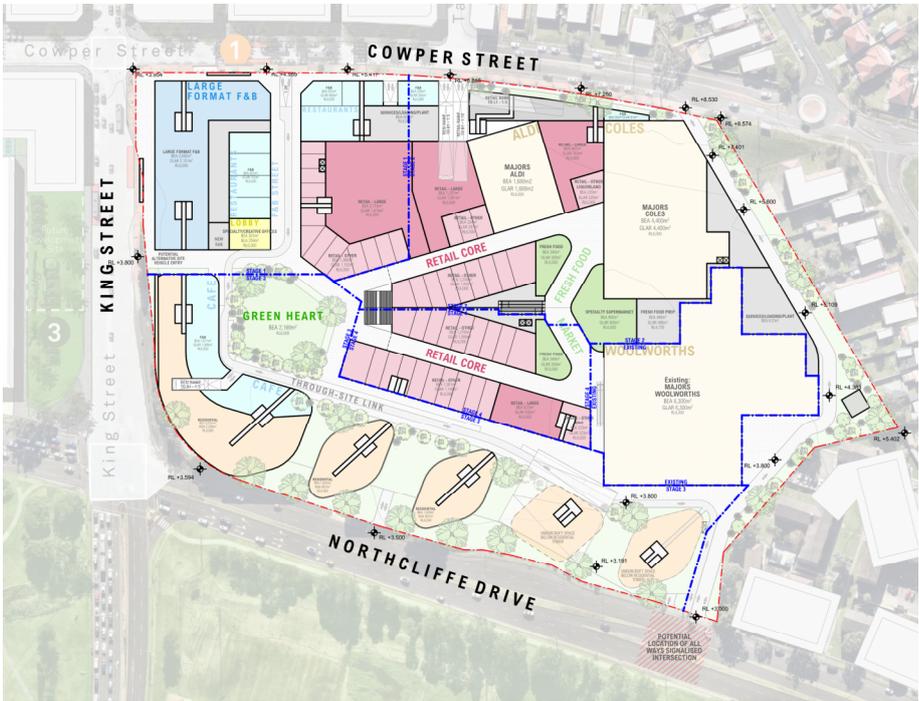


Figure 3: Proposed Staging Plan with Commercial Spaces



Figure 4: Proposed Staging Plan with Residential Towers

### 3. Reference Information

The following information has been used to undertake this desktop assessment:

- Dial Before You Dig information, sourced 09 August 2023.
- Warramong Plaza - Electrical Audit - Report\_rev2\_(by Paul Anthony Electrical)
- 2023 Annual fire Safety statement (AFSS) Warramong – Final
- Critical Services Isolation Plan Warramong 2021

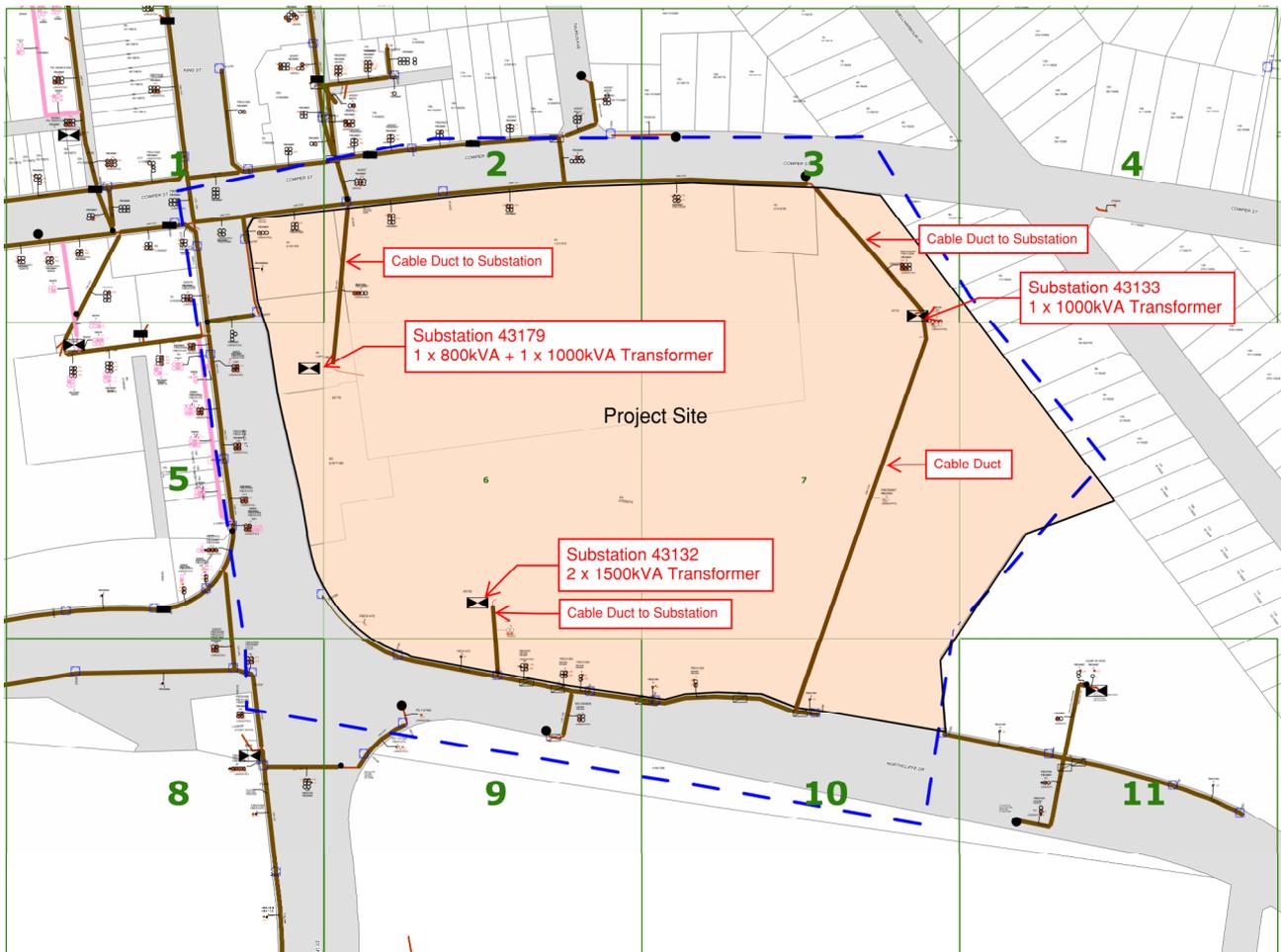
## 3.1 Electrical Services

### 3.1.1 Existing Electrical Services Infrastructure Review

Based on Dial Before You Dig (DBYD) drawings as shown in Figure 5 below, it is noted that the site is surrounded by electrical duct along Cowper Road and Northcliffe Drive.

There are 3 substations supplying power to the existing site located within the site itself. They are namely, Substation 43179, 43133 and 43132. Each substation consists of different quantity and rating of transformers as shown in Figure 5.

These substations may potentially be retained and reused for the new development. This shall be further reviewed and developed in the later design stages.



**Figure 5: DYBD Drawing**

There are cable ducts running across the project site as shown in the figure above. It is noted that some of the cable ducts are serving the existing substations. If the substations can be retained and reused for the new development, it is proposed that these existing cable ducts are retained as well.

Should any of the utilities cable ducts require relocation in the later stages, it shall be further developed and reviewed with consultation with the utilities company.

The existing site is split into several electrical zones. Each electrical zone has its own substations and main switch rooms as per shown in the Critical Isolation Plan for electrical in Figure 6 and

Figure 7.

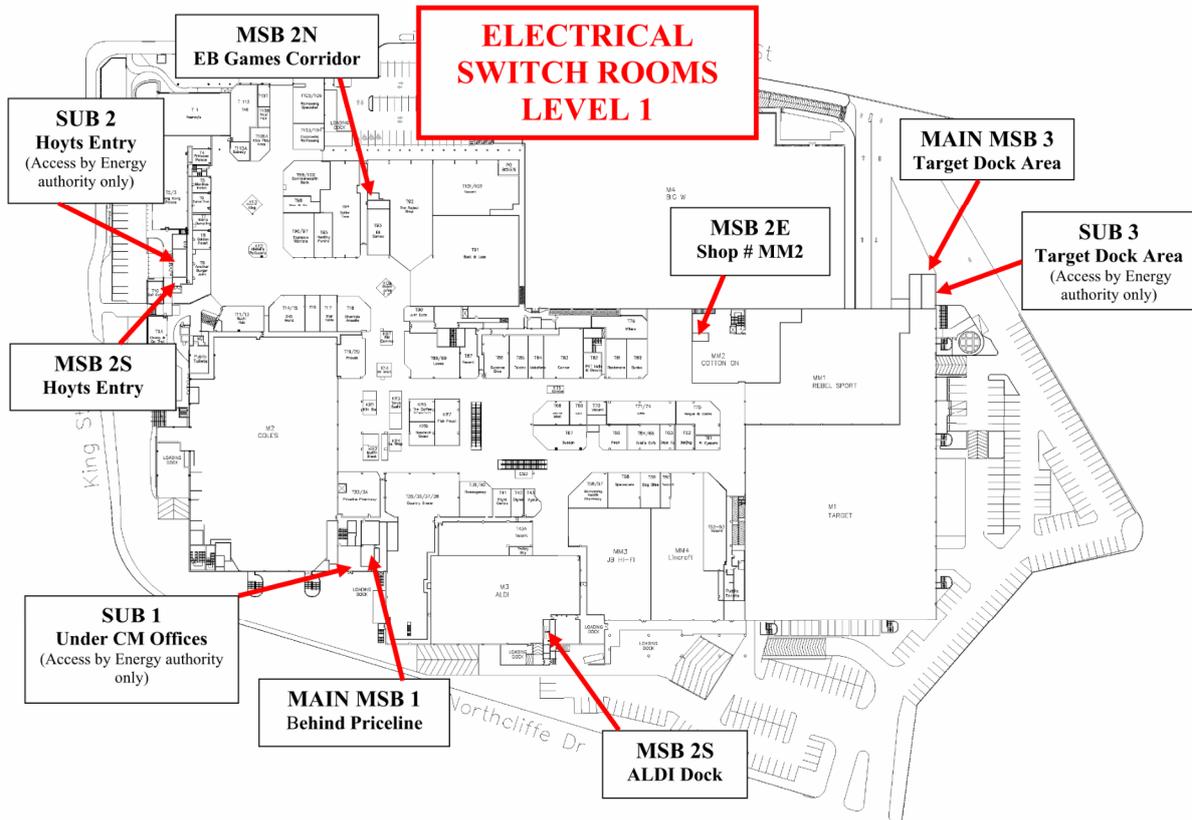


Figure 6: Critical Isolation Plan Level 1 (Elect)

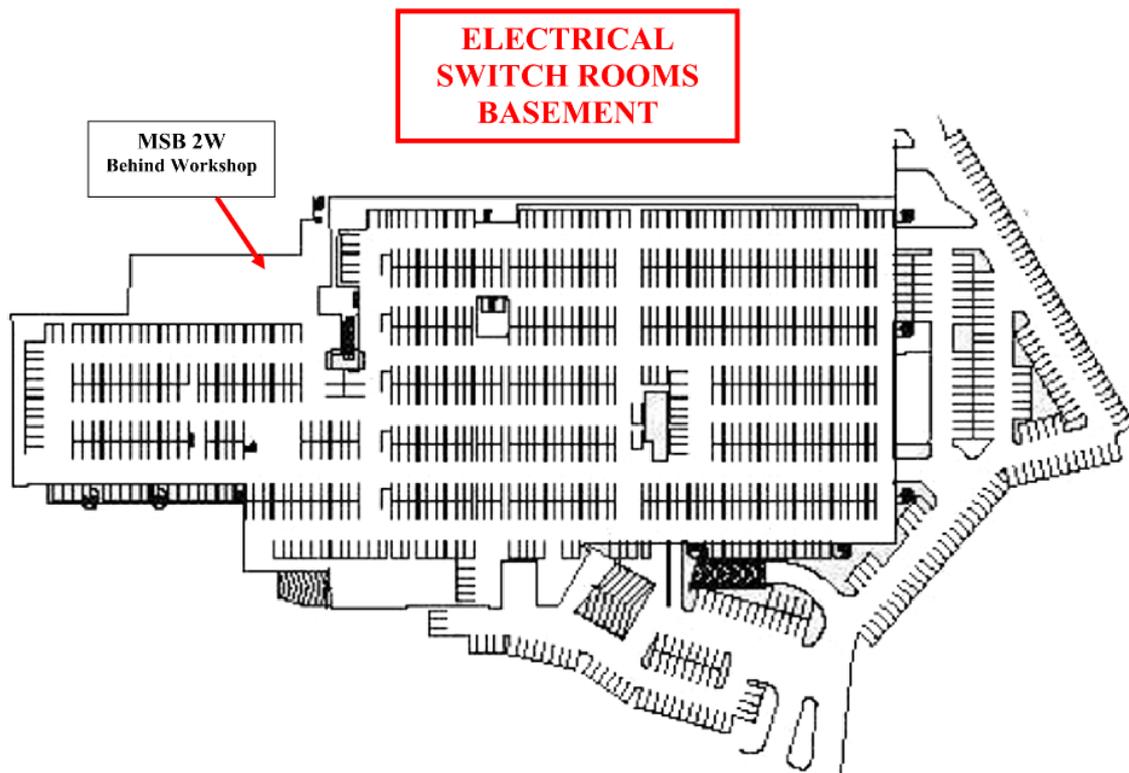
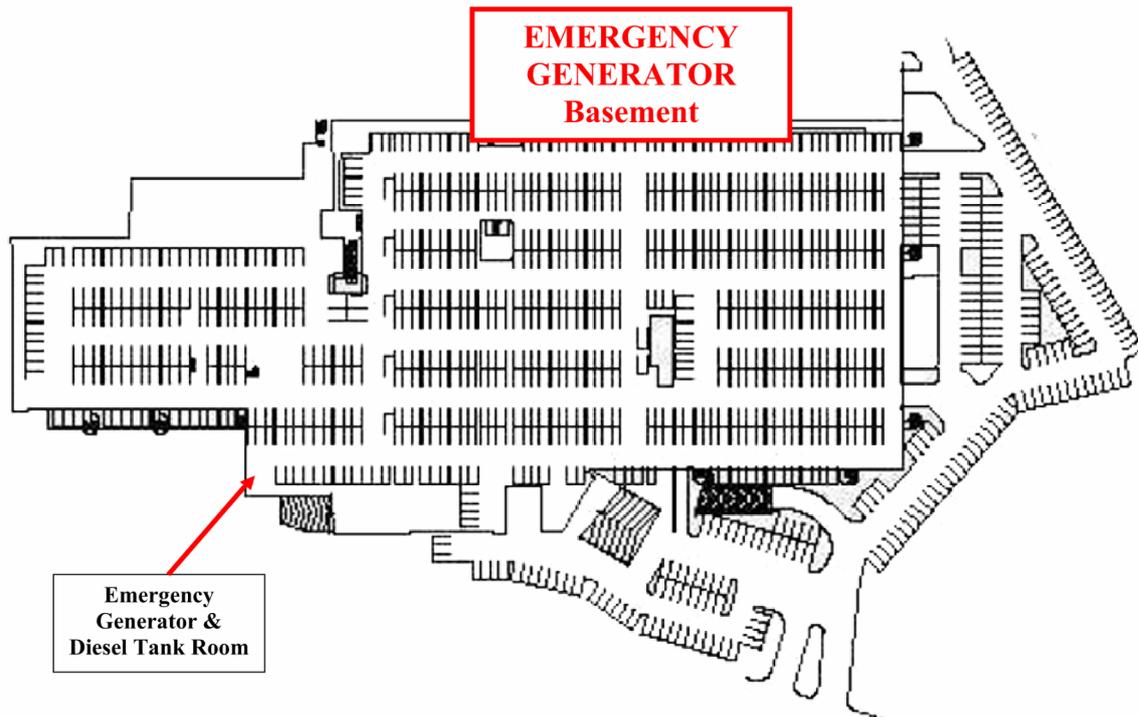


Figure 7: Critical Isolation Plan Basement (Elect)

In terms of retaining and reusing the existing switch room for the new site development, it is noted in the electrical audit report that some of the rooms are not big enough to house all the panels and as a result some

of the panels are housed external to the switch room instead. Further study and development to expand the existing switch rooms will be required in the later stages should these rooms be retained and reused.

It is noted that the current existing site is provided with a 500kVA standby generator, complete with a fuel tank room, located in the basement as shown in Figure 8. The generator is lower than the preliminary generator load estimated but it may potentially be retained and reused in the new development. However, this will have to be further reviewed with the load requirement and developed in the later stage of the design.



**Figure 8: Critical Isolation Plan Basement (Elect Gen)**

### 3.1.2 Demand assessment

The preliminary electrical demand estimates are based on Chrofi staging plans dated 08/09/2023 and Chrofi's Brief Requirement Rev C dated 29/08/2023.

The electrical load estimates at current stage assumes the following and will have to be further developed in the next stage:

- Full electrical building with no gas cooking
- Electrical Vehicle Charging (EV) provision is based on assumption load management system will be in use, that Basement 1 parkings are for Retail (Class 6) and Basement 2 parkings are for Residential (Class 2) use.
- Residential load does not include any facilities (swimming pool/sauna/gym) at this stage.
- Assumes only 1 set of fire pump will be in operation any one time for residential area.

The summaries of the preliminary electrical demand estimates are as per follows:

- Retail & Commercial

Retail & Commercial	Load Requirement (kVA)
Total Load (kVA)	7635.44
Total Load + 20% Spare Capacity (kVA)	9162.53

- Residential

Residential	Load Requirement (kVA)
Total Load (kVA)	3817.63
Total Load + 20% Spare Capacity (kVA)	4581.16

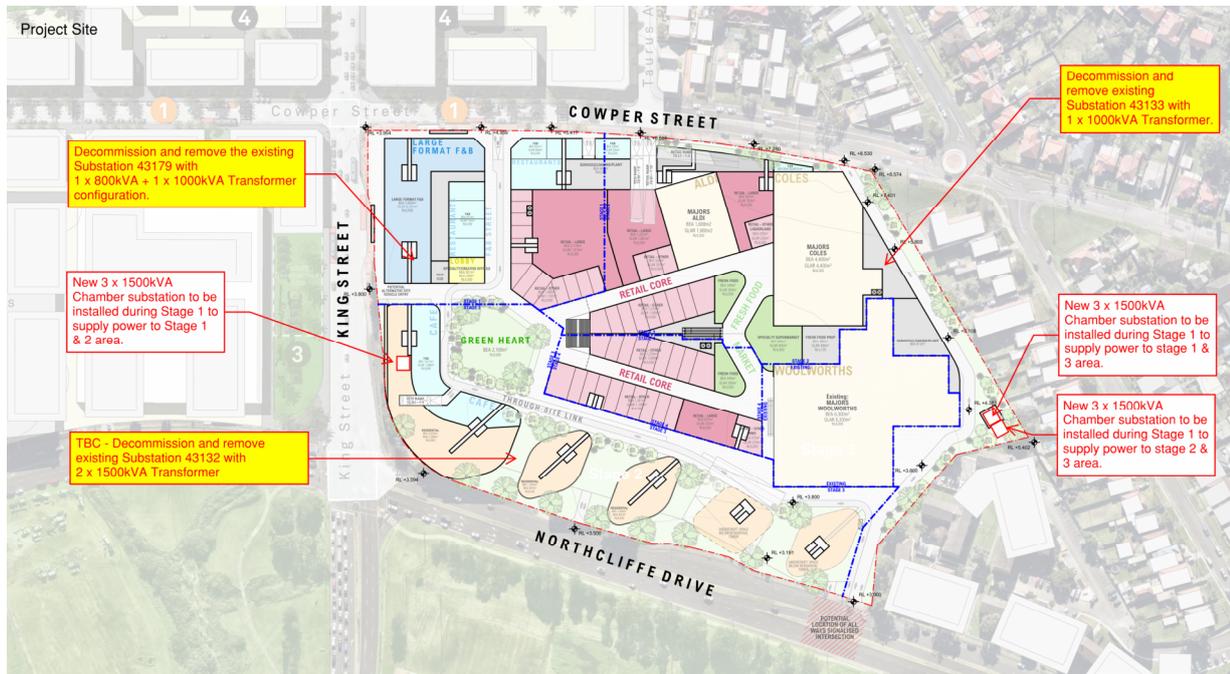
- Total load

**Calculated Maximum Demand with 20% spare capacity 13,743.69 kVA**

Based on the preliminary total load estimate, the current substations can only support part of the future load of the retail and commercial development. Additional supply has to be requested even if the existing substations are being retained and reused.

### 3.1.3 Proposed Electrical Services Infrastructure

The figure below shows the proposed power infrastructure arrangement.



**Figure 9: Proposed Power Arrangement**

Proposed electrical distribution arrangement for each of the stages are outlined below.

#### Stage 1

- Decommission and remove the existing Substation 43179 with Transformer configuration: 800kVA - 1100A/Phase and 1000kVA - 2100A/Phase.
- Decommission and remove the existing Substation 43133 with 1000kVA transformer (1400A/Phase supply).
- New 3x1500 KVA chamber substation to be installed to supply power to Stage 1& 2 area in a suitable compliance location near.

- New 3x1500 KVA chamber substation to be installed to supply power to Stage 2 area in a suitable compliance location.

## Stage 2

- Existing chamber Substation 43132 with transformer configuration: 2 x 1500kVA to be decommissioned and remove from site. This shall be reviewed and further developed in the next stage.

### 3.1.4 Authority Liaison

An enquiry for supply to be submitted to Endeavour energy with the estimated load requirement for the proposed development.

The reply from Endeavour Energy is attached under Appendix B.

## 3.2 Telecommunications

### 3.2.1 Existing ICT services infrastructure Review

Based on DBYD drawings as shown in figure below, the site is surrounded by telecom duct along King Street and Northcliffe Drive.

The main incoming cables are by Telstra and NBN and it enters the development from the external foot access chamber at Northcliffe Drive into the development MDF room. It is noted that the incoming cables are by Telstra and NBN.

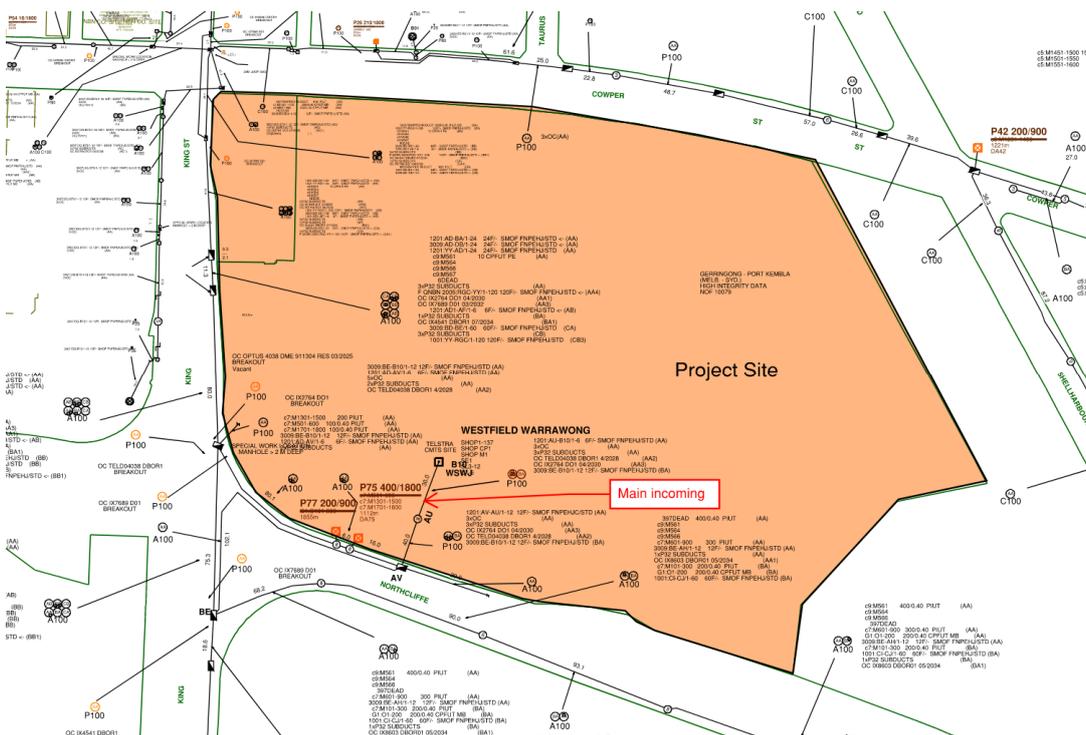


Figure 10: DBYD Telecom

Based on the existing building Critical Isolation Plan received, there are currently 3 IDF room on Level 1 and 1 IDF room in the basement.

No DAS room is noted on the existing site. Provision shall be further developed in the next stage.

