

ENGINEERING REPORT

FOR THE PROPOSED
RESIDENTIAL DEVELOPMENT

153 CAMPBELL STREET, BOWEN HILLS

PREPARED FOR
SENTINEL CITILINK PTY LTD

MAY 2015

Bornhorst & Ward Project No. **15041**

If you have any queries regarding this report please contact Nicholas Rozis.

Revision	Date	Description	Author	Rev.	App.
D	May 2015	Issue to Client	AW	RG	NR

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CONTENTS

1.	INTRODUCTION	1
2.	SITE CHARACTERISTICS.....	1
2.1	LOCATION.....	1
2.2	SITE DESCRIPTION	2
2.3	TOPOGRAPHY AND SITE DRAINAGE.....	2
2.4	SITE FLOODING AND INUNDATION	2
2.4.1	FLOOD SOURCES AND DATA	3
2.4.2	FLOOD FREEBOARD.....	3
2.4.3	FLOOD FREE ACCESS	5
3.	EXISTING AND PROPOSED CIVIL WORKS AND INFRASTRUCTURE	5
3.1	STORMWATER.....	5
3.1.1	EXISTING STORMWATER INFRASTRUCTURE.....	5
3.1.2	PROPOSED STORMWATER INFRASTRUCTURE.....	6
3.2	SEWERAGE	6
3.3	WATER.....	6
3.4	EARTHWORKS	7
3.4.1	ACID SULPHATE SOILS.....	7
3.4.2	EROSION AND SEDIMENT CONTROL PLAN (ESCP).....	7
3.5	TELSTRA.....	7
3.6	ELECTRICITY.....	7
3.7	GAS.....	8
4.	STORMWATER MANAGEMENT PLAN	8
4.1	STORMWATER OBJECTIVES.....	8
5.	STORMWATER QUANTITY.....	8
5.1	STORMWATER DRAINAGE METHODOLOGY	8
5.2	PEAK FLOW CALCULATIONS.....	9
6.	STORMWATER QUALITY.....	9
6.1	WATER QUALITY.....	9
7.	PLANNING CODES	10
7.1	BRISBANE CITY PLAN CODES	10
8.	SUMMARY	11

LIST OF FIGURES

Figure 1: Locality Plan	1
Figure 2: Flood Map	3

LIST OF TABLES

Table 1: Estimated peak flooding levels	3
Table 2: Minimum Finished Floor Levels	4

APPENDICES

Appendix A Bornhorst and Ward Drawings and Calculations	
Appendix B Architectural Drawings	
Appendix C Survey and Site Information	
Appendix D BCC FloodWise Property Report	
Appendix E 'Dial Before You Dig' Plans	
Appendix F Brisbane City Plan Codes	

1. INTRODUCTION

A 14 story tower building has been proposed for the property at 153 Campbell Street, Bowen Hills, as described by Lot 1 on SP193899. The building will consist of permanent short-term accommodation, with three levels dedicated to car parking. The Lobby of the new building will tie into the existing raised car park (upper ground level) already located on site, with one level of car parking below this (lower ground level) tying into the existing ground level. The proposed development is shown on the attached Cottee Parker Architectural plans in Appendix B.

This document reports on the existing and proposed civil works and the infrastructure required as part of the proposed development as well as flooding and the stormwater quantity and quality management required for the site. The engineering requirements for this proposal will be in accordance with Engineering Best Management Practices, Brisbane City Council (BCC) City Plan 2014, the Queensland Urban Drainage Manual (QUDM) (2013) and the State Planning Policy (2014).

This report outlines the preliminary design methodology and calculations in support of a Development Application and should be read in conjunction with other documents issued by the consultant team.

2. SITE CHARACTERISTICS

2.1 LOCATION

The proposed site is located on the east side of Bowen Bridge Road, Bowen Hills. Campbell Street forms the southern site boundary while Enoggera Creek lays at the north east boundary. The inner city bypass lies to the east of the site. Refer Below to Figure 1 for more information.



Figure 1: Locality Plan

(Retrieved from BCC City Plan interactive map on 26 March 2015)

2.2 SITE DESCRIPTION

The development property (Lot 1 on SP193899) is bound by Bowen Bridge Road to the west, Campbell Street to the south, a residential unit development to the east and Enoggera Creek to the north. Vehicle access to the site is via an existing crossover to Campbell Street.

The development site has an area of approximately 2100m² and is located in the north eastern corner of this property. On the development site there exists a tennis court, a pool and a small building servicing these two activities. It predominantly contains impervious surfaces with a large percentage of concrete hardstand and roof cover with minimal vegetation.

Street Address: 153 Campbell Street, Bowen Hills 4006

RP Description: Lot 1 on SP193899

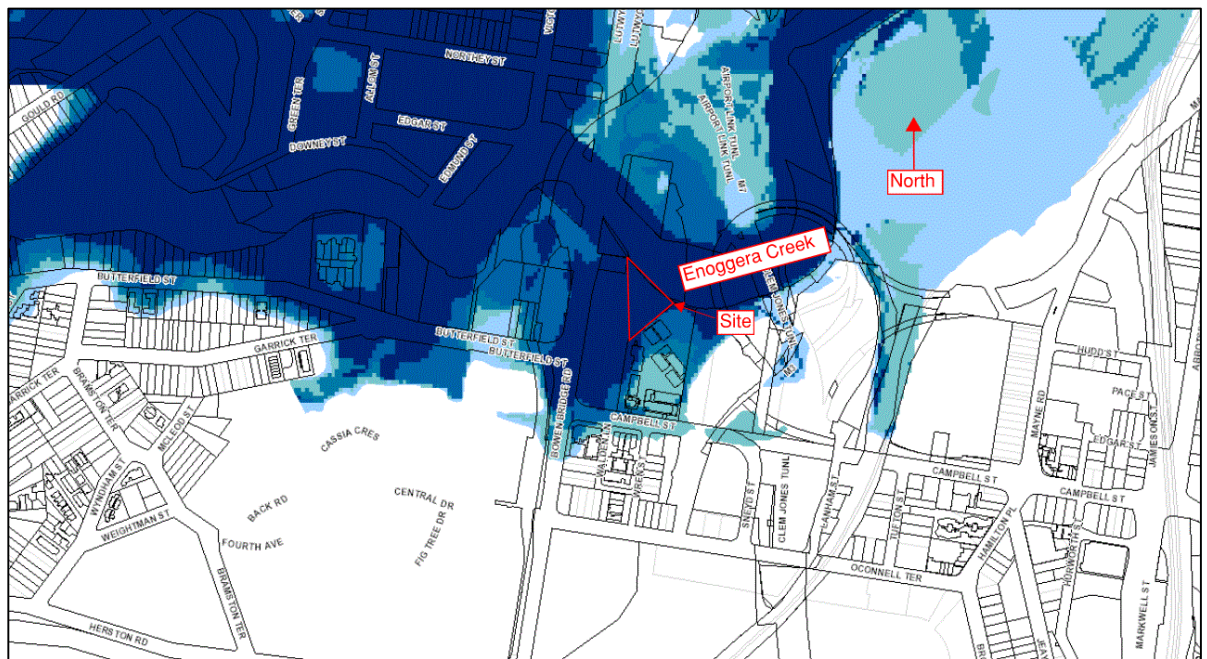
2.3 TOPOGRAPHY AND SITE DRAINAGE

The development site has an area of approximately 2100m² and ranges in level from RL2.15m AHD at the northern corner of the site (river) to RL2.81m AHD in the landscaped areas around the pool. The site is generally flat with levels averaging at RL2.40m AHD (including adjoining, existing basement levels). There is an existing shotcrete (sprayed concrete) wall along the Enoggera Creek boundary of the development site. The wall has an approximate height of 2.5m and is sloped at approximately 1 in 1.

Runoff from the development site currently drains north discharging directly into Enoggera Creek via overland flow and the existing piped drainage network. Runoff from the remainder of Lot 1 on SP193899 and an external catchment on Bowen Bridge Road also discharges to Enoggera Creek via piped drainage through the development site and remainder of the existing onsite development. Refer to the Norris Clarke and O'Brien survey in Appendix C for more information.

2.4 SITE FLOODING AND INUNDATION

Due to the proximity of the development site to Enoggera Creek and reported flooding in the area a review of flood requirements has been undertaken. The Brisbane City Council Interactive Flood Awareness Map indicates flooding within the site and, as a result, the site is considered as flood affected. Flooding also occurs within the areas surrounding the site. This flooding appears to be caused by the Enoggera Creek. Refer to Figure 2 below for further information.

**Figure 2: Flood Map**

(Retrieved from BCC City Plan interactive map on 2 April 2015)

2.4.1 Flood sources and Data

A BCC FloodWise Property Report has been obtained from council; refer to report in Appendix D. The flood report indicates that the development site is subject to minor (up to 50 year ARI) flooding from storm tide and major (100 year ARI) flooding from the adjacent Enoggera Creek. The extract below summarises the flood levels.

Table 1: Estimated peak flooding levels

Description	Level (mAHD)	Source
20% AEP	1.9	STORM TIDE
5% AEP	2.1	STORM TIDE
2% AEP	2.2	STORM TIDE
1% AEP	4.4	CREEK/WATERWAY
January 2011	2.7	RIVER
DFL	4.4	CREEK/WATERWAY

2.4.2 Flood Freeboard

The Defined flood Level (DFL) for the development site according to the BCC FloodWise Property Report is set at RL4.4mAHD which is the 100 year recurrence interval event for Enoggera Creek. This flood level has been used to set the finished floor levels for the proposed development in accordance with Brisbane City Council's Development Codes, Part 9 – Stormwater code.

The Building has been identified as class 2 from the 'Building Code of Australia – Building Classification'. Table 9.4.9.3.C from Brisbane City Plan Development Codes, Part 9 – Stormwater code was used to determine the Category for the areas of the structure. All habitable areas are category A and the car parking (basement) area is category C. Table 9.4.9.3.B was then used to determine the appropriate freeboard requirements for habitable areas, non-habitable areas and the basement car parking entrance as 0.5m, 0.3m and 0.3m respectively. Minimum finished floor levels are outlined below:

Table 2: Minimum Finished Floor Levels

Development Area	Freeboard	Level
Habitable Room	+0.5m freeboard	4.9 mAHD
Non-habitable Room	+0.3m freeboard	4.7 mAHD
Non-habitable part of building excluding essential services	+0.3m freeboard	4.7 mAHD
Parking in building undercroft of multiple dwelling	+0.0m freeboard	4.4 mAHD
Carport, unroofed carpark or vehicle manoeuvring area	+0.0m freeboard	4.4 mAHD
Essential electrical services	+0.5m freeboard	4.9 mAHD
Basement Carpark Entry	+0.3m freeboard	4.7 mAHD

The minimum internal finished floor level (non-habitable and excluding basement carpark) shown on Cottee Parker architectural plans is 5.95mAHD and refers to the upper ground level. This is well above the defined flood level for the site which is at 4.4m. All building services essential to the operation of the building are to be installed as required above the 1% AEP event, plus a minimum of 500mm freeboard. Therefore all building services essential to the operation of the building will be installed above 4.9mAHD.

The basement entrance will be located at RL5.9 mAHD to ensure that flood waters cannot enter the proposed basement in any flood event up to a 1% AEP. The basement walls are to be designed to be water-proof as required. The proposed basement entrance arrangement is shown on Cottee Parker Architectural plans in Appendix B.

Due to the developed nature of the site it is assumed that upstream catchments have been taken account of in the existing stormwater infrastructure. Any alteration of the stormwater infrastructure will equal or exceed the current capacity of the infrastructure hence upstream catchments are assumed to be accounted for.

Runoff from all other areas within the site will continue to drain as per the existing conditions via the existing drainage infrastructure.

2.4.3 Flood Free Access

Access to the site is an existing crossover in Campbell Street, located adjacent to the Campbell Street and Walden Lane intersection. During major flood events this intersection is inundated and no longer trafficable preventing vehicle access to the proposed structure. As indicated on the BCC Flood Map, Figure 2, this situation is not uncommon in the surrounding area with a large number of sites inaccessible during major flooding. The cross over level for the site is approximately 2.9mAHD. This level, when compared with Table 1 shows the site is accessible in any flood event under the 1% AEP, including during the January 2011 floods.

The annual average time of exceedance is estimated to be approximately 0.07 hrs assuming flood water has encroached on the sites crossover for 5 hrs in a 1% AEP flood event (this is considered a reasonable assumption due to it being creek flooding). BCC Infrastructure Planning Scheme Policy section 6.2 nominates a maximum average annual time of closure of 2 hours. Thus the development has suitable access. Refer to Appendix A for calculations.

3. EXISTING AND PROPOSED CIVIL WORKS AND INFRASTRUCTURE

3.1 STORMWATER

3.1.1 Existing Stormwater Infrastructure

Dial Before You Dig (DBYD) Storm water drainage plans have been obtained which indicate that there is significant existing drainage infrastructure within the development site and in the surrounding road reserves. Refer to the Norris Clarke and O'Brian Detailed Survey in Appendix C and DBYD BBC Stormwater and Cable Networks Plan in Appendix E and for details. The significant drainage lines through the site include;

- 1200mm and a 900mm diameter line which drain northeast through the site beneath the existing northern building onsite; and
- 600mm diameter line which drains northeast through the site passing below the existing pool and tennis court area (proposed building location).

These lines are all constructed below the existing basement level discharging directly to Enoggera Creek using the existing shotcrete wall as a headwall.

There is also an external drainage network in Bowen Bridge Road which captures runoff via gully pits and property connections. This drainage network discharges via a 900mm diameter line in a northeast direction through Lot 1 on SP193899 adjacent to the proposed development boundary.

3.1.2 Proposed Stormwater Infrastructure

There are multiple existing drainage pits/inlets across the proposed development site. The existing pits which fall within the building footprint are to be removed as part of the demolition works. Where pits have drainage lines leaving the building works area, these drainage lines are to be removed from the building area and capped at the site boundary.

There is an existing 600mm diameter drainage line from the existing developed portion of the subject property which drains through the proposed works area. This is a private drainage line. Existing levels of this drainage line locate it under the proposed building basement; therefore it is to be redirected around the structure. Refer to the Proposed Drainage Plan (SK-C030) in Appendix A.

To connect existing drainage lines to the redirected drainage, line Junction pits will be required at locations where these lines enter the proposed new building site. A new outlet to Enoggera Creek is to be constructed from the development site for the proposed new line. Refer to the Proposed Drainage Plan (SK-C030) in Appendix A.

3.2 SEWERAGE

There is an existing 150mm diameter sewer main running south along Bowen Bridge road which services the existing development on Lot 1 on SP193899. This line drains into a 300mm diameter line which continues south joining with a 300mm and a 375mm diameter sewer line at the Campbell Street and Bowen Bridge Road intersection. The sewer reticulation then continues east along Campbell Street via a 450mm diameter sewer. Refer to the DBYD QUU Sewer Plan in Appendix E.

It is proposed to service the development by extending the internal plumbing system from the existing onsite buildings to provide a shared service connection. The design of this internal system will be undertaken by the hydraulic consultant in accordance with the relevant Australian Standards.

The final connection arrangement will be discussed with QUU to ensure the existing infrastructure servicing the site has sufficient capacity to cater for the proposal.

3.3 WATER

There is an existing QUU 150/225mm water service along the full frontage of Lot 1 on SP193899. Refer to the 'Dial Before You Dig' QUU Sewer and Water Plan in Appendix E. This main services the existing development on Lot 1 on SP193899.

It is proposed to service the new structure by extending the internal plumbing system from the existing onsite buildings to provide a shared service connection. The design of this internal system will be undertaken by the hydraulic engineering consultant in accordance with the relevant Australian Standards.

Given the built up nature of the area, specifically the development site it is anticipated that the existing infrastructure has sufficient capacity to cater for the proposed development. The final connection arrangement will be discussed with QUU to ensure the existing infrastructure servicing the site has sufficient capacity to cater for the proposal.

3.4 EARTHWORKS

Based on the FFL of the structure being approximately the same as the existing level (FFL of basement is approximately 2.95mAHD) it is anticipated very minor detailed earthworks will be undertaken for this development. All earthworks will be undertaken in accordance with Brisbane City Plan guidelines.

3.4.1 Acid Sulphate Soils

The subject site is located within the potential acid sulphate soil overlay zone as shown in the Brisbane City Plan 2014 map, Refer to Appendix C for the map. It is anticipated that Acid Sulphate Soils (ASS) will be encountered; however no bulk earthworks or large compressive loads (due to piling) are expected. It is recommended that an ASS investigation be completed as part of the detailed Geotechnical Investigation conducted for the site due to the minor works being done for trenching and piling. If ASS are found, then an ASS Management Plan will be required. This will be in accordance with the Potential and Actual Acid Sulphate Soils Planning Scheme Policy.

3.4.2 Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan (ESCP) will be in accordance with the Institution of Engineers reference material and Brisbane City Council's Guidelines. Using the BCC Erosion Hazard Assessment (EHA) Form the site has been assessed as 'medium risk'. A suitable ESCP including a construction process will be prepared for this development during the detailed design phase. The EHA form has been included in Appendix C.

3.5 TELSTRA

Telstra and Optus operate extensive telecommunications infrastructure in the vicinity of the development site. Refer to the 'Dial Before You Dig' Plans in Appendix E. The development site currently shares a connection with the remainder of Lot 1 on SP193899. The final connection will require confirmation and approval from the chosen service provider.

3.6 ELECTRICITY

Energex operates extensive electrical infrastructure in the vicinity of the development site. Refer to the Energex 'Dial Before You Dig' Plan in Appendix E. The development site currently shares a connection with the remainder of Lot 1 on SP193899. The final connection will require confirmation and approval from Energex.

3.7 GAS

APA Group operates gas infrastructure in the vicinity of the development site. Refer to the APA Gas 'Dial Before You Dig' Plan in Appendix E. Any connection to this infrastructure will require confirmation and approval from APA Gas.

4. STORMWATER MANAGEMENT PLAN

4.1 STORMWATER OBJECTIVES

In accordance with the Brisbane City Council Infrastructure Design Planning Scheme Policy (2014) and the Queensland Urban Drainage Manual (2013), several design elements were identified in relation to stormwater management issues which must be appropriately considered and catered for as part of the design. Brisbane City Council must be satisfied that:

- The proposed development can be drained;
- The stormwater management system can follow the features and functions of the natural drainage system;
- The volume, timing, velocity and pollutant load of stormwater has no adverse effect on any surrounding properties or receiving waters; and
- Suitable provision is made in the design layout to accommodate for major drainage.

All stormwater discharges must comply with Brisbane City Council's stormwater management requirements. In accordance with the State Planning Policy and BCC Infrastructure Design Planning Scheme Policy, the environmental values of downstream waterways are to be protected and the impacts of the development are demonstrated and suitably mitigated. This includes the control of water quality, flow velocities and flow volumes discharging from the site.

The property described as Lot 1 on SP193899 is an existing fully developed site. As such, only the proposed development works area has been assessed and reviewed as part of the Stormwater Management Plan with the remainder of the site to remain in its current state.

5. STORMWATER QUANTITY

5.1 STORMWATER DRAINAGE METHODOLOGY

Modelling of stormwater runoff quantity has been considered for the existing case and operational phase of the development. In order to assess the existing and predicted future (operational phase) discharge rates from the development site, calculations have been conducted based on the Rational Method, according to the methods specified in the Queensland Urban Drainage Manual (2013) and Brisbane City Council's City Plan (2014).

Calculations have been undertaken to determine the undeveloped and developed peak run-off rates with the Best Management Practices (BMPs) incorporated into the site layout for stormwater quantity control.

5.2 PEAK FLOW CALCULATIONS

The fraction impervious value for the existing site was calculated at 85% based on a review of aerial photography and site survey information obtained. The developed site fraction impervious was calculated at 87% based on the proposed architectural site layout plan.

The time of concentration for both existing and developed conditions was evaluated at the common discharge of the site; the Enoggera Creek. Due to the developed nature and high fraction impervious of both the existing and developed site, the time of concentration has been taken as five minutes for both cases.

Flow rates were calculated at points of discharge from the site for the existing and developed phases of the development. Essentially no increase in impervious area or time of concentration leads to no increase in runoff, thus no further analysis is considered necessary. Calculations can be reviewed in Appendix A.

6. STORMWATER QUALITY

6.1 WATER QUALITY

The proposed development is such that the majority of the site is covered by roof area, with a 5.0m wide landscaped strip along the Creek frontage. It is hence expected that the generation of pollutants will be low. It is proposed to target gross pollutants as these will be the most prominent pollutants on this site. Best management practices will be applied to mitigate the pollutant discharge from the site.

The following is an extract from the State Interest – Water Quality Section of the State Planning Policy which describes developments that the policy is applicable to:

Receiving waters – a development application for any of the following:

- 1) a material change of use for urban purposes that involves a land area greater than 2500 square metres that:
 - a) will result in an impervious area greater than 25 per cent of the net developable area, or*
 - b) will result in six or more dwellings, or**
- 2) reconfiguring a lot for urban purposes that involves a land area greater than 2500 square metres and will result in six or more lots, or*
- 3) operational works for urban purposes that involve disturbing more than 2500 square metres of land.*

As the proposed development does not involve an area greater than 2500m², the proposed development does not trigger the state planning policy water quality guidelines. As such, water quality control measures are not required for the site. However, it is proposed to target gross pollutants as these will be the most prominent pollutants on this site. Best management practices will be applied to mitigate the pollutant discharge from the site using Stormwater 360 EnviroPods or similar basket traps as gross pollutant traps.

