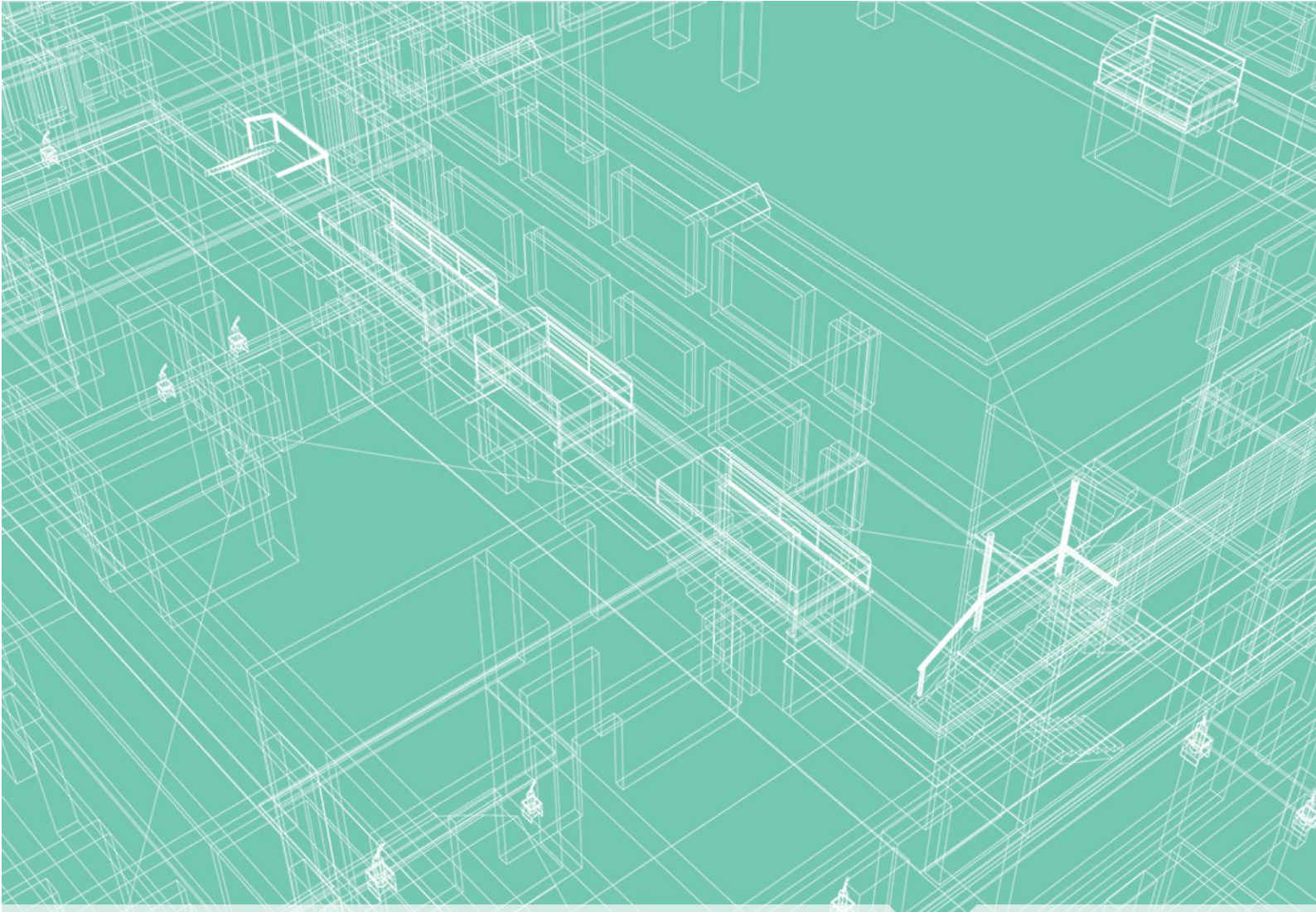

STORMWATER MANAGEMENT REPORT

WEE HUR, 104 – 116 REGENT STREET

REDFERN, NSW, 2016

JHA

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DOCUMENT CONTROL SHEET

Project Number	210118
Project Name	Wee Hur, 104 - 1116 Regent Street, Redfern, NSW, 2016
Description	Stormwater Management Report
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Prepared By

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Authorised	

Revision History

Issued To	Revision and Date								
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	DATE	15/11/21							
	REV	P2							
	DATE	3/12/21							
	REV								
	DATE								

CONTENTS

1 INTRODUCTION

JHA has been engaged by The Trust Company (Australia) Limited ATF Wee Hur Regent Trust to provide a stormwater management report. This stormwater management report with attached stormwater concept plans forms part of the submission for the Development Application.

This report will be assessed by the NSW Department of Planning, Industry and Environment (DPIE). The proposed development is classified as State Significant Development as it has a project value of more than $10million. This stormwater management report addresses the site stormwater issues with reference to the following documents:

1) City of Sydney Council – Sydney Development Control plan 2012 and City of Sydney's "Stormwater Drainage Manual" (2017)
2) Sydney Water's On-Site Detention Policies.
3) City of Sydney's WSUD Technical Guidelines (Oct 2014) and
4) Australia Rainfall and Runoff 2019, (ARR 2019).

This report shall address Item 15 of the SEARs and shall include and Integrated Water Management Plan that:

- is prepared by a suitably qualified person in consultation with Council and any other relevant drainage authority
- assesses any stormwater, drainage, erosion and sedimentation impacts associated with the proposal
- assesses the water quality impacts and any downstream impacts for both surface and groundwater on any water courses, estuaries and marine areas
- details the proposed drainage design for the site including on-site detention facilities, water quality measures and the nominated discharge point
- demonstrates compliance against any relevant provisions of the Sydney Drinking Water Catchment SEPP with council or drainage authority requirements and avoids adverse impacts on any downstream properties
- where drainage infrastructure works are required that would be handed over to council, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with Council and comply with council's relevant standards

As the site does not fall within the bounds of the Sydney Drinking Water Catchment and therefore does not require compliance with the Sydney Water Drinking Catchment SEPP.

Due to the scope of works, it is not anticipated that drainage infrastructure works will be required beyond the point of connection to council's system and as such, no drainage infrastructure plans have been provide at this stage.

An erosion and sediment control plan has been designed in accordance with principles outlined in the "blue book" Managing Urban Stormwater - Soils and Construction by Landcom (2004). During the construction, certain activities such as earthwork and demolition will increase the pollution to the stormwater system and generally the environment. The blue book helps all those involved in the construction industry to comply with appropriate stormwater quality outcomes. These outcomes have been established by various consent authorities, including the Department of Environment and Conservation (DEC) and local government.

This report has been reviewed by an experienced Chartered Professional Civil Engineer from JHA registered with NPER.

2 BACKGROUND

2.1 SITE DESCRIPTION

The proposed development is the construction of an 18 storey mixed-use building accommodating ground floor retail premises and 411 bed student housing accommodation with indoor and outdoor communal spaces, on-site bicycle parking and ancillary facilities.

located at 104 - 116 Regent Street, Redfern, NSW, 2016. The site is identified as Lot 10 DP 1026349, with a total area of 1366.2 m2 (refer to the attached Survey in Appendix A).

The existing site consists of an abandoned service station and a 2 storey mixed-use commercial building of brick construction along the northern boundary. The site is fully paved/built upon and impermeable.

The adjacent site to the north of this development fronting Regent St currently consists of a row of 2 to 4 storey terraces of brick construction, however, redevelopment of this site has been proposed to construct new student accommodation. The adjacent site to the west fronting Gibbons Street is currently being redeveloped to provide student accommodation. Further to the west of the site across Gibbons Street is Gibbons Street Reserve.

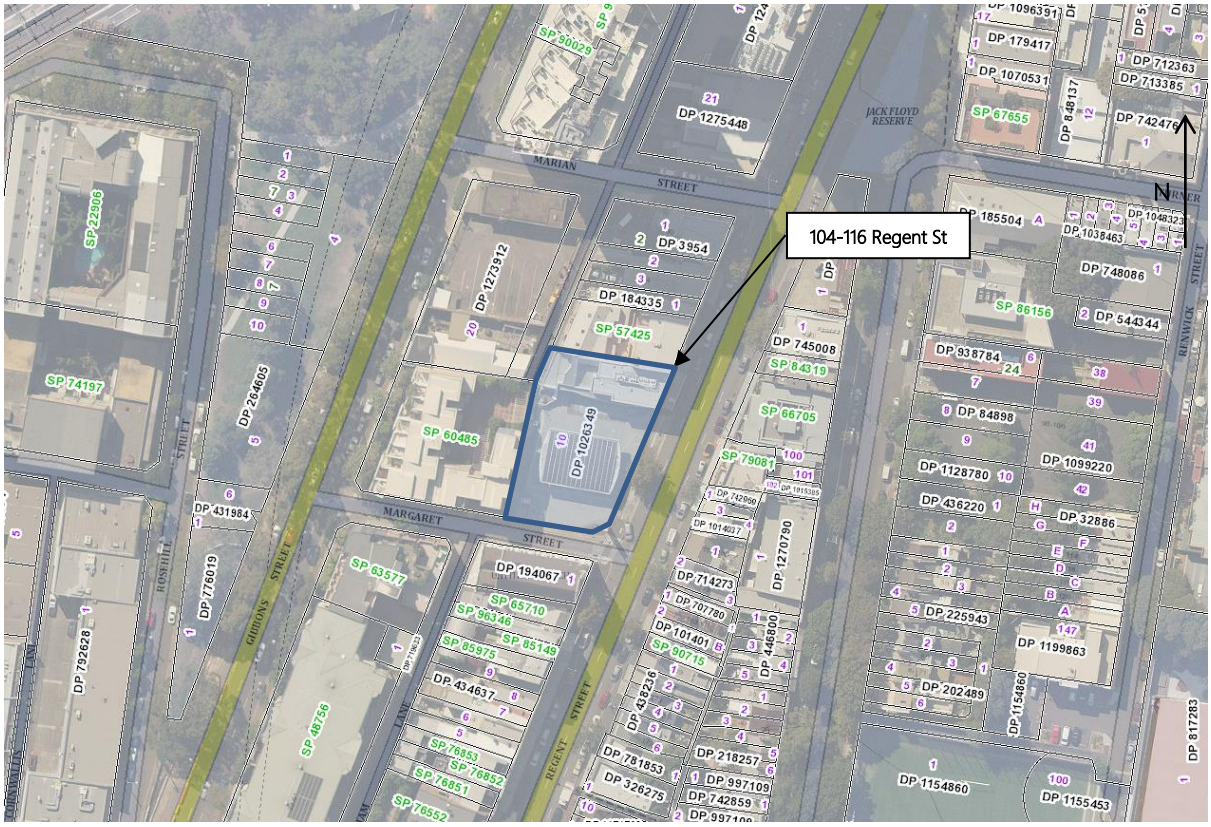


Figure 1 – Site Locality Plan

The site generally falls from north to south with a max ground level of RL25.30 m AHD at the northern boundary adjacent Regent Street to RL23.46m AHD at the boundary of Margaret Street.

It has been determined during surveying works for the adjacent developments that a 300mm diameter council stormwater line runs parallel to the western boundary. In addition, a Sydney Water sewer also intersects the site. As part of the neighbouring development both the stormwater and sewer main are in the process of being approved so that they are diverted/ realigned to run parallel to the eastern boundary but within the 13-23 Gibbons Street site.

2.2 REFERENCE DOCUMENTS

The following documents have been reviewed to assist with the report:

- Survey by LTS Lockley Registered Surveyors (Ref: 50670 001 DT, dated 23 April 2019) (Refer to Appendix A)
- Survey of Council Assets by Richard Crookes Constructions Pty. Ltd. (Refer to Appendix B)
- Architectural drawings by Antoniades Architects (Refer to Appendix C)
- Landscape architect drawings by RPS (Refer to Appendix D)
- On-site Detention and Permissible Site Discharge advice by Sydney Water Corporation (Appendix E)
- Geotechnical Report by Douglas and Partners (Appendix F)
- Stormwater Plans by JHA Consulting Engineers (Appendix G)

3 STORMWATER DESIGN

3.1 OVERVIEW

The proposed stormwater management system is to serve the proposed new development at 104-116 Regent St only in its entirety.

3.1.1 REVIEW OF EXISTING STORMWATER ASSETS

The existing stormwater assets in Margaret Street have been determined as per the site survey provided by LTS Lockley (Appendix A) and additional below-ground survey and CCTV footage has been provided by Richard Crookes Constructions which confirm the depths and state of the repair of these assets.

The proposed point of connection for the site stormwater drainage is the existing kerb inlet pit on the North side Margaret Street, at the corner of Margaret Street and Regent Street as shown in Figure 2 below.

Figure 2 – Kerb Inlet Pit Margaret Street

The kerb inlet pit lintel level as per the survey is RL 23.360. The base of the pit as per the below ground survey as shown in Figure 3 below was determined to be RL 21.830 at the invert level of the downstream pipe.

The downstream pipe was determined to be 450mm diameter concrete pipe, running below Margaret Street and connecting directly to a 450mm diameter concrete pipe serving the south side of Margaret Street.

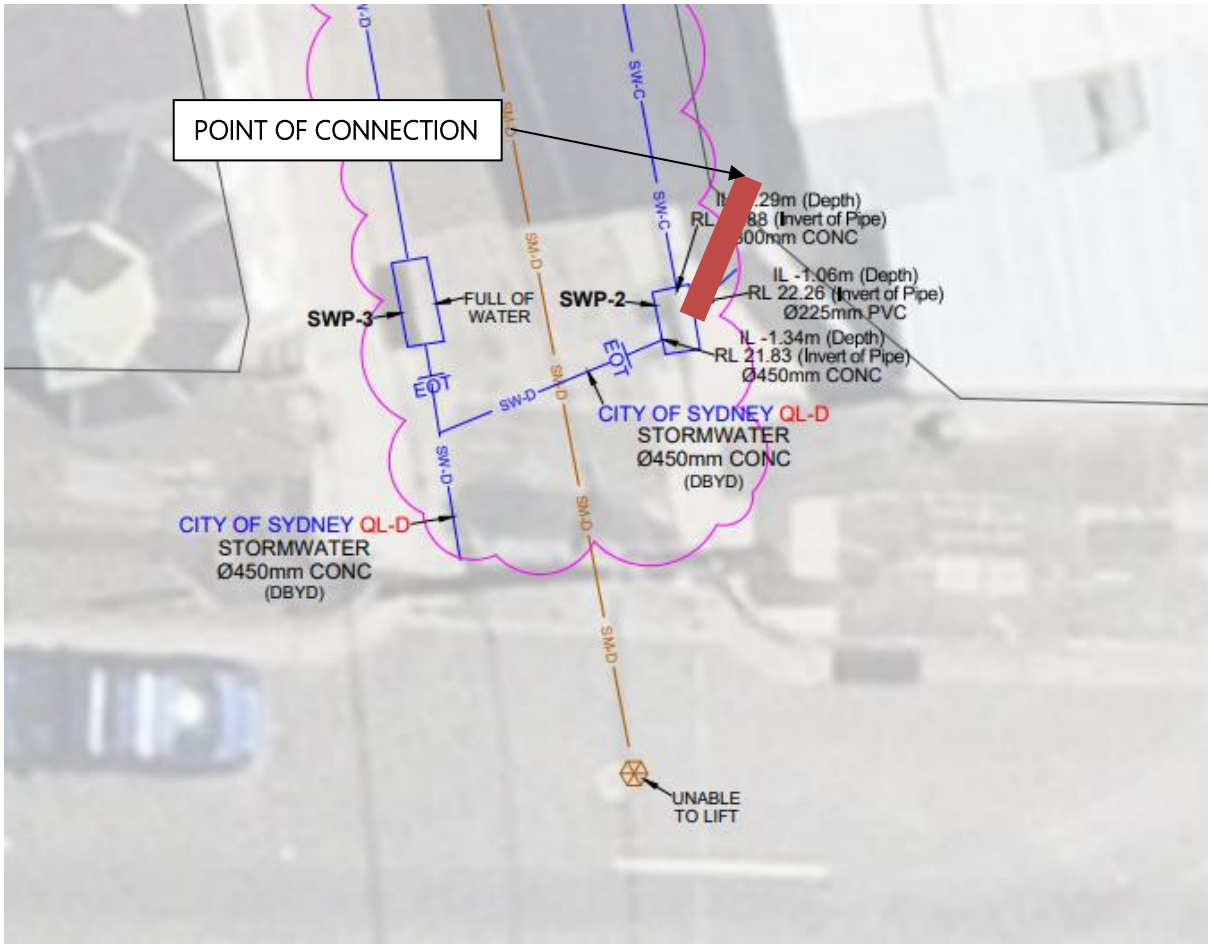


Figure 3 – Extract from Survey by Richard Crookes Constructions Pty Ltd

3.1.2 EXISTING CATCHMENT ANALYSIS

As discussed in Section 2.1, the existing site is fully built upon. Refer to figure 4 for the existing catchment breakdown.

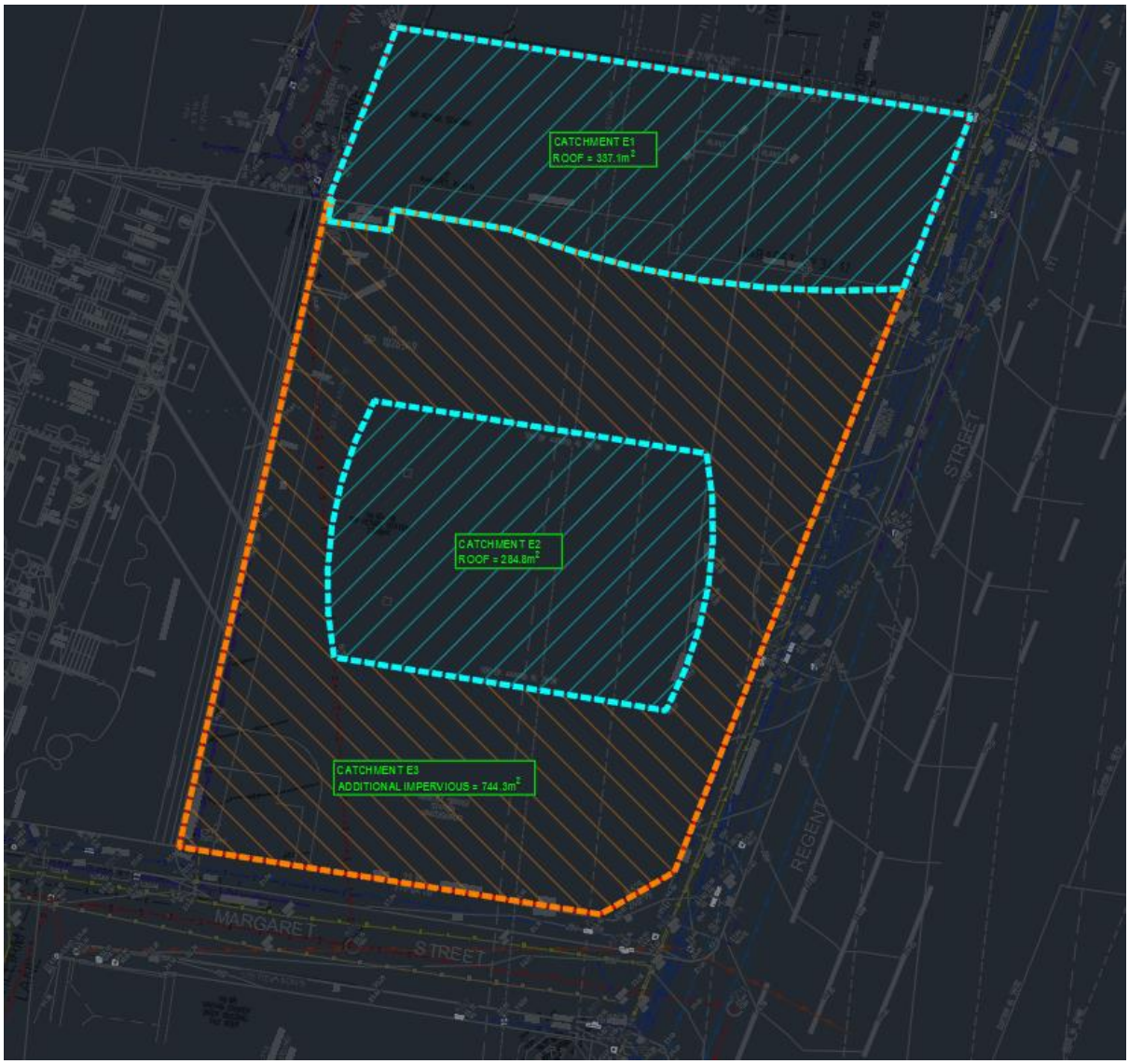


Figure 4 – Existing Catchment Plan

Table 1 – Existing Catchment Breakdown

Catchment Ref	Impervious Area (m^2) (% of catchment)	Pervious Area (m^2) (% of catchment)	Total Area (m^2)
E1	337.1 (100%)	0 (0%)	337.1
E2	284.8 (100%)	0 (0%)	284.8
E3	744.3 (100%)	0 (0%)	744.3
Total	1366.2	0	1366.2

3.1.3 PROPOSED CATCHMENT ANALYSIS

The proposed development is also to be fully built upon, as per the existing conditions. Refer to Figure 5 for the proposed catchment breakdown.

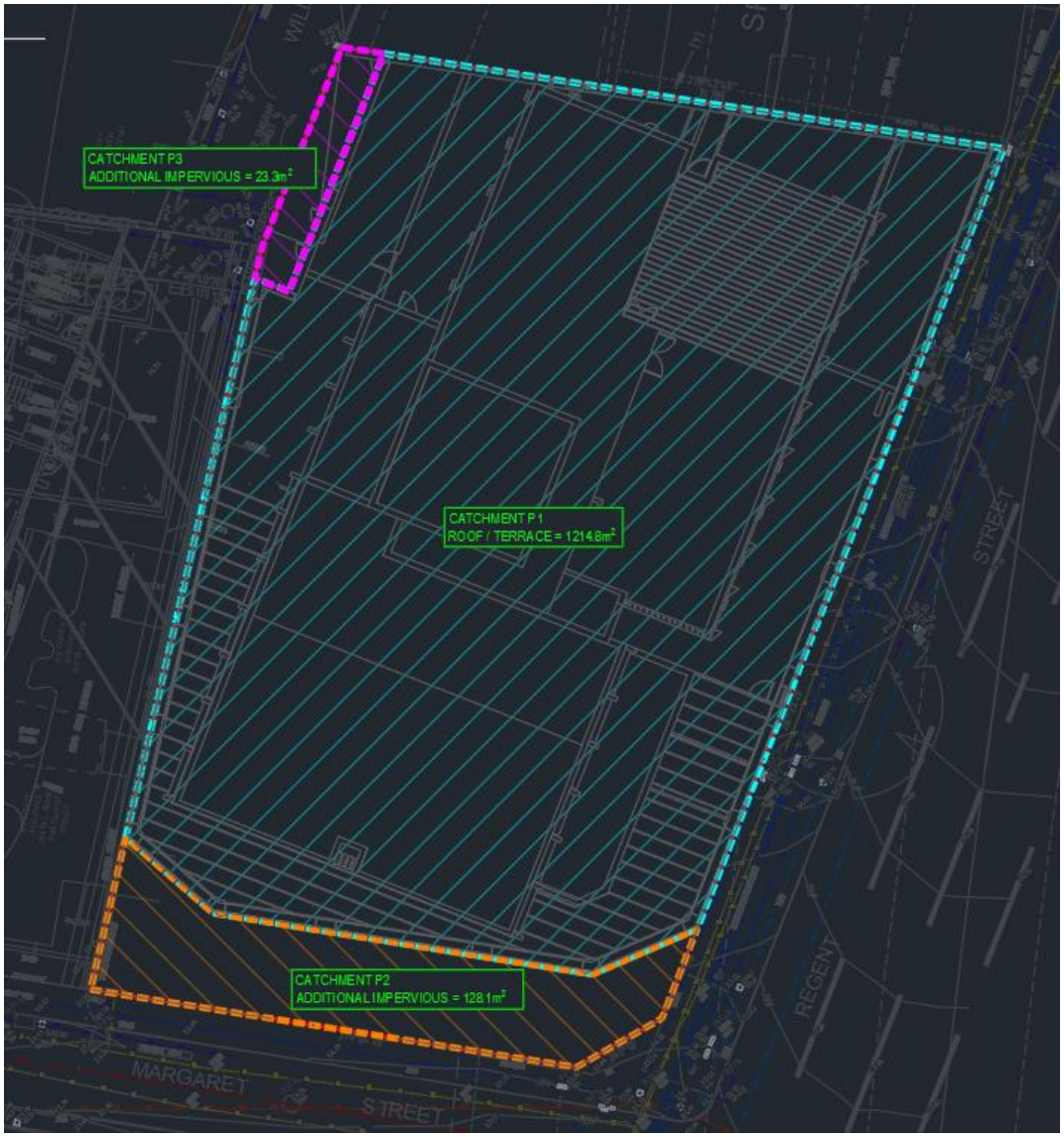


Figure 5 – Proposed Catchment Plan

Table 2 – Proposed Catchment Breakdown

Catchment Ref	Impervious Area (m^2) (% of catchment)	Pervious Area (m^2) (% of catchment)	Total Area (m^2)
1	1214.8 (100%)	0 (0%)	1214.8
2	128.1 (100%)	0 (0%)	128.1
3	23.3 (100%)	0 (0%)	23.3
Total	1366.2	0	1366.2

3.2 PROPOSED ON-SITE DETENTION AND SITE DISCHARGE REQUIREMENTS

Sydney Water Corporation has calculated the required Site Storage Requirement at $22m^3$ and Permissible Site Discharge at 50 litres/sec (Appendix E). The on-site detention tank (OSD) is situated at the Western extent of the proposed building footprint. The OSD tank layout and long-sections are shown in drawing C400 of the stormwater plans (Appendix G). The shape of the OSD tank is trapezoidal with an internal area of $25.1m^2$ and water depth of 0.95m. The orifice is calculated to be 165mm in diameter, which allows stormwater discharge at a maximum rate of 43L/s. The centre of the orifice is at RL 22.950m and top-water level is at RL 23.950m. The outlet PVC-U pipe is 300mm diameter with invert level IL 22.800. The discharge from the OSD will be conveyed to the existing kerb inlet pit at Margaret Street as shown in drawing C103, which has an invert level of IL 21.830m AHD.

In the event of blockage of the orifice, the tank will overflow via a high level 300mm diameter PVC-U pipe outlet towards Pit A-2. In the event of downstream blockage, the stormwater Pit A-2 as shown in the stormwater plans in Appendix G will act as a surcharge point to allow discharge from the OSD tank to surcharge overland to Margaret Street. In the event of a blockage to the orifice and high overflow within the tank, an emergency surcharge grate is proposed outside the building footprint to allow for overflow from the on-site detention tank to discharge to William Lane.

The proposed development has been broken down into zoning/surface types to represent the different pollutants loads expected. Refer to Figure 6.

The on-site detention system and below ground pipe drainage system has been modelled using the DRAINS software. The rainfall data used was taken from the Bureau of Meteorology website Design Rainfall data System (2016).

3.3 PROPOSED WATER SENSITIVE URBAN DESIGN

3.3.1 WATER QUALITY OBJECTIVES

In accordance with the CoSC requirements, a Water Sensitive Urban Design (WSUD) has been undertaken. The water quality treatment shall meet the water quality reduction targets outlined in Table 2.

Table 2 -City of Sydney Water Quality Targets

Pollutant	Reduction Target
Gross Pollutants (GP)	Reduce the baseline annual pollutant load for litter and vegetation larger than 5mm by 90%
Total Suspended Solids (TSS)	Reduce the baseline annual pollutant load for total suspended solids by 85%
Total Phosphorus (TP)	Reduce the baseline annual pollutant load for total phosphorous by 60%
Total Nitrogen (TN)	Reduce the baseline annual pollutant load for total nitrogen by 45%

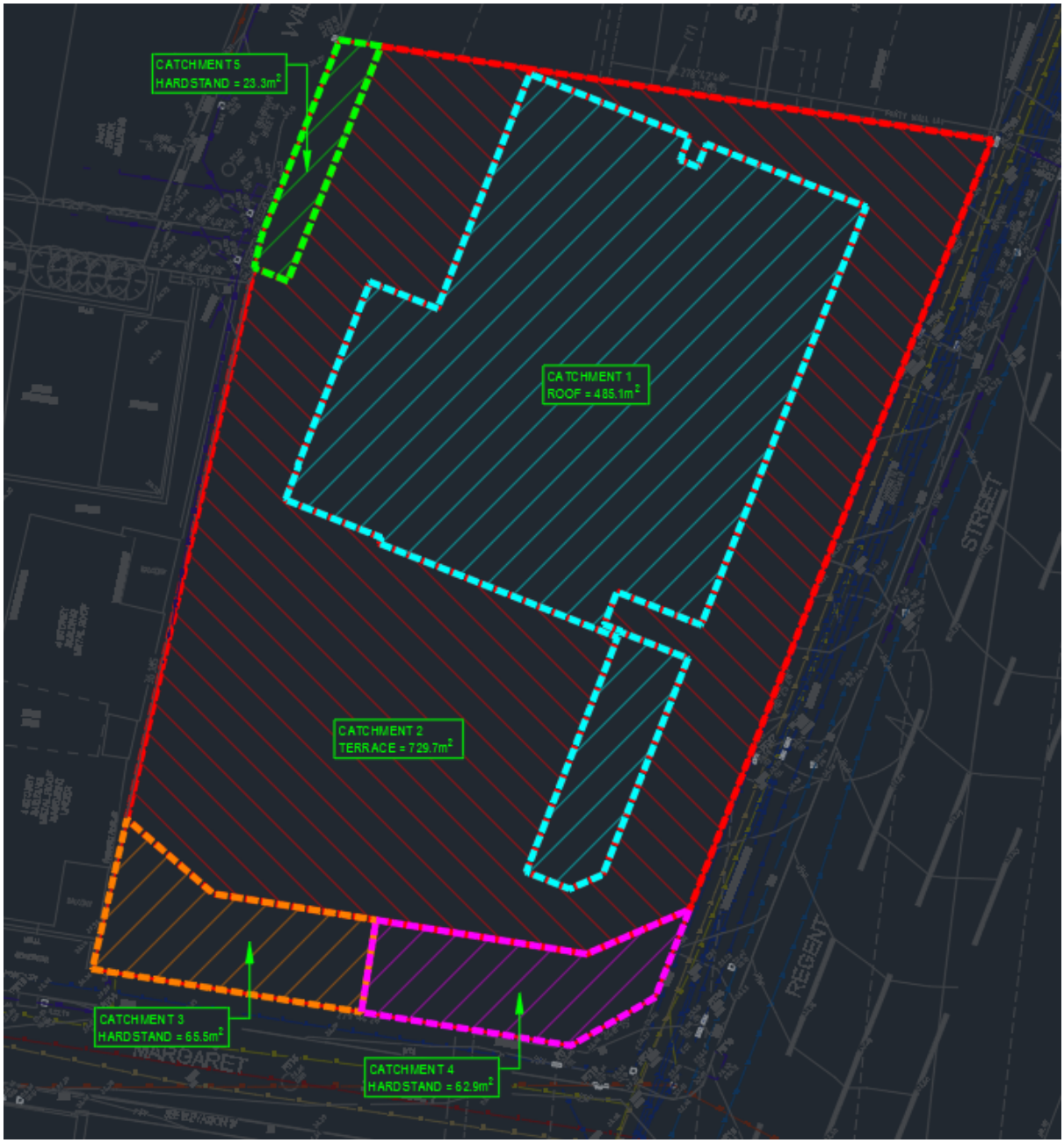


Figure 6 – Water Quality Catchment Breakdown

Using Modelling Urban Stormwater Improvement Conceptualisation (MUSIC) software, water quality improvement measures have been modelled as shown in the MUSIC Flowchart in Figure 7.

3.3.2 PROPOSED STORMWATER TREATMENT PLAN

A stormwater treatment train has been proposed consisting of:

- 8 No 690 Psorb Stormfilter cartridges by Ocean Protect to be located within the on-site detention tank
- 3 No Oceanguard filter baskets by Ocean Protect located within all external surface inlet pits.

3.3.3 RESULTS

Using Modelling Urban Stormwater Improvement Conceptualisation (MUSIC) software, water quality improvement measures have been modelled as shown in the MUSIC Flowchart in Figure 7.

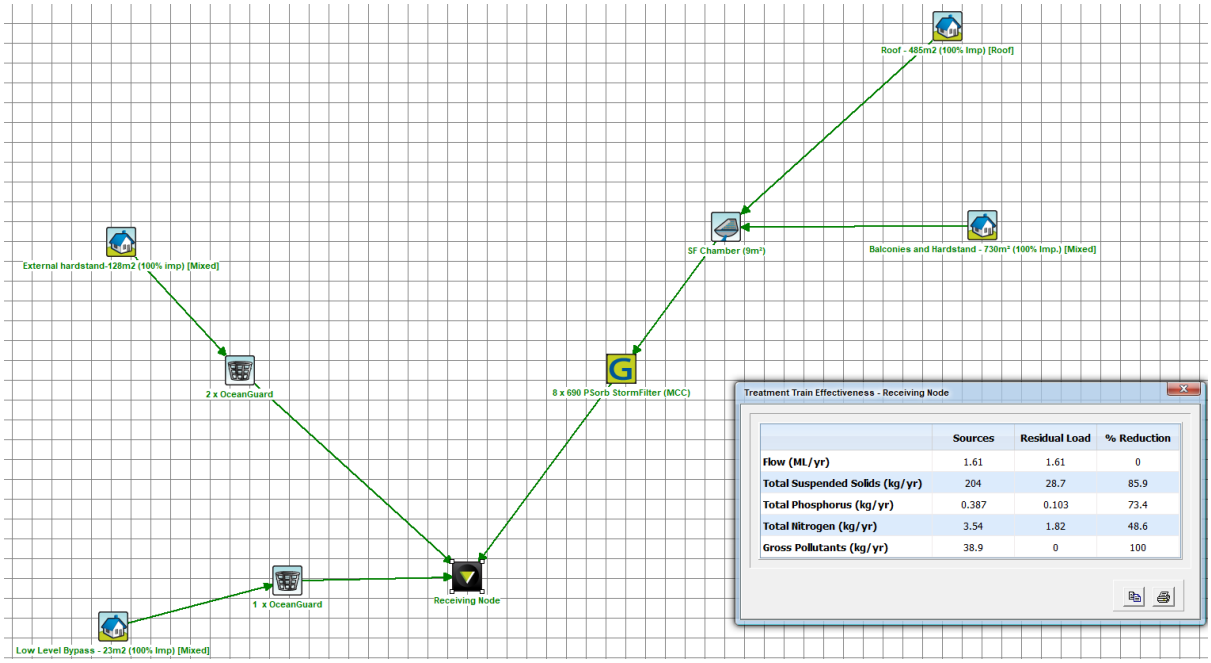


Figure 7 – Water Quality Treatment Train and Results

The water quality treatment results, as determined by MUSIC analysis:

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.61	1.61	0
Total Suspended Solids (kg/yr)	204	28.7	85.9
Total Phosphorus (kg/yr)	0.387	0.103	73.4
Total Nitrogen (kg/yr)	3.54	1.82	48.6
Gross Pollutants (kg/yr)	38.9	0	100

Figure 8 – Water Quality Treatment Train and Results

3.4 PROPOSED STORMWATER DISCHARGE POINT ASSESSMENT

3.4.1 POINT OF DISCHARGE

It is proposed to connect to the existing grated kerb inlet pit located to the south-east of the new building works to the existing kerb inlet pit on the northern side of Margaret Lane. This pit currently collects a 300mm diameter pipe from the upstream property at 13-23 Gibbons St, however, this pipe is proposed to be abandoned and capped once the proposed stormwater system for the development at 13-23 Gibbons St has been completed. The outlet pit from this existing pit is a 450mm diameter pipe running across Margaret Lane to a grated kerb inlet pit. Figure 9 shows the point of connection.

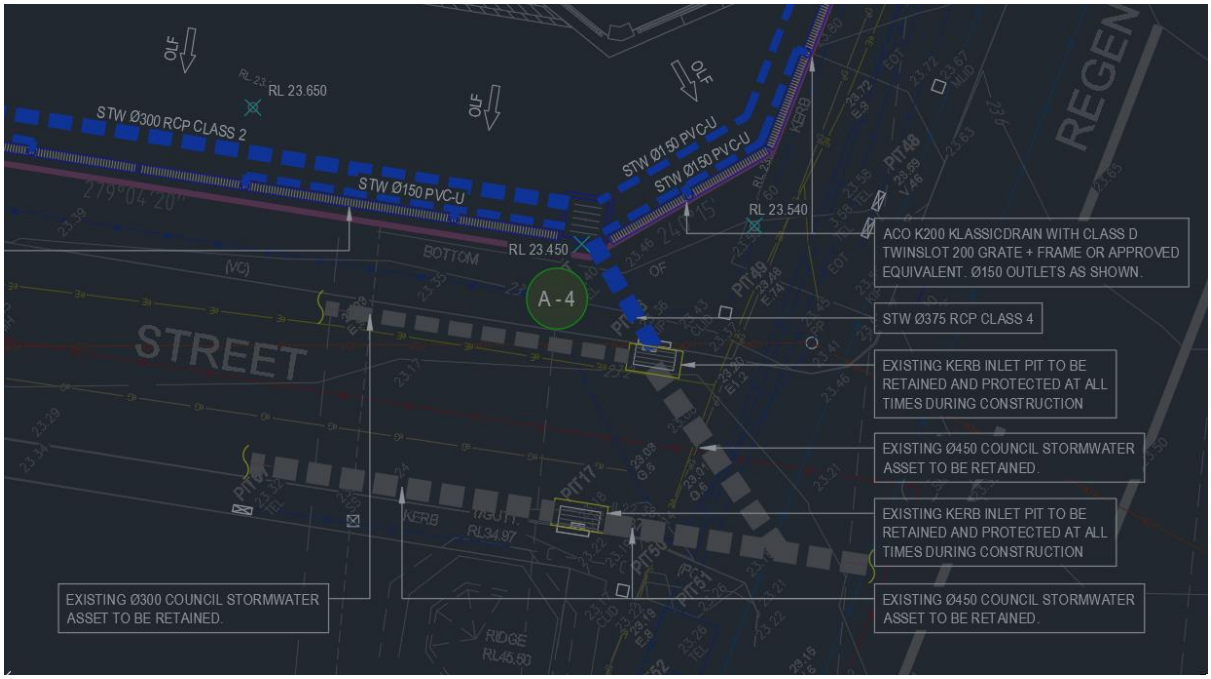


Figure 9 – Proposed Stormwater Discharge Point

In accordance with the City of Sydney A4 Stormwater Drainage Design Manual, where the private connection from the site exceeds 150mm diameter the pipe shall be concrete reinforced. In addition, all incoming pipes to pit Ref A4, shall be fitted with non-return valves to prevent surcharge of the council's stormwater system within the site.

3.5 GROUNDWATER

Geotechnical investigation of the site was undertaken by Douglas and Partners in regards to the proposed development. As per the report (Appendix F), groundwater seepage was observed during auger drilling between 2.5m to 4m depth. The ground water level was measured at 3.9m depth, approximately 20.9m AHD. As such it is anticipated that ground water will not be a prevailing issue during construction for the proposed development.

4 EROSION AND SEDIMENT CONTROL PLAN

An erosion and sediment control plan has been designed in accordance with principles outlined in the "blue book" Managing Urban Stormwater - Soils and Construction by Landcom (2004). During the construction, certain activities such as earthwork and demolition will increase the pollution to the stormwater system and generally the environment. The blue book helps all those involved in the construction industry to comply with appropriate stormwater quality outcomes. These outcomes have been established by various consent authorities, including the NSW Department of Planning, Industry and Environment.

It is proposed that the downstream perimeter of the entire site to be protected with sediment fence. All vehicles that enter and exit the site during the construction site shall be washed down to prevent the soil and dirt on the road system. The exact location of the wash bay shall be determined by the contractor to suit their construction sequence, but it is likely to be located at the current vehicular driveway entry location.

All existing grated inlet pits to be retained within the site shall be surrounded by a geotextile mesh and gravel inlet filter.

The site storage and material handling areas shall be located in an area adjacent to easy access for vehicle movements. This location may be shifted to suit the contractor sequence of work.

Refer to the Stormwater plans in Appendix G for the Erosion and Sediment Control Plan.

5 CONCLUSION

In this report, we addressed several aspects of the stormwater management plan including stormwater quantity, stormwater quality and erosion and sediment control.

The site stormwater management has been designed to meet the requirements set out in the CoSC Development Control Plan and Stormwater Drainage Manual.

The proposed estimated flow rates from the development have been modelled according to the requirements specified by the Sydney Water Corporation. The results show that the site storage requirement and permissible site discharge are achievable for the proposed development.

In addition, the stormwater treatment train, incorporating stormfilter treatment cartridges within the on-site detention tank and oceanguard baskets at all main line grated inlet pits results in an improvement in pollutant reduction, and therefore meets the water quality targets set by CoSC.

An erosion and sediment control plan has been designed in accordance with principles outlined in the "blue book" Managing Urban Stormwater - Soils and Construction by Landcom (2004). During the construction, certain activities such as earthwork and demolition will increase the pollution to the stormwater system and generally the environment. The blue book helps all those involved in the construction industry to comply with appropriate stormwater quality outcomes. These outcomes have been established by various consent authorities, including the NSW Department of Planning, Industry and Environment. Due to the minimal excavation works and with implementation of the strategies mentioned above it is expected that the impact of the development on stormwater quality and quantity will be acceptable.

6 APPENDICES

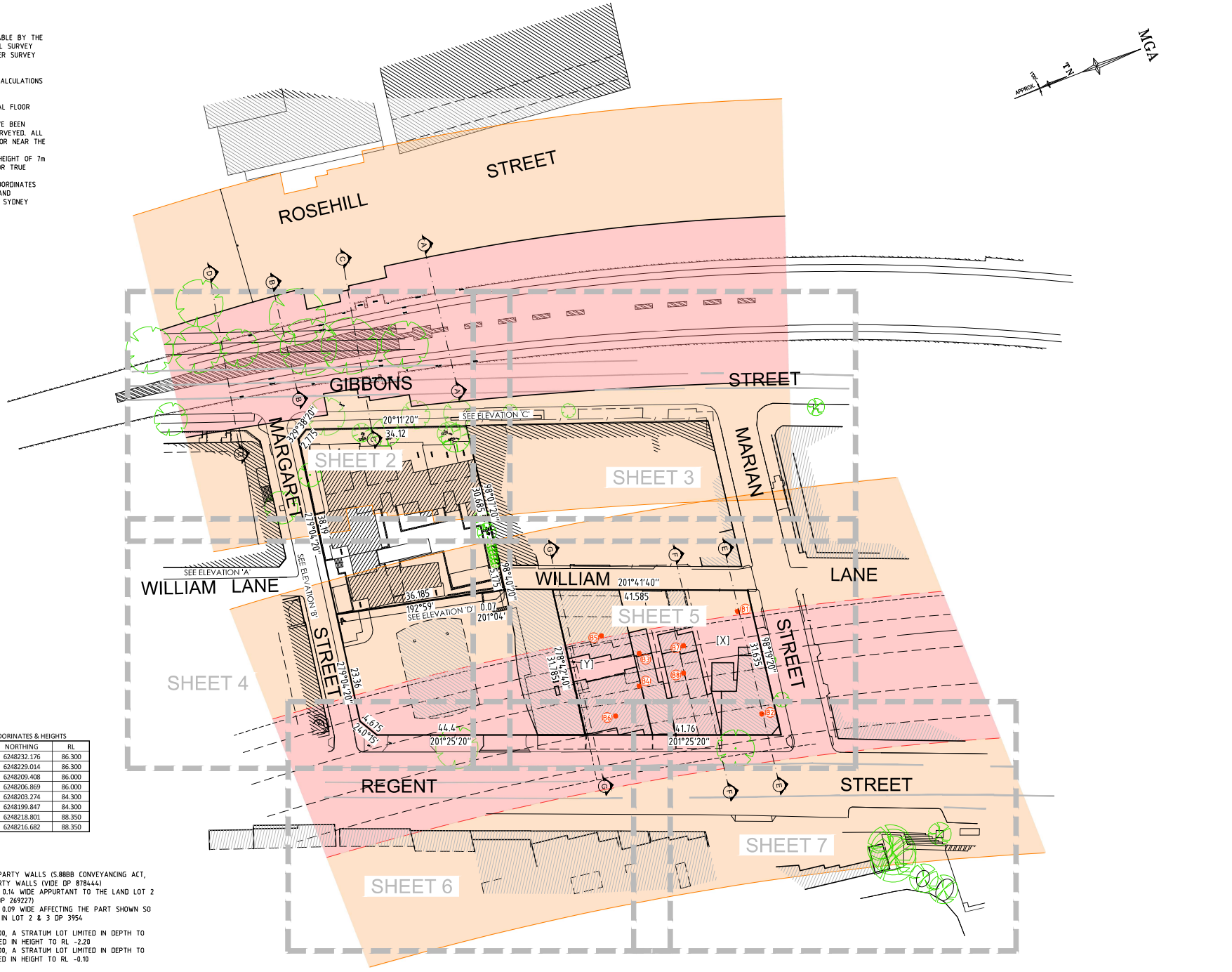
APPENDIX A

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY THE OFFICE of LAND & PROPERTY INFORMATION (NSW) AND ARE SUBJECT TO FINAL SURVEY
3. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM BENCHMARK IN KERB FROM LINKER SURVEY PLAN REFERENCE 170638 R.L. 24.35 (A.H.D.) IN GIBBONS STREET
4. CONTOUR INTERVAL 0.5 m
5. CONTOURS ARE INDICATIVE ONLY. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
6. KERB LEVELS ARE TO THE TOP OF KERB UNLESS SHOWN OTHERWISE
7. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
8. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. SERVICES HAVE BEEN PLOTTED FROM RELEVANT AUTHORITIES INFORMATION AND HAVE NOT BEEN SURVEYED. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
9. 8/4/7 DENOTES TREE SPREAD OF 8m, TRUNK DIAMETER OF 0.4m & APPROX HEIGHT OF 7m
10. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH
11. METRO TUNNEL RT01 & RT02 HORIZONTAL & VERTICAL POSITION BASED ON COORDINATES PROVIDED BY SYDNEY METRO (DENISE THORNTON) ON 29/07/19 AND 21/08/19 AND DRAWINGS SMCSWTSE-JAB-TPW-AL-DRG-505108 AND -505208 AS PROVIDED BY SYDNEY METRO

LEGEND

BENCH MARK	▲
TELSTRA PILLAR	⊠ TPIL
COMMS PIT	COM
ELECTRICITY PIT	TEL
ELECTRICITY PIT	EBOX
POWER POLE	PP
SERVICE PIT	PIT
PIT WITH METAL LID	MLID
KERB INLET PIT	KIP
GRATED INLET PIT	GIP
SEWER MANHOLE	SMH
SEWER INSPECTION POINT	SIP
STOP VALVE	SV
HYDRANT	HYD
WATER METER	WM
GAS VALVE	GM
GAS VALVE	GAS
GAS MARKER	GMKR
GAS PILLAR	GPIL
BOLLARD	BOL
VEHICLE CROSSING	(VC)
PRAM CROSSING	(PC)
WINDOW	W
DOOR	D
UNDERSIDE OF BEAM	USB
UNDERSIDE OF SLABB	USS
GAS (DBYD)	G
TELSTRA (DBYD)	T
COMMUNICATIONS (DBYD)	C
OPTUS (DBYD)	OP
NAT. BROADBAND NETWORK (DBYD)	NBN
WATER (DBYD)	W
STORMWATER (DBYD)	SW
SEWER (DBYD)	S
ELECTRICITY (OVERHEAD)	P
ELECTRICITY (U'GROUND) (DBYD)	E
1ST RESERVE	
2ND RESERVE	
GAS (DETECTED)	G(D)
TELSTRA (DETECTED)	T(D)
OPTICAL FIBRE (DETECTED)	OF(D)
COMMUNICATIONS (DETECTED)	C(D)
WATER (DETECTED)	W(D)
STORMWATER (DETECTED)	SW(D)
SEWER (DETECTED)	S(D)
ELECTRICITY (DETECTED)	E(D)
UNABLE TO OPEN	UTO
DEPTH OF SERVICES	6.09



PROPOSED BUILDING COORINATES & HEIGHTS

CORNER	EASTING	NORTHING	RL
B1	333523.266	6248232.176	86.300
B2	333545.492	6248229.014	86.300
B3	333523.981	6248209.408	86.000
B4	333530.451	6248206.869	86.000
B5	333517.52	6248203.274	84.300
B6	333534.518	6248199.847	84.300
B7	333525.894	6248218.801	88.350
B8	333531.294	6248216.682	88.350

(A) CROSS EASEMENTS FOR PARTY WALLS (S.88BB CONVEYANCING ACT, 1919) AFFECTING THE PARTY WALLS (VIDE DP 878444)
(B) EASEMENT FOR SUPPORT 0.14 WIDE APPURTANT TO THE LAND LOT 2 & 3 IN DP 3954 (VIDE DP 269227)
(C) EASEMENT FOR SUPPORT 0.09 WIDE AFFECTING THE PART SHOWN SO BURDENED IN DP 269227 IN LOT 2 & 3 DP 3954