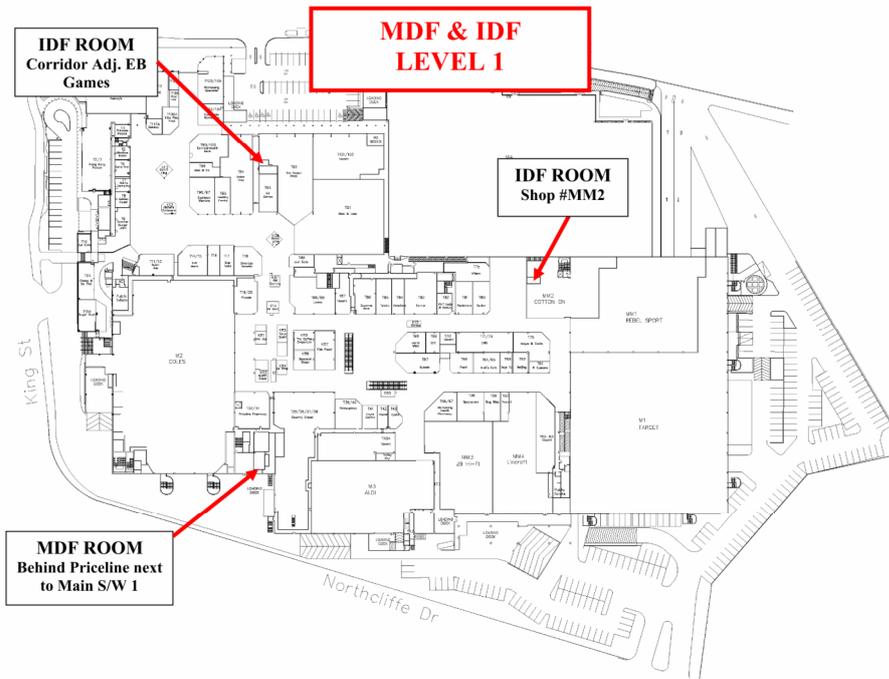


Figure 11: Critical Isolation Plan Level 1 Showing IDF Rooms

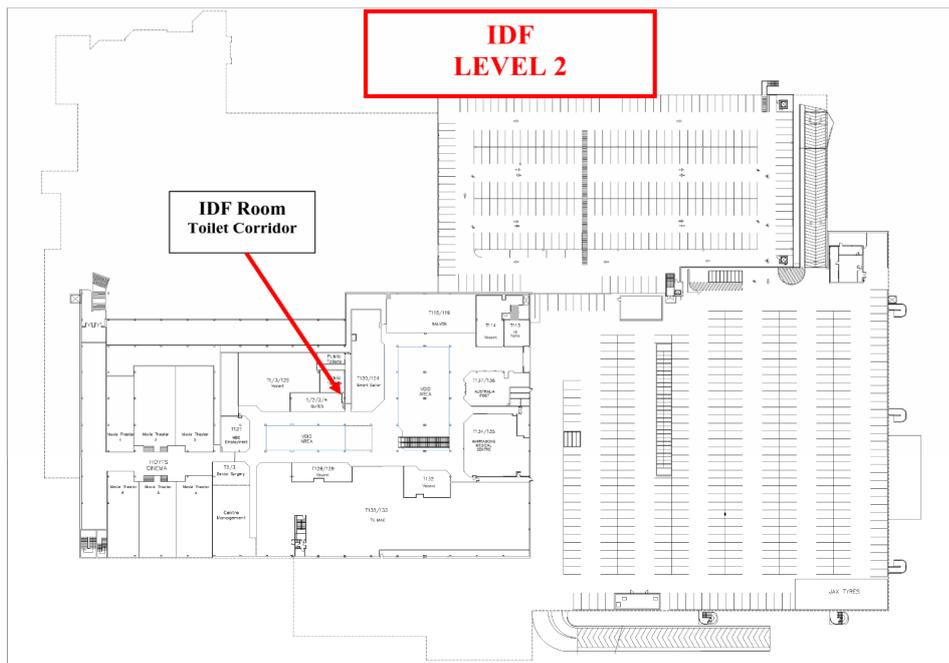


Figure 12: Critical Isolation Plan Basement Showing IDF Rooms

### 3.2.2 Proposed Communication Services Arrangement

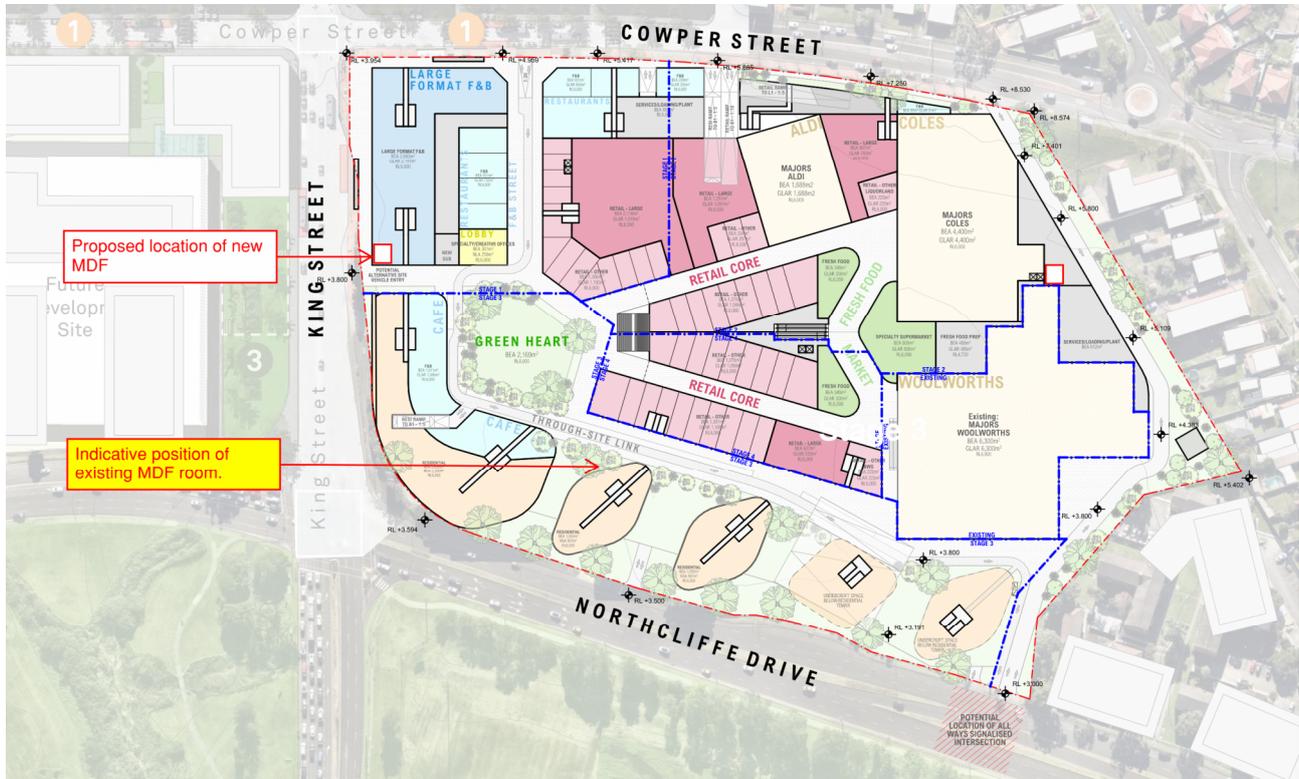
As shown in the figure below, the existing MDF appears to be within the Stage 2 area. It is proposed to have a new MDF room during Stage 1 phase. This ensures communication services can be available by Stage 1 and will not be interrupted due to site work.

The existing MDF room is proposed to continue to operate to provide telecom services to the existing development that will be retained. Once Stage 1 MDF room is commissioned and ready for operation, the

telecom services for the existing development to be retained will then be rerouted to the new MDF room. After which, then the existing MDF room can be demolished.

New NBN services is proposed New NBN Co. services to be installed to proposed new residential and commercial developments to NBN Co. Standard requirements.

The communication services provision shall be further developed with consultation with the Telco company in the next stage.



### 3.3 Potable Water

#### 3.3.1 Existing Authority Water Infrastructure Review

Various potable water mains exist in the streets adjacent the site, ranging in diameter from 100-450mm. For locations refer to Appendix A for the Sydney Water DBYD diagram.

The existing potable water infrastructure in the surrounding street network is as follows:

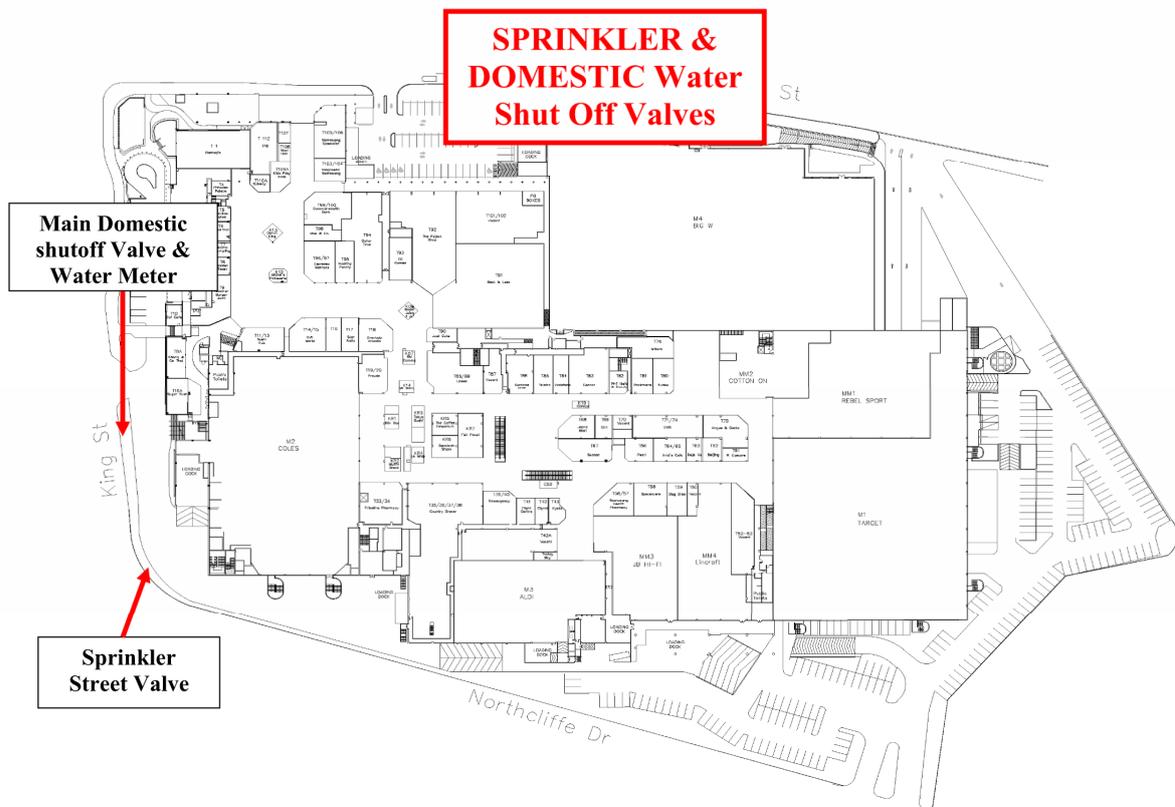
- North of the site: On the opposite side of the site, a 150mm diameter Ductile Iron Cement Mortar Lined (DICL) mains reticulates along Cowper Street and reduces to a 100mm diameter Cast Iron Cement Line (CICL) to the east of Taurus Avenue;
- East of the site: A 100mm diameter Ductile Iron Cement (mortar) Line (DICL) reticulates along Shellharbour Road. A 450mm Cast Iron Cement Line (CICL) trunk main reticulates parallel to the 100mm main. Private property on the site eastern boundary separates access to these mains.
- West of the site: A 150mm diameter Cast Iron Cement Line (CICL) pipe reticulates along King Street on the side closer to the site.
- South of the site: no existing water mains are present.

#### 3.3.2 Existing Water Infrastructure Serving the Existing Development

Figure 13 shows the water connections serving the site.

The master water meter, sprinkler booster and hydrant booster assemblies are all located on King St. Due to the increase demand of the proposed development, all connections will need to be upgraded to serve the development.

**Figure 13 Critical Isolation Site Plan Showing Water Connections**



### 3.3.3 Demand Assessment

An assessment of the estimated increase in potable water demand generated from the proposed development yield has been conducted to determine if the existing infrastructure can serve the development.

Using the Sydney Water edition of the Water Supply Code WSA-03, Table SW 3.5 (see Table 1) states a 200 or 225mm diameter Cast Iron pipework or equivalent is required to serve developments over 8 storeys. The building yield have been provided for reference in Table 2.

As a majority of the proposed residential building are over 8 storeys, the mains pipework servicing will need to be upgraded as they are currently 100mm and 150mm.

Sydney Water has been contacted to confirm if this have been planned and timeframes on the installation of these services. Their response is summarised in 3.3.4 Authority Liaison.

The estimated fire services water demand is approximately 51.6 L/s with assumption of an OH3 sprinkler system and 3 hydrant outlets flowing simultaneously. This shall be refined in the next stage of design with understanding of fire compartments and Building Classification.

On-site fire water tanks within the buildings shall be provided if the water mains cannot accommodate the fire water demand.

Table 1: WSA-03, Table SW 3.5

**TABLE SW 3.5  
MINIMUM PIPE SIZES FOR INFILL DEVELOPMENTS**

ZONING/DEVELOPMENT	MINIMUM PIPE SIZE (DN)	
	Cast iron equivalent outside diameter series	ISO series <sup>(2)</sup>
Low and medium density residential	100 <sup>(1)</sup>	125 <sup>(1)</sup>
High density residential (≥ 4 storeys)	150 If a 100 mm main currently fronts a proposed development and the hydraulic capacity is sufficient to serve the property's domestic future demand, then the existing main will be deemed acceptable until the main requires renewal. The developer might upgrade the existing pipe size for other reasons – this is subject to Water Agency agreement.	180 If a 125 mm main currently fronts a proposed development and the hydraulic capacity is sufficient to serve the property's domestic future demand, then the existing main will be deemed acceptable until the main requires renewal. The developer might upgrade the existing pipe size for other reasons – this is subject to Water Agency agreement.
Multiple developments of high density residential (≥ 8 storeys)	200 or 225 <sup>(2)</sup> If a 100 or 150 mm main currently fronts a proposed development and the hydraulic capacity is sufficient to serve the property's domestic future demand, then the existing main will be deemed acceptable until the main requires renewal. The developer might upgrade the existing pipe size for other reasons – this is subject to Water Agency agreement.	250 or 280 <sup>(2)</sup> If a 125 or 180 mm main currently fronts a proposed development and the hydraulic capacity is sufficient to serve the property's domestic future demand, then the existing main will be deemed acceptable until the main requires renewal. The developer might upgrade the existing pipe size for other reasons – this is subject to Water Agency agreement.

NOTES:

- 1 The Water Agency may authorise smaller pipe sizes to address issues such as water quality in cul-de-sacs.
- 2 The Water Agency to nominate the preferred size consistent with an overall servicing strategy.
- 3 For steel (SCL) and polyethylene (PE) pipes only.

Table 2: Building Yield

Building	Storeys	Stage
A-1	6	1A
A-2	17	
B-1	6	1B
B-2	16	
B-3	6	
B-4	4	
C-1	12	2
C-2	25	
D	9	
E	18	

Building	Storeys	Stage
F	8	
G	6	
H-1	5	3
H-2	16	

### 3.3.4 Authority Liaison

Authorities affected by the infrastructure works includes Sydney Water, the local council and relevant government departments.

Arup have completed a desktop study of Sydney Water infrastructure and contacted Sydney Water’s Urban Growth team to identify the following:

- The site is part of the Sydney Water Illawarra region that served by Avon Dam. Water is treated at the Illawarra Water Filtration Plant prior to reticulating reservoirs across the region.
- Current water infrastructure does not have adequate capacity to serve the proposed development. Infrastructure upgrades will be required to upsize the Cowper St and King St mains.
- The existing water connection to the mains on King St is insufficient to serve the proposed development.
- An upsized water connection to the mains on King St will incur the least amount of road works and closures provided the mains is upgraded.
- Enquiries have been made to Sydney Water in regards to the capacity of the trunk distribution system feeding the impacted reservoirs. Further reviews will be required to identify if mains upstream to the site will be impacted and any additional works that may take place and their timing, so they can be placed into the capital works plan.
- Where buildings are over 50m in effective height, a fire water storage tank is to be provided in accordance with AS2419.1 requirements.
- Several options in the vicinity of the site have been identified as required to accommodate the proposed development:
  1. Upsizing the 150mm and 100mm water mains on Cowper St to DN200 minimum. A new water meter connection will be made to serve the residential development with the retail connection to be retained where possible. A separate connection will be made for fire services.
  2. Upsizing the 150mm water mains on King St to DN200 minimum. The existing water meter connection will be removed and an upsized connection be made to serve both the residential and retail parts of the development. A separate connection will be made for fire services.

For both options, a minimum of 2 x fire flow connection points are required to achieve the site demand. Modelling, by the WSC, is required to confirm the preferred location of these connection points. Onus will then be on the developer to provide firefighting requirements within the site via internal infrastructure, noting this will likely involve a ring main reticulation network with connections authority assets and internal booster systems to navigate the high-rise structures.
- Definition of lot boundaries and strata management of the development should be outlined as part of a future application process to allow further assessment of impacts on the water infrastructure by Sydney Water.
- The extent to which mains upgrades are to be made shall be confirmed by a Sydney Water accredited Water Services Coordinator (WSC) via a feasibility study. Understanding and submission of the following information is required to obtain the Feasibility Notice Letter that shall detail the site requirements:
  - Completing the Sydney Water Growth Data Form

- ultimate growth data for the development
- annual growth data for the development
- staging plans and timescales

## 3.4 Sewer

### 3.4.1 Existing Utility Infrastructure Review

Various existing sewer gravity and pressure mains exist in the streets adjacent the site. Existing sewer infrastructure is summarised below:

- North of the site: A 150mm Vitrified Clay Pipe (VC) main increases in size to 400mm diameter VC pipe as it runs east along Cowper St. Sewer lines from neighbouring lanes along Cowper Street and Greene Street and Montgomery Avenue also join to this sewer main;
- East of the site: The 150 to 225mm diameter Vitrified Clay Pipe (VC) situated on Shellharbour Road joins to another sewer main situated on Cowper Road which also extends and continue on Shellharbour Road. Additionally, a 1350 to 1397mm diameter Concrete Pipe (CONC) situated parallel, to VC sewer main run along Shellharbour Road as well. A 150 to 300mm diameter VC sewer main is also situated on the site boundary, currently under rehabilitation.
- South of the site: A 300mm main increases in size to a 375mm diameter Cast Iron Cement Lined Pipe (CICL) as it runs west on Northcliffe Drive to a sewer pump station.

Two 225mm branches connect to this VC main, with one serving the Warrawong development.

The sewer pump station is located on the intersection of King Street and Northcliffe Drive on the Southwest Corner. Sewer pump connects to a 500mm diameter Cast Iron Cement Lined Pipe (CICL) that continues East along Northcliff Drive parallel to the VC line.

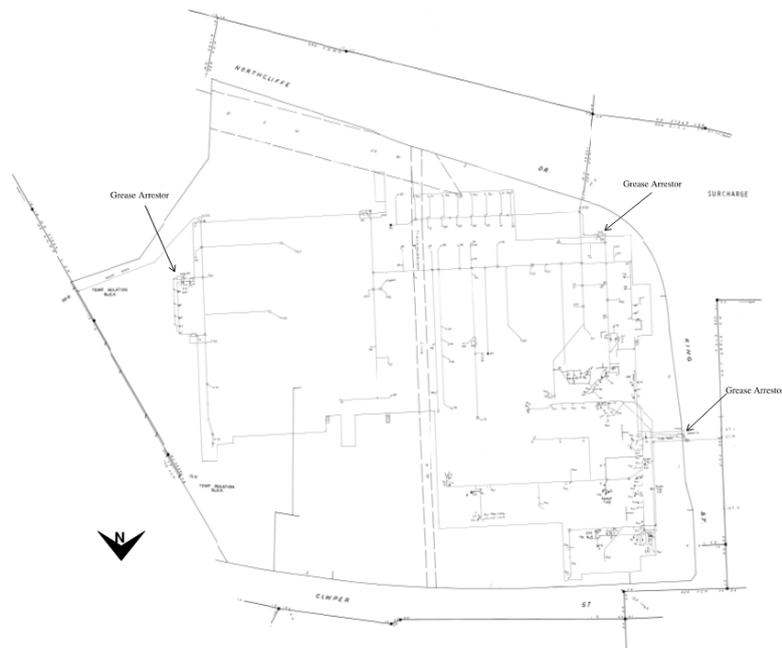
- West of the site: 300mm diameter Vitrified Clay Pipe (VC) situated on the top of King Street which extends to a 300mm diameter Cast Iron Cement Lined Pipe (CICL) continuing south and eventually expanding to a 500mm diameter Cast Iron Cement Lined Pipe (CICL) Pipe connecting to the sewer infrastructure on Northcliffe Drive.

A 225mm VC branch extends from this main to serve the development.

### 3.4.2 Existing Sewer infrastructure Serving the Existing Development

The Sydney Water Sewer Service Diagram in Appendix C illustrates the location of the sewer mains traversing through the site. Three connections to the authority sewer infrastructure that have been identified in the Sewer Service Diagram in Figure 14 and are summarised below:

- North of the site: No existing connection between the site sewer mains and site mains has been found;
- East of the site: A sewer pump station located on the Southeast corner of the site connecting to a rising main which eventually terminates into the sewer infrastructure on Shellharbour Road is present on the site. A Grease Arrestor is also present on this side of the site.
- South of the site: A 225mm diameter Vitrified Clay Pipe (VC) connects to the authority sewer mains on Northcliffe Drive. A Grease Arrestor is also present as illustrated in Figure 14
- West of site: A connection was identified between site sewer line and the authority sewer mains on King Street. A 5000L Grease Arrestor is also present as illustrated in Figure 14.



**Figure 14 - Sewer mains traversing through the site**

### 3.4.3 Demand Assessment

An assessment of the estimated increase in sewer loading generated from the proposed development yield has been conducted to determine the estimated peak hour sewer demand.

Demand estimates for sewer have been calculated using the WSA 02-2017 (Table 4) and total apartment yield provided by CHROFI being 1300 apartments.

**Table 3 Sewer Yield Calculations**

	EP/ unit	Total units	Total EP
Residential	2.5/ dwelling	~1300	3250
Retail/ Commercial	75/ hectare	5.4 ha *measured from the layout	405
<b>Total</b>			<b>3655</b>
<b>Sewer size based on Table 3</b>			<b>300 mm</b>

Table 4 WSA-02 Table 4.4

**TABLE 4.4  
MAXIMUM EP FOR RETICULATION SEWERS**

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

### 3.4.4 Authority Liaison

Authorities affected by the infrastructure works includes Sydney Water, the local council and relevant government departments.

Arup have completed a desktop study of Sydney Water sewer infrastructure and have identified the following:

- There are 3 existing connections made to different authority mains. It is recommended to retain these connections as they can be utilised during the site staging process. Some upsizing of the site sewer infrastructure will be required.
- The sewer authority mains are sufficient to serve the development provided multiple connections are made to the authority mains bounding the site.
- The south east part of the site currently has a pumped connection to the authority sewer mains. This will possibly impact work and activities relevant to stage Stage 2, Stage 3 and potentially the existing site. Further surveying is required to confirm levels. It is likely a new sewer pump station is required to serve this area.
- Where a singular connection is to be made to the site, the authority infrastructure will need to be upsized. It is not recommended to pursue this option due to the staging of the project.
- Engagement of a WSC is required to confirm the sewerage flows generated by the proposed development and additional requirements provided by Sydney Water.
- The extent to which mains upgrades are to be made shall be confirmed by a Sydney Water accredited Water Services Coordinator (WSC) via a feasibility study. Understanding and submission of the following information is required to obtain the Feasibility Notice Letter that shall detail the site requirements:
  - Completing the Sydney Water Growth Data Form
  - ultimate growth data for the development

- annual growth data for the development
- staging plans and timescales

## 4. Next Steps

Sydney Water has advised a Feasibility Study be completed as soon as possible to ensure connections can be made to site. Requirements from the Feasibility Notice Letter may impact staging plans to the site and progression of DA approval. Subject to the project's program, the mains upgrade may form part of the design works if it is not completed prior to the construction of the Warrawong development.

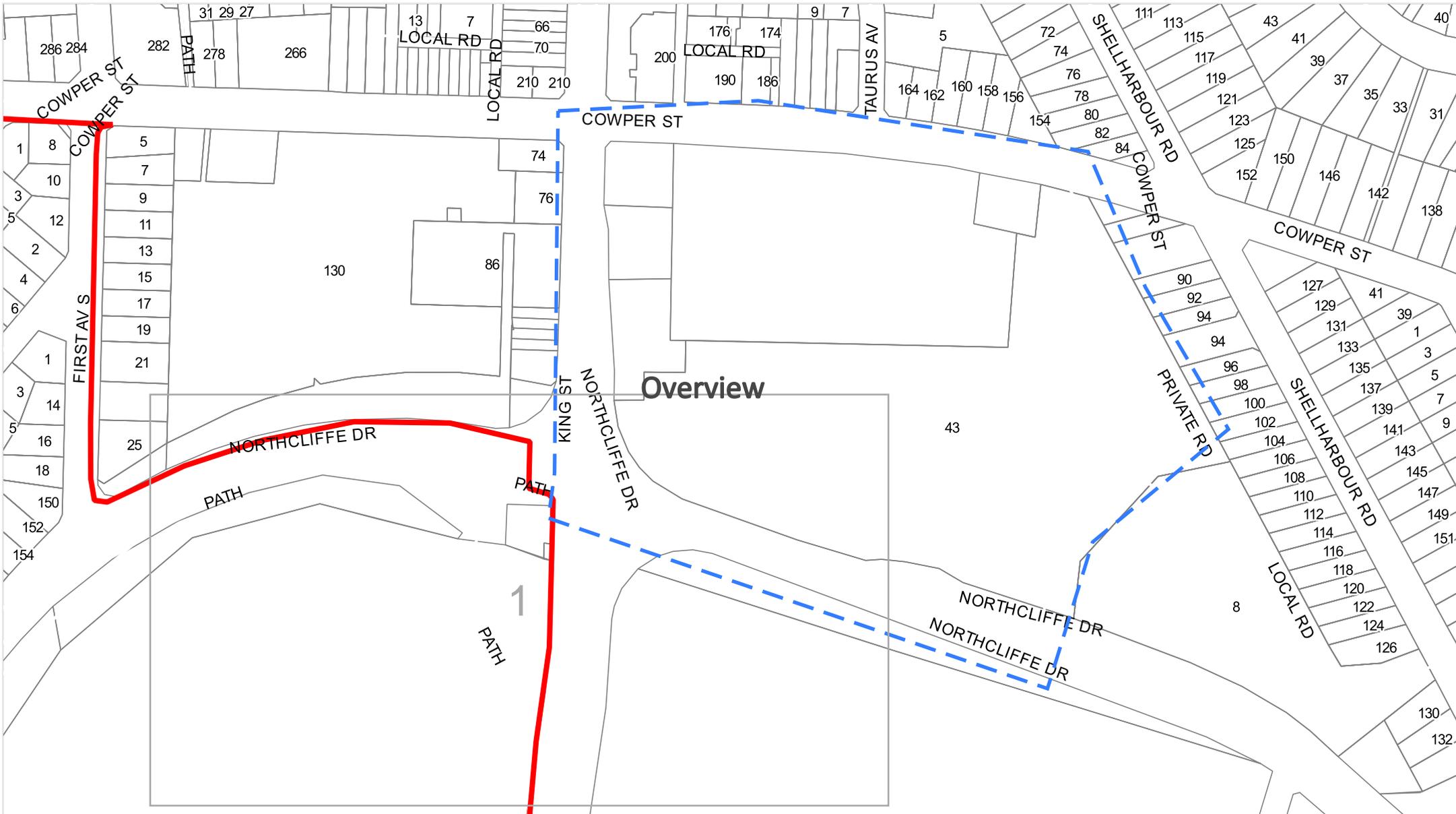
Further design development will be required to finetune the electrical supply required. Further coordination with the electrical and telecom utilities company will be required to ensure that the network has no issues with the additional capacity required for the additional development.