7. PLANNING CODES

7.1 BRISBANE CITY PLAN CODES

The relevant Brisbane City Plan Codes with respect to engineering aspects for assessment of the Development Application have been addressed. The codes will assist in assessing operational works requirements. Please refer to Appendix F for the following completed codes:-

- Stormwater Management Code;
- Services and Infrastructure Code;
- Filling and Excavation Code; and
- Potential and Actual acid Sulphate Code.

8. SUMMARY

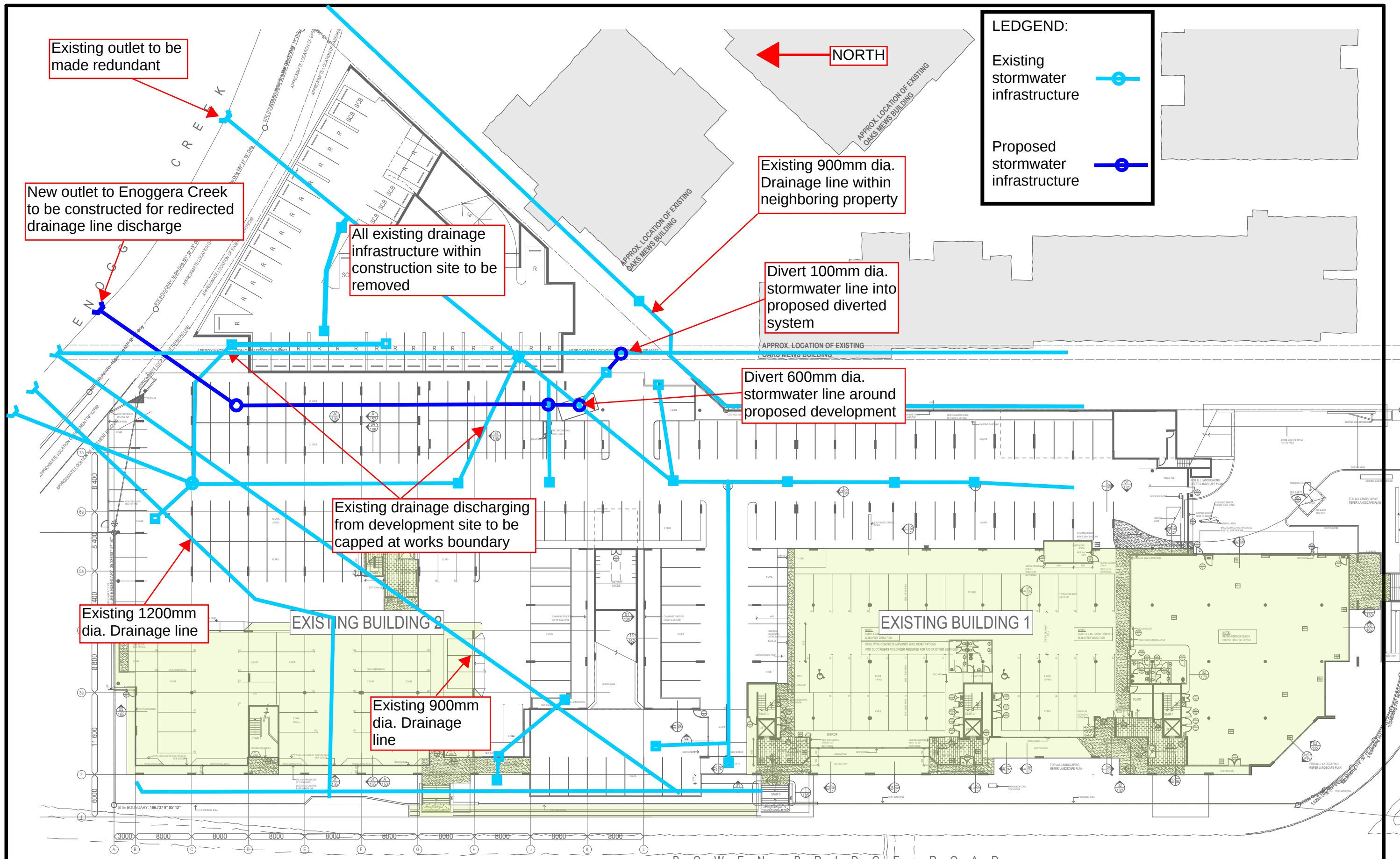
The investigations and reporting relating to the proposed permanent short-term residential accommodation development at 153 Campbell Street, Bowen Hills, as described by Lot 1 on SP193899, have shown the following:

- A Brisbane City Council FloodWise Property Report was obtained for the development site which indicates that the development site is inundated to RL4.4mAHD during a major storm event due to flooding from Enoggera Creek.
- Minimum freeboard requirements to finished floor levels (FFL) for the development have been set based on this defined flood level (DFL) and BCC Infrastructure Planning Scheme Policy. The minimum freeboard levels are as follows:
 - habitable area (category A) = 4.9mAHD
 - Entrance to carpark (category C + 0.3m) = 4.7mAHD
- Acceptable flood free access to the structure is achievable as the annual average time of closure is within the acceptable limits.
- An existing drainage line through the proposed building zone is to be redirected through the existing carpark area to Enoggera Creek which is the existing point of discharge. All site drainage from the development is to be discharged to Enoggera Creek via the existing shotcrete wall as per the current drainage scenario.
- There is no increase in stormwater runoff due to the development hence no onsite detention is needed.
- Due to the size of the site being less than 2500m² the State Planning Policy Water Quality guidelines is not triggered, and hence no stormwater quality mitigation is needed. Stormwater Quality Best Management Practices are to be adopted including use of gross pollutant traps where appropriate.
- Sewer and potable water connections for the proposed development are to be extended through the existing onsite development as a shared connection arrangement. These works are to be designed by the hydraulic engineer.
- There is existing electricity, communications and gas infrastructure in the vicinity of the site to service the proposed development.

It has been shown that the proposed development can be constructed and serviced in accordance with the Brisbane City Council Infrastructure Planning Scheme Policy and the Stormwater Management Plan has demonstrated that adequate treatment of stormwater quantity and quality is possible under the proposed plan.

APPENDIX A

B+W DRAWINGS AND CALCULATIONS



BORNHORST + WARD
CONSULTING ENGINEERS
CIVIL AND STRUCTURAL

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PROJECT
Citilink Multi Residential
153 Campbell Street, Bowen Hills

SUBJECT
Drainage Layout Plan

PROJECT No. 15041	REVISION
DRAWING No. SK - 0300	A

0 10 20 30 40 50 ORIGINAL SIZE A3

INITIAL PEAK FLOW CALCULATIONS

Based on QUDM (2008) 4.00 'Catchment Hydrology'

Written by BB 31/10/08

Job Number: **15041**
 Job Name: **Centilink DA**
Brisbane

Designed: **AW**
 Checked: **RG**

IFD Location: **Brisbane**

BORNHORST + WARD
CONSULTING ENGINEERS
 CIVIL AND STRUCTURAL

TOTAL RUNOFF COEFF.						
		Sub Catchment Area (Ha)		Runoff Coefficients		Calculated C10
No.	Existing	Proposed	Existing	Proposed	Existing	Proposed
1	0.210	0.210	0.87	0.87		
2	0.000	0.000	0.00	0.00		
3	0.000	0.000	0.00	0.00		
4	0.000	0.000	0.00	0.00		
5	0.000	0.000	0.00	0.00		
	0.21	0.21			0.87	0.87

Raw IFD data has been obtained from the Bureau of Meteorology (BOM) website.

EXISTING TIME OF CONCENTRATION		
SHEET FLOW	Std Inlet Time	5
	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIP E FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	5.0

DEVELOPED TIME OF CONCENTRATION		
SHEET FLOW	Std Inlet Time	5
	Site Slope (%)	0
	Flow Length (m)	0
	Horton's "n"	0
	Travel Time (min)	0.00
CHANNEL/PIP E FLOW	Travel Length (m)	0
	Fall (m)	0
	Travel Time (min)	0
	Multiplier	0
	Travel Time (min)	0
	Total Time (Tc)	5.0

PEAK RUNOFF CALCULATIONS						
ARI Event yr	Rainfall Intensity (mm/hr)		Coefficient of Runoff		Peak Runoff Rates (m ³ /s)	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
1	116	116	0.70	0.70	0.047	0.047
2	149	149	0.74	0.74	0.064	0.064
5	190	190	0.83	0.83	0.092	0.092
10	215	215	0.87	0.87	0.109	0.109
20	248	248	0.91	0.91	0.132	0.132
50	292	292	1.00	1.00	0.171	0.171
100	327	327	1.00	1.00	0.191	0.191

PEAK FLOWS FOR FREQUENT EVENTS			
ARI Event yr	% of Q1	Peak discharge (m ³ /s)	
		Existing	Proposed
1mth	25%	0.012	0.012
2mth	40%	0.019	0.019
3mth	50%	0.023	0.023
4mth	60%	0.028	0.028
6mth	75%	0.035	0.035
9mth	90%	0.042	0.042
12mth	100%	0.047	0.047

Average Annual Time of Closure

Austrorads Waterway Design 1994
Section 9.2

B+W Ref
date

15041
9-Apr-2015

Road is considered closed when total head (Static + velocity) is
higher than 300mm.

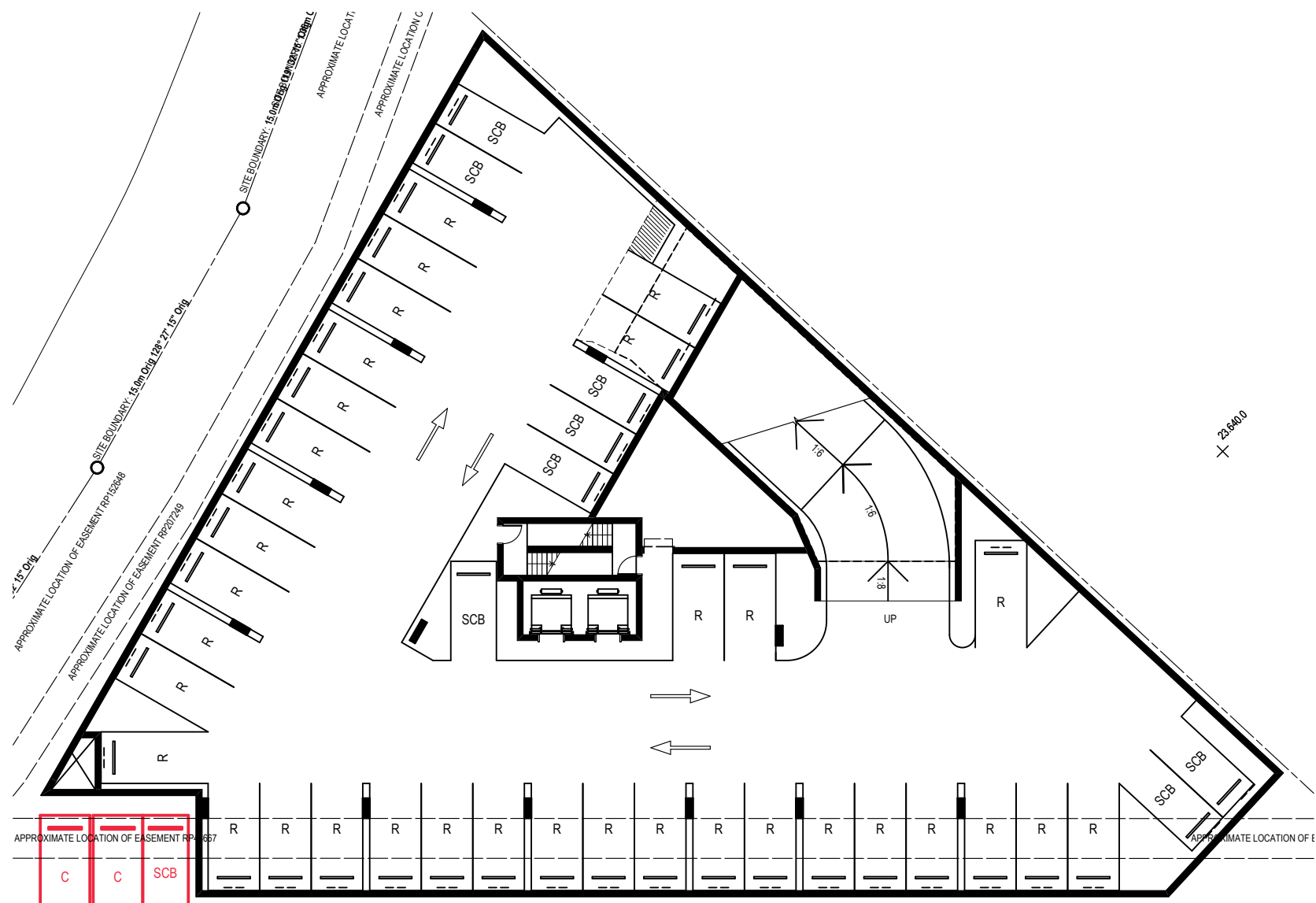
Road level **2.90**
Closure Level 3.20

Flood ARI years	Flood Level m	Time of Closure hours	Ft	fT(t)	avg_t	delta_p	delta_p * avg_t
2	1.90	0.0	0.50				
				0.00	0.00	0.00	0.00
5	2.00	0.0	0.80				
				0.00	0.00	0.00	0.00
10	2.10	0.0	0.90				
				0.00	0.00	0.00	0.00
20	2.15	0.0	0.95				
				0.00	0.00	0.00	0.00
50	2.20	0.0	0.98				
				0.00	2.50	0.01	0.03
100	4.40	5.0	0.99				
				0.01	5.50	0.01	0.05
1000	4.50	6.0	1.00				

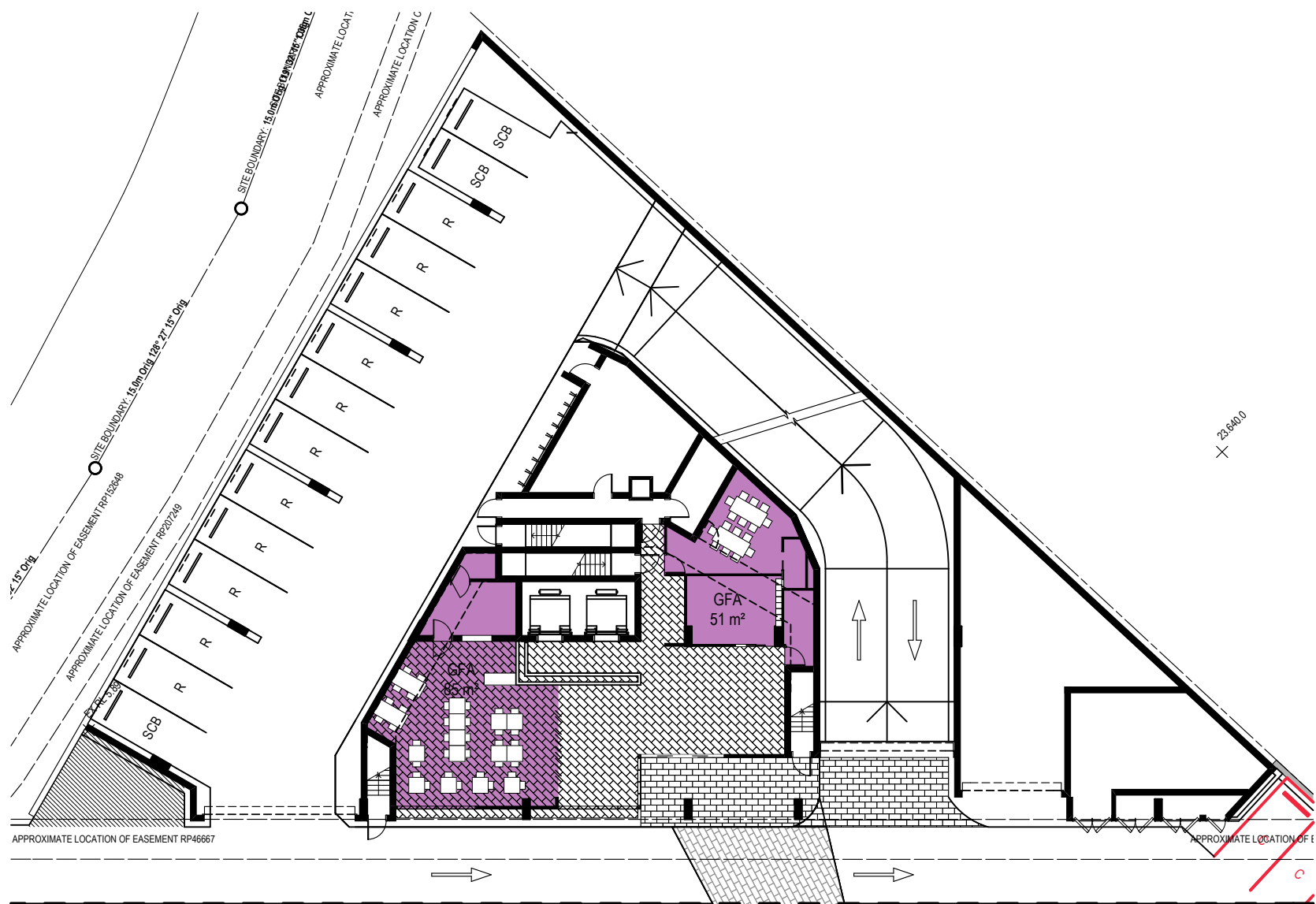
Avg Annual Time Exceedance **0.07**
hrs

APPENDIX B

ARCHITECTURAL DRAWINGS



1 GFA PLAN - LOWER GROUND FLOOR
SCALE NTS @ A1



2 GFA PLAN - UPPER GROUND FLOOR
SCALE NTS @ A1



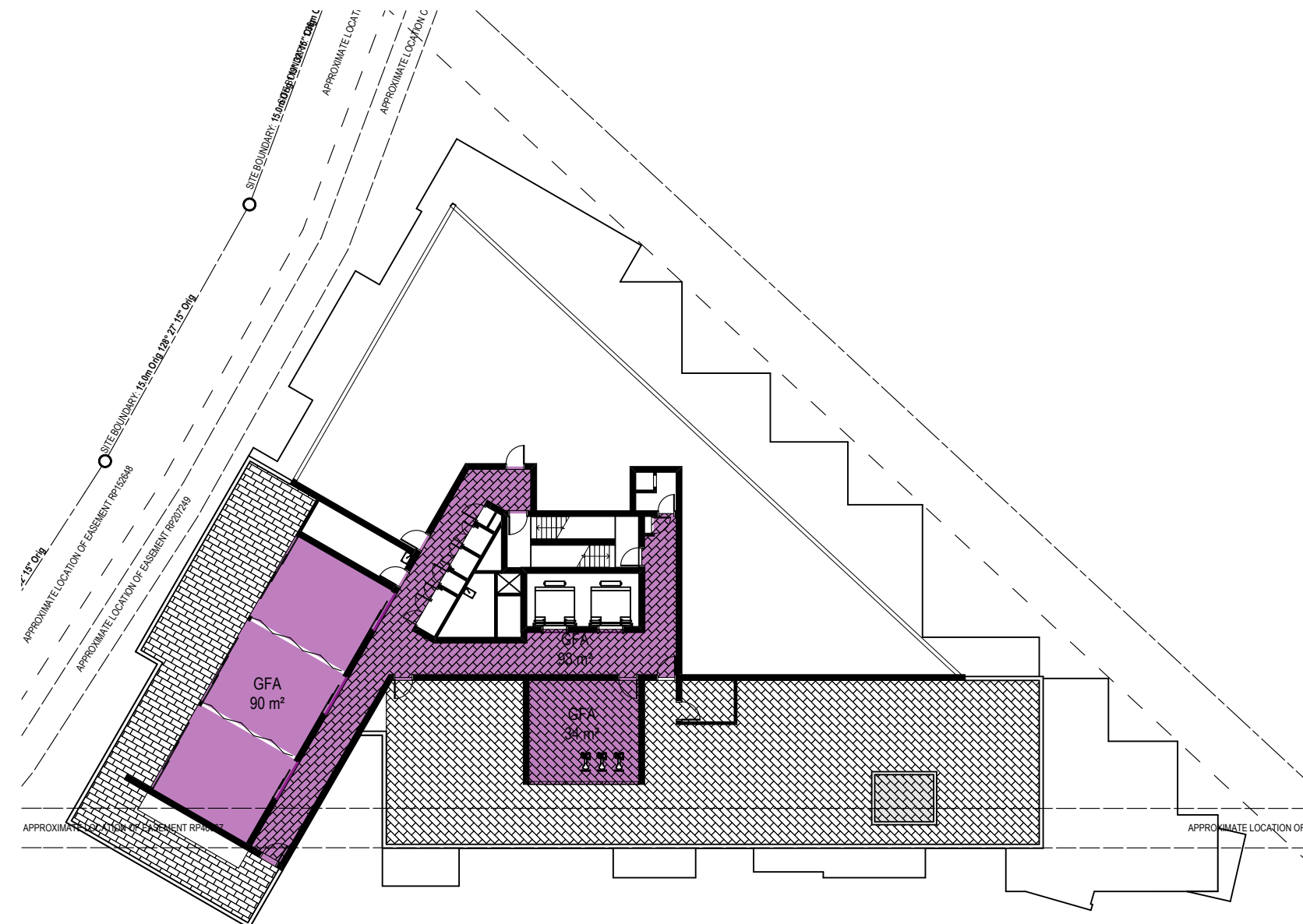
3 GFA PLAN - LEVEL 01 PODIUM
SCALE NTS @ A1