[X] IS LOT 180 IN DP 1232400, A STRATUM LOT LIMITED IN DEPTH TO RL -25.40 AND LIMITED IN HEIGHT TO RL -2.20
[Y] IS LOT 180 IN DP 1232400, A STRATUM LOT LIMITED IN DEPTH TO RL -23.30 AND LIMITED IN HEIGHT TO RL -0.10

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Revision	Date	Description	Reference
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–	00/00/00	–	00
H	22/03/21	SW INVERTS ON REGENT ST & 104–116 REGENT ST BOUNDARIES	007
G	26/11/20	DETAIL & LEVELS ADDED, DETECTED SERVICES ADDED	007

Revision	Date	Description	Reference
F	23/11/20	COORDINATES FOR PROPOSED BUILDING LIFT OVERRUN ADDED	50670 006
E	12/10/20	COORDINATES FOR PROPOSED BUILDING ADDED	50670 006
D	30/09/20	SYDNEY METRO TUNNELS, RESERVES AND CROSS SECTIONS ADDED	50670 006
C	18/09/20	STORMWATER PIPT INVERTS ADDED	50670 005

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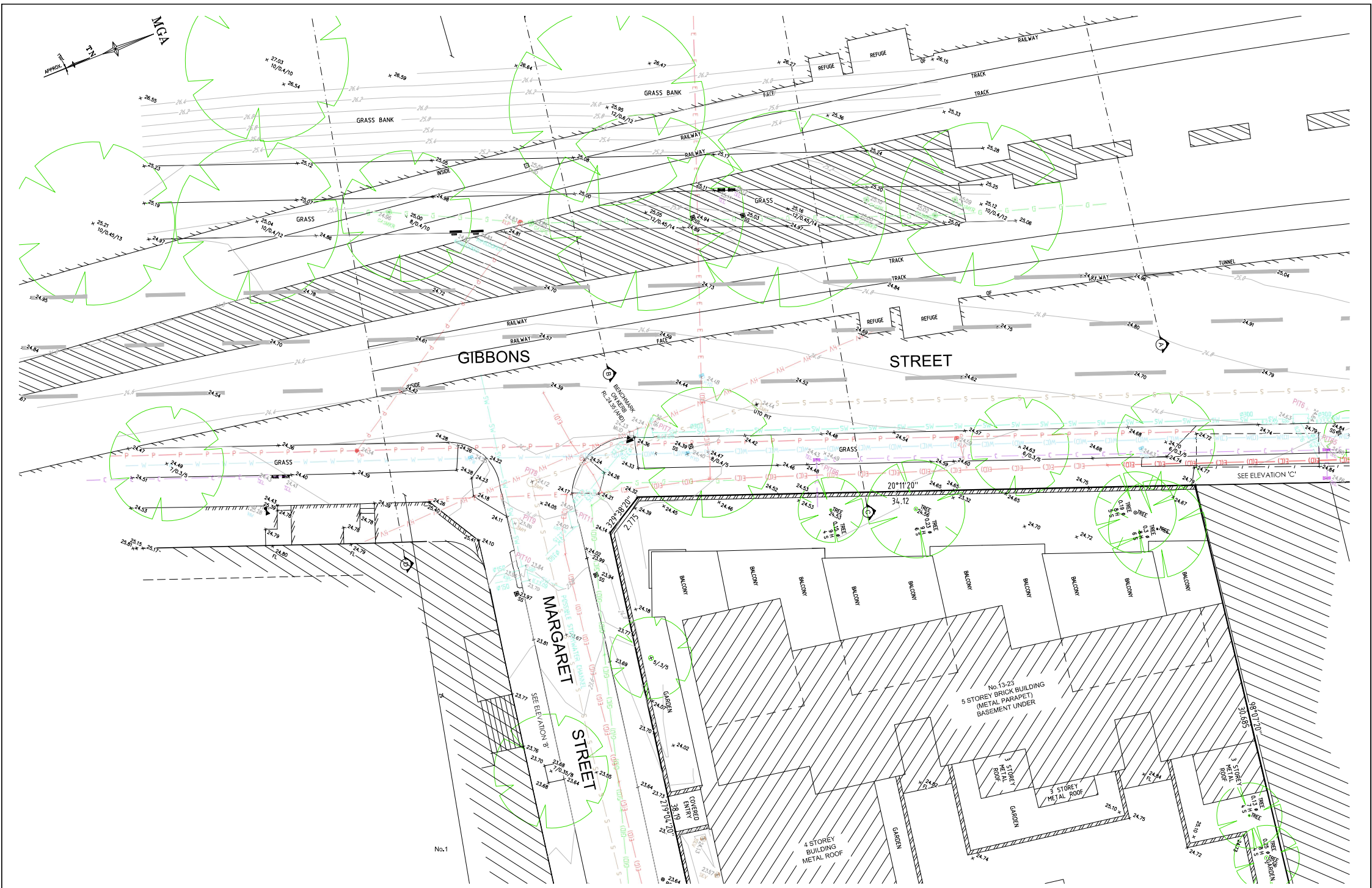
THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:
.....
Registered Surveyor NSW

Client THE TRUST COMPANY (AUSTRALIA) LIMITED ATF HW REGENT TRUST

Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 1-3 SECTION 2 IN DP 3954, LOT 1 IN DP 184335 AND SP 57425 KNOWN AS No 90-102 REGENT STREET, REDFERN

datum AHD
site Area 1287m²
LGA SYDNEY

reference number 50670 001DT
scale 1:400 @A1
date of survey 23/04/2019
SHEET 1 OF 18



SEE SHEET 1 FOR LEGEND & NOTES

SEE SHEET 8 FOR SERVICE DETAIL & LEVELS

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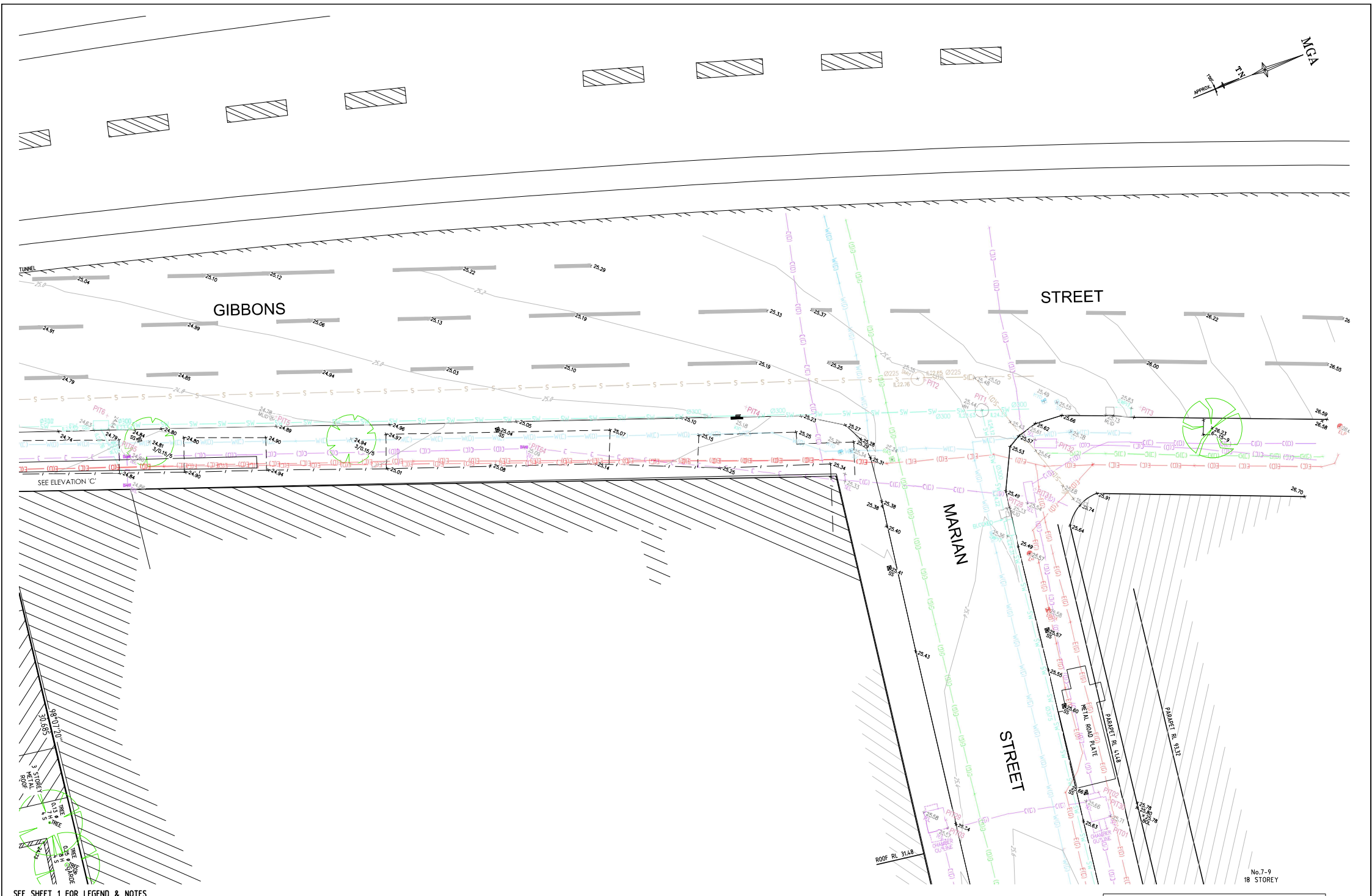
datum AHD
site Area 1287m²
LGA SYDNEY

reference number 50670 001DT
scale 1:1:100@A1
date of survey 23/04/2019
SHEET 2
OF 18



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Drawing title
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datum AHD
site Area 1287m²
LGA SYDNEY

reference number 50670 001DT
scale 1:1:100@A1
date of survey 23/04/2019
SHEET 3
OF 18

SEE SHEET 1 FOR LEGEND & NOTES

SEE SHEET 10 FOR SERVICE DETAIL & LEVELS

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SCALE 1:100 @ A1

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SHEET 4
OF 18

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SHEET 5 OF 18

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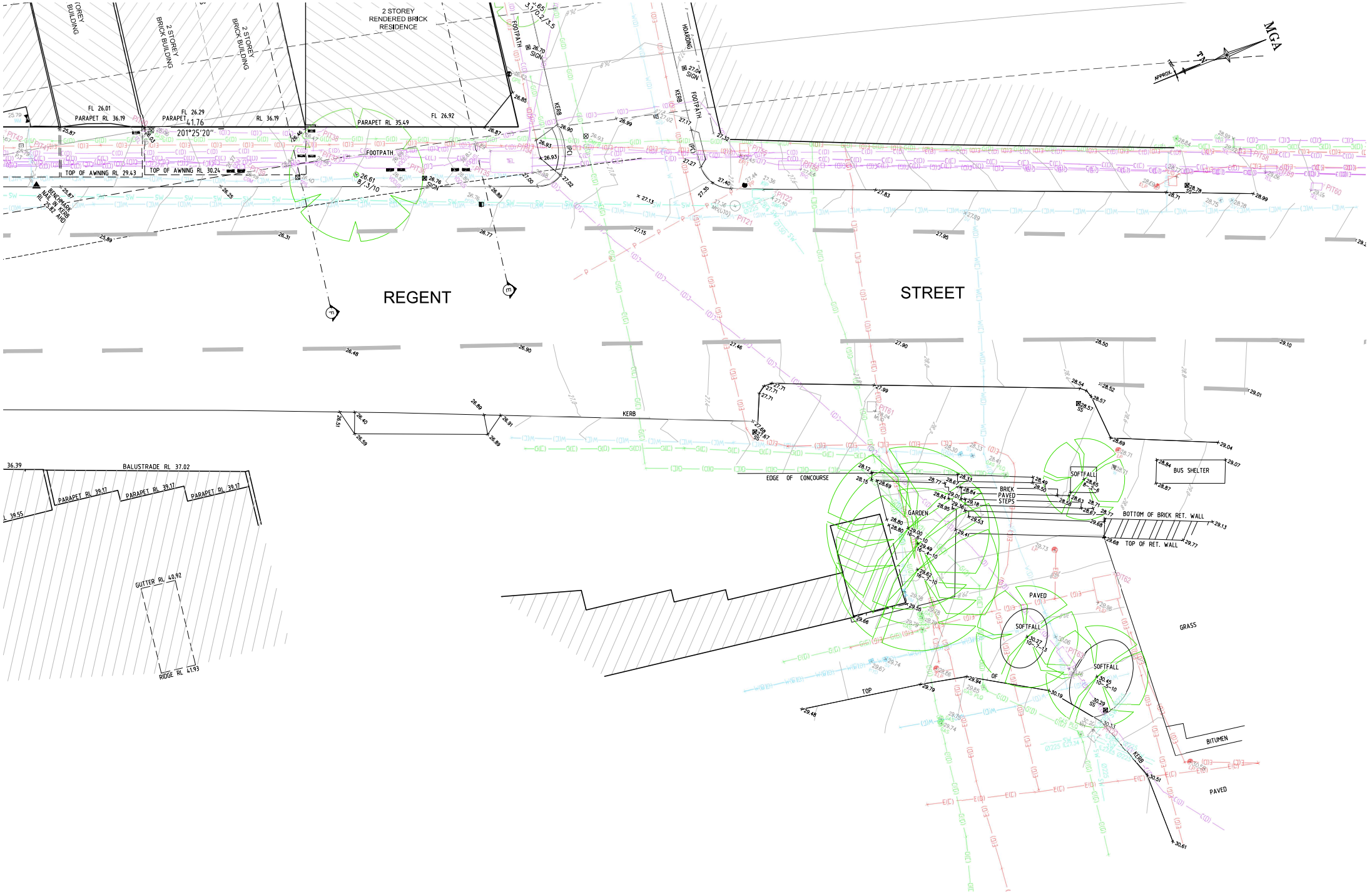
SHEET 6 OF 18



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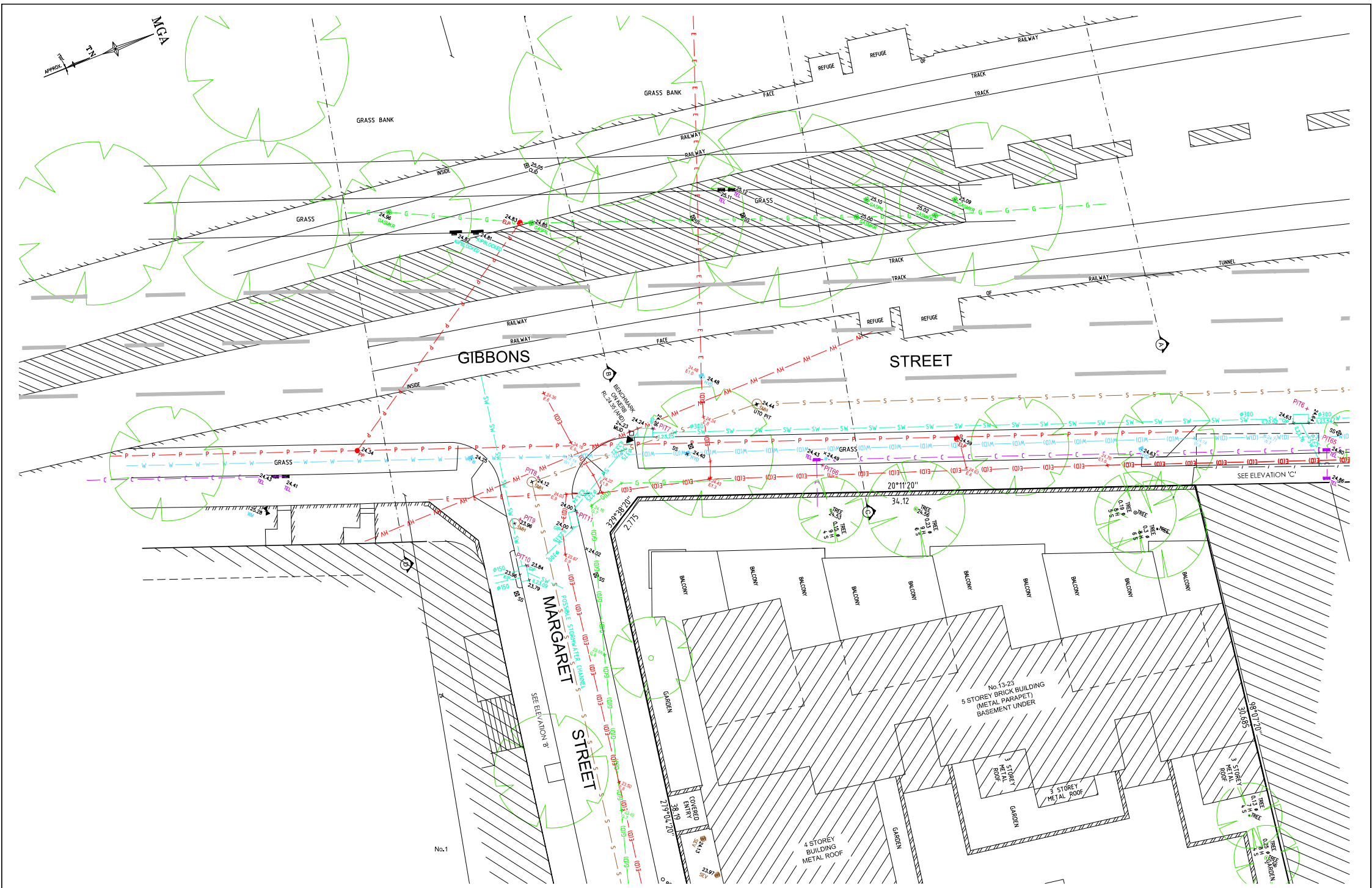

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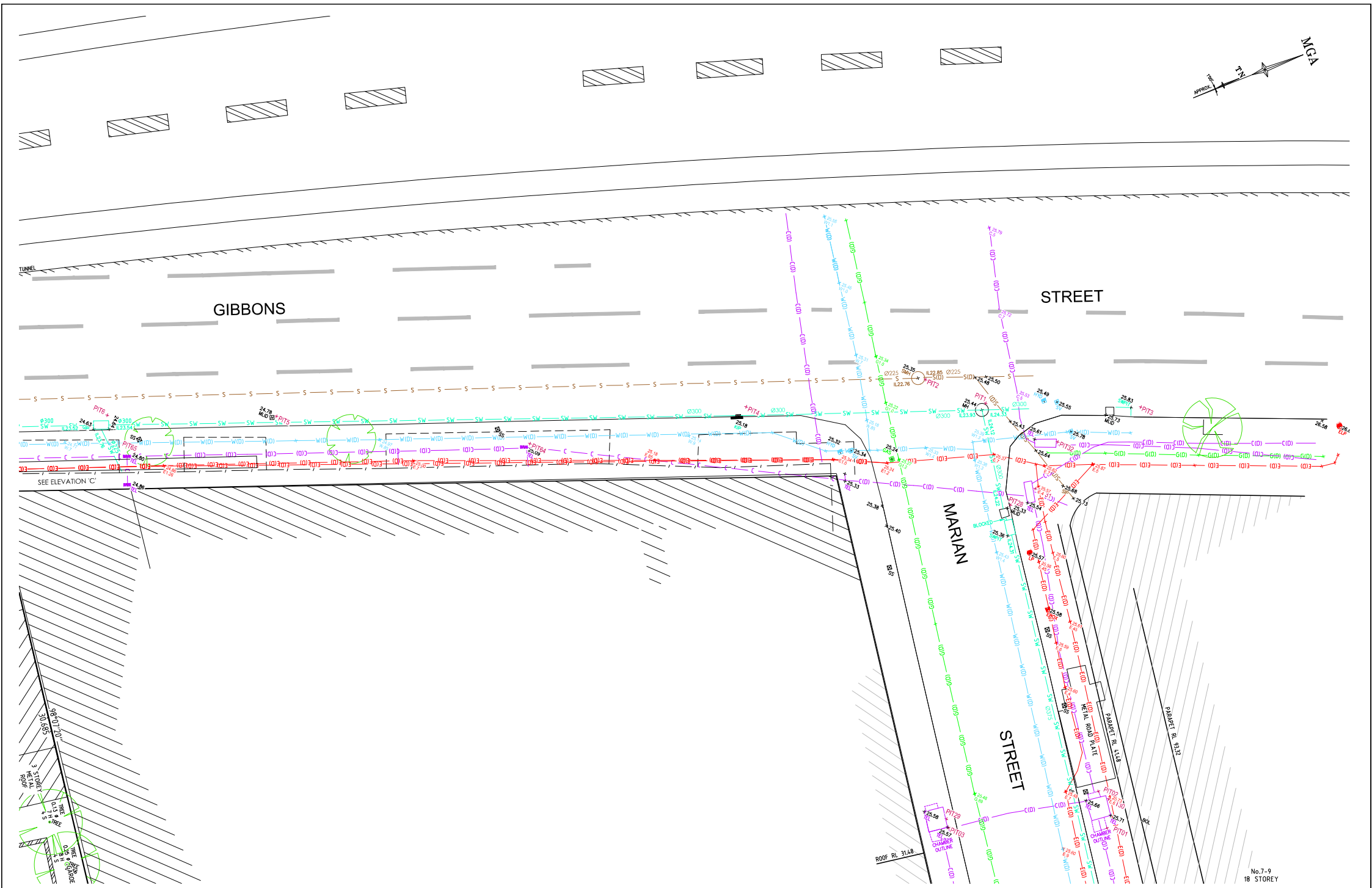

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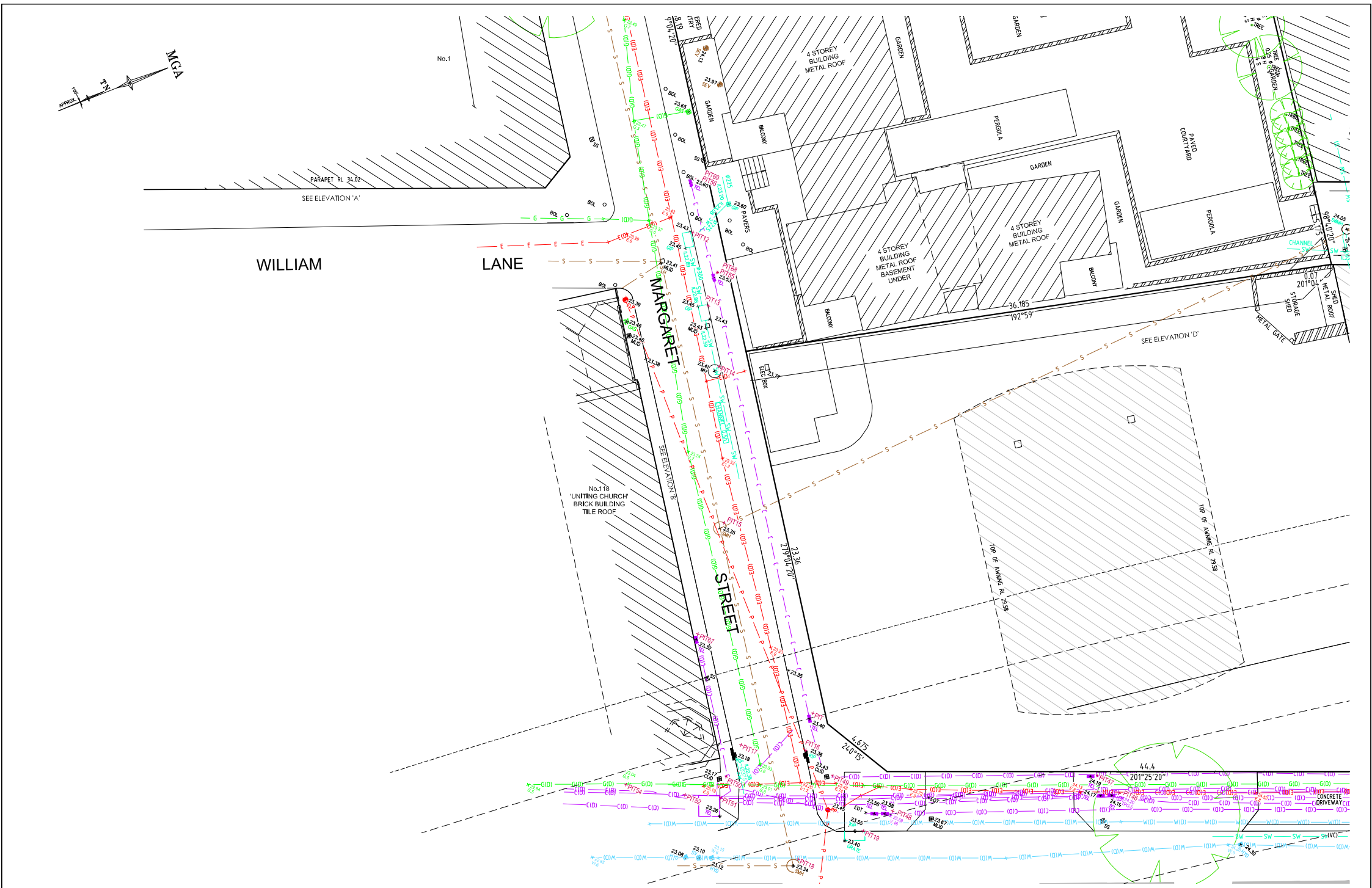

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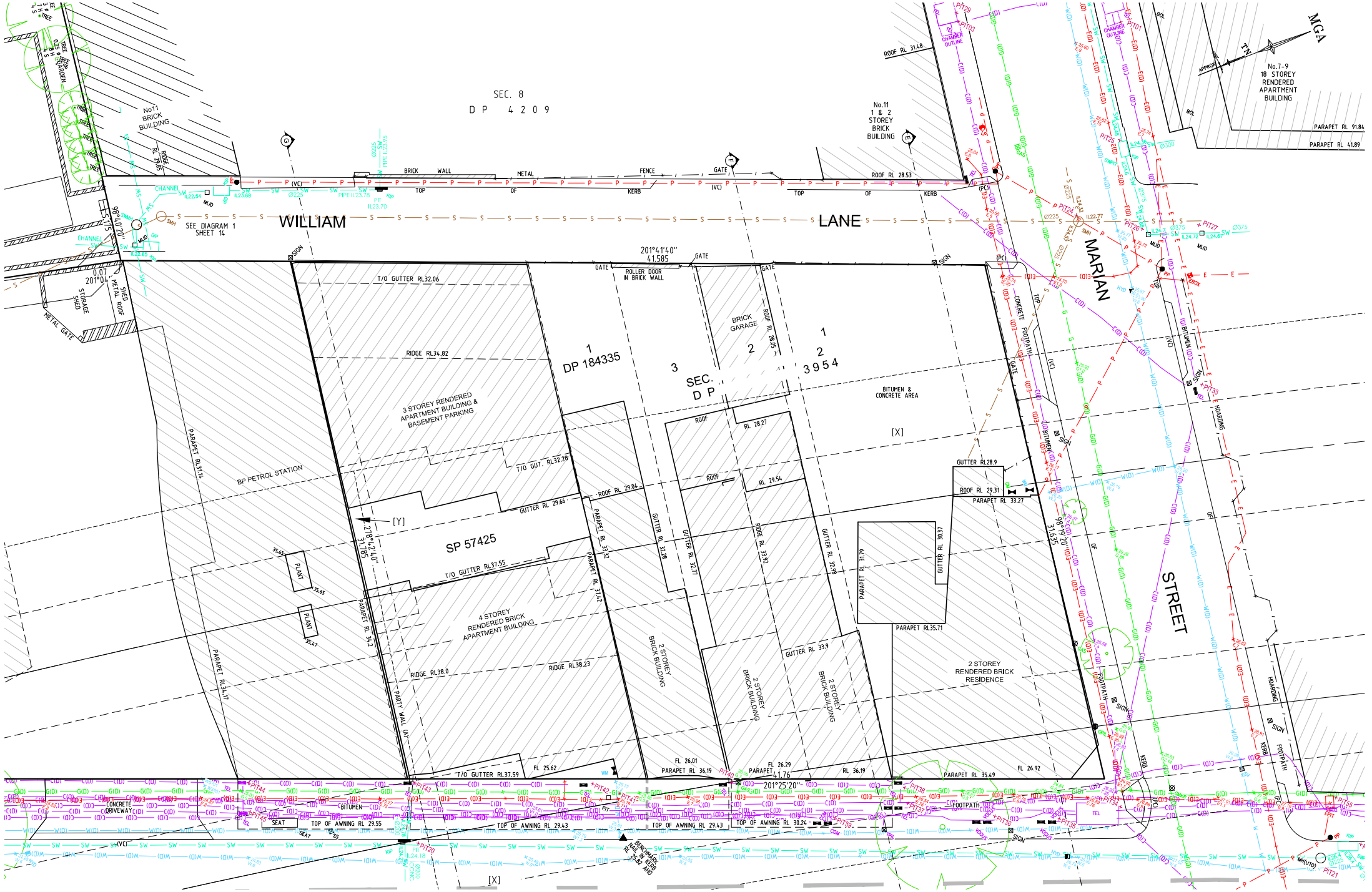

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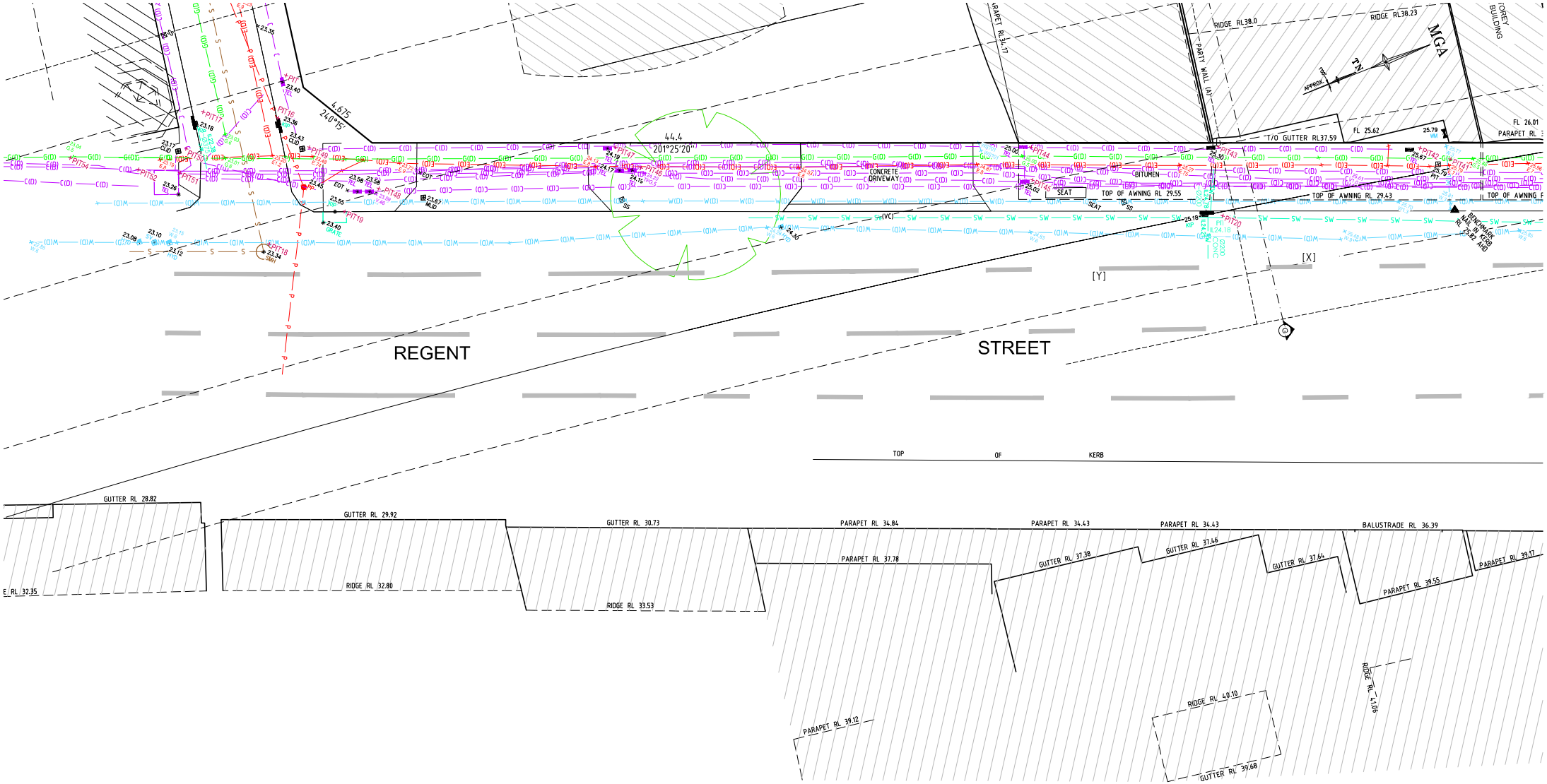

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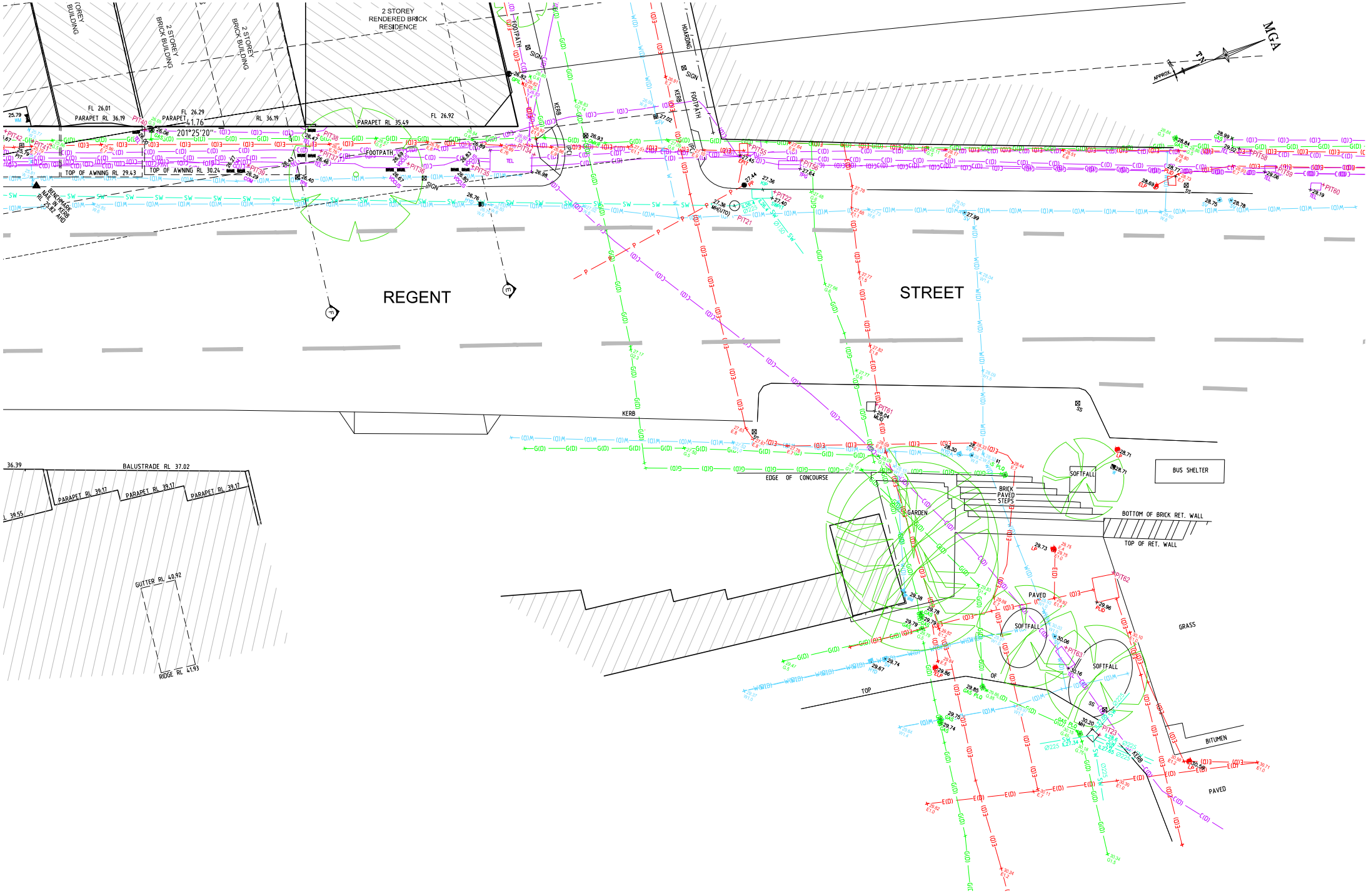

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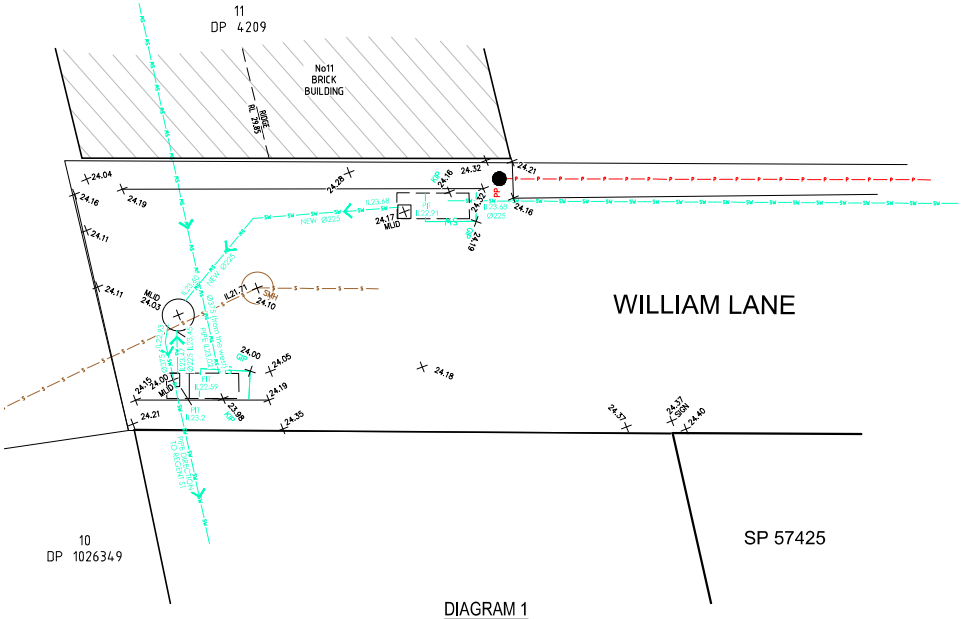

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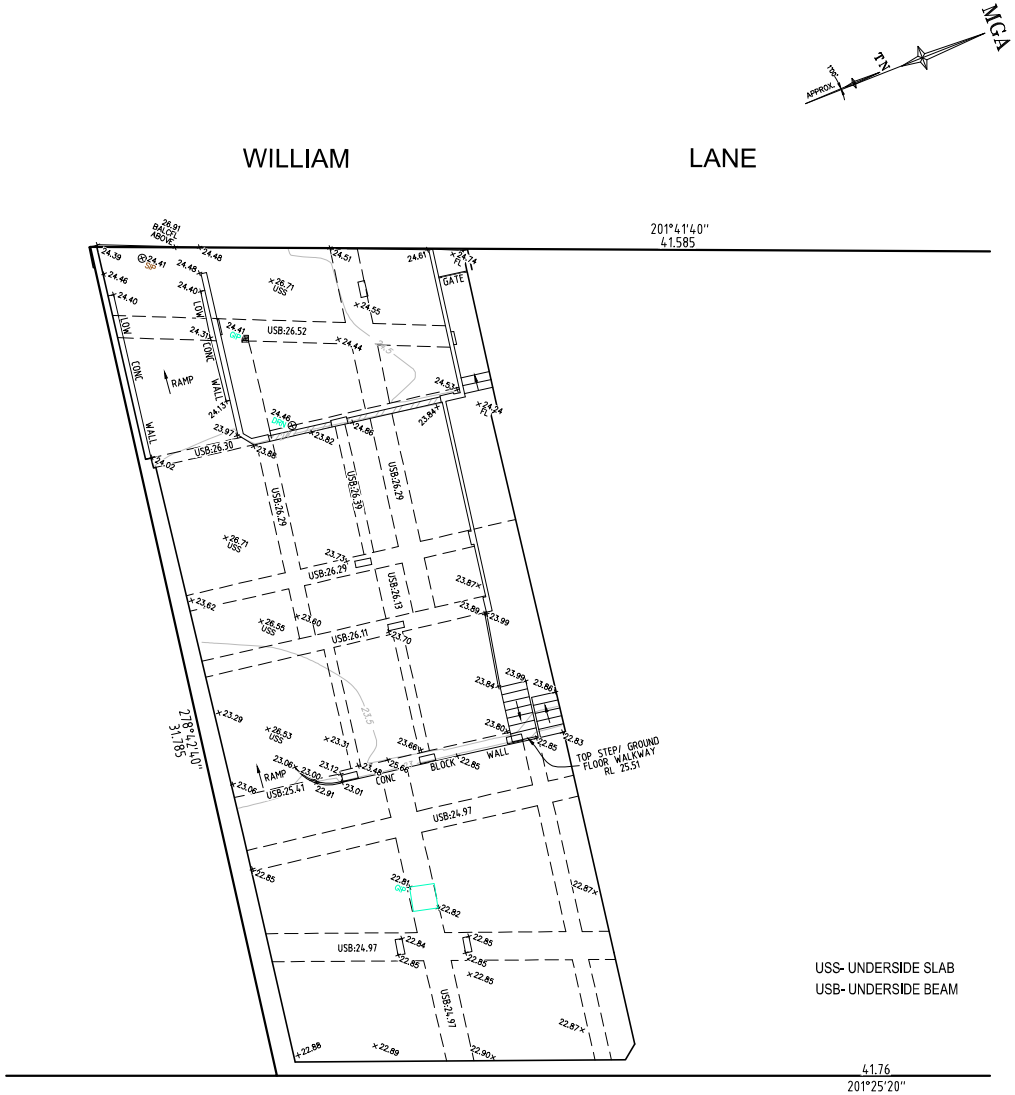

BASEMENT PLAN (SP57425)

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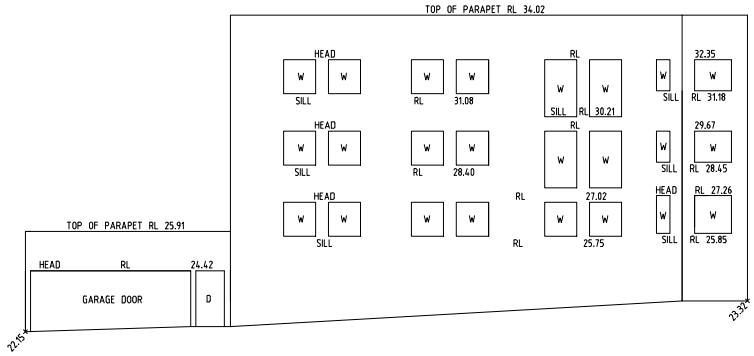
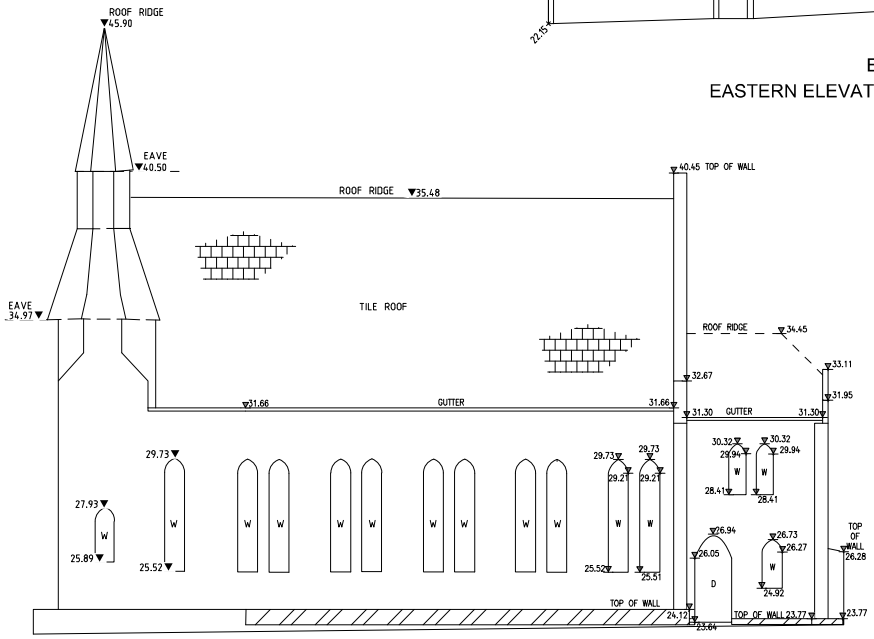
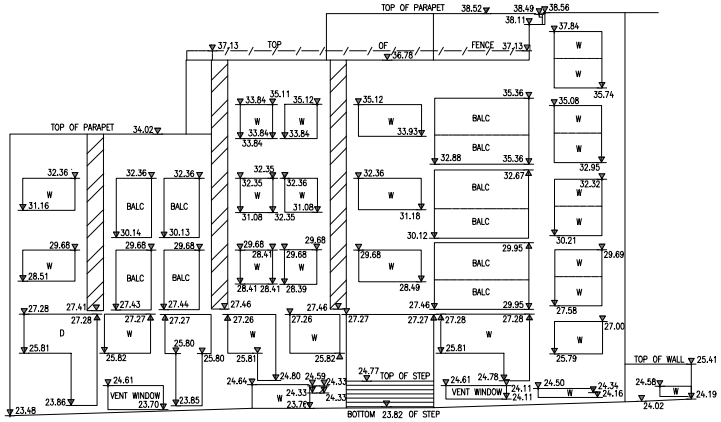
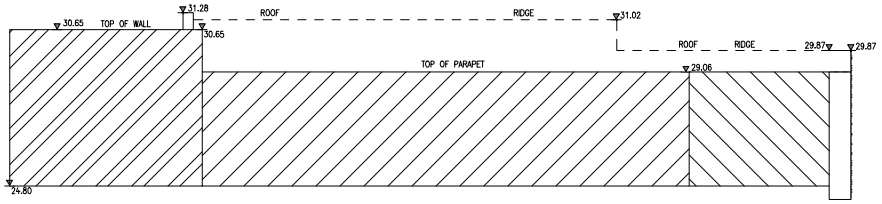


ELEVATION 'A'
EASTERN ELEVATION OF No1 MARARET STREET

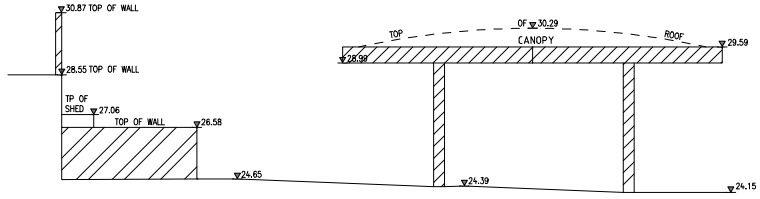




ELEVATION 'B'
NORTHERN ELEVATION OF No1 MARGARET STREET AND 118 REGENT STREET



ELEVATION 'C'
SOUTH ELEVATION OF No11 GIBSON STREET



ELEVATION 'D'
WESTERN ELEVATION OF No104-116 REGENT STREET

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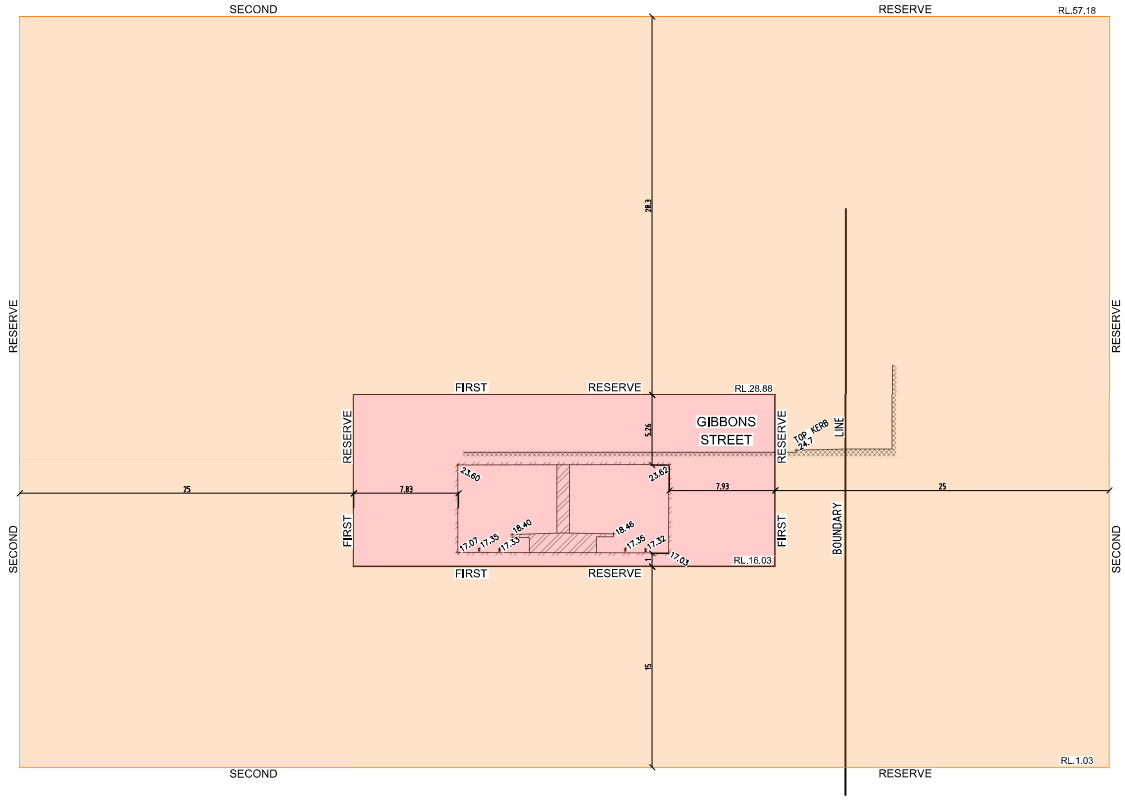
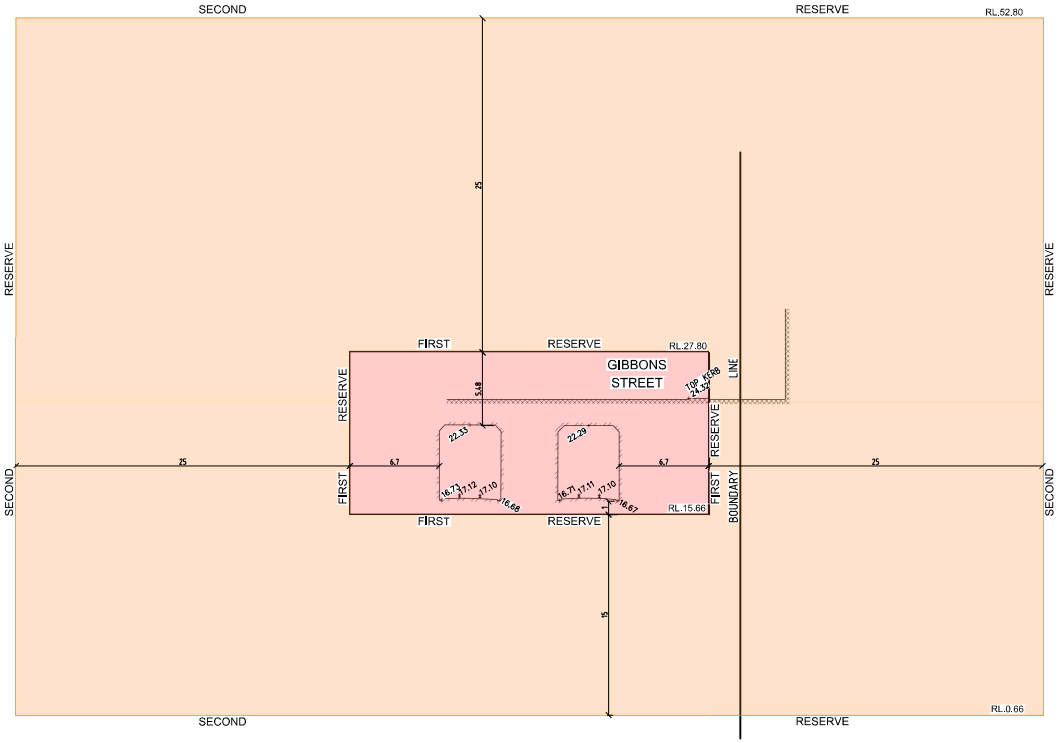