# Appendix A

## Dial Before You Dig Plans

DIAL BEFORE YOU DIG (DYBD) DRAWINGS

# AARNET DBYD DRAWINGS

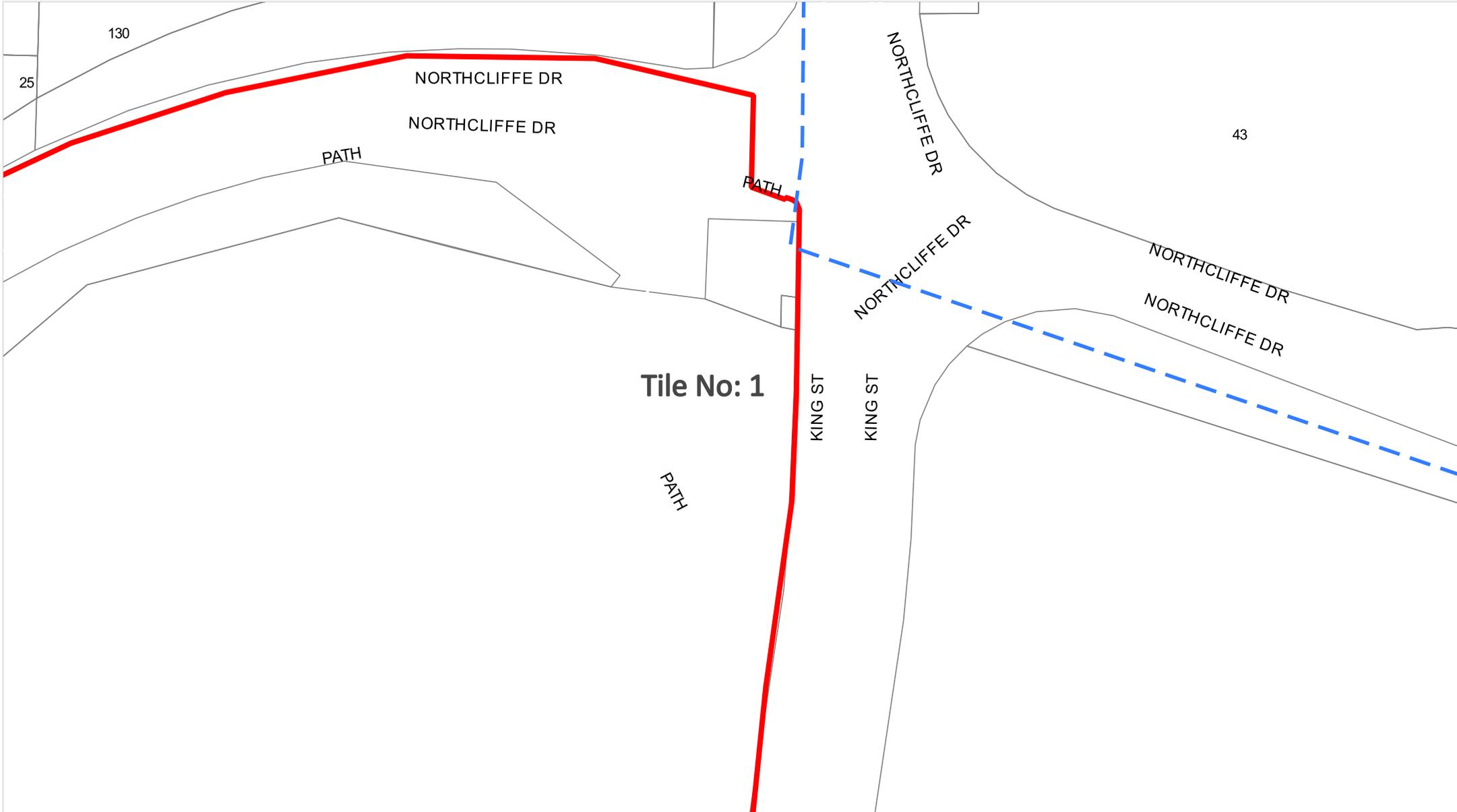


Legend | Scale: 1:2960



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

**DISCLAIMER:** While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither AARNet or PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



Legend | Scale: 1:1500



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

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# ENDEAVOUR ENERGY DBYD DRAWINGS



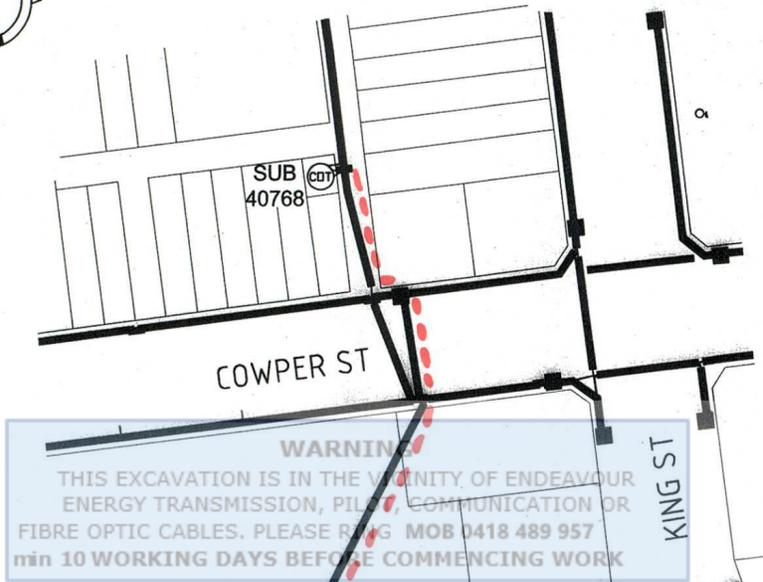
### SITE PLAN LEGEND

SCALE 1:1000

- EXISTING DUCT.
- - - EXISTING UG CABLES
- DUCT WITH EXISTING CABLE
- DUCT WITH NEW CABLE
- SPARE DUCT.
- ⊙ COTTAGE SUB
- PILLAR
- COLUMN
- EXISTING POLE

### ATTENTION IMPORTANT NOTES.

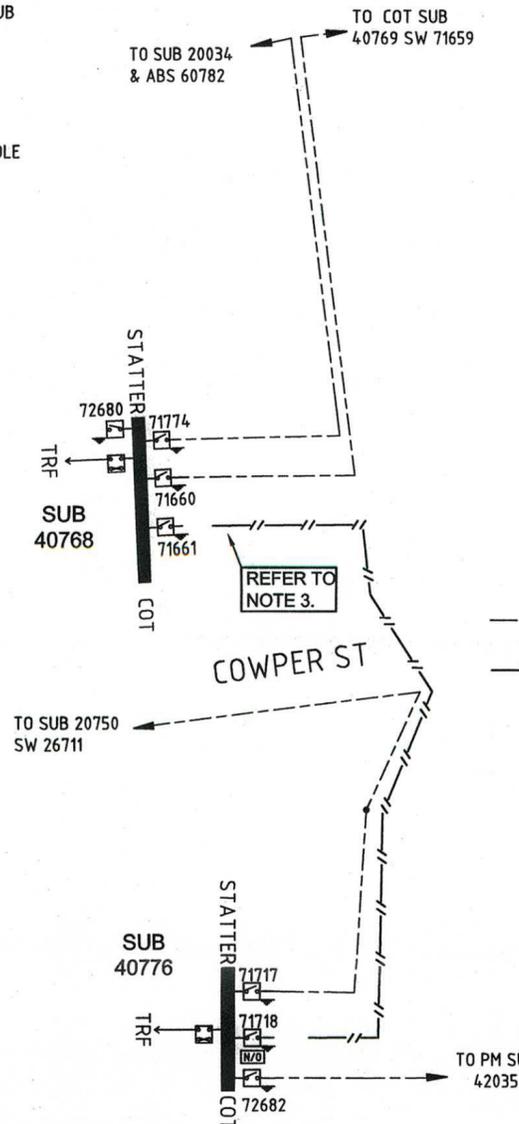
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH INTEGRAL ENERGY'S MCI0005, MCI0006 AND THE RELEVANT GENERAL TERMS AND CONDITIONS.
2. INSTALL 240 mm<sup>2</sup> AI XLPE IN EXISTING DUCTS FROM COTTAGE SUB 40768 TO COTTAGE SUB 40776.
3. LEAVE SUFFICIENT CABLE AT EACH END TO RUN TO THE FURTHEST SWITCH.
4. SHORT CIRCUIT AND CAP CABLE IN ACCORDANCE TO THE APPROPRIATE PROCEDURES. (MDI 023 5.4)
5. CABLE DUCTS & PITS HAVE BEEN CLEANED OUT.
6. COTTAGE SUBS 40768 & 40776 HAVE PROJECTS TO REFURBISH EXISTING STATER HV SWITCHGEAR.  
PLEASE REFER TO THE FOLLOWING DRAWINGS:  
334290 - GREENE LN. SUB 40768 REFB. &  
334275 - KING ST SUB 40776.
7. UPON COMMISSIONING OF HV CABLE TIE BETWEEN BOTH COTTAGE SUBS FEEDER OPEN POINTS ARE REQUIRED TO BE CHANGED AS FOLLOWS:  
1. FEEDER PKA2 - OPEN ABS 71756, CLOSE ABS 74355.  
2. FEEDER PKD2 & PKE2 - OPEN ABS 74446, CLOSE ABS 71687, OPEN ABS 71726, CLOSE ABS 71729, OPEN ABS 70685, CLOSE HV SWITCH 74783 IN SUB 41700, OPEN HV SWITCH 74784 IN SUB 41700.  
3. FEEDER PKF2 - CLOSE HV SWITCH 71661 IN SUB 40768, CLOSE HV SWITCH 71718 IN SUB 40776.
8. WARNING - ASBESTOS DUCTING IN THE AREA.



This plan shows the approximate location of underground cables relative to fixtures existing when the cables were laid and has been prepared solely for Endeavour Energy's own use. Endeavour Energy has taken all reasonable steps to ensure that the information is accurate as possible but will accept no liability for inaccuracies in the information shown on such plans from any cause whatsoever arising.

Persons excavating are expected to exercise all due care in the vicinity where cables are indicated and will be held responsible for any damage caused to Endeavour Energy's property.

All electrical apparatus shall be considered live until proved de-energised. Contact with live electrical apparatus will cause injury or death.



**CONSTRUCTION CREW**  
PLEASE MARK UP IN RED ON WAE THE FOLLOWING:  
1. DUCT USED FOR NEW CABLE.  
2. COFIRM OCCUPIED DUCTS

**"IMPORTANT"**  
1. ALL alterations to this Project Drawing by the Construction crews **MUST** be marked in **RED** daily by the responsible leadinghand on the 'Works in Progress' drawing held in the Construction office.

2. A **FINAL** field inspection with the above Drawing was carried out and is built as shown.

Name M. MUKLEYS please print please sign Leadinghand  
Name DINO ORDO please print please sign Operations Manager

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2. A **FINAL** field inspection with the above Drawing was carried out and is built as shown.

Name \_\_\_\_\_ please print please sign Leadinghand  
Name \_\_\_\_\_ please print please sign Operations Manager

**OPERATIONAL LIMITATIONS**  
UNLESS APPROVED OTHERWISE, INTERRUPTIONS TO ANY CUSTOMERS SUPPLY MUST BE AVOIDED. THE FOLLOWING ALTERNATIVES SHOULD BE CONSIDERED:  
- MOBILE GENERATORS OR SUBSTATIONS;  
- LIVE LINE WORK;  
- DESIGN ALTERNATIVES;  
- WORK PRACTICES / STANDARDS;  
- LOW VOLTAGE PARRALLELS  
THIS COST TO BE FUNDED BY THE DEVELOPER.

**WARNING**  
LIVE INTEGRAL ENERGY CABLES & OTHER SERVICES IN THIS AREA. PLEASE CONTACT DIAL BEFORE YOU DIG ON TEL: 1100 FOR SEARCHES TWO DAYS PRIOR TO EXCAVATION.

**ATTENTION**  
ALL SERVICES SEARCHES MUST BE CHECKED BEFORE CONSTRUCTION.

**CONSTRUCTION CREW**  
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**DESIGN COMPLIANCE**  
This design complies with Integral Energy's relevant standards as current at this time and as listed on the Integral Energy Accredited Service Providers Internet site. These standards include, but are not limited to:

- GT&C: General Terms & Conditions
- SDI: Substation Design Instruction
- EMS: Environmental Management Standard
- SAD0001: Design Drawing Standard
- MCI: Mains Construction Standard
- MMI: Mains Maintenance Instruction
- MDI: Mains Design Instruction
- SMI: Substation Maintenance Instruction
- PDI: Protection Design Instruction

Additionally, where relevant, the design complies with C(D)-1 "Guideline for Design and Maintenance of Overhead Distribution and Transmission Lines" published by ESAA and other relevant Australian Standards.

Signed: STEVE SRBINOVSKI  
Name: STEVE SRBINOVSKI  
Service Provider No: 403  
Date: 2/7/09

**WORKS COMPLETED**  
CONSTRUCTED BY: INTEGRAL ENERGY  
WORKS COMPLETED: \_\_\_\_\_ NAME: \_\_\_\_\_ DATE: \_\_\_\_\_  
INSPECTED BY: \_\_\_\_\_ NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

THE PREPARATION OF THIS DESIGN AND THE PEGGING OF PROPOSED POLE SITES HAS BEEN UNDERTAKEN GIVING THE CONSIDERATION TO THE EXISTING SERVICES. THE PROJECT CONSTRUCTOR IS, HOWEVER, WHOLLY RESPONSIBLE FOR VERIFYING THE EXACT LOCATION OF EXISTING SERVICES AND PERMANENT SURVEY MARKS BEFORE CONSTRUCTION COMMENCES AND NO RESPONSIBILITY NOR LIABILITY WILL BE ACCEPTED BY THE DESIGNER OF THIS PROJECT FOR DAMAGE TO EXISTING SERVICES AS A RESULT OF THIS DESIGN AND/OR THE POLE PEGGING.

destructive water excavation must be operated at a minimum 2000PSI. Any operation exceeding 2000PSI must be classified and treated as a destructive excavation.  
**WAE-0909043**

WORK ORDER NUMBERS	CAP / SAMP No.	HVWS9208Q
GENERAL	AM PROJ. No.	HVWS9208
OVERHEAD	UBD/PENGUIN REF	MAP 41 -L13
UNDERGROUND	GIS MAP No	W82776
SUBSTATIONS	HV OP DIAGRAM	PORT KEMBLA - M7
	LOCAL GOV AREA	WOLLONGONG

ORIGINAL SCALE	AS SHOWN
DRAWN	SS
DATE	1/07/09

DO NOT SCALE DIMENSIONS IN METRES

**COWPER STREET WARRAWONG HVWS1010**  
INSTALL NEW 11kV CABLE IN EXISTING DUCTS FROM SUB 40768 TO SUB 40776

**INTEGRAL ENERGY**  
The power is in your hands

A2 329317 A

SHEET No 1 OF 1 SHEETS

Issue Date: 08/08/2023 BYDA Sequence No: 228082202

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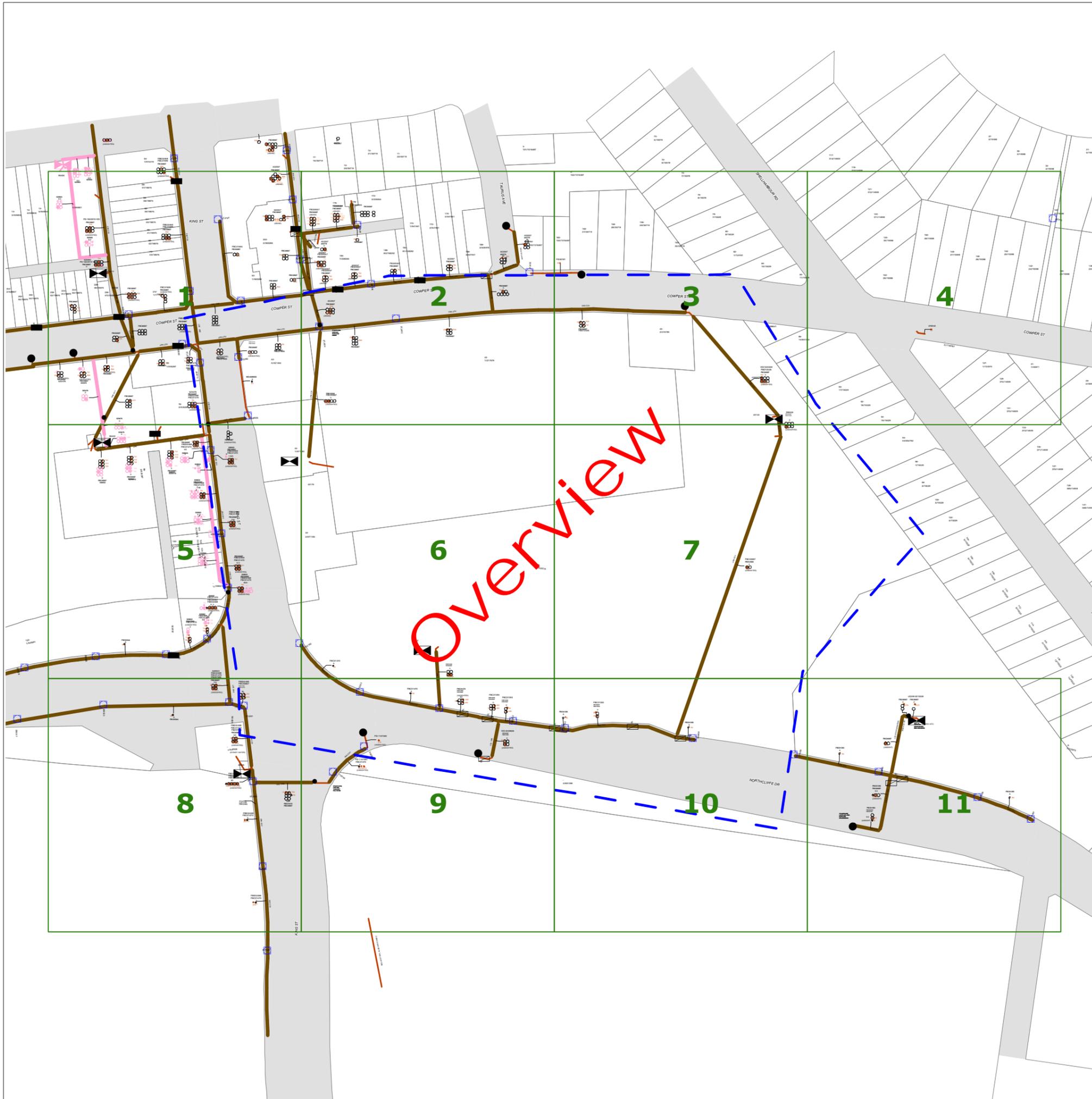
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- ⊠ Underground pit
- Duct run
- Cable run
- ⊙ Typical duct section
- ▲ Asbestos warning