4 GFA PLAN - LEVEL 02
SCALE NTS @ A1



5 GFA PLAN - LEVEL 03-12 TYPICAL
SCALE NTS @ A1



6 GFA PLAN - ROOF TERRACE
SCALE NTS @ A1

CAR PARKING

PROPOSED RESIDENTIAL	REQUIRED	PROVIDED
VISITORS	INCLUDED	0
UNITS	100 (65 x 154 UNITS)	100
TOTAL	100	100

PROPOSED RETAIL	PROPOSED RETAIL	PROPOSED RETAIL
RETAIL VISITORS (1/100m2 NLA)	0	9
TOTAL CARS	100	109

MOTORCYCLE PARKING	-	-
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BICYCLE PARKING

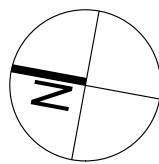
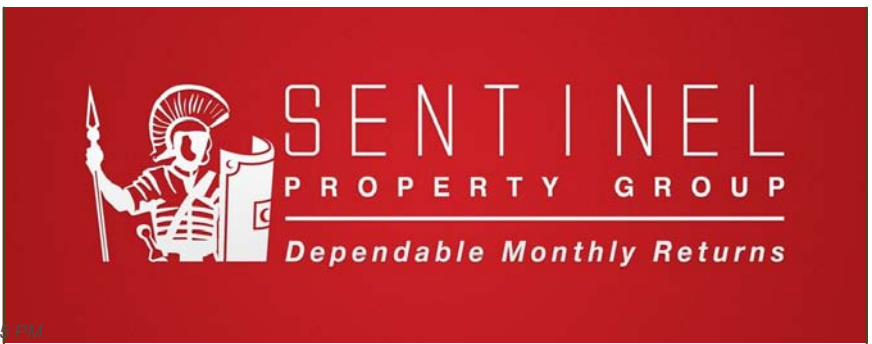
RESIDENTIAL (1/UNIT)	154	100
RESIDENTIAL VISITOR (1/10 UNITS)	16	10
RETAIL STAFF (1/500M2 GFA)	1	0
RETAIL CUSTOMERS	-	5
TOTAL BICYCLES	171	115

MRV	-	-
LRV	-	1

GFA SUMMARY		
	FLOOR	AREA
GFA	UPPER GROUND	450.06
GFA	LEVEL 02	1,062.17
GFA	LEVEL 03	1,062.17
GFA	LEVEL 04	1,062.17
GFA	LEVEL 05	1,062.17
GFA	LEVEL 06	1,062.17
GFA	LEVEL 07	1,062.17
GFA	LEVEL 08	1,062.17
GFA	LEVEL 09	1,062.17
GFA	LEVEL 10	1,062.17
GFA	LEVEL 11	1,062.17
GFA	LEVEL 12	1,062.17
GFA	ROOF TERRACE	214.24
		12,348.17 m²

Schematic
MULTI RESIDENTIAL

COPYRIGHT COTTEE PARKER ARCHITECTS PTY LTD
K:\1400\14004940 Sentinel Cnr Bowen Bridge Rd & Campbell St Herston\Arch\CAD\Master\Options\4940 Bowen Bridge Rd Podium Option G5.pln: 12/05/2015: 9:22



Issue	Revision	Date	In.
02	REVISED DA ISSUE	XX/04/2015	JH
01	REVISED DA ISSUE	16/04/2015	JH
00	DA ISSUE	10/04/2015	JH

Client	SENTINEL PROPERTY GROUP
Project Name and Location	MULTI RESIDENTIAL, 153 CAMPBELL STREET, BOWEN HILLS
Drawing Title	GFA PLANS

Scale	As Shown	Date	JAN2015	Job no.	4940
Drawn	JH	Checked	JH	Approved	MT
Drawing no.	SD 2801	Issue	02		

Cottee Parker Architects Pty Ltd
ABN 77 010 924 106
Brisbane Office
201 Montague Road
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ACCOMMODATION SCHEDULE - DA ISSUE 02

CLIENT: SENTINEL PROPERTY GROUP
JOB No. 4940
DOC No.
PROJECT: 153 CAMPBELL STREET, BOWEN HILLS
ISSUE: 02
DATE: 12.05.2015
BY: JH



Brisbane
201 Montague Road
West End QLD 4101
t. 61 7 3846 7422
f. 61 7 3846 7433
PO Box 3812
South Brisbane
Business Centre
QLD 4101

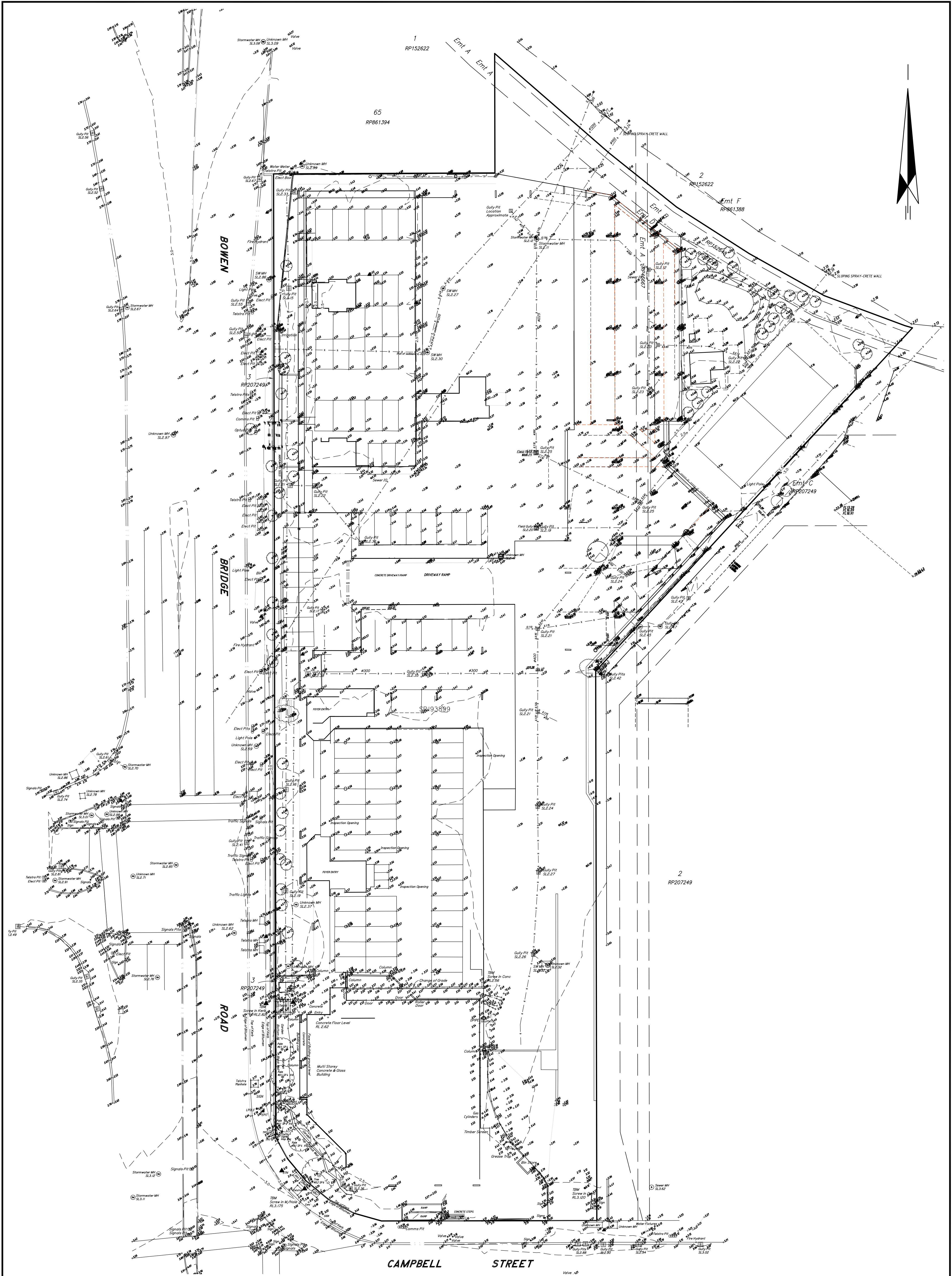
Melbourne
Level 4
400 Collins Street
Melbourne VIC 3000
t. 61 3 9664 2264
f. 61 3 9664 6864
PO Box 16007
Collins Street West
VIC 3007
ABN 77 010 924 106
www.cotteeparker.com.au

				TYPE	RESIDENTIAL																		RESIDENTIAL TOTALS		RETAIL TOTALS				PROJECT TOTALS														
					INTERIOR	A1.T	C1.T	E1.T	E2.T	A	A1	A2	B1	B2	B3	B4	C1	C2	C3	C4	E1	E2	-	GSA	BALC/STORE	NLA	BALC/STORE		-	CARS S	CARS S	CARS	EDQ GFA	GBAI	GBAC	GBAB	GBAE						
						20	58.8	105.8	25.2	5.3	7.7	10.1	9.7	7.4	2.7	8.5	12	7.5	16.9	12.2	15.2	6	-																				
						1	1	1	0	1	1	1	1	0	0	1	1	1	1	1	1	0	-																				
						GSA	80.9	144.3	186.1	66.4	50.7	68.6	55.5	53.7	48.4	43.7	52.5	97.5	77	92	80.2	95.5	47.2			0																	
LEVEL	RL	FTF	AHD	USE	1B+1Ba	2B+2Ba	2B+2Ba	1B+1Ba	1B+1Ba	1B+1Ba	1B+1Ba	1B+1Ba DK	1B+1Ba DK	1B+1Ba DK	1B+1Ba DK	2B+2Ba	2B+2Ba	2B+2Ba	2B+2Ba	2B+2Ba DK	1B+1Ba DK	Visitor		S		S		Visitor															
LG	2950	3000		CARPARK																									42			0	0	0	1467								
UG	5950	5000		CARPARK / RAMP																			0	0					14	3	6	0	0	710	0								
				RETAIL																				0	0	90.2							90	90	0	0							
				MANAGER'S OFFICE																					0	0	50.2							50	50	0	0						
				FOYER + CIRC.																					0	0							0	0	105	0							
				SERVICES + LOADING																					0	0							0	0	245	0							
				LANDSCAPE																						0	0							0	0	0	0	577					
1	10950	3900		CARPARK																			0	0					44			0	0	1359	0								
				LANDSCAPE																				0	0							0	0	0	39								
				SERVICES																					0	0							0	0	46	0							
2	14850	2900		RESIDENTIAL UNITS	1	1	1	1	5		1	1	1	1	1	1	1	1				922.9	311.3								923	923	0	311									
				FOYER + CIRC.																				0	0							103	0	103	0								
				SERVICES																					0	0							0	0	69	0							
3 to 12 (10 typical floors)	17750	29300		RESIDENTIAL UNITS					50	10	10	10	10	10	10	10	10	10	10			9229	1424								9229	9229	0	1424									
				FOYER + CIRC.																				0	0							1030	0	1030	0								
				SERVICES																					0	0							0	0	694	0							
ROOF TERRACE	47050	5400		VIEWING DECK																			0	0								124	0	124	0	350							
				FOYER + CIRC.																				0	0							93	0	93	0								
				SERVICES																					0	0							0	0	69	0	274						
				TOTAL	1	1	1	1	55	10	11	11	11	11	11	10	11	11	10	10	0	10151.9	1735.3		140.4	0	0	0		100	3	6	11642	10292	4647	3202	1240						
TOTAL BUILDING HEIGHT 49500 mm																					VISITORS																						
SITE AREA:	12,741	SQM		% GSA	80.9	144.3	186.1	66.4	2788.5	686	610.5	590.7	532.4	480.7	577.5	975	847	1012	882.2	955	472	0	TOTAL UNITS:	187																			
				NO CARS SALE REQ'D	0.7%	1.2%	1.5%	0.6%	23.2%	5.7%	5.1%	4.9%	4.4%	4.0%	4.8%	8.1%	7.0%	8.4%	7.3%	7.9%	3.9%	0.0%	TOTAL GSA:	11887.2		TOTAL NLA:	140.4																
				NO CARS SALE REQ'D	1	1	1	0	55	10	11	11	0	0	11	10	11	11	11	10	0	0.0	CARS Sale	154		TOTAL CARS																	
				NO CARS EDQ REQ'D	1	1	1	0	55	10	11	11	0	0	11	10	11	11	11	10	0	0.0	CARS Sale	154		TOTAL CARS																	
				CARS PER UNIT TYPE	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	4.00							TOTAL CARS														
					1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	4.00																						

LEGEND		GFA	COUNCIL DEFINITION OF GROSS FLOOR AREA		TOTAL GBA (Including balconies, basements, excluding roofs, terraces, on-grade parking, landscaping)	18,141
		GSA	GROSS SALE AREA			
		NLA	PCA DEFINITION OF NETT LETTABLE ARE (COMMERCIAL ONLY)			
AHD	AUSTRALIAN HEIGHT DATUM	GBAI	GROSS BUILDING AREA - INTERNAL SALE AREAS			
RL	SURVEY LEVEL	GBAC	GROSS BUILDING AREA - COMMON AREAS (LOBBIES, CORRIDORS ETC)			
FTF	FLOOR TO FLOOR HEIGHT	GBAB	GROSS BUILDING AREA - BALCONIES, STORES, TERRACES, FOOTPATHS & OPEN AREAS			
2B	2 BEDROOMS	CAR SALE	CARS ALLOCATED BY SALES TEAM			
2BA	2 BATH ROOMS	CAR EDQ	CARS ALLOWED BY COUNCIL			
2ST	2 STUDIES					
BALC/STORE		COUNTED IN GSA FOR RESIDENTIAL COMPONENT				

APPENDIX C

SURVEY AND SITE INFORMATION



SERVICES BY RECORDS
Norris Clarke & O'Brien take no responsibility for the location of any non-visible services. All services are shown by records only where records are available. A service location survey should be performed prior to earthworks.

Datum for Levels AHD
Levelled from PSM No.133854.....RL3.805m AHD

ALL SERVICES ARE BY RECORDS ONLY.

—	—	A/G POWER
—	—	U/G POWER
—	—	U/G TELSTRA
—	—	U/G GAS
—	—	U/G SEWERAGE
—	—	U/G WATERMAIN
—	—	U/G STORMWATER

ISSUE	DESCRIPTION	DATE	SIGNED
A	ORIGINAL ISSUE	13/03/15	

NOTE:
This plan has been prepared from a combination of field survey and existing records for the purpose of designing new constructions on the land and should not be used for any other purpose. The title boundaries shown hereon were not marked by the author at the time of survey and have been determined by plan dimensions only and not by field measurement. Services shown hereon have been located where possible by field survey. If not able to be so located or known, services have been plotted from the records of relevant authorities where available and have been noted accordingly on this plan. Where such records either do not exist or are considered inadequate, a notation has been made hereon. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services. This note is an integral part of this plan.

DETAIL SURVEY – GROUND

Description
**LAND at BOWEN BRIDGE ROAD
BOWEN HILLS
LOT 1 on SP193899
Parish of North Brisbane
County of Stanley**

Scale in Metres
1:300 at A1

Norris Clarke & O'Brien Pty Ltd
Licensed Surveyors
Town Planners
Development Consultants

Level 1 - Aldi Centre, 12 Bishop Street
Kelvin Grove QLD 4059
ph: 07 3012 0000 fax: 07 3012 0099
email: info@ncob.com.au
ACN 056 870 770 ABN 15 056 870 770

COMP FILE 6533D2-GND.DWG
F.B. Date 13/03/2015 Ref. 6533D2-GND

ISSUE: **A**



Datum for Levels AHD
Levelled from PSM No.133854.....RL3.805m AHD

ALL SERVICES ARE BY RECORDS ONLY.

—	—	A/G POWER
—	—	U/G POWER
—	—	U/G TEL STRA
—	—	U/G GAS
—	—	U/G SEWERAGE
—	—	U/G WATERMAIN
—	—	U/G STORMWATER

A	ORIGINAL ISSUE	13/03/15	
ISSUE:	DESCRIPTION	DATE	SIGNED

NOTE:
This plan has been prepared from a combination of field survey and existing records for the purpose of designing new constructions on the land and should not be used for any other purpose. The title boundaries shown hereon were not marked by the author at the time of survey and have been determined by plan dimensions only and not by field measurement. Services shown hereon have been located where possible by field survey. If not able to be so located or known, services have been plotted from the records of relevant authorities where available and have been noted accordingly on this plan. Where such records either do not exist or are considered inadequate, a notation has been made hereon. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of further underground services and detailed locations of all services. This note is an integral part of this plan.

DETAIL SURVEY – ROOF

Description

LAND at BOWEN BRIDGE ROAD
BOWEN HILLS
LOT 1 on SP193899
Parish of North Brisbane
County of Stanley

Scale in Metres

1: 300 at A1

Norris Clarke & O'Brien Pty Ltd

Licensed Surveyors
Town Planners
Development Consultants

Level 1 - Aldi Centre, 12 Bishop Street
Kelvin Grove QLD 4059
ph: 07 3012 0000 fax: 07 3012 0099
email: info@ncob.com.au
ACN 056 870 770 ABN 15 056 870 770

COMP FILE 6533D2-ROOF.DWG

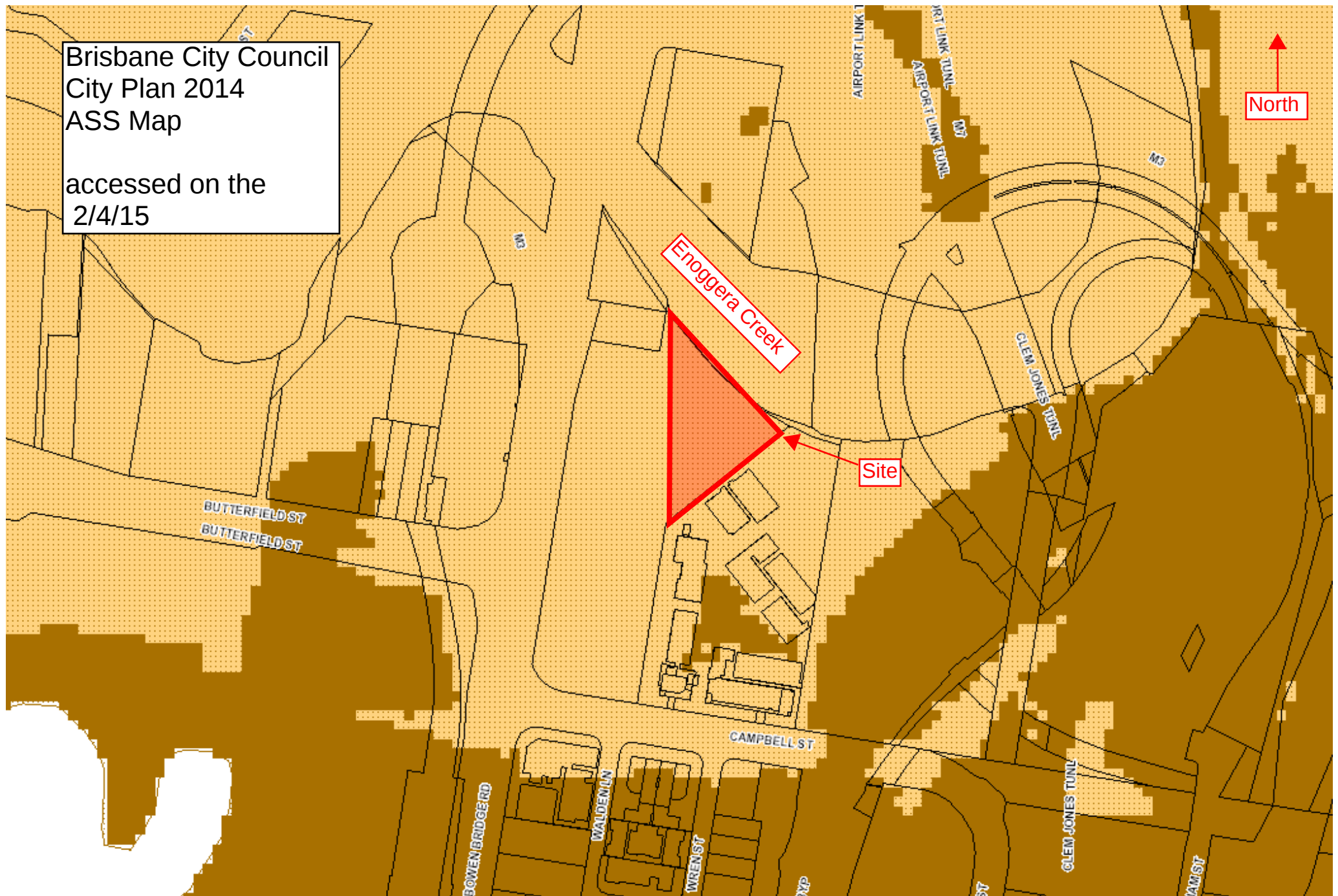
ISSUE: A

Date 13/03/2015

Ref. 6533D2-ROOF

Brisbane City Council
City Plan 2014
ASS Map

accessed on the
2/4/15





Erosion Hazard Assessment - June 2014

Brisbane City Council (BCC), *Erosion Hazard Assessment* form must be read in conjunction with the *Erosion Hazard Assessment- Supporting Technical Notes* (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?

Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low', 'medium' or 'high'.

When is the EHA required?

An *Erosion Hazard Assessment* form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement

The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

1 Please turn over and complete the erosion hazard assessment.

2 Based on the erosion hazard assessment overleaf, is the site:

☐ A 'low' risk site

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at <http://www.waterbydesign.com.au/factsheets>

☒ A 'medium' risk site

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

☐ A 'high' risk site

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

153 Campbell Street, Bowen Hills

Postcode 4006

I certify that:

- ☒ I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.
- ☒ I am a person with suitable qualifications and/or experience in erosion and sediment control.
- ☒ The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.
- ☒ The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.
- ☒ I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by *Print name*

Robert Gray

Certifier's sign

Date

10 / 04 / 2015

Table 1: Low Risk Test

		Yes	No
1.1	is the area of land disturbance > 1000 m ²	☒	☐
1.2	does any land disturbance occur in a BCC mapped waterway corridor	☒	☐
1.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 5%	☐	☒
1.4	does any land disturbance occur below 5 m AHD	☒	☐
1.5	does development involve endorsement of a staging plan	☐	☒
1.6	is there an upstream catchment passing through the site > 1 hectare	☐	☒

Have you answered 'yes' to any of the questions in Table 1?

Yes	No
☒	☐

If 'No' then site is **low risk** with respect to erosion and sediment control

If 'Yes' then proceed to Table 2

Table 2: Medium Risk Test

		Yes	No
2.1	is the area of land disturbance > 1 hectare	☐	☒

If 'No' then site is **medium risk** with respect to erosion and sediment control

If 'Yes' then proceed to Table 3

Table 3: High Risk Test

3.1	is there an upstream catchment passing through the site > 1 hectare	☐	☐
3.2	does any land disturbance occurs in a BCC mapped waterway corridor	☐	☐
3.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 15%	☐	☐

Have you answered 'yes' to any of the questions in Table 3?

Yes	No
☐	☐

If 'No' then site is **medium risk** with respect to erosion and sediment control

If 'Yes' then site is **high risk** with respect to erosion and sediment control

APPENDIX D

BBC FLOODWISE REPORT



Brisbane City Council FloodWise Property Report

Report Reference

3311227

30/03/2015 14:32:35

Dedicated to a better Brisbane

THIS REPORT IS FOR BUILDING AND DEVELOPMENT PURPOSES ONLY

The FloodWise Property Report provides property or lot-based flood information for building and development requirements. This report provides information on estimated flood levels, habitable floor level requirements and more technical information on the four sources of flooding: river, creek / waterway, storm tide and overland flow. Refer to the Useful Definitions section for a glossary of terms.

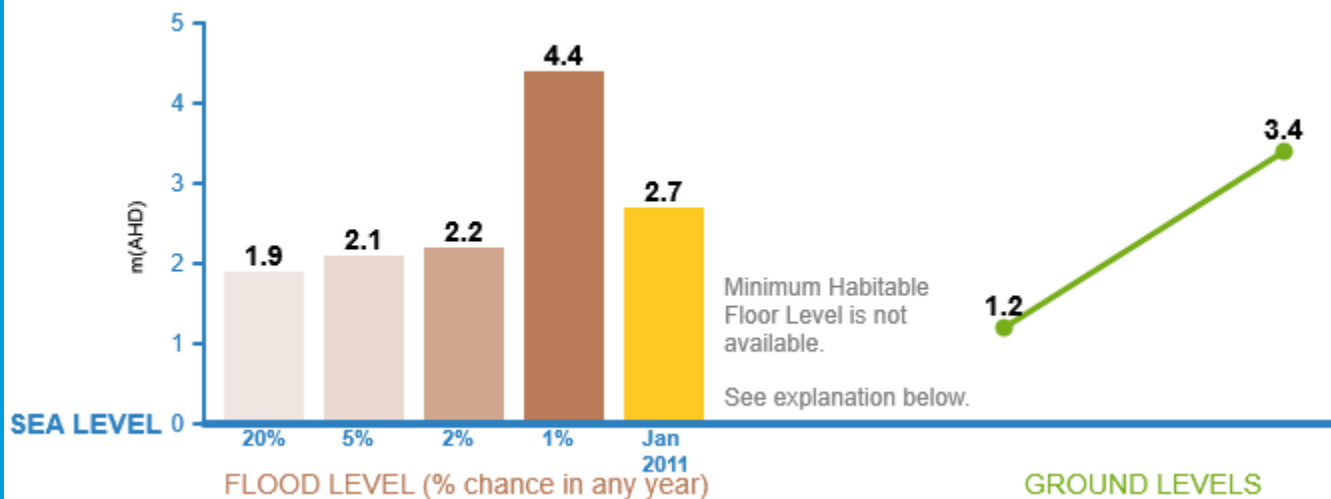
To find out more about how the contents of this report may affect building or development on this property, please visit www.brisbane.qld.gov.au/planning-building. For more general information about understanding your flood risk and how to prepare your property, family or business for potential flooding visit www.brisbane.qld.gov.au/beprepared

PROPERTY DETAILS:

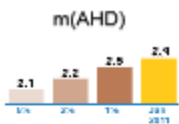
Address: 153 CAMPBELL ST, BOWEN HILLS QLD 4006

Lot Details: L.1 SP.193899

FLOOD LEVEL INFORMATION



EXPLANATION



m(AHD) - Metres Australia Height Datum. The level of 0.0m AHD is approximately mean sea level.

Flood Levels - The Flood level bar chart above shows the possible flooding level and percentage chance of that level being reached or exceeded in any year. If an orange bar shows, it is the calculated January 2011 flood level at this address or lot.

Minimum Habitable Floor Level - Applies to residential development only. Please refer to Council's planning scheme to learn how this may affect you. If a property is in an overland flow path, or a large allotment, a minimum habitable floor level cannot be provided. Refer flood and planning development flags below.

Ground Levels - The green line above shows this property's approximate lowest and highest ground levels based on latest available information (2009 airborne laser survey) to Council. If you are building, please confirm with a surveyor.

For further information and definitions please refer to the Useful Definitions page

FLOOD AND PLANNING DEVELOPMENT FLAGS

DEVELOPMENT
FLAG(S)

This property is affected by one or more flood or property development overlay or flags. These are: LARGE ALLOTMENT

Please review the technical summary over page for more detail.



Brisbane City Council FloodWise Property Report

Report Reference

3311227

30/03/2015 14:32:35

Dedicated to a better Brisbane

TECHNICAL SUMMARY

This section of the FloodWise Property Report contains more detailed flood information for this property so surveyors, builders, certifiers, architects and engineers can plan and build in accordance with Council's planning scheme. For more information about building and development in Brisbane please visit www.brisbane.qld.gov.au/planning-building or talk to a Development Assessment Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

PROPERTY DETAILS:

Address: 153 CAMPBELL ST, BOWEN HILLS QLD 4006

Lot Details: L.1 SP.193899

PROPERTY INFORMATION (Summary)

The following table provides a summary of flood information for this property. More detailed flood level information is provided in the following sections of this report.

PROPERTY SUMMARY	LEVEL (mAHD)
Minimum Ground Level	1.2
Maximum Ground Level	3.4
Min Habitable Floor Level	Contact Council
Defined Flood Level (DFL)	4.4
Defined Flood Level Source	CREEK/WATERWAY
Source of Highest Flooding	CREEK/WATERWAY
Flooding may also occur from	RIVER,STORM TIDE

ESTIMATED PEAK FLOODING LEVELS

The table below displays the peak estimated flood levels by probability for this property. Estimated flood level data should be used in conjunction with applicable planning scheme requirements - Refer to Flood Planning Development Information.

Note that the overland flow flooding level maybe higher than the levels below from other sources.

DESCRIPTION	LEVEL (mAHD)	SOURCE
20% AEP	1.9	STORM TIDE
5% AEP	2.1	STORM TIDE
2% AEP	2.2	STORM TIDE
1% AEP	4.4	CREEK/WATERWAY
January 2011	2.7	RIVER
DFL	4.4	CREEK/WATERWAY

FLOOD PLANNING DEVELOPMENT INFORMATION

This section of the FloodWise Property Report contains information about Council's planning scheme overlays. Overlays identify areas within the planning scheme that reflect distinct themes that may include constrained land and/or areas sensitive to the effects of development.

FLOOD OVERLAY CODE

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the Flood Planning Areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in Council's planning scheme, which is available from www.brisbane.qld.gov.au/planning-building.

FLOOD PLANNING AREAS (FPA)		
RIVER	CREEK/WATERWAY	OVERLAND FLOW
FPA1	FPA1	Not Applicable
	FPA2	
FPA2b		
FPA3		
FPA4		
FPA5		

COASTAL HAZARD OVERLAY CODE

The coastal hazard overlay code of Council's planning scheme uses the following information to provide guidelines when conducting new development. The table below summarises the coastal hazard categories that apply to this property. Development guidelines for the following coastal hazard overlay sub-categories are explained in the planning scheme, which is available from www.brisbane.qld.gov.au/planning-building.

COASTAL HAZARD OVERLAY SUB-CATEGORIES
High Storm Tide Inundation Area
Medium Storm Tide Inundation Area
Erosion Prone – Coastal Erosion
Erosion Prone Area - permanent inundation by 2100
Coastal Management District

NOTE: Where land is identified within one or more flood planning area on the Flood Overlay, or is identified within a Storm Tide Inundation area on the Coastal Hazard Overlay, the assessment criteria that provide the highest level of protection from any source of flooding applies.

PROPERTY DEVELOPMENT FLAGS

Large Allotment - This property is a Large Allotment of over 1000 square metres. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site. For more information or advice, it is recommended you engage a Registered Professional Engineer of Queensland.



Brisbane City Council FloodWise Property Report

Report Reference

3311227

30/03/2015 14:32:35

Dedicated to a better Brisbane

Useful Definitions

Australian Height Datum (AHD) - The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.

Annual Exceedance Probability (AEP) – The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

Defined Flood Level (DFL) - The DFL for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m³/s.

Maximum and Minimum Ground Level – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum Habitable Floor Level – The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed.

Council's Planning Scheme - The City Plan (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Residential Flood Level (RFL) – Residential flood level (RFL) for Brisbane River flooding equates to the flood level applicable to the extent of January 2011 floods as depicted by mapping on the Queensland Reconstruction Authority website or the Council's defined flood level (DFL) for the Brisbane River, whichever is higher.

Brisbane City Council's Online Flood Tools

Council provides a number of online flood tools:

- to guide planning and development
- to help residents and businesses understand their flood risk and prepare for flooding.

Planning and Development Online Flood Tools

Council's online flood tools for planning and development purposes include:

- FloodWise Property Report
- Flood Overlay Code

For more information on Council's planning scheme and online flood tools for planning and development:

- phone 07 3403 8888 to talk to a Development Assessment Customer Liaison Officer
- visit www.brisbane.qld.gov.au/planning-building
- visit a Regional Business Centre.

Helping residents and businesses be prepared for flooding

Council has a range of free tools and information to help residents and businesses understand potential flood risks and how to be prepared. This includes:

- Flood Awareness Maps
- Flooding in Brisbane – A Guide for Residents
- Flooding in Brisbane – A Guide for Business
- Early Warning Alert Service. Visit www.brisbane.qld.gov.au/earlywarning to register for email, home phone or SMS severe weather alert updates.

Note: The Flood Awareness Maps show four levels of flood risk from high risk (flooding is very likely to occur) through to very low risk (very rare and extreme flood events). Flooding in the low and very low risk areas has no planning and development requirements and is therefore not reflected in the FloodWise Property Report.

For more information on Council's online flood tools for residents and business:

- Visit www.brisbane.qld.gov.au/beprepared
- Phone (07) 3403 8888.



Brisbane City Council FloodWise Property Report

Report Reference

3311227

30/03/2015 14:32:35

Dedicated to a better Brisbane

Disclaimer

1. Defined Flood Levels and Residential Flood Levels, and the Minimum Habitable Floor Levels are determined from the best available information to Council at the date of issue. These flood levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating flood levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property report. Council disclaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



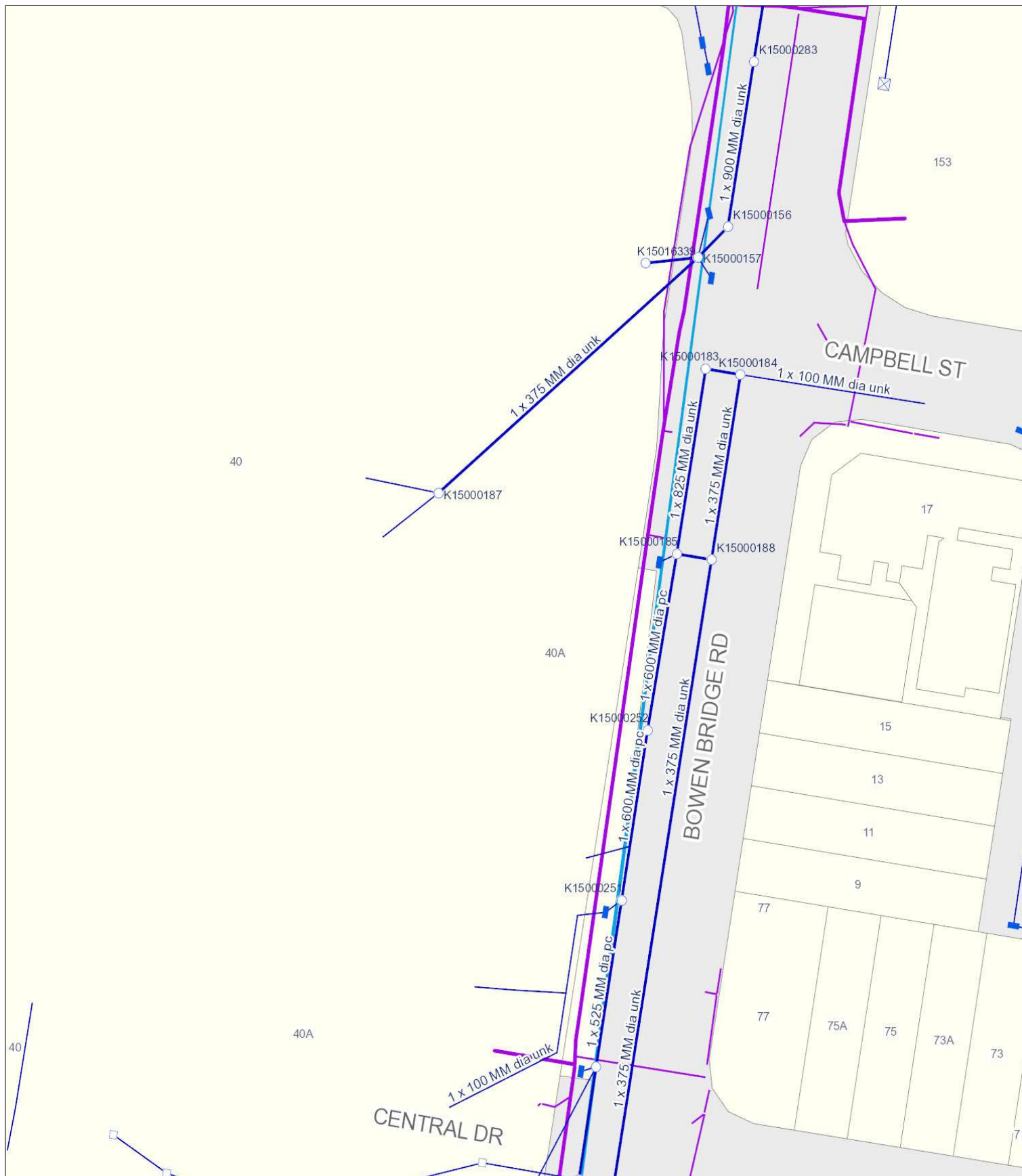
Planning to build or renovate?

For information, guidelines, tools and resources to help you track, plan or apply for your development visit www.brisbane.qld.gov.au/planning-building

You can also find the Brisbane City Plan 2014 and Neighbourhood Plans as well as other information and training videos to help with your building and development plans.

APPENDIX E

‘DIAL BEFORE YOU DIG’ PLANS



BCC Stormwater and Cable Networks

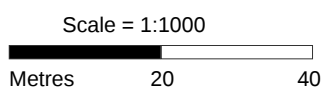
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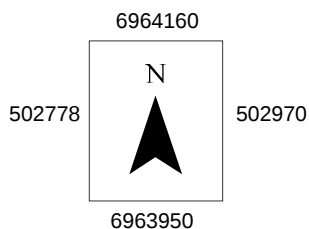
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Street Names and House Numbers (c) 2011 Brisbane City Council

Caution: This map may contain the locations of abandoned underground asbestos pipes. Council gives no warranty to the completeness or accuracy of these records. Appropriate care needs to be taken in all cases.



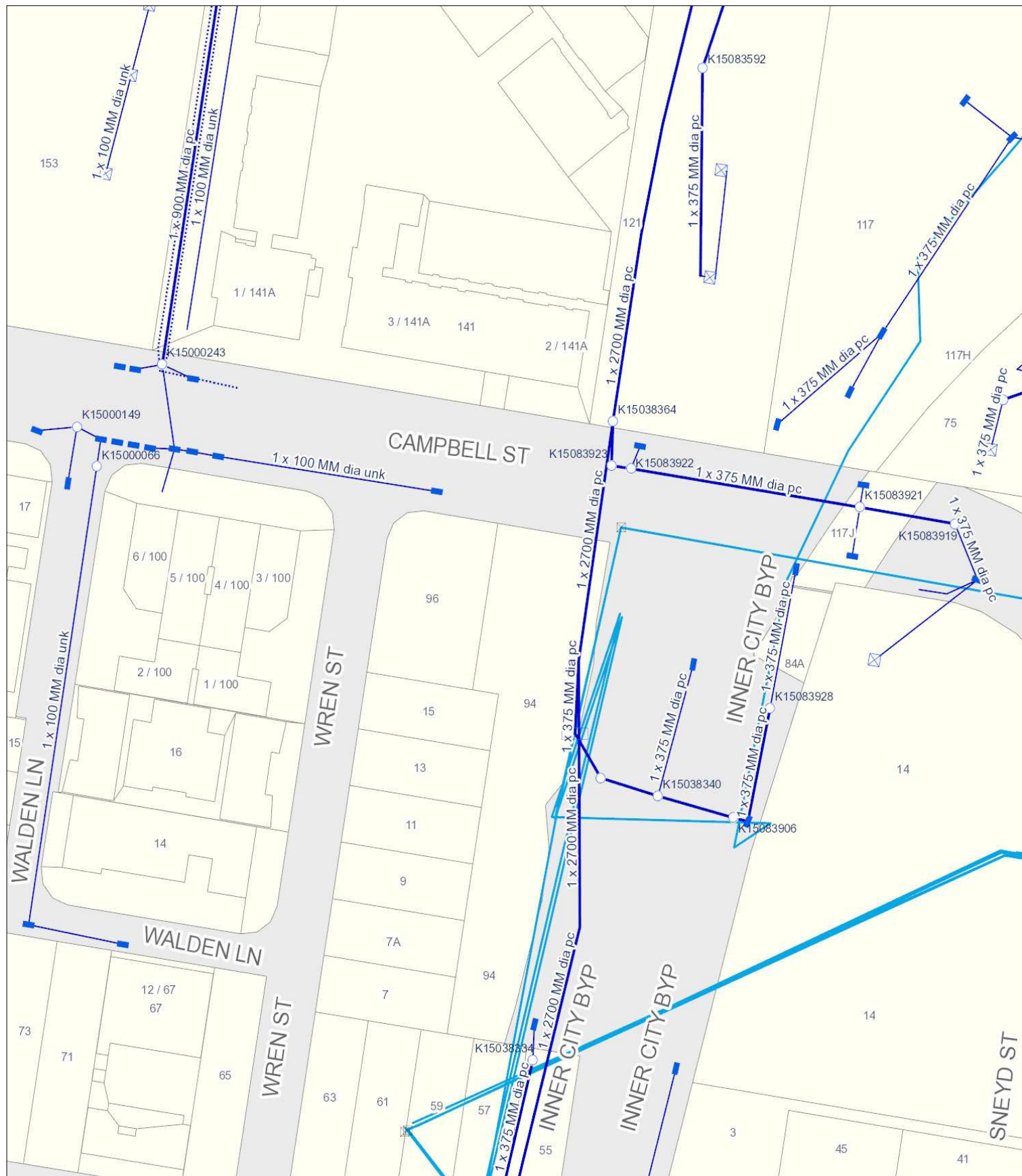
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Sheet 1



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BCC Stormwater and Cable Networks

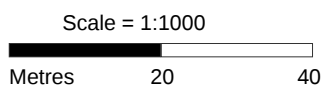
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Disclaimer:

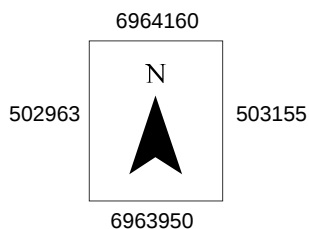
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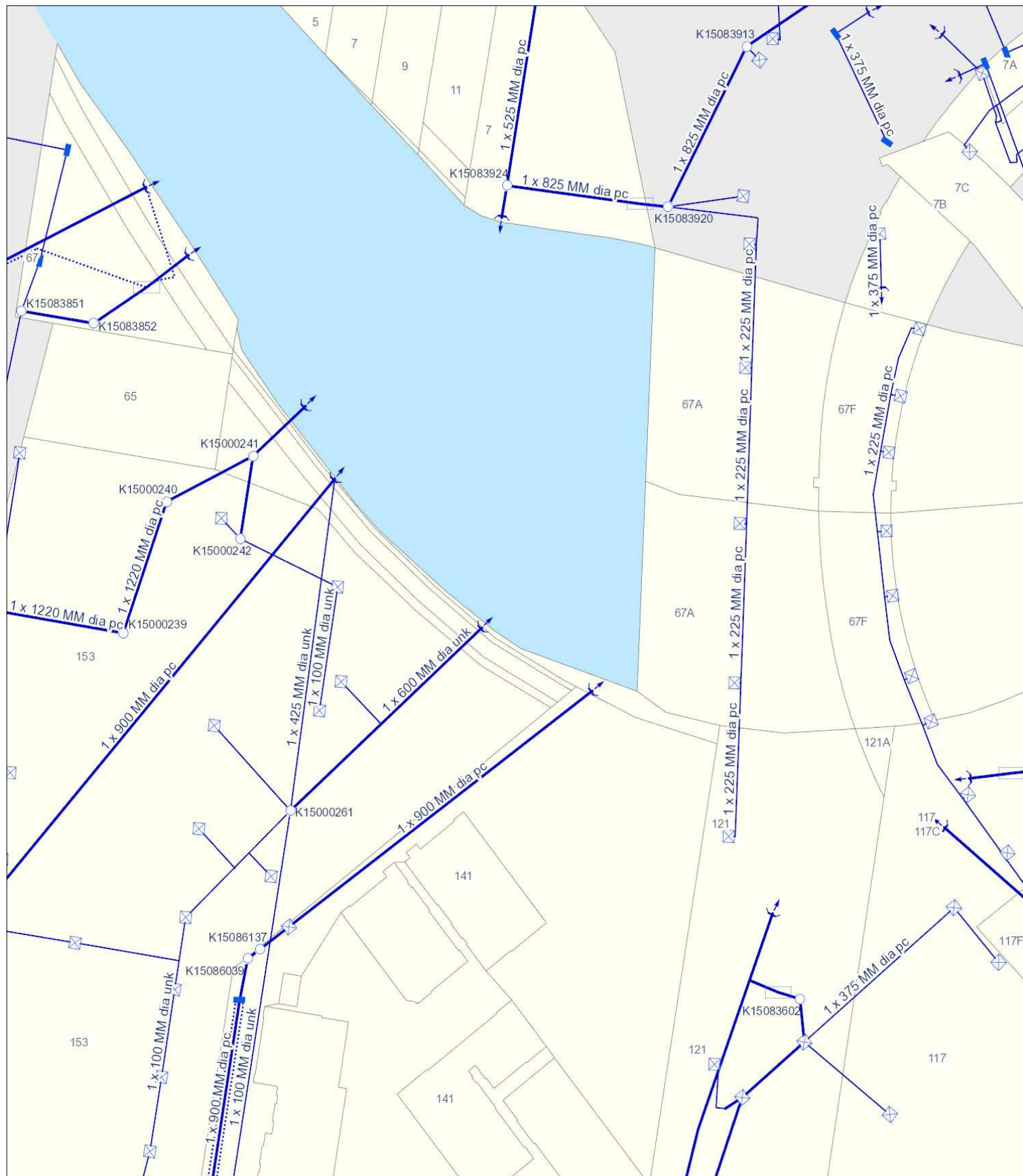
Location:



Sheet 2



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BCC Stormwater and Cable Networks

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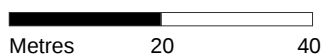
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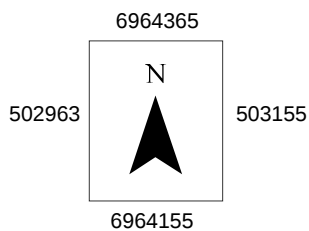
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Scale = 1:1000



Location:



Sheet 4



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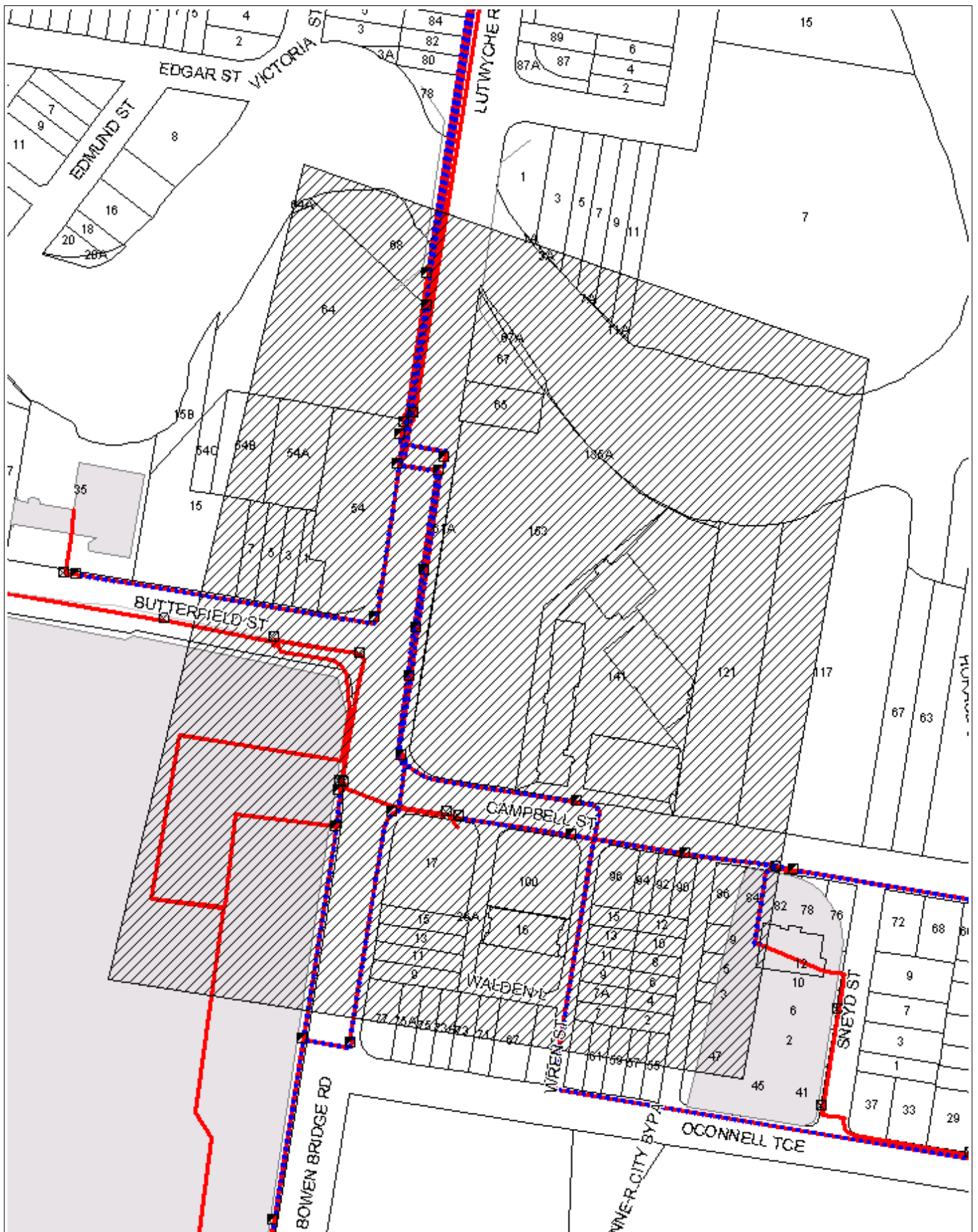
Legend

Stormwater Network

-  Stormwater Drain
-  Stormwater Gully / Roofwater Connection
-  Future Stormwater Drain
-  Stormwater Maintenance Hole
-  Stormwater Roofwater Pit
-  Stormwater Gully Pit
-  Stormwater Field Inlet
-  Stormwater Quality Improvement Device
-  Stormwater Culvert

BCC Cable Network

-  Traffic System Cable
-  Traffic Signal Ducting
-  Traffic Light Conduit
-  Fibre Optic Cable Location
-  Flood Telemetry Conduit
-  Parking Sensor Ducting
-  Fibre Optic Pit Location



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Sequence Number: 44487359

Date Generated: 18/03/2015



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

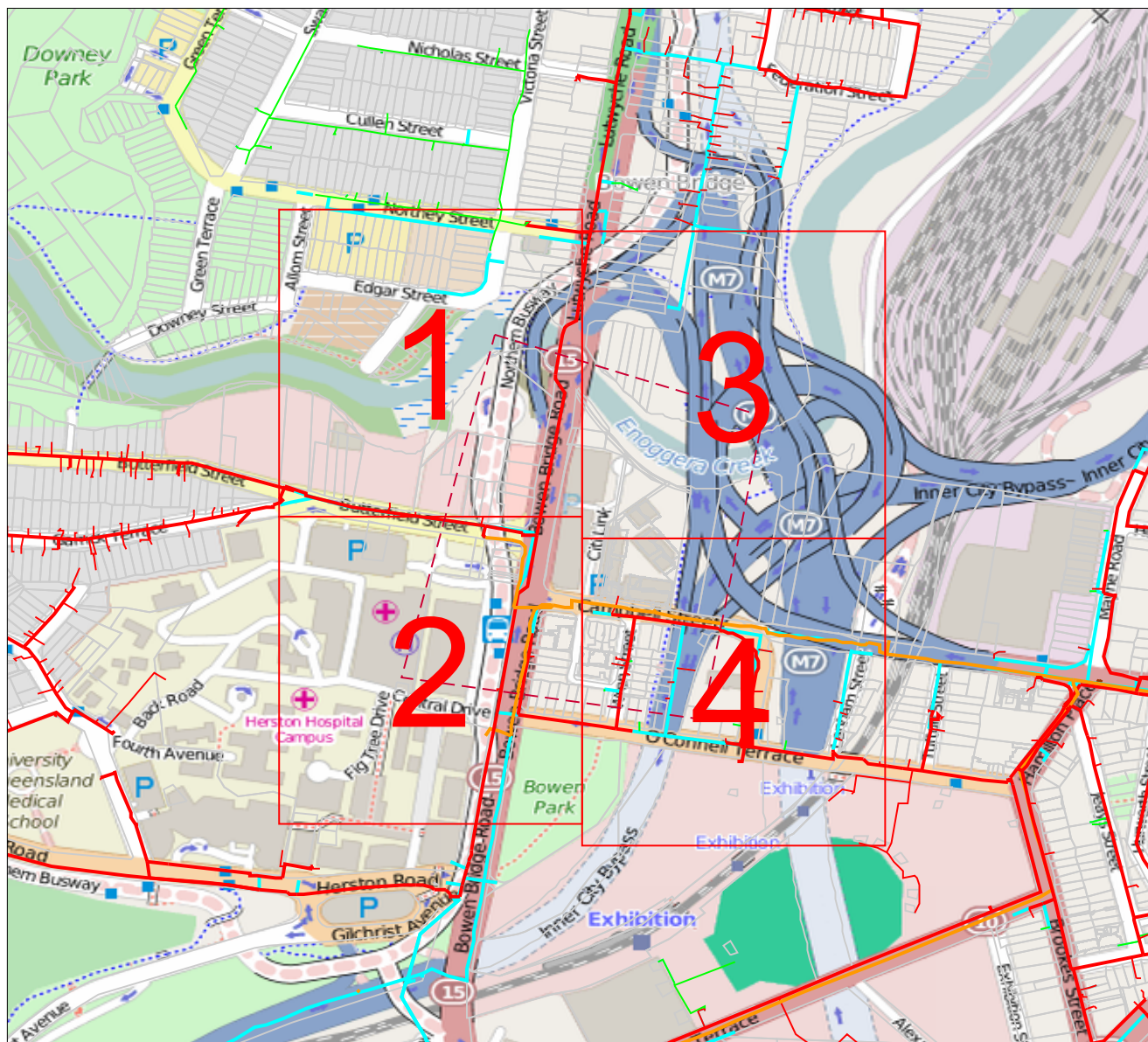


18 03 2015

SCALE: DO NOT SCALE

REF NO: 44487360

As work on APA underground plant is ongoing any drawing with an issue date of more than one month previous can no longer be considered valid. All persons planning civil works on any site are advised to contact APA to confirm location. All underground gas pipelines are the property of APA & are not to be accessed by unauthorised persons. All care is taken with preparation of the drawings & no responsibility is accepted for errors or omissions.



44487360

Papersize: A4 Scale: 1: 6000

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Data Source

Pipeline Data Copyright APT O&M Services (QLD) Pty Ltd,
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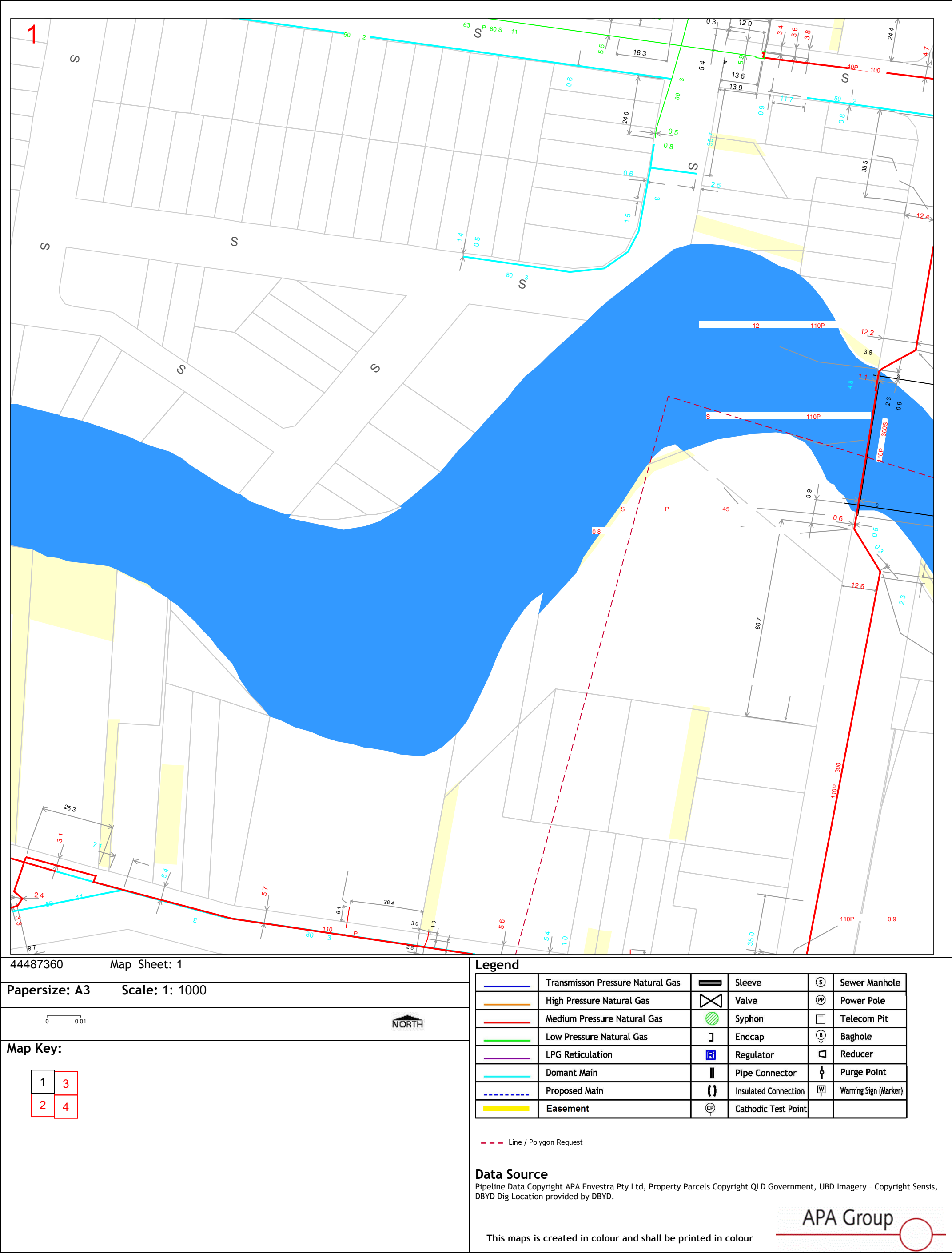
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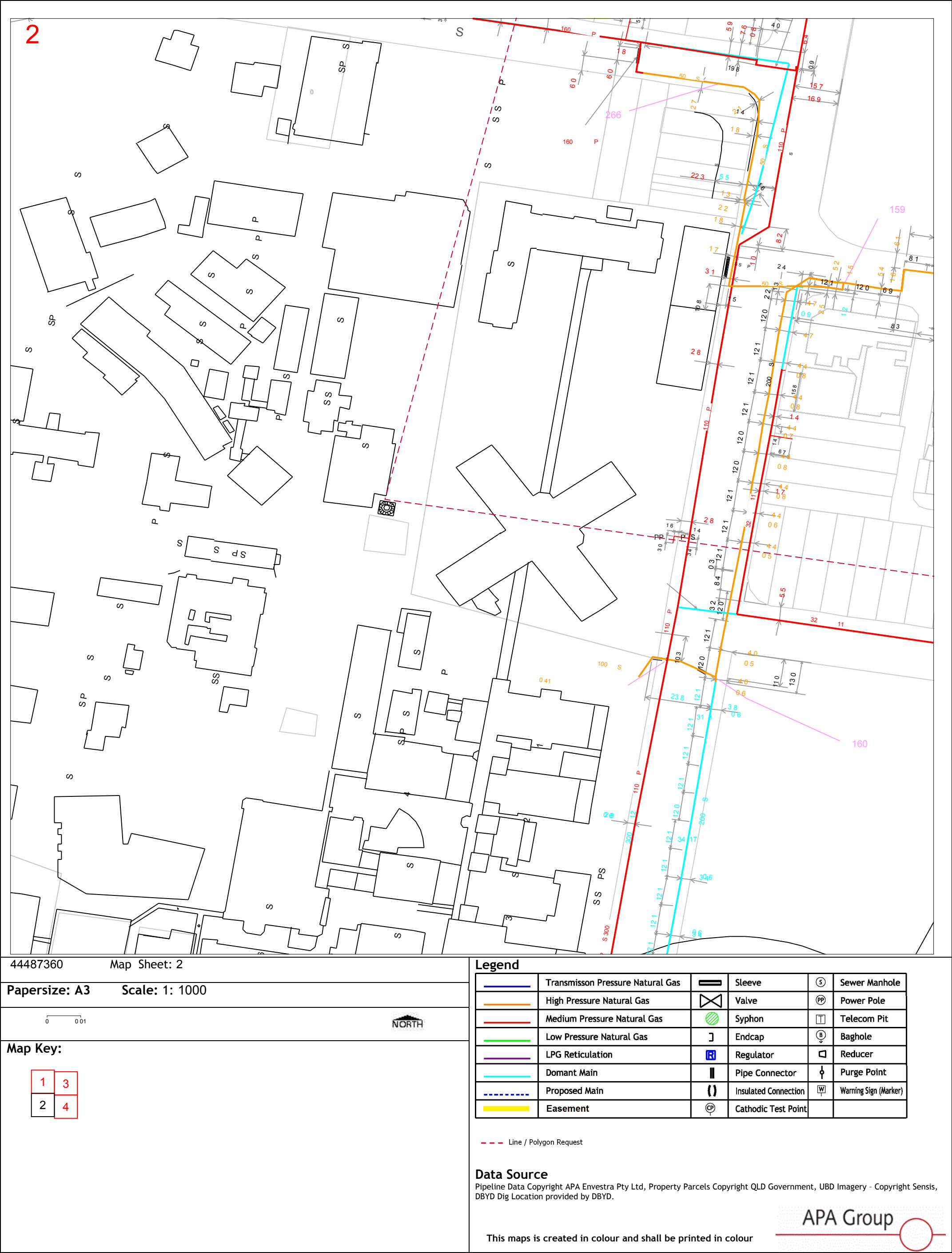
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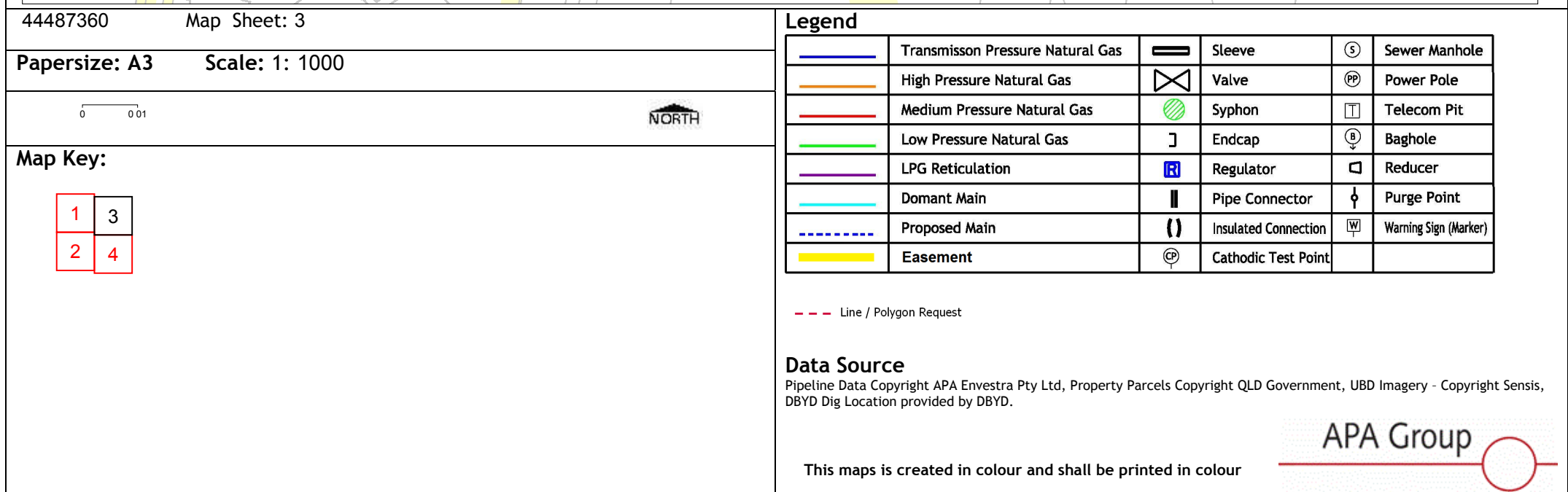
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	High Pressure Natural Gas		Valve		Power Pole
	Medium Pressure Natural Gas		Syphon		Telecom Pit
	Low Pressure Natural Gas		Endcap		Baghole
	LPG Reticulation		Regulator		Reducer
	Domant Main		Pipe Connector		Purge Point
	Proposed Main		Insulated Connection		Warning Sign (Marker)
	Easement		Cathodic Test Point		