TUNNEL SECTION A-A



TUNNEL SECTION B-B

SYDNEY METRO TUNNEL CROSS SECTIONS

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H	22/03/21	SW INVERTS ON REGENT ST & 104–116 REGENT ST BOUNDARIES	007
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F	23/11/20	COORDINATES FOR PROPOSED BUILDING LIFT OVERRUN ADDED	50670 006
E	12/10/20	COORDINATES FOR PROPOSED BUILDING ADDED	50670 006
D	30/09/20	SYDNEY METRO TUNNELS, RESERVES AND CROSS SECTIONS ADDED	50670 006
C	18/09/20	STORMWATER PIPT INVERTS ADDED	50670 005

LTS CONFIDENCE TOGETHER
www.ltsl.com.au | P 1300 587 000

THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:

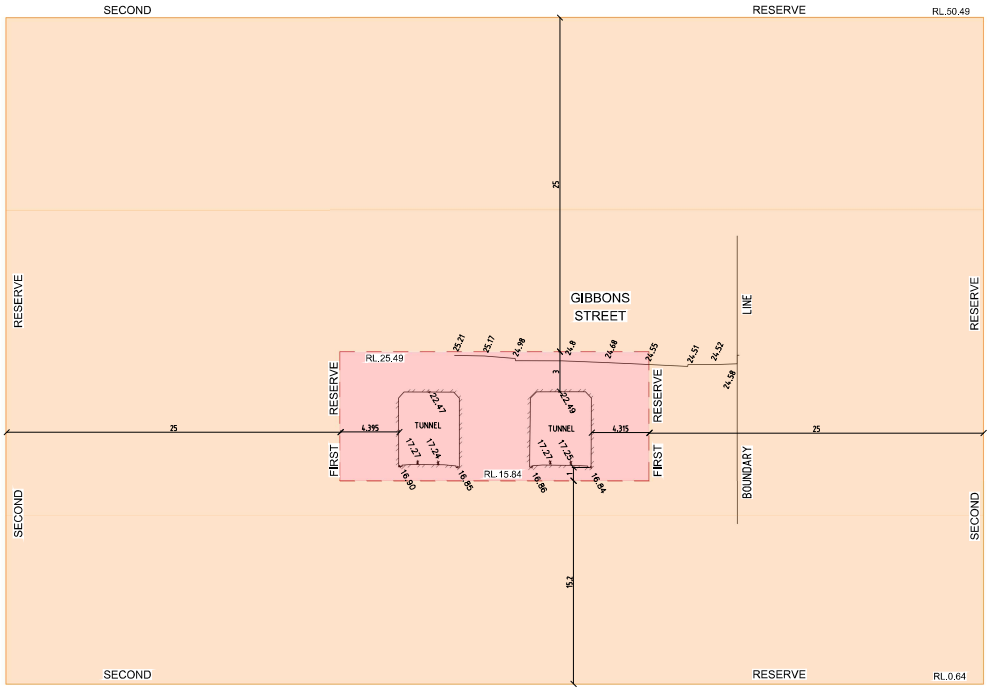
.....
Registered Surveyor NSW

Client THE TRUST COMPANY (AUSTRALIA) LIMITED ATF HW REGENT TRUST

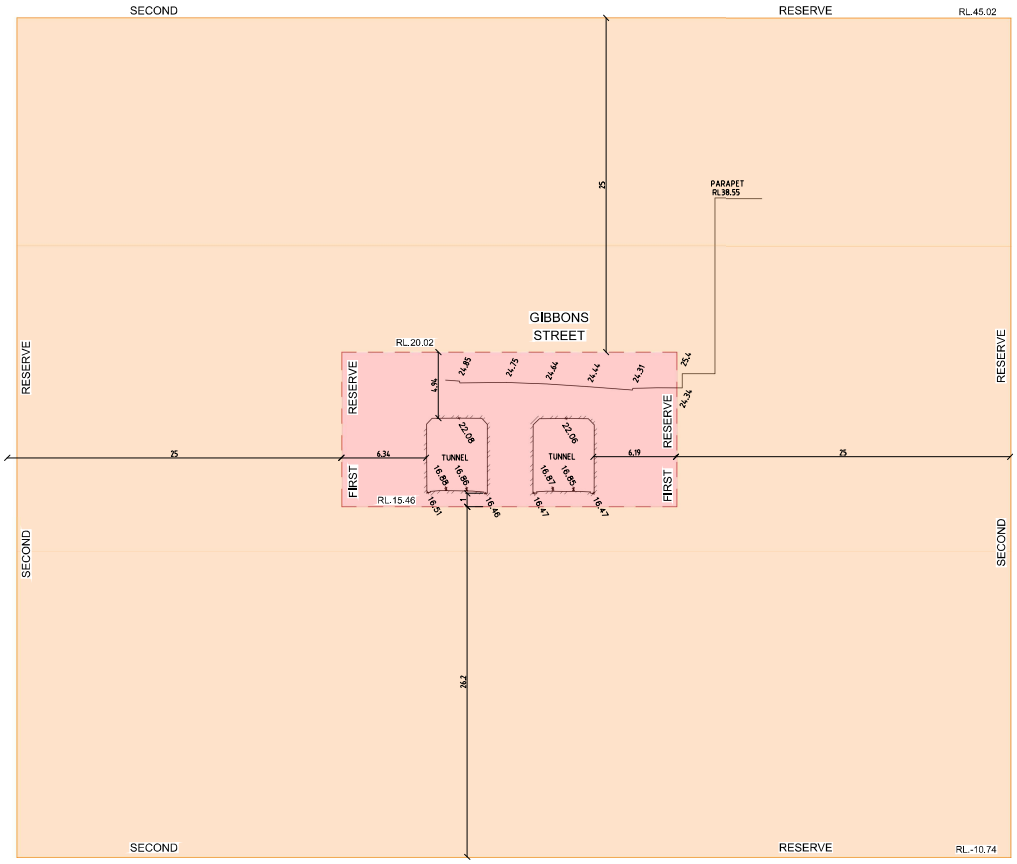
Drawing title
PLAN OF DETAIL AND LEVELS OVER LOTS 1-3 SECTION 2 IN DP 3954, LOT 1 IN DP 184335 AND SP 57425 KNOWN AS No 90-102 REGENT STREET, REDFERN

datum AHD
site Area 1287m²
LGA SYDNEY

reference number 50670 001DT
scale 1:200 @A1
date of survey 23/04/2019
SHEET 16 OF 18



TUNNEL SECTION C-C



TUNNEL SECTION D-D

SYDNEY METRO TUNNEL CROSS SECTIONS

SEE SHEET 1 FOR LEGEND & NOTES

DIAL BEFORE YOU DIG www.1100.com.au

GDA2020

0 4 8 12 16 20

SCALE 1:200 @ A1

Revision	Date	Description	Reference
–	00/00/00	–	00
–	00/00/00	–	00
H	22/03/21	SW INVERTS ON REGENT ST & 104–116 REGENT ST BOUNDARIES	007
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Revision	Date	Description	Reference
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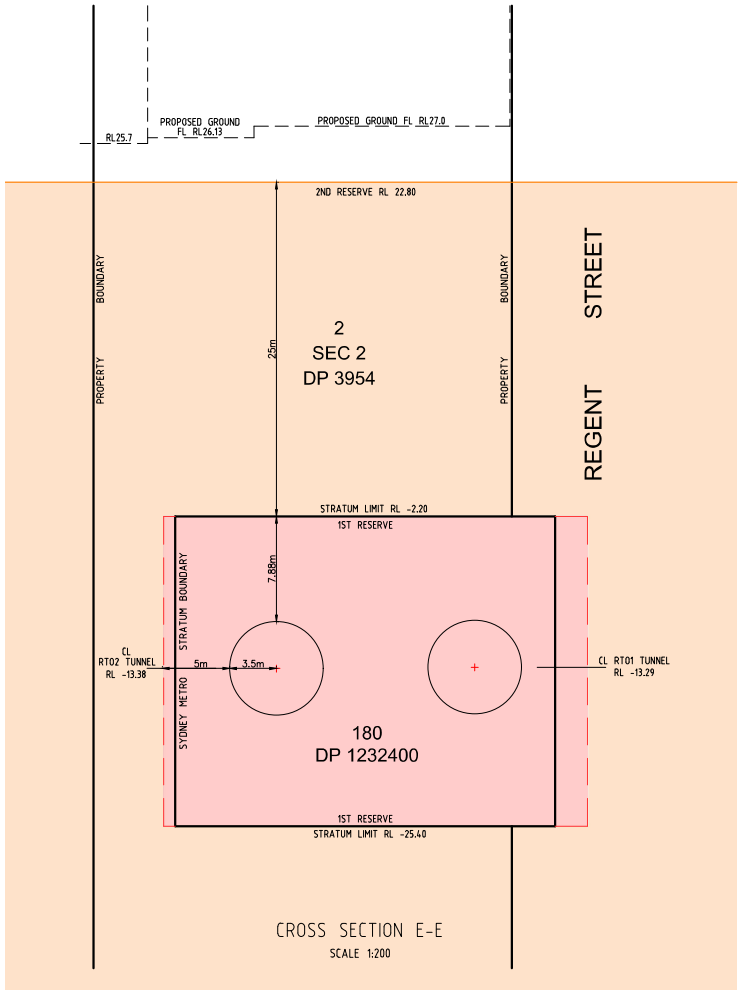
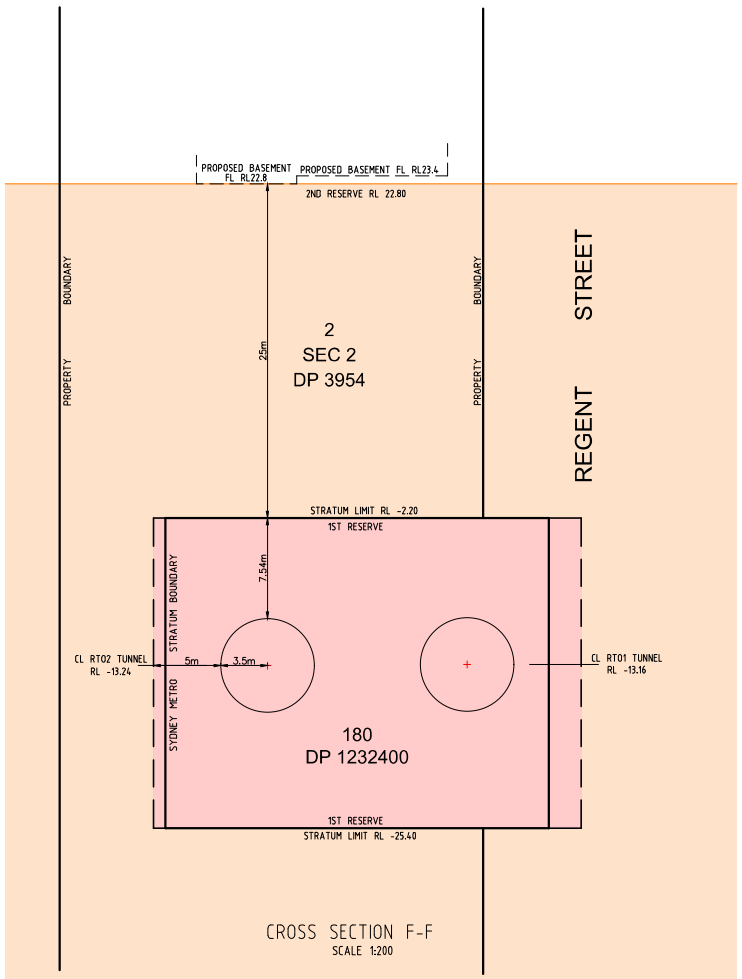
datum AHD
site Area 1287m²
LGA SYDNEY

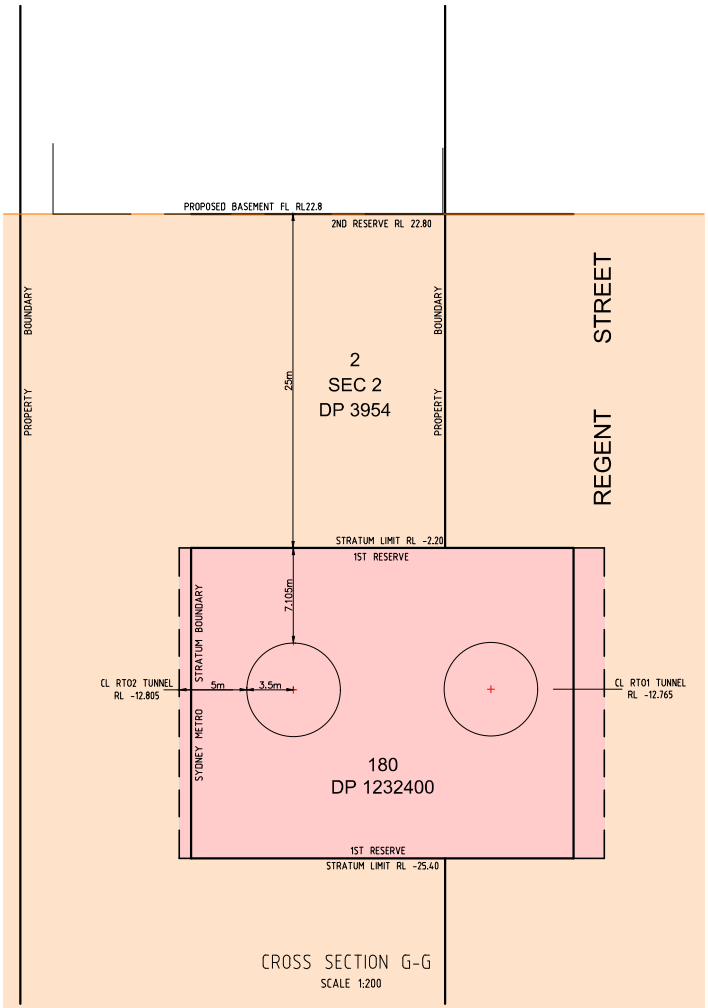
reference number 50670 001DT
scale 1:200 @A1
date of survey 23/04/2019
SHEET 17
OF 18



CROSS SECTION E-E
SCALE 1:200



CROSS SECTION F-F
SCALE 1:200



CROSS SECTION G-G
SCALE 1:200

SYDNEY METRO TUNNEL CROSS SECTIONS

SEE SHEET 1 FOR LEGEND & NOTES

DIAL BEFORE YOU DIG www.1100.com.au

GDA2020

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

Revision	Date	Description	Reference
–	00/00/00	–	00
–	00/00/00	–	00
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LTS CONFIDENCE TOGETHER
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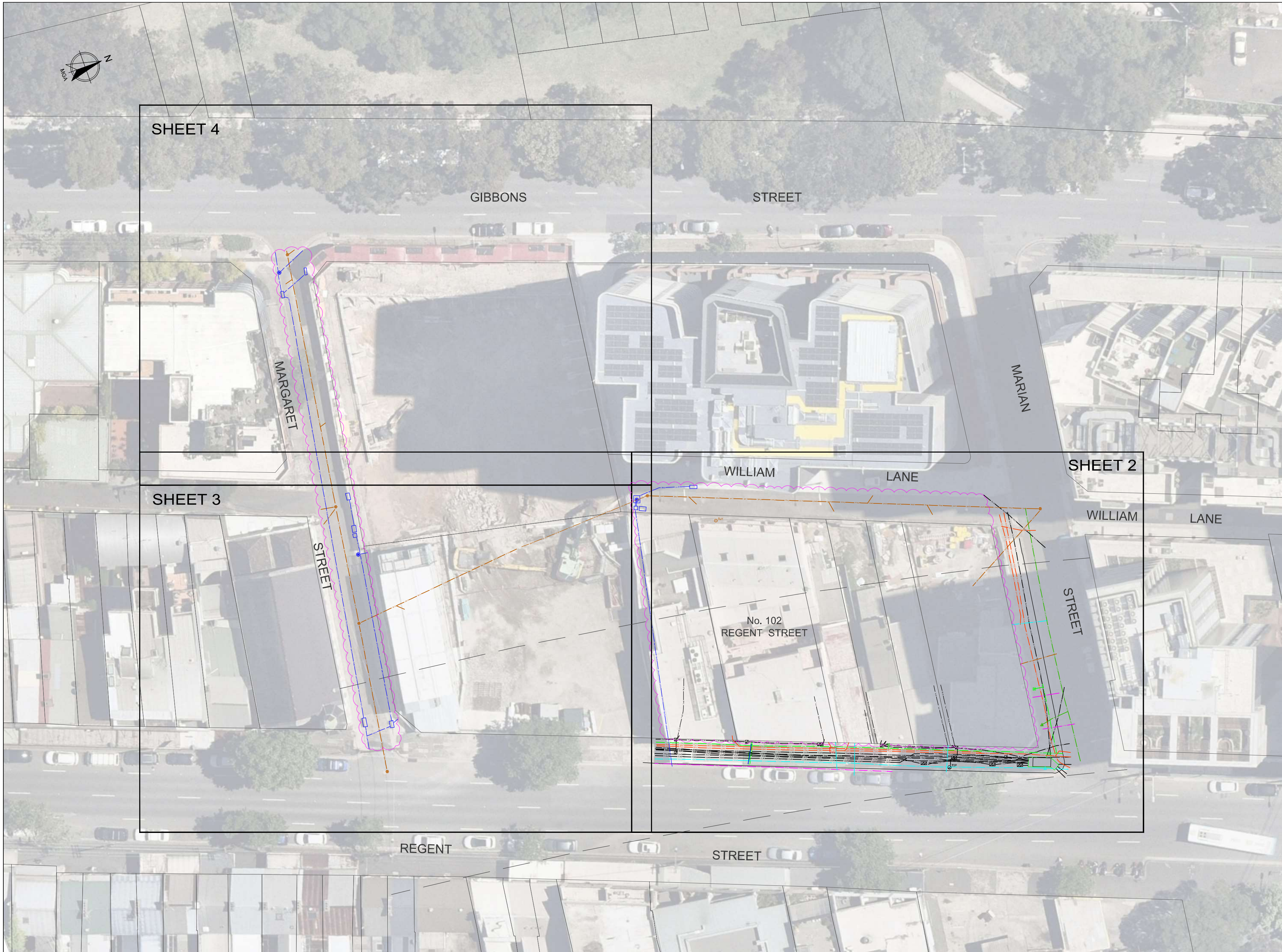
datum AHD
site Area 1287m²
LGA SYDNEY

reference number 50670 001DT
scale 1:200 @A1
date of survey 23/04/2019
SHEET 18 OF 18

APPENDIX B



UTILITY ASSETS LEGEND

ELECTRICITY	EU-A-B-C-D
TELECOMMUNICATIONS	TN-A-B-C-D
OPTIC FIBRE	OU-A-B-C-D
LOW PRESSURE GAS	LG-A-B-C-D
HIGH PRESSURE GAS	HG-A-B-C-D
WATER MAIN	WM-A-B-C-D
FIRE MAIN	FH-A-B-C-D
SEWER MAIN	SM-A-B-C-D
STORMWATER	SW-A-B-C-D
UNKNOWN SERVICE	UP-A-D
PROPERTY BOUNDARY	
LIMIT OF SURVEY	
FENCE	
DENOTES DEPTH TO SERVICE	X-0.5m
HYDRANT	WH
STOP VALVE	
WATER METER	
FIRE HYDRANT	
WATER TAP	
TELEPHONE PIT	
TELEPHONE TWIN PIT	
TELEPHONE LARGE SUMP	
TELEPHONE DISTRIBUTION PILLAR	TDP
LIGHT POLE	
POWER AND LIGHT POLE	
POWER POLE	EP
CABLE MARKER	EC
GATIC COVER	GAT
UNIDENTIFIED SERVICE	?
CABLE JUNCTION BOX	EJB
RMS TRAFFIC LIGHT	
RMS SIGNAL PIT	
SEWER LAMP HOLE	SLH
SEWER MANHOLE	
GAS TEST POINT - HIGH PRESSURE	
GAS PIPE MARKER	GP
GAS VALVE BOX	
DRAINAGE DOWN PIPE	DP
SMALL DRAINAGE GULLY PIT	
DRAINAGE JUNCTION MANHOLE	
SIGN	
GATE	
END OF TRACE	EOT
TOP OF SERVICE	TOS
DEPTH TO INVERT OF PIPE	IL

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED, SURESEARCH PLANS MUST ABIDE BY THE DBYD REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
3. THIS PLAN SHOULD NOT BE USED FOR EXCAVATION PURPOSES.
4. THIS PLAN HAS BEEN DRAWN TO SCALE, AND ANY REPRODUCTION OF THIS PLAN WILL NEED TO BE DRAWN IN COLOUR AND AT THIS SCALE TO ENSURE THAT ALL RELEVANT NOTES AND ENHANCEMENTS ARE SHOWN. FAILURE TO DO THIS WILL VOID ALL INFORMATION INDICATED FOR THIS JOB.
5. ALL SERVICES HAVE BEEN ELECTRONICALLY TRACED IN THE FIELD AND ARE SHOWN HERE FOR DIAGRAMMATIC PURPOSES ONLY. DEPTHS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED PRIOR TO WORKS.
6. SERVICES SHOWN DIGITISED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT, THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
8. ELECTRICITY IS HIGH VOLTAGE UNLESS OTHERWISE STATED. TO CONFIRM VOLTAGES ALONG THE LINE WOULD REQUIRE OBTAINING CONFIGURATION/SCHEMATIC PLANS. NOT ALL ELECTRICITY CABLES ARE ENCLOSED IN CONDUITS OR MARKED WITH INDICATORS OF THEIR PRESENCE.
9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
10. THE CADASTRAL BOUNDARIES HAVE BEEN DERIVED FROM THE DIGITAL CADASTRAL DATABASE (DCDB). THIS INFORMATION IS SHOWN FOR PLAN CONTEXT ONLY AND IS OF UNKNOWN ACCURACY OR QUALITY.
11. STANDBYS ARE REQUIRED FOR ALL EXCAVATIONS NEAR SECONDARY OR HIGHER GAS MAINS.
12. REFER TO CCTV FOOTAGE FOR FURTHER INFORMATION.
13. LIMIT OF SURVEY HAS BEEN SHOWN AS PER REQUESTED SCOPE. FEATURES OUTSIDE THE LIMIT OF SURVEY HAVE BEEN INCLUDED FOR CLARIFICATION PURPOSES.
14. THIS IS A RE-INVESTIGATION BY SURESEARCH. AMENDMENTS ARE HIGHLIGHTED VIA REVIEW CLOUDS. EXTENSION OF SCOPE.
15. SYDNEY METRO TUNNEL EXTENTS WERE DIGITISED IN AS PER DP1232400. NO PHYSICAL STRUCTURE WAS LOCATED ON SITE. NO ASSOCIATED INFRASTRUCTURE OR SERVICES WERE FOUND BELONGING TO SYDNEY METRO.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.
Line work sample; ---EU-B--- Quality level represented within linework, Underground Electricity (Quality Level 'B').

QL-A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a non-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

QL-B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or flexi-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

SureSearch UNDERGROUND SERVICES

ORIGIN OF SURVEY
MGA 56 / GDA 2020
SS 38398
E 333326.408
N 6248011.740
AHD 18.680

A1 SCALES
0 5 10 15 20 25
SCALE 1:250

DIAL BEFORE YOU DIG CERTIFIED LOCATOR

www.dialbeforeyoudig.com.au DIAL 1100 BEFORE YOU DIG

SureSearch UNDERGROUND SERVICES
1300 884 520
www.suresearch.com.au

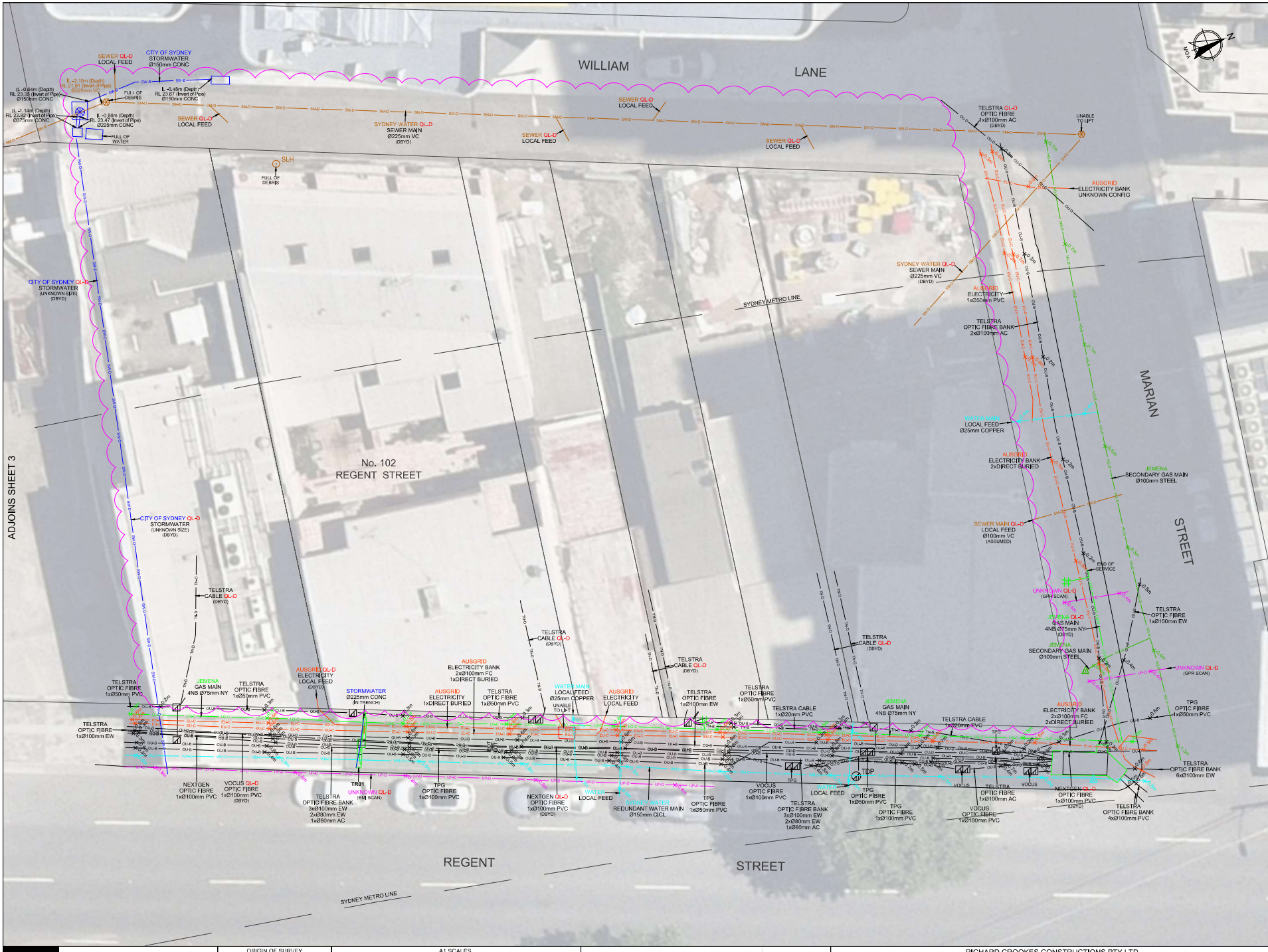
RICHARD CROOKES CONSTRUCTIONS PTY LTD
JOB NO. 80381_V2
102 REGENT STREET, REDFERN
QL-A / QL-B UTILITY INVESTIGATION

SURVEYED: MT	DATE: 20-10-2021
LOCATED: RM / BC	DATE: 20-10-2021
COMPILED: AS	DATE: 27-10-2021
REVIEWED: DY	DATE: 27-10-2021
ISSUED BY: MN	DATE: 27-10-2021

FILE NAME: 80381_Richard Crookes_Redfern_V2

MODEL NAME: 80381ab

A1 Border version: July 2021



UTILITY ASSETS LEGEND

ELECTRICITY	X	EU-A-B-C-D
TELECOMMUNICATIONS	X	TN-A-B-C-D
OPTIC FIBRE	X	OU-A-B-C-D
LOW PRESSURE GAS	X	LG-A-B-C-D
HIGH PRESSURE GAS	X	HG-A-B-C-D
WATER MAIN	X	WM-A-B-C-D
FIRE MAIN	X	FH-A-B-C-D
SEWER MAIN	X	SM-A-B-C-D
STORMWATER	X	SW-A-B-C-D
UNKNOWN SERVICE	X	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		

- DENOTES DEPTH TO SERVICE
- HYDRANT
- STOP VALVE
- WATER METER
- FIRE HYDRANT
- WATER TAP
- TELEPHONE PIT
- TELEPHONE TWIN PIT
- TELEPHONE LARGE SUMP
- TELEPHONE DISTRIBUTION PILLAR
- LIGHT POLE
- POWER AND LIGHT POLE
- POWER POLE
- CABLE MARKER
- GATIC COVER
- UNIDENTIFIED SERVICE
- CABLE JUNCTION BOX
- RMS TRAFFIC LIGHT
- RMS SIGNAL PIT
- SEWER LAMP HOLE
- SEWER MANHOLE
- GAS TEST POINT - HIGH PRESSURE
- GAS PIPE MARKER
- GAS VALVE BOX
- DRAINAGE DOWN PIPE
- SMALL DRAINAGE GULLY PIT
- DRAINAGE JUNCTION MANHOLE
- SIGN
- GATE
- END OF TRACE (EOT)
- TOP OF SERVICE (TOS)
- DEPTH TO INVERT OF PIPE (IL)

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED. SURESEARCH PLANS MUST ABIDE BY THE DBYD REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
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6. SERVICES SHOWN DOTTED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
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8. ELECTRICITY IS HIGH VOLTAGE UNLESS OTHERWISE STATED. TO CONFIRM VOLTAGES ALONG THE LINE WOULD REQUIRE OBTAINING CONFIGURATIONS/SCHEMATIC PLANS. NOT ALL ELECTRICITY CABLES ARE ENCLOSED IN CONDUITS OR MARKED WITH INDICATORS OF THEIR PRESENCE.
9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
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14. THIS IS A RE-INVESTIGATION BY SURESEARCH. AMENDMENTS ARE HIGHLIGHTED VIA REVIEW CLOUDS, EXTENSION OF SCOPE.
15. SYDNEY METRO TUNNEL EXTENTS WERE DIGITISED IN AS PER DP1256400. NO PHYSICAL STRUCTURE WAS LOCATED ON SITE. NO ASSOCIATED INFRASTRUCTURE OR SERVICES WERE FOUND BELONGING TO SYDNEY METRO.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS
Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.
Line work sample; ---EL-B--- Quality level represented within linework, Underground Electricity (Quality Level "B").

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QL-B: Information is collected by designating the horizontal and vertical location of underground utilities by using electromagnetic pipe and cable locators, sondes or Non-Place, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three-dimensional information. Electronically traced locate marks with poor scratchy signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Dial-Before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indications of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to +/- origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY
MGA 56 / GDA 2020
SS 38398
E 333326.408
N 6248011.740
AHD 18.680

A1 SCALES
0 2 4 6 8 10
SCALE 1:100

RICHARD CROOKES CONSTRUCTIONS PTY LTD
JOB NO. 80381_V2
102 REGENT STREET, REDFERN
QL-A / QL-B UTILITY INVESTIGATION

SURVEYED: MT	DATE: 20-10-2021	FILE NAME: 80381_Richard Crookes_Redfern_V2
LOCATED: RM / BC	DATE: 20-10-2021	MODEL NAME: 80381ab
COMPILED: AB	DATE: 27-10-2021	
REVIEWED: GY	DATE: 27-10-2021	SHEET 2 of 4 SHEETS
ISSUED BY: MN	DATE: 27-10-2021	

UTILITY ASSETS LEGEND

ELECTRICITY	X	EU-A-B-C-D
TELECOMMUNICATIONS	X	TN-A-B-C-D
OPTIC FIBRE	X	OU-A-B-C-D
LOW PRESSURE GAS	X	LG-A-B-C-D
HIGH PRESSURE GAS	X	HG-A-B-C-D
WATER MAIN	X	WM-A-B-C-D
FIRE MAIN	X	FM-A-B-C-D
SEWER MAIN	X	SM-A-B-C-D
STORMWATER	X	SW-A-B-C-D
UNKNOWN SERVICE	X	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		

DENOTES DEPTH TO SERVICE

HYDRANT
STOP VALVE
WATER METER
FIRE HYDRANT
WATER TAP
TELEPHONE PIT
TELEPHONE TWIN PIT
TELEPHONE LARGE SUMP
TELEPHONE DISTRIBUTION PILLAR
LIGHT POLE
POWER AND LIGHT POLE
POWER POLE
CABLE MARKER
GATIC COVER
UNIDENTIFIED SERVICE
CABLE JUNCTION BOX
RMS TRAFFIC LIGHT
RMS SIGNAL PIT
SEWER LAMP HOLE
SEWER MANHOLE
GAS TEST POINT - HIGH PRESSURE
GAS PIPE MARKER
GAS VALVE BOX
DRAINAGE DOWN PIPE
SMALL DRAINAGE GULLY PIT
DRAINAGE JUNCTION MANHOLE
SIGN
GATE
END OF TRACE EOT
TOP OF SERVICE TOS
DEPTH TO INVERT OF PIPE IL

NOTES

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6. SERVICES SHOWN UNLISTED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT. THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
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12. REFER TO CCTV FOOTAGE FOR FURTHER INFORMATION.
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14. THIS IS A RE-INVESTIGATION BY SURESEARCH. AMENDMENTS ARE HIGHLIGHTED VIA REVIEW CLOUDS, EXTENSION OF SCOPE.
15. SYDNEY METRO TUNNEL EXTENTS WERE DIGITISED IN AS PER DP1252400. NO PHYSICAL STRUCTURE WAS LOCATED ON SITE. NO ASSOCIATED INFRASTRUCTURE OR SERVICES WERE FOUND BELONGING TO SYDNEY METRO.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

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Line work sample: —ELEC— Quality level represented within linework: Underground Electricity (Quality Level "B").

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REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY
MGA 56 / GDA 2020
SS 38398
E 333326.408
N 6248011.740
AHD 18.680

A1 SCALES
0 2 4 6 8 10
SCALE 1:100

RICHARD CROOKES CONSTRUCTIONS PTY LTD
JOB NO. 80381_V2
102 REGENT STREET, REDFERN
QL-A / QL-B UTILITY INVESTIGATION

SURVEYED:	DATE:	FILE NAME:	
MT	20-10-2021	80381_Richard Crookes_Redfern_V2	
LOCATED:	DATE:	MODEL NAME:	
RM / BC	20-10-2021	80381ab	
COMPILED:	DATE:		
AB	27-10-2021		
REVIEWED:	DATE:		
GY	27-10-2021		
ISSUED BY:	DATE:		
MN	27-10-2021		

SHEET 3 of 4 SHEETS

SureSearch UNDERGROUND SERVICES
1300 884 520
www.suresearch.com.au

A1 Border version: July 2021

UTILITY ASSETS LEGEND

ELECTRICITY	X	EU-A-B-C-D
TELECOMMUNICATIONS	X	TN-A-B-C-D
OPTIC FIBRE	X	OU-A-B-C-D
LOW PRESSURE GAS	X	LG-A-B-C-D
HIGH PRESSURE GAS	X	HG-A-B-C-D
WATER MAIN	X	WM-A-B-C-D
FIRE MAIN	X	FM-A-B-C-D
SEWER MAIN	X	SM-A-B-C-D
STORMWATER	X	SW-A-B-C-D
UNKNOWN SERVICE	X	UP-A-D
PROPERTY BOUNDARY		
LIMIT OF SURVEY		
FENCE		

DENOTES DEPTH TO SERVICE	445.5mm
HYDRANT	HY
STOP VALVE	
WATER METER	M
FIRE HYDRANT	FH
WATER TAP	
TELEPHONE PIT	
TELEPHONE TWIN PIT	
TELEPHONE LARGE SUMP	
TELEPHONE DISTRIBUTION PILLAR	TDP
LIGHT POLE	
POWER AND LIGHT POLE	
POWER POLE	PP
CABLE MARKER	EC
GATIC COVER	GAT
UNIDENTIFIED SERVICE	
CABLE JUNCTION BOX	EJB
RMS TRAFFIC LIGHT	
RMS SIGNAL PIT	
SEWER LAMP HOLE	SLH
SEWER MANHOLE	
GAS TEST POINT - HIGH PRESSURE	
GAS PIPE MARKER	GP
GAS VALVE BOX	
DRAINAGE DOWN PIPE	DP
SMALL DRAINAGE GULLY PIT	
DRAINAGE JUNCTION MANHOLE	
SIGN	
GATE	
END OF TRACE	EOT
TOP OF SERVICE	TOS
DEPTH TO INVERT OF PIPE	IL

NOTES

1. THIS PLAN SHOWS A REPRESENTATION OF THE DWG MODEL. THIS MODEL SHOULD BE VIEWED IN A CADD ENVIRONMENT TO INTERPRET THE INFORMATION.
2. THIS UTILITY PLAN IS VALID FOR 28 DAYS STARTING FROM THE DATE OF THE ISSUE, AS UNDERGROUND UTILITY WORKS ARE OFTEN UPDATED. SURESEARCH PLANS MUST ABIDE BY THE DBYD REGULATIONS TO PROTECT THEIR UNDERGROUND ASSETS.
3. THIS PLAN SHOULD NOT BE USED FOR EXCAVATION PURPOSES.
4. THIS PLAN HAS BEEN DRAWN TO SCALE, AND ANY REPRODUCTION OF THIS PLAN WILL NEED TO BE DRAWN IN COLOUR AND AT THIS SCALE TO ENSURE THAT ALL RELEVANT NOTES AND ENHANCEMENTS ARE SHOWN. FAILURE TO DO THIS WILL VOID ALL INFORMATION INDICATED FOR THIS JOB.
5. ALL SERVICES HAVE BEEN ELECTRONICALLY TRACED IN THE FIELD AND ARE SHOWN HERE FOR DIAGRAMATIC PURPOSES ONLY. DEPTHS SHOWN ARE APPROXIMATE ONLY AND SHOULD BE VERIFIED PRIOR TO WORKS.
6. SERVICES SHOWN UNLISTED HAVE BEEN PLACED FROM RELEVANT AUTHORITY PLANS AND ARE SHOWN AS QL-D.
7. POTHOLING IS REQUIRED TO VERIFY UTILITY LOCATIONS AND DEPTHS ARE CORRECT. THAT IS QL-A, AND IS REQUIRED TO DETERMINE AND CONFIRM UNKNOWN ASSET CONFIGURATIONS.
8. ELECTRICITY IS HIGH VOLTAGE UNLESS OTHERWISE STATED. TO CONFIRM VOLTAGES ALONG THE LINE WOULD REQUIRE OBTAINING CONFIGURATION/SCHEMATIC PLANS. NOT ALL ELECTRICITY CABLES ARE ENCLOSED IN CONDUITS OR MARKED WITH INDICATORS OF THEIR PRESENCE.
9. REFER TO THE UTILITY LOCATING DISCLAIMER INCLUDED WITH THE DELIVERABLES FOR A VISUAL REPRESENTATION OF SUB-SURFACE ACCURACY TOLERANCES AND IMPLIED CONFIDENCES.
10. THE CADASTRAL BOUNDARIES HAVE BEEN DERIVED FROM THE DIGITAL CADASTRAL DATABASE (DCDB). THIS INFORMATION IS SHOWN FOR PLAN CONTEXT ONLY AND IS OF UNKNOWN ACCURACY OR QUALITY.
11. STANDBYS ARE REQUIRED FOR ALL EXCAVATIONS NEAR SECONDARY OR HIGHER GAS MAINS.
12. REFER TO CCTV FOOTAGE FOR FURTHER INFORMATION.
13. LIMIT OF SURVEY HAS BEEN SHOWN AS PER REQUESTED SCOPE. FEATURES OUTSIDE THE LIMIT OF SURVEY HAVE BEEN INCLUDED FOR CLARIFICATION PURPOSES.
14. THIS IS A RE-INVESTIGATION BY SURESEARCH. AMENDMENTS ARE HIGHLIGHTED VIA REVIEW CLOUDS, EXTENSION OF SCOPE.
15. SYDNEY METRO TUNNEL EXTENTS WERE DIGITISED IN AS PER DP1258400. NO PHYSICAL STRUCTURE WAS LOCATED ON SITE. NO ASSOCIATED INFRASTRUCTURE OR SERVICES WERE FOUND BELONGING TO SYDNEY METRO.

SUBSURFACE UTILITY INFORMATION (SUI) AS5488 LOCATION CLASS

Labelling utility information by a classification code allows the user of this information to understand clearly how the information was collected and then place an appropriate amount of reliance on it. Project risks related to underground utilities can then be properly managed.

Line work sample: ---EU-B--- Quality level represented within linework. Underground Electricity (Quality Level "B").

QL-A: Information is the highest possible level of accuracy and is obtained by exposing the underground utility using a non-destructive excavation (pot holing) technique. The vertical information for this locating method is to the top or shallowest part of the located service. The 3D location is recorded by survey as an X, Y, Z coordinate.

QL-B: Information is collected by designating the horizontal and vertical locations of underground utilities by using electromagnetic pipe and cable locators, sondes or ferro-trace, ground penetrating radar and acoustic pulse equipment. This is the most common form of utility locating and although an X, Y and Z axis can be established it is not always entirely accurate due to differing electromagnetic fields, soil conditions and multiple banks of cables affecting the locating signal.

QL-C: Information is collected by correlating the survey of visible utility surface features such as marker plates or water hydrants and acquired Dial-Before-You-Dig plans to "draw" a string which shows the approximate position of services. This method does not usually show multiple banks of cables and does not always show three-dimensional information. Electronically traced locate marks with poor sonic/rx signals are represented as QL-C.

QL-D: Information is the most basic level of utility locations using only information based on existing Dial-before-You-Dig plans and by measuring boundary offsets etc. This method of utility locations should always be treated as an indication of the presence of a service only and should not be used for design. GPR scans are also represented as QL-D as the GPR image cannot be confirmed to it's origin point. Depths on GPR scan must be treated as indicative only.