**NOT TO SCALE**

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Issued Date: 08/08/2023

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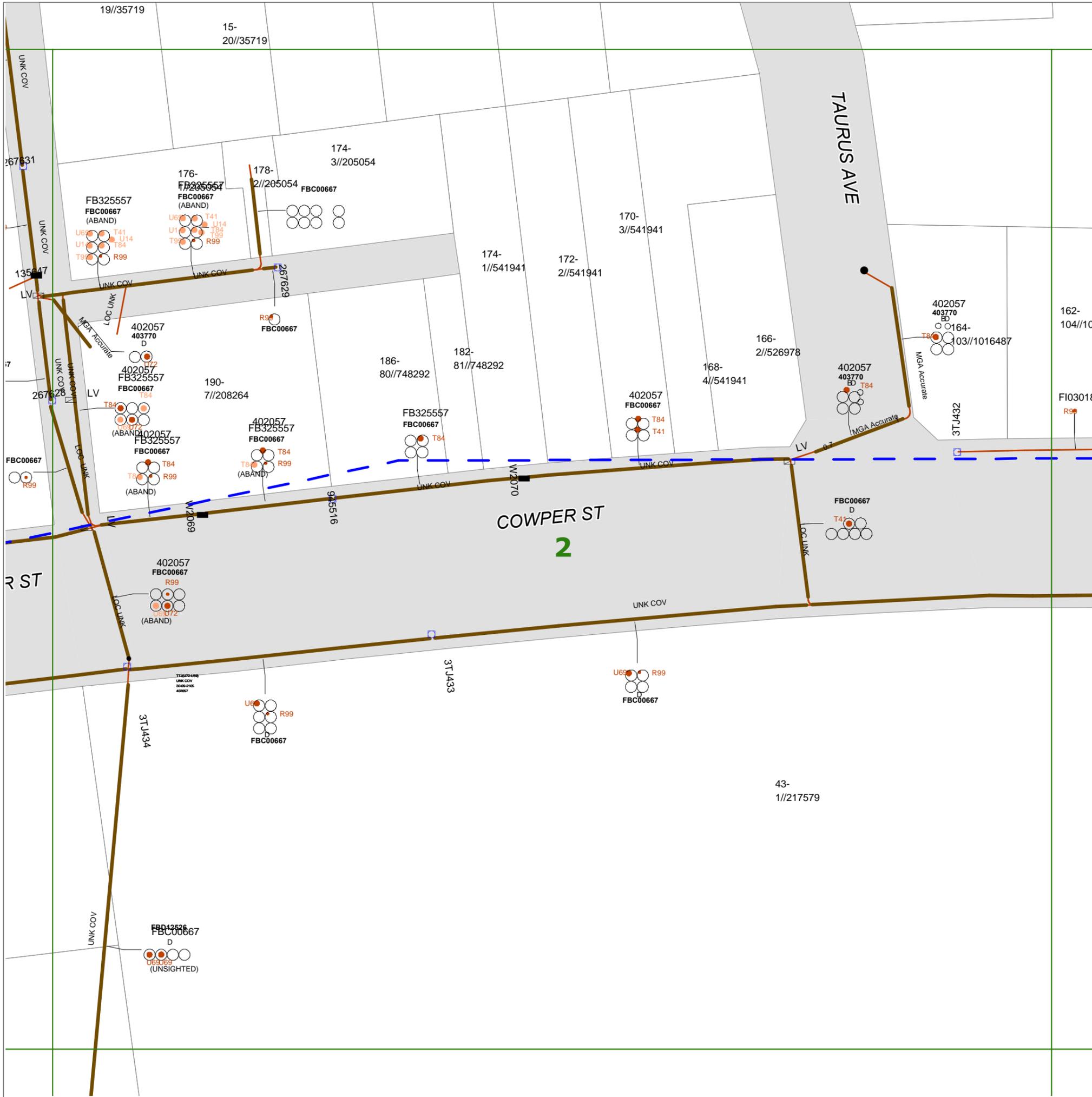
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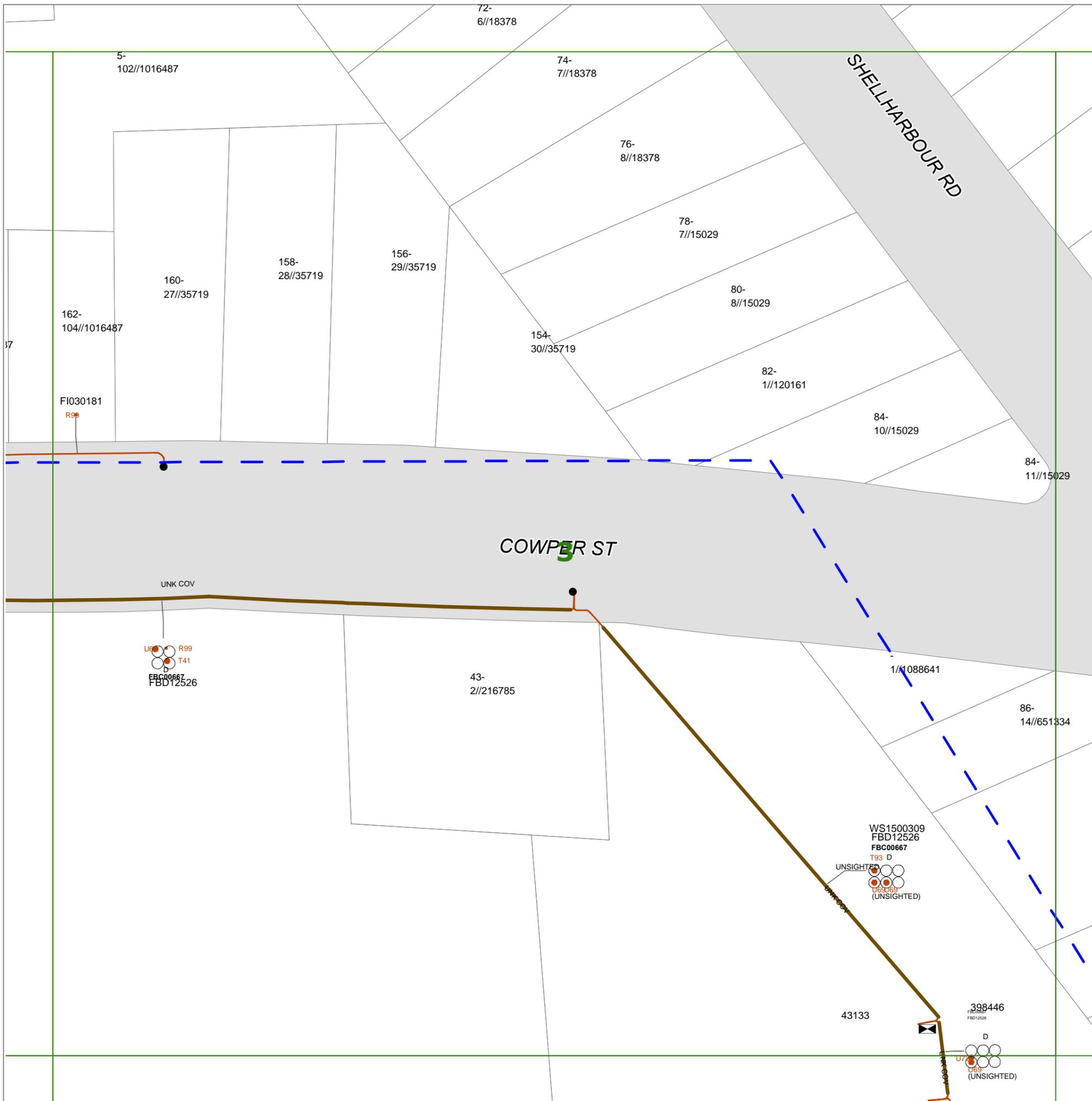
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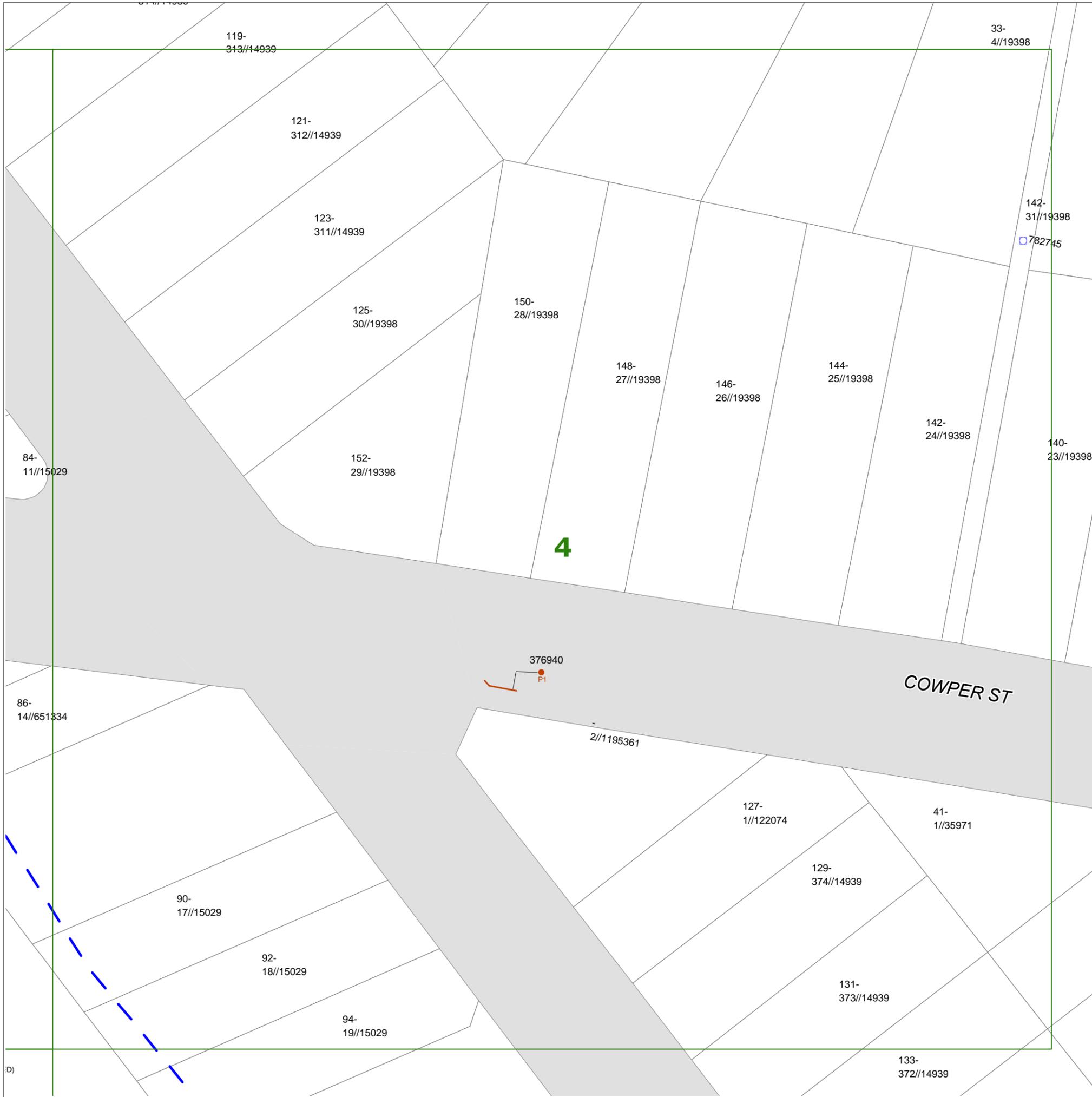
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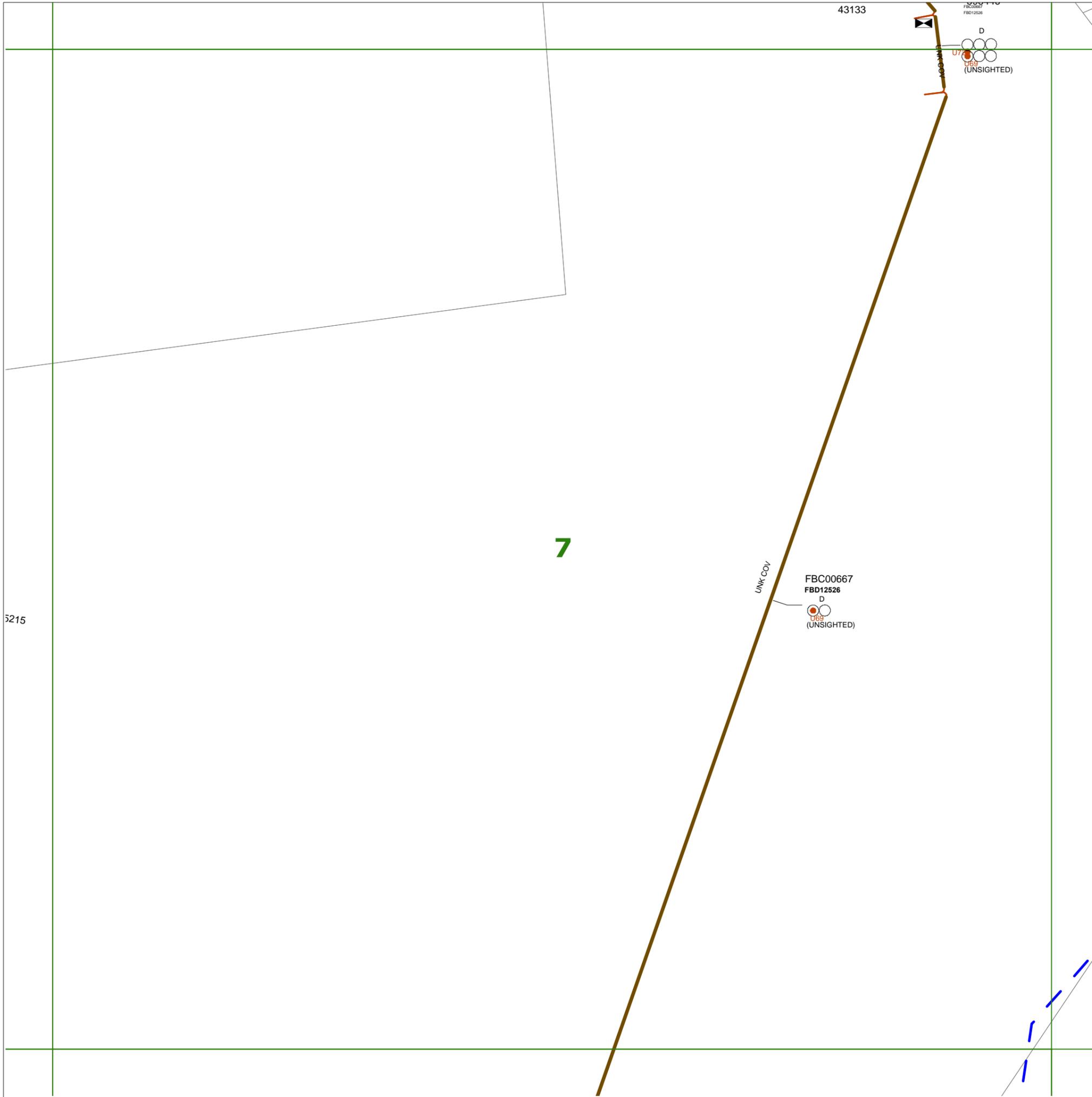
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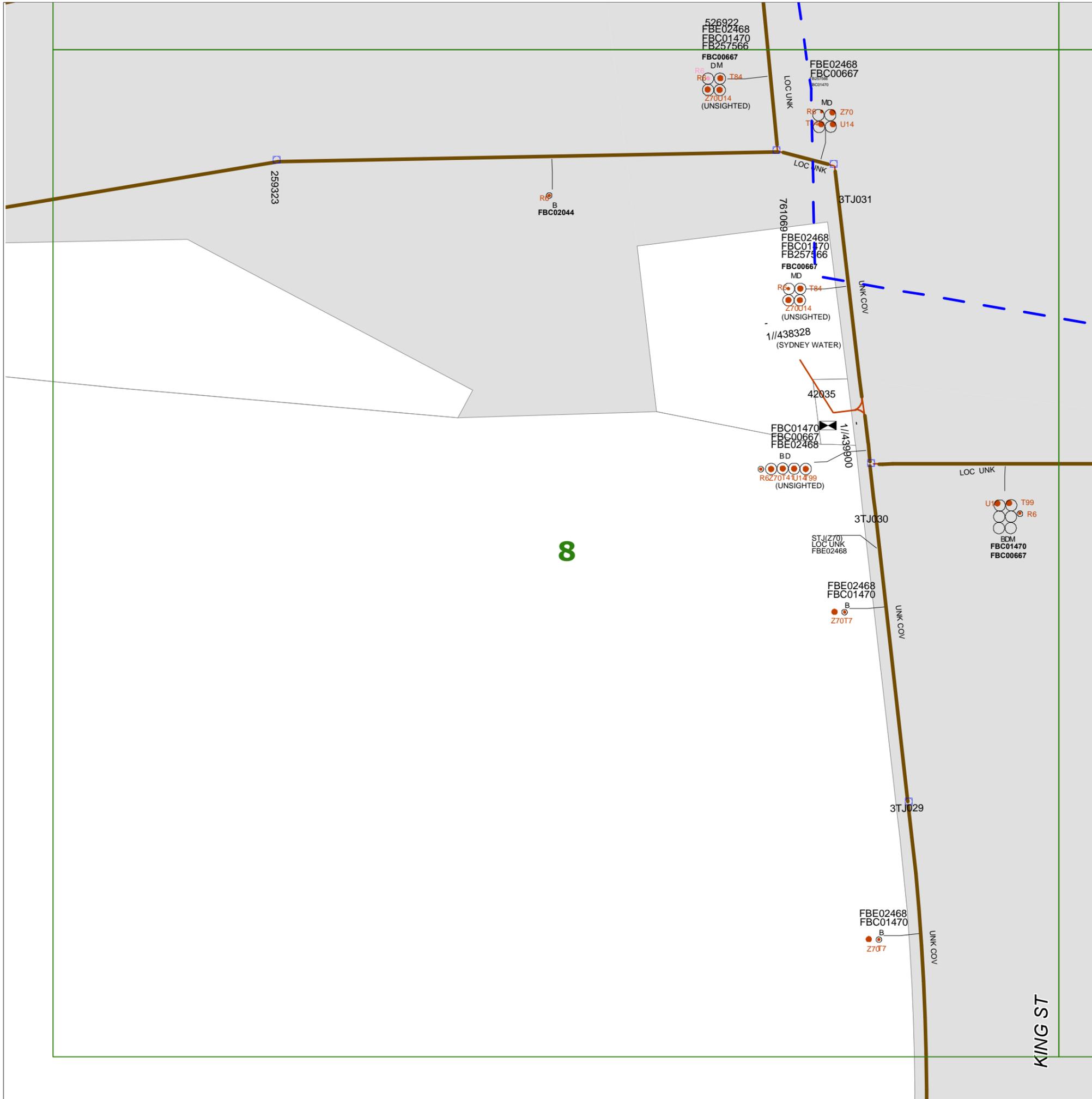
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**10 WORKING DAYS BEFORE COMMENCING WORK**

- 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

BYDA Sequence No.:	228082202
Issued Date:	08/08/2023





**WARNING**

- **All electrical apparatus shall be regarded as live until proved de-energised.** Contact with live electrical apparatus will cause severe injury or death.
- Underground assets may be congested at the approach to bridges and other structures. Typical asset depths and alignment may vary substantially, rising and falling sharply and at much shallower depths than elsewhere as they are channelled into shared allocated spaces on bridges and other structures. Additional precautions and underground asset location methods will be required in proximity to bridges and other structures.
- 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.
- Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be made available at the worksite where excavation is to be undertaken in either printed or electronic format. If the plans are in an electronic format, they must be in a format visible on a screen size 10 inches or greater. Plans must be reviewed and understood by the crew on site prior to commencing excavation.
- Non-destructive water excavation must be operated at or below 2000PSI. Any operation exceeding 2000PSI must be classed and treated as a destructive excavation practice.

**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**

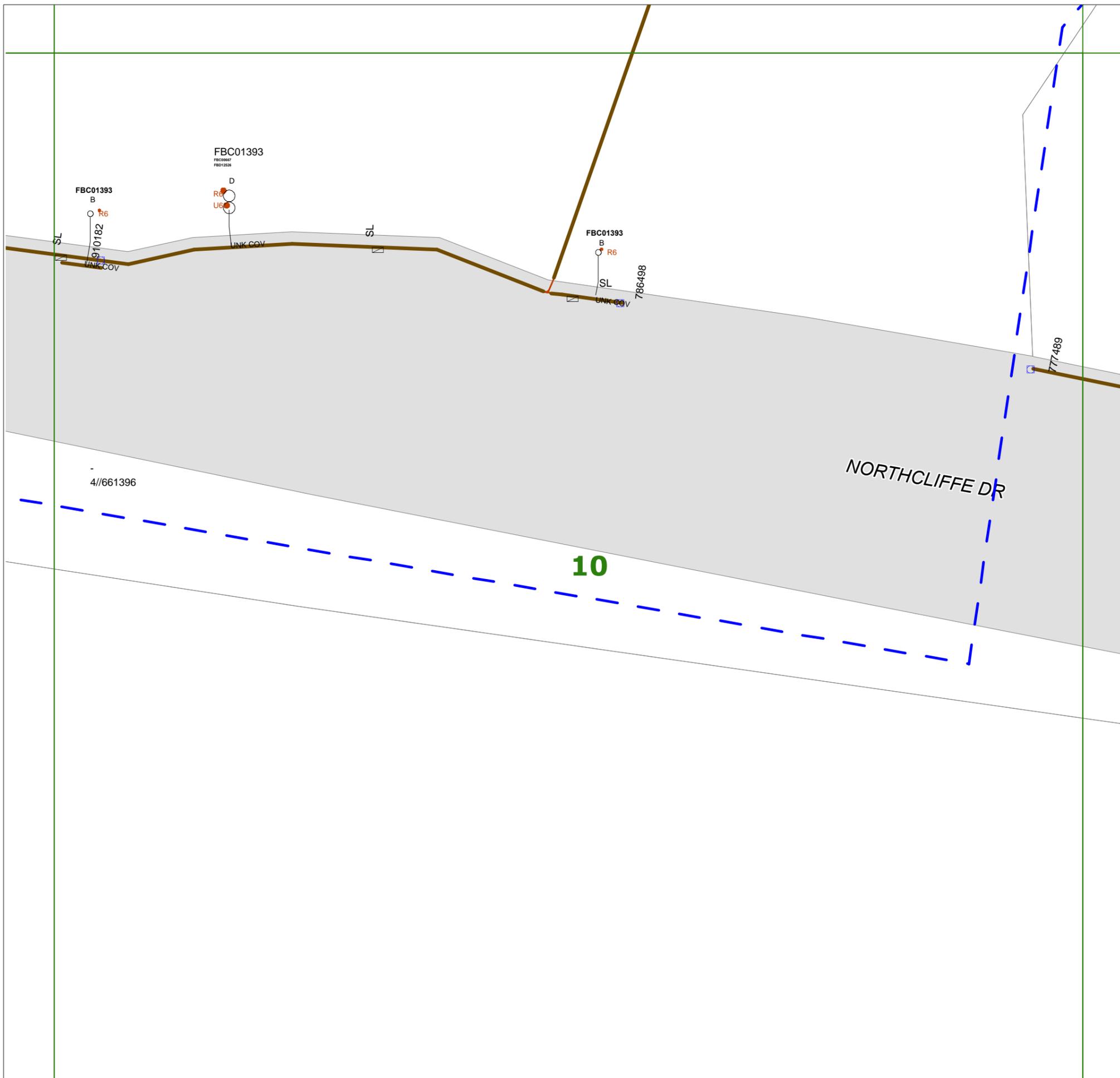
Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

**WARNING**  
THIS EXCAVATION IS IN THE VICINITY OF ENDEAVOUR ENERGY TRANSMISSION, PILOT, COMMUNICATION OR FIBRE OPTIC CABLES  
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**NOT TO SCALE**

BYDA Sequence No.:	228082202
Issued Date:	08/08/2023



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**DISCLAIMER**

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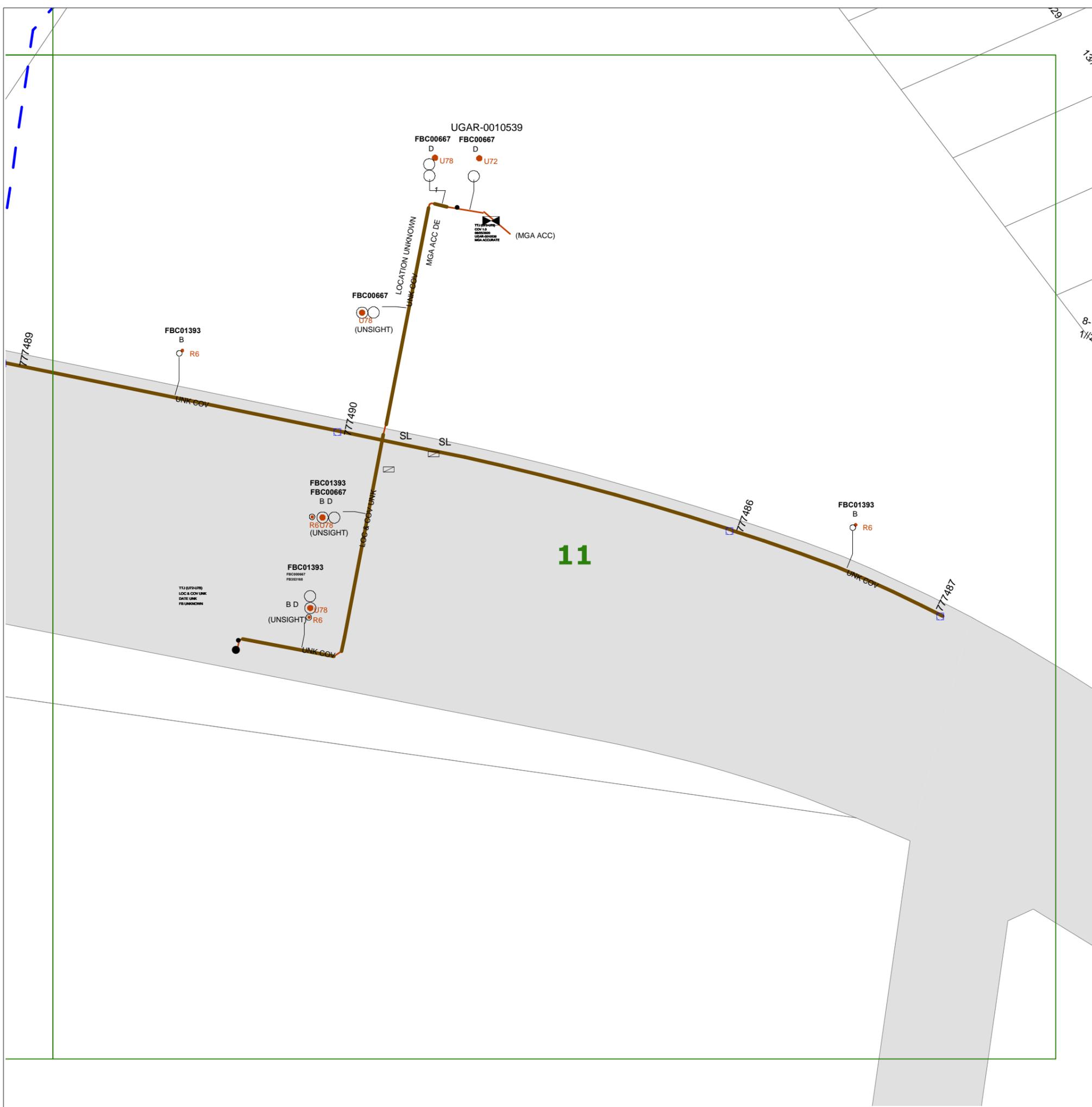
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THIS EXCAVATION IS IN THE VICINITY OF ENDEAVOUR ENERGY TRANSMISSION, PILOT, COMMUNICATION OR FIBRE OPTIC CABLES  
PLEASE RING 0418 489 957  
**10 WORKING DAYS BEFORE COMMENCING WORK**

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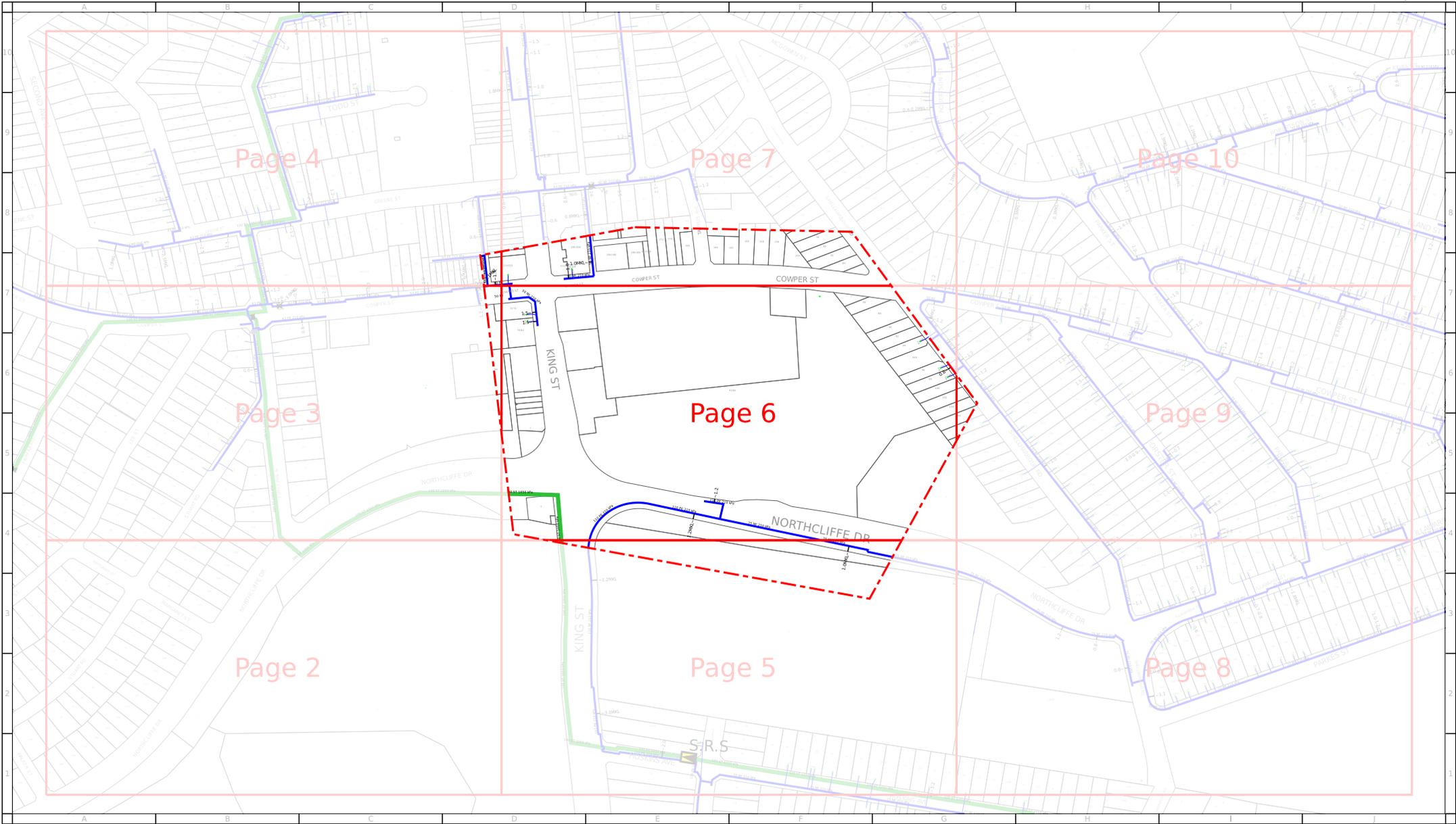


**NOT TO SCALE**

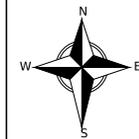
BYDA Sequence No.:	228082202
Issued Date:	08/08/2023



# JEMENA DBYD DRAWINGS



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



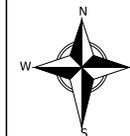
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Issue Date: 08/08/2023  
 BYDA Seq No: 228082200  
 BYDA Job No: 34788537  
 Overview Page:

**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. 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.



For legend details, please refer to the Coversheet attachment provided as part of this BYDA response.