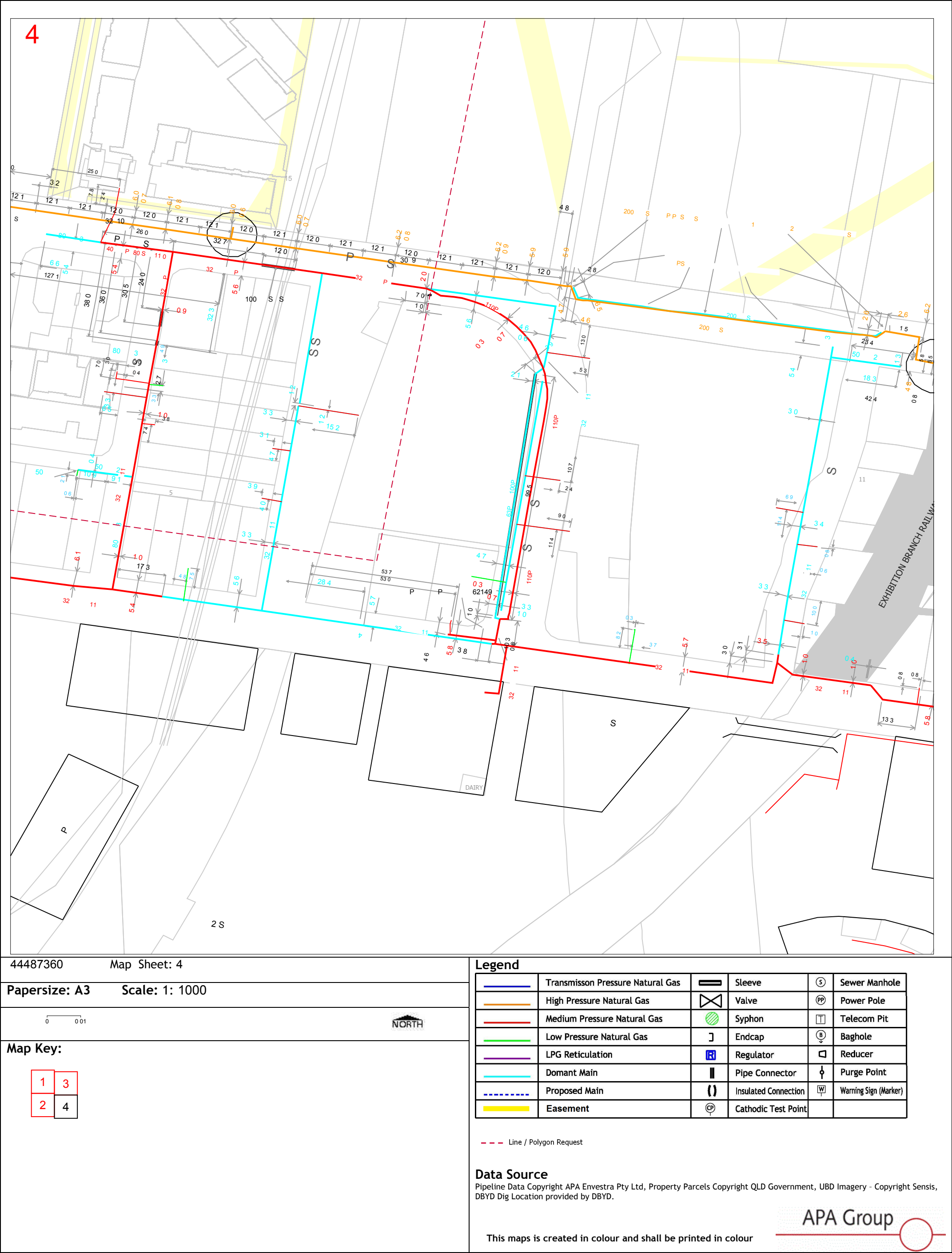
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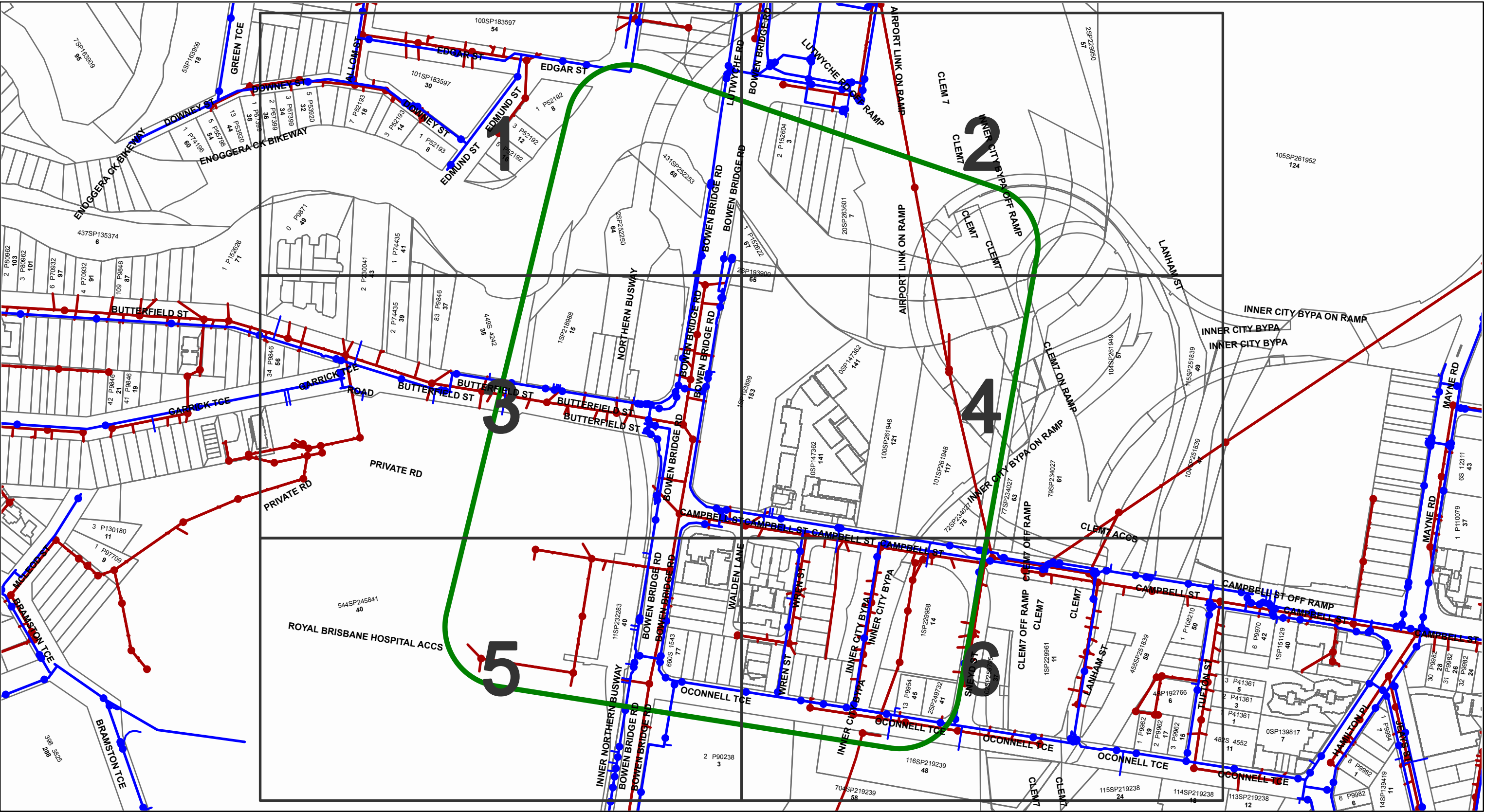








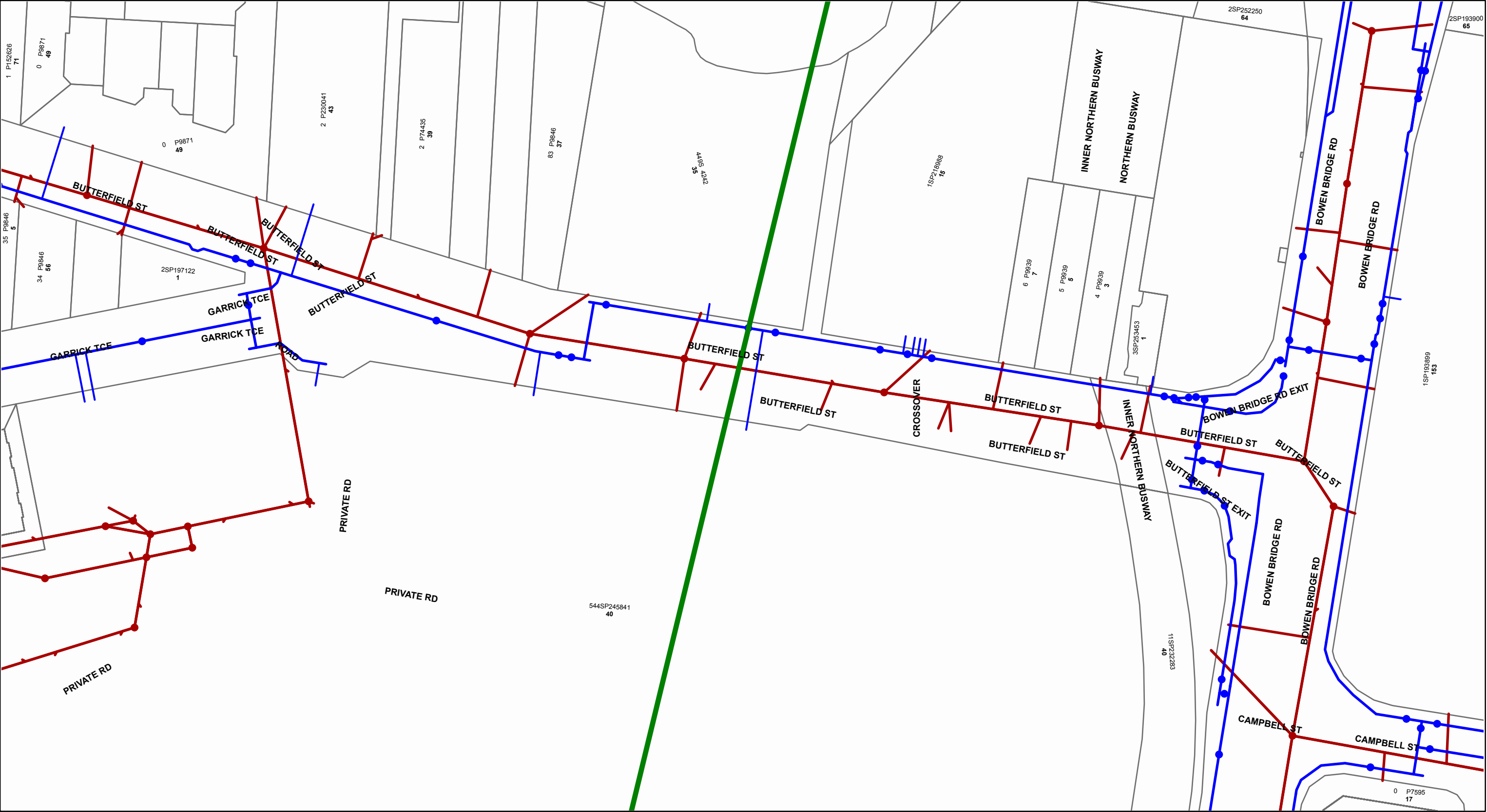
Queensland Urban Utilities - Water & Sewer Infrastructure



2015

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Sewer	Water							
P P S S	P P S S							

Queensland Urban Utilities - Water & Sewer Infrastructure



2015

DBYD - Queensland Urban Utilities
Water & Sewer Infrastructure

DBYD Reference No: 44487361

18 03 2015 4 23 00 P
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P 30

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Map Scale

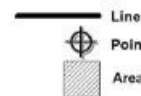
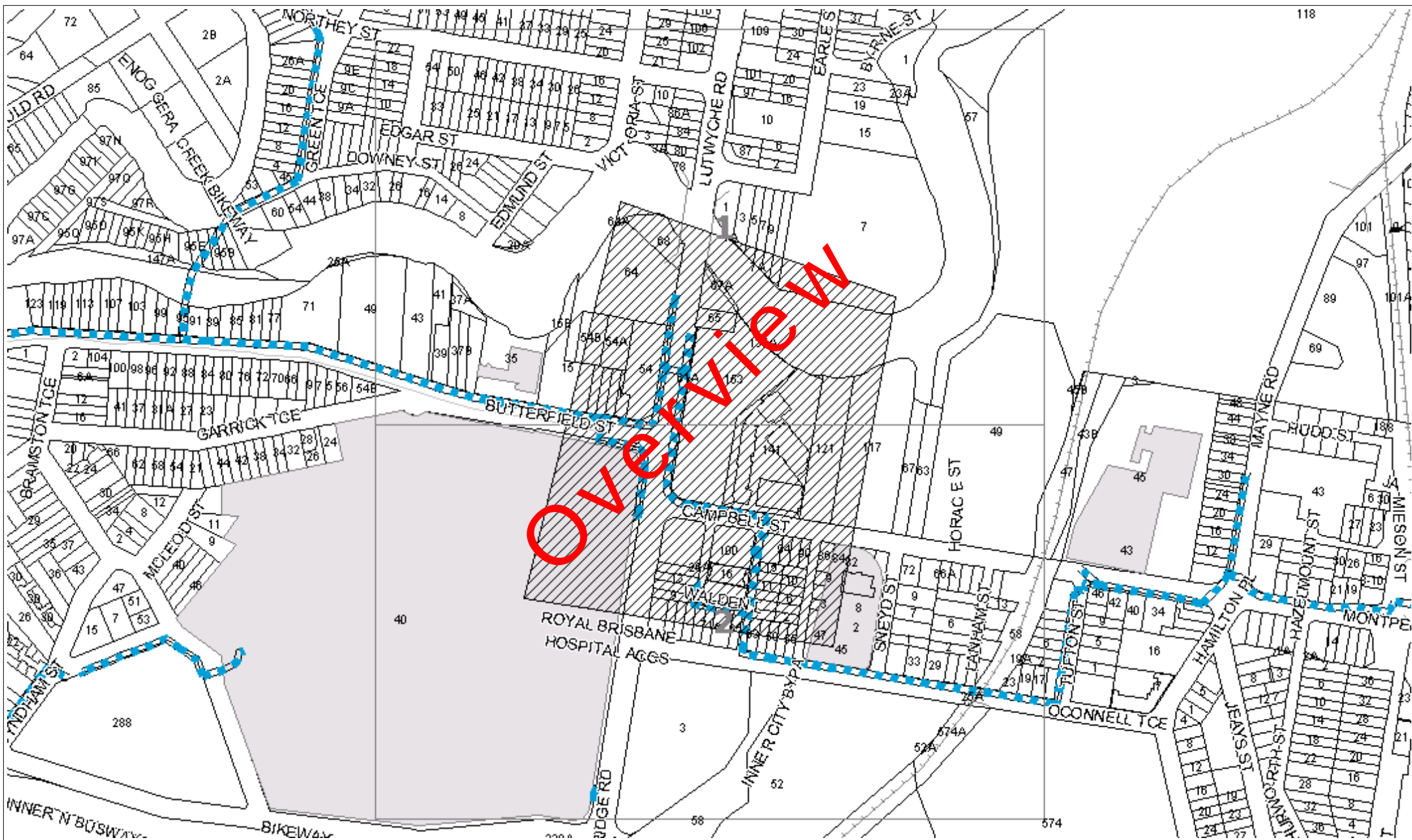
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Uecomm

Cable Uecomm Underground

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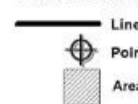
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Sequence Number: 44487359

Location: 135 Campbell Street



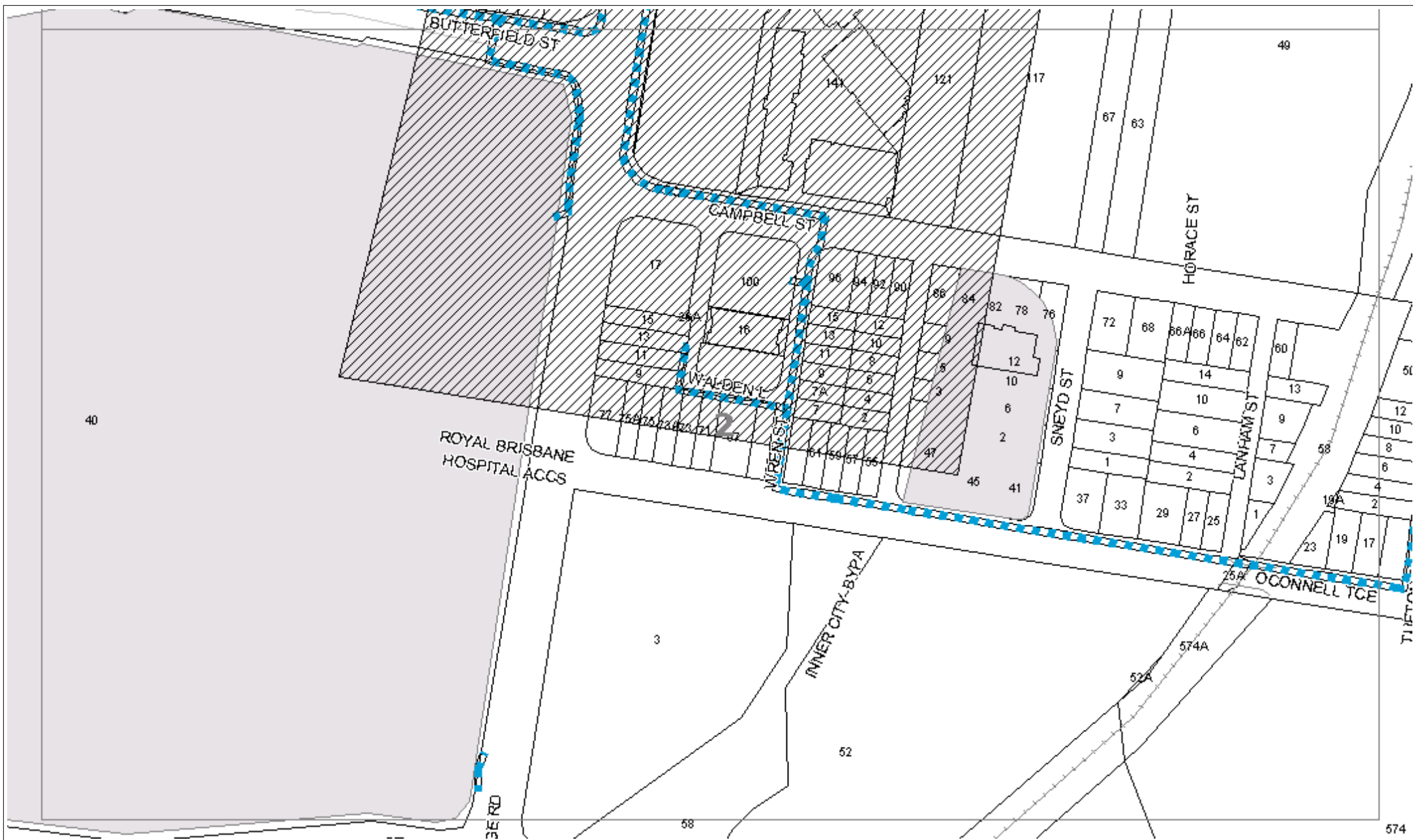
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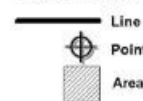
Underground Asset



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Job Location



Underground Asset



All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX EnerGISE DBYD map, then ENERGEX shall be contacted immediately.