REVISION PANEL

NO.	DATE	REVISION DESCRIPTION

ORIGIN OF SURVEY
MGA 56 / GDA 2020
SS 38398
E 333326.408
N 6248011.740
AHD 18.680

A1 SCALES
0 2 4 6 8 10
SCALE 1:100

RICHARD CROOKES CONSTRUCTIONS PTY LTD
JOB NO. 80381_V2
102 REGENT STREET, REDFERN
QL-A / QL-B UTILITY INVESTIGATION

SURVEYED: MT	DATE: 20-10-2021	FILE NAME: 80381_Richard Crookes_Redfern_V2	
LOCATED: RM / BC	DATE: 20-10-2021	MODEL NAME: 80381ab	
COMPILED: AB	DATE: 27-10-2021		
REVIEWED: GY	DATE: 27-10-2021	SHEET 4 of 4 SHEETS	
ISSUED BY: MN	DATE: 27-10-2021		

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APPENDIX C

20009DA - 104-116 REGENT STREET, REDFERN

Development Application

WEE HUR

NOVEMBER 2021

Council	City of Sydney
Lot & DP	DP 1026349
Zoning	B3
Site Area	1366m^2

Drawing Schedule

Sheet Number	Sheet Name	Revision	Rev Date
DA1.00	Cover Page	A	25.11.2021
DA1.01	Site Analysis	A	25.11.2021
DA1.03	Setbacks - Site Plan	A	25.11.2021
DA1.04	Setbacks - Levels	A	25.11.2021
DA2.01	Demolition Plan - Ground Floor	A	23.10.2020
DA3.01	Site Plan	B	25.11.2021
DA3.02	Entry Level	B	25.11.2021
DA3.03	Level 02	B	25.11.2021
DA3.04	Level 03	B	25.11.2021
DA3.05	Level 04	B	25.11.2021
DA3.06	Level 05 -08	B	25.11.2021
DA3.07	Level 09 - 15	B	25.11.2021
DA3.08	Level 16	B	25.11.2021
DA3.09	Level 17 / 18	B	25.11.2021
DA3.10	Roof Plan	B	25.11.2021
DA4.01	Long Section + Short Section	A	29.10.2021
DA5.01	Regent St - Elevation	B	25.11.2021
DA5.02	Northern Elevation + Southern Elevation	B	25.11.2021
DA5.03	William Ln - Elevation	B	25.11.2021
DA6.01	Project Data Schedule	D	22.10.2021
DA6.02	Shadow Diagrams - 21 JUNE 2021	A	25.11.2021
DA7.02	Material Board	B	25.11.2021
DA7.03	Signage Details	A	25.11.2021
DA8.01	Notification Plan		

Grand total: 24

NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		25.11.2021

ANTONIADES ARCHITECTS
www.antoniades.com.au
ACN 129 731 559
Nominated Architect: Andreas Antoniades
NSW Registration 7954

PROJECT PHASE: DEVELOPMENT APPLICATION
STATUS: PRELIMINARY

PROJECT NO.: 20009DA
PROJECT: REGENT STREET
ADDRESS: 104-116 REGENT STREET
CLIENT: WEE HUR

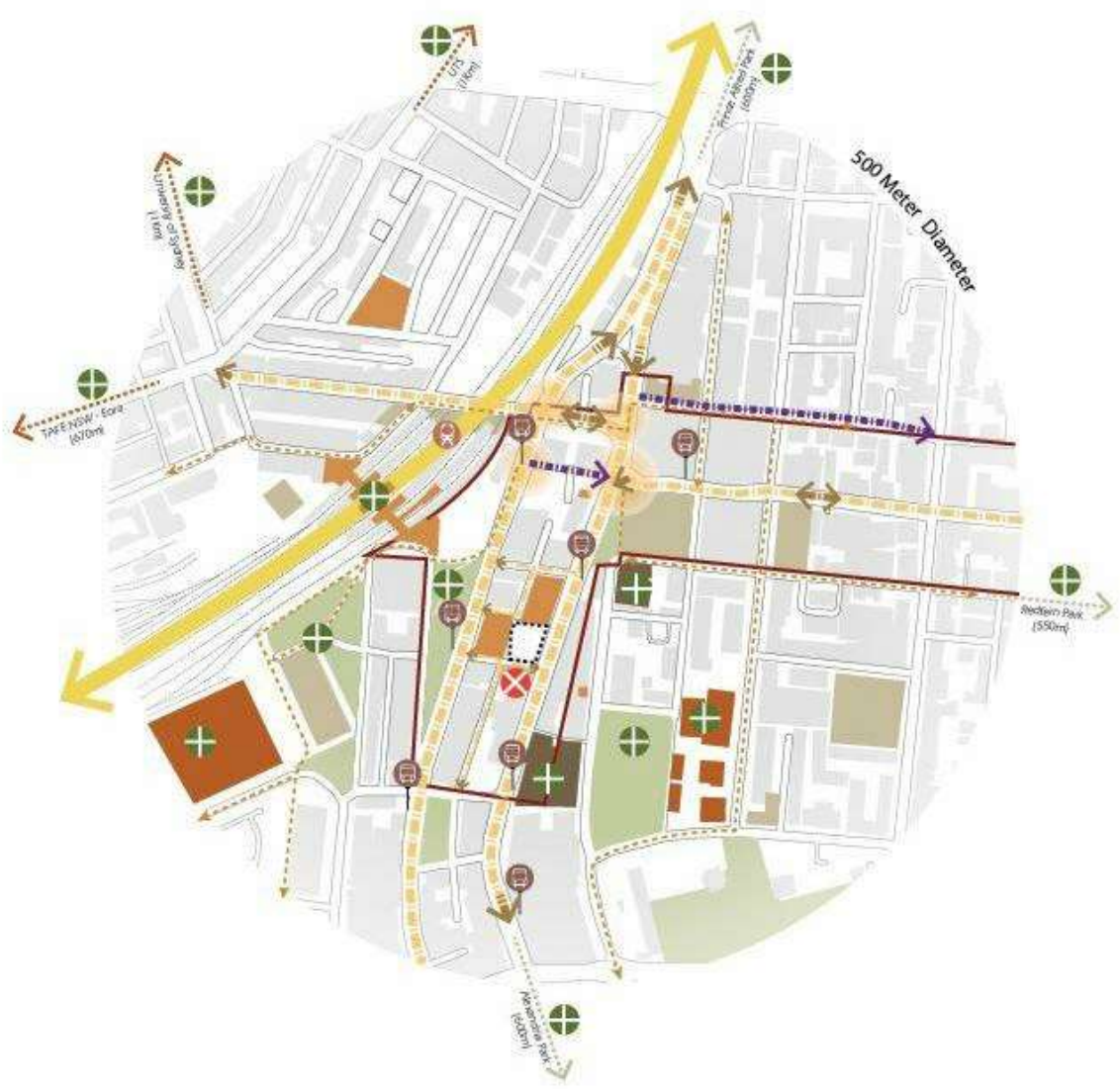
DRAWING SERIES: Overall Plans
DRAWING TITLE: Cover Page

DRAWING NO.: DA1.00
REVISION: A
DRAWN BY: ZD
CHECKED BY: AA
SCALE: NTS @A3

LEGEND

- PUBLIC PARKS
- SUBJECT SITE
- DISTANCE TO EDUCATIONAL INSTITUTION
- EDUCATIONAL INSTITUTION
- DISTANCE TO HERITAGE ITEM
- HERITAGE ITEM
- COMMUNITY BUILDING
- FUTURE DEVELOPMENT
- REDFERN TOWN CENTER
- SHARED ZONE
- VEHICULAR MOVEMENT
- TRAIN NETWORK
- BICYCLE MOVEMENT
- TRAIN STATION
- BUS STOPS
- MAIN INTERSECTION

THE URBAN CONTEXT



OPPORTUNITIES

- Close to community amenities (eg. Aboriginal legal Services located in Redfern town centre which is a prime location to attract more people
- Access to main roads like Gibbons and Regent St with Bus lines close to Redfern train station and new connection line to be implemented
- Close to cycling roads
- No stopping zone on Regent Street in front of site
- Margaret st is a quiet street better for pedestrians
- 18 Storey height limit allows for more occupants and thus more chances to proposed public amenities for students and for the community
- Height of proposal will correspond to height of 90-102 Regent st / 13-23 Gibbons St/11 Gibbons st/90-98 Regent St
- Close to parks
- Good natural air circulation
- Views and access to Redfern Park (East)
- Views and access to Alexandria Park (South)
- Views and access to Heritage buildings
- Townhouses rythm can inspire treatment of the proposed podium

CONSTRAINTS

- Close to the church (heritage) + 2 storey
- Proposed and approved neighbour buildings will impact sun access
- Gibbons St and Regent St very noisy
- Student rooms orientation need to work with the other 18 storey buildings orientation
- Neighbour buildings overshadowing the site
- Wind tunneling effect on Regent st
- Transitional site / Precinct

REFER TO DESIGN REPORT FOR MORE INFORMATION

NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		25-11-2021

PROJECT PHASE: DEVELOPMENT APPLICATION

STATUS: PRELIMINARY

PROJECT NO.: 20009DA

PROJECT: REGENT STREET

ADDRESS: 104-116 REGENT STREET

CLIENT: WEE HUR

DRAWING NO.: DA1.01

REVISION: A

DRAWN BY: ZD

CHECKED BY: AA

SCALE: NTS @A3

NORTH

DRAWING SERIES: Site Information

DRAWING TITLE: Site Analysis

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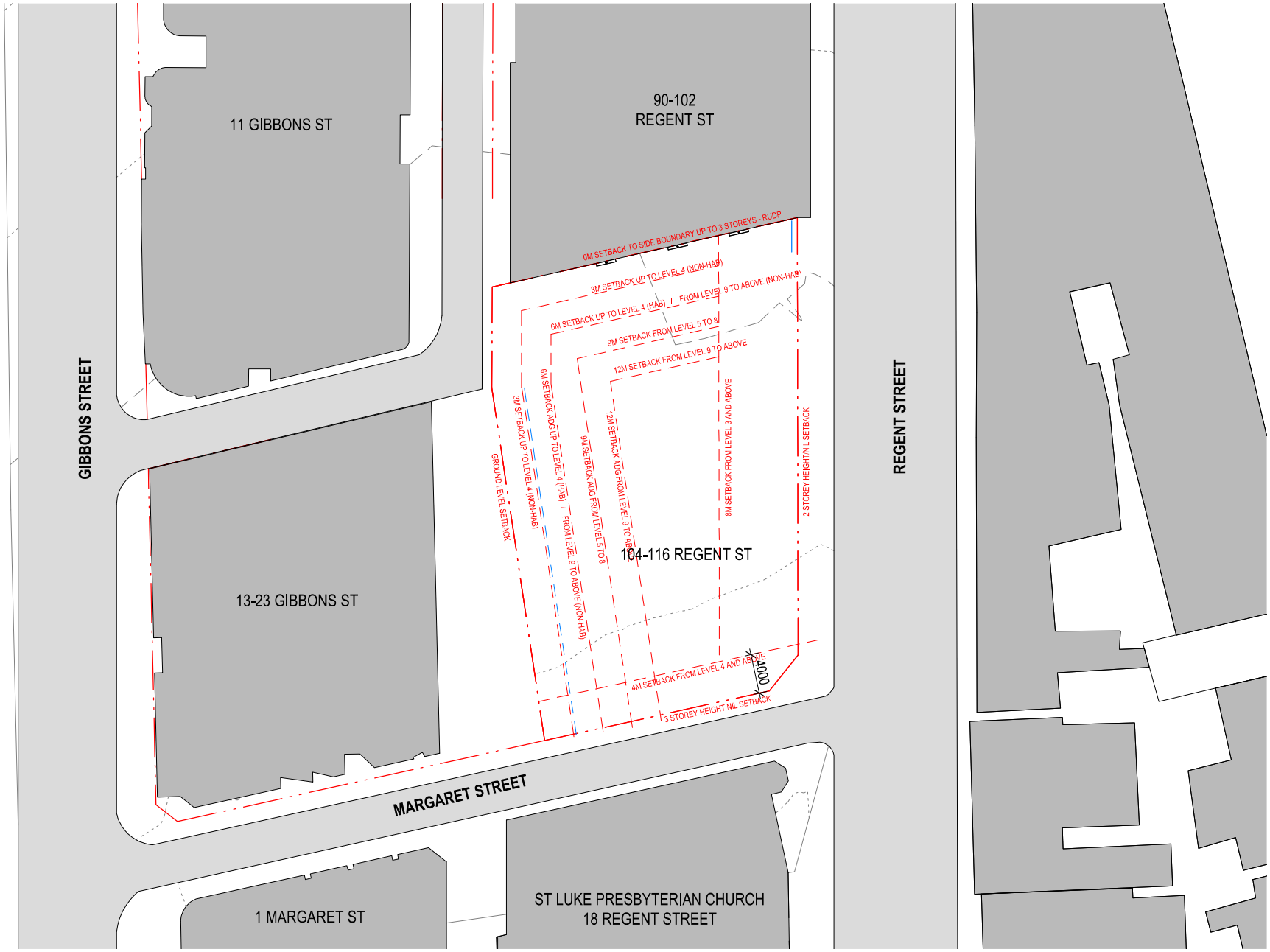
www.antoniades.com.au ACN 129 731 559

Nominated Architect: Andreas Antoniades NSW Registration 7954



NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		25.11.2021

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PROJECT PHASE: DEVELOPMENT APPLICATION
STATUS: PRELIMINARY

PROJECT NO.: 20009DA
PROJECT: REGENT STREET
ADDRESS: 104-116 REGENT STREET
CLIENT: WEE HUR

DRAWING SERIES: Site Information
DRAWING TITLE: Setbacks - Site Plan

DRAWING NO.: DA1.03
REVISION: A
DRAWN BY: ZD
CHECKED BY: AA
SCALE: 1 : 400 @A3
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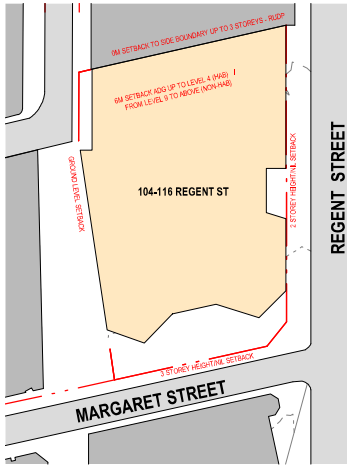
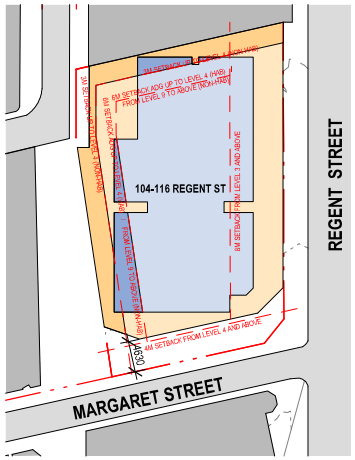
Scale 1:100
NORTH



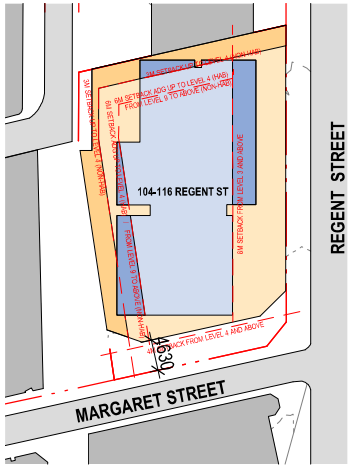
1 **Setbacks - Level 01**

Floor Plan 1 : 800



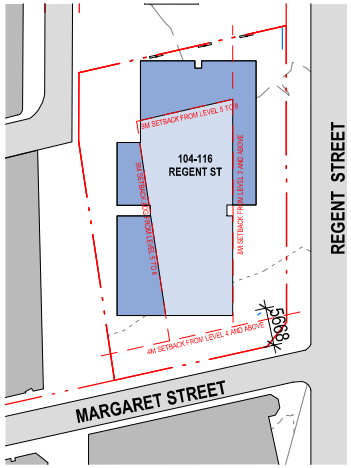
2 **Setbacks- Level 02**

Floor Plan 1 : 800



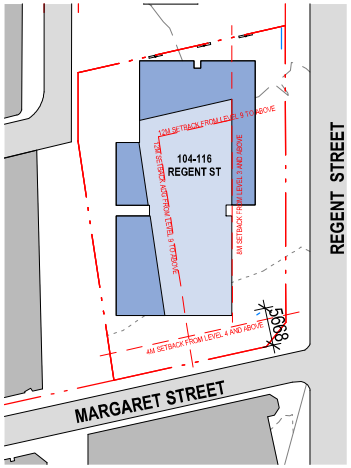
3 **Setbacks- Level 03 - 04**

Floor Plan 1 : 800



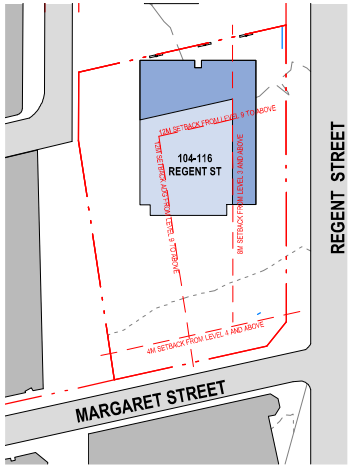
4 **Setbacks - Level 05 to 08**

Floor Plan 1 : 800



5 **Setbacks - Level 09 to 16**

Floor Plan 1 : 800



6 **Setbacks - Level 17 and Above**

Floor Plan 1 : 800

SETBACKS LEGEND

- PODIUM
- PODIUM OVER SETBACKS
- TOWER
- TOWER OVER SETBACKS

NOT FOR CONSTRUCTION

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		05.11.2021

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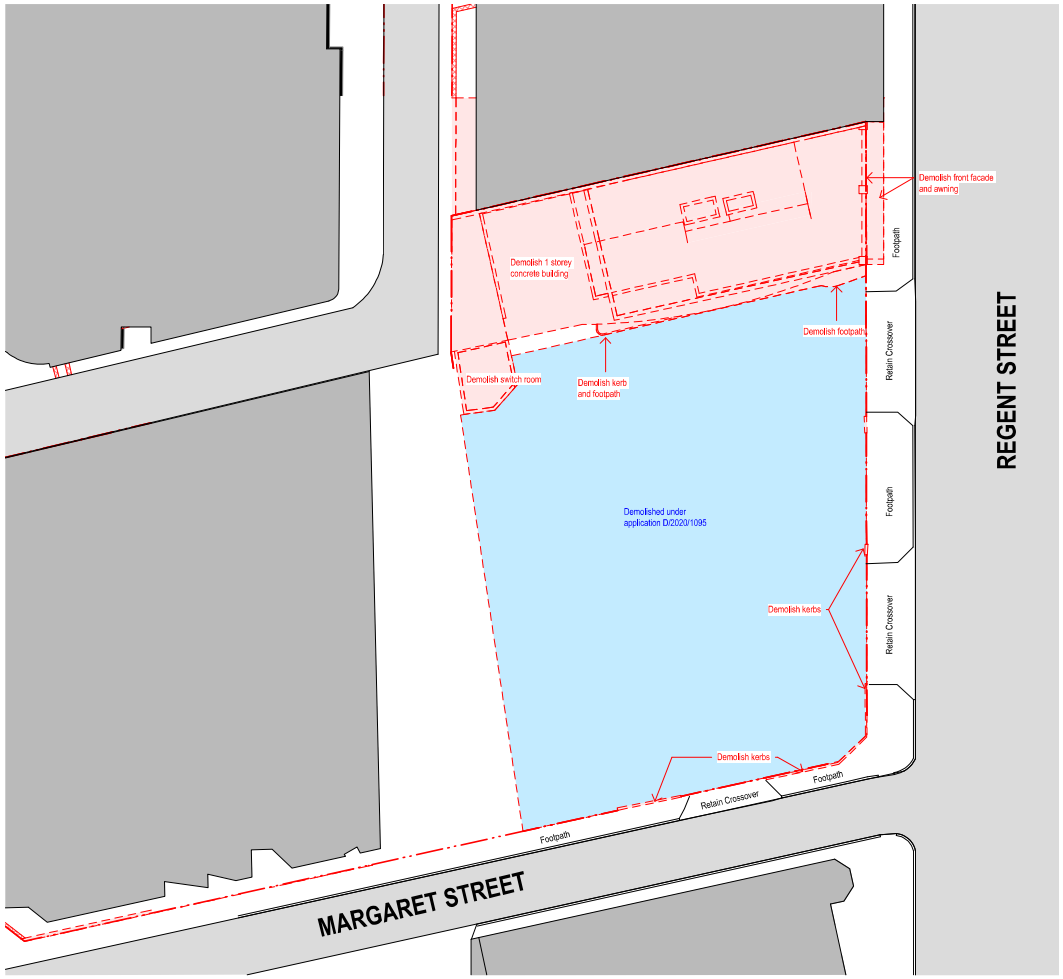
PROJECT PHASE: DEVELOPMENT APPLICATION
STATUS: PRELIMINARY

PROJECT NO.: 20009DA
PROJECT: REGENT STREET
ADDRESS: 104-116 REGENT STREET
CLIENT: WEE HUR

DRAWING SERIES: Site Information
DRAWING TITLE: Setbacks - Levels

DRAWING NO.: DA1.04
REVISION: A
DRAWN BY: ZD
CHECKED BY: AA
SCALE: As indicated @A3
Scale 1:800
NORTH

NOT FOR CONSTRUCTION



1 Demolition Plan (Entry Level)
Floor Plan 1 : 200

PLEASE NOTE : This demolition plan only concerns structures above ground and do not include any fuel tanks or services located below ground.

General Notes:

1. All drawings to be read in conjunction with all consultants and sub-contractors documentation and reports.
2. All works to conform with the National Construction Code of Australia and Australian Standards.
3. Check all dimension on site and notify Antoniades Architects of any discrepancies.
4. Refer A20 Series for specifications, materials and products schedule for full code description.

Legend:

- Property Boundary
- Setbacks
- Overhead
- Hidden
- RL 0.00 — Level Marker (Plan)
- RL 0.00 — Level Marker (Elevation)
- RL 0.00 — Level Marker (Spot)
- Room Tag (Number, Name, Area) — Room Number, Room Name, Room Area
- ABC01 — Material Tag: See Material Board for code reference

Hatches

- Existing Elements (Projection)
- Existing Elements (Cut)
- Demolished Elements (Projection)
- Demolished Elements (Cut)
- Zone for Service Penetration
- Earth
- Concrete
- Water feature
- Tile
- Carpet
- Timber Floors
- Grass
- Gravel/Stone
- Brickwork
- Metal Sheet

Abbreviations

RL	Relative Level (AHD)
FFL	Finished Floor Level
AFFL	Above FFL
TOW	Top Of Wall Level
TOR	Top of Ridge Level
P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for Information	AA	23.10.2020

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1

NORTH

0m 2 4 5m
Scale 1:100

DRAWING SERIES
Existing Plans

DRAWING TITLE
Demolition Plan - Ground Floor

DRAWING NO.	REVISION	DRWN
DA2.01	**A**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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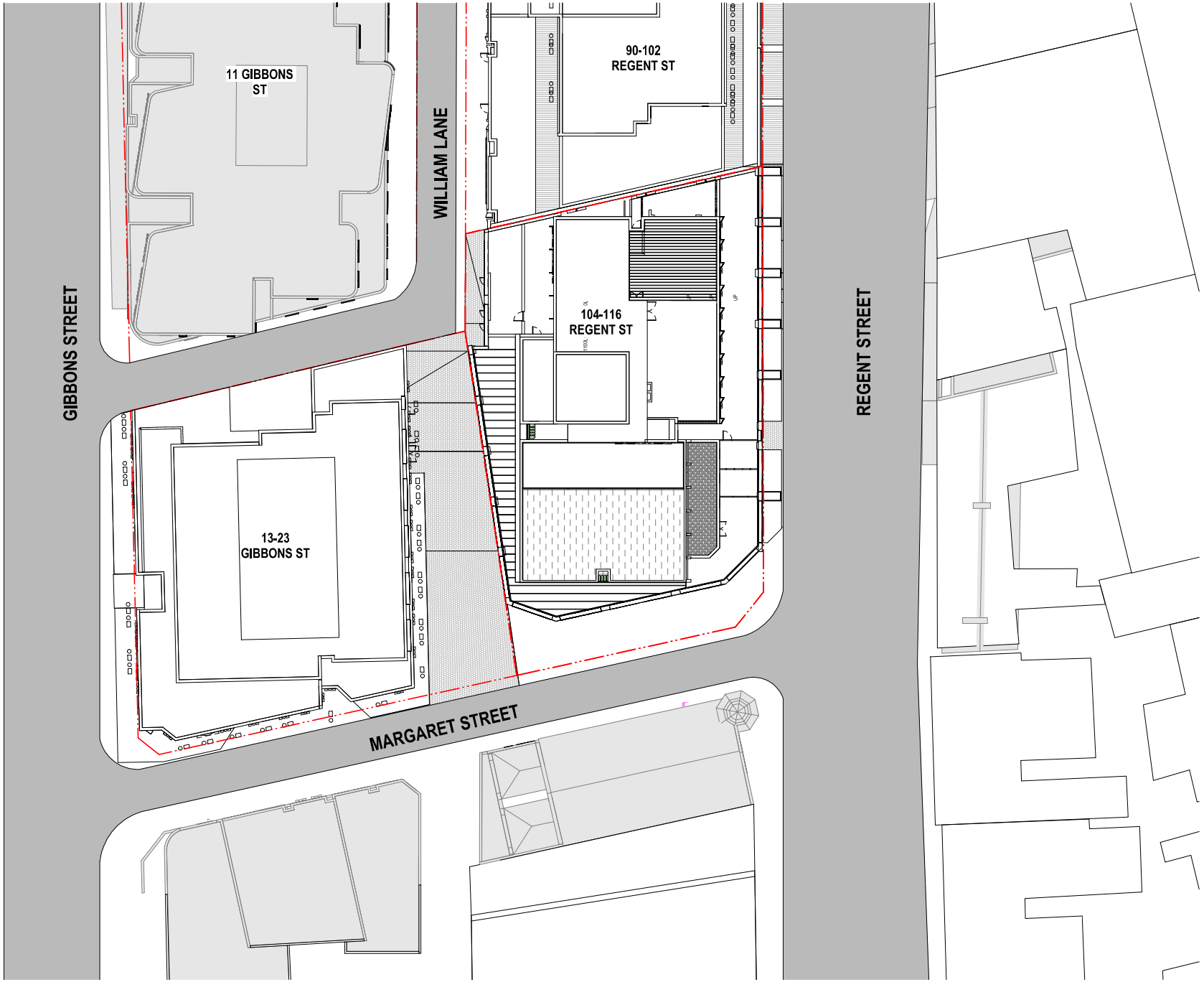
Nominated Architect: Andreas Antoniades
NSW Registration 7954



NOT FOR CONSTRUCTION

NOTES:

- All dimensions in millimeters unless otherwise shown.
- Use figured dimensions only.
- Do not scale from drawings.
- Check all dimensions on site prior to construction.
- To be read in conjunction with all other documents.
- Report any discrepancies to Antoniades Architects Pty Ltd.
- All boundary dimensions and bearings to be verified by licensed surveyor prior to proceeding with work.

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REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1

0m 4 8 10m
Scale 1:200

NORTH

DRAWING SERIES
Overall Plans

DRAWING TITLE
Site Plan

DRAWING NO.	REVISION	DRWN
DA3.01	**B**	**ZD**
		CHK: **AA**

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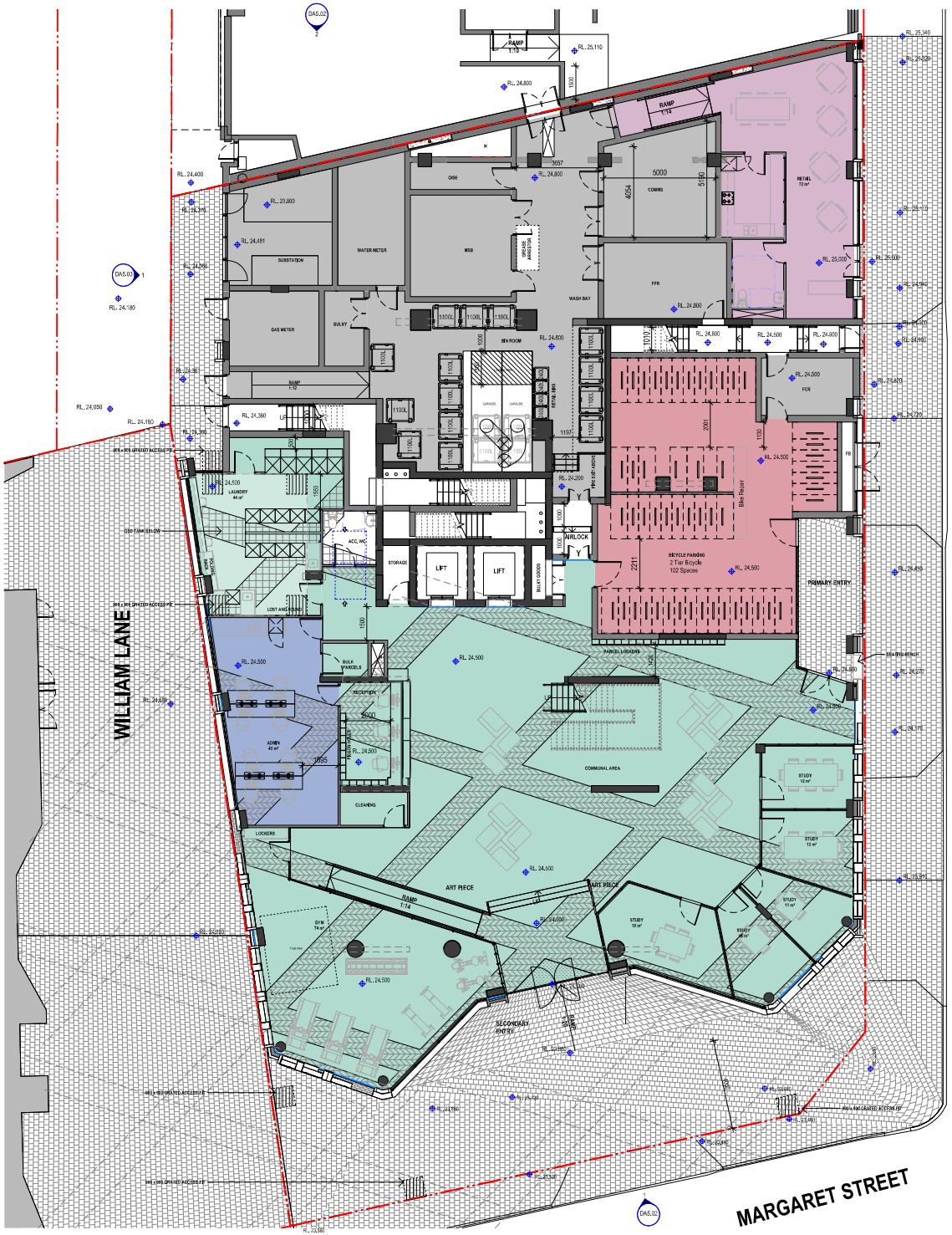
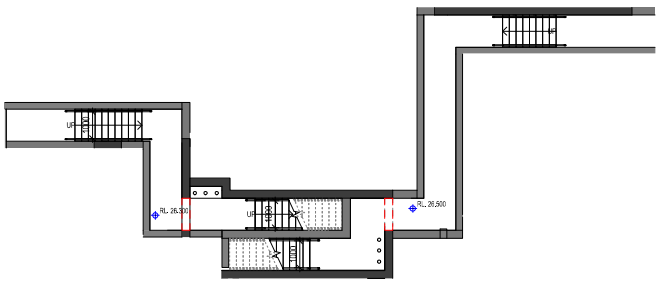
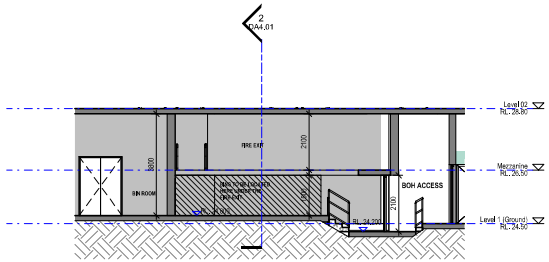


1 **Level 1 (Ground)**
Floor Plan 1 : 100



2 **Fire Exit Plan**
Floor Plan 1 : 100



3 **Section - Fire exit**
Section 1 : 100

NOTES:

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- All boundary dimensions and bearings to be verified by licensed surveyor prior to proceeding with work.

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- Overhead
- Hidden
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- RL. 0.00 — Level Marker (Elevation)
- RL. 0.00 — Level Marker (Spot)
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- Existing Elements (Cut)
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Abbreviations

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REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

NORTH

0m 1 2 4 5m
Scale 1:100

DRAWING SERIES

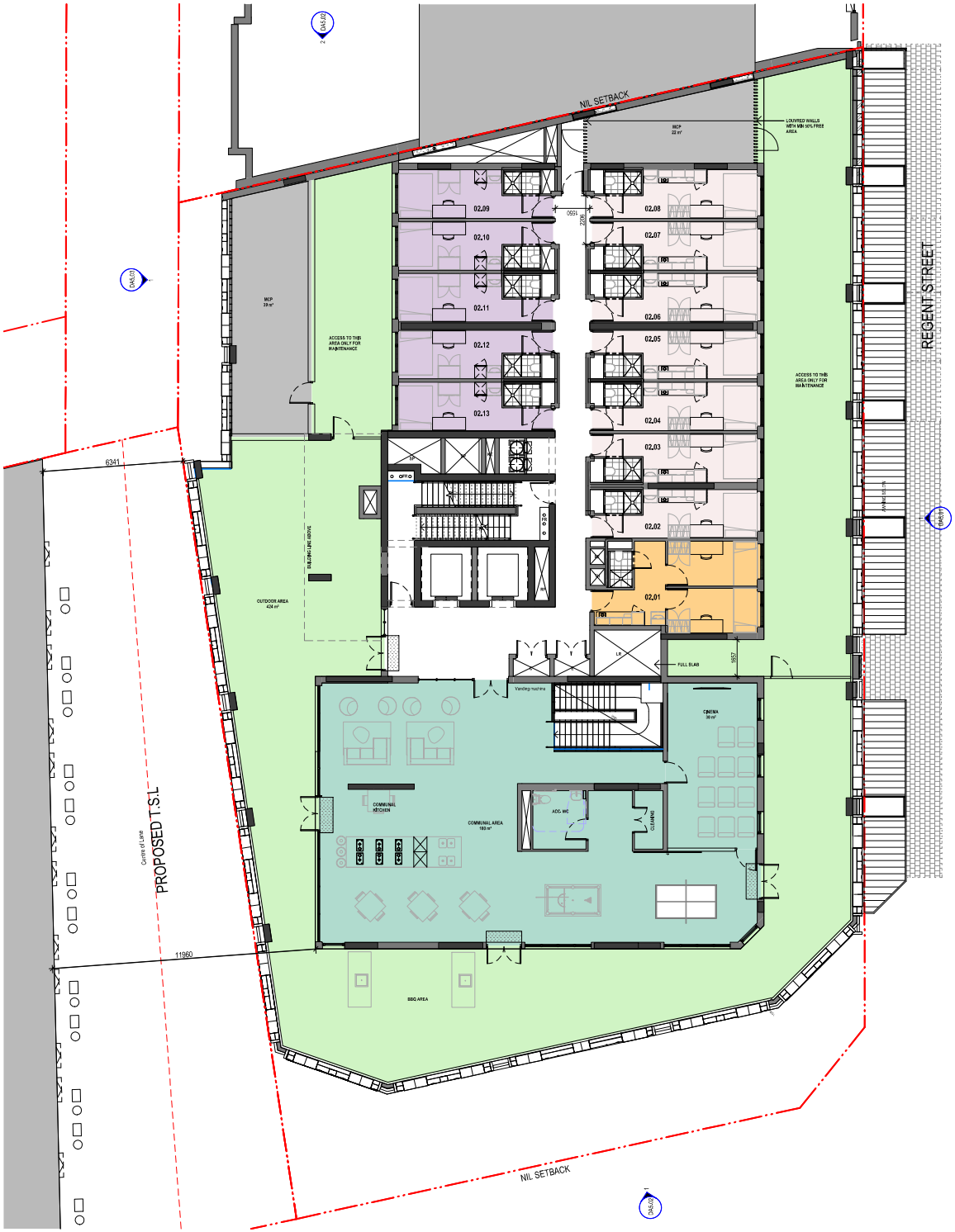
DRAWING TITLE
Entry Level

DRAWING NO.	REVISION	DRN:
DA3.02	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

www.antoniades.com.au
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954



NOT FOR CONSTRUCTION

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Legend:

- Property Boundary
- Setbacks
- Overhead
- Hidden
- RL 0.00 — Level Marker (Plan)
- RL 0.00 — Level Marker (Elevation)
- RL 0.00 — Level Marker (Spot)
- Room Tag: Number / Name / Area — Room Number, Room Name, Room Area
- ABC01 — Material Tag: See Material Board for code reference

Hatches

- Existing Elements (Projection)
- Existing Elements (Cut)
- Demolished Elements (Projection)
- Demolished Elements (Cut)
- Zone for Service Penetration
- Earth
- Concrete
- Water feature
- Tile
- Carpet
- Timber Floors
- Grass
- Gravel/Stone
- Brickwork
- Metal Sheet

Abbreviations

RL	Relative Level (AHD)
FFL	Finished Floor Level
AFFL	Above FFL
TOW	Top Of Wall Level
TOR	Top of Ridge Level
P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated @A1

NORTH

0m 1 2 4 5m
Scale 1:100

DRAWING SERIES

DRAWING TITLE
Level 02

DRAWING NO.	REVISION	DRN:
DA3.03	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

www.antoniades.com.au
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954

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- Demolished Elements (Projection)
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- Carpet
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- Grass
- Gravel/Stone
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Abbreviations

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S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

0m 6 12 15m
Scale 1:300

NORTH

DRAWING SERIES

DRAWING TITLE
Level 03

DRAWING NO.	REVISION	DRWN
DA3.04	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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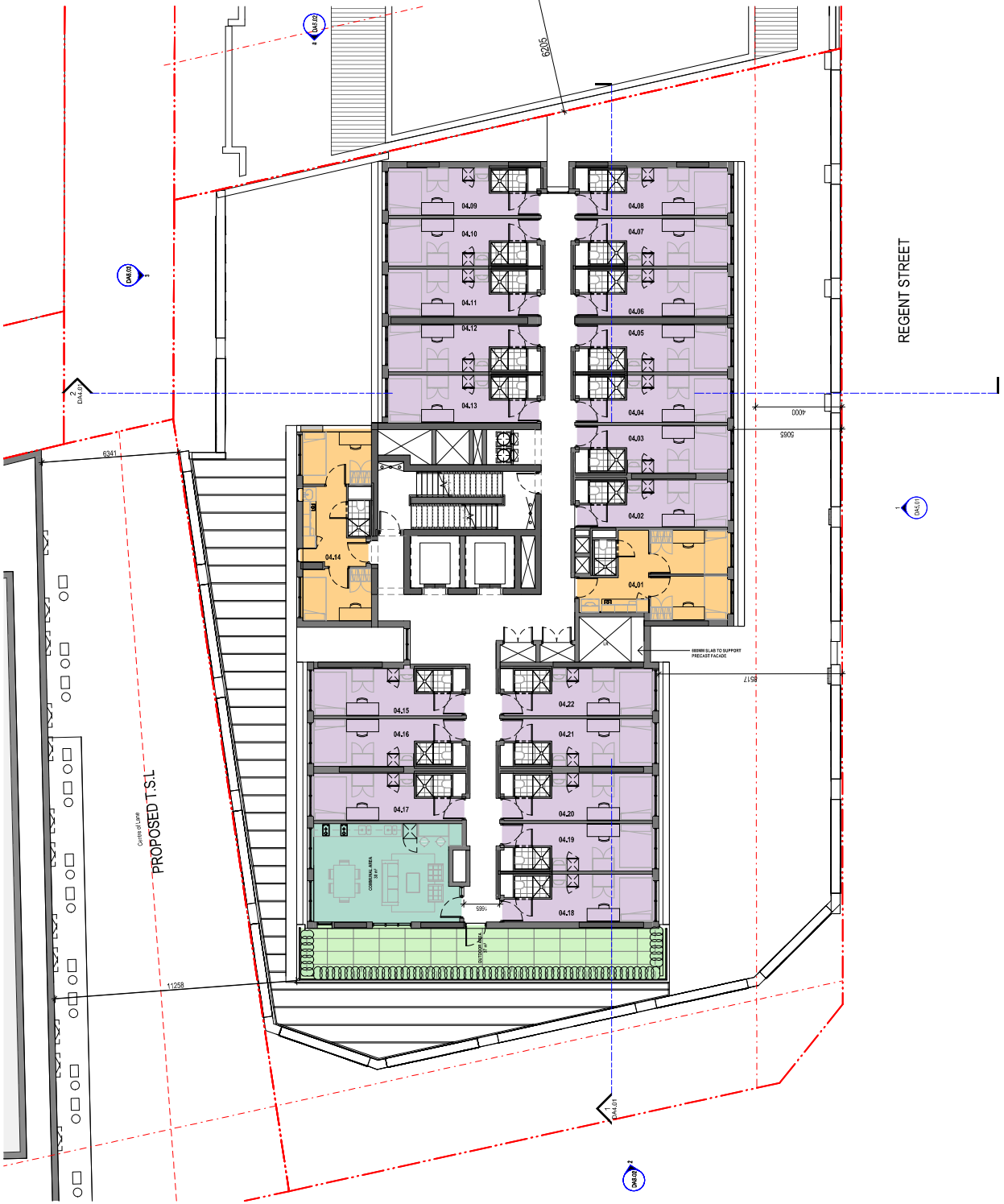
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954



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- Brickwork
- Metal Sheet

Abbreviations

RL	Relative Level (AHD)
FFL	Finished Floor Level
AFFL	Above FFL
TOW	Top Of Wall Level
TOR	Top of Ridge Level
P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		22.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

NORTH

0m 1 2 4 5m
Scale 1:100

DRAWING SERIES

DRAWING TITLE
Level 04

DRAWING NO.	REVISION	DRWN
DA3.05	**B**	**ZD**
		CHK: **AA**

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Nominated Architect: Andreas Antoniades
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NOT FOR CONSTRUCTION

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Abbreviations

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P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

0m 6 12 15m
Scale 1:300

NORTH

DRAWING SERIES

DRAWING TITLE
Level 05 -08

DRAWING NO.	REVISION	DRWN
DA3.06	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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NSW Registration 7954

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- RL 0.00 — Level Marker (Spot)
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Abbreviations

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P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

0m 6 12 15m
Scale 1:300

NORTH

DRAWING SERIES

DRAWING TITLE
Level 09 - 15

DRAWING NO.	REVISION	DRWN
DA3.07	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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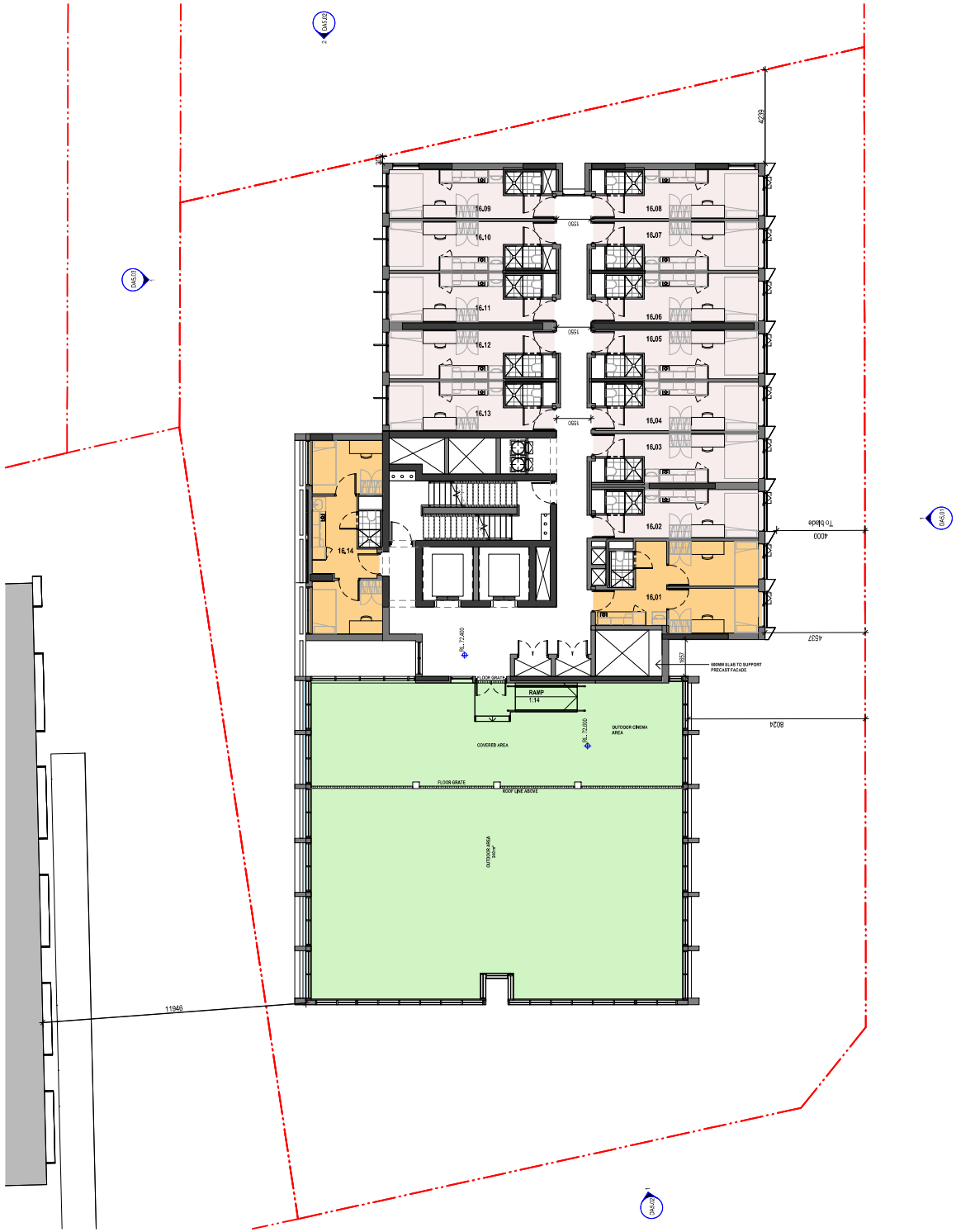
Nominated Architect: Andreas Antoniades
NSW Registration 7954



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- RL. 0.00 — Level Marker (Spot)
- Room Tag: Number, Name, Area
- A20.01 — Material Tag: See Material Board for code reference

Hatches

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- Existing Elements (Cut)
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Abbreviations

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REV	DESCRIPTION	BY	DATE
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B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

0m 6 12 15m
Scale 1:300

NORTH

DRAWING SERIES

DRAWING TITLE
Level 16

DRAWING NO.	REVISION	DRWN
DA3.08	**B**	**ZD**
		CHK: **AA**

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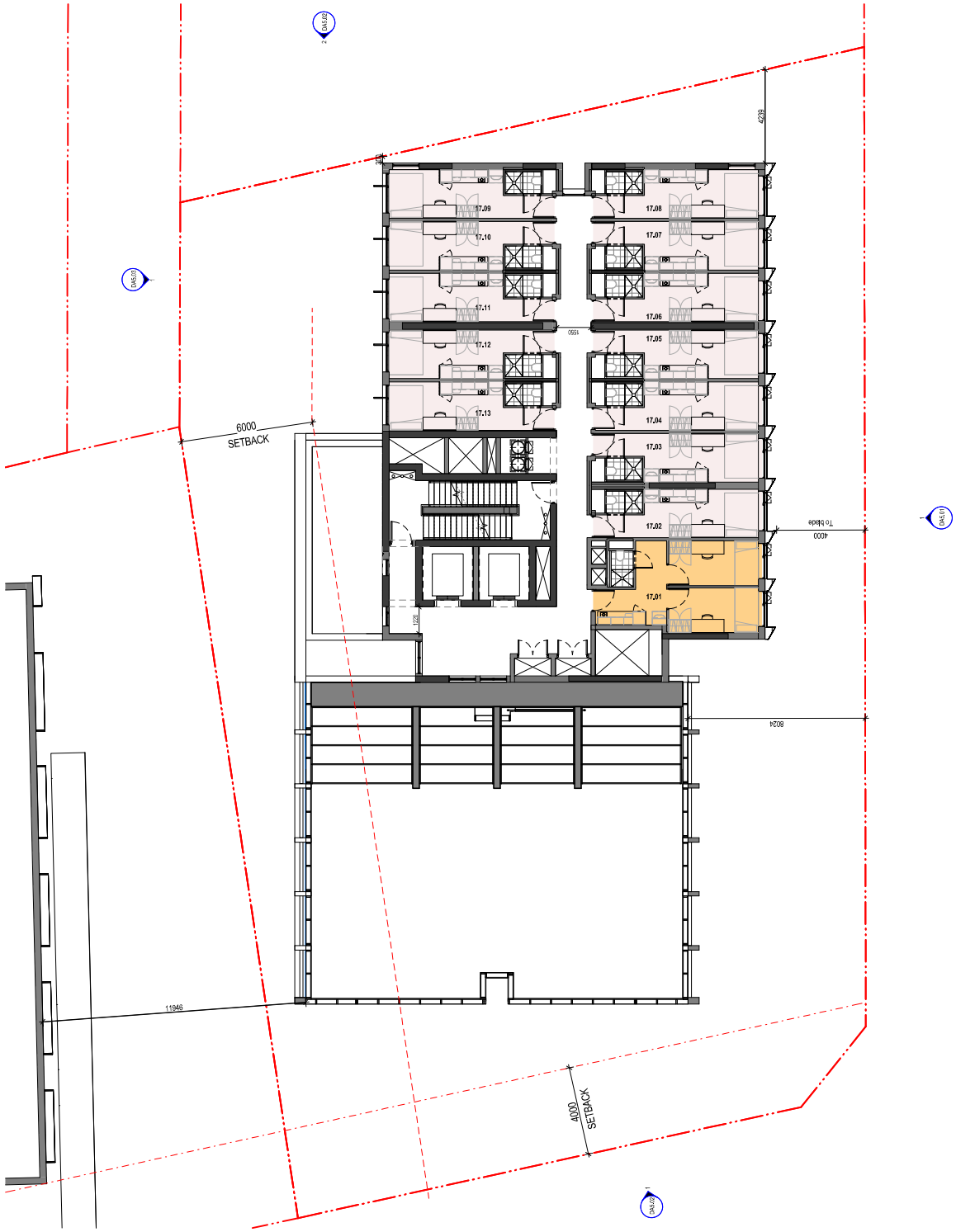

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REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

NORTH

0m 6 12 15m
Scale 1:300

DRAWING SERIES

DRAWING TITLE
Level 17 / 18

DRAWING NO.	REVISION	DRN:
DA3.09	**B**	**ZD**
		CHK: **AA**

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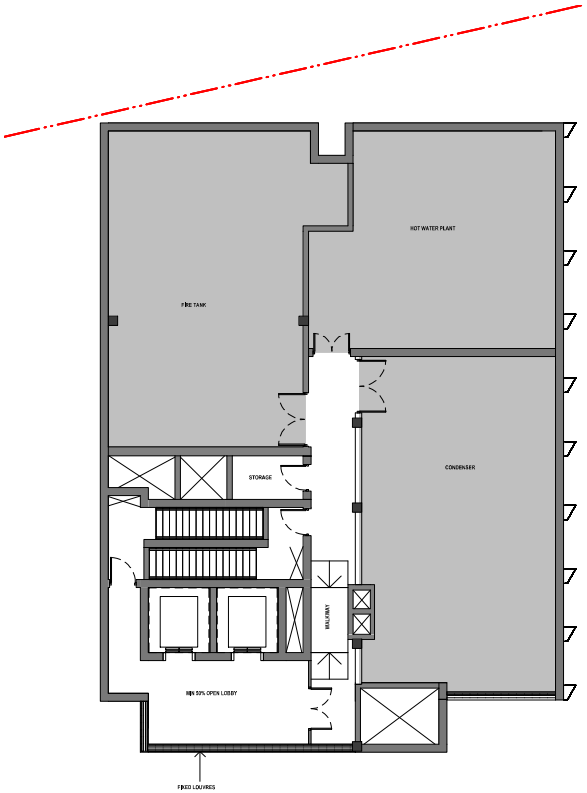
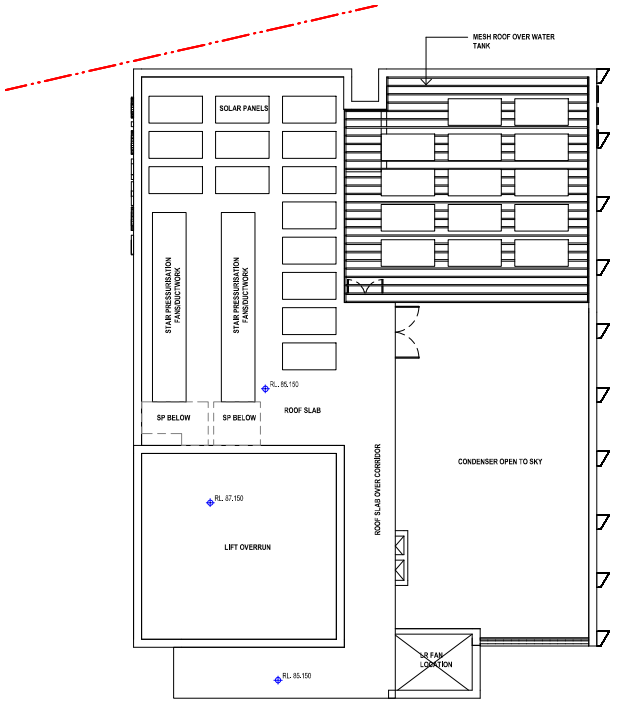