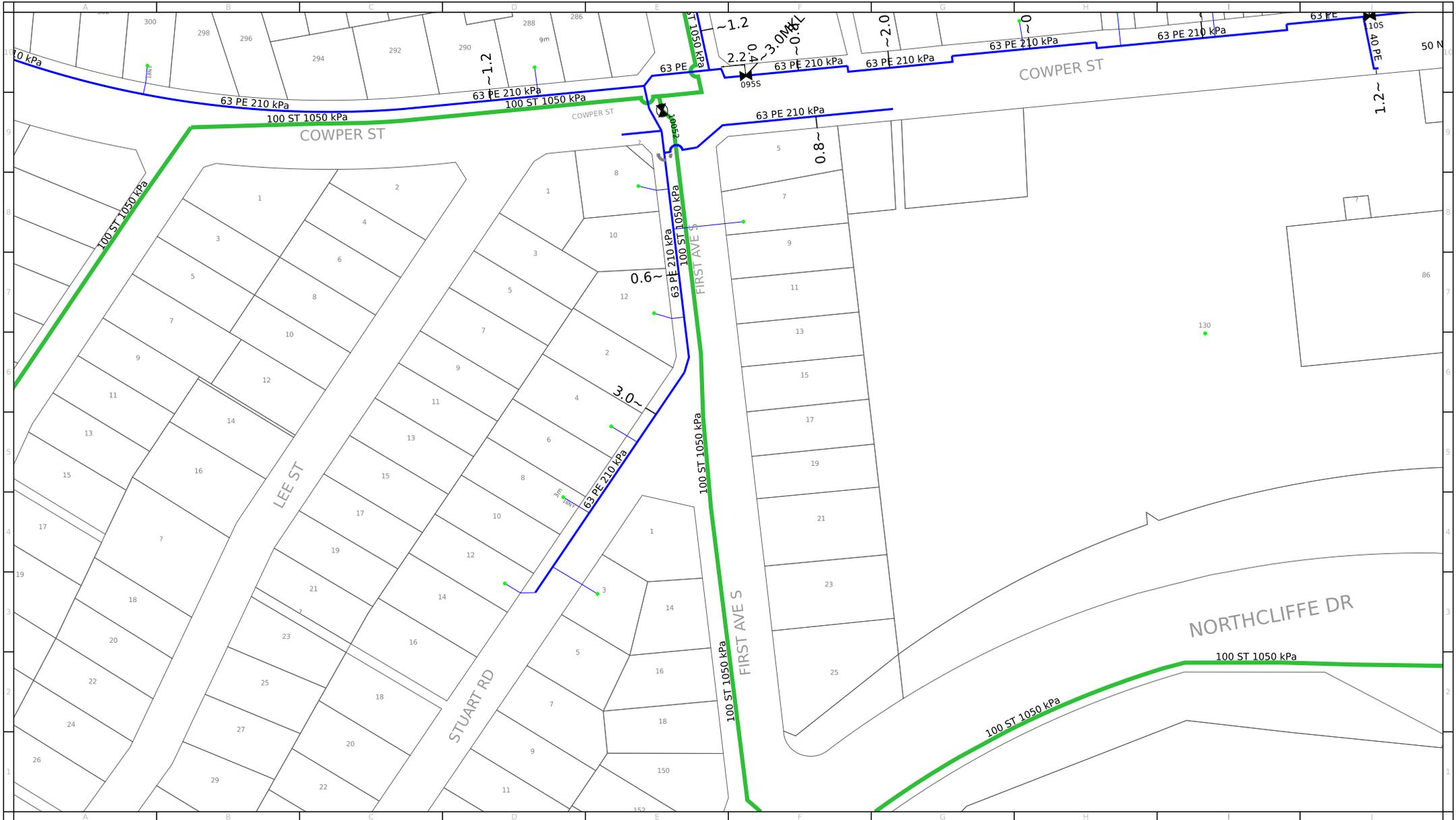
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Issue Date: 08/08/2023  
 BYDA Seq No: 228082200  
 BYDA Job No: 34788537

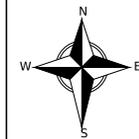
0m 10m 20m 30m 40m 50m 60m 70m 80m



**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.



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Scale: 1:2000

Issue Date: 08/08/2023  
 BYDA Seq No: 228082200  
 BYDA Job No: 34788537

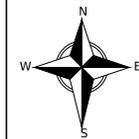
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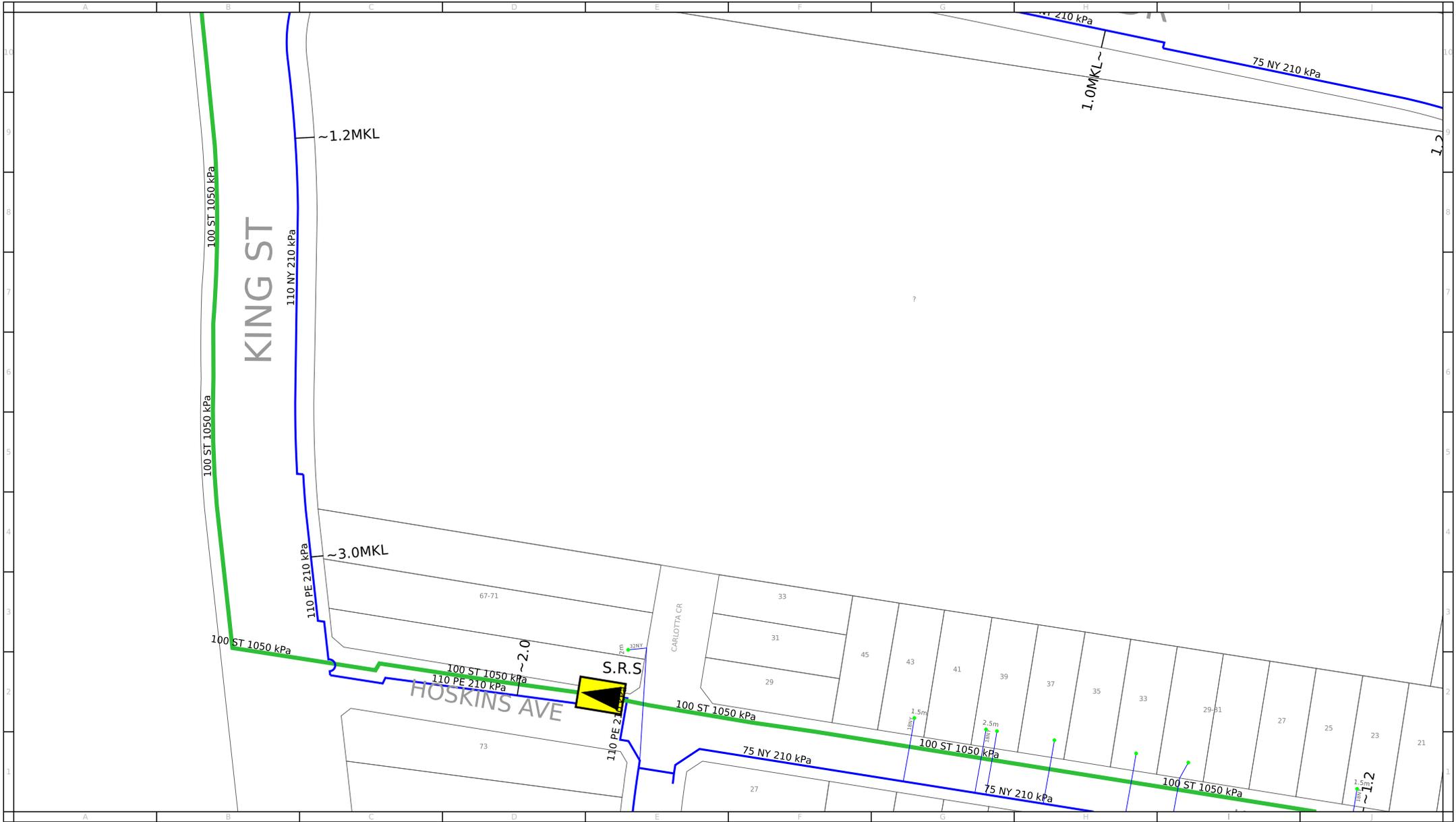
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Issue Date: 08/08/2023  
 BYDA Seq No: 228082200  
 BYDA Job No: 34788537

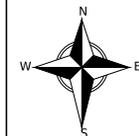
0m 10m 20m 30m 40m 50m 60m 70m 80m



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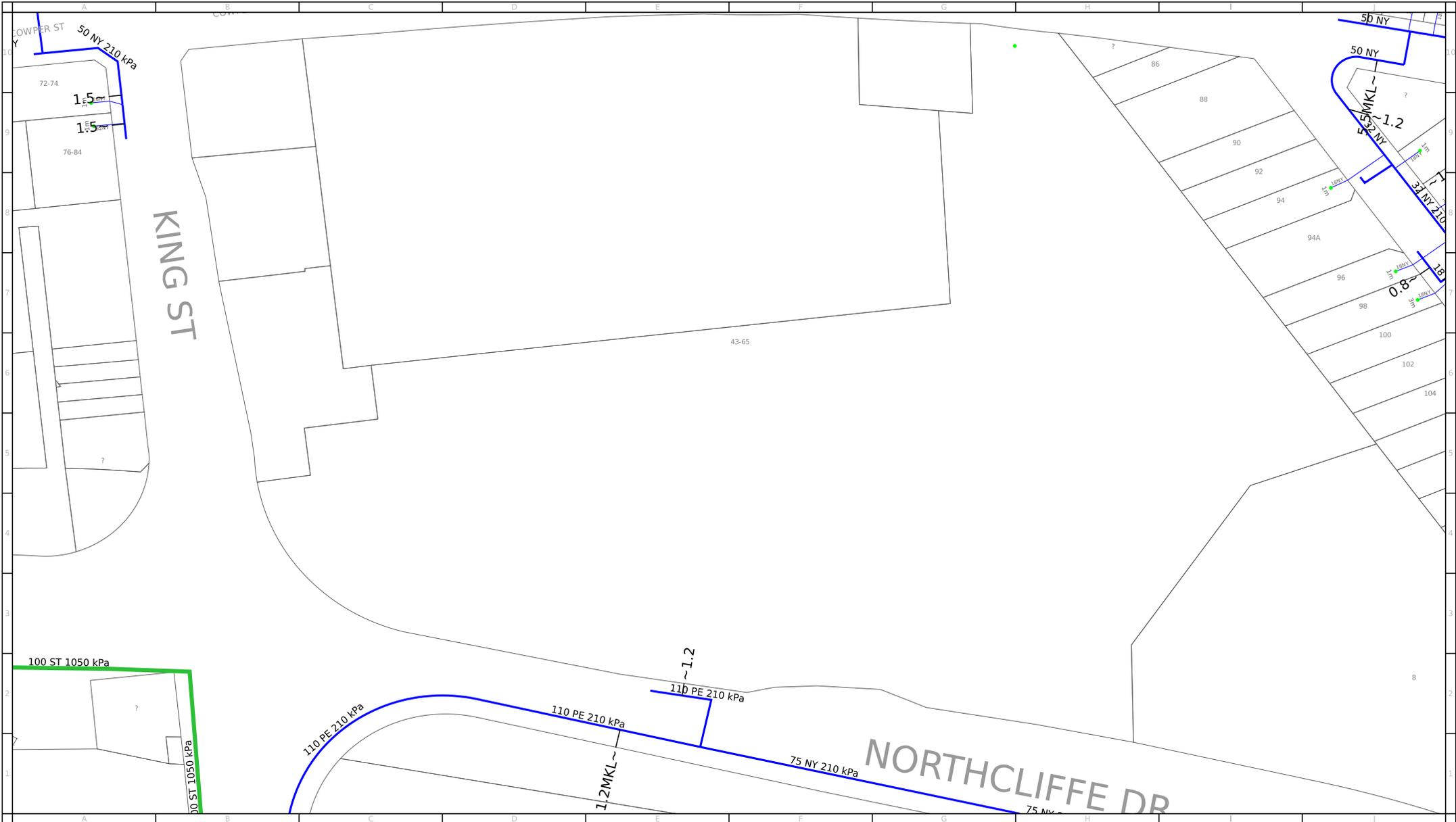
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BYDA Job No: 34788537

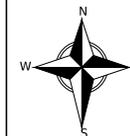
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Scale: 1:2000

Issue Date: 08/08/2023  
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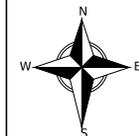
0m 10m 20m 30m 40m 50m 60m 70m 80m



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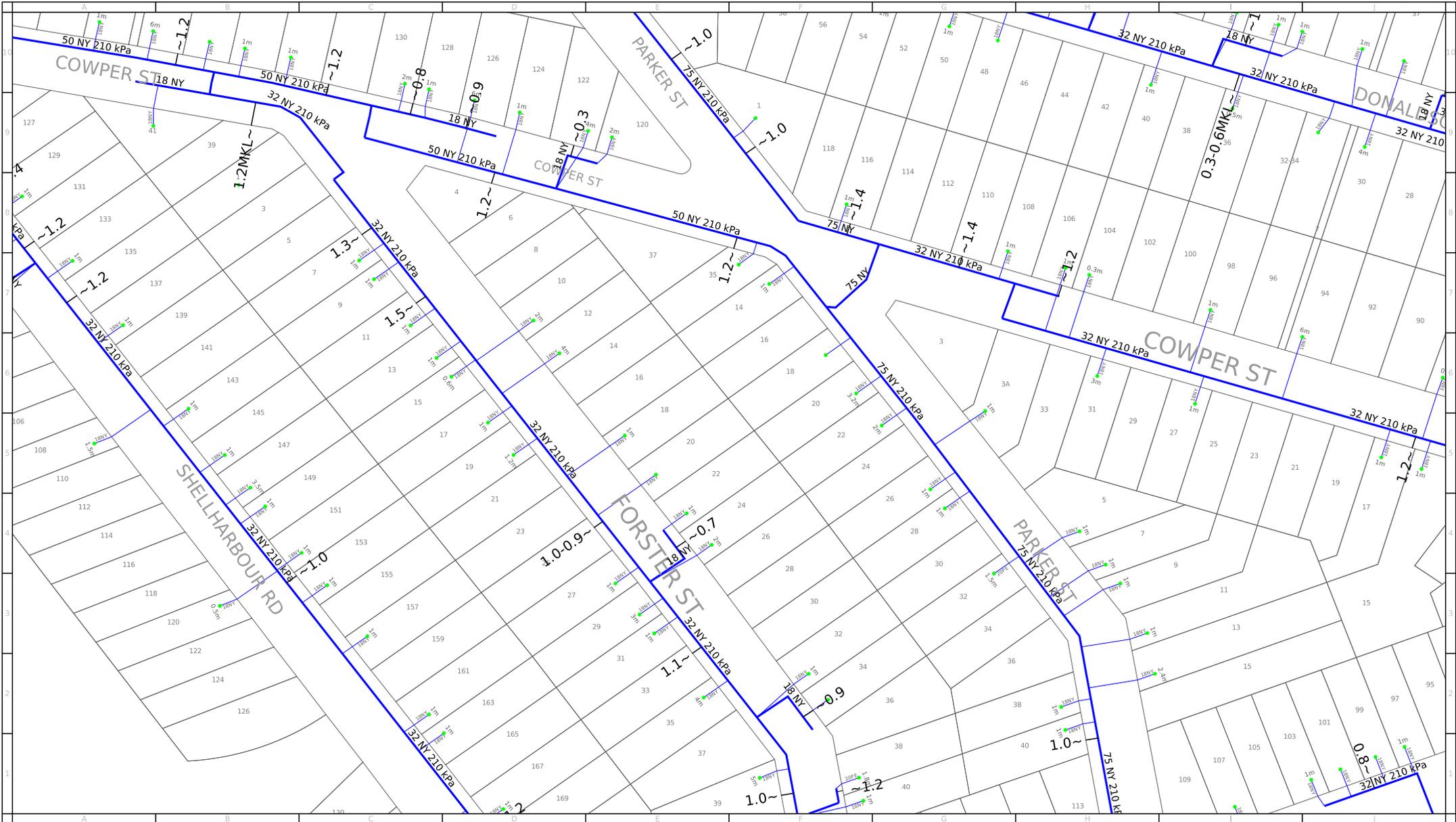
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 BYDA Seq No: 228082200  
 BYDA Job No: 34788537

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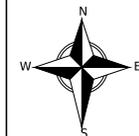


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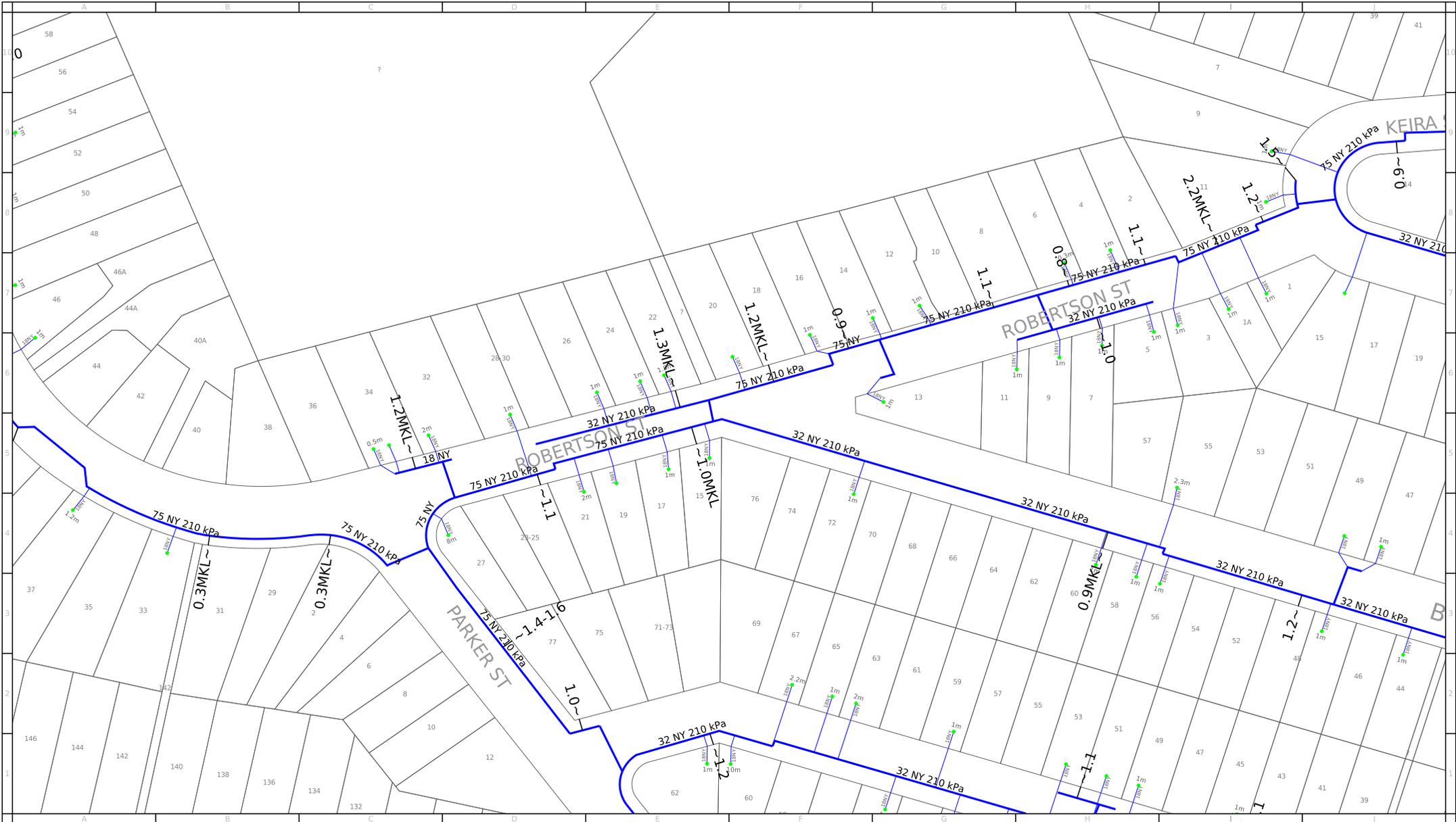
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 BYDA Seq No: 228082200  
 BYDA Job No: 34788537

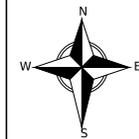
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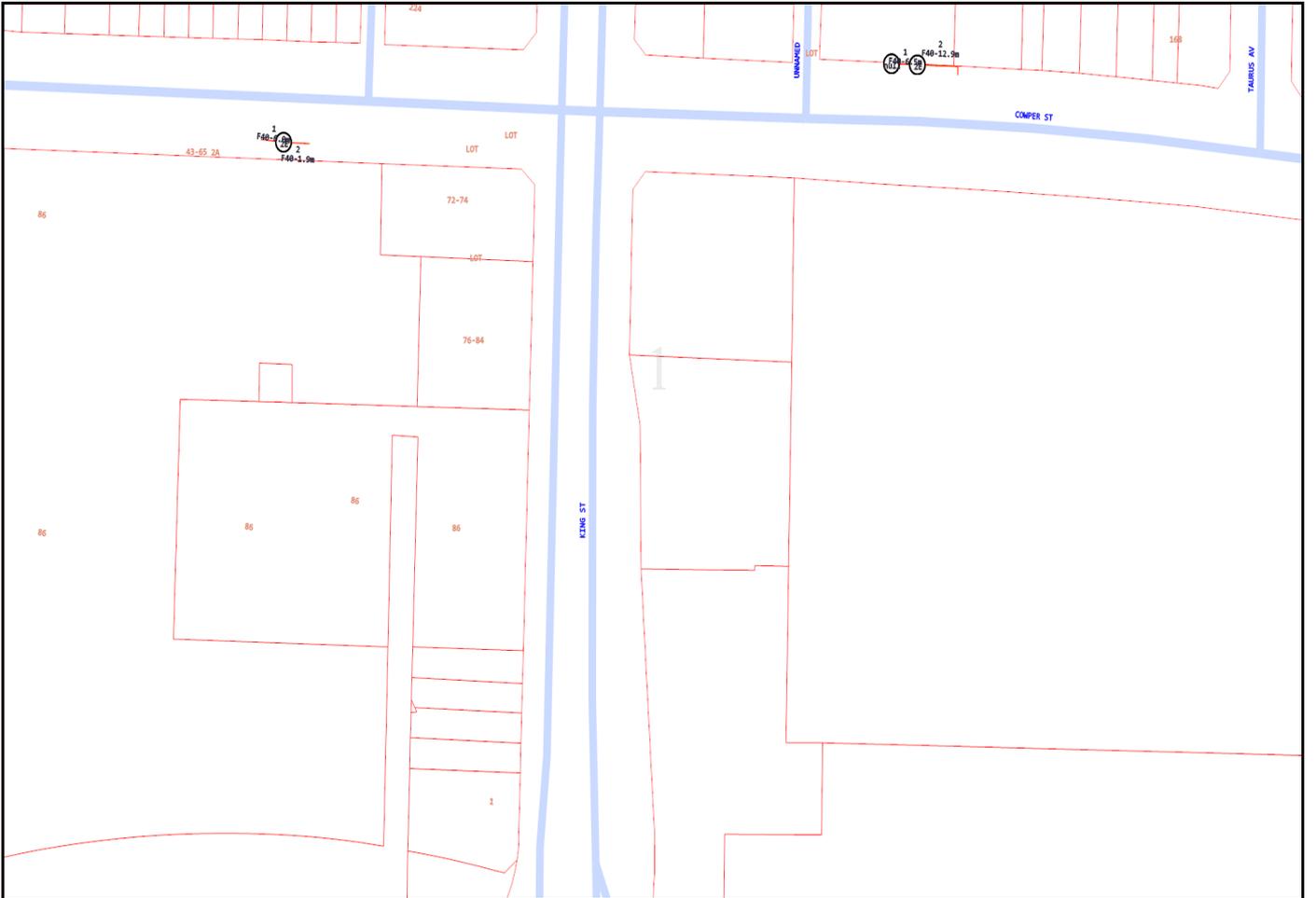
# NBN DBYD DRAWINGS

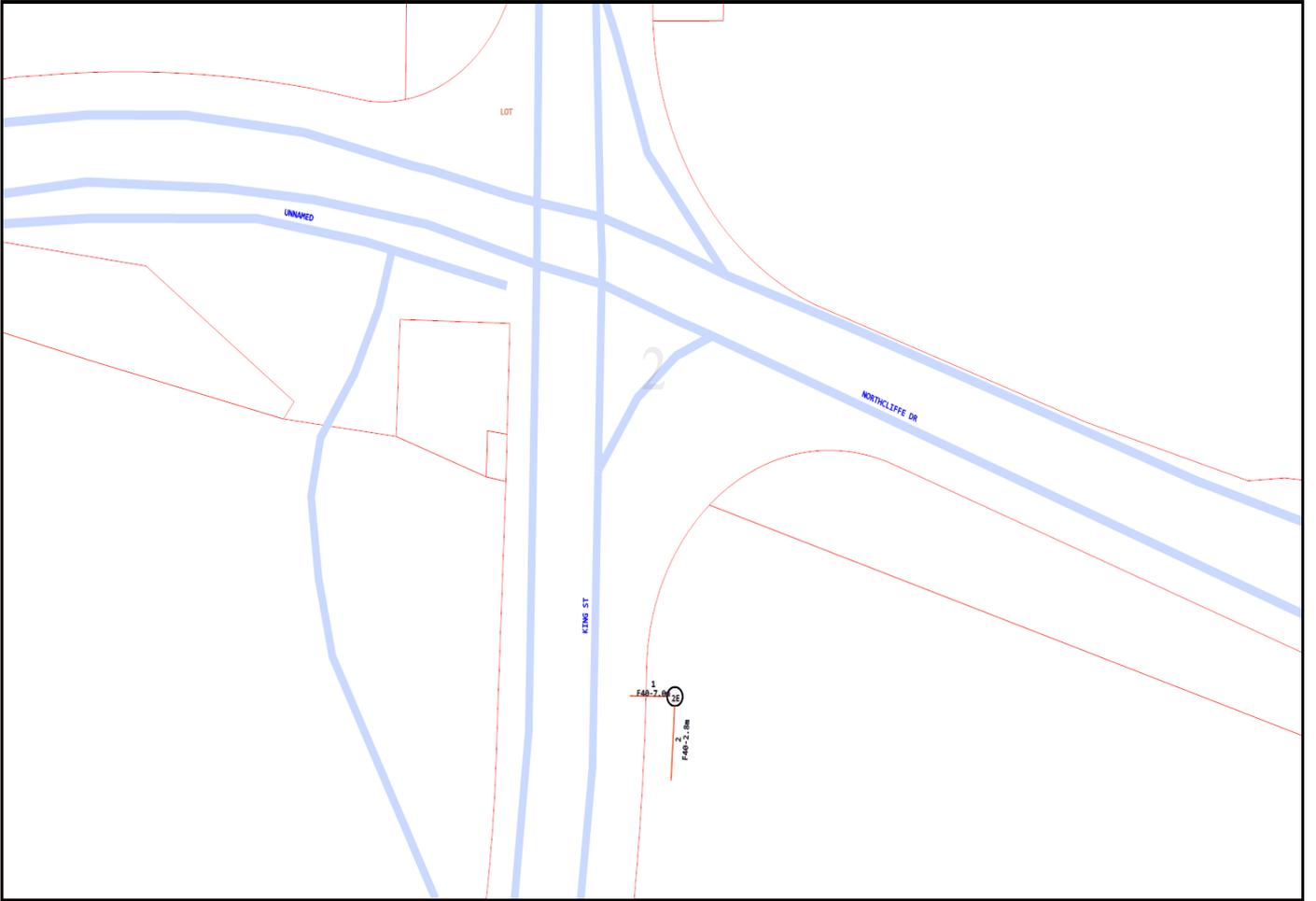
**To:** Zee Qasim  
**Phone:** Not Supplied  
**Fax:** Not Supplied  
**Email:** zee.qasim@arup.com