For Emergency Situations
Please call 13 19 62

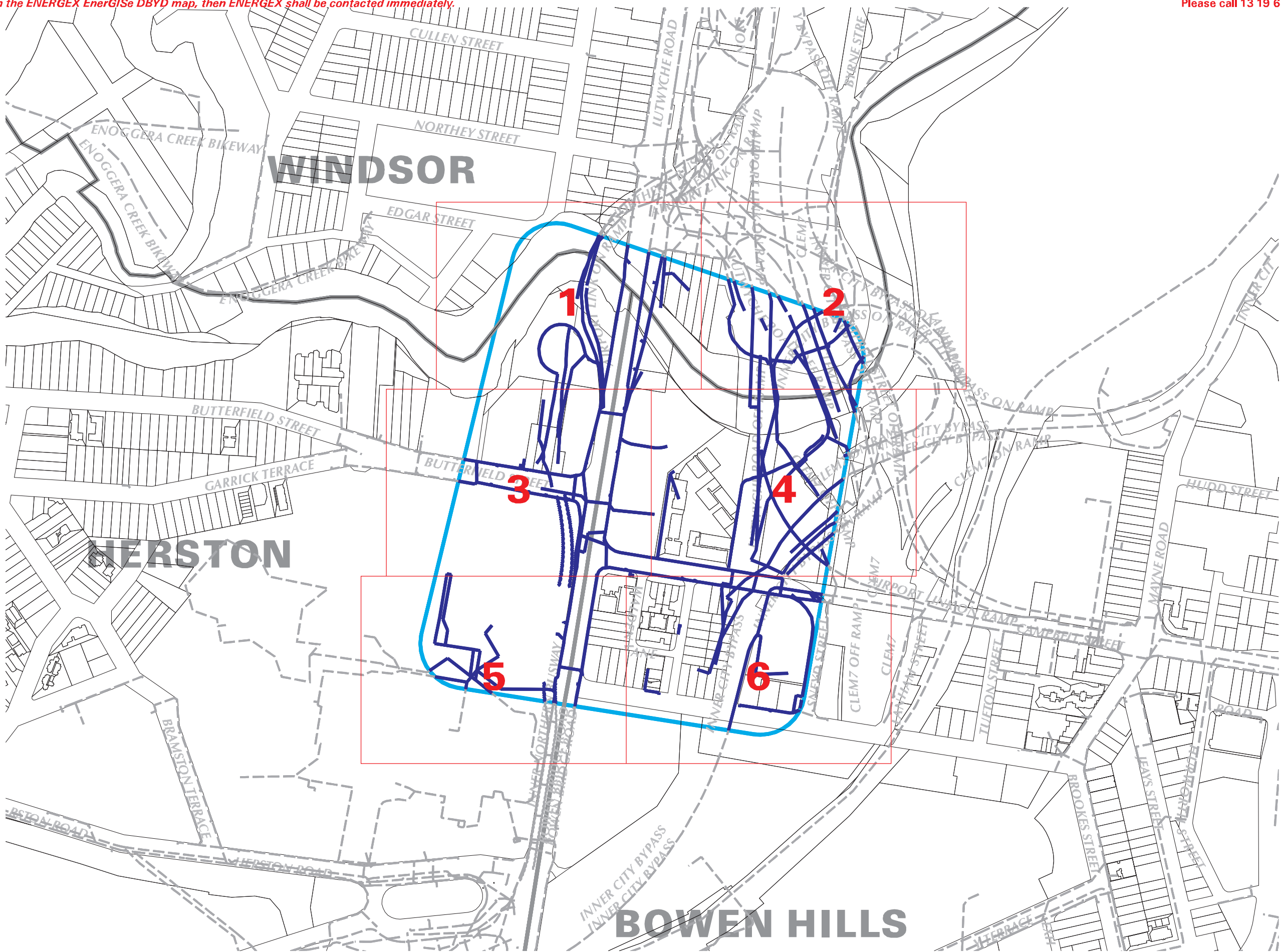


Date: 18 Mar 15 Time: 15.26.08
Requested By: DBYD

NOT TO SCALE
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Enquiry No: 44487357
KEY MAP

Enquiry Area



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LOCALITY DIAGRAM



All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX EnerGISE DBYD map, then ENERGEX shall be contacted immediately.

For Emergency Situations
Please call 13 19 62



Date: 18 Mar 15 Time: 15.26.22
Requested By: DBYD

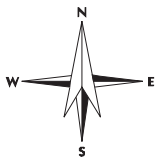
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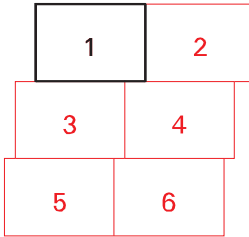
Enquiry No: 44487357

STRIP No: 1

- | | | | |
|--|---------------------|--|------------------------------|
| | Ground Transformer | | Cable Voltage Less Than 33kV |
| | Cubicle Transformer | | Cable Voltage 33kV or Higher |
| | Ring Main Unit | | Direct-Lay Cable |
| | Metering Unit | | Conduit |
| | Link Pillar | | Multi-Section Duct |
| | Service Pillar | | Trench |
| | Junction Pillar | | Cable Tray |
| | Pit | | Tunnel |
| | Cable Joint | | |
| | Cable Termination | | |
| | Cable Marker | | |
| | Street Light Pole | | |
| | Earth | | |
| | Works Order Polygon | | |



INDEX TO SHEETS



LOCALITY DIAGRAM



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All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX EnerGISE DBYD map, then ENERGEX shall be contacted immediately.

For Emergency Situations
Please call 13 19 62



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Requested By: DBYD

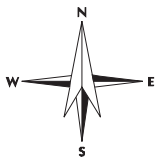
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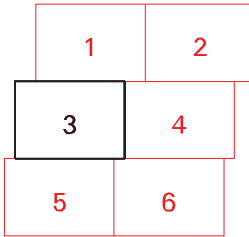
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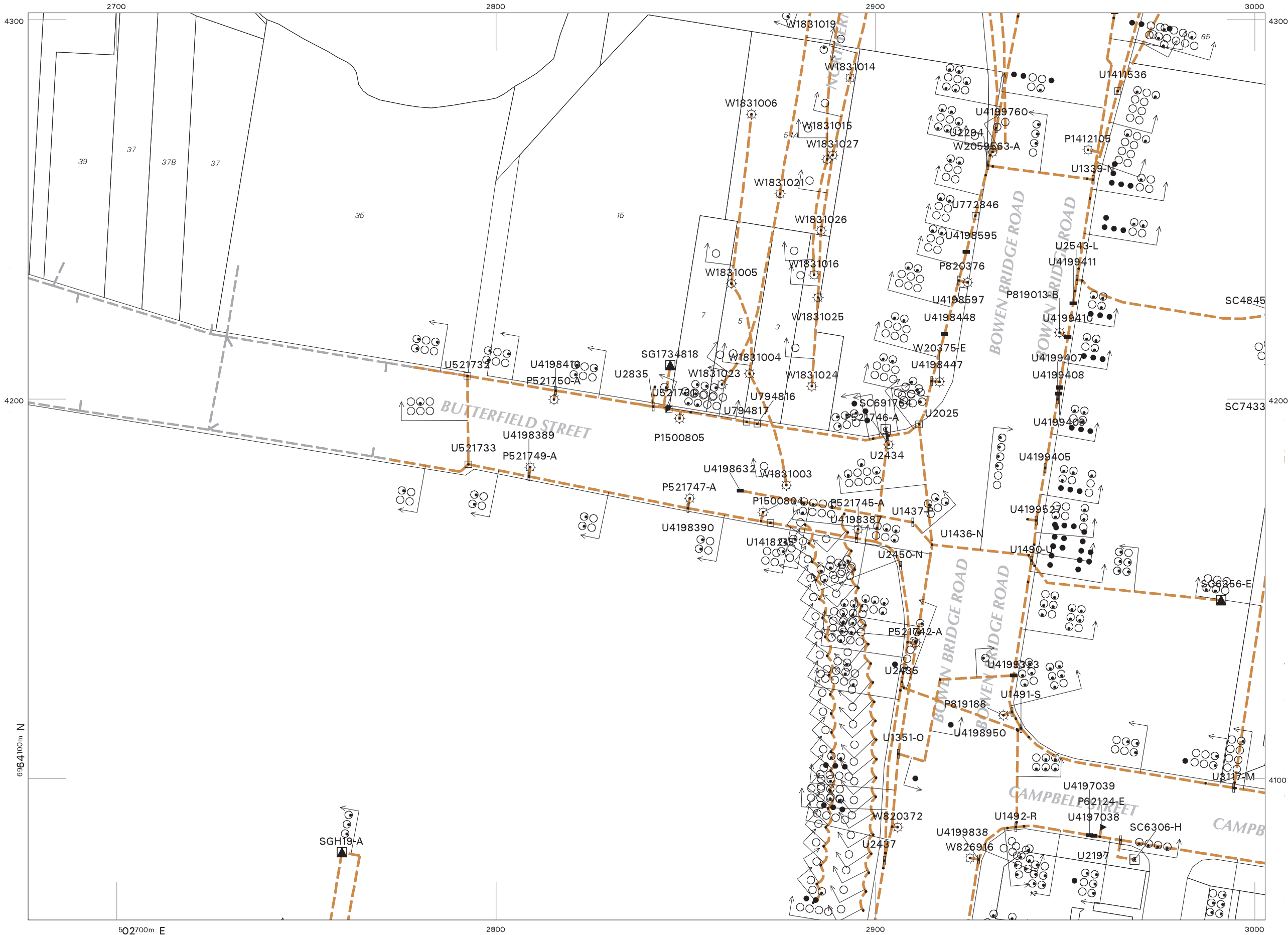
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|--|---------------------|--|------------------------------|
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| | Cubicle Transformer | | Cable Voltage 33kV or Higher |
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| | Metering Unit | | Conduit |
| | Link Pillar | | Multi-Section Duct |
| | Service Pillar | | Trench |
| | Junction Pillar | | Cable Tray |
| | Pit | | Tunnel |
| | Cable Joint | | |
| | Cable Termination | | |
| | Cable Marker | | |
| | Street Light Pole | | |
| | Earth | | |
| | Works Order Polygon | | |



INDEX TO SHEETS



LOCALITY DIAGRAM



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For Emergency Situations
Please call 13 19 62



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Requested By: DBYD

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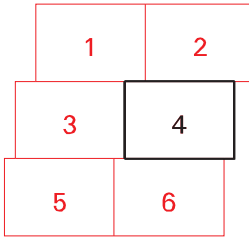


Enquiry No: 44487357
CAUTION 33kV/110kV/132kV
STRIP No: 4

- | | | | |
|--|---------------------|--|------------------------------|
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| | Cubicle Transformer | | Cable Voltage 33kV or Higher |
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| | Metering Unit | | Conduit |
| | Link Pillar | | Multi-Section Duct |
| | Service Pillar | | Trench |
| | Junction Pillar | | Cable Tray |
| | Pit | | Tunnel |
| | Cable Joint | | |
| | Cable Termination | | |
| | Cable Marker | | |
| | Street Light Pole | | |
| | Earth | | |
| | Works Order Polygon | | |



INDEX TO SHEETS



LOCALITY DIAGRAM



This output provides details of the ENERGEX electrical network. As variations may exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

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APPENDIX F

BBC PLANNING SCHEME POLICIES

STORMWATER CODE**Job Ref No.: 15041****Performance Outcomes and Acceptable Solution**

	AO3.4 Where on private land, all underground stormwater infrastructure is secured by a drainage easement.			
PO4 Development provides a stormwater management system which has sufficient capacity to safely convey run-off taking into account increased run-off from impervious surfaces and flooding in local catchments.	AO4.1 Development provides a stormwater conveyance system which is designed to safely convey flows in compliance with the standards in the Infrastructure design planning scheme policy . AO4.2 Development provides sufficient area to convey run-off which will comply with the standards in the Infrastructure design planning scheme policy .	✓	The design demonstrates that a drainage network will be provided that will comply with Council's Infrastructure design planning scheme policy which safely conveys runoff taking into account increased runoff and flooding in local catchments.	
PO5 Development designs stormwater channels, creek modification works, bridges, culverts and major drains to protect and enhance the value of the waterway corridor or drainage path for fauna movement.	AO5 Development ensures the design of stormwater channels, creek modifications or other infrastructure, permits terrestrial and aquatic fauna movement.	N/A		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

J:\ 2015\15041\REPORTS\DESIGNREPORTS\Appendix D

STORMWATER CODE***Performance Outcomes and Acceptable Solution*****Job Ref No.: 15041**

PO6 Development ensures that location and design of stormwater detention and water quality treatment: (a) minimises risk to people and property; (b) provides for safe access and maintenance; (c) minimises ecological impacts to creeks and waterways.	AO6.1 Development locates stormwater detention and water quality treatment: (a) outside of a waterway corridor; (b) offline to any catchment not contained within the development.	N/A		
PO7 Development is designed, including any car parking areas and channel works to: (a) reduce property damage; (b) provide safe access to the site during the defined flood event.	AO7.1 Development (including any ancillary structures and car parking areas) is located above minimum flood immunity levels in Table 9.4.9.3.B, Table 9.4.9.3.C, Table 9.4.9.3.D, Table 9.4.9.3.E and Table 9.4.9.3.F. <i>Note—Compliance with this acceptable outcome can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a site-based stormwater management plan).</i> AO7.2 Development including the road network provides a stormwater management system that provides safe pedestrian and	✓	The proposed development design provides flood immunity levels in accordance with the Infrastructure design planning scheme policy. A SBSMP has been prepared and demonstrates this	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

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STORMWATER CODE***Performance Outcomes and Acceptable Solution*****Job Ref No.: 15041**

	vehicle access in accordance with the standards in the Infrastructure design planning scheme policy .			
PO8 Development designs stormwater channels, creek modification works and the drainage network to protect and enhance the environmental values of the waterway corridor or drainage path.	AO8.1 Development ensures natural waterway corridors and drainage paths are retained. AO8.2 Development provides the required hydraulic conveyance of the drainage channel and floodway, while maximising its potential to maximise environmental benefits and minimise scour. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines . AO8.3 Development provides stormwater outlets into waterways, creeks, wetlands and overland flow paths with energy dissipation to minimise scour in compliance with the standards in the Infrastructure design planning scheme policy . AO8.4 Development ensures that the design of modifications to the existing design of new stormwater channels, creeks and major drains is in compliance with the standards in the Infrastructure design planning scheme policy .	N/A	The proposed development does not include any channel or creek modification works.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

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STORMWATER CODE**Job Ref No.: 15041****Performance Outcomes and Acceptable Solution**

PO9 Development is designed to manage run-off and peak flows by minimising large areas of impervious material and maximising opportunities for capture and re-use.	AO9 No acceptable outcome is prescribed.	A/S	Fraction impervious has not increased as a result of the proposed development	
PO10 Development ensures that there is sufficient site area to accommodate an effective stormwater management system. <i>Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.</i>	AO10 No acceptable outcome is prescribed.	✓	The proposed development ensures there is sufficient site area to accommodate an effective stormwater management system. This is demonstrated in the SBSMP.	
PO11 Development provides for the orderly development of stormwater infrastructure within a catchment, having regard to the: (a) existing capacity of stormwater infrastructure within and external to the site, and any planned stormwater infrastructure upgrades; (b) safe management of stormwater discharge from existing and future up-slope development;	AO11.1 Development with up-slope external catchment areas provides a drainage connection sized for ultimate catchment conditions that is directed to a lawful point of discharge. AO11.2 Development ensures that existing stormwater infrastructure that is undersized is upgraded in compliance with the Priority infrastructure	A/S	Stormwater will be discharged from the site in a very similar manner to existing conditions with no net increase in peak flows.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

J:\ 2015\15041\REPORTS\DESIGNREPORTS\Appendix D

STORMWATER CODE**Job Ref No.: 15041****Performance Outcomes and Acceptable Solution**

(c) implication for adjacent and down-slope development.	plan and the standards in the Infrastructure design planning scheme policy .			
PO12 Development provides stormwater infrastructure which: (a) remains fit for purpose for the life of the development and maintains full functionality in the design flood event; (b) can be safely accessed and maintained cost effectively; (c) ensures no structural damage to existing stormwater infrastructure.	AO12.1 The stormwater management system is designed in compliance with the Infrastructure design planning scheme policy . AO12.2 Development provides a clear area with a minimum of 2m radius from the centre of an existing manhole cover and with a minimum height clearance of 2.5m.	✓	Stormwater infrastructure and management is designed in compliance with the Infrastructure design planning scheme policy.	
PO13 Development ensures that all reasonable and practicable measures are taken to manage the impacts of erosion, turbidity and sedimentation, both within and external to the development site from construction activities, including vegetation clearing, earthworks, civil construction, installation of services, rehabilitation, revegetation and landscaping to protect: (a) the environmental values and water quality objectives of waters; (b) waterway hydrology; (c) the maintenance and serviceability of stormwater infrastructure.	AO13 No acceptable outcome is prescribed.	A/S	An erosion and sediment control plan will be produced within the detailed design phase of the project and will be in accordance with Appendix E, Table A (construction phase) in the State Planning Policy and Brisbane City Councils stormwater drainage section of the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

J:\ 2015\15041\REPORTS\DESIGNREPORTS\Appendix D

STORMWATER CODE**Job Ref No.: 15041****Performance Outcomes and Acceptable Solution**

<i>Note—The Infrastructure design planning scheme policy outlines the appropriate measures to be taken into account to achieve the performance outcome.</i>				
PO14 Development ensures that: (a) unnecessary disturbance to soil, waterways or drainage channels is avoided; (b) all soil surfaces remain effectively stabilised against erosion in the short and long term.	AO14 No acceptable outcome is prescribed	A/S	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. The ESCP shall be prepared during the Operational Works phase of the development.	
PO15 Development does not increase: (a) the concentration of total suspended solids or other contaminants in stormwater flows during site construction; (b) run-off which causes erosion either on site or off site.	AO15 No acceptable outcome is prescribed	A/S	A detailed Erosion Sediment Control Plan will be prepared in accordance with Brisbane City Council Guidelines. The ESCP shall be prepared during the Operational Works phase of the development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

J:\ 2015\15041\REPORTS\DESIGNREPORTS\Appendix D

Performance Outcomes and Acceptable Solution**Section B—Additional criteria which apply to high-risk development, being one or more of the following:**

(a) a material change of use for an urban purpose which involves greater than 2,500m² of land that:

(i) will result in an impervious area greater than 25% of the net developable area; or

(ii) will result in 6 or more dwellings.

(b) reconfiguring a lot for an urban purpose that involves greater than 2,500m² of land and will result in 6 or more lots;

(c) operational work for an urban purpose which involves disturbing greater than 2,500m² of land.