1 Roof Level
Floor Plan 1 : 100



1 DA3.01

2 Plant Level
Floor Plan 1 : 100

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S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

NORTH

0m 6 12 15m
Scale 1:300

DRAWING SERIES

DRAWING TITLE
Roof Plan

DRAWING NO.	REVISION	DRWN
DA3.10	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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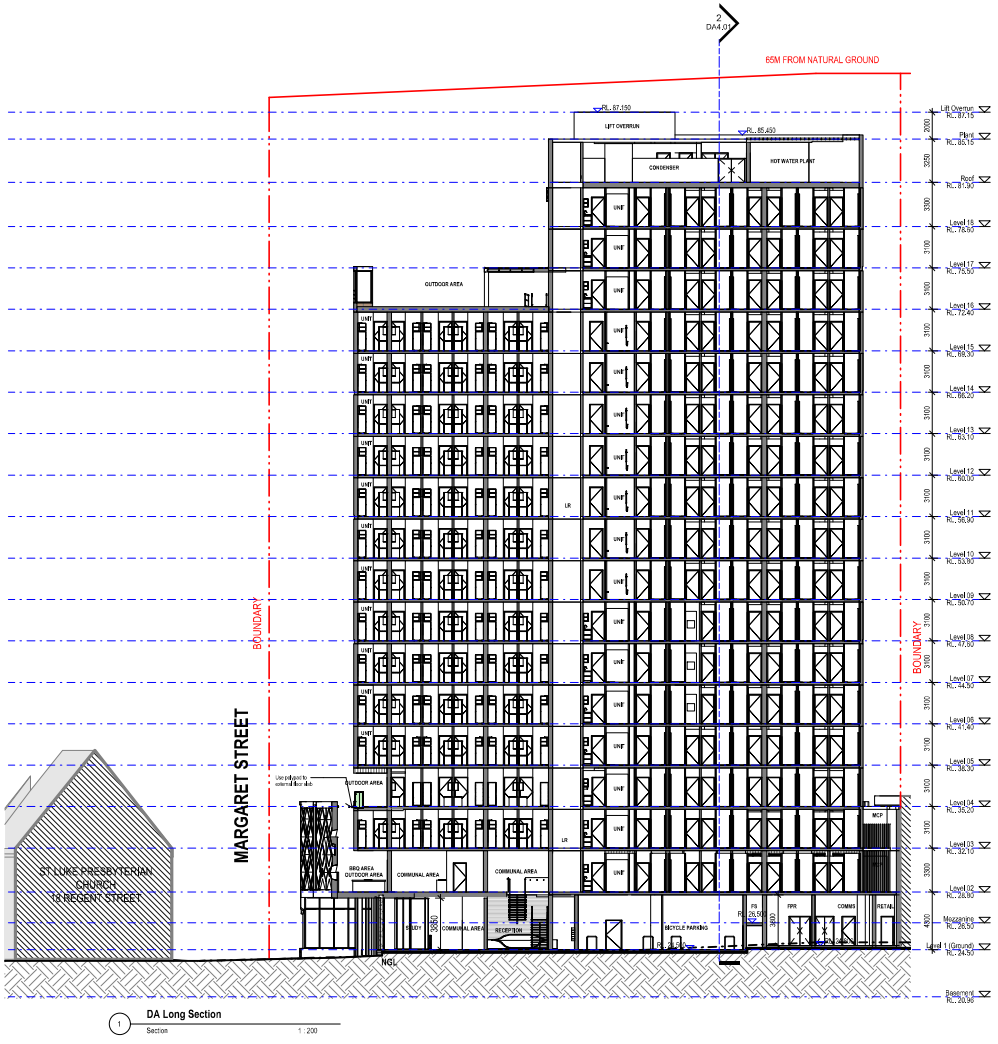
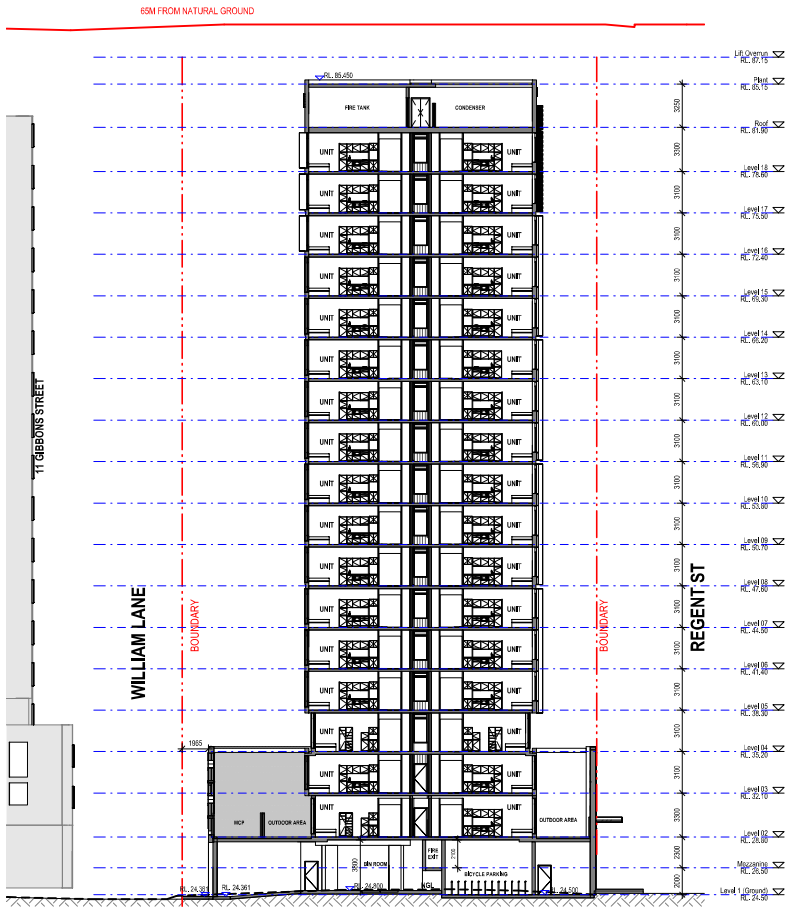


1 DA Long Section
Section 1 : 200



2 DA Short Section
Section 1 : 200

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REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1 NORTH

0m 4 8 10m
Scale 1:200

DRAWING SERIES
Sections

DRAWING TITLE
Long Section + Short Section

DRAWING NO.	REVISION	DRWN
DA4.01	**A**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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ACN 129 731 559

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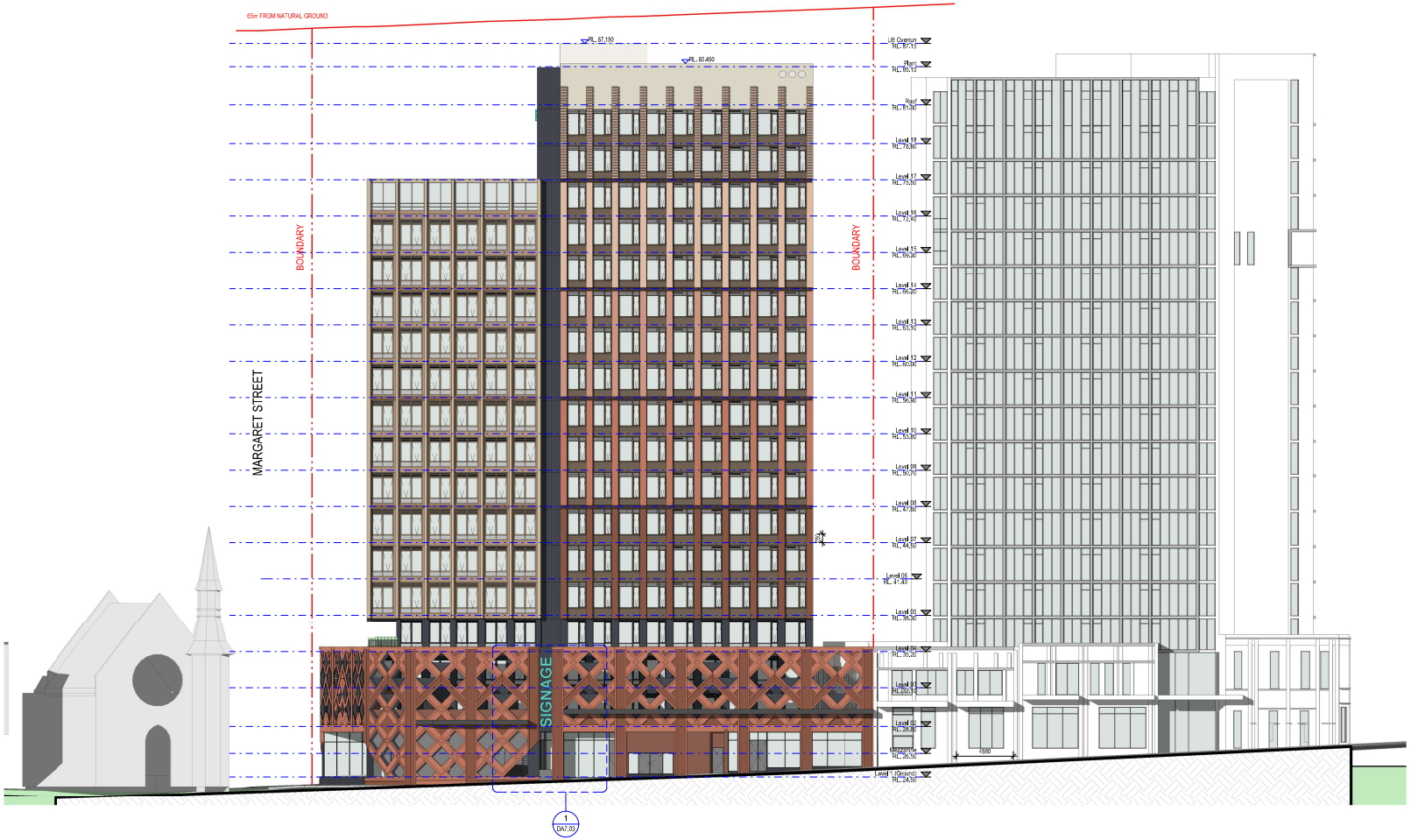

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REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
WORK IN PROGRESS

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1 NORTH

0m 4 8 10m
Scale 1:200

DRAWING SERIES
Elevations

DRAWING TITLE
Regent St - Elevation

DRAWING NO.	REVISION	DRN:
DA5.01	**B**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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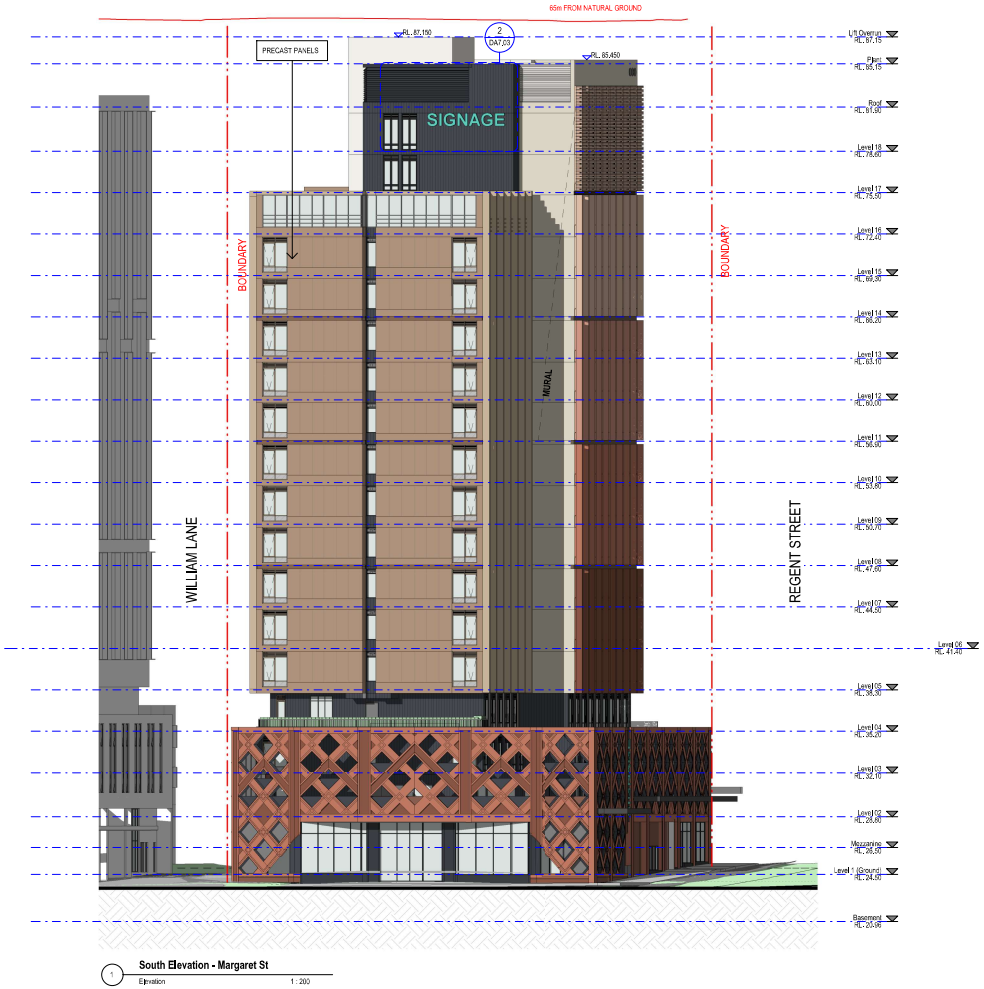
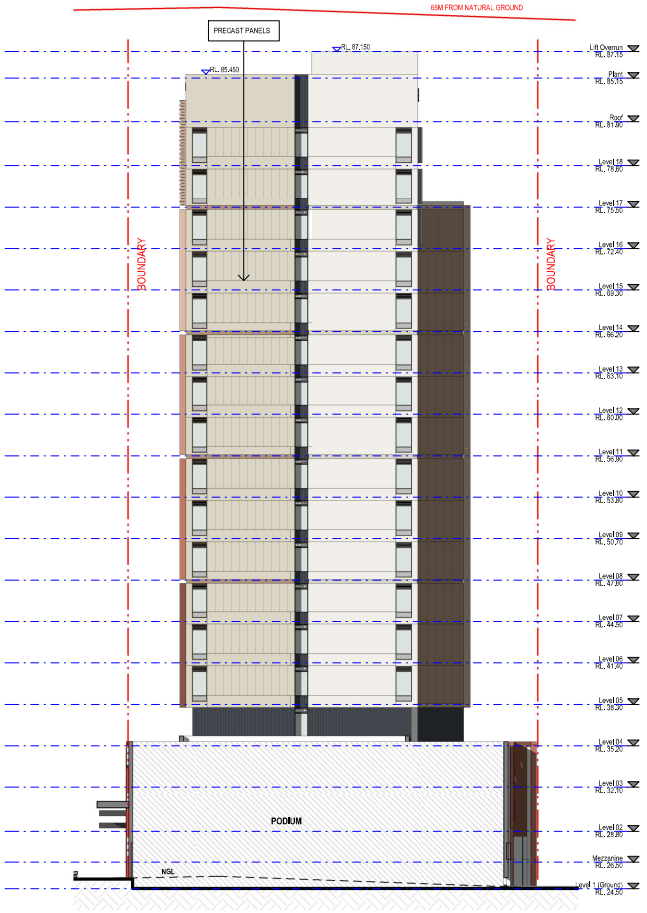
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954



1 South Elevation - Margaret St
Elevation 1 : 200



2 North Elevation
Elevation 1 : 200

NOT FOR CONSTRUCTION

NOTES:

- All dimensions in millimeters unless otherwise shown.
- Use figured dimensions only.
- Do not scale from drawings.
- Check all dimensions on site prior to construction.
- To be read in conjunction with all other documents.
- Report any discrepancies to Antoniades Architects Pty Ltd.
- All boundary dimensions and bearings to be verified by licensed surveyor prior to proceeding with work.

General Notes:

1. All drawings to be read in conjunction with all consultants and sub-contractors documentation and reports.
2. All works to conform with the National Construction Code of Australia and Australian Standards.
3. Check all dimension on site and notify Antoniades Architects of any discrepancies.
4. Refer A20 Series for specifications, materials and products schedule for full code description.

Legend:

- Property Boundary
- Setbacks
- Overhead
- Hidden
- RL. 0.00 Level Marker (Plan)
- RL. 0.00 Level Marker (Elevation)
- RL. 0.00 Level Marker (Spot)
- Room Tag (Number, Name, Area): Room Number, Room Name, Room Area
- ABC01 Material Tag: See Material Board for code reference

Hatches

- Existing Elements (Projection)
- Existing Elements (Cut)
- Demolished Elements (Projection)
- Demolished Elements (Cut)
- Zone for Service Penetration
- Earth
- Concrete
- Water feature
- Tile
- Carpet
- Timber Floors
- Grass
- Gravel/Stone
- Brickwork
- Metal Sheet

Abbreviations

RL	Relative Level (AHD)
FFL	Finished Floor Level
AFFL	Above FFL
TOW	Top Of Wall Level
TOR	Top of Ridge Level
P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
WORK IN PROGRESS

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1 NORTH

0m 4 8 10m
Scale 1:200

DRAWING SERIES
Elevations

DRAWING TITLE
Northern Elevation + Southern Elevation

DRAWING NO. **DA5.02** REVISION **B** DRN: **ZD** CHK: **AA**

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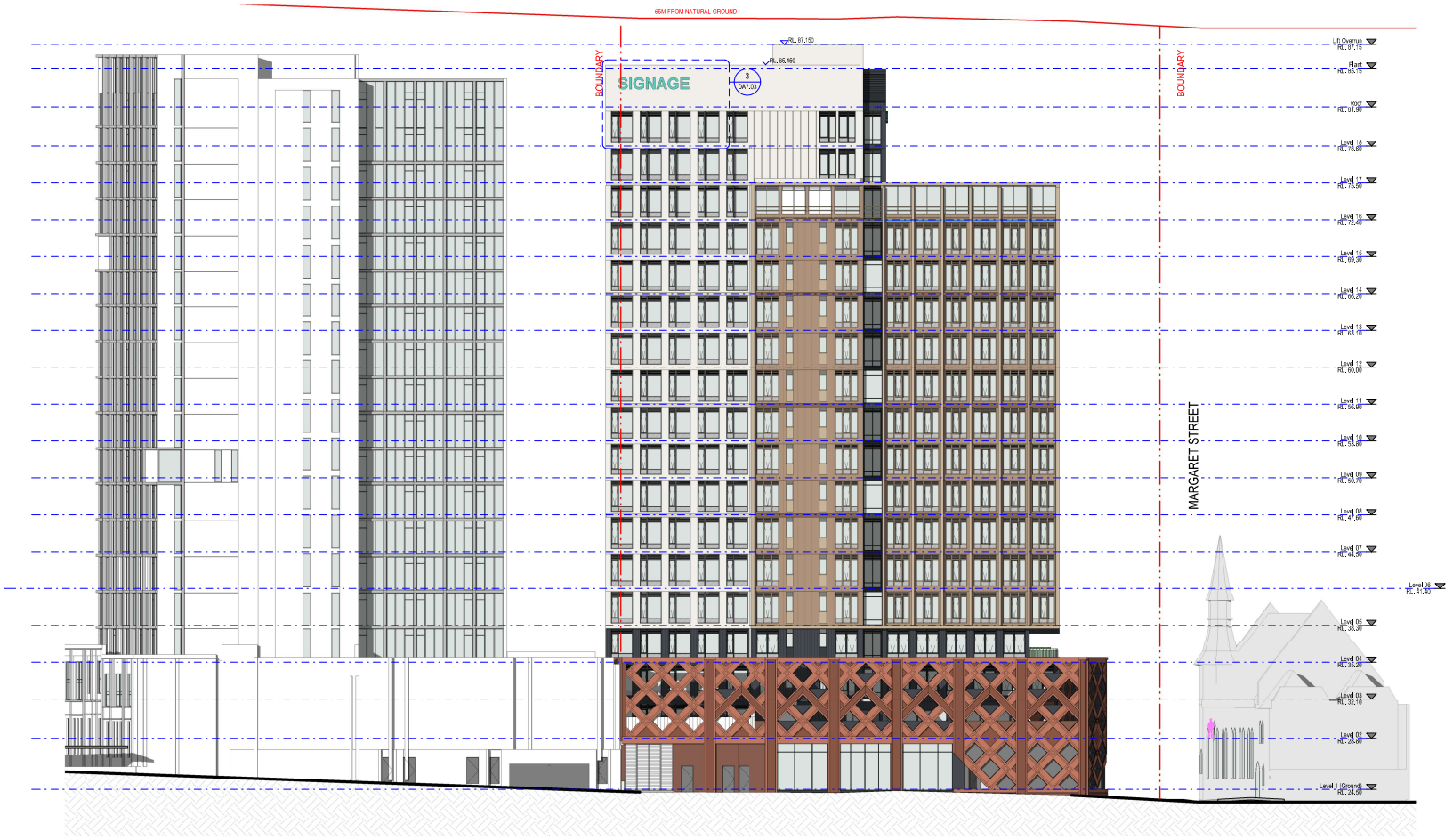
NSW Registration 7954



General Notes:

1. All drawings to be read in conjunction with all consultants and sub-contractors documentation and reports.
2. All works to conform with the National Construction Code of Australia and Australian Standards.
3. Check all dimension on site and notify Antoniades Architects of any discrepancies.
4. Refer A20 Series for specifications, materials and products schedule for full code description.

Legend:

- Property Boundary
- Setbacks
- Overhead
- Hidden
- RL. 0.00 — Level Marker (Plan)
- RL. 0.00 — Level Marker (Elevation)
- RL. 0.00 — Level Marker (Spot)
- Room Tag (Number, Name, Area): Room Number, Room Name, Room Area
- ABC01 — Material Tag: See Material Board for code reference

Hatches

- Existing Elements (Projection)
- Existing Elements (Cut)
- Demolished Elements (Projection)
- Demolished Elements (Cut)
- Zone for Service Penetration
- Earth
- Concrete
- Water feature
- Tile
- Carpet
- Timber Floors
- Grass
- Gravel/Stone
- Brickwork
- Metal Sheet

Abbreviations

RL	Relative Level (AHD)
FFL	Finished Floor Level
AFFL	Above FFL
TOW	Top Of Wall Level
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P	Storage Cupboard
R	Wardrobe
S	Full Height Pantry Cupboard

REV	DESCRIPTION	BY	DATE
A	Issued for information		29.10.2021
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PROJECT PHASE

DEVELOPMENT APPLICATION

STATUS

WORK IN PROGRESS

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 200 @A1 NORTH

0m 4 8 10m
Scale 1:200

DRAWING SERIES
Elevations

DRAWING TITLE
William Ln - Elevation

DRAWING NO.	REVISION	DRN:
DA5.03	**B**	**ZD**
		CHK: **AA**

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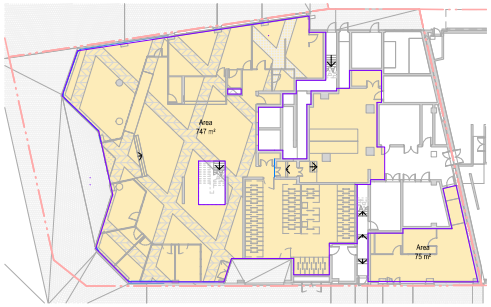
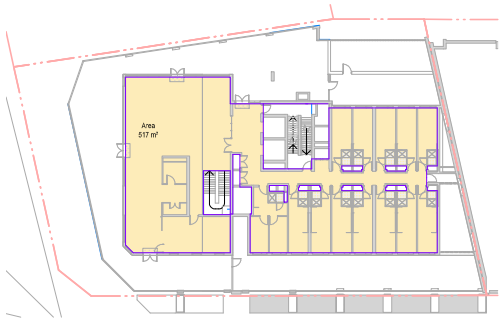
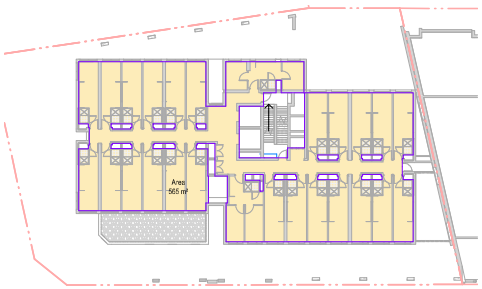


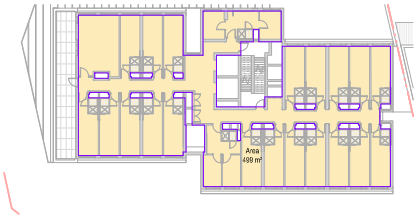
1 **Level 1 (Ground)**
Area Plan 1 : 300



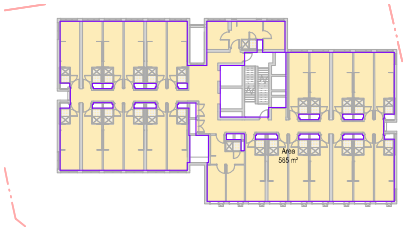
2 **Level 02**
Area Plan 1 : 300



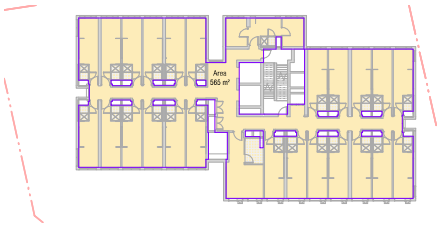
3 **Level 03**
Area Plan 1 : 300



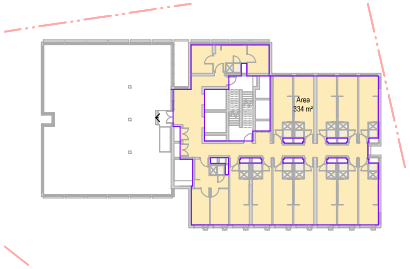
4 **Level 04**
Area Plan 1 : 300



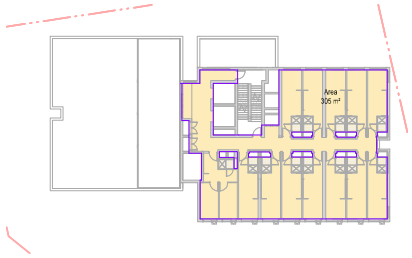
5 **Level 05 - 08 - Typical**
Area Plan 1 : 300



6 **Level 09 -15 Typical**
Area Plan 1 : 300



7 **Level 16**
Area Plan 1 : 300



8 **Level 17 - 18**
Area Plan 1 : 300

104-116 REGENT STREET

LEVELS	GFA	Studio A	Studio B	Twin Share	Ensuite	2 Bed	Acc	Total Beds	Com. Area	Outdoor Area
Level GF	822								490	
Level 02	517	7	0	0	5	1	0	14	210	431
Level 03	565	24	0	0	0	2	0	28		
Level 04	499	0	0	0	20	2	0	24	30	37
Level 05	565	24	0	0	0	2	0	28		
Level 06	565	24	0	0	0	2	0	28		
Level 07	565	24	0	0	0	2	0	28		
Level 08	565	24	0	0	0	2	0	28		
Level 09	565	24	0	0	0	1	1	27		
Level 10	565	24	0	0	0	1	1	27		
Level 11	565	24	0	0	0	1	1	27		
Level 12	565	24	0	0	0	1	1	27		
Level 13	565	24	0	0	0	1	1	27		
Level 14	565	24	0	0	0	1	1	27		
Level 15	565	24	0	0	0	1	1	27		
Level 16	334	12	0	0	0	2	0	16		240
Level 17	305	12	0	0	0	1	0	14		
Level 18	305	12	0	0	0	1	0	14		
								Total	730	708
Total Rooms		331	0	0	25	24	7			
Beds		331	0	0	25	48	7			
Total Beds %		81%	0%	0%	6%	12%	2%			
Total Beds		411								
Total per bed										1.8

Proposed		Control	
GFA	9562	GFA	9562
FSR	7	FSR	7

Site Area	1366

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		19.05.2021
B	Issued for information		25.06.2021
C	Issued for coordination		12.07.2021
D	Issued for information		22.10.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 300 @A1 NORTH

0m 10 20 25m
Scale 1:300

DRAWING SERIES
General Information

DRAWING TITLE
Project Data Schedule

DRAWING NO. **DA6.01** REVISION **D** DRN: **ZD** CHK: **AA**

ANTONIADES ARCHITECTS

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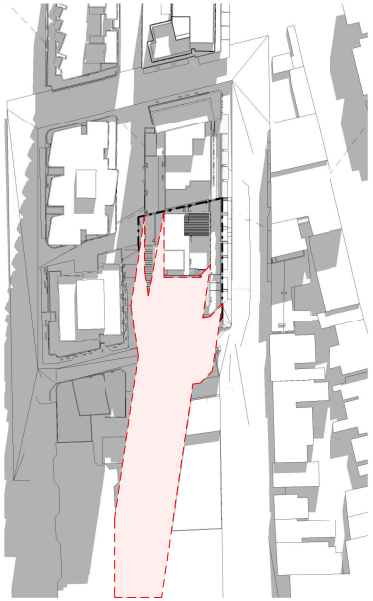
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954

NOT FOR CONSTRUCTION

1 SD-JUNE 9AM
Floor Plan 1 : 1000



2 SD-JUNE 10AM
Floor Plan 1 : 1000

3 SD-JUNE 11AM
Floor Plan 1 : 1000

4 SD-JUNE 12PM
Floor Plan 1 : 1000

5 SD-JUNE 01PM
Floor Plan 1 : 1000

6 SD-JUNE 02PM
Floor Plan 1 : 1000

7 SD-JUNE 03PM
Floor Plan 1 : 1000

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: 1 : 1000 @A1

0m 2 4 5m
Scale 1:100

NORTH

DRAWING SERIES
Design Analysis

DRAWING TITLE
Shadow Diagrams - 21 JUNE 2021

DRAWING NO.	REVISION	DRN:
DA6.02	**A**	**ZD**
		CHK: **AA**

ANTONIADES ARCHITECTS

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Nominated Architect: Andreas Antoniades
NSW Registration 7954

NOT FOR CONSTRUCTION

3 Regent st - Materials
Elevation 1 : 300

1 William Lane - Materials
Elevation 1 : 300

2 Margaret St - Materials
Elevation 1 : 300

4 North Elevation - Materials
Elevation 1 : 300

FINISHES SCHEDULE

BR - 01

PODIUM BRICKS :DRY PRESSED MACARTHUR MIX

MET - 01

WINDOW/ DOOR FRAME/BLADES/RECESS 04 : DULUX POWDERCOAT PAPERBARK SATIN 2723088S

MET - 03

WINDOW/ DOOR FRAME/BLADES : DULUX POWDERCOAT STONE GREY SATIN 27278126

MET - 05

WINDOW/ DOOR FRAME/BLADES : DULUX POWDERCOAT JASPER MATT 2608252M

MET - 06

RECESS 02 : DULUX POWDERCOAT COLOR TO MATCH SMOOTH CARAMEL S11D5

PA - 01

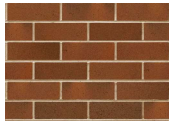
WALL PAINT : DULUX GRAND PIANO A204

PA - 03

WALL PAINT: DULUX HAROLD A191 (WALL COLOR TO MATCH MET - 05)

PA - 05

WALL PAINT: DULUX SMOOTH CARAMEL S11D5



BR - 02

PODIUM BRICKS :DRY PRESSED MCKINLAY BROWN

MET - 02

WINDOW/ DOOR FRAME/AWNING : DULUX POWDERCOAT MONUMENT SATIN 2729067S

MET - 04

RECESS 01 : DULUX POWDERCOAT ANOTEC MID BRONZE MATT 27251014

BL - 01

BLADES GRADIENT: DULUX POWDERCOAT FROM TERRAIN_MATT_2608234M TO STONE BEIGE_MATT_7232538

MET - 07

RECESS 03 : DULUX POWDERCOAT ALPHATEC COPPER SATIN 9614137Q

PA - 02

WALL PAINT: DULUX ANTIQUE WHITE USA 16W

PA - 04

WALL PAINT: DULUX DOMINO SG6G8

PA - 06

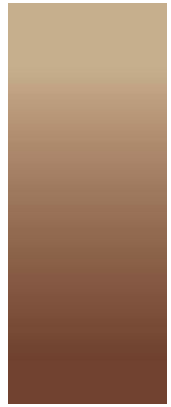
SIGN COLOR: DULUX PEPPERMINT FRESH S26G5 (TBC BY WEEHUR)

GL - 01

WINDOW GLASS : CLEAR

GL - 02

WINDOW GLASS : COLORBACK



BL - 01

BLADES GRADIENT: DULUX POWDERCOAT FROM TERRAIN_MATT_2608234M TO STONE BEIGE_MATT_7232538

REV	DESCRIPTION	BY	DATE
A	Issued for information		22.10.2021
B	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1 NORTH

Scale 1:100

DRAWING SERIES
Materials & Finishes

DRAWING TITLE
Material Board

DRAWING NO.	REVISION	DRWN
DA7.02	B	ZD
		CHK: AA

ANTONIADES ARCHITECTS

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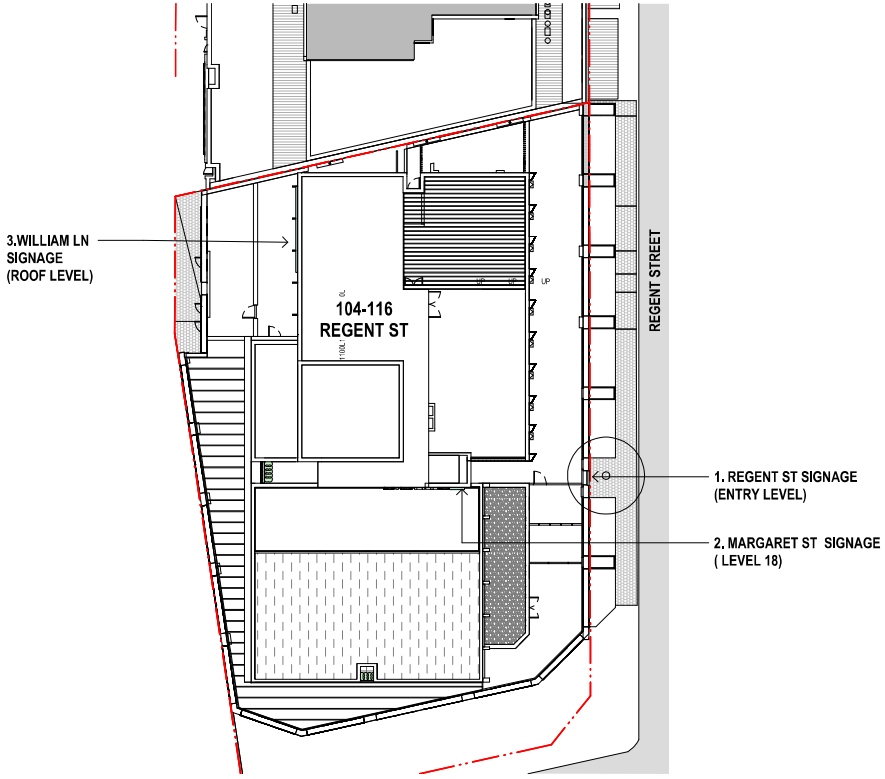
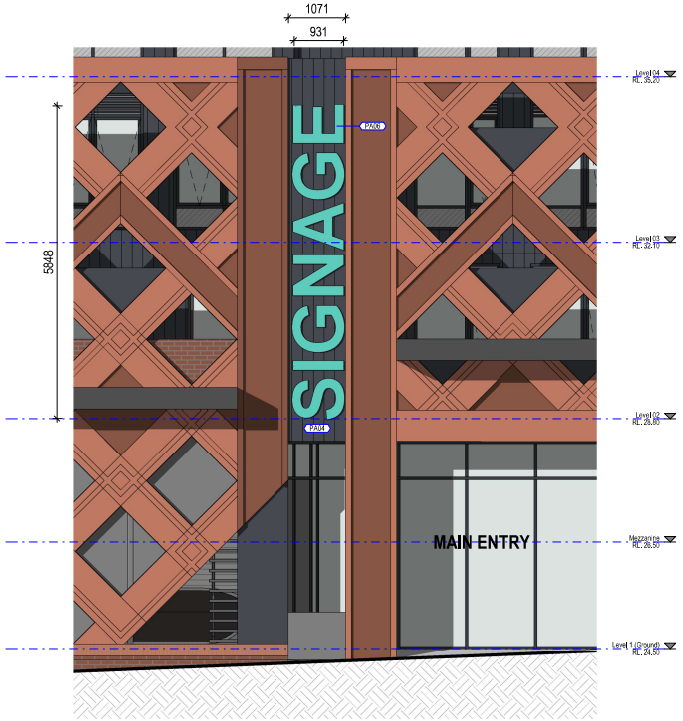
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954

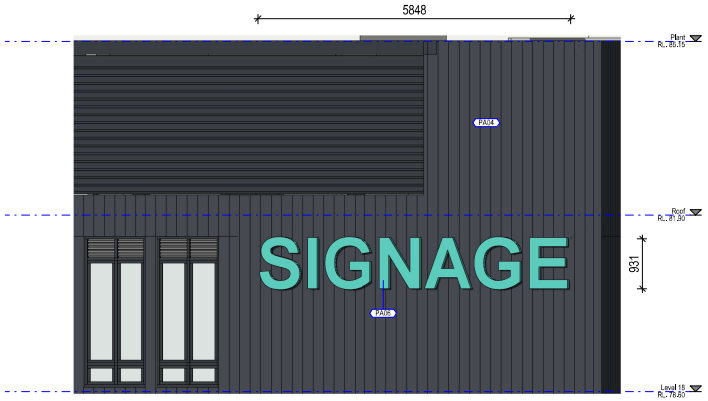
NOT FOR CONSTRUCTION



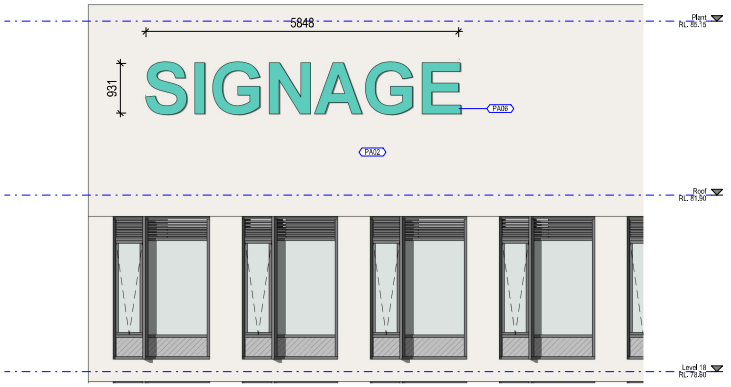
3 Signage location
Floor Plan 1 : 200



1 Regent st Signage
Elevation 1 : 50



2 Margaret St Signage
Elevation 1 : 50



3 William Lane Signage
Elevation 1 : 50

REV	DESCRIPTION	BY	DATE
A	Issued for coordination		25.11.2021

PROJECT PHASE
DEVELOPMENT APPLICATION

STATUS
PRELIMINARY

PROJECT NO.
20009DA

PROJECT
REGENT STREET

ADDRESS
104-116 REGENT STREET

CLIENT
WEE HUR

SCALE: As indicated@A1

0m 1 2 4 5m
Scale 1:100

NORTH

DRAWING SERIES
Photomontage

DRAWING TITLE
Signage Details

DRAWING NO.	REVISION	DRN
DA7.03	**A**	**Author**

CHK: **Checker**

ANTONIADES ARCHITECTS

www.antoniades.com.au
ACN 129 731 559

Nominated Architect: Andreas Antoniades
NSW Registration 7954

APPENDIX D

2.0 LANDSCAPE DRAWINGS

2.0 15-23 GIBBONS ST - APPROVED PLANS

2.1 PROPOSED GROUND PLAN

General
- Awning Over
- Property boundary

Grading
- EX 0.000 Existing surface level
- 0.000 Relative surface level
- TW 0.000 Top of wall
- TS 0.000 Top of seat
- 1:14 Indicates direction of inclining gradient on ramp
- 1:50 Indicates direction of declining gratient

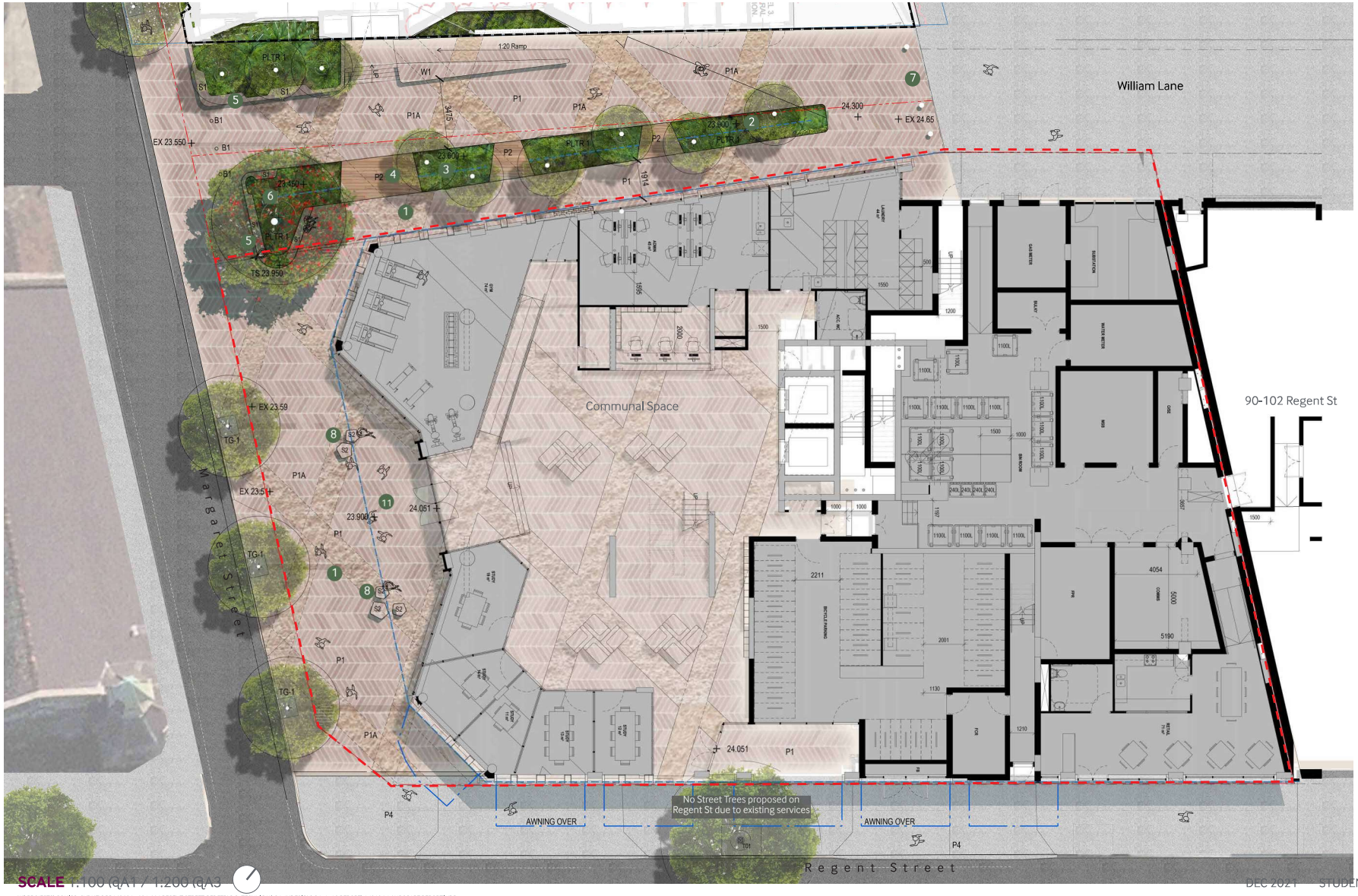
Softscape
- Existing tree To be removed
- Tree
- PLTR 1 Planting area On Grade
- PLTR 2 Planting area 2 On Slab
- GR Gravel to Planting area

Walls
- W1 Wall type 1 Insity Concrete Wall

Pavement
- P1 Pavement type 1 Brick Decorative Pavement
- P1A Pavement type 1A Sandstone Inlay
- P2 Pavement type 2 City Of Sydney Bridge Detail
- P3 Pavement type 3 Brick Pavers on Slab
- P4 Pavement type 4 City of Sydney Footpath

Furniture
- S1 Sandstone Seat type 1 Seating
- S2 Integrated Concrete Seat
- B1 Bollard Type 1
- TG-1 City of Sydney Tree Grate
- TBL Table type 1
- T1 Trellis type 1

1. Decorative weaving brick pattern
2. Native WSUD planting
3. Bio-Swale as per City Sydney Details
4. Timber Bridge as per City Sydney Details
5. Seating Edges
6. Hero Focal Tree - Semi Decidious - Brachychiton acerifolia
7. Removable bollards as per City Sydney Details
8. Informal Sandstone seating
9. Tristaniopsis laurina (Water Gum)
10. New Street Tree platanus x acerifolius
10. Mungo footprint art to building entry

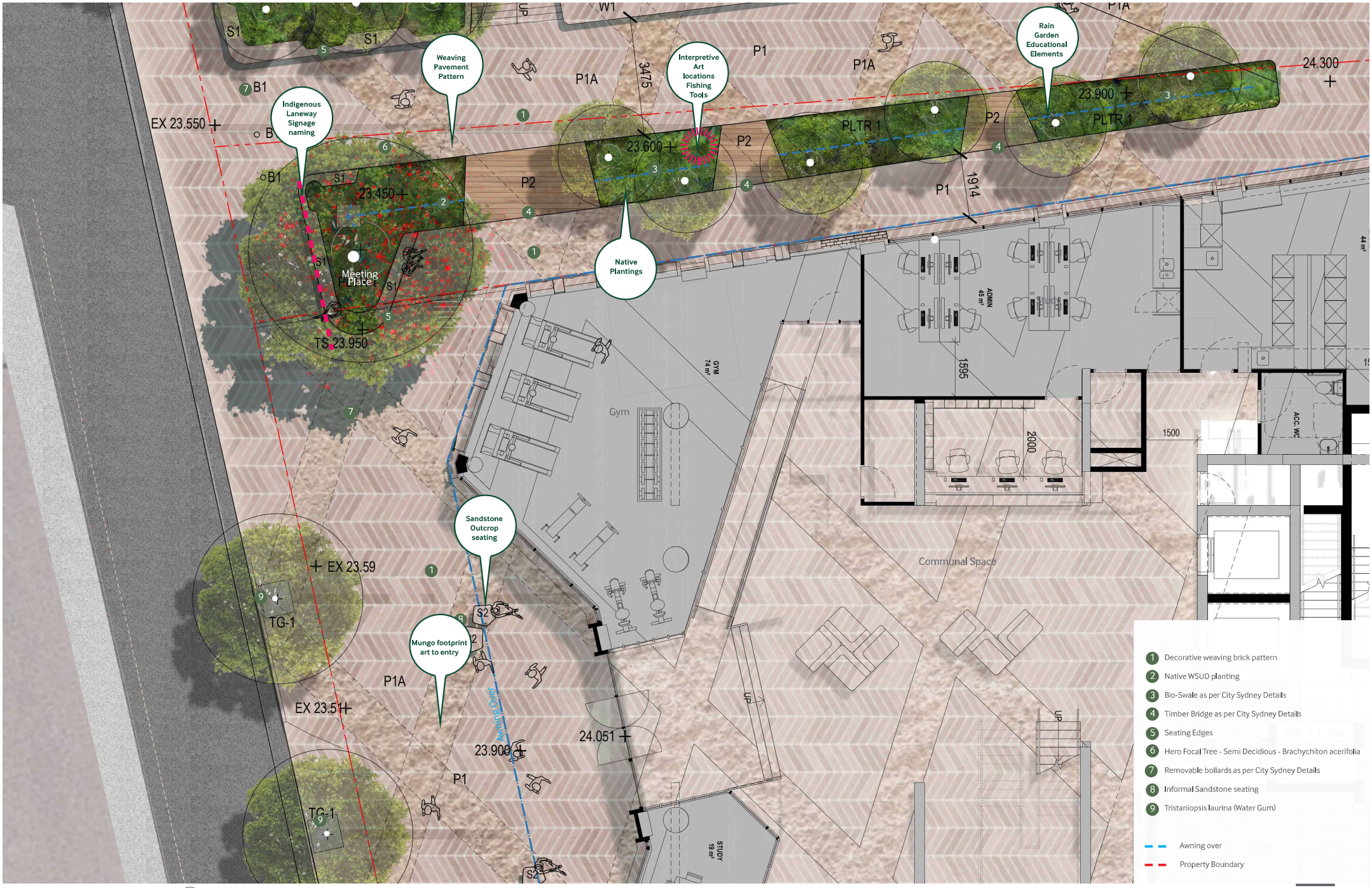


- Awning over
- Property Boundary
- TR -Tree to be retained - refer arborist report