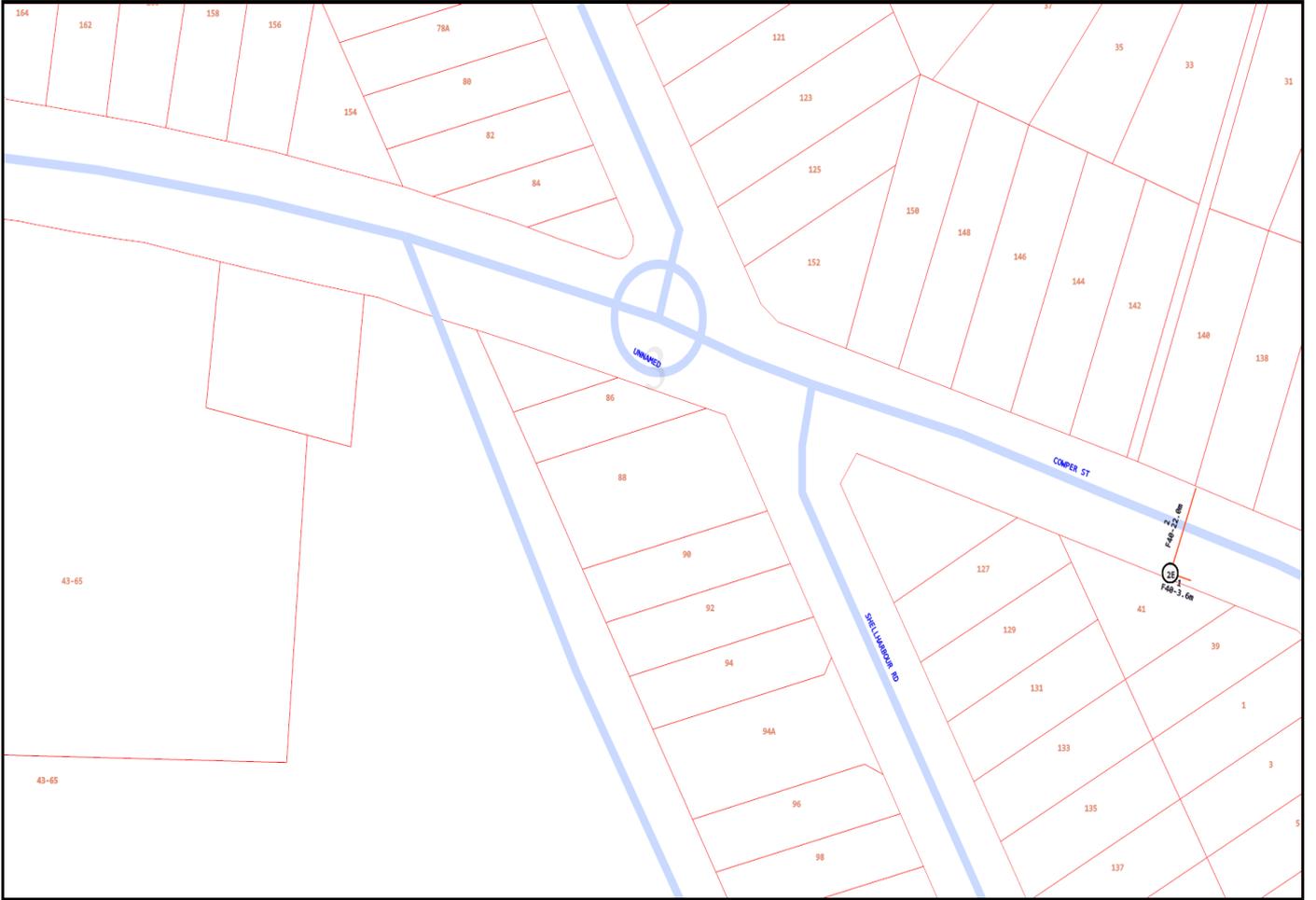
<b>Dial before you dig Job #:</b>	34788537	
<b>Sequence #</b>	228082199	
<b>Issue Date:</b>	08/08/2023	
<b>Location:</b>	43-65 Cowper Street , Warrawong , NSW , 2502	

## Indicative Plans

1	3
2	4









## Emergency Contacts

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

**To:** Zee Qasim  
**Phone:** Not Supplied  
**Fax:** Not Supplied  
**Email:** zee.qasim@arup.com

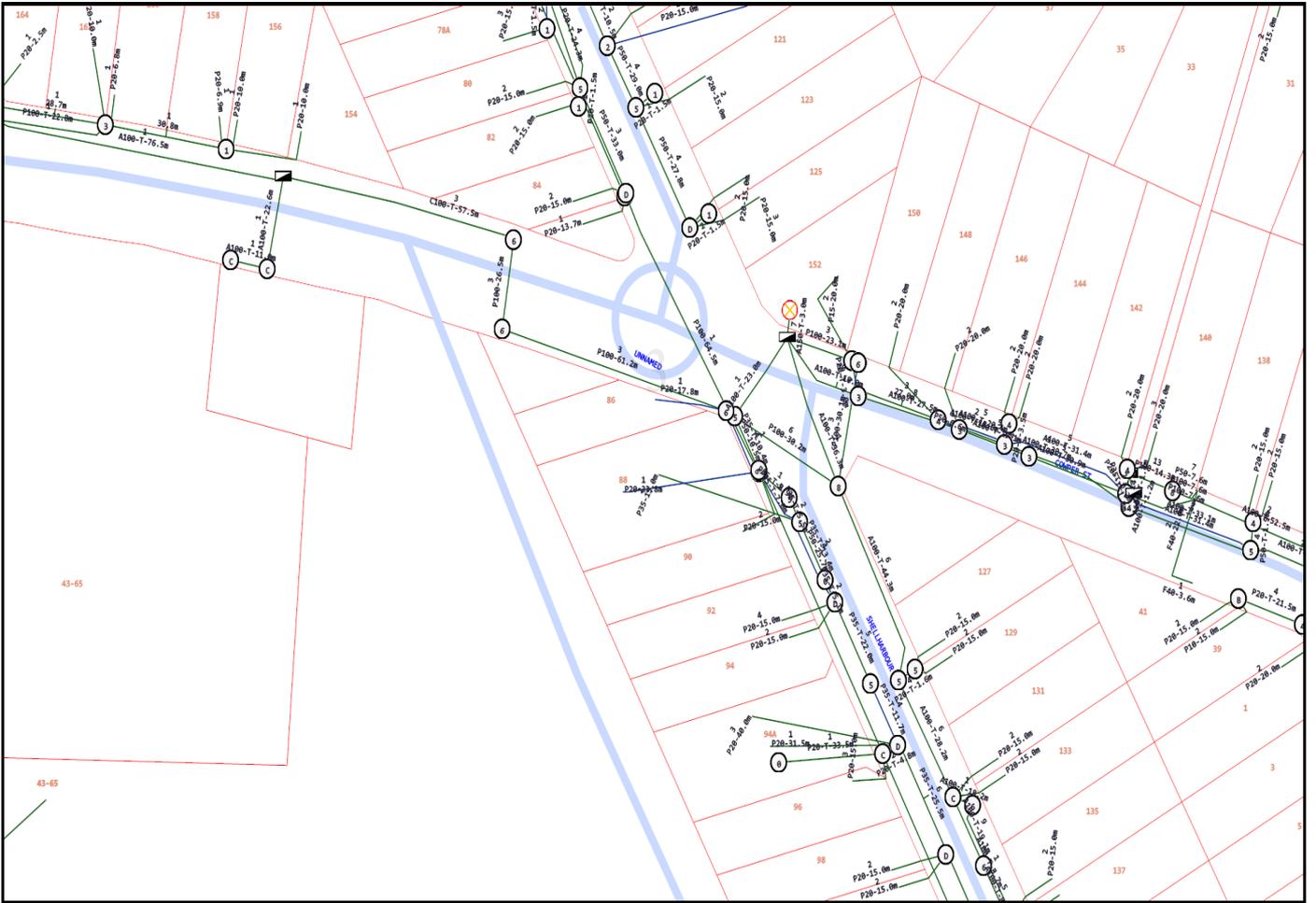
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<b>Sequence #</b>	228082199	
<b>Issue Date:</b>	08/08/2023	
<b>Location:</b>	43-65 Cowper Street , Warrawong , NSW , 2502	

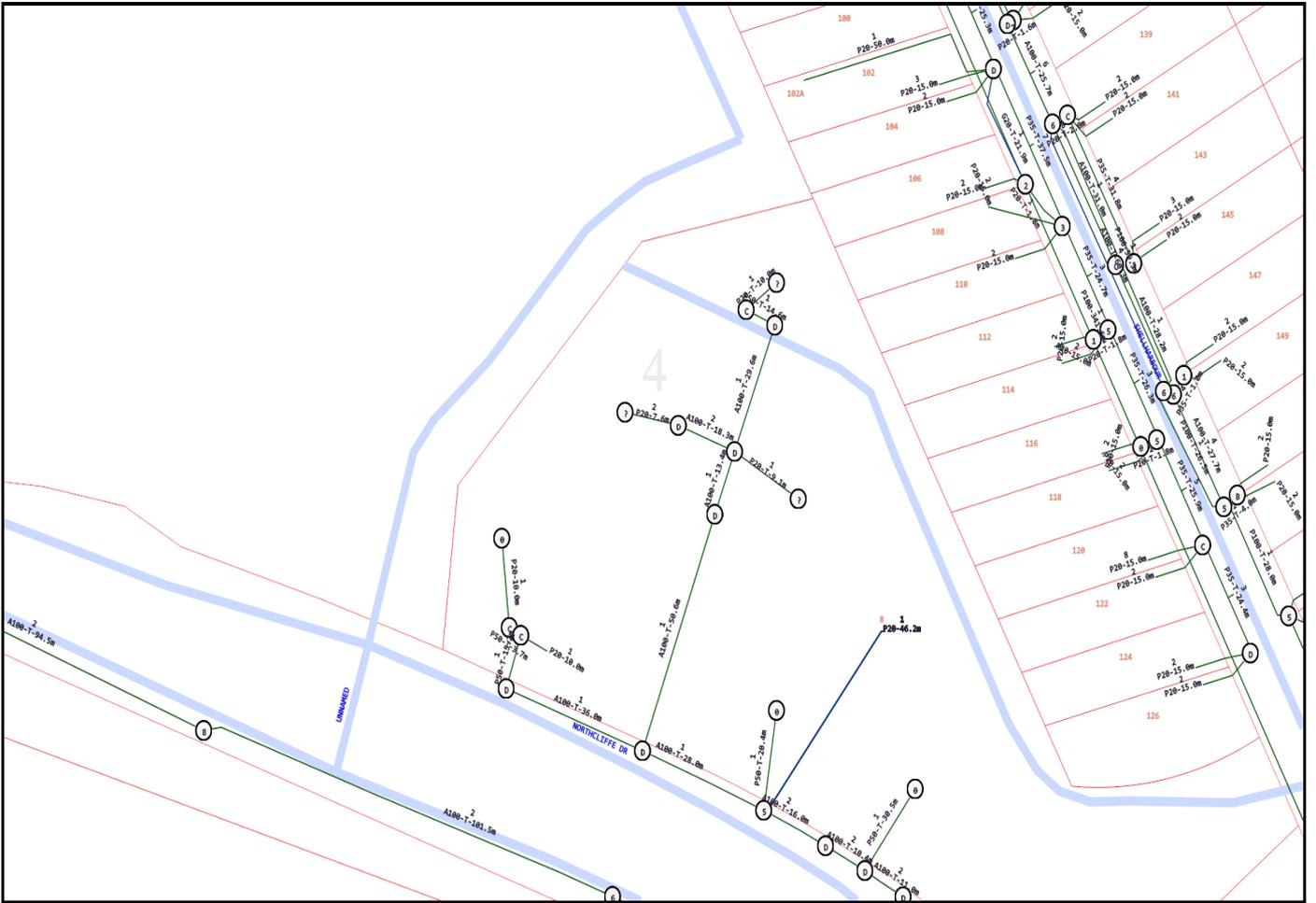
## Indicative Plans

1	3
2	4









## Emergency Contacts

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

# OPTUS DBYD DRAWINGS



# OVERVIEW

WARNING: This document is confidential and may also be privileged. Confidentiality nor privilege is not waived or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from our records is believed to be accurate, but no responsibility is assumed for any error or omission. 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: 228082198

Date Generated: 08 Aug 2023



For all Optus DBYD plan enquiries –  
 Email: [Fibre.Locations@optus.net.au](mailto:Fibre.Locations@optus.net.au)  
 For urgent onsite assistance contact 1800 505 777  
 Optus Limited ACN 052 833 208







**Tile No: 2**

WARNING: This document is confidential and may also be privileged. Confidentiality nor privilege is not waived or destroyed by virtue of it being transmitted to an incorrect addressee. Unauthorised use of the contents is therefore strictly prohibited. Any information contained in this document that has been extracted from our records is believed to be accurate, but no responsibility is assumed for any error or omission. 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: 228082198

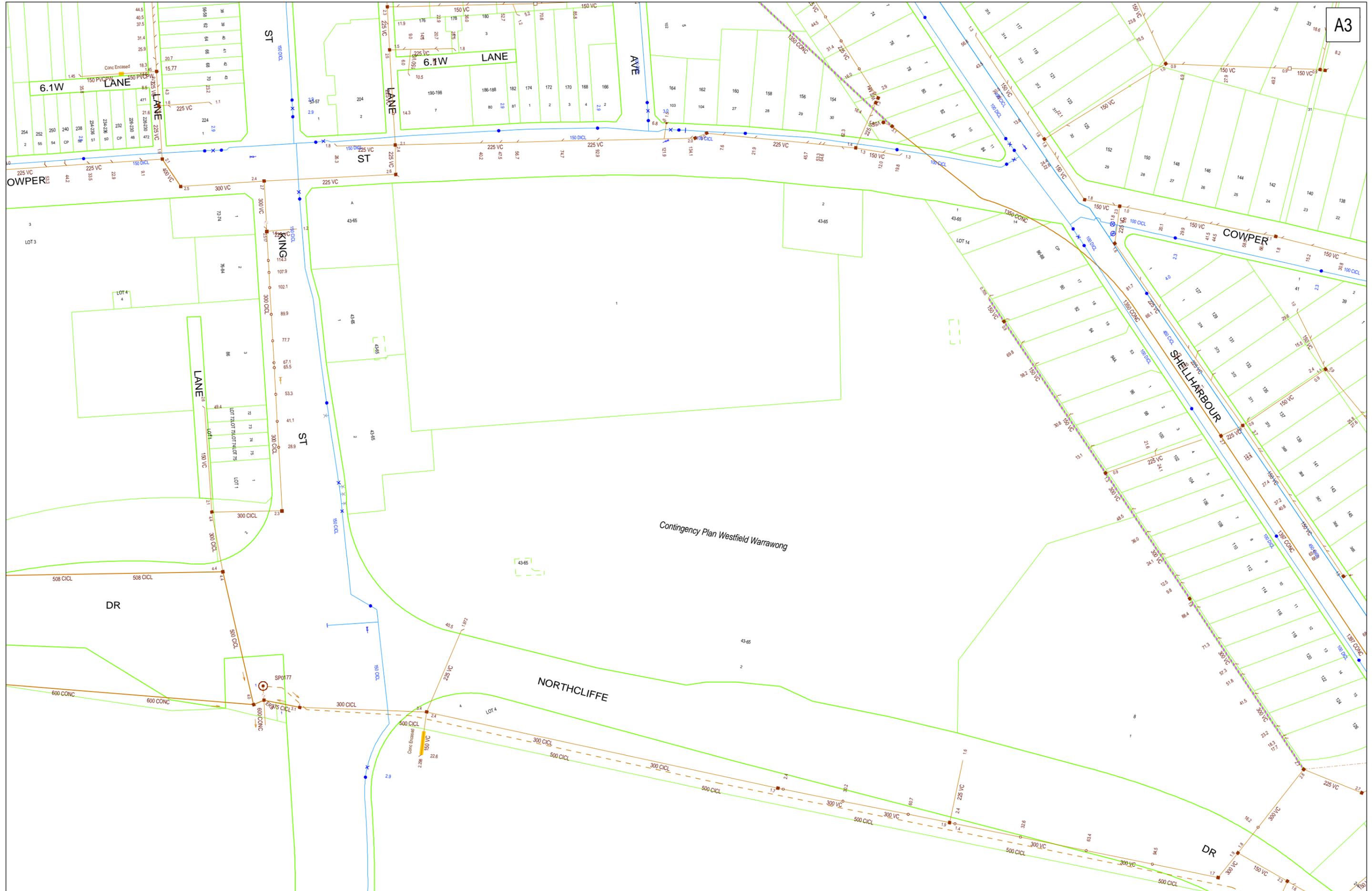
Date Generated: 08 Aug 2023



For all Optus DBYD plan enquiries –  
 Email: [Fibre.Locations@optus.net.au](mailto:Fibre.Locations@optus.net.au)  
 For urgent onsite assistance contact 1800 505 777  
 Optus Limited ACN 052 833 208



# SYD WATER DBYD DRAWINGS

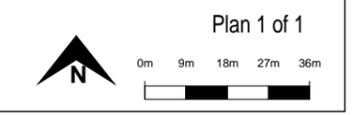


DBYD Address:  
 43-65 Cowper Street  
 Warrawong NSW 2502

DBYD Job No: 34788537  
 DBYD Sequence No: 228082203

Copyright Reserved Sydney Water 2023  
 No warranty is given that the information shown is complete or accurate.  
 SYDNEY WATER CORPORATION

Scale: 1:1500  
 Date of Production: 08/08/2023



# TELSTRA DBYD DRAWINGS

# Cable Plan



Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>  
 Ph - 13 22 03  
 Email - Telstra.Plans@team.telstra.com  
 Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

Sequence Number: 228082205

**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**

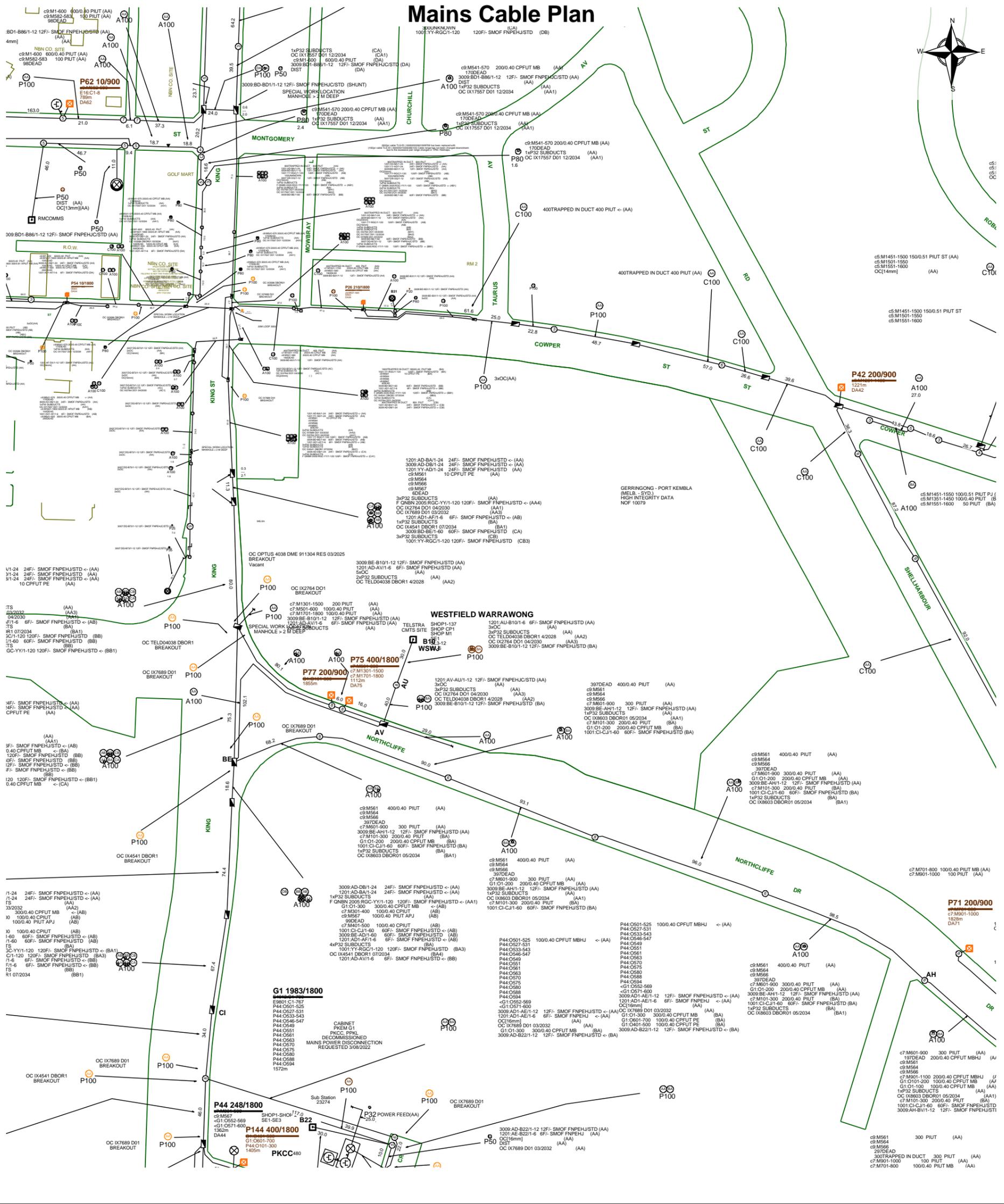
TELSTRA LIMITED A.C.N. 086 174 781  
 Generated On 08/08/2023 11:43:19

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

**WARNING**  
 Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

# Mains Cable Plan



Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>  
 Ph - 13 22 03  
 Email - [Telstra.Plans@team.telstra.com](mailto:Telstra.Plans@team.telstra.com)  
 Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

Sequence Number: 228082205

**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**

TELSTRA LIMITED A.C.N. 086 174 781  
 Generated On 08/08/2023 11:43:24

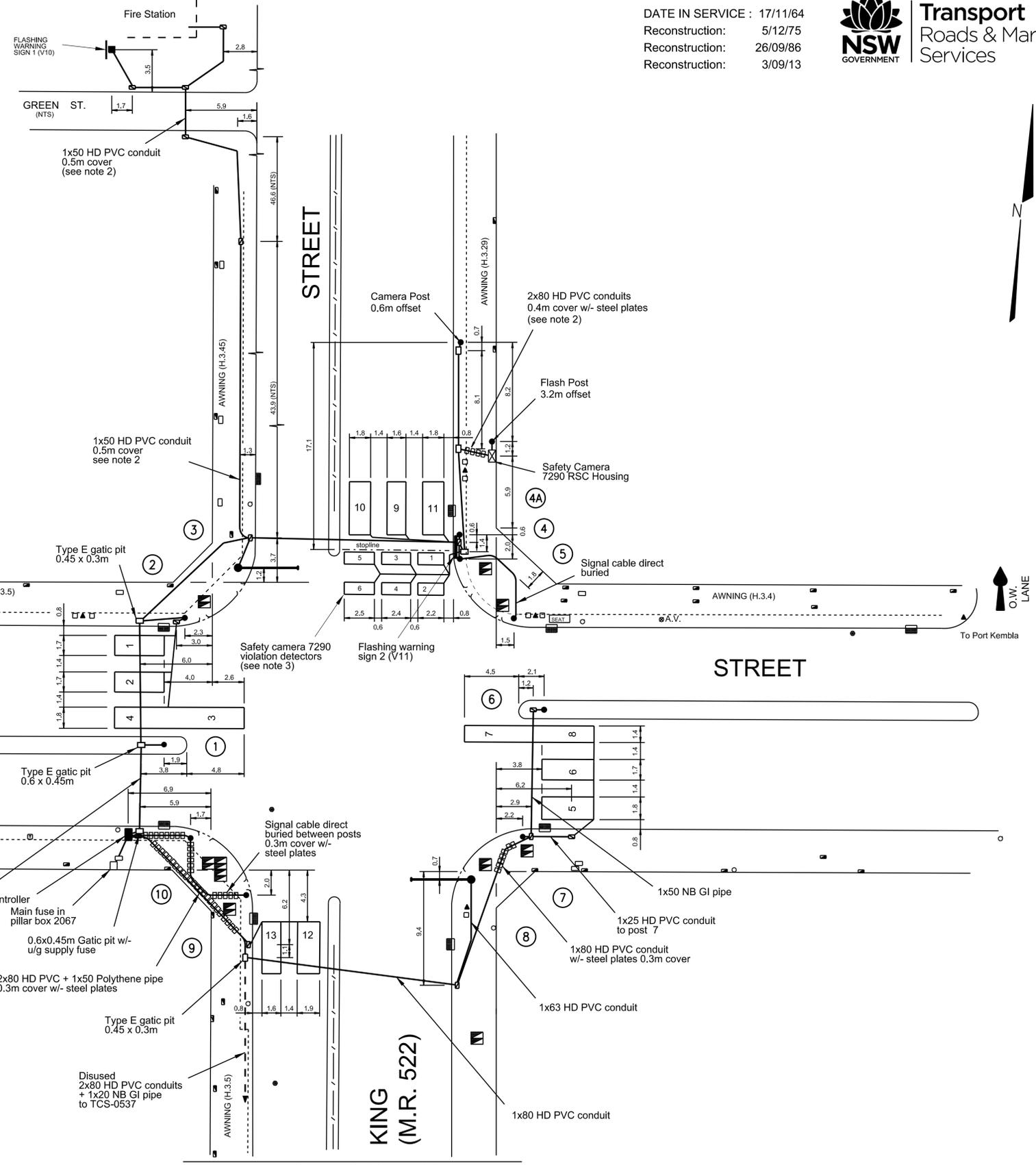
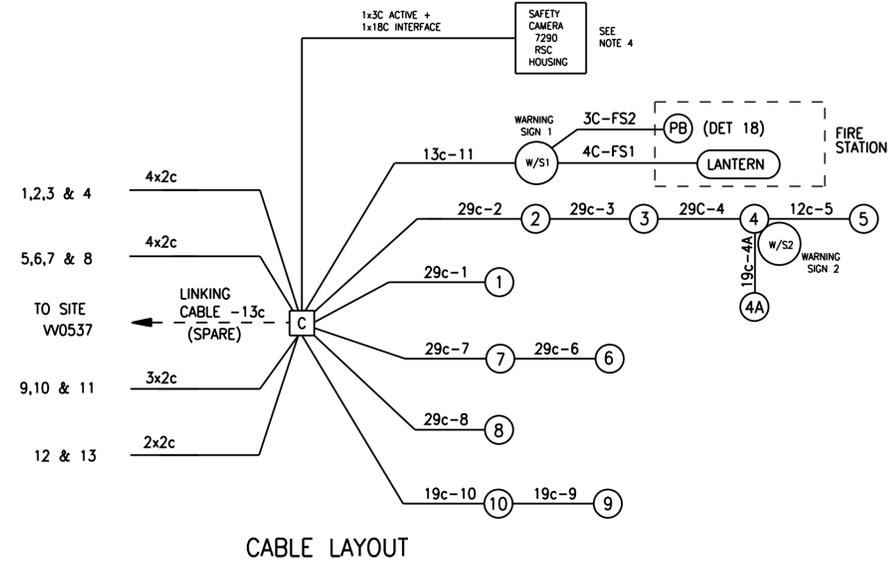
**WARNING**  
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# TfNSW DBYD DRAWINGS

0522.497.VV.0210

DRAWN BY CADD  
DO NOT AMEND MANUALLY

DATE IN SERVICE : 17/11/64  
Reconstruction: 5/12/75  
Reconstruction: 26/09/86  
Reconstruction: 3/09/13



**NOTES**

- CABLE COVER : IN ROADWAYS 0.6m ABOVE PIPE.  
IN FOOTWAYS 0.45m ABOVE PIPE UNLESS OTHERWISE STATED.
- ALL CABLE IN FOOTWAYS ARE INSTALLED IN 1x80 HD PVC CONDUIT UNLESS OTHERWISE STATED.  
ALL CONDUITS ASSOCIATED WITH THE FIRE STATION ARE 1x50 HD PVC CONDUITS (0.5m COVER)  
ALL CONDUITS ASSOCIATED WITH THE SAFETY CAMERA ARE 1x80 HD PVC ORANGE + 1x80 HD PVC WHITE (0.5m COVER) UNLESS OTHERWISE STATED.
- SAFETY CAMERA (7290) VIOLATION DETECTORS ARE POSITIONED 0.2m IN FRONT OF THE STOPLINE & CONSIST OF 2 LOOPS 1.0m WIDE SPACED 1.5m APART.
- FOR FURTHER DETAILS ON THE RED LIGHT CAMERA , CCTV CAMERAS & VIOLATION DETECTORS, REFER TO PLANS VV0210 SHEETS 10,15 & 16.