PO16 Development ensures that the entry and transport of contaminants into stormwater is avoided or minimised to protect receiving water environmental values. <i>Note—Prescribed water contaminants are defined in the Environmental Protection Act 1994.</i> <i>Note—Compliance with the performance outcome should be demonstrated by the submission of a site-based stormwater management plan for high-risk development only.</i>	AO16 Development provides a stormwater management system which is designed in compliance with the standards in the Infrastructure design planning scheme policy.	N/A	Not considered a high-risk development	
PO17 Development ensures that: (a) the discharge of wastewater to a waterway or external to the site is avoided; or (b) if the discharge cannot practicably be avoided, the development minimises wastewater discharge through re-use, recycling, recovery and	AO17 No acceptable outcome is prescribed.	N/A	Not considered a high-risk development	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this proposal

STORMWATER CODE**Job Ref No.: 15041*****Performance Outcomes and Acceptable Solution***

treatment. <i>Note—The preparation of a wastewater management plan can assist in demonstrating achievement of this performance outcome. Editor's note—This code does not deal with sewerage which is the subject of the Wastewater code.</i>				
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1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this proposal

Centilink, Bowen Hills

J:\ 2015\15041\REPORTS\DESIGNREPORTS\Appendix D

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO1 Development provides roads, pavement, edging and landscaping which: (a) are designed and constructed in accordance with the road hierarchy; (b) provide for safe travel for pedestrians, cyclists and vehicles; (c) provide access to properties for all modes; (d) provide utilities; (e) provide high levels of aesthetics and amenity, improved liveability and future growth; (f) provide for the amelioration of noise and other pollution; (g) provide a high-quality streetscape; (h) provide a low-maintenance asset with a minimal whole-of-life cost. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	AO1 Development provides roads and associated pavement, edging and landscaping which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	N/A	Development does not involve construction of a road	
PO2 Development provides road pavement surfaces which: (a) are well designed and constructed; (b) durable enough to carry the wheel loads of the intended types and numbers	AO2 Development provides road pavement surfaces which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme	N/A	Development does not involve construction of a road	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
of travelling and parked vehicles; (c) ensures the safe passage of vehicles, pedestrians and cyclists, the discharge of stormwater run-off and the preservation of all-weather access; (d) allows for reasonable travel comfort.	policy.			
PO3 Development provides a pavement edge which is designed and constructed to: (a) control vehicle movements by delineating the carriageway for all users; (b) provide for people with disabilities by allowing safe passage of wheelchairs and other mobility aids.	AO3 Development provides pavement edges which are designed and constructed in compliance with the road corridor design standards in the Infrastructure design planning scheme policy.	N/A	Development does not involve construction of a road.	
PO4 Development provides verges which are designed and constructed to: (a) provide safe access for pedestrians clear of obstructions and access areas for vehicles onto properties; (b) provide a sufficient area for public utility services; (c) be maintainable by the Council.	AO4 Development provides verges which are designed and constructed in compliance with the road corridor design and streetscape locality advice standards in the Infrastructure design planning scheme policy.	N/A	Existing verges are to remain unchanged.	
PO5 Development provides a lane or laneway identified in a neighbourhood plan which: (a) allows equitable access for all modes;	AO5 Development provides a lane or laneway identified in a neighbourhood plan which is embellished in compliance with the	N/A	Lane or Laneway not proposed for the development.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

Infrastructure Design Code

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
(b) is safe and secure; (c) has 24-hour access; (d) is a low-speed shared zone environment; (e) has a high-quality streetscape.	streetscape locality advice standards in the Infrastructure design planning scheme policy.			
PO6 Development of an existing premises provides at the frontage to the site, if not already provided, the following infrastructure to an appropriate urban standard: (a) an effective, high-quality paved roadway; (b) an effective, high-quality roadway kerb and channel; (c) safe, high-quality vehicle crossings over channels and verges; (d) safe, accessible, high-quality verges compatible and integrated with the surrounding environment; (e) safe vehicle access to the site that enables ingress and egress in a forward gear; (f) provision of and required alterations to public utilities; (g) effective drainage; (h) appropriate conduits to facilitate the provision of required street-lighting systems and traffic signals.	AO6 Development of an existing premises provides at the frontage of the site, if not already existing, the following infrastructure to the standard that would have applied if the development involved new premises as stated in the road corridor design standards in the Infrastructure design planning scheme policy: (a) concrete kerb and channel; (b) forming and grading to verges; (c) crossings over channels and verges; (d) a constructed bikeway; (e) a constructed verge or reconstruction of any damaged verge; (f) construction of the carriageway; (g) payment of costs for required alterations to public utility mains, services or installations; (h) construction of and required alterations to public utility mains, services or installations; (i) drainage works; (j) installation of electrical conduits.	✓	Any works required to ensure the frontage is to the appropriate standards will be in accordance with the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO7 Development provides both cycle and walking routes which: (a) are located, designed and constructed to their network classification (where applicable); (b) provide safe and attractive travel routes for pedestrians and cyclists for commuter and recreational purposes; (c) provide safe and comfortable access to properties for pedestrians and cyclists; (d) incorporate water sensitive urban design into stormwater drainage; (e) provide for utilities; (f) provide for a high level of aesthetics and amenity, improved liveability and future growth; (g) are a low-maintenance asset with a minimal whole-of-life cost; (h) minimise the clearing of significant native vegetation. Note—This can be demonstrated in an engineering report prepared and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.	AO7 Development provides cycle and walking routes which are located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.	✓	Walking routes will be located, designed and constructed in compliance with the road corridor design and off-road pathway design standards in the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO8 Development provides refuse and recycling collection, separation and storage facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.	AO8.1 Development provides refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy. AO8.2 Development ensures that refuse and recycling collection and storage location and design do not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development. Note—Refer to the Refuse planning scheme policy for further guidance.	✓	Development will provide refuse and recycling collection and storage facilities in accordance with the Refuse planning scheme policy and they will have no adverse impacts.	
PO9 Development ensures that: (a) land used for an urban purpose is serviced adequately with regard to water supply and waste disposal; (b) the water supply meets the stated standard of service for the intended use and fire-fighting purposes.	AO9.1 Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced. AO9.2 Development provides the lot with reticulated water supply and sewerage to a standard acceptable to the distributor–retailer.	✓	Development ensures that the reticulated water and sewerage distribution system for all services is in place before the first use is commenced. Connections will be provided as outline in Bornhorst and Wards Engineering Serviceability Report and Site Based Stormwater Management Plan. This will be in accordance with QUU standards.	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO10 Development provides public utilities and street lighting which are the best current or alternative technology and facilitate accessibility, easy maintenance, minimal whole-of-life costs, and minimal adverse environmental impacts.	AO10.1 Development provides public utilities and street lighting which are located and aligned to: (a) avoid significant native vegetation and areas identified within the Biodiversity areas overlay map; (b) minimise earthworks; (c) avoid crossing waterways, waterway corridors and wetlands or if a crossing is unavoidable, tunnel-boring techniques are used to minimise disturbance, and a disturbed area is reinstated and restored on completion of the work. Note—Guidance on the restoration of habitat is included in the Biodiversity areas planning scheme policy. AO10.2 Development provides compatible public utility services and street-lighting services which are co-located in common trenching for underground services. AO10.3 Development provides public utilities and street lighting which are designed and constructed in compliance with the public utilities standards in the Infrastructure design planning scheme policy.	✓	Development provides public utilities and street lighting which are the best current or alternative technology and facilitate accessibility, easy maintenance, minimal whole-of-life costs, and minimal adverse environmental impacts. These will be designed within the public utilities standards in the Infrastructure design planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO11 Development ensures that land used for urban purposes is serviced adequately with telecommunications and energy supply.	AO11 Development provides land with the following services to the standards of the approved supplier: (a) electricity; (b) telecommunications services; (c) gas service where practicable.	✓	The Development has sufficient telecommunications and energy infrastructure located around it and will be serviced adequately to ensure supply of these services. This will be achieved with Energex and Telstra's coordination and approval. See Bornhorst and Wards Engineering Serviceability Report and Site Based Stormwater Management Plan for more information.	
PO12 Development ensures that major public projects promote the provision of affordable, high-bandwidth telecommunications services throughout the city.	AO12 Development provides conduits which are provided in all major Council and government works projects to enable the future provision of fibre optic cabling, if: (a) the additional expense is unlikely to be prohibitive; or (b) further major work is unlikely or disruption would be a major concern, such as where there is a limited capacity road; or (c) there is a clear gap in the telecommunications network; or (d) there is a clear gap in the bandwidth available to the area. Editor's note—An accurate, digital 'as built' three-dimensional location plan is to be supplied for all infrastructure provided in a road.	N/A	This is not a major council project.	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO13 Development provides public art identified in a neighbourhood plan or park concept plan which: (a) is provided commensurate with the status and scale of the proposed development; (b) is sited and designed: (i) as an integrated part of the project design; (ii) as conceptually relevant to the context of the location; (iii) to reflect and respond to the cultural values of the community; (iv) to promote local character in a planned and informed manner.	AO13 Development provides public art identified in a neighbourhood plan or park concept plan which is sited and designed in compliance with the public art standards in the Infrastructure design planning scheme policy.	N/A		
PO14 Development provides signage of buildings and spaces which promote legibility to help users find their way.	AO14 Development provides public signage: (a) at public transport interchanges and stops, key destinations, public spaces, pedestrian linkages and at entries to centre developments; (b) which details the location of the key destinations, public spaces and pedestrian linkages in the vicinity, the services available within the development and where they are located. (Control of Advertisements Local Law).	N/A		

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO15 Development that provides community facilities which form part of the development is functional, safe, low maintenance, and fit for purpose.	AO15 Development that provides community facilities which form part of the development is designed in compliance with the community facilities standards in the Infrastructure design planning scheme policy.	✓	Community facilities which form part of the development will be designed in compliance with the community facilities standards in the Infrastructure design planning scheme policy.	
PO16 Development provides public toilets which: (a) are required as part of a community facility or park; (b) are located, designed and constructed to be: (i) safe; (ii) durable; (iii) resistant to vandalism; (iv) able to service expected demand; (v) fit for purpose.	AO16 Development that provides public toilets is designed and constructed in compliance with the public toilets standards in the Infrastructure design planning scheme policy.	N/A		
PO17 Development provides bridges, tunnels, elevated structures and water access structures that are designed and constructed using proven methods, materials and technology to provide for: (a) safe movement of intended users; (b) an attractive appearance appropriate to the general surroundings and any	AO17 Development that provides bridges, tunnels, elevated structures and water access structures is designed and constructed in compliance with the standards in the Infrastructure design planning scheme policy.	N/A		

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

INFRASTRUCTURE DESIGN CODE
Performance Criteria and Acceptable Solutions
Job Ref No.: 15041

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
adjacent structures; (c) functionality and easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) current and future services. Note—All bridges and elevated and associated elements must be designed and certified by a Registered Professional Engineer Queensland in accordance with the Infrastructure design planning scheme policy.				
PO18 Development provides culverts which are designed and constructed using proven methods, materials and technology to provide for: (a) safety; (b) an attractive appearance appropriate to the general surroundings; (c) functionality and easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) future widening; (g) current and future services; (h) minimal adverse impacts, such as increase in water levels or flow velocities, and significant change of flood patterns. Note—All culverts and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the	AO18 Development that provides culverts is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	N/A		

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

Infrastructure Design Code

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
applicable design standards.				
PO19 Development provides batters, retaining walls, and seawalls and river walls which are designed and constructed using proven methods, materials and technology to provide for: (a) safety; (b) an attractive appearance appropriate to the surrounding area; (c) easy maintenance; (d) minimal whole-of-life cost; (e) longevity; (f) minimal water seepage. Note—All retaining walls and associated elements are to be designed and certified by a Registered Professional Engineer Queensland in accordance with the applicable design standards.	AO19 Development that provides batters, retaining walls, seawalls and river walls is designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	✓	Any batters, retaining walls, seawalls and river walls will be designed and constructed in compliance with the structures standards in the Infrastructure design planning scheme policy.	
If for development with a gross floor area greater than 1,000m²				
PO20 Development ensures that construction is managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts. Note—The preparation of a construction management plan can assist in	AO20 Development ensures that during construction: (a) the ongoing use of adjoining and surrounding parks and public spaces, such as malls and outdoor dining, is not compromised; (b) adjoining and surrounding landscaping is protected from damage; (c) safe, legible, efficient and sufficient	✓	Construction will be managed so that use of public spaces and movement on pedestrian, cyclist and other traffic routes is not unreasonably disrupted and existing landscaping is adequately protected from short- and long-term impacts.	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
demonstrating achievement of this performance outcome. Note—The Transport, access, parking and servicing planning scheme policy provides advice on the management of vehicle parking and deliveries during construction.	pedestrian, cyclist and vehicular accessibility and connectivity to the wider network are maintained.			
PO21 Development ensures that construction and demolition activities are guided by measures that prevent or minimise adverse impacts including sleep disturbance at a sensitive use, due to noise and dust, including dust from construction vehicles entering and leaving the site. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO21.1 Development ensures that demolition and construction: (a) only occur between 6:30am and 6:30pm Monday to Saturday, excluding public holidays; (b) do not occur over periods greater than 6 months. AO21.2 Development including construction and demolition does not release dust emissions beyond the boundary of the site. AO21.3 Development construction and demolition does not involve asbestos-containing materials.	✓	Release of dust emissions beyond the boundary of the site will not occur during demolition and construction. These activities will only take place between 6:30am and 6:30pm Monday to Saturday, excluding public holidays and will not occur over periods greater than 6 months.	
PO22	AO22	✓	Development ensures that the nature and scale of	

1. Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
Development ensures that: (a) construction and demolition do not result in damage to surrounding property as a result of vibration; (b) vibration levels achieve the vibration criteria in Table 9.4.4.3.B, Table 9.4.4.3.C, Table 9.4.4.3.D and Table 9.4.4.3.E. Note—A vibration impact assessment report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	Development ensures that the nature and scale of construction and demolition do not generate noticeable levels of vibration.		construction and demolition do not generate noticeable levels of vibration in accordance to the Brisbane City Councils vibration criteria.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
PO1 Development for filling or excavation minimises visual impacts from retaining walls and earthworks.	AO1 Development ensures that the total height of any cut and fill, whether or not retained, does not exceed: a) 2.5m in a zone in the Industry zones category; b) 1m in all other zones, or if adjoining a sensitive zone.	✓	All earthworks and retaining walls that are proposed will not cause visual impacts and will not impact adversely on the stability of the land.	
PO2 Development of a retaining wall proposed as a result of filling or excavation: a) Is designed and constructed to be fit for purpose; b) Does not impact adversely on significant vegetation; c) Is capable of easy maintenance Editor's note—A retaining wall also needs to comply with the Building Regulation and embankment gradients will need to comply with the Building Regulation. Note—Guidance on the protection of	AO2.1 Development of a retaining structure, including footings, surface drainage and subsoil drainage: a) Is wholly contained within the site; b) If the total height to be retained is greater than 1m, then: 1) The retaining wall at the property boundary is not greater than 1m above the ground level; 2) all further terracing from the 1m high boundary retaining	✓	Retaining walls will be designed in accordance with the structures standards in the Infrastructure Design Planning Scheme Policy.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

J:\2015\15041\REPORTS\DESIGNREPORTS\AppendixE\

Performance Criteria and Acceptable Solutions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
native vegetation is included in the Biodiversity areas planning scheme policy.	wall is 1 vertical unit:1 horizontal unit; 3) the distance between each successive retaining wall (back of lower wall to face of higher wall) is no less than 1m horizontally to incorporate planting areas. AO2.2 Development of a retaining wall over 1m in height protects significant vegetation on the site and on adjoining land and is designed and constructed in accordance with the structures standards in the Infrastructure design planning scheme policy and certified by a Registered Professional Engineer Queensland. AO2.3 Development provides a retaining wall finish that presents to adjoining land that is maintenance free if the setback is less than 750mm from the boundary.			

Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not Applicable to this Proposal

J:\2015\15041\REPORTS\DESIGNREPORTS\AppendixE\

Performance Criteria and Acceptable Solutions

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
	AO2.4 Development for filling only uses clean fill that does not include any construction rubble or debris.			
PO3 Development ensures that a rock anchor is designed and constructed to be fit for purpose.	AO3 Development ensures that a rock anchor: a) is constructed in accordance with the standards in the Infrastructure design planning scheme policy; b) where it extends beyond the property boundary, is supported by a letter of consent from the adjoining land and building owners.	✓	Various options for shoring will be considered in the detailed design phase of the project. If rock anchors are proposed to be used, this will be undertaken in accordance with Brisbane City Plan 2014.	
PO4 Development protects all services and public utilities.	AO4 Development protects services and public utilities and ensures that any alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	✓	Development will protect services and public utilities and will ensure that the alteration or relocation of services or public utilities meets the standard design specifications of the responsible service authorities.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

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FILLING AND EXCAVATION CODE**Performance Criteria and Acceptable Solutions****Job Ref No.: 15041**

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
PO5 Development provides surface and sub-surface drainage to prevent water seepage, concentration of run-off or ponding of stormwater on adjacent land.	AO5 Development ensures all flows and subsoil drainage are directed to a lawful point of discharge of a surface water diversion drain, including to the top or toe of a retaining wall in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	All flow and subsoil drainage will be directed towards Enoggera Creek in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	
PO6 Development ensures that the design and construction of all open drainage works is undertaken in accordance with natural channel design principles, being the development of a stormwater conveyance system for major flows, by using a vegetated open channel or drain that approximates the features and functions of a natural waterway to enhance or improve riparian values of those stormwater conveyance systems. Editor's note—Guidance on natural channel design principles can be found in the Council's publication Natural channel design guidelines.	AO6 No acceptable outcome is prescribed.	N/A	Open channel not proposed for the site	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

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FILLING AND EXCAVATION CODE
Performance Criteria and Acceptable Solutions
Job Ref No.: 15041

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
PO7 Development for filling or excavation: a) does not degrade water quality or adversely affect environmental values in receiving waters; b) ensures site sediment and erosion control standards are best practice.	PO7.1 Development for filling or excavation provides water quality treatment that complies with the stormwater drainage section of the Infrastructure design planning scheme policy. PO7.2 Development provides erosion and sediment control standards that are in accordance with the stormwater drainage section of the Infrastructure design planning scheme policy.	✓	An erosion and sediment control plan will be produced within the detailed design phase of the project and will be in accordance with Appendix E, Table A (construction phase) in the State Planning Policy and Brisbane City Councils stormwater drainage section of the Infrastructure design planning scheme policy.	
PO8 Development for filling or excavation is conducted such that adverse impacts at a sensitive use due to noise and dust are prevented or minimised. Note—A noise and dust impact management plan prepared in accordance with the Management plans planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO8.1 Development ensures that no dust emissions extend beyond the boundary of the site, including dust from construction vehicles entering and leaving the site. AO8.2 Development for filling or excavation activity only occurs between the hours of 6:30am and 6:30pm Monday to Saturday, excluding public holidays.	✓	Excavation is conducted such that adverse impacts due to noise and dust are minimised. Excavation activity will only occur between the hours of 6:30am and 6:30pm Monday to Saturday.	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

J:\2015\15041\REPORTS\DESIGNREPORTS\AppendixE\

FILLING AND EXCAVATION CODE
Performance Criteria and Acceptable Solutions
Job Ref No.: 15041

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
PO9 Development ensures that vibration generated by the filling or excavation operation does not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G. Note—A noise management report prepared in accordance with the Noise impact assessment planning scheme policy can assist in demonstrating achievement of this performance outcome.	AO9 Development involving filling or excavation does not cause a ground-borne vibration beyond the boundary of the site.	✓	Vibration generated by excavation operation does not exceed the vibration criteria in Table 9.4.3.3.D, Table 9.4.3.3.E, Table 9.4.3.3.F and Table 9.4.3.3.G.	
PO10 Development ensures that heavy trucks hauling material to and from the site do not affect the amenity of established	AO10 Development ensures that heavy trucks hauling material to and from the site: a) occur for a maximum of 3 weeks;	A/S	Heavy trucks hauling material to and from the site will not affect the amenity of established areas and will only use Major Roads. The time frame for	

Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not Applicable to this Proposal

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FILLING AND EXCAVATION CODE
Performance Criteria and Acceptable Solutions
Job Ref No.: 15041

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
areas and limits environmental nuisance impact on adjacent land.	b) use a major road to access the site; c) only use a minor road for the shortest-most-direct route that has the least amount of environmental nuisance if there is no major road alternative.		hauling material to and from site will be minimised as much as practical.	
PO11 Development for filling or excavation protects the environment and community health and wellbeing from exposure to contaminated land and contaminated material.	AO11 Development does not involve: a) excavation on land previously occupied by a notifiable activity or on land listed on the Environmental Management Register or the Contaminated Land Register; b) filling with material containing a contaminant.		The relevant procedures and precautions will be taken when dealing with contaminated material. If Acid Sulphate Soils are found onsite an Acid Sulfate Management Plan will be developed by a geotechnical engineer in the detailed design phase of the project	
PO12 Development provides for: a) landscaping for water conservation purposes; b) water sensitive urban design measures which are employed within the landscape design to maximise stormwater use and to reduce any adverse impacts	AO12.1 Development provides landscaping which is designed using the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.2 Development ensures that the design and requirements for irrigation are in	✓	Landscaping will be designed using the standards in the Landscape design guidelines for water conservation planning scheme policy.	

Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not Applicable to this Proposal

J:\2015\15041\REPORTS\DESIGNREPORTS\AppendixE\

FILLING AND EXCAVATION CODE***Performance Criteria and Acceptable Solutions*****Job Ref No.: 15041**

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTIONS ¹	COMMENTS	COUNCIL USE ONLY
c) on the landscape; stormwater harvesting to be maximised and any adverse impacts of stormwater minimised.	compliance with the standards in the Landscape design guidelines for water conservation planning scheme policy. AO12.3 Development provides areas of pavement, turf and mulched garden beds which are drained. Note—This may be achieved through the provision and/or treatment of swales, spoon drains, field gullies, sub-surface drainage and stormwater connections.			

Solution: ✓ = Acceptable Solution
 A/S = Alternative Solution
 N/A = Not Applicable to this Proposal

J:\2015\15041\REPORTS\DESIGNREPORTS\AppendixE\

153 Campbell Street, Bowen Hills

POTENTIAL AND ACTUAL ACID SULPHATE SOIL OVERLAY CODE
Performance Criteria and Acceptable Solutions

Job Ref No.: 15041

PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
PO1 Development protects the environmental values and ecological health of receiving waters and does not subject assets to accelerated corrosion.	AO1 Development ensures that: a) no potential or actual acid sulfate soils are disturbed; or - Note—This can be demonstrated through the submission of an acid sulfate soil investigation report with reference to the Potential and actual acid sulfate soils planning scheme policy b) the disturbance impacts in an area that hosts potential acid sulfate soils are appropriately managed, if less than 500m³ of soil is disturbed and the watertable is not affected; or - Note—This can be demonstrated through the submission of an acid sulfate soil investigation report and a preliminary acid sulfate soil management plan, with reference to the Potential and actual acid sulfate soils planning scheme policy. c) impacts are appropriately managed if 500m³ or more of	✓	The development is within the Potential and Actual Acid Sulfate Soil Overlay and will possibly disturb more than 500m ³ of soil. An Acid Sulfate Investigation and Management Plan may be developed by a geotechnical engineer in the detailed design phase of the project. If this is required it will be in accordance with the Potential and actual acid sulfate soils planning scheme policy.	

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

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PERFORMANCE CRITERIA	ACCEPTABLE SOLUTIONS	SOLUTION ¹	COMMENTS	COUNCIL USE ONLY
	soil is disturbed or the watertable in an area that hosts potential or actual acid sulfate soils is affected. Note—This can be demonstrated through the submission of an acid sulfate soil investigation report and a full acid sulfate soil management plan, with reference to the Potential and actual acid sulfate soils planning scheme policy using levels of testing commensurate with the level of risk. If the investigation demonstrates that an acid sulfate soil management plan is not required, only an investigation report is required.			

1. Solution: ✓ = Acceptable Solution
A/S = Alternative Solution
N/A = Not applicable to this Proposal

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