SCALE 1:100 @A1 / 1:200 @A3

2.2 PROPOSED GROUND PLAN - PUBLIC DOMAIN

15-23 Gibbons St -



SCALE 1:50 @A1 / 1:100 @A3

W:\PROJECTS\CONICS_SYDNEY\PR149106 - 104-116 REGENT STREET REDFERN\C_TECHNICAL\C4_INDESIGN\C4_1_A3 REPORT\149106_LANDSCAPE REPORT.INDD

2.3 LEVEL 2 - RECREATIONAL DECK

General

- Awning Over
- Property boundary

Grading

- EX 0.000 Existing surface level
- 0.000 Relative surface level
- TW 0.000 Top of wall
- TS 0.000 Top of seat
- 1:14 Indicates direction of Inclining gradient on ramp
- 1:50 Indicates direction of declining gratient

Softscape

- Existing tree To be removed
- Tree
- PLTR 1 Planting area On Grade
- PLTR 2 Planting area 2 On Slab
- GR Gravel to Planting area

Walls

- W1 Wall type 1 Insity Concrete Wall

Pavement

- P1 Pavement type 1 Brick Decorative Pavement
- P1A Pavement type 1A Sandstone Inlay
- P2 Pavement type 2 City Of Sydney Bridge Detail
- P3 Pavement type 3 Brick Pavers on Slab
- P4 Pavement type 4 City of Sydney Footpath

Furniture

- S1 Sandstone Seat type 1 Seating
- S2 Integrated Concrete Seat
- B1 Bollard Type 1
- TG-1 City of Sydney Tree Grate
- TBL Table type 1
- Trellis type 1

1. S2 - Seating edges and sun lounges
2. PLTR-2 Podium planter - 1000mm depth
3. Screen planting / small trees
4. W1 - Concrete planter wall
5. BBQ bench with sink and hotplate
6. Dinning Areas

Property Boundary

2.5 LEVEL 4

General

- Awning Over
- Property boundary

Grading

- EX 0.000 Existing surface level
- 0.000 Relative surface level
- TW 0.000 Top of wall
- TS 0.000 Top of seat
- 1:14 Indicates direction of inclining gradient on ramp
- 1:50 Indicates direction of declining gradient

Softscape

- Existing tree To be removed
- Tree
- PLTR 1 Planting area On Grade
- PLTR 2 Planting area 2 On Slab
- GR Gravel to Planting area

Walls

- W1 Wall type 1 Insity Concrete Wall

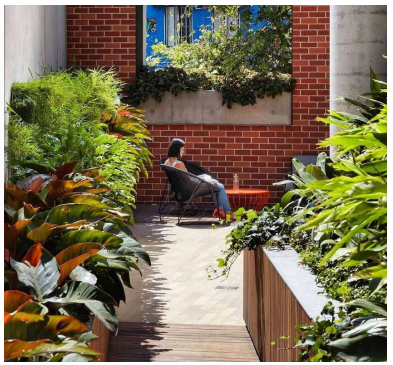
Pavement

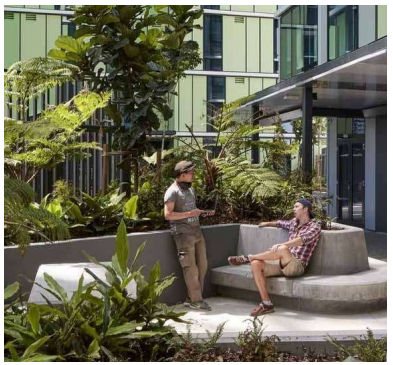
- P1 Pavement type 1 Brick Decorative Pavement
- P1A Pavement type 1A Sandstone Inlay
- P2 Pavement type 2 City Of Sydney Bridge Detail
- P3 Pavement type 3 Brick Pavers on Slab
- P4 Pavement type 4 City of Sydney Footpath

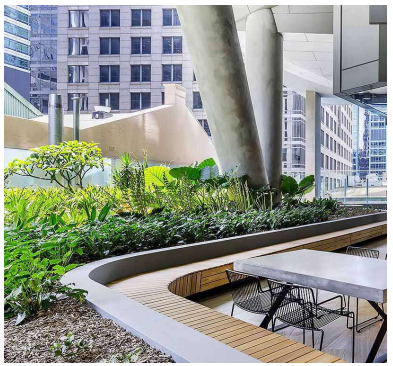
Furniture

- S1 Sandstone Seat type 1 Seating
- S2 Integrated Concrete Seat
- B1 Bollard Type 1
- TG-1 City of Sydney Tree Grate
- TBL Table type 1
- T1 Trellis type 1

1. S2 - Seating edges and sun lounges
2. PLTR-2 Podium planter - 1000mm depth







SCALE 1:100 @A1 / 1:200 @A3

W:\PROJECTS\CONICS_SYDNEY\PR149106 - 104-116 REGENT STREET REDFERN\C_TECHNICAL\C4_INDESIGN\C4_1_A3 REPORT\149106 LANDSCAPE REPORT.INDD

2. 6 LEVEL 16 SKY PARK

General

- Awning Over
- Property boundary

Grading

- EX 0.000 Existing surface level
- 0.000 Relative surface level
- TW 0.000 Top of wall
- TS 0.000 Top of seat
- 1:14 Indicates direction of Inclining gradient on ramp
- 1:50 Indicates direction of declining gratient

Softscape

- Existing tree To be removed
- Tree
- PLTR 1 Planting area On Grade
- PLTR 2 Planting area 2 On Slab
- GR Gravel to Planting area

Walls

- W1 Wall type 1 Insity Concrete Wall

Pavement

- P1 Pavement type 1 Brick Decorative Pavement
- P1A Pavement type 1A Sandstone Inlay
- P2 Pavement type 2 City Of Sydney Bridge Detail
- P3 Pavement type 3 Brick Pavers on Slab
- P4 Pavement type 4 City of Sydney Footpath

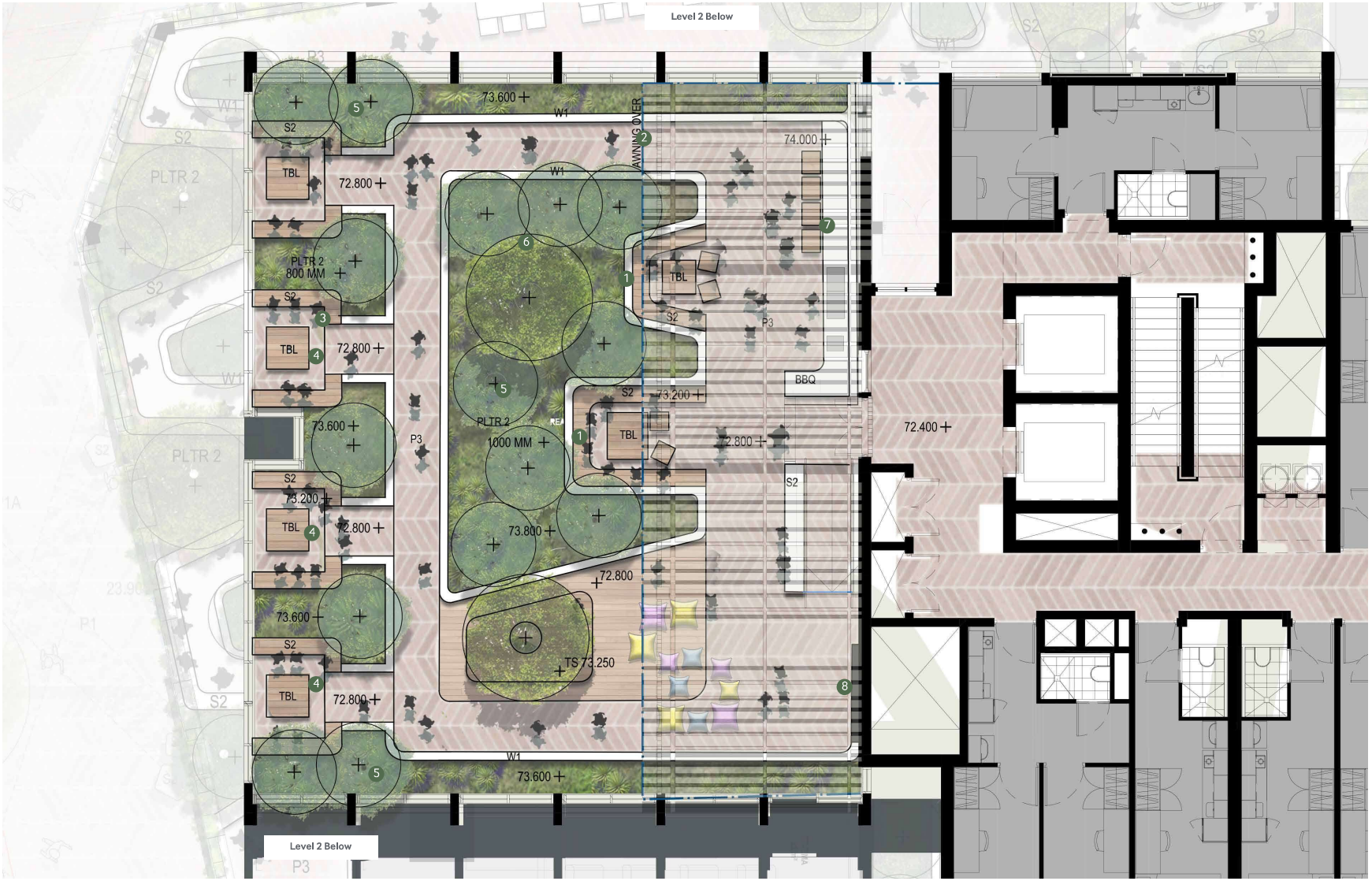
Furniture

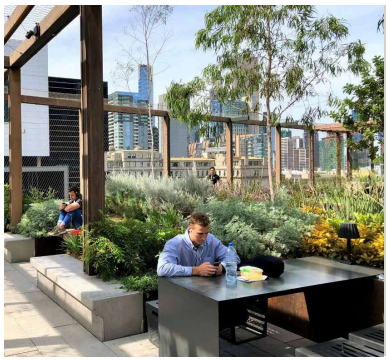
- S1 Sandstone Seat type 1 Seating
- S2 Integrated Concrete Seat
- B1 Bollard Type 1
- TG-1 City of Sydney Tree Grate
- TBL Table type 1
- Trellis type 1

1. TBL - Outdoor tables fixed
2. Arbour above with climbers
3. s2 - Seating edges and sun lounges
4. Garden Lounge
5. PLTR-2 Podium planter
6. Small Shade Trees
7. BBQ bench
8. Outdoor cinema

Property Boundary

Awning Over





APPENDIX E

From: Stormwater <Stormwater@sydneywater.com.au>
Sent: Monday, 22 March 2021 8:51 AM
To: Matthew Beament
Subject: 104-116 Regent Street Redfern - OSD Design Information Request -

Matthew,

The On Site Detention requirements for the 1,366 square meters site at 104-116 Regent Street Redfern, are as follows:

- On Site Detention 22 cubic meters
- Permissible Site Discharge 50 L/s

The approval for the On Site Detention would only be given as part of the Section 73 application for this development. The On Site Detention is to be designed according to the above values and submitted to Sydney Water for approval with the Section 73 application. The following details are to be included in your submission for On Site Detention approval:

- Location of the On Site Detention in relation to the development
- Location of the On Site Detention in relation to overall stormwater network of the property
- Plan and Elevation of the On Site Detention tank with all dimensions
- Orifice plate calculation

Best Regards
Planning and Technical, City Growth and Development, Sydney Water

---

From: Matthew Beament [mailto:Matthew.Beament@jhaengineers.com.au]
Sent: Friday, 19 March 2021 4:14 PM
To: Stormwater <Stormwater@sydneywater.com.au>
Subject: [External] OSD Design Information Request

To whom it may concern

Please can you confirm the OSD SSR and PSD for the proposed student accommodation development at 104-116 Regent Street Redfern. The works involve the knock down of the existing BP service station and build of a new 18 floor building. To assist you the following is provided:

Site area = 1366m2
Existing Impervious Area = 1313.3m2 (96.1%)
Proposed Impervious Area = 1297.7m2 (95.0%)

I trust that this is satisfactory.

Regards

Matthew Beament
Civil Group Manager

Level 23, 101 Miller Street, North Sydney, NSW 2060
PO Box 3, North Sydney, NSW 2059
T 02 9437 1000 E Matthew.Beament@jhaengineers.com.au
Sydney | Brisbane | Melbourne | www.jhaservices.com

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Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Geotechnical Investigation

Proposed Student Accommodation
104-116 Regent Street, Redfern

Prepared for
Perpetual Corporate Trust Limited ATF for WH PH
PBSA Trust

Project 99740.01
October 2021

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	99740.01	Document No.	R.002.Rev0
Document title	Report on Geotechnical Investigation Proposed Student Accommodation		
Site address	104-116 Regent Street, Redfern		
Report prepared for	Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust		
File name	99740.01.R.002.Rev0		

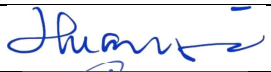
Document status and review

Status	Prepared by	Reviewed by	Date issued
Revision 0	Joel Huang	Scott Easton	15 October 2021

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1		Mark Surtees, Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author		15 October 2021
Reviewer		15 October 2021

bsi. ISO 9001 Quality Management
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Table of Contents

Report on Geotechnical Investigation
Proposed Student Accommodation
104-116 Regent Street, Redfern

1. Introduction

This report presents the results of a geotechnical investigation undertaken by Douglas Partners Pty Ltd (DP) for the proposed student accommodation development at 104-116 Regent Street, Redfern (the site). The investigation was commissioned by Wee Hur (Australia) Pty Ltd on behalf of Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust. The work was undertaken in accordance with Douglas Partners' proposal P99740.01.P.001.Rev0, dated 18 March 2021.

The investigation included the drilling of four boreholes and installation of three groundwater monitoring wells, together with a review of published geological mapping and previous studies and investigations undertaken by DP and others on the subject site and adjacent sites. Findings from the investigation and review are provided in this report together with comments relating to design and construction issues.

The site is located adjacent to the new Sydney Metro City and Southwest rail tunnels which are currently under construction. Detailed geotechnical impact analysis using numerical modelling is expected to be required during detailed design.

2. Proposed Development

We understand that the proposed development includes demolition of the existing BP Service Station to accommodate a high-rise mixed-use development including student accommodation, retail premises and ancillary facilities. It is understood that the architectural design is yet to be finalised but is likely to be of similar building height (i.e. 18 storeys) to the adjacent developments at 90-102 Regent Street and 13-23 Gibbons Street. No basement is currently proposed.

3. Site Description

The site is roughly trapezoidal in shape and covers one lot with an area of approximately 1400 m^2. The site is bordered by Regent Street to the east, Margaret Street to the south, and two similar 18-storey student accommodation developments to the north and west, each with a single basement. These two adjacent developments are expected to be constructed prior to the site development.

The site was formerly occupied by a BP Service Station, which has undergone demolition and remediation works. It is understood that the remediation work included removal of the underground petroleum storage system (UPSS), the associated piping, filling points and fuel vents, and the contaminated soil and any perched groundwater surrounding the UPSS.

Prior to the remediation work, the site sloped gently towards the south-west with the surface elevations from approximately RL 25 m to RL 23 m, relative to Australian height datum (AHD). The remediation work created a minor depression in site level towards the southern site boundary, with an approximately 1 m maximum drop from the original ground surface levels. A photo showing the site conditions after remediation is in Figure 1 below.

Figure 1 – Site Photo, looking towards west and south-western corner

Prior to our field work, it is understood that additional fill had been placed to level the southern part of the site with granular soils. It is unclear whether the backfilling for remediation and the further stie levelling followed engineered fill procedures with the required geotechnical inspections and testing during the earthworks.

The development is located along Regent Street and close to the new Sydney Metro City and Southwest line Tunnels (managed by Sydney Metro), which are below the site and are currently under construction. Based on the survey drawings (ref: 51281-001DT, Sheets 1-3, by LTS Lockley Pty Ltd, dated 6 July 2021), the “First and Second Reserves” extend approximately north-south below the site, with the tunnel crown at least 34 m below the ground surface. The LTS survey drawing showing the Sydney Metro tunnels relative to the site is included in Appendix B.

Regent Street is also classified as a State Road, that is, it is managed by Roads and Maritime Services (RMS, now part of TfNSW).

The Illawarra Relief Rail Tunnels (managed by Sydney Trains) are running parallel to Gibbons Street to the west of the site, with a horizontal offset of at least 40-50 m. The site is considered to be beyond any Reserve Zones of the Illawarra Relief Tunnels.

4. Site Geology

Reference to the Sydney 1:100 000 Geological Series Sheet 9130 indicates that the site is located within Quaternary-aged transgressive dunes typically comprising medium to fine-grained sand. The boundary with Triassic-aged Ashfield Shale occurs about 140 m to the west of the site. Ashfield Shale typically comprises black to dark grey shale and laminite and weathers to residual clay.

The 1:25 000 Acid Sulphate Soil Risk map for Botany Bay indicates that the site does not lie within an area known for acid sulphate soils. The site also does not occur within an area mapped for known soil salinity issues.

5. Previous Investigations

DP has undertaken the following geotechnical investigations in the area surrounding the site:

- 90-102 Regent Street in 2019 (north of the site). This investigation included three cored boreholes, two machine-augered boreholes and two hand-augered boreholes. This site is currently at detailed design development stage.
- 13-23 Gibbons Street, in 2018 (west of the site). This Investigation included drilling of three cored boreholes, three shallow boreholes and the installation of two groundwater monitoring wells.

DP has also previously completed geotechnical investigations on the following nearby sites:

- 39-61 Gibbons Street in 1987 and 1993 (DP Ref. 10133 and 19660);
- 9 Gibbons Street in 1971 (DP Ref. 3090);
- 32 Rosehill Street in 1980 (DP Ref. 6810); and
- 44-78 Rosehill Street in 1988 (DP Ref. 11650).

In addition, DP has undertaken geotechnical investigations for the adjacent Sydney Metro City and Southwest rail tunnels and also for the future Waterloo Station, and is therefore familiar with the geology in the area.

A previous geotechnical investigation on the subject site was carried out by PSM Consult Pty Ltd in July 2020, concurrently with an environmental investigation by JBS&G. The geotechnical investigation included drilling of four shallow boreholes to maximum depths of 7.0 m using augering techniques. No rock coring was undertaken.

Four groundwater monitoring wells were previously installed on site by BP Australia Pty Ltd in 2008. A most recent groundwater monitoring report dated 18 June 2020 was provided to DP, which contains the groundwater level measurement records.

6. Field Work Methods

The field work for the current investigation included:

- four rock cored boreholes (BH1 to BH4) to depths between 9.5 m and 24.8 m with truck/track mounted drilling rigs, using a combination of augering, rotary wash boring and NMLC rock coring techniques.
- Disturbed soil samples were collected from the tip of the auger and Standard Penetration Tests (SPTs) were undertaken at regular depth intervals throughout the soil profile.
- Three standpipes were installed in the three boreholes (BH1, BH3 and BH4) following the completion of drilling. This involved inserting Class 18 uPVC screen and casing to the required depths, backfilling the screened length with gravel, plugging the top of the gravel with bentonite pellets and backfilling the casing with drilling spoil. Construction details for the standpipe are shown on the schematic diagram included on the borehole logs attached. The standpipes were purged of water after installation.
- Measurements of the water levels were carried out on 28 September 2021 at BH4. The other two wells (BH1 and BH3) were covered by site sheds therefore no measurement was taken from these wells.

The new borehole locations, together those of the previous boreholes drilled by DP and others are shown on Drawing 1 in Appendix B.

The boreholes were logged and sampled by an experienced geotechnical engineer.

The ground surface levels (relative to AHD) and coordinates for the boreholes are shown on the borehole logs and were obtained by a surveyor (LTS Lockley Pty Ltd).

7. Field Work Results

7.1 Subsurface Profile

Details of the subsurface conditions encountered in the boreholes are given in the borehole logs in Appendix C, together with notes explaining descriptive terms and classification methods used.

The subsurface materials encountered at the borehole locations may be summarised as follows:

FILL:	Fill generally extended to depths of between approximately 2 m and 4.5 m, with a localised deepening encountered at BH4 to approximately 8 m depth. The upper layer of fill to approximately 3 m depth was mostly granular materials with variable degrees of compaction. The lower layer of fill generally comprised a mixture of silt, clay, sand and gravel, with a trace of foreign materials such as brick, glass, sandstone fragments, charcoal and timber fragments, in a generally loose and soft condition; over
Alluvial / Residual CLAY:	Mostly stiff, very stiff and hard clay to depths of between approximately 7 m to 9.5 m. Extremely weathered shale of hard clay consistency was encountered over the lower 1-2 metres; over
Laminite and Siltstone: (Ashfield Shale)	Laminite and siltstone bedrock below depths of between 7 m and 9.5 m and continuing to the termination depths of BH1 to BH3. The rock profile generally includes a weathered profile of very low to low strength, fragmented to fractured laminite around 1 m to 4 m thick over medium to high strength or stronger, fresh and slightly fractured to unbroken laminite.
Sandstone (Hawkesbury)	Medium to coarse grained sandstone bedrock was encountered below a depth of 23.9 m at BH4. The sandstone is generally fresh, of high to very high strength and unbroken.

7.2 Groundwater

Groundwater seepage was observed during auger drilling between 2.5 m and 4 m depth. The use of water during rock coring precluded any further observation of the groundwater during rock coring in BH1 to BH4.

Groundwater level was measured within the monitoring well in BH4 on 28 September 2021and found to be at 3.9 m depth (RL 20.9 m, relative to AHD).

Groundwater levels will fluctuate with climatic conditions and may temporarily rise following periods of rainfall.

7.3 Rock Strength Testing

Selected samples of the rock core were tested in the laboratory to determine the Point Load Strength Index (Is_{50}) values to assist with the rock strength classification. The results of the testing are shown on the borehole logs at the appropriate depth. The Is_{50} values for the rock ranged from 0.08 MPa to 4.6 MPa, indicating very low to very high strength rock.

8. Comments

Comments on earthworks, excavation support, groundwater and foundations are provided in the following sections.

8.1 Geotechnical Considerations Relating to the Rail Corridor

The twin TBM rail tunnels of "Sydney Metro – City and Southwest" line, which is currently under construction, pass below the site such that the "First and Second Reserves" extend approximately north-south, with the tunnel crown at least 34 m below the ground surface. The proposed development is required to take these tunnels into consideration in accordance with "Transport for NSW (TfNSW) and Sydney Metro –Technical Services, Sydney Metro Underground Corridor Protection, Technical Guidelines".

The above-mentioned guideline document (ref: Document No. iCentral SM-20-00081444, Revision 2, dated April 2021) provides the technical requirements to assess and manage the risks associated with developments near existing and future underground Metro infrastructure. It defines and uses the tunnel protection reserve zones to provide restrictions to the adjacent development activities such as basement excavation and the construction of new building foundations. The protection reserve zones are categorised into "First Reserve" and "Second Reserve".

The "First Reserve" comprises the ground that immediately surrounds the underground metro infrastructure, and represents the area that must not be encroached upon by any future construction or development. Beneath the project site, the uppermost extent of the First Reserve is understood to be at RL -0.1 m, which appears to be defined by the extent of the Sydney Metro substratum, based on the LTS survey drawing in Appendix B. The First Reserve is not expected to be encroached upon by any of the construction activities for the proposed development.

The "Second Reserve" surrounds the First Reserve and covers the areas where future development works have the potential to impact on the performance of the support elements of underground infrastructure, Metro operations or the feasibility of planned Metro infrastructure. The uppermost extent of Second Reserve is defined as 25 m above First Reserve (ie. at RL 24.9 m), which roughly coincides with the existing site surface level. Therefore, any minor bulk excavation, if required, is expected to only extend slightly into the top of the Second Reserve. However, further encroachment upon Second Reserve is envisaged to be required for localised deepened excavations, shallow footings, piled foundations and for the embedment of any shoring walls.

Based on previous experience, all of the above activities will generally be acceptable by TfNSW and Sydney Metro but a geotechnical impact assessment (possibly including 2D or 3D numerical modelling) of excavation and building foundations will be required, together with ground movement and vibration monitoring, and dilapidation surveys of the tunnels to assess and monitor the impact of the proposed development on the underground Metro infrastructure. The extent of assessment and monitoring required at various project stages is subject to discussion and agreement from TfNSW/Sydney Metro.

8.2 Excavation Conditions

Since there is no basement excavation proposed for the development at this stage, it is expected that the construction of the building will require minor excavation of the existing fill near the surface, which should be achievable using conventional earthmoving equipment. The fill may contain building rubble (e.g. bricks, concrete fragment, tiles, etc) left over from previous demolition and remediation works on site.

8.3 Disposal of Excavated Material

All excavated materials, including any piling spoils, will need to be disposed of in accordance with the provisions of the current legislation and guidelines including the *Waste Classification Guidelines* (EPA, 2014). Further reference should be made to the existing environmental investigation results and reports by others.

8.4 Vibration Monitoring

Given that the ground excavation will be very minor and rock excavation will only occur during the piling penetration, it is expected that vibrations from the construction works will be relatively minor.

However, based on previous experience, TfNSW usually requires vibration monitoring within existing tunnels when construction works are carried out within the second rail reserve. It will be necessary to use appropriate methods and equipment to keep ground vibrations within the rail tunnel and at adjacent buildings and structures within acceptable limits. The level of acceptable vibration is dependent on various factors including the type of building structure (e.g. reinforced concrete, brick, etc.), its structural condition, founding conditions, the frequency range of vibrations produced by the construction equipment, the natural frequency of the building and the vibration transmitting medium.

Ground vibration can be strongly perceptible to humans at levels above 2.5 mm/s peak particle velocity (PPV). This is generally much lower than the vibration levels required to cause structural damage to most buildings. The Standard AS/ISO 2631.2 – 2014 “Mechanical vibration and shock – Evaluation of human exposure to whole-body vibration – Vibration in buildings (1 Hz to 80 Hz)” suggests an acceptable daytime limit of 8 mm/s PPVi for human comfort.

The Sydney Metro Underground Corridor Protection Technical Guidelines suggests a maximum acceptable vibration limit of 15 mm/s PPVi for the rail tunnels with cast in situ concrete linings that are in good condition and 20 mm/s PPVi for rail tunnels supported using precast concrete segment lining, however this is subject to confirmation by TfNSW/Sydney Metro. Shallow excavations and piling work is unlikely to approach these nominated levels at the tunnel.

Based on the DP’s experience and with reference to AS/ISO 2631.2, it is suggested that a maximum PPVi of 8 mm/s (measured at the first occupied level of existing buildings) be provisionally employed at this site for both architectural and human comfort considerations, although this vibration limit may need to be reduced if there are sensitive structures or equipment in the area.

As the magnitude of vibration transmission is site specific, it is recommended that a vibration trial be carried out at the commencement of construction. These trials may indicate that smaller or different

types of construction equipment or approaches to demolition are required to reduce vibration to acceptable levels.

8.5 Dilapidation Surveys

Dilapidation surveys should be carried out on surrounding buildings, pavements and sensitive structures that may be affected by the construction works. The dilapidation surveys should be undertaken before the commencement of any construction work in order to document any existing defects so that any claims for damage due to construction related activities can be accurately assessed. As mentioned in Section 8.1, a dilapidation assessment of the tunnels may be required by TfNSW.

8.6 Subgrade Preparation for Lightly-Trafficked Pavements and Slabs-on-Grade

The existing fill, including the fill placed during the site remediation and relevelling, is assumed to be 'uncontrolled' in the absence of compaction records. The deeper fill encountered in BH4 appears to be poorly compacted and uncontrolled at depth and it is understood that other areas of similar deeper fill were encountered in the previous contamination assessments. Our investigation and review of the previous investigations on site also indicated that the fill is generally of variable thicknesses and compaction.

Where design subgrade levels for pavements and slabs on grade are close to the current ground surface, the existing fill should be removed and replaced as engineered fill to a depth that is appropriate for the loads from the pavement or the ground slab to be supported. This could include construction of a 1 m thick bridging layer of compacted granular material such a good quality, high strength crushed sandstone or similar over the deeper fill. However, it is noted that construction of slabs and pavements on uncontrolled filling that is left in place (i.e. below bridging layers) may result in variable and more unpredictable settlement due to the inherent variability of uncontrolled fill. Further investigation using cone penetration tests (CPTs) could be carried out to assess the fill consistency and compaction and to allow estimation of settlements once slab/pavement loads are known.

The extent of earthworks required will depend on slab loads and settlement tolerances. Where slabs are to be fully suspended on piles then no significant earthworks are required to improve the existing fill compaction.

From a geotechnical perspective, the upper layer of non-contaminated fill at the site is considered to be suitable for re-use as engineered filling, provided that it is free of oversize particles (>100 mm) and deleterious material. The suitability of re-using site-won filling should be further considered from a contamination perspective.

Subgrade preparation for lightly trafficked pavements, lightly loaded slabs-on-ground and/or raising site levels should incorporate the following:

- stripping of uncontrolled fill and any obvious unsuitable material (vegetation, organic topsoil, deleterious material, oversize material larger than 100 mm diameter) to an appropriate depth depending on the design surcharge;

- rolling of the exposed subgrade with at least 8 passes of a smooth drum roller with a minimum static weight of 10 tonnes, subject to vibration concerns. The final pass (test roll) of the subgrade should be inspected by a geotechnical engineer to detect any soft spot or heaving areas. Any soft spots defected during test rolling would generally need to be stripped to a stiffer base or to a depth of approximately 0.5 m, subject to confirmation by a geotechnical engineer, and replaced with engineered fill;
- engineered fill for replacing soft spots or raising site levels should be placed in layers of 300 mm maximum loose thickness (although dependent upon the size of the compaction equipment) and compacted to a dry density ratio of between 98% and 102% relative to Standard compaction with moisture contents strictly within 2% of Standard optimum moisture content (OMC). The existing fill and sandy/clayey soils on site should generally be suitable for re-use as engineered fill provided it has a maximum particle size of 100 mm and moisture content within 2% of Standard OMC; and
- density testing of each layer of fill should be undertaken in accordance with AS 3798-2007 "Guidelines for Earthworks for Commercial and Residential Developments" to verify that the specified density ratios have been achieved.

A CBR of 5% for granular subgrade is recommended for the preliminary design of pavement and slab-on-grade, assuming subgrade preparation is carried out in accordance with the methodology described above. Further testing of subgrade soils and any imported material should be carried out to confirm CBR values for design.

8.7 Excavation Support

No basement excavation is currently proposed for the development. However, minor excavation for levelling the site, construction of building cores and high-level footings may be required. Vertical excavations within fill and natural soil will require both temporary and permanent support during and after construction. It is expected that temporary batters will be possible for excavation works set back a sufficient distance from the site boundaries. If temporary batters are not possible, then shoring should be used to provide the required excavation support.

8.7.1 Batter Slopes

Suggested temporary and permanent batter slopes for unsupported excavations above the water table, up to a maximum height of 3 m are shown in Table 1. If surcharge loads are applied near the crest of the slope, then further geotechnical review and probably flatter batters or soil stabilisation may be required.

Table 1: Recommended Batter Slopes

Exposed Material	Max. Temporary Batter Slope (H : V)	Max. Permanent Batter Slope (1) (H : V)
Granular Fill and Natural Sandy Soil	1.5 : 1	2 : 1
Natural Clayey Soil	1 : 1	2 : 1

Notes: (1) Provided batter slope is protected from erosion (e.g. shotcrete and dowel support)

8.7.2 Retaining Walls

It is likely that minor retaining structures may be required along the site boundaries to provide a level building platform for the ground floor of the building, where there is no room for battering.

Table 2 outlines material and strength parameters that could be used for the design of new shoring/retaining walls and to design lateral support systems for the small-scale retaining wall.

Table 2: Parameters for Retaining Wall Design

Material	Dry Unit Weight (kN/m^3)	Coefficient of Active Earth Pressure (K_a)	Coefficient of Earth Pressure at Rest (K_o)	Ultimate Passive Earth Pressure*
Granular Fill	20	0.4	0.6	K_p = 2.5
Natural Sandy Soil (at least loose to medium)	20	0.3	0.5	K_p = 3.5
Natural Clayey Soil (at least stiff)	20	0.3	0.5	100 kPa

Notes: *Ultimate values and only below bulk excavation level. May need to be reduced where batter slopes are located nearby.

Unless the material behind the existing basement walls is effectively free draining, hydrostatic pressure should be assumed to act on the full height of the basement walls to account for increases in groundwater levels caused by significant rainfall events and flooding. Surcharge pressures from adjacent structures, construction machinery and traffic should also be incorporated into the design of retaining walls as necessary.

8.8 Foundations

For the currently envisaged 18-storey building, relatively high column loads are expected. It is considered that structural loads should be transferred into the underlying bedrock using piles socketed into at least medium strength (or better) rock.

Continuous flight auger (CFA) or bored piles are likely to be suitable for this site, however, casing through the upper fill and natural sandy soils (if encountered) should be expected to prevent the upper section of the holes from collapsing, if bored piles are adopted. Groundwater should be expected within the open pile holes and therefore allowance for pumping to remove water or the use of 'tremmie' methods to place concrete should be considered. Issues with collapsing soils and groundwater may be particularly problematic for bored pile sin deeper fill areas as encountered in BH4. Relatively high seepage flows can sometimes occur within the fractured laminate and this should be considered by the piling contractor..

Recommended maximum design pressures for the various rock strata are presented in Table 3. For piles shaft adhesion values for uplift (tension) may be taken as being equal to 70% of the values for compression.

The foundation design parameters given in Table 3 assume that the pile excavations are clean and free of loose debris, with pile sockets free of smear and adequately roughed immediately prior to concrete placement.

Settlement of a pile is dependent on the loads applied to the pile and the foundation conditions in the socket zone and below the pile toe. The total settlement of bored pile designed using the 'allowable' parameters provided in Table 3 should be less than 1% of the pile diameter upon application of the design load.

By way of example, a 1.2 m diameter bored piles socketed 3 m within medium strength rock would safely support a (Working) column load of about 7000 kN, based on the parameters given in Table 3.

An appropriate geotechnical strength reduction factor should be applied when using the limit-state approach as outlined in AS 2159 – 2009 Piling – Design and installation.

Table 3: Parameters for Foundation Design

Foundation Stratum	Maximum Allowable Pressure		Maximum Ultimate Pressure		Young's Modulus (MPa)
	End Bearing (kPa)	Shaft Adhesion(1) (Compression) (kPa)	End Bearing (kPa)	Shaft Adhesion(1) (Compression) (kPa)	
Very Low Strength Rock	-	70	-	100	-
Low to Medium Strength Rock	-	150	-	300	-
Medium Strength Rock	3,500	300	15,000	500	500
High Strength Rock	6,000	500	40,000	1000	1500

Notes: (1) Shaft adhesion applicable for the design of bored piers, uncased over rock socket length, or CFA piles where adequate sidewall cleanliness and roughness is achieved.

8.9 Seismicity

In accordance with AS1170-2007 "Structural Design Actions, Part 4: Earthquake Actions in Australia" a hazard factor (Z) of 0.08 and a site subsoil Class C_e is considered to be appropriate for the site.

8.10 Groundwater

Groundwater has been measured on the site and the adjacent sites at between RL 16.2 m and RL 20.9 m (i.e. depths below the existing ground surface varying between approximately 3 m and 9 m). The high fluctuations in the measured groundwater table levels may be attributed to the particularly dry season before 2020, a temporary rise by at least 1-2 m following heavy and prolonged rainfall and the intermittent perched water table above the clay soil layer.

In light of the fact that there is no basement proposed for the development and the depths of any localised excavation are unlikely to exceed 3 m, DP expect that there will be no impact on groundwater levels/quality, no impact in terms of the NSW Aquifer Interference Policy, and no requirement to obtain a dewatering license or approval under the Water Act 1912 or Water Management Act 2000. This advice is subject to review and approval from the project planner and Council. Any seepage that may occur following heavy rainfall is likely to be associated with surface runoff and rainfall and will presumably be removed under Council approvals.

9. Limitations

Douglas Partners (DP) has prepared this report for this project at 104-116 Regent Street, Redfern in accordance with DP's proposal P99740.01.P.001.Rev0, dated 18 March 2021. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Perpetual Corporate Trust Limited ATF for WH PH PBSA Trust for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during the current and previous investigations carried out by DP or others. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached notes and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The scope for work for this investigation/report did not include the assessment of surface or sub-surface materials or groundwater for contaminants, within or adjacent to the site. Should evidence of filling of unknown origin be noted in the report, and in particular the presence of building demolition materials, it should be recognised that there may be some risk that such filling may contain contaminants and hazardous building materials.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the geotechnical components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

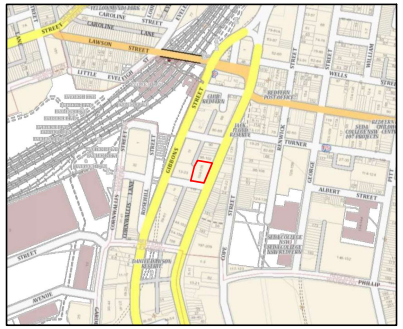
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

Appendix B

Drawings



Locality Plan

LEGEND

- Approximate Site Boundary
- PSM Borehole Locations
- BP Monitoring Well Locations
- DP Borehole Locations (86266.03 - 2018)
- DP Borehole Locations (86852.00 - 2019)
- DP Borehole Locations (99740.01 - 2021)

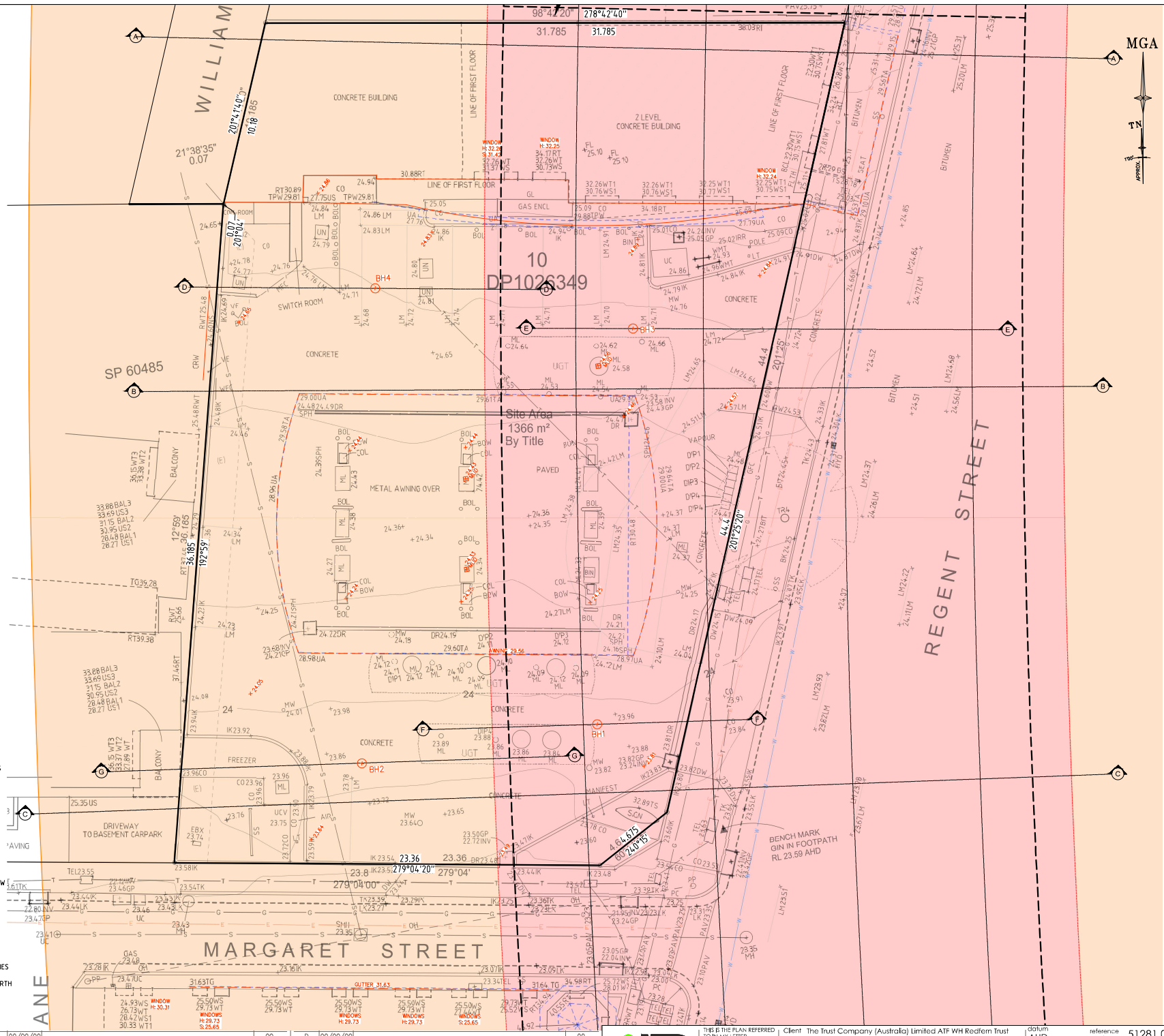
NOTE:
1: Base image from MetroMap (Dated 30.07.2021)

0 5 10 15 20 30 40 50m

1:500 @ A3

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Prepetual Corporate Trust Limited ATF for WH PH PBSA Trust		TITLE: **Test Location Plan**	PROJECT No: 99740.01
OFFICE: Sydney	DRAWN BY: MG	**Proposed Student Accommodation**	DRAWING No: 1
SCALE: 1:500 @ A3	DATE: 29.09.2021	**104-116 Regent Street, Redfern**	REVISION: 0



LEGEND

BENCH MARK	▲
WINDOW	W
HEAD/SILL	H/S
PIT WITH METAL LID	☐ MLID
PROPOSED BOREHOLE	● BH1

PROPOSED BOREHOLE DETAILS

1. PROPOSED BOREHOLES ARE 0.11m DIAMETER IN SOIL AND 0.076m DIAMETER IN ROCK
2. PROPOSED LOCATION AND DEPTHS ARE AS SHOWN IN THE PLAN AND RELEVANT SECTIONS

NOTES

1. THE BOUNDARIES HAVE NOT BEEN MARKED ON GROUND
2. ALL AREAS AND DIMENSIONS HAVE BEEN COMPILED FROM PLANS MADE AVAILABLE BY NSW LAND REGISTRY SERVICES AND ARE SUBJECT TO FINAL SURVEY
3. BOUNDARIES WITHIN THIS FILE HAVE BEEN ADDED FROM DCDB DATA OBTAINED FROM NSW LAND REGISTRY SERVICES AND ARE APPROXIMATE ONLY
4. ORIGIN OF LEVELS ON A.H.D. IS TAKEN FROM BENCHMARK IN KERB FROM LINKER SURVEY PLAN REFERENCE 170638 R.L. 24.35 (A.H.D.) IN GIBBONS STREET
5. CONTOUR INTERVAL 1.0 m
6. ONLY SPOT LEVELS SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION
7. FLOOR LEVELS SHOWN ARE THRESHOLD LEVELS. NO INVESTIGATION OF INTERNAL FLOOR LEVELS HAS BEEN UNDERTAKEN
8. NO INVESTIGATION OF UNDERGROUND SERVICES HAS BEEN MADE. ALL RELEVANT AUTHORITIES SHOULD BE NOTIFIED PRIOR TO ANY EXCAVATION ON OR NEAR THE SITE
9. BEARINGS SHOWN ARE MGA (MAP GRID OF AUSTRALIA) ADD APPROX. 1°00' FOR TRUE NORTH
10. UNDERLAY SURVEY RECEIVED BY 'REALSERVE' REF: 75573JP DATED: 27-06-2020

DIAL BEFORE YOU DIG www.1100.com.au

GDA2020

0 2 4 6 8 10
SCALE 1:100 @ A1

Revision	Date	Description	Reference
H	00/00/00	–	00
G	00/00/00	–	00
F	00/00/00	–	00
E	00/00/00	–	00

Revision	Date	Description	Reference
D	00/00/00	–	00
C	00/00/00	–	00
B	06/07/21	BOREHOLE LOCATIONS AND SECTIONS D–G AMENDED	004
A	19/05/21	PROPOSED BOREHOLE LOCATIONS AND SECTIONS ADDED	003

LTS CONFIDENCE TOGETHER
www.lts.com.au | P 1300 587 000

THIS IS THE PLAN REFERRED TO IN MY LETTER DATED:

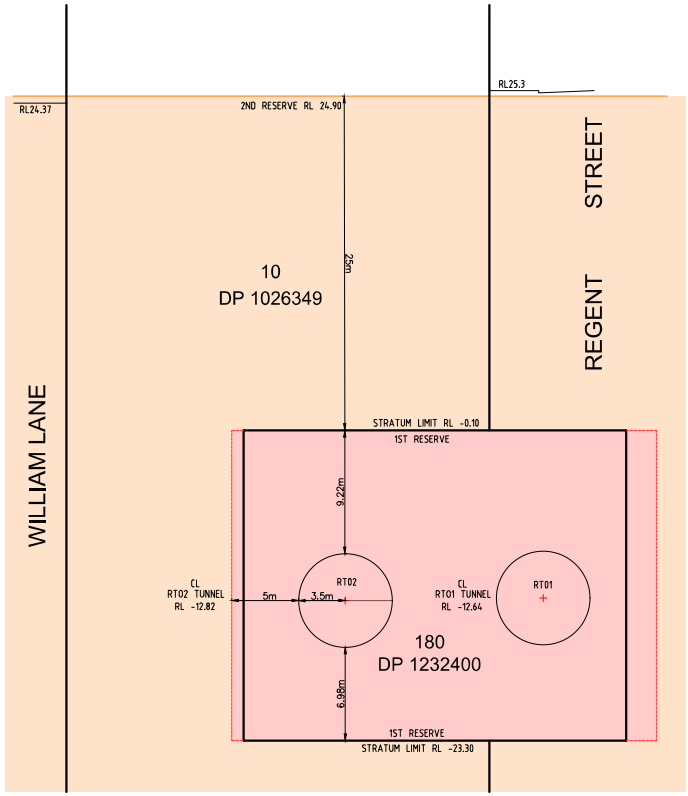
.....
Registered Surveyor NSW

Client The Trust Company (Australia) Limited ATF WH Redfern Trust

Drawing title
PLAN OF PARTIAL DETAIL AND LEVELS OVER PART OF LOT 10 IN DP 1026349 KNOWN AS No 104-116 REGENT STREET, REDFERN

datum AHD
site Area N/A
LGA SYDNEY

reference number 51281 001DT
scale 1:100 @A1
date of survey 11/03/2021
SHEET 1 OF 1



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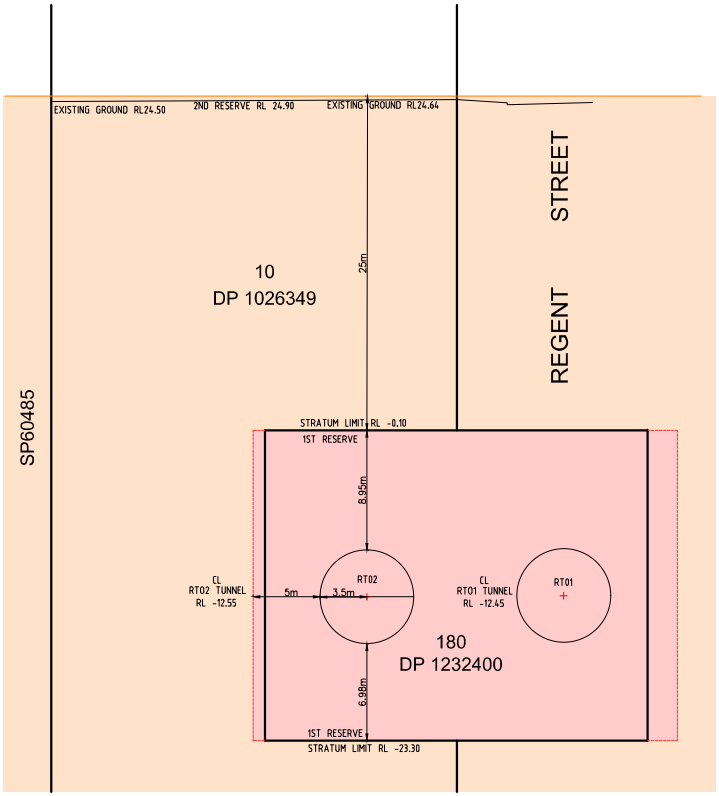

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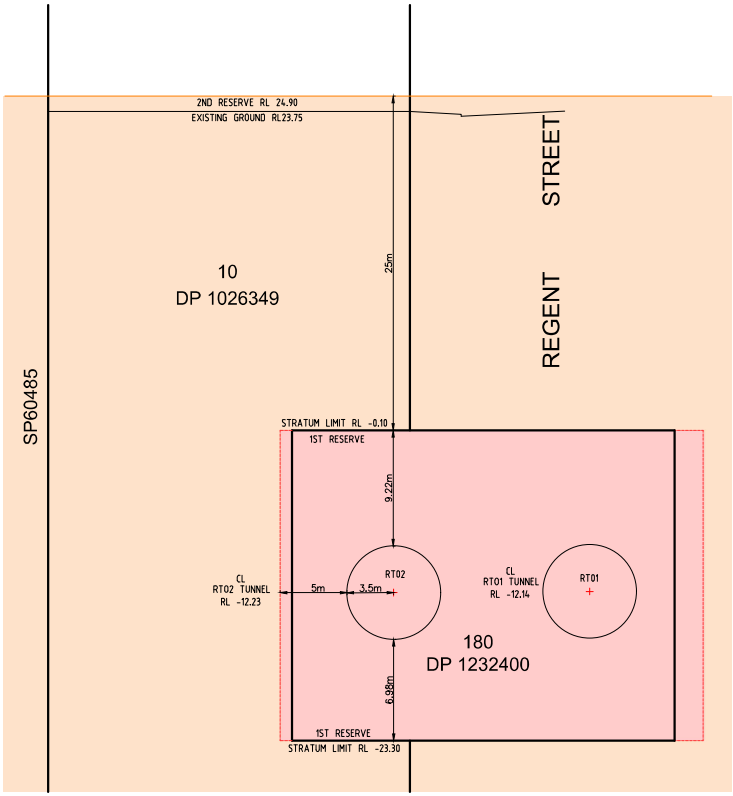