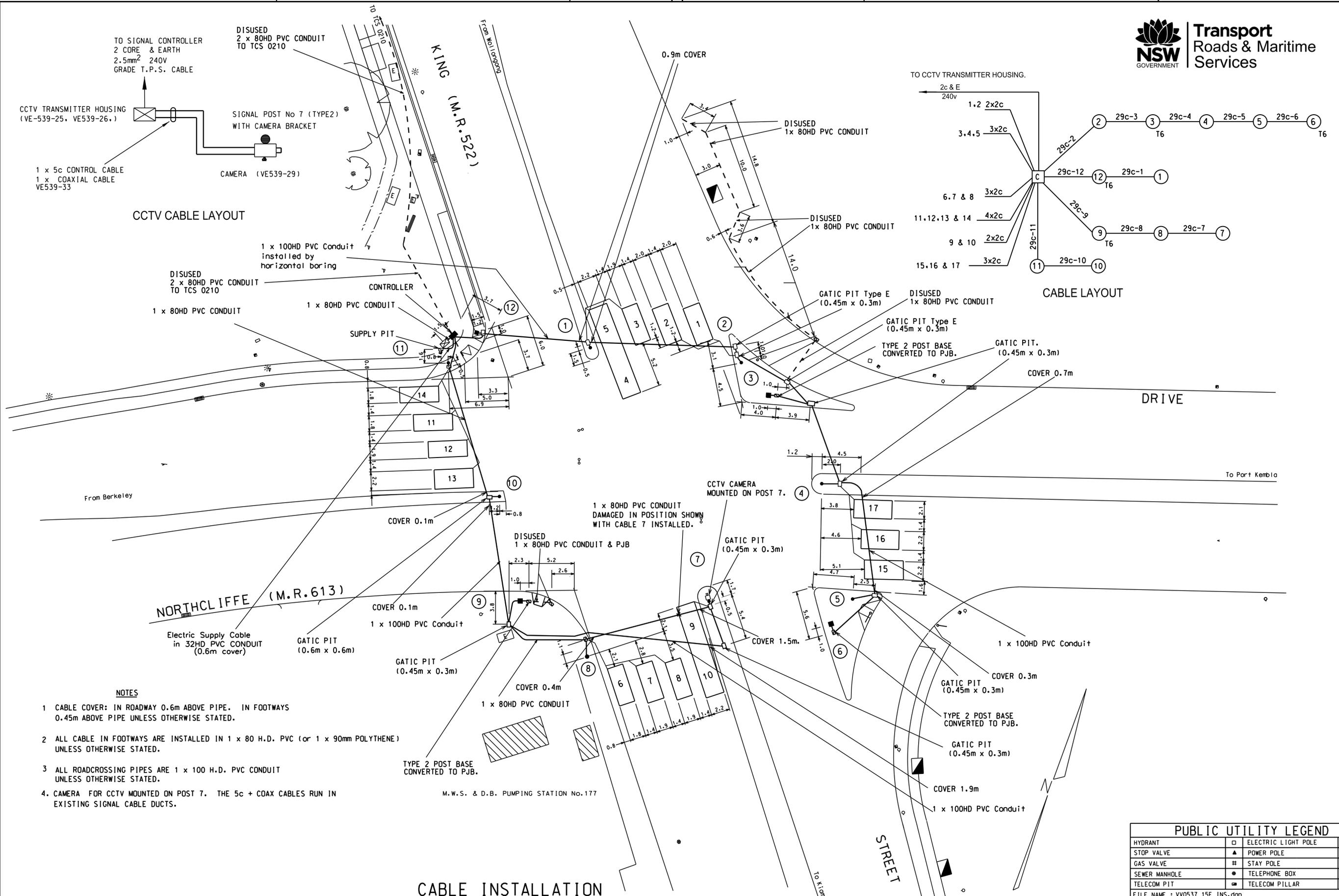
A ORIGINAL ISSUE  
PLAN REDRAWN - SAFETY CAMERA ADDED.  
B ISSUE 26/08/2019  
DETECTOR NOS REVISED.  
IH MM

PUBLIC UTILITY LEGEND		REFERENCE PLANS		U.B.D. Ref. Map 10 L10	
HYDRANT	□	DESIGN LAYOUT	SHT 10	I.S.G. E: 289 585	
STOP VALVE	▲	CABLE CHART	SHT 15	CO-ORDS N: 1 182 520	
GAS VALVE	#	RL CABLE CAHART	SHT 16	DRAWN L.CLAY (12/13)	
SEWER MANHOLE	⊗			CHECKED I.HAYES (12/13)	
TELECOM PIT	⊕				
ELECT LIGHT POLE	⊙				
POWER POLE	○				
STAY POLE	⋈				
TELEPHONE BOX	⊞	SURVEYOR: N/A			
TELECOM PILLAR	⊕	DATE: N/A			

APPROVED  
SIGNATURE: *[Signature]*  
NAME: L.CLAY  
POSITION: DESIGN MANAGER  
DATE: 12/12/13

**ROADS AND MARITIME SERVICES**  
**WOLLONGONG COUNCIL AREA**  
**KING (MR522) STREET**  
**AND COWPER STREET**  
**WARRAWONG**

EXISTING <input checked="" type="checkbox"/>	PROPOSED <input type="checkbox"/>
CADD FILE: VV0210_17B_INS.dgn	
SCALE 5 0 (1:200) 5 10	ISSUE
FILE SF2014/007461	SUPERSEDES SHEET/ISSUE 13
REG NO DS2014/000585	TCS NO 0210
	SHEET 17



CCTV CABLE LAYOUT

CABLE LAYOUT

CABLE INSTALLATION

- NOTES**
1. CABLE COVER: IN ROADWAY 0.6m ABOVE PIPE. IN FOOTWAYS 0.45m ABOVE PIPE UNLESS OTHERWISE STATED.
  2. ALL CABLE IN FOOTWAYS ARE INSTALLED IN 1 x 80 H.D. PVC (or 1 x 90mm POLYTHENE) UNLESS OTHERWISE STATED.
  3. ALL ROADCROSSING PIPES ARE 1 x 100 H.D. PVC CONDUIT UNLESS OTHERWISE STATED.
  4. CAMERA FOR CCTV MOUNTED ON POST 7. THE 5c + COAX CABLES RUN IN EXISTING SIGNAL CABLE DUCTS.

PUBLIC UTILITY LEGEND		
HYDRANT	□	ELECTRIC LIGHT POLE
STOP VALVE	▲	POWER POLE
GAS VALVE	#	STAY POLE
SEWER MANHOLE	●	TELEPHONE BOX
TELECOM PIT	■	TELECOM PILLAR

FILE NAME : VV0537\_15E\_INS.dgn  
SURVEY FILE :

**A ORIGINAL ISSUE**

0 ISSUE J1 11/13/17 7/4/00  
MAJOR RECONSTRUCTION  
LEFT TURN SLIP LANE REMOVED  
R.W.A. A.G.

B ISSUE J1 11/14/53  
W.A.E. 18/10/02

C ISSUE J1 11/18/80  
P3 PEDESTRIAN ADDED ON SOUTHERN  
SIDE OF KING ST. W.A.E.  
R.W.A.

D ISSUE  
CCTV CAMERA DETAILS ADDED  
WORK AS EXECUTED  
R.W.A. 10/09/2008

E ISSUE 06/01/2014  
CCTV CAMERA DETAILS REMOVED  
WORK AS EXECUTED  
R.W.A. 1/1/14/05.

REFERENCE PLANS	U.B.D. REF. Map10 L10
Symbol & Abb. V0003-6	1.S.G. E 298600
Standard Posit. V0001-5	CO-ORDS N 1182280
Det. Sched. Exp. V0018-10	
Pres. Detectors V0005-17	
SSG Dis. Seq. V0018-8	
Single D.O. V0018-5	
DESIGN LAYOUT SHEET 14	
CABLE CONN SHEET 16	

**APPROVED**

SIGNATURE: *[Signature]*

NAME: CON SHAKAS

POSITION: TET MANAGER

DATE: 28.06.2007

ROADS AND MARITIME SERVICES.

CITY OF WOLLONGONG

INTERSECTION OF KING STREET AND  
NORTHCLIFFE DRIVE  
WARRAWONG

REGION : SOUTHERN REGIONAL OFFICE

SCALE 5 0 5 10

FILE 497.TS.131 SUPERSEDES SHEET 12

REGN. 0522.497.VV.0537

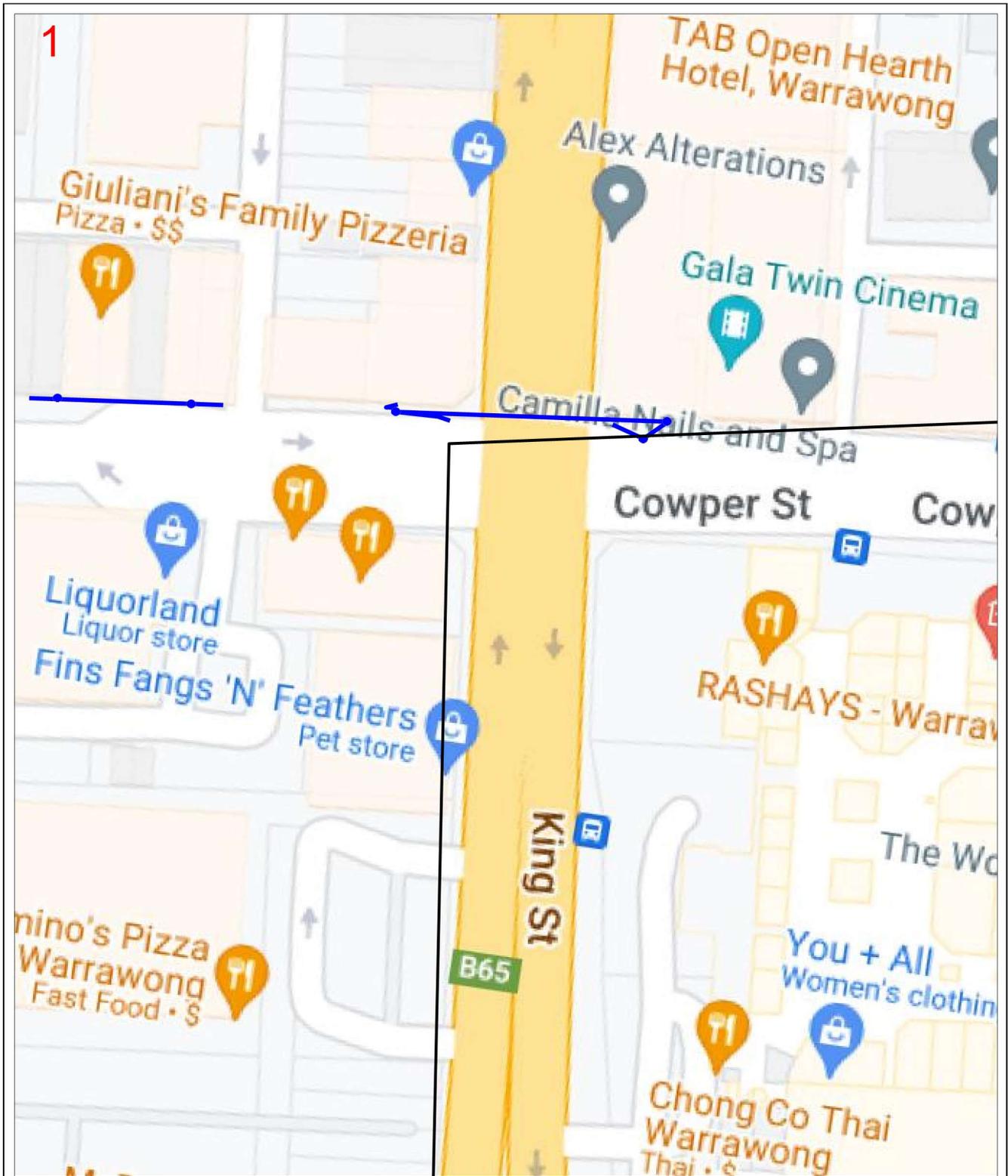
SHEET 15

ISSUE

A	B	C	D	E

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# TPG DBYD DRAWINGS



**Enquiry Number:** 228082206

**Map Sheet:** 1

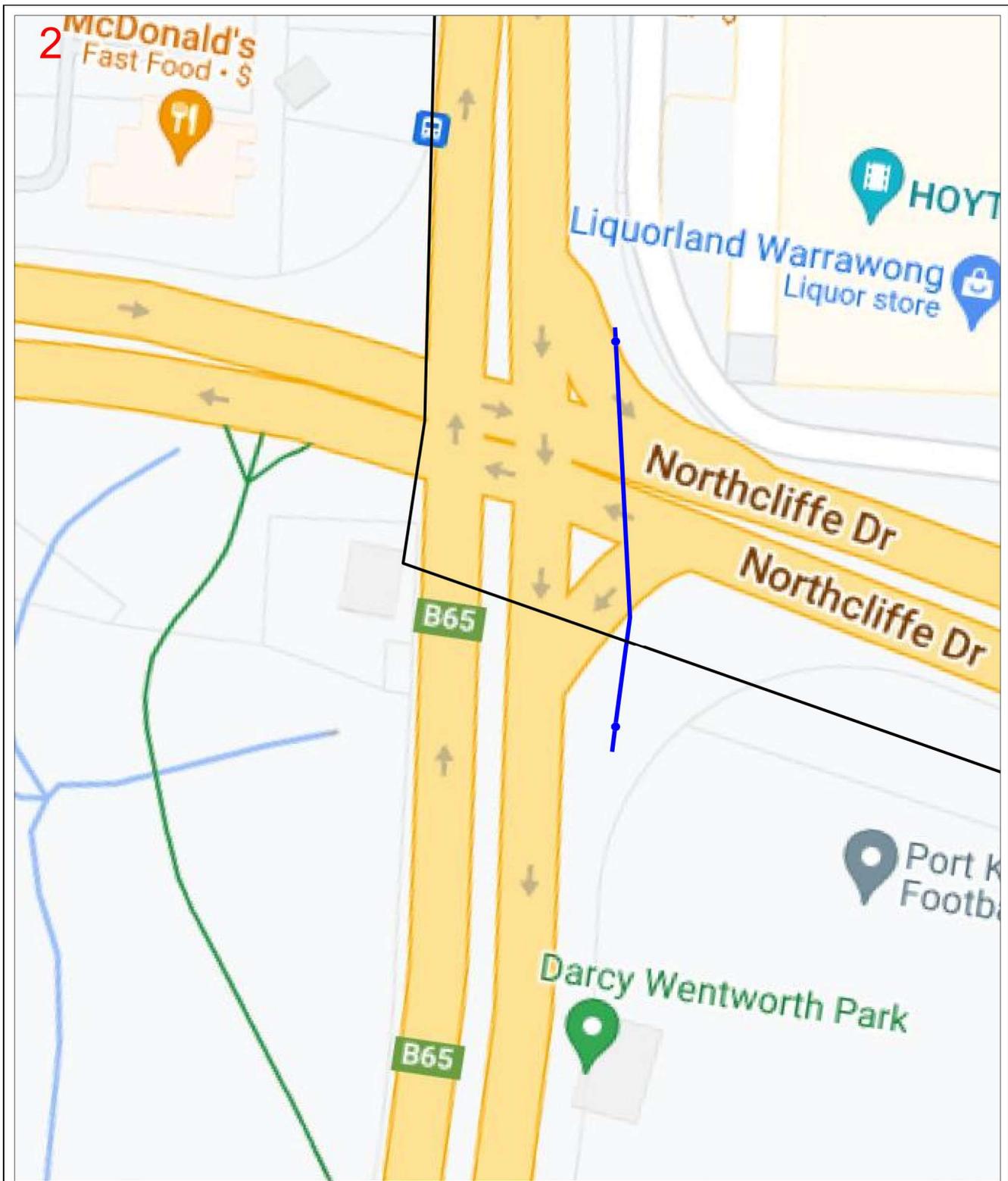
**Scale:** 1: 750

0 0.008km

**LEGEND**

BYDA Work Area		
AAPT/PowerTel Pit		TransACT Pit
AAPT/PowerTel Duct		TransACT Duct
DDA Pit		SOUL Pattinson Telecoms Pit
DDA Duct		SOUL Pattinson Telecoms Duct
Agile/Adam Pit		PIPE Networks Pit
Agile/Adam Duct		PIPE Networks Duct

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Enquiry Number: 228082206

Map Sheet: 2

Scale: 1: 750

0 0.008km



**LEGEND**

BYDA Work Area



AAPT/PowerTel Pit



TransACT Pit



AAPT/PowerTel Duct



TransACT Duct



DDA Pit



SOUL Pattinson Telecoms Pit



DDA Duct



SOUL Pattinson Telecoms Duct



Agile/Adam Pit



PIPE Networks Pit



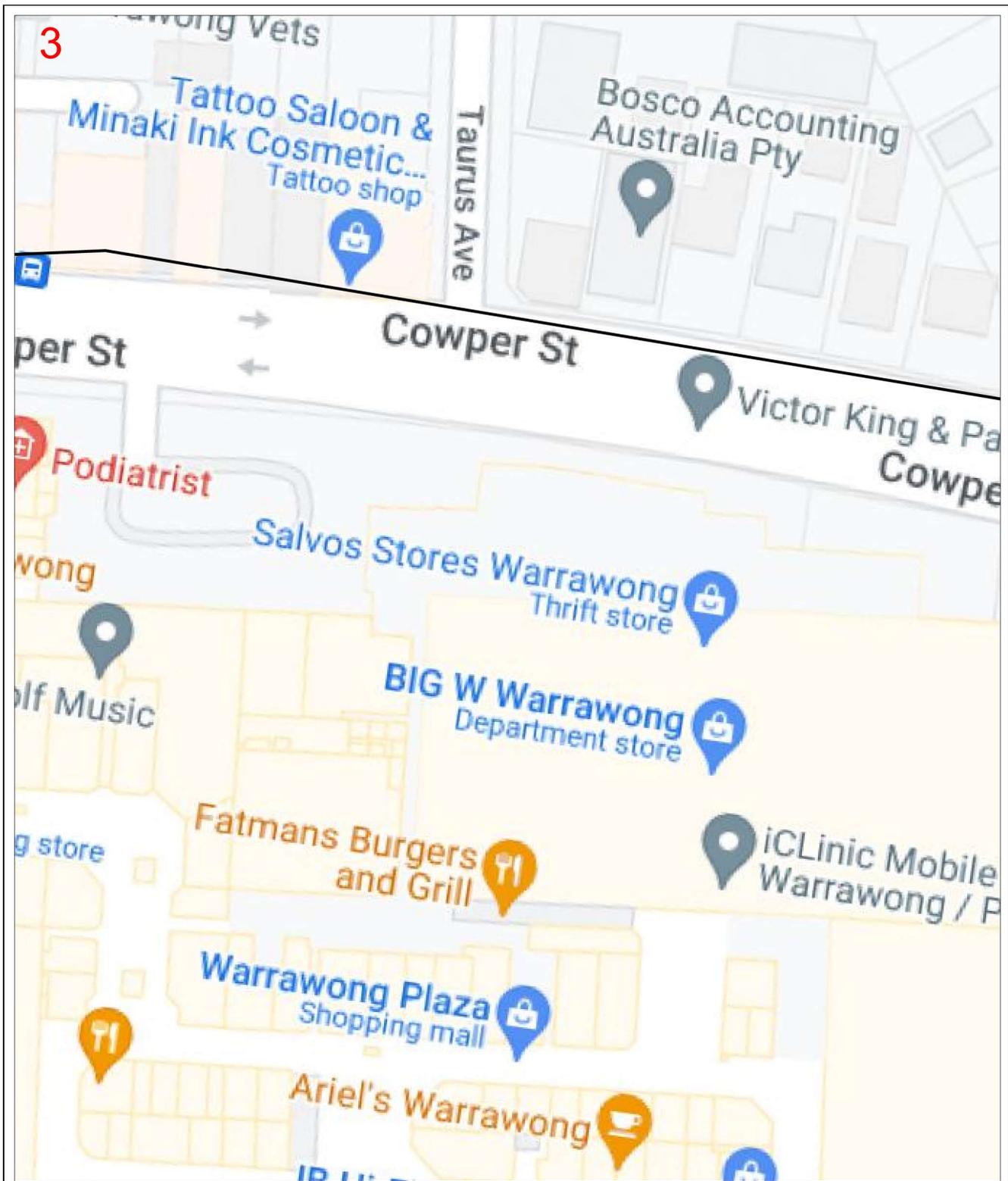
Agile/Adam Duct



PIPE Networks Duct



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Enquiry Number: 228082206

Map Sheet: 3

Scale: 1: 750

0 0.008km



**LEGEND**

BYDA Work Area



AAPT/PowerTel Pit



TransACT Pit



AAPT/PowerTel Duct



TransACT Duct



DDA Pit



SOUL Pattinson Telecoms Pit



DDA Duct



SOUL Pattinson Telecoms Duct



Agile/Adam Pit



PIPE Networks Pit



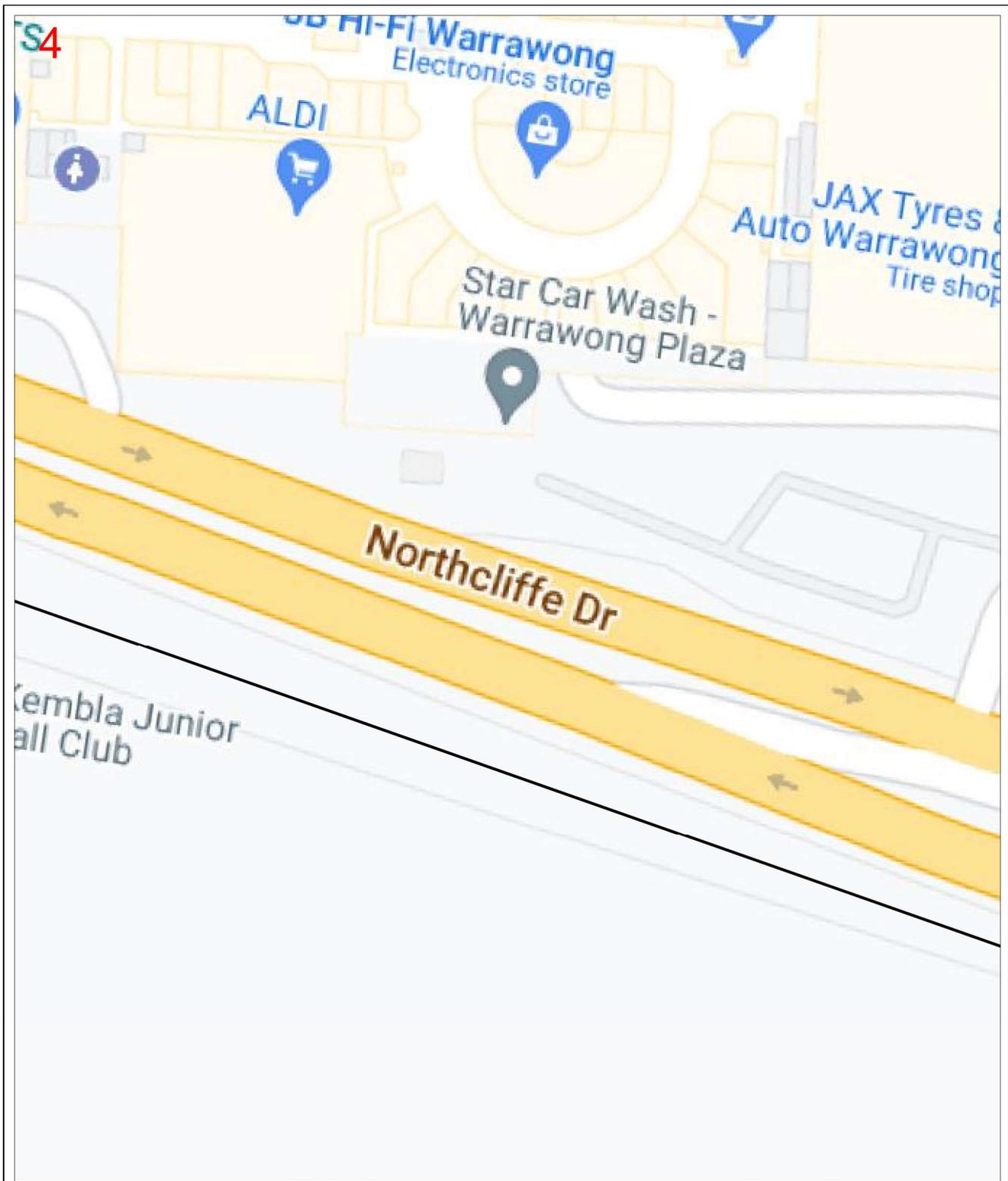
Agile/Adam Duct



PIPE Networks Duct



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**Enquiry Number:** 228082206