CROSS SECTION C-C

DIAL BEFORE YOU DIG www.1100.com.au

GDA2020

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G	00/00/00	–	00
F	00/00/00	–	00
E	00/00/00	–	00

Revision	Date	Description	Reference
D	00/00/00	–	00
C	00/00/00	–	00
B	06/07/21	BOREHOLE LOCATIONS AND SECTIONS D–G AMENDED	004
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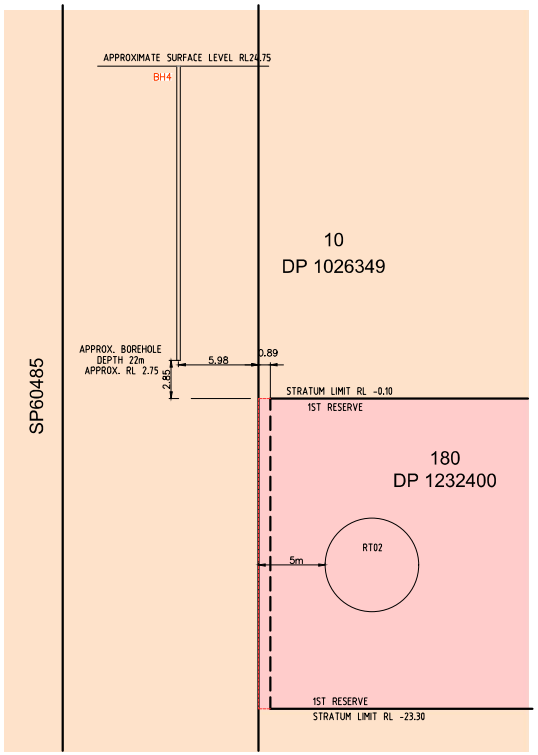
datum AHD
site Area N/A
LGA SYDNEY

reference number 51281 001DT
scale 1:200 @A1
date of survey 11/03/2021
SHEET 2 OF 1

MGA

TN

APPROX. 1°00'



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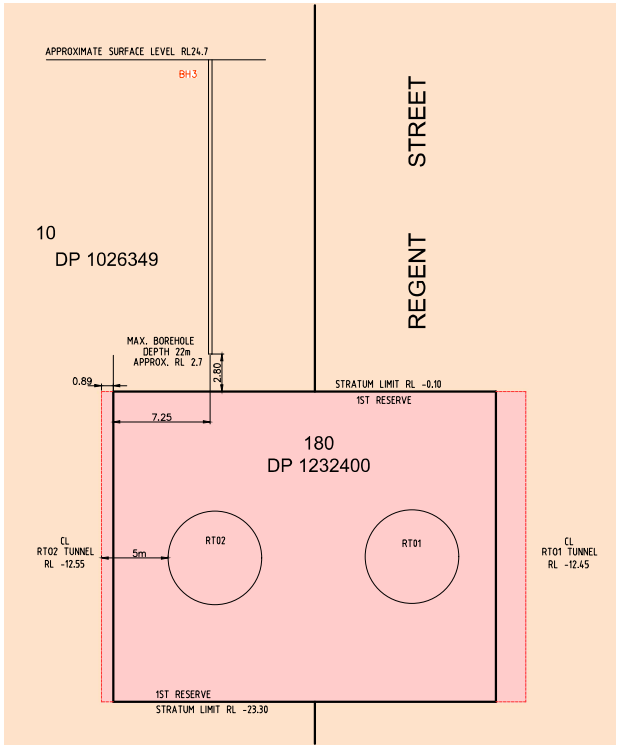

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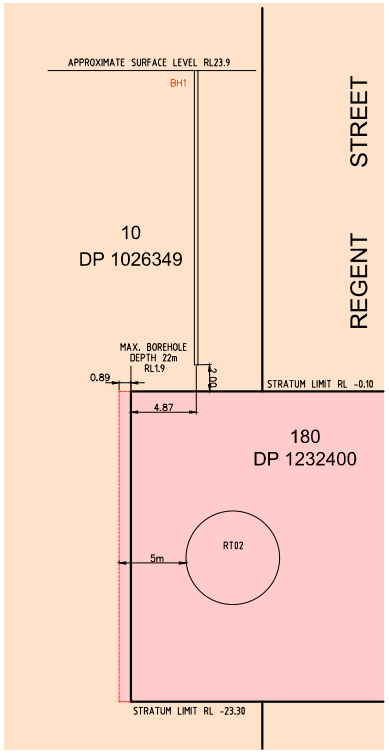

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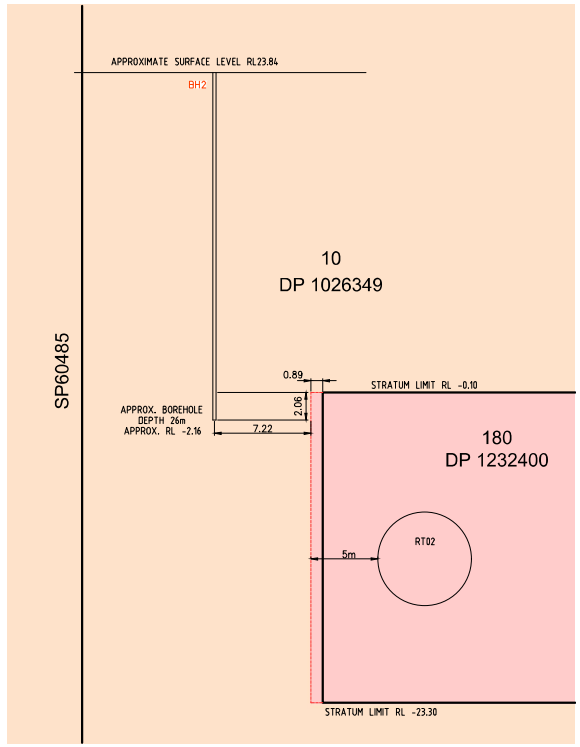

CROSS SECTION G-G

NOTES

1. BOREHOLES DIAMETERS ARE SHOWN DIAGRAMMATICALLY ONLY - SEE SHEET 1 FOR PROPOSED BOREHOLE DIAMETERS

DIAL BEFORE YOU DIG www.1100.com.au

GDA2020

0 2 4 6 8 10

SCALE 1:100 @ A1

Revision	Date	Description	Reference
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G	00/00/00	–	00
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datum AHD

site Area N/A

LGA SYDNEY

reference number 51281 001DT

scale 1:200 @A1

date of survey 11/03/2021

SHEET 3 OF 1

Appendix C

Field Work Results

About this Report

Douglas Partners

Introduction

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Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
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More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

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Sampling Methods

Douglas Partners

Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

Soil Descriptions

Douglas Partners

Description and Classification Methods

The methods of description and classification of soils and rocks used in this report are generally based on Australian Standard AS1726:2017, Geotechnical Site Investigations. In general, the descriptions include strength or density, colour, structure, soil or rock type and inclusions.

Soil Types

Soil types are described according to the predominant particle size, qualified by the grading of other particles present:

Type	Particle size (mm)
Boulder	>200
Cobble	63 - 200
Gravel	2.36 - 63
Sand	0.075 - 2.36
Silt	0.002 - 0.075
Clay	<0.002

The sand and gravel sizes can be further subdivided as follows:

Type	Particle size (mm)
Coarse gravel	19 - 63
Medium gravel	6.7 - 19
Fine gravel	2.36 – 6.7
Coarse sand	0.6 - 2.36
Medium sand	0.21 - 0.6
Fine sand	0.075 - 0.21

Definitions of grading terms used are:

- Well graded - a good representation of all particle sizes
- Poorly graded - an excess or deficiency of particular sizes within the specified range
- Uniformly graded - an excess of a particular particle size
- Gap graded - a deficiency of a particular particle size with the range

The proportions of secondary constituents of soils are described as follows:

In fine grained soils (>35% fines)

Term	Proportion of sand or gravel	Example
And	Specify	Clay (60%) and Sand (40%)
Adjective	>30%	Sandy Clay
With	15 – 30%	Clay with sand
Trace	0 - 15%	Clay with trace sand

In coarse grained soils (>65% coarse)
- with clays or silts

Term	Proportion of fines	Example
And	Specify	Sand (70%) and Clay (30%)
Adjective	>12%	Clayey Sand
With	5 - 12%	Sand with clay
Trace	0 - 5%	Sand with trace clay

In coarse grained soils (>65% coarse)
- with coarser fraction

Term	Proportion of coarser fraction	Example
And	Specify	Sand (60%) and Gravel (40%)
Adjective	>30%	Gravelly Sand
With	15 - 30%	Sand with gravel
Trace	0 - 15%	Sand with trace gravel

The presence of cobbles and boulders shall be specifically noted by beginning the description with 'Mix of Soil and Cobbles/Boulders' with the word order indicating the dominant first and the proportion of cobbles and boulders described together.

Soil Descriptions

Cohesive Soils

Cohesive soils, such as clays, are classified on the basis of undrained shear strength. The strength may be measured by laboratory testing, or estimated by field tests or engineering examination. The strength terms are defined as follows:

Description	Abbreviation	Undrained shear strength (kPa)
Very soft	VS	<12
Soft	S	12 - 25
Firm	F	25 - 50
Stiff	St	50 - 100
Very stiff	VSt	100 - 200
Hard	H	>200
Friable	Fr	-

Cohesionless Soils

Cohesionless soils, such as clean sands, are classified on the basis of relative density, generally from the results of standard penetration tests (SPT), cone penetration tests (CPT) or dynamic penetrometers (PSP). The relative density terms are given below:

Relative Density	Abbreviation	Density Index (%)
Very loose	VL	<15
Loose	L	15-35
Medium dense	MD	35-65
Dense	D	65-85
Very dense	VD	>85

Soil Origin

It is often difficult to accurately determine the origin of a soil. Soils can generally be classified as:

- Residual soil - derived from in-situ weathering of the underlying rock;
- Extremely weathered material – formed from in-situ weathering of geological formations. Has soil strength but retains the structure or fabric of the parent rock;
- Alluvial soil – deposited by streams and rivers;
- Estuarine soil – deposited in coastal estuaries;
- Marine soil – deposited in a marine environment;
- Lacustrine soil – deposited in freshwater lakes;
- Aeolian soil – carried and deposited by wind;
- Colluvial soil – soil and rock debris transported down slopes by gravity;
- Topsoil – mantle of surface soil, often with high levels of organic material.
- Fill – any material which has been moved by man.

Moisture Condition – Coarse Grained Soils

For coarse grained soils the moisture condition should be described by appearance and feel using the following terms:

- Dry (D) Non-cohesive and free-running.
- Moist (M) Soil feels cool, darkened in colour.
  Soil tends to stick together.
  Sand forms weak ball but breaks easily.
- Wet (W) Soil feels cool, darkened in colour.
  Soil tends to stick together, free water forms when handling.

Moisture Condition – Fine Grained Soils

For fine grained soils the assessment of moisture content is relative to their plastic limit or liquid limit, as follows:

- 'Moist, dry of plastic limit' or 'w <PL' (i.e. hard and friable or powdery).
- 'Moist, near plastic limit' or 'w ≈ PL (i.e. soil can be moulded at moisture content approximately equal to the plastic limit).
- 'Moist, wet of plastic limit' or 'w >PL' (i.e. soils usually weakened and free water forms on the hands when handling).
- 'Wet' or 'w ≈LL' (i.e. near the liquid limit).
- 'Wet' or 'w >LL' (i.e. wet of the liquid limit).

Rock Strength

Rock strength is defined by the Unconfined Compressive Strength and it refers to the strength of the rock substance and not the strength of the overall rock mass, which may be considerably weaker due to defects.

The Point Load Strength Index $Is_{(50)}$ is commonly used to provide an estimate of the rock strength and site specific correlations should be developed to allow UCS values to be determined. The point load strength test procedure is described by Australian Standard AS4133.4.1-2007. The terms used to describe rock strength are as follows:

Strength Term	Abbreviation	Unconfined Compressive Strength MPa	Point Load Index * $Is_{(50)}$ MPa
Very low	VL	0.6 - 2	0.03 - 0.1
Low	L	2 - 6	0.1 - 0.3
Medium	M	6 - 20	0.3 - 1.0
High	H	20 - 60	1 - 3
Very high	VH	60 - 200	3 - 10
Extremely high	EH	>200	>10

* Assumes a ratio of 20:1 for UCS to $Is_{(50)}$. It should be noted that the UCS to $Is_{(50)}$ ratio varies significantly for different rock types and specific ratios should be determined for each site.

Degree of Weathering

The degree of weathering of rock is classified as follows:

Term	Abbreviation	Description
Residual Soil	RS	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely weathered	XW	Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible
Highly weathered	HW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately weathered	MW	The whole of the rock material is discoloured , usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly weathered	SW	Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh	FR	No signs of decomposition or staining.
Note: If HW and MW cannot be differentiated use DW (see below)		
Distinctly weathered	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching or may be decreased due to deposition of weathered products in pores.

Rock Descriptions

Degree of Fracturing

The following classification applies to the spacing of natural fractures in diamond drill cores. It includes bedding plane partings, joints and other defects, but excludes drilling breaks.

Term	Description
Fragmented	Fragments of <20 mm
Highly Fractured	Core lengths of 20-40 mm with occasional fragments
Fractured	Core lengths of 30-100 mm with occasional shorter and longer sections
Slightly Fractured	Core lengths of 300 mm or longer with occasional sections of 100-300 mm
Unbroken	Core contains very few fractures

Rock Quality Designation

The quality of the cored rock can be measured using the Rock Quality Designation (RQD) index, defined as:

$$\text{RQD \%} = \frac{\text{cumulative length of 'sound' core sections} \geq \text{100 mm long}}{\text{total drilled length of section being assessed}}$$

where 'sound' rock is assessed to be rock of low strength or stronger. The RQD applies only to natural fractures. If the core is broken by drilling or handling (i.e. drilling breaks) then the broken pieces are fitted back together and are not included in the calculation of RQD.

Stratification Spacing

For sedimentary rocks the following terms may be used to describe the spacing of bedding partings:

Term	Separation of Stratification Planes
Thinly laminated	< 6 mm
Laminated	6 mm to 20 mm
Very thinly bedded	20 mm to 60 mm
Thinly bedded	60 mm to 0.2 m
Medium bedded	0.2 m to 0.6 m
Thickly bedded	0.6 m to 2 m
Very thickly bedded	> 2 m

Symbols & Abbreviations

Douglas Partners

Introduction

These notes summarise abbreviations commonly used on borehole logs and test pit reports.

Drilling or Excavation Methods

C	Core drilling
R	Rotary drilling
SFA	Spiral flight augers
NMLC	Diamond core - 52 mm dia
NQ	Diamond core - 47 mm dia
HQ	Diamond core - 63 mm dia
PQ	Diamond core - 81 mm dia

Water

▷	Water seep
▽	Water level

Sampling and Testing

A	Auger sample
B	Bulk sample
D	Disturbed sample
E	Environmental sample
U_{50}	Undisturbed tube sample (50mm)
W	Water sample
pp	Pocket penetrometer (kPa)
PID	Photo ionisation detector
PL	Point load strength Is(50) MPa
S	Standard Penetration Test
V	Shear vane (kPa)

Description of Defects in Rock

The abbreviated descriptions of the defects should be in the following order: Depth, Type, Orientation, Coating, Shape, Roughness and Other. Drilling and handling breaks are not usually included on the logs.

Defect Type

B	Bedding plane
Cs	Clay seam
Cv	Cleavage
Cz	Crushed zone
Ds	Decomposed seam
F	Fault
J	Joint
Lam	Lamination
Pt	Parting
Sz	Sheared Zone
V	Vein

Orientation

The inclination of defects is always measured from the perpendicular to the core axis.

h	horizontal
v	vertical
sh	sub-horizontal
sv	sub-vertical

Coating or Infilling Term

cln	clean
co	coating
he	healed
inf	infilled
stn	stained
ti	tight
vn	veneer

Coating Descriptor

ca	calcite
cbs	carbonaceous
cly	clay
fe	iron oxide
mn	manganese
slt	silty

Shape

cu	curved
ir	irregular
pl	planar
st	stepped
un	undulating

Roughness

po	polished
ro	rough
sl	slickensided
sm	smooth
vr	very rough

Other

fg	fragmented
bnd	band
qtz	quartz

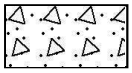
Symbols & Abbreviations

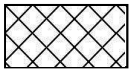
Graphic Symbols for Soil and Rock

General

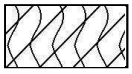

Asphalt

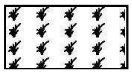

Road base

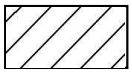

Concrete

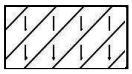

Filling

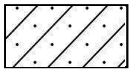
Soils


Topsoil

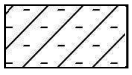

Peat


Clay

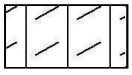

Silty clay

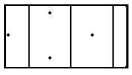

Sandy clay

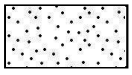

Gravelly clay

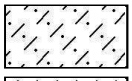

Shaly clay

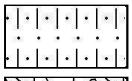

Silt


Clayey silt

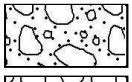

Sandy silt

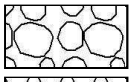

Sand

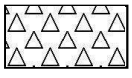

Clayey sand


Silty sand

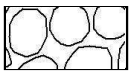

Gravel

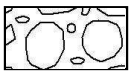

Sandy gravel


Cobbles, boulders

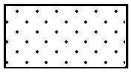

Talus

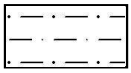
Sedimentary Rocks

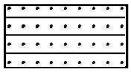

Boulder conglomerate

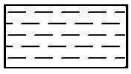

Conglomerate


Conglomeratic sandstone

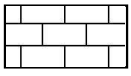

Sandstone


Siltstone

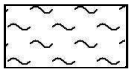

Laminite

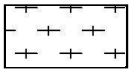

Mudstone, claystone, shale


Coal


Limestone

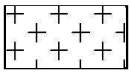
Metamorphic Rocks

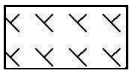

Slate, phyllite, schist

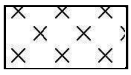

Gneiss


Quartzite

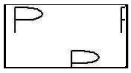
Igneous Rocks


Granite


Dolerite, basalt, andesite


Dacite, epidote


Tuff, breccia


Porphyry

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.9 AHD
EASTING: 333516.6
NORTHING: 6248156.7
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 99740.01
DATE: 30/8/2021
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing			
			EW HW MW SW FS FR		Ex Low / Very Low / Low / Medium / High / Very High / Ex High		0.01 / 0.05 / 0.10 / 0.50 / 1.00	B - Bedding J - Joint S - Shear F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments
23	0.3	FILL/Sandy GRAVEL: fine to medium, pale grey-brown, angular to subrounded igneous gravel, medium to coarse sand, generally in a loose condition, dry							A/E			PID<1ppm
22	1.0	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subrounded igneous gravel, generally in a medium dense condition, dry							A/E			PID<1ppm
22	1.4	FILL/GRAVEL: fine to coarse gravel, pale grey, trace sandstone fragments, generally in a dense condition, dry							A/E			PID<1ppm
21	2	FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subangular igneous gravel, trace metal fragments, slag and charcoal, generally in a medium dense condition							A/E			PID=5ppm
20	3								A/E			PID=4ppm
19	4	Below 4.0m: wet				▼			A/E			PID=2ppm
	4.5	CLAY CI: medium plasticity, pale grey, trace silt, w>PL, apparently stiff, alluvial							A/E			PID<1ppm
18	5.5	CLAY CH: high plasticity, pale grey mottled brown, w~PL, apparently very stiff, alluvial/possibly residual							A/E			PID<1ppm
17	6.5	CLAY CI: medium plasticity, pale grey brown, w<PL, apparently hard, residual							A/E			PID<1ppm
16	6.8	LAMINITE: pale grey brown, approximately 70% siltstone interlaminated with 30% fine grained sandstone, medium strength, highly to moderately weathered, fragmented to fractured, Ashfield Shale						7m: CORE LOSS: 300mm	C	40		PL(A) = 0.5
15	9								R			
	9.5								C	100		PL(A) = 0.4
14		Bore discontinued at 9.5m										

RIG: Track-mounted rig **DRILLER:** Groundtek Drilling Services **LOGGED:** SI **CASING:** HQ to 6.8m

TYPE OF BORING: Solid flight auger (TC-bit) to 6.7m; Rotary to 7.0m; NMLC Coring to 7.5m; Rotary to 8.8m; NMLC Coring to 9.5m

WATER OBSERVATIONS: Free groundwater at 4.0m whilst augering

REMARKS: Groundwater well installed to 9.0m (screen 9.0-6.0m; blank 6.0-0.1m; gravel 9.0-5.5m; bentonite 5.5-5.0m; backfill to 0.1m; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BORE: BH1 PROJECT: 99740.01 AUGUST 2021

7.50 – 9.50m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
		VOID										
23	0.3	FILL/SAND: fine to coarse, grey, trace fine to medium sandstone gravel, dry, generally in a dense condition, possibly ripped sandstone							A/E			PID<1ppm
	1								A/E			PID<1ppm
									S			11,14,9 N = 23
	1.3	FILL/SAND: fine to coarse, dark grey-brown, with fine to medium angular to subangular igneous gravel, moist, generally in a medium dense condition							A/E			PID<1ppm
22	2								A/E			PID<1ppm
									A/E			PID<1ppm
									S			3,5,3 N = 8
21	3	Below 3.1m: trace brick fragments										
	3.6	FILL/CLAY: medium plasticity, red-brown and dark grey, with fine to medium sand and fine to medium angular to subangular igneous gravel, w<PL, generally in a stiff condition							A/E			PID=9ppm
20	4								A/E*			*BD5/230421, PID=8ppm
	4.0	CLAY CI-CH: medium to high plasticity, pale grey mottled red-brown, trace fine to medium ironstone gravel, w<PL. very stiff, residual							S/E			2,3,7 N = 10
									A/E*			*BD6/230421, PID=3ppm
19	5											
	5.5	CLAY CL-CI: low to medium plasticity, pale grey and red-brown, with fine to medium ironstone gravel, w<PL, hard, relict rock structure, extremely weathered Ashfield Shale						Note: unless otherwise stated, discontinuties are bedding, planar, rough, iron coated to 1mm thick, dipping 0-5°	S/E			8,17,25/130 refusal PID<1ppm
18	6											
17	7							7.17m: Cs 20mm 7.46m: Cs 30mm 7.57 & 7.62m: Cs 20mm 7.82m: Cs 100mm 7.98m: Cs 20mm 8.28m: J50°, pl, ro, fe stn	C	100	8	
	7.38	LAMINITE: grey dark grey and orange-grey, 70% siltstone and 30% sandstone laminations, very low to medium strength, highly to moderately weathered, highly fractured, Ashfield Shale						8.66m: B0°, pl, sm, cly co				PL(A) = 0.29
16	8											
15	9								C	100	40	
	9.0	LAMINITE: dark grey and grey with some orange staining, 70% siltstone & 30% sandstone laminations, low and medium strength, slightly weathered, fractured, Ashfield Shale						9.38-9.58m: Cs (x6) 5-10mm 9.63m: J50°, pl, ro, cly vn				PL(A) = 0.28
14												

RIG: Comacchio 305 **DRILLER:** LC **LOGGED:** TM **CASING:** HW to 5.5, HQ to 7.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 5.5m; Rotary to 7.0m; NMLC-Coring to 22.52m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
			EW HW MW SW FS FR		Ex Low Very Low Low Medium High Very High Ex High		0.01 0.05 0.10 0.50 1.00					
								9.73m: F30°, pl, ro, cln 9.85m: Fg 30mm, cly inf 10.03m: J (x2) 40°, st, ro, cln				PL(A) = 0.72
	10.5	LAMINITE: dark grey and pale grey, 70% siltstone & 30% sandstone laminations, medium then high strength, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale							C	100	40	PL(A) = 0.52
	11											
	12							11.93m: J90°, pl, sm, cln				PL(A) = 1.7
	13								C	100	100	PL(A) = 2.4
								13.22m: Fg 10mm				
	14							13.96m: J70-90°, ir, ro, cln				PL(A) = 4.6
	15											PL(A) = 2.6
	16								C	100	99	PL(A) = 2.1
								16.35m: J30°, pl, sm, cln				
	17	17.0 SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale										PL(A) = 1.1
								17.35m: J30°, pl, sm, cln				
	18											PL(A) = 1.5
									C	100	100	
	19											PL(A) = 1.2
								19.45m: J80°, pl, sm, cln				

RIG: Comacchio 305 **DRILLER:** LC **LOGGED:** TM **CASING:** HW to 5.5, HQ to 7.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 5.5m; Rotary to 7.0m; NMLC-Coring to 22.52m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.8 AHD
EASTING: 333503.5
NORTHING: 6248156.3
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 99740.01
DATE: 23/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale *(continued)*						19.98m: J80°, pl, ro, cln 20.19m: J80°, cu, ro, cln	C	100	100	
	21							20.75m: Fg 20mm 20.95m: J60°, pl, ro, cln				PL(A) = 1 PL(A) = 1.7
									C	100	99	
	22											PL(A) = 1.8
	22.52	Bore discontinued at 22.52m Target depth reached										
	23											
	24											
	25											
	26											
	27											
	28											
	29											

RIG: Comacchio 305 **DRILLER:** LC **LOGGED:** TM **CASING:** HW to 5.5, HQ to 7.0m

TYPE OF BORING: Solid flight auger (TC-bit) to 5.5m; Rotary to 7.0m; NMLC-Coring to 22.52m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Hole backfilled with grout

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: BH2 PROJECT: 99740.01 AUGUST 2021

7.00 – 11.00m

BORE: BH2 PROJECT: 99740.01 AUGUST 2021

11.00 – 16.00m

BORE: BH2 PROJECT: 99740.01 AUGUST 2021

16.00 – 21.00m

BORE: BH2 PROJECT: 99740.01 AUGUST 2021

21.00 – 22.52m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
24	0.0	FILL/Gravelly SAND: fine to coarse, dark grey, fine to medium, subangular to angular igneous gravel, dry		A/E			PID<1ppm
	0.7	FILL/SAND: fine to coarse, dark brown, trace fine to medium subrounded gravel, moist, generally in a loose condition		A/E			PID<1ppm
23	1			S			2,2,2 N = 4
				A/E			PID<1ppm PID<1ppm
	2						
22	2.2	CLAY CI: medium plasticity, orange-brown and grey, with fine to medium sand, w<PL, stiff, alluvial		S/E			3,4,5 N = 9 PID<1ppm
	3						
21	3.5	CLAY CI-CH: medium to high plasticity, pale grey and red-brown, trace fine ironstone gravel, w<PL, very stiff, residual		S/E			5,9,12 N = 21 PID<1ppm
	4						
20	5						
	5.0	CLAY CI: medium plasticity, pale grey and red-brown, with fine to medium ironstone gravel, w<PL, hard, relict rock structure, extremely weathered Ashfield Shale		S/E			15,25 refusal PID<1ppm
19	6						
				C	100	0	
18	6.84	LAMINITE: grey dark grey and orange-grey, 70% siltstone & 30% sandstone laminations, very low and low strength, highly weathered, highly fractured, Ashfield Shale					PL(A) = 0.5
	7						
17	7.8	LAMINITE: dark grey and pale grey with some orange staining, 60% siltstone & 40% sandstone laminations, low to medium strength, moderately to slightly weathered, fractured, Ashfield Shale					PL(A) = 0.52
	8						
16				C	100	15	
	9						PL(A) = 0.14
15	9.75	LAMINITE: as below					
	10.0						

Note: unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-5°

6.84m: Fg 120mm
7.12m: Cs 40mm
7.2m: J80°, ir, ro, fe stn
7.3m: Ds 20mm
7.34m: J80°, ir, ro, fe stn
7.37-7.52m: Cs x3, 5-30mm
7.52m: J70°, un, ro, cly co
7.93m: Cs 20mm
8.22m: J20°, st, ro, fe stn
8.41m: Cs 15mm
8.68m: Ds 70mm

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		LAMINITE: dark grey and pale grey, 50% siltstone & 50% sandstone laminations, medium then high strength, fresh, slightly fractured then unbroken, Ashfield Shale						10.25m: J60°, pl, ro, cln 10.42m: J10°, pl, ro, cln				PL(A) = 0.85
								10.8m: J60°, pl, ro, cln				
	11											PL(A) = 2.9
									C	100	100	
	12											PL(A) = 2.3
		Below 12.7m: 70% siltstone & 30% sandstone										
	13											PL(A) = 2.2
								13.72m: J60°, pl, ro, cln				
	14											PL(A) = 2.5
									C	100	100	
	15											PL(A) = 3.4
								15.22m: J20°, st, ro, cln				
		Below 12.7m: 80% siltstone & 20% sandstone										
	16											PL(A) = 1.5
								16.2m: J90°, cu, ro, cln 16.25m: J30°, pl, sm, cln				
									C	100	100	
	17											PL(A) = 1.4
	17.51	SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale										
	18							17.95m: J70°, pl, sm, cln				PL(A) = 1.1
	19								C	100	95	PL(A) = 1.7
								19.42m: J50°, pl, sm, cln				

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale *(continued)*										PL(A) = 1.6
	21	Below 20.57m: fractured						20.57m: J60°, pl, sm, cln 20.8m: J10°, pl, sm, cln 20.84m: J40°, ir, ro, cln 20.89m: J90°, cu, ro, cln	C	100	95	PL(A) = 1.6
	22							21.15m: J30°, pl, sm, cln 21.3m: J (x2) 30°, pl, sm, cln 21.4m: J40°, sz 100mm 21.5m: Fg 40mm	C	100	80	PL(A) = 1.9
	22.04	Bore discontinued at 22.04m Target depth reached										

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BORE: BH3 PROJECT: 99740.01 AUGUST 2021

5.54 – 10.00m

BORE: BH3 PROJECT: 99740.01 AUGUST 2021

10.00 – 15.00m

BORE: BH3 PROJECT: 99740.01 AUGUST 2021

15.00 – 20.00m

BORE: BH3 PROJECT: 99740.01 AUGUST 2021

20.00 – 22.04m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
24	0.2	FILL/Gravelly SAND: fine to coarse, dark grey sand, fine to medium, subangular to angular igneous gravel, dry							A/E			PID<1ppm
									A/E			PID<1ppm
23	1	FILL/Gravelly SAND: fine to coarse, dark brown, fine to medium angular to subrounded sandstone and igneous gravel, moist, generally in a loose condition							A/E*			*BD1/170821, PID<1ppm
									S			2,1,1 N = 2
												PID<1ppm
									A/E			PID<1ppm
22	2								A/E*			*BD2/170821, PID<1ppm
									A/E			PID<1ppm
									S			0,0,1 N = 1
												PID<1ppm
21	3								A/E			PID<1ppm
		Below 3.5m: with clay, wet							A/E			PID<1ppm
						28-09-21			A/E*			*BD3/170821, PID<1ppm
20	4								S			1,0,0 N = 0
												20% sample recovery, PID<1ppm
	5								A/E			PID<1ppm
19	5.0	FILL/Gravelly CLAY: low to medium plasticity, dark brown, fine to medium subangular igneous gravel, trace wood and glass fragments, w>PL, generally in a very soft condition							A/E			PID<1ppm
									S			0,0,0 N = 0
	6											0% sample recovery, PID<1ppm
18									A/E			PID<1ppm
	7								S			0,0,0 N = 0
												0% sample recovery, PID<1ppm
17												
	8											
	8.0	CLAY CI: medium plasticity, pale grey, w<PL, stiff, residual							A/E*			*BD4/170821, PID<1ppm
16	9							Note: unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-5°				
	9.5	LAMINITE: as below							C	100	15	PL(A) = 0.08
15	10.0											

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing			
			EW HW MW SW FS FR		Ex Low / Very Low / Low / Medium / High / Very High / Ex High		0.01 / 0.05 / 0.10 / 0.50 / 1.00	B - Bedding J - Joint S - Shear F - Fault	Type	Core Rec. %	RQD %	Test Results & Comments
14		LAMINITE: grey dark and grey with orange staining, 60% siltstone & 40% sandstone laminations, very low then medium strength, slightly weathered, fractured, Ashfield Shale						10.05m: J70°, pl, ro, fe st 10.2m: J80°, pl, ro, fe st				
	10.7							10.59m: J80°, pl, ro, fe st	C	100	15	PL(A) = 1.5
11		LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale										PL(A) = 3.4
13								11.74m: J30°, pl, sm, cln & J85°, pl, sm, cln				
12												PL(A) = 2.3
12								12.4m: J30°, pl, sm, cln				
								12.7m: J30°, pl, sm, cln	C	100	100	
13												PL(A) = 2.9
11												
14												PL(A) = 2.5
10												
15		Below 15m: 80% siltstone & 20% sandstone laminations										PL(A) = 2.1
									C	100	100	
9												
16								16.03m: J30°, pl, sm, cln				PL(A) = 2.5
8												
17												PL(A) = 3
	17.51											
7		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale							C	100	100	PL(A) = 1.4
18												
6								18.62m: J30°, pl, sm, cln				
19												PL(A) = 2
5									C	100	95	

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale *(continued)*					PL(A) = 1.5
		Below 20.35m: slightly fractured					
	21			C	100	95	
	21.5	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale					PL(A) = 1.1
	22						PL(A) = 1.9
	23	Below 23.0m: unbroken		C	100	100	PL(A) = 2.7
	23.9	SANDSTONE: medium to coarse grained, pale grey, very high then high strength, fresh, unbroken, Hawkesbury Sandstone					PL(A) = 4
	24.81	Bore discontinued at 24.81m Target depth reached					PL(A) = 2.6
	25						
	26						
	27						
	28						
	29						

Degree of Weathering: EW, HW, MW, SW, FS, FR
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00

Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)

20.35m: J50°, pl, sm, cln
20.83m: J60°, pl, sm, cln
20.92m: J85°, pl, sm, cln
21.4m: J80°, pl, sm, cln
21.55m: J40°, sheared, 50mm
21.67m: J80°, ir, ro, cln
21.78m: J60°, pl, ro, cln
21.83m: J80°, pl, ro, cln
22.22m: J60°, ir, ro, cln
22.52m: J30°, pl, ro, cln & J50, ir, sm, cln
22.95m: J70°, pl, sm, cly co
23m: J40°, pl, sm, cln
23.89m: B0°, pl, ro, cln

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: BH4 PROJECT: 99740.01 AUGUST 2021

9.50 – 14.00m

BORE: BH4 PROJECT: 99740.01 AUGUST 2021

14.00 – 19.00m

BORE: BH4 PROJECT: 99740.01 AUGUST 2021

19.00 – 24.00m

BORE: BH4 PROJECT: 99740.01 AUGUST 2021

24.00 – 24.81m

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 23.9 AHD
EASTING: 333516.6
NORTHING: 6248156.7
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 99740.01
DATE: 30/8/2021
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
23	0.0			A/E	0.0				Gatic cover
	0.2				0.2				
	0.3	FILL/Sandy GRAVEL: fine to medium, pale grey-brown, angular to subrounded igneous gravel, medium to coarse sand, generally in a loose condition, dry		A/E	0.4		PID<1ppm		
	0.5				0.5				
		FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subrounded igneous gravel, generally in a medium dense condition, dry		A/E	0.9		PID<1ppm		
22	1.0	FILL/GRAVEL: fine to coarse gravel, pale grey, trace sandstone fragments, generally in a dense condition, dry			1.0				
	1.4			A/E	1.4		PID<1ppm		
		FILL/Gravelly SAND: fine to coarse, pale grey-brown, fine to medium, angular to subangular igneous gravel, trace metal fragments, slag and charcoal, generally in a medium dense condition			1.5				
				A/E	1.9		PID=5ppm		
21	2.0				2.0				Backfill 0.0-5.0m
				A/E	2.9		PID=4ppm		
	3.0				3.0				Blank pipe 0.0-6.0m
				A/E	3.9		PID=2ppm	▼	
20	4.0	Below 4.0m: wet			4.0				
	4.5	CLAY CI: medium plasticity, pale grey, trace silt, w>PL, apparently stiff, alluvial		A/E	4.9		PID<1ppm		
19	5.0				5.0				Bentonite 5.0-5.5m
	5.5	CLAY CH: high plasticity, pale grey mottled brown, w~PL, apparently very stiff, alluvial/possibly residual		A/E	5.9		PID<1ppm		
18	6.0				6.0				
	6.5	CLAY CI: medium plasticity, pale grey brown, w<PL, apparently hard, residual		A/E	6.7		PID<1ppm		
17	6.8				6.8				
	7.0	LAMINITE: pale grey brown, approximately 70% siltstone interlaminated with 30% fine grained sandstone, medium strength, highly to moderately weathered, fragmented to fractured, Ashfield Shale		C	7.0				Gravel 5.5-9.0m
	7.3				7.35		PL(A) = 0.5		
					7.5				Machine slotted PVC screen 6.0-9.0m
16	8.0			R					
					9.1				
15	9.0			C	9.3		PL(A) = 0.4		End cap
	9.5	Bore discontinued at 9.5m			9.5				
14									

RIG: Track-mounted rig **DRILLER:** Groundtek Drilling Services **LOGGED:** SI **CASING:** HQ to 6.8m

TYPE OF BORING: Solid flight auger (TC-bit) to 6.7m; Rotary to 7.0m; NMLC Coring to 7.5m; Rotary to 8.8m; NMLC Coring to 9.5m

WATER OBSERVATIONS: Free groundwater at 4.0m whilst augering

REMARKS: Groundwater well installed to 9.0m (screen 9.0-6.0m; blank 6.0-0.1m; gravel 9.0-5.5m; bentonite 5.5-5.0m; backfill to 0.1m; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
24	0.0	FILL/Gravelly SAND: fine to coarse, dark grey, fine to medium, subangular to angular igneous gravel, dry		A/E	0.4 0.5		PID<1ppm		Gatic cover
	0.7	FILL/SAND: fine to coarse, dark brown, trace fine to medium subrounded gravel, moist, generally in a loose condition		A/E S A/E	0.9 1.0 1.4 1.45 1.5		PID<1ppm 2,2,2 N = 4 PID<1ppm PID<1ppm		Blank pipe 0.0-16.0m
23	2.2	CLAY CI: medium plasticity, orange-brown and grey, with fine to medium sand, w<PL, stiff, alluvial		S/E	2.5 2.95		3,4,5 N = 9 PID<1ppm		
22	3.5	CLAY CI-CH: medium to high plasticity, pale grey and red-brown, trace fine ironstone gravel, w<PL, very stiff, residual		S/E	3.5 3.95		5,9,12 N = 21 PID<1ppm		
21	5.0	CLAY CI: medium plasticity, pale grey and red-brown, with fine to medium ironstone gravel, w<PL, hard, relict rock structure, extremely weathered Ashfield Shale		S/E C	5.0 5.3 5.54		15,25 refusal PID<1ppm		
19	6.84	LAMINITE: grey dark grey and orange-grey, 70% siltstone & 30% sandstone laminations, very low and low strength, highly weathered, highly fractured, Ashfield Shale		C	7.4 7.65		PL(A) = 0.5		Backfill 0.0-14.0m
17	7.8	LAMINITE: dark grey and pale grey with some orange staining, 60% siltstone & 40% sandstone laminations, low to medium strength, moderately to slightly weathered, fractured, Ashfield Shale		C	8.1 9.0		PL(A) = 0.52 PL(A) = 0.14		
15	9.75	LAMINITE: as below			9.9		PL(A) = 0.85		
	10.0								

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		LAMINITE: dark grey and pale grey, 50% siltstone & 50% sandstone laminations, medium then high strength, fresh, slightly fractured then unbroken, Ashfield Shale			10.0 10.0				
14	11			C	11.0		PL(A) = 2.9		11
13	12				12.0		PL(A) = 2.3		12
12		Below 12.7m: 70% siltstone & 30% sandstone			12.8				
	13				13.0		PL(A) = 2.2		13
11	14			C	14.0		PL(A) = 2.5		14
10	15				15.0		PL(A) = 3.4		15
9		Below 12.7m: 80% siltstone & 20% sandstone			15.78				
	16				16.0		PL(A) = 1.5		16
8	17			C	17.0		PL(A) = 1.4		17
	17.51	SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale							
7	18				18.0		PL(A) = 1.1		18
6	19			C	19.0		PL(A) = 1.7		19
5					20.0		PL(A) = 1.6		

Bentonite 14.0-15.0m
Gravel 15.0-22.0m
Machine slotted PVC screen 16.0-22.0m

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.7 AHD
EASTING: 333521.6
NORTHING: 6248177.9
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 99740.01
DATE: 16/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
4	21	SILTSTONE: dark grey and pale grey, 95% siltstone & 5% sandstone laminations, medium then high strength, fresh, unbroken, Ashfield Shale *(continued)* Below 20.57m: fractured		C	21.0 21.08		PL(A) = 1.6		21
3	22 22.04			C	22.0 22.04		PL(A) = 1.9		22 End cap
		Bore discontinued at 22.04m Target depth reached							
2	23								23
1	24								24
0	25								25
-1	26								26
-2	27								27
-3	28								28
-4	29								29
-5									

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 3.0, HQ to 5.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 2.5m; Rotary to 5.55m; NMLC-Coring to 22.04m

WATER OBSERVATIONS: 90% drilling flush return below 13m

REMARKS: Groundwater well installed to 22m (screen 22.0-16.0m; blank 16.0-0.0m; gravel 22.0-15.0m; bentonite 15.0-14.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 1 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
24	0.2	FILL/Gravelly SAND: fine to coarse, dark grey sand, fine to medium, subangular to angular igneous gravel, dry		A/E	0.0 0.1		PID<1ppm		Gatic cover
		FILL/Gravelly SAND: fine to coarse, dark brown, fine to medium angular to subrounded sandstone and igneous gravel, moist, generally in a loose condition		A/E	0.4 0.5		PID<1ppm		
1				A/E*	0.9 1.0		*BD1/170821, PID<1ppm		Blank pipe 0.0-3.0m Backfill 0.0-2.0m
				S			2,1,1 N = 2 PID<1ppm		
23					1.45				
				A/E	1.5 1.6		PID<1ppm		
2				A/E*	1.9 2.0		*BD2/170821, PID<1ppm		Bentonite 2.0-2.5m
				A/E	2.4 2.5		PID<1ppm	▽	
22				S			0,0,1 N = 1 PID<1ppm		
3					2.95				
				A/E	3.0 3.1		PID<1ppm		
				A/E	3.4 3.5		PID<1ppm		
21		Below 3.5m: with clay, wet						28-09-21	
4				A/E*	3.9 4.0		*BD3/170821, PID<1ppm		
				S			1,0,0 N = 0 20% sample recovery,		
					4.45		PID<1ppm		
20				A/E	4.9 5.0		PID<1ppm		
5	5.0	FILL/Gravelly CLAY: low to medium plasticity, dark brown, fine to medium subangular igneous gravel, trace wood and glass fragments, w>PL, generally in a very soft condition		A/E	5.4 5.5		PID<1ppm		
19				S			0,0,0 N = 0 0% sample recovery,		
6					5.95		PID<1ppm		Machine slotted PVC screen 3.0-9.0m
					6.5				Gravel 2.5-10.5m
18				A/E			PID<1ppm		
7				S	7.0		0,0,0 N = 0 0% sample recovery,		
					7.45		PID<1ppm		
17									
8	8.0	CLAY CI: medium plasticity, pale grey, w<PL, stiff, residual							
				A/E*	8.3 8.5		*BD4/170821, PID<1ppm		
16									
9									
	9.5	LAMINITE: as below			9.5				
15				C	9.8		PL(A) = 0.08		Blank pipe 9.0-10.5m
	10.0								

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 2 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		LAMINITE: grey dark and grey with orange staining, 60% siltstone & 40% sandstone laminations, very low then medium strength, slightly weathered, fractured, Ashfield Shale		C					End cap
	10.7				10.8		PL(A) = 1.5		
		LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high, slightly weathered then fresh, slightly fractured then unbroken, Ashfield Shale			11.2				
					11.3		PL(A) = 3.4		Bentonite 10.5-12.0m
					12.3		PL(A) = 2.3		
				C					
					13.3		PL(A) = 2.9		
					14.0		PL(A) = 2.5		
					14.2				
		Below 15m: 80% siltstone & 20% sandstone laminations			15.0		PL(A) = 2.1		
				C					
					16.3		PL(A) = 2.5		
					16.55				
					17.0		PL(A) = 3		
	17.51								
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale		C					
					18.0		PL(A) = 1.4		Backfill 120-24.8m
					19.0		PL(A) = 2		
					19.25				
				C					

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Prepetual Corporate Trust Limited
PROJECT: Proposed Student Accommodation
LOCATION: 104-116 Regent Street, Redfern

SURFACE LEVEL: 24.8 AHD
EASTING: 333507.9
NORTHING: 6248182
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 99740.01
DATE: 17/8/2021
SHEET 3 OF 3

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
		SILTSTONE: dark grey, 5% sandstone laminations, high strength, fresh, unbroken, Ashfield Shale *(continued)*			20.1		PL(A) = 1.5		
		Below 20.35m: slightly fractured		C					
	21				21.3		PL(A) = 1.1		
	21.5	LAMINITE: dark grey and pale grey, 60% siltstone & 40% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale			21.95				
	22				22.0		PL(A) = 1.9		
	23	Below 23.0m: unbroken		C	23.0		PL(A) = 2.7		
	23.9	SANDSTONE: medium to coarse grained, pale grey, very high then high strength, fresh, unbroken, Hawkesbury Sandstone			24.0		PL(A) = 4		
	24.81	Bore discontinued at 24.81m			24.8		PL(A) = 2.6		
	25	Target depth reached			24.81				
	26								
	27								
	28								
	29								

RIG: Explora **DRILLER:** SS **LOGGED:** TM **CASING:** HW to 8.5, HQ to 9.5m

TYPE OF BORING: Solid flight auger (TC-bit) to 8.5m; Rotary to 9.5m; NMLC-Coring to 24.81m

WATER OBSERVATIONS: Water seep below 2.5m; Water level at 3.9m (measured in the groundwater well on 28/09/21)

REMARKS: Groundwater well installed to 10.5m (back fill to 10.5m; blank 10.5-9.0m; screen 9.0-3.0m; blank 3.0-0.0m; gravel 10.5-2.5.0m; bentonite 2.5-2.0m; backfill to GL; gatic at surface)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Appendix D

Borehole Logs from Adjacent Sites

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 22.9 AHD
EASTING: 333532
NORTHING: 6248203.2
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86852.00
DATE: 17 - 20/9/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
			EW HW MW SW FS FR		Ex Low / Very Low / Low / Medium / High / Very High / Ex High		0.01 / 0.05 / 0.10 / 0.50 / 1.00	B - Bedding J - Joint S - Shear F - Fault				
22	0.15	CONCRETE							A/E			
	0.3	FILL/Silty CLAY: low plasticity, brown - grey, trace rounded concrete gravel, moist										
	1	Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, appears stiff, residual 1.0m brown mottled grey							A/E*			
									A/E			
21	2								A/E			
	2.0	Silty CLAY CL: low plasticity, pale grey - brown, w>PL, appears very stiff, residual							A/E			
20	3											
19	4								A			
	4.5	Silty CLAY CL: low plasticity, grey - brown, trace angular highly weathered shale gravel, w>PL, appears hard, residual (extremely weathered rock)						Note: Unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-2°	A			
18	5											
	5.35	LAMINITE: dark grey - pale grey and brown grey, 60% siltstone and 40% sandstone laminations, low to medium strength, slightly weathered, fractured, Ashfield Shale						5.48m: Ds, 8mm 5.59m: Ds, 5mm 5.67m: Ds, 5mm 5.72m: Ds, 10mm 5.87m: Cs, 1mm 6.18m: Cs, 1mm 6.38m: Ds, 20mm 6.4m: J20°, pl, sm 6.43m: Ds, 20mm 6.56m: Ds, 40mm 6.67m: J60°, pl, ro	C	100	57	PL(A) = 0.4
17	6								C	80	27	PL(A) = 0.4
16	7											
	7.1	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, low to medium strength, fresh, slightly fractured, Ashfield Shale						6.81m: CORE LOSS: 290mm 7.41m: J45°, pl, ro, fe, co 7.54m: J45°, pl, ro, fe, co 7.61m: J40°, pl, ro, fe, co 7.68m: Ds, 4mm 8.08-8.47m: B(x4) 8.36m: J30°, pl, ro, fe, co 8.41m: Ds,10mm 8.64m: B, sm, cly, vn 8.8m: B, sm, cly, vn	C	100	60	PL(A) = 0.2
15	8											
	8.6	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, fresh, slightly fractured, Ashfield Shale							C	100	100	PL(A) = 1.4
14	9							9.36m: J25°, pl, ro 9.8-9.96m: J50-90°, ir,				
13	10.0											