**Map Sheet:** 4

**Scale:** 1: 750

0 0.008km



**LEGEND**

BYDA Work Area



AAPT/PowerTel Pit



TransACT Pit



AAPT/PowerTel Duct



TransACT Duct



DDA Pit



SOUL Pattinson Telecoms Pit



DDA Duct



SOUL Pattinson Telecoms Duct



Agile/Adam Pit



PIPE Networks Pit



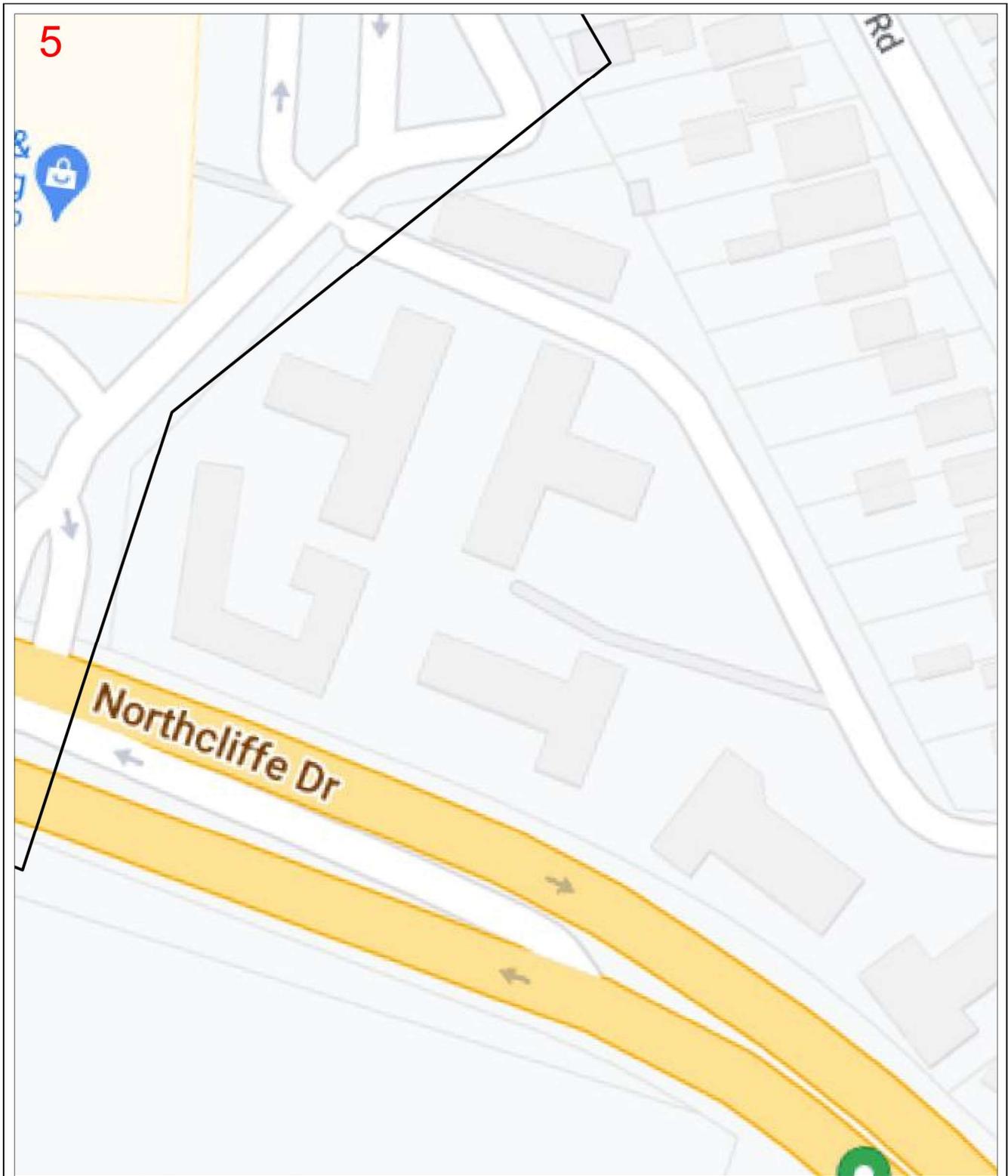
Agile/Adam Duct



PIPE Networks Duct



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Enquiry Number: 228082206

Map Sheet: 5

Scale: 1: 750

0 0.008km



**LEGEND**

BYDA Work Area



AAPT/PowerTel Pit



TransACT Pit



AAPT/PowerTel Duct



TransACT Duct



DDA Pit



SOUL Pattinson Telecoms Pit



DDA Duct



SOUL Pattinson Telecoms Duct



Agile/Adam Pit



PIPE Networks Pit



Agile/Adam Duct



PIPE Networks Duct



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# Appendix B

## Endeavour Energy – Electrical Infrastructure Connection Advice

## Standard Connection Offer

---

29 August 2023

**Endeavour Energy Ref: UML10812**

**Customer Ref:**

**Gary Wong**

Arup

Sydney NSW 2000

**UML10812– LOT 2,2,A,1,1,2, DP 216785,535215,421454,217579,571183,571183,  
Connection of Load Application: 43 COWPER STREET, WARRAWONG**

Thank you for your application for Endeavour Energy to provide connection services in respect of the proposed development at the above location ("**Proposed Development**"). Your application for connection services in respect of the Proposed Development ("**Connection Application**") has been registered under the above reference number. Please quote this reference number on all future correspondence relating to the Connection Application.

Endeavour Energy has completed a preliminary desk top assessment of the information provided in the Connection Application and is pleased to make the Supply Offer enclosed with this letter. The enclosed Supply Offer is to provide standard connection services for the Proposed Development in accordance with the terms and conditions of Endeavour Energy's Model Standing Offer for a Standard Connection Service ("**Connection Offer**"). A copy of Endeavour Energy's Model Standing Offer for a Standard Connection Service is available on our website at <https://www.endeavourenergy.com.au/connections/connection-contracts-and-fees>.

### Supply Offer

The enclosed Supply Offer forms part of this Connection Offer and it will assist your Level 3 Accredited Service Provider (ASP) to develop the most efficient design solution to meet your needs. Some general requirements that will need to be addressed by your nominated Level 3 ASP includes, but is not limited to:

- Field visit to verify physical site details
- Details of new and existing assets, including quantities
- Substation location, HV switchgear and earthing details
- Construction methods and isolation point requirements.
- Asset Valuation
- Environmental Assessment (Summary Environmental Report)

A sketch of the proposed design utilising our Geographic Information System (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.

#### **Payment of design related ancillary network services.**

Ancillary Network Services (ANS) are the main connection services we provide to customers for which ANS fees are payable. ANS include our interactions with ASPs to ensure that the contestable network services they provide, meet the design and technical requirements to be connected to and form part of our network.

The design related ANS fees payable for this project will be sent to you with a Design Brief. Payment of Design related ANS fees must be made before we can accept your L3 ASP design submission and commence design checking.

Please note that further ANS fees will also apply for the construction and connection phase of the project. 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. We may also amend or charge you further ANS fees if your application details or project scope changes.

#### **Accepting this Connection Offer**

To accept this Connection Offer, please:

- a) appoint a Level 3 Accredited Service Provider (ASP);
- b) confirm your appointed Level 3 ASP contact details in the attached Notice of Advice form; and
- c) complete and sign the Notice of Advice form yourself and return it to Endeavour Energy.

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

If you accept this Connection Offer, a connection contract will be formed between Endeavour Energy and the retail customer or real estate developer who requires the connection services for the Proposed Development ("**Developer**") on and from the date that Endeavour Energy receives the completed Notice of Advice form. The connection contract will be on the terms and conditions of the Supply Offer and Model Standing Offer for a Standard Connection Service.

If you accept this Connection Offer and you are not the Developer, you will be accepting this Connection Offer as the Developer's authorised agent.

### **Next steps**

Your next step after accepting this Connection Offer is to engage your Level 3 ASP to prepare and provide an electrical design to Endeavour Energy in the form of a Proposed Method of Supply. Under the Model Standing Offer for a Standard Connection Service, this activity is "Customer Funded Contestable Work", and you will need to pay for it.

Please note under the National Electricity Rules (NER) the Connection Customer may choose to enter into a negotiated connection contract. A negotiation framework describing this process is available on our website at <https://www.endeavourenergy.com.au/your-energy/our-services/your-right-to-negotiate>.

Should you have any enquiries regarding your application please contact the undersigned, who has been appointed as Endeavour Energy's representative for the purposes of this Connection Offer.

Yours faithfully,

*Bhoomi Shah*

Bhoomi Shah

Customer Network Engineer

Email: [CWTech@endeavourenergy.com.au](mailto:CWTech@endeavourenergy.com.au)

Enclosed:

1. Supply Offer
2. Initial Funding Arrangements
3. Notice of Advice – to be completed and returned when you have engaged your L3 ASP

# Supply Offer

(Based on desktop assessment)

29 August 2023

Endeavour Energy Reference: UML10812

<b>Development Details &amp; Applicant's Assessed Load:</b>	<p>Application for the provision of electricity for Multi Units - Strata Developments.</p> <p>Existing load 8,800 Amps amps per phase, additional load of 4,573 amps per phase and total load of 13,373 amps per phase.</p>
<b>Endeavour Energy Assessed Load:</b>	AS3000 Maximum demand calculation provided with application
<b>Development &amp; Site Plans received/not received:</b>	Site plans received with the application
<b>HV/LV Connection Point &amp; Connection Asset Requirements:</b>	<p>Customer is to engage a Level 3 Accredited Service Provider to investigate and submit a proposed Method of Supply (MOS) to Endeavour Energy for further assessment.</p> <p>The scope of works shall be undertaken in accordance with guidelines stated in the Connection Policy, Model Standing Offers, Land Interest Guideline for Network Connection Works where applicable and all relevant Endeavour Energy's policies, regulations and network standards.</p> <p>All service works are to comply with the requirements of the NSW service and Installations Rules.</p>
<b>Network Constraints &amp; Limitations:</b>	<p>Network Planning's preliminary HV comments and requirements are:</p> <ol style="list-style-type: none"><li>1. Existing Dsubs 43179 and 43133 are supplied from 11kV feeder PC1232 – Five Islands Rd from Port Central ZS.</li><li>2. Existing Dsub 43132 is supplied from 11kV feeder PC1142 – Lawarra St from Port Central ZS.</li><li><b>3. To provide sufficient capacity for the new 3,168 kVA load (4,573Amps/phase @ 400V), a new feeder will need to be established to the Warrawong Plaza redevelopment site.</b></li><li>4. The new 11kV feeder should be developed from Port Kembla ZS where there are multiple spare feeder circuit breakers available.</li><li>5. The feeder route length from Port Kembla ZS (located on Flagstaff, Warrawong) to the redevelopment site is approximately 1.0km.</li></ol>



# Initial Funding Arrangements

29 August 2023

**Endeavour Energy Reference: UML10812**

<b>Endeavour Energy Supplied Materials:</b>	TBA
<b>Endeavour Energy Funded and Constructed:</b>	TBA
<b>Endeavour Energy Funded and Level1 ASP Constructed – Reimbursement Paid by Endeavour Energy</b>	TBA
<b>Reimbursement to be paid to Endeavour Energy by Customer:</b>	TBA
<b>Customer Funded Monopoly Services:</b>	Network switching, commissioning, contractor inspection, ancillary fees, etc.
<b>Customer Funded Contestable Works:</b>	All other works required

## Notice of Advice

29.08.2023

**Endeavour Energy Ref: UML10812**

Endeavour Energy  
PO Box 811  
Seven Hills NSW 1730  
[cwadmin@endeavourenergy.com.au](mailto:cwadmin@endeavourenergy.com.au)

**Attention:** Customer Connections Administrator

**APPOINTMENT OF ACCREDITED DESIGNER FOR THE PROPOSED DEVELOPMENT AT: LOT 2,2,A,1,1,2, DP 216785,535215,421454,217579,571183,571183, 43 COWPER STREET, WARRAWONG ("PROPOSED DEVELOPMENT")**

*Please complete and return this letter when a Level 3 ASP has been appointed*

I refer to Endeavour Energy's offer to provide standard connection services in respect of the Proposed Development ("**Connection Offer**").

This letter confirms that:

- the retail customer or real estate developer for the Proposed Development ("**Developer**") owns, or is developing, the land on which the Proposed Development is to be located;
- the Developer intends to supply the Proposed Development in accordance with Endeavour Energy's requirements;
- the Developer has appointed the Level 3 Accredited Service Provider ("**Level 3 ASP**") described below for the purposes of the Proposed Development; and
- the Developer agrees to acquire standard connection services from Endeavour Energy in respect of the Proposed Development on the terms and conditions set out in the Connection Offer.

**Confirmation of Key Contacts:**

(1) Applicant	
<b>Company/Name:</b>	Arup Gary Wong
<b>Address:</b>	Sydney NSW 2000
<b>Email:</b>	<a href="mailto:gary-x.wong@arup.com">gary-x.wong@arup.com</a>
<b>Phone:</b>	0293209022

**(2) Developer**

<b>Company/Name:</b>	The Trustee for Warrawong Plaza Equity Fund C/- JLL Centre Management Ben Mah-Chut
<b>Address:</b>	Warrawong NSW 2502
<b>Email:</b>	bmahchut@elanorinvestors.com
<b>Phone:</b>	0488580875

**(3) L3 ASP (if you did not nominate a Level 3 ASP in your initial application, please do so below)**

<b>Company/Name:</b>	
<b>Address:</b>	
<b>Email:</b>	
<b>Phone:</b>	

*Please ensure all fields above are completed.*

**The Fees will be Paid to Endeavour Energy by\*:**

(\*Please check only one responsible party in relevant check box below)

Applicant

Developer

Level 3 ASP

**Notice of Advice Execution and Acceptance of Connection Offer:**

By signing this Notice of Advice, I accept the Connection Offer made by Endeavour Energy in respect of the Proposed Development, including the terms and conditions of Endeavour Energy's Model Standing Offer for a Standard Connection Service.

Where I am accepting the Connection Offer on behalf of the Developer, I declare that:

- a) I have the authority to execute this Notice of Advice and accept the Connection Offer on their behalf; and
- b) I am not aware of any fact or circumstance that might affect my authority to execute this Notice of Advice and accept the Connection Offer on their behalf.

**Developer/ Developer's Authorised Agent:**

\_\_\_\_\_  
Signature of Developer/Developer's Authorised Agent

\_\_\_\_\_  
Name of Developer/Developer's Authorised Agent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Company Name

# Appendix C

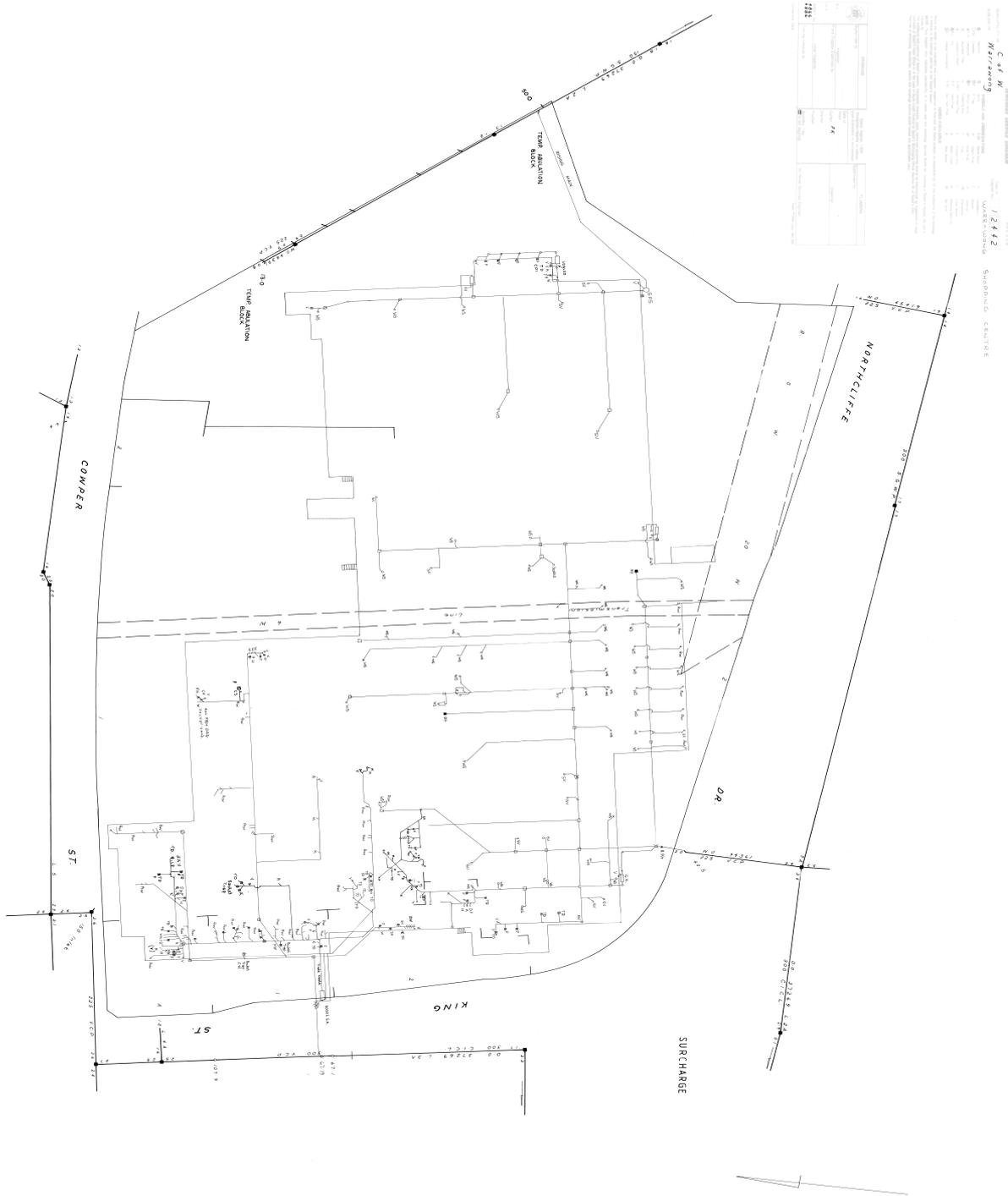
## Sydney Water – Sewer Service Diagram

# Sewer Service Diagram

Application Number: 1713349

12442

2 of 2



Document generated at 15-08-2023 04:26:48 PM

**Disclaimer**

The information in this diagram shows the private wastewater pipes on this property. It may not be accurate or to scale and may not show our pipes, structures or all property boundaries. If you'd like to see these, please buy a **Service location print**.

# Appendix D

## Sydney Water Correspondence

## Zee Qasim

---

**From:** UrbanGrowth <UrbanGrowth@sydneywater.com.au>  
**Sent:** Wednesday, 30 August 2023 4:22 PM  
**To:** Zee Qasim  
**Subject:** RE: [External] RE: Warrawong Plaza Mains upgrades  
**Attachments:** Growth Data Form - Sydney Water.xlsx

Hi Zeerak,

Apologies for the delayed response.

We request that you engage with a Water Servicing Coordinator as soon as possible. As the Water Servicing Coordinator (WSC) will submit your feasibility application and the growth data form to Sydney Water. The outcome of this process will result in Sydney Water issuing you with a Feasibility Notice Letter detailing what the requirements might be before you have obtained consent. You can't start any works until you have received your consent and you'll have to submit a new Section 73 application.

To fully support all growth and developments and to fully assess proposed developments, we require the ultimate and annual growth data for this development as noted in the attachment, be fully populated, and returned to the Water Servicing Coordinator. Sydney Water acknowledges that timescales and final growth numbers may alter however, to provide robust servicing advice and to investigate the potential for staged servicing to meet timescales, we require a realistic indication of demand and timescales. Failure to provide this may result in Sydney Water being unable to formulate proper planning requirements.

Further information regarding Water Servicing Coordinators and the feasibility application process can be found on the links below:

- [Water Servicing Coordinator](#)
- [Our development process](#) – Feasibility application process pg. 2

Please do not hesitate to contact me if you have any questions.

Kind regards,

Debbie Jacobs  
Student Planner  
City Growth and Development  
Sydney Water, Level 13, 1 Smith Street, Parramatta NSW 2150



---

**From:** Zee Qasim <Zee.Qasim@arup.com>  
**Sent:** Friday, 25 August 2023 12:47 PM  
**To:** UrbanGrowth <UrbanGrowth@sydneywater.com.au>  
**Subject:** [External] RE: Warrawong Plaza Mains upgrades

**CAUTION:** This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi,

Following up on this

---

**From:** Zee Qasim  
**Sent:** Wednesday, August 16, 2023 12:03 PM  
**To:** [urbangrowth@sydneywater.com.au](mailto:urbangrowth@sydneywater.com.au)  
**Cc:** Michael Tran (X) <[Michael-X.Tran@arup.com](mailto:Michael-X.Tran@arup.com)>  
**Subject:** Warrawong Plaza Mains upgrades

To Whom It May Concern,

We are working on the feasibility of adding 1000+ apartments to the 43- 65 Cowper St development that spans the following DP numbers:

- DP 421454
- DP571183
- DP21579
- DP216785
- DP535215

The DBYD information we have received and attached for reference, shows 150mm and 100mm water mains serving the development.

Are there plans to upgrade the water and sewer mains in this region? Or are there next steps that can be taken to investigate this?

Kind Regards,

**Zeerak Qasim**  
Senior Hydraulics & Fire Engineer | Sydney Buildings

**Arup**  
*Gadigal Country*  
Barrack Place, Level 5, 151 Clarence Street,  
Sydney, NSW, 2000, Australia  
d +61 2 9320 9121  
[arup.com](http://arup.com)



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# Growth Servicing Data



The data collected will inform Sydney Water's planning investigations for servicing of the proposed development and wider area. Ideally updates should be provided every quarter for each development. Development intel helps to ascertain demonstrated demand and development confidence which supports business cases and commercial opportunities. The data collected will be treated as commercial in confidence. As well as ultimate growth, staging data enables Sydney Water to ascertain both short and long term servicing options for a site and assists Sydney Water in asset decision making, referral responses, and interim planning.

Growth Data		Development details												
Date of Growth Update:		Please insert data in box to the left (column H). Use drop down options where applicable												
Number of Update for the project (e.g 1st, 2nd, 3rd...)														
Unique Identifier Code (if this your first form in this new form, leave blank)														
Developer Name:														
Project/ Development Name:														
Address:														
Primary lot number & DP:														
LGA:														
Growth Area:														
Development/ Growth Precinct Status:														
Is this area in the GSP or an accelerated development?														
Consent Authority														
Current development application type:														
Consent Authority Application Reference Number/s														
Weblink to Consent application (ie. DA, SSD, planning proposal)														
Anticipated date of rezoning/ approval? (month and year - MM/YYYY)														
SWC Edev case ref number (where applicable): (e.g 123456)														
Any known high water users (e.g data centres, industrial process/production, hospitals, all developments >500 dwellings): RW may be used for these purposes (if yes, see over to the RW Form)														
First S73 application received or anticipated to be received? (month and year - MM/YYYY):														
First dwelling connection anticipated (month and year - MM/YYYY):														
Date development is fully constructed/occupied? (month and year - MM/YYYY):														
<b>Do you require the following services? (Y/N):</b>														
Water														
Wastewater		Please indicate if you are outside the ww scheme, plan on having a septic/stand-alone system, or are interested in a commercial wastewater solution												
Recycled Water		If you are planning to have recycled water, your development is a high-water user, or you are interested in sustainable opportunities, please fill the Recycled Water Form over.												
Any additional comments?														
<b>Growth Numbers</b>		<i>The more information provided will assist Sydney Water to assess opportunities for servicing via existing or interim services or whether there is a requirement for new assets. We acknowledge that data may be indicative only at this time.</i>												
Development Type		Ultimate proposed growth	Total # stages	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
Single Dwellings		0	0	0	0	0	0	0	0	0	0	0	0	
Multi Dwellings		0	0	0	0	0	0	0	0	0	0	0	0	
Jobs		0	0	0	0	0	0	0	0	0	0	0	0	
Non-resi GFA (i.e xx/sqm & xx/ha)														
Please attach additional growth information you may have (e.g if growth extends beyond 2030)														
<b>Final Checklist</b>		<b>Please ensure all section above are complete</b>												
Have all sections been completed?														
Please attach a boundary site plan														
Please attach a staging plan/intel														
Please attach link reference if applicable														
Save document in this format:		YYYYMMDD Companyname Developmentname												
Please submit this form to your Account manager		FirstName.LastName@sydneywater.com.au												
<b>SWC Internal Use Only (SWC Growth Ref)</b>														
Unique Identifying code														
Date of next review/update (enter as MM/YYYY)														
Status of the form		Data inaccurate - returned to AM												

\*Updated Growth Data Form\*, Rev-1, 10/08/2021  
 CG&D, Growth Planning