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 5m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 5.35m; NMLC-coring to 12.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 10.9m (screen 3-10.9m; gravel 2-12.9m; bentonite seal 0.2-2m; gatic cover); *BD1/200919 is replicate of 0.5-0.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 22.9 AHD
EASTING: 333532
NORTHING: 6248203.2
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 86852.00
DATE: 17 - 20/9/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
		SILTSTONE: dark grey - pale grey, 90% siltstone and 10% sandstone laminations, medium and high strength, fresh, slightly fractured to unbroken, Ashfield Shale						cly, vn 10.15m: B5-10°, cu, sm, cly, vn 10.58m: B, sm, cly, vn				PL(A) = 0.4
11									C	100	100	
									C	100	100	PL(A) = 1.7
12									C	100	95	PL(A) = 2.4
									C	100	100	
10	12.9	Bore discontinued at 12.9m										PL(A) = 2
13												
9	14											
8	15											
7	16											
6	17											
5	18											
4	19											
3												

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 5m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 5.35m; NMLC-coring to 12.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 10.9m (screen 3-10.9m; gravel 2-12.9m; bentonite seal 0.2-2m; gatic cover); *BD1/200919 is replicate of 0.5-0.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 1 PROJECT: REDFERN SEPTEMBER 2019

5.35-10.0m

BORE: 1 PROJECT: REDFERN SEPTEMBER 2019

10.0-12.9m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 24.5 AHD
EASTING: 333508.7
NORTHING: 6248204
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86852.00
DATE: 19/9/2018 - 20/9/2019
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
24	0.15	CONCRETE										
		FILL/Gravelly SAND: fine to medium sand and fine gravel, dark grey, trace brick fragments, moist, appears moderately to well compacted							A/E			
	0.8								A/E			
23	1	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears firm, possibly alluvial							A/E			
									A/E			
22	2								A/E			
	2.1	Silty CLAY CL: low plasticity, brown-orange, trace fine sand, w>PL, stiff, residual							A/E			
21	3											
20	4								A			
	4.0	Silty CLAY CL: low plasticity, pale grey-red, trace angular highly weathered shale gravel, w>PL, appears hard, residual (extremely weathered rock)										
19	5								A			
18	6											
	7											
17	7.5	LAMINITE: brown - grey, very low to low strength, Ashfield Shale										
16	8							Note: Unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-2°				
	9											
15	9.62	LAMINITE: see over						9.77m: Ds, 20mm	C	100	0	PL(A) = 0.6

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 9.62m; NMLC-coring to 13.69m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 12.3m (screen 5-12.3m; gravel 4-13.69m; bentonite seal 0.15-4m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 24.5 AHD
EASTING: 333508.7
NORTHING: 6248204
DIP/AZIMUTH: 90°/--

BORE No: BH2
PROJECT No: 86852.00
DATE: 19/9/2018 - 20/9/2019
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
14	10.43	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, slightly weathered, slightly fractured, Ashfield Shale							C	100	0	PL(A) = 0.8
13	11	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium and high strength, fresh, slightly fractured to unbroken, Ashfield Shale							C	93	93	PL(A) = 2
12	12.2	LAMINITE: dark grey - pale grey, 80% siltstone and 20% sandstone laminations, high strength, fresh, slightly fractured to unbroken, Ashfield Shale						12.09m: CORE LOSS: 110mm	C	100	95	PL(A) = 1.7 PL(A) = 1.3
11	13.69	Bore discontinued at 13.69m						13.61m: J45°, pl, sm				

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m

TYPE OF BORING: Diacore to 0.15m; solid flight auger (TC-bit) to 9.62m; NMLC-coring to 13.69m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 12.3m (screen 5-12.3m; gravel 4-13.69m; bentonite seal 0.15-4m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 2 PROJECT: REDFERN SEPTEMBER 2019

9.62-13.69m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333522.1
NORTHING: 6248231.8
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86852.00
DATE: 20/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Graphic Log	Water	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
26	0.05	ASPHALTIC CONCRETE				A/E			
		FILL/Silty SAND: fine to medium, dark grey with ash/charcoal, moist, appears poorly and variably compacted				A/E			
25	1	1.0m: trace ash				A/E			
	1.2	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears soft, possibly alluvial				S			0,0,1 N = 1
						A/E*			
24	2	2.0 Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, stiff, residual				S			4,6,8 N = 14
23	3								
	3.5	Silty CLAY CL: low plasticity, pale grey - red, trace ironstone gravel, w>PL, very stiff, residual				S			7,12,14 N = 26
22	4								
21	5								
						S			7,12,14 N = 26
20	6	6m: pale grey, hard							
19	7					S			9,17, 20/80mm refusal
	7.4	Silty CLAY CL: low plasticity, brown - dark red, with ironstone gravel, w>PL, hard, residual (extremely weathered rock)							
18	8				Note: Unless otherwise stated, discontinuities are bedding, planar, rough, iron coated to 1mm thick, dipping 0-2°	S			8,15,18 N = 33
17	9								
	9.1	Silty CLAY CL: low plasticity, brown - dark red, with ironstone gravel, w > PL, hard, residual (extremely weathered rock)				C	100	0	
	9.67	LAMINITE: see over							

RIG: Rig 12 (Hanjin) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m

TYPE OF BORING: Solid flight auger (TC-bit) to 9.1m; NMLC-coring to 20.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 13m (screen 7-13m; gravel 6-20m; bentonite seal 0.2-6m; gatic cover); *BD4/200919 is replicate of 1.5-1.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333522.1
NORTHING: 6248231.8
DIP/AZIMUTH: 90°/--

BORE No: BH3
PROJECT No: 86852.00
DATE: 20/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
16			EW HW MW SW FS FR		Ex Low, Very Low, Low, Medium, High, Very High, Ex High		0.01, 0.05, 0.10, 0.50, 1.00					
		LAMINITE: brown - grey, 80% siltstone and 20% sandstone with hard clay bands, very low strength, highly weathered, fractured, Ashfield Shale						9.91m: J80°, pl, ro, fe, co	C	100	0	
	10.55	10.33m: thrust fault						10.05m: Ds, 30mm 10.15m: Ds, 40mm 10.23m: Ds, 60mm 10.33-10.50m fault zone, folded				PL(A) = 0.4
15	11	LAMINITE: dark grey - pale grey, 60% siltstone and 40% sandstone laminations, medium strength, slightly weathered to fresh, fractured, Ashfield Shale						10.89m: Cs, 5mm 11.21m: Ds, 5mm 11.41m: Cs, 2mm	C	100	77	PL(A) = 0.5
14	12 12.0	LAMINITE: dark grey - pale grey, 80% siltstone and 20% sandstone laminations, high strength, fresh, slightly fractured, Ashfield Shale						11.9m: J80° closed				PL(A) = 2.3
13	13							13.31m: J45°, pl, sm 13.57m: J45°, pl, sm				PL(A) = 2.9
12	14							14.06m: J20°, pl, sm 14.2m: J60°, pl, ro				PL(A) = 2.5
11	15							15.11m: J40°, pl, sm	C	100	100	PL(A) = 2.8
10	16							15.60-16.40m: J80°, pl, sm				PL(A) = 2.7
	16.3	SILTSTONE: dark grey, 95% siltstone and 5% sandstone thin laminations, high strength, fresh, slightly fractured to unbroken, Ashfiled Shale						16.5-16.90m: J75°, pl, ro				
9	17							17.35m: J40°, pl, sm 17.37m: J50°, pl, sm				PL(A) = 2.1
8	18								C	100	100	
7	19											PL(A) = 1
	20.0	Bore discontinued at 20.0m							C	100	100	PL(A) = 1.2

RIG: Rig 12 (Hanjin) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** HQ to 8m

TYPE OF BORING: Solid flight auger (TC-bit) to 9.1m; NMLC-coring to 20.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Groundwater monitoring well installed to 13m (screen 7-13m; gravel 6-20m; bentonite seal 0.2-6m; gatic cover); *BD4/200919 is replicate of 1.5-1.6m sample

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BORE: 3 PROJECT: REDFERN SEPTEMBER 2019

9.1-14.0m

BORE: 3 PROJECT: REDFERN SEPTEMBER 2019

14.0-19.0m

BORE: 3 PROJECT: REDFERN SEPTEMBER 2019

19.0-20.0m

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 25.0 AHD
EASTING: 333516.9
NORTHING: 6248216.5
DIP/AZIMUTH: 90°/--

BORE No: BH4
PROJECT No: 86852.00
DATE: 23/9/2016
SHEET 1 OF 1

RL	Depth (m)	Description of Strata
25	0.1	BRICK PAVERS
		FILL/Gravelly SAND: fine tomedium sand and fine gravel, dark grey, trace glass fragments, moist, appears moderately to well compacted
24	0.6	
	1	FILL/SAND: fine, pale grey, moist, appears moderately compacted
	1.4	Sandy CLAY CL: low plasticity, orange brown, fine sand, w>PL, appears firm, possibly alluvial
23	2	
	2.0	Silty CLAY CL: low plasticity, brown - red, trace fine sand, w>PL, appears stiff, residual
22	3	
21	4	
	4.0	Silty CLAY cl: low plasticity, pale grey - red, trace ironstone gravel, w>PL, appears stiff to very stiff, residual
20	5	
19	6	
18	7	
	7.3	Bore discontinued at 7.3m - limit of investigation
17	8	
16	9	

Degree of Weathering: EW, HW, MW, SW, FS, FR
Graphic Log
Rock Strength: Ex Low, Very Low, Low, Medium, High, Very High, Ex High
Water
Fracture Spacing (m): 0.01, 0.05, 0.10, 0.50, 1.00
Discontinuities: B - Bedding, J - Joint, S - Shear, F - Fault

Sampling & In Situ Testing			
Type	Core Rec. %	RQD %	Test Results & Comments
A/E			
A/E			
A/E			
A/E			
A			
A			
A			
A			
A			

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** Uncased
TYPE OF BORING: Hand auger to 1.5m; Solid flight auger (TC-bit) to 7.3m
WATER OBSERVATIONS: No free groundwater observed whilst augering
REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 23.5 AHD
EASTING: 333522.2
NORTHING: 6248198.8
DIP/AZIMUTH: 90°/--

BORE No: BH5
PROJECT No: 86852.00
DATE: 23/9/2016
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
23	0.15	CONCRETE SLAB										
	0.3	FILL/Silty GRAVEL: fine, dark grey, with medium sand, moist, apparently well compacted							A/E			
		Silty CLAY CL: low plasticity, brown - orange, trace fine sand, w>PL, appears stiff, residual							A/E			
22	1								A/E			
									A/E			
21	2								A/E			
	3											
	3.0	Silty CLAY CL: low plasticity, pale grey - red, trace ironstone gravel, w>PL, appears very stiff, residual										
20												
	4								A			
19												
	5											
18												
	6											
	6.2	Bore discontinued at 6.2m - limit of investigation							A			
17												
	7											
16												
	8											
15												
	9											
14												

RIG: Rig 5 (Trailer Mounted) **DRILLER:** BG Drilling **LOGGED:** NB **CASING:** Uncased

TYPE OF BORING: Diacore to 0.15m; Solid flight auger (TC-bit) to 6.2m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.0 AHD
EASTING: 333530.3
NORTHING: 6248221.2
DIP/AZIMUTH: 90°/--

BORE No: BH6
PROJECT No: 86852.00
DATE: 17 - 19/9/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
26	0.12	CONCRETE SLAB							E			
		FILL/Clayey SAND: fine to medium, grey and dark brown, low plasticity fines, trace sandstone gravel, moist										
	0.72	FILL/Sandy CLAY: low plasticity, brown, fine sand, trace tile and PVC fragments, w>PL							E			
25	1											
	1.3	FILL/Sandy CLAY: low plasticity, orange-brown, fine sand, trace sandstone gravel, w>PL, appears moderately compacted, possibly alluvial							E			
24	2	2.0										
		Bore discontinued at 2.0m - limit of investigation										
23	3											
22	4											
21	5											
20	6											
19	7											
18	8											
17	9											

RIG: Hand tools **DRILLER:** CLN **LOGGED:** CLN **CASING:** Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: See Remarks below

REMARKS: Borehole completed over 2 days due to wet weather, borehole filled with rain water, precluded observation of groundwater

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U$_x$	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: The Trust Company (Australia) Limited
PROJECT: Student Housing Development
LOCATION: 90-102 Regent Street, Redfern

SURFACE LEVEL: 26.5 AHD
EASTING: 333542
NORTHING: 6248218.7
DIP/AZIMUTH: 90°/--

BORE No: BH7
PROJECT No: 86852.00
DATE: 17/9/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
26	0.45	VOID BELOW FLOOR										
		FILL/SAND: fine to medium, dark brown, with clay, timber fragments, concrete gravels and terracota, trace charcoal and brick fragments, moist							E*			
	0.9	Bore discontinued at 0.9m Refusal possibly on concrete slab										
25	1											
24	2											
23	3											
22	4											
21	5											
20	6											
19	7											
18	8											
17	9											

RIG: Hand tools **DRILLER:** CLN **LOGGED:** CLN **CASING:** Uncased

TYPE OF BORING: Hand auger

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD2/2170919

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 101
PROJECT No: 86266.03
DATE: 20 - 21/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
22	0.16	CONCRETE (SLAB)										
	0.3	FILLING: grey-brown, fine to medium sand filling with some brick fragments, damp							A/E			PID < 1
									A/E			PID < 1
21	1	SAND: pale brown, fine to medium sand, damp 0.8m: clayey							A/E			PID < 1
	1.2	SANDY CLAY: red-brown, sandy clay, Mc~PL							A/E			PID < 1
20	2								A/E			PID < 1
	2.5	CLAY: red-brown mottled grey, clay, Mc<PL							A			
19	3											
	3.6	SHALY CLAY: grey-brown, shaly clay							A			
18	4											
17	5					21-09-18		Note: Unless otherwise stated, discontinuities are planar, rough, iron coating to 1mm, dipping 0-5°	A			
	5.53	LAMINITE: very low to low strength, highly to moderately weathered, fractured, brown and grey laminite with some medium to high strength ironstone bands						5.6m: B, sm, vn 5.7m: Cs, 20mm 5.77m: Ds, 10mm 5.79m: B, vn 5.84m: CORE LOSS: 110mm 5.95-6.04m: Ds, 90mm 6.05-6.35m: Cs(x5), 5-20mm	C	100	0	
16	6								C	87	0	
	6.78	LAMINITE: low to medium strength, slightly weathered, fractured, dark grey laminite, (60% siltstone, 40% sandstone), horizontal and lenticular bedding						6.52-6.61m: Sz, 90mm 6.61m: Ds, 10mm 6.69m: CORE LOSS: 90mm 6.81m: B 6.85m: Ds, 10mm 6.91m: B, ir 7.02-7.14m: B(x4) 7.33m: B, 3mm 7.41m: B, vn 7.51m: Ds, 40mm 7.75m: B, sm, vn 7.95m: B, 5mm 7.98m: B, sm, vn, cly 8.08-8.47m: B(x4) 8.64m: B, sm, vn, cly 8.8m: B, sm, sn, cly	C	89	37	PL(A) = 0.29
15	7								C	100	84	PL(A) = 0.61
14	8											PL(A) = 2.06
	8.25	LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), bedding dipping 0-5°							C	100	100	PL(A) = 2.4
13	9											PL(A) = 2.55
								9.8-9.96m: J50-90°, ir,	C	100	100	

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 2.7m

TYPE OF BORING: 200mm diacore to 0.16m; solid flight auger (TC-bit) to 5.53m; NMLC-coring to 10.83m

WATER OBSERVATIONS: Groundwater observed at 4.66 m depth two hours after installation and development of monitoring well

REMARKS: groundwater monitoring well installed to 10.47 m (screen 1.2-10.47m; gravel 0.6-10.47m; bentonite seal 0.2-0.6m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 101
PROJECT No: 86266.03
DATE: 20 - 21/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
12		LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), bedding dipping 0-5° *(continued)*						stn, cly	C	100	100	
								10.15m: B5-10°, cu, sm, sn, cly	C	100	100	
								10.58m: B, sm, sn, cly				
	10.83											PL(A) = 2.2
11		Bore discontinued at 10.83m - limit of investigation										
10	12											
9	13											
8	14											
7	15											
6	16											
5	17											
4	18											
3	19											

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 2.7m

TYPE OF BORING: 200mm diacore to 0.16m; solid flight auger (TC-bit) to 5.53m; NMLC-coring to 10.83m

WATER OBSERVATIONS: Groundwater observed at 4.66 m depth two hours after installation and development of monitoring well

REMARKS: groundwater monitoring well installed to 10.47 m (screen 1.2-10.47m; gravel 0.6-10.47m; bentonite seal 0.2-0.6m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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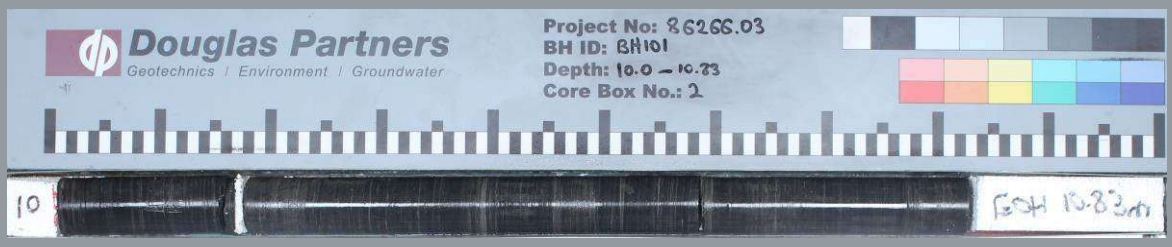
BORE: 101 PROJECT: 86266.03 SEPTEMBER 2018

5.53 – 10.00 m

BORE: 101 PROJECT: 86266.03 SEPTEMBER 2018



10.00 – 10.83m

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 102
PROJECT No: 86266.03
DATE: 21/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
22	0.12	CONCRETE (SLAB): 8mm reinforcement at 0.09m							Flush gatic cover
		FILLING: brown, clayey fine to medium sand filling with some fine to medium grained sandstone gravel, damp		A/E	0.2 0.3		PID < 1		
	0.6			A/E	0.4 0.5		PID < 1		Bentonite
		CLAYEY SAND: orange-brown, clayey fine to medium sand, damp		A/E	0.9 1.0		PID = 1		
21	1			A/E*	1.4 1.5		PID < 1		
				A/E	1.8 2.0		PID < 1		
20	2	2.5m: damp to moist							Machine slotted PVC screen
				A	2.8 3.0				
19	3								Gravel
	3.5	CLAY: red-brown, clay with a trace of fine to medium grained sand, Mc<PL							
				A	3.8 4.0				
18	4	4.5m: red-brown mottled grey							
17	5								
	5.6	SHALY CLAY: grey and brown, shaly clay with ironstone bands (possibly extremely low strength laminite)							End cap
				A	5.8				
16	6				6.0				
	6.0	Bore discontinued at 6.0m - limit of investigation							
15	7								
14	8								
13	9								

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** Uncased

TYPE OF BORING: 200mm diacore to 0.12m; solid flight auger (TC-bit) to 6.0m

WATER OBSERVATIONS: No groundwater observed in monitoring well one hour after installation

REMARKS: *BD1/20180921 is replicate of 1.4-1.5m sample; groundwater monitoring well installed to 5.8m (screen 1.2-5.8m; gravel 0.85-5.8m; bentonite seal 0.15-0.85m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 86266.03
DATE: 19 - 20/9/2018
SHEET 1 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
22	0.15	CONCRETE (SLAB): 8mm reinforcement at 0.08m							A/E			PID < 1
	0.4	FILLING: brown, fine to medium sand filling with a trace of tile fragments, damp							A/E			PID < 1
21	1	SAND: orange-brown, fine to medium sand, damp							A/E			PID < 1
	1.1	SANDY CLAY: orange-brown, sandy clay, fine to medium grained sand, damp to moist										
20	2								A/E			PID < 1
19	3								A/E			PID < 1
	3.5	CLAY: red-brown mottled grey, clay with a trace of fine to medium grained sand, Mc~PL							A			PID < 1
18	4											
17	5	5.0m: becoming shaly				21-09-18			A			PID < 1
	5.2	SHALY CLAY: hard, grey mottled red-brown, clay with 20% ironstone bands (extremely weathered laminite)							A			PID < 1
16	6								C	100	0	pp = 300
												pp = 250
15	7							Note: Unless otherwise stated, discontinuities are planar, smooth, iron coating to 1mm, dipping 0-5°	C	100	0	pp = 200
14	8	CORE LOSS						8.04m: CORE LOSS: 360mm				
	8.4	LAMINITE: extremely low to very low strength, extremely to highly weathered, fractured, grey-brown, laminite, 50% extremely weathered seams, bedding dipping 30-45°						8.63-8.89m: Cs(x4), 10-15mm	C	68	0	
13	9							9.06-9.27m: Ds, 110mm				
	9.39							9.17m: CORE LOSS: 220mm				
								9.52m: Ds, 30mm 9.61m: Ds, 5mm 9.67-9.79m: Ds, 120mm	C	83	43	
	9.84	LAMINITE										PL(A) = 0.19

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 3.7m

TYPE OF BORING: 200mm diacore to 0.15m; solid flight auger (TC-bit) to 5.2m; NMLC-coring to 12.93m

WATER OBSERVATIONS: Groundwater observed at 4.90 m depth five hours after development of monitoring well

REMARKS: groundwater monitoring well installed to 12.93m (screen 1.4-12.93m; gravel 1.15-12.95m; bentonite seal 0.2-1.15m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 103
PROJECT No: 86266.03
DATE: 19 - 20/9/2018
SHEET 2 OF 2

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Sampling & In Situ Testing: Type	Core Rec. %	RQD %	Test Results & Comments
12	10.0	LAMINITE: low strength, slightly weathered, fractured, dark grey laminite (70% siltstone, 30% sandstone), horizontally bedded						9.8m: B, ro, co, 2mm 9.81m: Cs, 20mm 10.02-10.14m: J70°, ro, vn 10.28m: Ds, 10mm 10.30-10.34m: B(x2), ro 10.44m: Cs, 5mm 10.46m: CORE LOSS: 170mm 10.63-10.78m: fg 10.86m: B, vn 10.93-10.97m: B(x2) 11.07-11.27m: B(x2), ro 11.28m: J45°, st, ro, stn 11.32m: Ds, 10mm 11.37m: Ds, 2mm 11.50-11.83m: B(x6), sm, 1-2mm 11.93-11.98m: Sz, 50mm 12.01m: B, vn	C	83	43	PL(A) = 0.16
	10.63											
11									C	88	33	PL(A) = 0.26
	11.32	LAMINITE: medium strength, slightly weathered, fractured, dark grey laminite (70% siltstone, 30% sandstone), horizontally bedded										PL(A) = 1.07
10	11.98	LAMINITE: high strength, fresh, slightly fractured, dark grey laminite (80% siltstone, 20% sandstone), horizontally bedded							C	100	92	
9	12.93	Bore discontinued at 12.93m - limit of investigation										PL(A) = 2.78
8	13											
7	14											
6	15											
5	16											
4	17											
3	18											
	19											

RIG: Rig 1 (CE150) **DRILLER:** BG Drilling **LOGGED:** ARM **CASING:** HQ to 3.7m

TYPE OF BORING: 200mm diacore to 0.15m; solid flight auger (TC-bit) to 5.2m; NMLC-coring to 12.93m

WATER OBSERVATIONS: Groundwater observed at 4.90 m depth five hours after development of monitoring well

REMARKS: groundwater monitoring well installed to 12.93m (screen 1.4-12.93m; gravel 1.15-12.95m; bentonite seal 0.2-1.15m; gatic cover)

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▽	Water level	V	Shear vane (kPa)

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BORE: 103 PROJECT: 86266.03 SEPTEMBER 2018

5.20 – 10.00 m

BORE: 103 PROJECT: 86266.03 SEPTEMBER 2018

10.00 – 12.93m

BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 104
PROJECT No: 86266.03
DATE: 20/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
22	0.12	CONCRETE (SLAB): 8mm reinforcement at 0.06m		A/E	0.15		PID < 1		
		FILLING: brown, fine to medium sand filling with a trace of clay and fine sandstone gravel, damp		A/E	0.2 0.4 0.5		PID < 1		
	0.7	SAND: medium dense, pale brown, medium sand, damp		A/E	0.7 0.8		PID < 1		
21	0.9 1	CLAYEY SAND: medium dense, orange-brown, clayey medium sand, damp		A/E	0.9 1.0		PID < 1		
				A/E	1.4 1.5		PID < 1		
20	2 2.0	Bore discontinued at 2.0m - limit of investigation		A/E	1.9 2.0		PID < 1		
19	3								
18	4								
17	5								
16	6								
15	7								
14	8								
13	9								

RIG: Hand Tools **DRILLER:** ARM **LOGGED:** ARM **CASING:** Uncased

TYPE OF BORING: 150mm diacore to 0.12m; 60mm hand auger to 2.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 105
PROJECT No: 86266.03
DATE: 19/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
22	0.16	CONCRETE (SLAB): 8mm reinforcement at 0.12m							
		FILLING: orange-brown, clayey fine to medium sand filling with a trace of fine sandstone gravel, damp		A/E	0.2 0.3 0.4		PID < 1 PID < 1		
	0.5	FILLING: grey-brown, fine to medium sand filling with some clay and a trace of fine gravel, damp		A/E A/E A/E	0.5 0.6 0.7		PID < 1 PID < 1		
21	0.8 1	SANDY CLAY: medium dense, orange-brown, sandy clay, fine to medium sand, damp			0.8 0.9				
				A/E*	1.4 1.5		PID < 1		
20	1.9 2	Bore discontinued at 1.9m - limit of investigation							
19	3								
18	4								
17	5								
16	6								
15	7								
14	8								
13	9								

RIG: Hand Tools **DRILLER:** ARM **LOGGED:** ARM **CASING:** Uncased

TYPE OF BORING: 150mm diacore to 0.16m; 60mm hand auger to 1.9m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: *BD1/20180919 is replicate of 1.4-1.5m sample

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
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BOREHOLE LOG

CLIENT: WH Gibbons Trust
PROJECT: Proposed Multi-Storey Residential Development
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 22 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: 106
PROJECT No: 86266.03
DATE: 19/9/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
22	0.17	CONCRETE (SLAB): 8mm reinforcement at 0.11m							
		FILLING: grey-brown, fine to medium sand filling with some fine gravel, brick fragments (up to 100mm) to 0.3m depth, damp		A/E	0.2 0.3		PID < 1		
		0.60m: mottled orange, possibly natural		A/E	0.4 0.5		PID < 1		
21	1			A/E	0.9		PID < 1		1
	1.3	SAND: orange-brown, fine to medium sand with a trace of clay, damp		A/E	1.4 1.5		PID < 1		
	1.7	SANDY CLAY: red-brown, sandy clay, fine to medium sand, damp		A/E	1.9 2.0		PID < 1		
20	2 2.0	Bore discontinued at 2.0m - limit of investigation							2
19	3								3
18	4								4
17	5								5
16	6								6
15	7								7
14	8								8
13	9								9

RIG: Hand Tools **DRILLER:** ARM **LOGGED:** ARM **CASING:** Uncased

TYPE OF BORING: 150mm diacore to 0.17m; 60mm hand auger to 2.0m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

☒ Sand Penetrometer AS1289.6.3.3
☐ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: GSA Australia Pty Ltd
PROJECT: Proposed Student Accomodation
LOCATION: 13-23 Gibbons Street, Redfern

SURFACE LEVEL: 23.5 AHD
EASTING:
NORTHING:
DIP/AZIMUTH: 90°/--

BORE No: BH1
PROJECT No: 0086266.00
DATE: 29/1/2018
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Type	Core Rec. %	RQD %	Test Results & Comments
23	0.07	PAVERS and bedding sand				
	0.25	CONCRETE				
		FILLING - grey sand filling with concrete fragments	A/E			
	0.95		A/E			
22	1.05	CONCRETE				
		FILLING - grey gravelly sand filling with occasional concrete fragments	A/E			
			A/E			
21	2		A/E			
	3	3.0m: with some tile fragments	A/E			
20	3.7	SAND - pale orange, medium grained sand, damp	A/E			
	4		A/E			
19	4.3	SANDY CLAY - orange-brown, fine to medium grained sandy clay, moist	A/E			(duplicate)
18	4.8	CLAY - stiff, orange-brown and grey mottled, clay	S			4,5,6 N = 11
	5					
17	6					
	6.0	SHALY CLAY - very stiff to hard, pale-grey and brown mottled shaly clay				
	7					
16	7.03	SHALY CLAY - pale-grey and brown mottled shaly clay	S			15/30mm refusal
			C	100	0	
	7.51	LAMINITE - medium strength, highly to moderately weathered, grey and brown-grey laminite with some clay bands				PL(A) = 0.35
15	7.95	LAMINITE - low strength, slightly weathered, grey laminite (silstone 70%, fine grained sandstone 30%)	C	100	0	PL(A) = 0.16
	8					
	8.85	Bore discontinued at 8.85m - target depth reached				
14	9					

Discontinuities (B - Bedding, J - Joint, S - Shear, F - Fault):
- 7.56-7.64m: DS 80mm clay
- 7.68-7.70m: DS 20mm clay
- 7.88m: DS 15mm clay
- 8.15-8.17m: J90°, fe healed, discontinuous
- 8.34m: B0°, pl, sl, 5mm clay
- 8.66-8.70m: DS 40mm clay

RIG: Dando Terrier **DRILLER:** BG Drilling **LOGGED:** LJH **CASING:** HQ to 6.0m

TYPE OF BORING: Diacore to 0.25m; SFA to 0.95m; Diacore to 1.05m; SFA to 7.03m; NMLC to 8.85m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS:

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

APPENDIX G

104-116 REGENT STREET, REDFERN

DISCIPLINE: CIVIL SERVICES

DRAWING LIST

C000	COVER SHEET, LOCALITY PLAN AND LEGEND
C001	NOTES
C100	EXISTING AND PROPOSED CATCHMENT PLAN
C101	STORMWATER LAYOUT PLAN
C102	STORMWATER LAYOUT PLAN - NORTH
C103	STORMWATER LAYOUT PLAN - SOUTH
C200	WATER QUALITY CATCHMENT PLAN & MUSIC MODEL LAYOUT PLAN
C300	DRAINS RESULTS & STORMWATER LONG-SECTION
C400	ON-SITE DETENTION PLAN & LONG SECTIONS
C401	DETAILS
C500	EROSION & SEDIMENT CONTROL PLAN
C501	EROSION & SEDIMENT CONTROL DETAILS

LEGEND

FALL	FALL DIRECTION
OLF	OVERLAND FLOW
	STORMWATER PIT
	SITE BOUNDARY
RL XX.XX	LEVEL TAG
	DOWN PIPE
RWO	RAINWATER OUTLET
PBO	PLANTERBOX OUTLET
CO	CLEAROUT
	TRENCH GRATE
S/S Ø100	PROPOSED SUBSOIL PIPE
STW Ø100	PROPOSED STORMWATER PIPE
RW Ø100	PROPOSED RAINWATER PIPE
	EXISTING POTABLE WATER
	EXISTING GAS
	EXISTING SEWER
	EXISTING STORMWATER
	SEDIMENTARY FENCE
	PROPOSED STOCKPILE LOCATION
	PROPOSED SITE ACCESS
	MESH + GRAVEL INLET FILTER
RWT	ABOVE GROUND RAINWATER HARVESTING
	DOWNPIPE SPREADER
CO	CLEAROUT
STEP	STEP DOWN
STW Ø100	PIPE SIZE
	FALL DIRECTION
1	SERVICE / SERVICE NUMBER
DWG	PIPE SIZE
--	FOR SECTION VIEW
--	REFER TO DRAWING

AHD	AUSTRALIAN HEIGHT DATUM
AP	ACCESS PANEL
BG	BOX GUTTER
DP	DOWNPIPE
e	EXISTING
FFL	FINISHED FLOOR LEVEL
GIP	GRATED INLET PIT
HL	HIGH LEVEL IN CEILING
HP	HIGH POINT
IL	INVERT LEVEL
INT	INTERNAL
KIP	KERB INLET PIT
O/F	OVERFLOW
RHS	RECTANGULAR HOLLOW SECTION
RL	RELATIVE LEVEL
RWH	RAINWATER HEAD
RWT	RAINWATER TANK
SRL	SLAB RELATIVE LEVEL
SRZ	STRUCTURAL ROOT ZONE
TBA	TO BE ADVISED
TKL	TOP KERB LEVEL
TRZ	TREE ROOT ZONE
UNO	UNLESS NOTED OTHERWISE

2 1 0 2 4 6 8 m

1 : 100-A1 1 : 200-A3

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CITY OF SYDNEY COUNCIL

REVISIONS / AMENDMENTS

Rev.	Date	Description	Verified
P1	10.11.21	PRELIMINARY ISSUE	M.B.
P2	15.11.21	PRELIMINARY ISSUE	M.B.
P3	03.12.21	PRELIMINARY ISSUE	M.B.

REVISIONS / AMENDMENTS

Rev	Date	Description	Verified

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PROJECT
104-116 REGENT STREET, REDFERN, NSW, 2016

TITLE
CIVIL SERVICES
COVER SHEET, LOCALITY PLAN AND LEGEND

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	J.M.	SCALE @ A1
CHECKED	M.B.	N.T.S.
APPROVED	M.B.	
CREATED	JUL 2021	
JOB No.	DRAWING No.	REV
210118	C000	P3

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CITY OF SYDNEY COUNCIL

A. GENERAL

1. ALL MATERIALS AND WORKMANSHIP MUST MEET *AS/NZS 3500.3:2018* STORMWATER DRAINAGE, BCA AND AUTHORISING LOCAL COUNCIL DEVELOPMENT GUIDELINES, STANDARDS, SPECIFICATIONS, POLICIES, CONSENTS AND REQUIREMENTS AND / OR AS DIRECTED BY THE PRINCIPAL.
2. THESE DRAWINGS ARE TO BE USED IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS, TECHNICAL SPECIFICATIONS AND OTHER INSTRUCTIONS THAT ISSUED DURING THE COURSE OF THE COMMISSION. ALL DISCREPANCIES ARE TO BE REFERRED TO THE PRINCIPAL FOR CLARIFICATION PRIOR TO COMMENCING WORK. WORKS SHALL NOT PROCEED WITHOUT CLARIFICATION AND INSTRUCTION FROM THE PRINCIPAL.
3. THE CONTRACTOR SHALL NOT ENTER OR WORK ON ADJOINING PROPERTIES WITHOUT THE WRITTEN CONSENT OF THE PROPERTY OWNERS OR THE RELEVANT AUTHORITIES.
4. THE CONTRACTOR IS TO ENSURE THAT MINIMAL DISTURBANCE IS MADE TO AREAS OUTSIDE OF THE CONSTRUCTION WORKS AREA.
5. ANY SUBSTITUTION OF PRODUCTS OR MATERIALS SHALL BE APPROVED BY THE PRINCIPAL PRIOR TO COMMENCING WORK.
6. ANY CONNECTION TO EXISTING WORKS ARE TO BE MADE GOOD.
7. EXCAVATION WORKS ARE NOT TO IMPACT THE STABILITY OF ANY NEARBY STRUCTURES AND PROPERTIES.
8. SOILS SHOULD BE TESTED FOR ACID SULPHATE SOILS AND/OR CONTAMINATION PRIOR TO EXCAVATION IF THERE IS A POTENTIAL RISK NOTED IN THE ENVIRONMENTAL IMPACT ASSESSMENT OR CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN.
9. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION UPON COMPLETION OF WORK UNLESS DIRECTED OTHERWISE BY THE PRINCIPAL.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE SETTING OUT OF THE WORKS IN ACCORDANCE WITH THE SETOUT DETAILS AND MEASUREMENTS SHOWN ON THE DRAWINGS. ALL SETOUT INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
11. ALL DIMENSIONS AND LEVELS RELEVANT TO SETTING OUT TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS. THIS INCLUDES EXISTING SERVICES AND/OR OTHER STRUCTURES THAT MAY AFFECT/BE AFFECTED BY THIS DESIGN PRIOR TO CONSTRUCTION.
12. ALL SURVEY INFORMATION AND PROPOSED WORKS OTHER THAN THE PROPOSED STORMWATER DRAINAGE HAVE BEEN OBTAINED FROM DRAWINGS BY OTHER CONSULTANTS.
13. REFER TO HYDRAULIC DRAWINGS AND PAVEMENT DRAWINGS FOR DETAILS OF ROOF AND SUBSOIL DRAINAGE SYSTEMS RESPECTIVELY.
14. THE DRAWINGS SHALL NOT BE SCALED UNLESS OTHERWISE INSTRUCTED IN THE NOTES ON THE DRAWINGS. ALL LEVELS, COORDINATES AND CHAINAGES ARE IN METRES AND DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE.
15. THE LEVEL DATUM REFERRED TO IN THE DRAWINGS IS THE AUSTRALIAN HEIGHT DATUM (AHD) UNLESS NOTED OTHERWISE.
16. THE CONTRACTOR IS TO INVESTIGATE, IDENTIFY AND ACCURATELY LOCATE ALL EXISTING SERVICES OR OTHER STRUCTURES WHICH MAY AFFECT/BE AFFECTED BY THIS DESIGN AND APPLY FOR "DIAL BEFORE YOU DIG" BEFORE CONSTRUCTION COMMENCES. ALL INFORMATION ON EXISTING SERVICES IS TO BE KEPT UP TO DATE, AND ON SITE AT ALL TIMES.
17. IT IS THE RESPONSIBILITY OF THE BUILDER TO OBTAIN ANY PRIOR APPROVAL REQUIRED FROM COUNCIL WITH RESPECT TO POTENTIAL IMPACT ON TREES.
18. THE CONTRACTOR IS TO CONTACT THE RELEVANT UTILITY AUTHORITIES / ASSET OWNERS PRIOR TO COMMENCEMENT OF EXCAVATION WORKS. ANY MODIFICATION OF THE ASSET REQUIRED BY THE CONTRACTOR IS TO BE APPROVED BY THE ASSET OWNER / AUTHORITY.

B. QUALITY, SAFETY AND ENVIRONMENT

1. SCOPE OF WORK FOR THIS DOCUMENT INCLUDES THE DESIGN, MODELLING AND DOCUMENTATION FOR THE FOLLOWING (WHERE APPLICABLE): STORMWATER CONCEPT PLAN WITH OSD (IF REQUIRED) AND WSUD LAYOUT DESIGN, SEDIMENT AND EROSION CONTROL PLAN, CALCULATIONS, STANDARD DETAILS AND MUSIC MODELLING.
2. THESE PLANS WERE PREPARED IN ACCORDANCE WITH THE AUTHORISING COUNCIL'S POLICIES AND REQUIREMENTS, AS 3500:2018 "PLUMBING AND DRAINAGE", BASIX REQUIREMENTS, AUSTRALIAN RAINFALL AND RUNOFF (2016), RELEVANT LEGISLATION, AND NSW MUSIC MODELLING GUIDELINES.
3. THE CONTRACTOR SHALL MAINTAIN AND OPERATE AND APPROVED QUALITY SYSTEM TO AS/NZS ISO9002-2000.
4. THE CONTRACTOR SHALL PROVIDE INSPECTION AND TEST PLANS TO THE PRINCIPAL FOR THEIR ENDORSEMENT.
5. ALL MATERIALS TESTING SHALL BE UNDERTAKEN BY A NATA ACCREDITED LABORATORY.
6. THE CONTRACTOR SHALL PROVIDE A SAFETY PLAN AND SAFE WORK METHOD STATEMENTS TO THE PRINCIPAL FOR ENDORSEMENT PRIOR TO COMMENCING WORKS.
7. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH NSW OCCUPATIONAL HEALTH AND SAFETY LAWS AND REGULATIONS.
8. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH NSW ENVIRONMENTAL LAWS AND REGULATIONS.
9. THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN TO THE PRINCIPAL FOR THEIR ENDORSEMENT.

C. EROSION AND SEDIMENT CONTROL

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO THE REQUIREMENTS OF THE NSW ENVIRONMENT PROTECTION AGENCY (EPA), THE OFFICE OF ENVIRONMENT & HERITAGE, AND WATER NSW.
2. THE CONTRACTOR IS TO IMPLEMENT ALL MEASURES OUTLINED IN THE EROSION AND SEDIMENT CONTROL PLAN PRIOR TO CONSTRUCTION COMMENCING AND MAINTAIN THESE MEASURES THROUGHOUT CONSTRUCTION.
3. EROSION AND SEDIMENT CONTROL MEASURES AND DEVICES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH LANDCOM'S 'MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION' (THE 'BLUE BOOK').
4. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
5. ALL SUB CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES FOR MAINTAINING AND PROVIDING ON-GOING ADJUSTMENTS TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AND PROVIDING ON-GOING ADJUSTMENTS TO EROSION CONTROL MEASURES AS REQUIRED DURING CONSTRUCTION

D. STORMWATER DRAINAGE

1. PIPES UP TO AND INCLUDING 225mm SHALL BE UPVC (DWV) PIPE AND FITTINGS, MANUFACTURED TO AS1260 WITH SOLVENT WELDED JOINTS.
2. PIPES LARGER THAN OR EQUAL TO 300mm TO BE REINFORCED CONCRETE RUBBER RING JOINTED TYPE (CLASS 2) MANUFACTURED TO AS4058 (U.N.O).
3. ALL CONCRETE WORKS ARE TO BE IN ACCORDANCE WITH AS 3600 AND ALL STEEL REINFORCEMENT AND STEEL MESH ARE TO BE IN ACCORDANCE WITH AS 4671. ALL BURIED FLEXIBLE PIPES ARE TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH AS/NZS 2566. ALL BURIED PVC PIPES ARE TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH AS/NZS 2032, AS/NZS 1254 AND AS/NZS 1477. ALL CONCRETE PIPES ARE TO BE MANUFACTURED AND INSTALLED IN ACCORDANCE WITH AS/NZS 3725, AS/NZS 4139 AND AS/NZS 4058.
4. GRATES AND COVERS SHALL CONFORM TO AS3996 AND TO THE AUTHORISING COUNCIL'S REQUIREMENTS.
5. NO PIT GRATE COMPONENT PART SHALL WEIGH MORE THAN 20KG. ALL GRATES SHALL BE HINGED FULLY OPENING GRATES WITH LOCKDOWN DEVICE.
6. ALL STORMWATER PITS AND DETENTION TANKS DEEPER THAN 1.2m IN DEPTH TO BE FITTED WITH RUNG LADDERS IN ACCORDANCE WITH AS/NZS 4198 AND AS/NZS 1657. STEEL LADDERS SHALL BE HOT DIP ZINC GALVANISED AS SPECIFIED IN AS/NZS 4680.
7. ALL INLET/OUTLET PIPES SHALL BE CUT FLUSH WITH PIT WALLS.
8. PRECAST CONCRETE PIPES AND FITTINGS TO BE DOUBLE V-RING JOINTED.
9. EMBEDMENT SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH AS/NZS 2566 FOR FLEXIBLE PIPES, AS/NZS 2032 FOR PVC PIPES, AND AS/NZS 3725 FOR CONCRETE PIPES.
10. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER DRAINAGE, THE CONTRACTOR SHALL PROVIDE ADEQUATE SAFETY MEASURES TO PREVENT WORKER INJURIES ASSOCIATED WITH PITS AND TRENCHES.
11. THE CONTRACTOR SHALL ALLOW FOR DEWATERING AS REQUIRED DURING CONSTRUCTION.
12. ALL STORMWATER DRAINAGE MATERIALS AND PRODUCTS INCLUDING PITS AND PIPES ARE TO BE INSTALLED TO THE MANUFACTURER'S SPECIFICATIONS.
13. DEMOLISH, FILL IN AND REMOVE EXISTING PIPE AND PITS AS DIRECTED BY THE SUPERINTENDENT. REDUNDANT DRAINAGE PIPES MUST BE FILLED WITH STABILISED SAND OR GROUT TO PREVENT STRUCTURAL COLLAPSE IN THE FUTURE. REDUNDANT PITS ARE TO BE DEMOLISHED AND REMOVED UNLESS THEY AFFECT THE STRUCTURAL INTEGRITY OF ADJACENT STRUCTURES, IN WHICH CASE THEY MUST BE FILLED WITH STABILISED SAND OR GROUT.
14. NEW PIPE SYSTEMS ARE TO BE FLUSHED OUT BY THE CONTRACTOR ONCE COMPLETE PRIOR TO CONNECTION INTO EXISTING SYSTEMS.
15. PITS ARE TO BE DESIGNED FOR THE STRENGTH CLASS SPECIFIED IN THE PIT SCHEDULE PROVIDED IN THIS DRAWING SET.

E. CONCRETE

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS/NZS 3600
2. FORMWORK SHALL COMPLY WITH AS/NZS 3610
3. PREMIXED CONCRETE SHALL BE MANUFACTURED AND SUPPLIED IN ACCORDANCE WITH AS/NZS 1379.
4. PORTLAND AND BLENDED CEMENT SHALL COMPLY WITH AS/NZS 3972.
5. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED BY THE PRINCIPAL. ADMIXTURES SHALL COMPLY WITH AS/NZS 1478.1.
6. AGGREGATE SHALL COMPLY WITH AS/NZS 2758.1
7. WATER SHALL BE CLEAN FRESH WATER IN ACCORDANCE WITH AS/NZS 1379.
8. PROJECT CONTROL TESTING SHALL BE CARRIED OUT ON ALL CLASSES OF CONCRETE IN ACCORDANCE WITH AS/NZS 1379.
9. CONCRETE EXPOSURE CLASSIFICATION SHALL BE SPECIFIED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.

MINIMUM 28 DAY AS/NZS 3600 COMPRESSIVE STRENGTH (f'c) OF CONCRETE IS AS FOLLOWS:

- CAST IN SITU ELEMENT: 40 MPa
- PRE-CAST CONCRETE ELEMENT: 40 MPa
- BLINDING CONCRETE AND MASS CONCRETE: 25 MPa

10. STORMWATER PITS AND STRUCTURES SPECIFIED SLUMP 80MM, NOMINAL AGGREGATE SIZE 20mm.
11. BLINDING CONCRETE SHALL BE MINIMUM 50mm THICK.

F. STEEL REINFORCEMENT

1. STEEL REINFORCEMENT SHALL COMPLY WITH AS/NZS 4671.

DOWELS SHALL BE ONE-PIECE, STRAIGHT, PLAIN STEEL BAR OR PLATE COMPLYING WITH AS/NZS 4671 OR AS/NZS 3679.1. TIE BARS SHALL BE DEFORMED BARS COMPLYING WITH AS/NZS4671.

2. THE NUMBER FOLLOWING THE FABRIC SYMBOL F IS THE REFERENCE NUMBER FOR FABRIC TO AS/NZS 1304. FABRIC SHALL BE LAPPED WITH TWO TRANSVERSE WIRES AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH AS/NZS 4671
3. LAPS SHALL BE IN ACCORDANCE WITH AS/NZS 3600.
4. SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS/NZS 3600.
5. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY AND NOT NECESSARILY IN TRUE PROJECTION.
6. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT APPROVAL FROM THE PRINCIPAL.
7. UNLESS OTHERWISE NOTED, MINIMUM CLEAR DISTANCE BETWEEN BARS OTHER THAN LAPPED BARS SHALL BE THE GREATEST OF:

I) 1.5 X THE DIAMETER OF THE LARGER BAR
II) 1.5 X THE MAXIMUM NORMAL AGGREGATE SIZE
III) 40

JOINTS IN STRUCTURES OR MEMBERS TO BE IN ACCORDANCE WITH AS/NZS 3600.

IMPORTANT

IN ORDER TO GAIN OCCUPATION/FINAL SIGN OFF, REGULAR INSPECTIONS MAY NEED TO BE CARRIED OUT BY A STORMWATER ENGINEER DURING CONSTRUCTION. IT IS RECOMMENDED THAT THE CERTIFYING AUTHORITY CONFIRM THESE REQUIREMENTS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS ON SITE. JHA CAN ONLY CERTIFY THOSE WORKS THAT HAVE BEEN VISUALLY INSPECTED AND CANNOT CERTIFY STORMWATER WORKS WHICH HAVE NOT BEEN VISUALLY INSPECTED PRIOR TO BACKFILL/CAST IN STRUCTURE.

THE CERTIFYING AUTHORITY SHOULD CONFIRM WHETHER ANY STORMWATER WORK-AS-EXECUTED SURVEY IS REQUIRED BY THE CONDITIONS OF CONSENT PRIOR TO COMPLETION OF WORKS

REVISIONS / AMENDMENTS

Rev.	Date	Description	Verified
P1	10.11.21	PRELIMINARY ISSUE	M.B.
P2	15.11.21	PRELIMINARY ISSUE	M.B.
P3	03.12.21	PRELIMINARY ISSUE	M.B.

REVISIONS / AMENDMENTS

Rev	Date	Description	Verified

NORTH

CLIENT
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PROJECT
104-116 REGENT STREET, REDFERN, NSW, 2016

TITLE
CIVIL SERVICES
NOTES

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	J.M.	SCALE @ A1
CHECKED	M.B.	N.T.S.
APPROVED	M.B.	
CREATED	JUL 2021	
JOB No.	DRAWING No.	REV
210118	C001	P3

Dec 03, 2021 – 11:06am S:\JOB No\Job No 20210100-20210199\210118 Wee Hur 104-116 Regent St Redfern\Drawings\Civil\210118-C001.dwg

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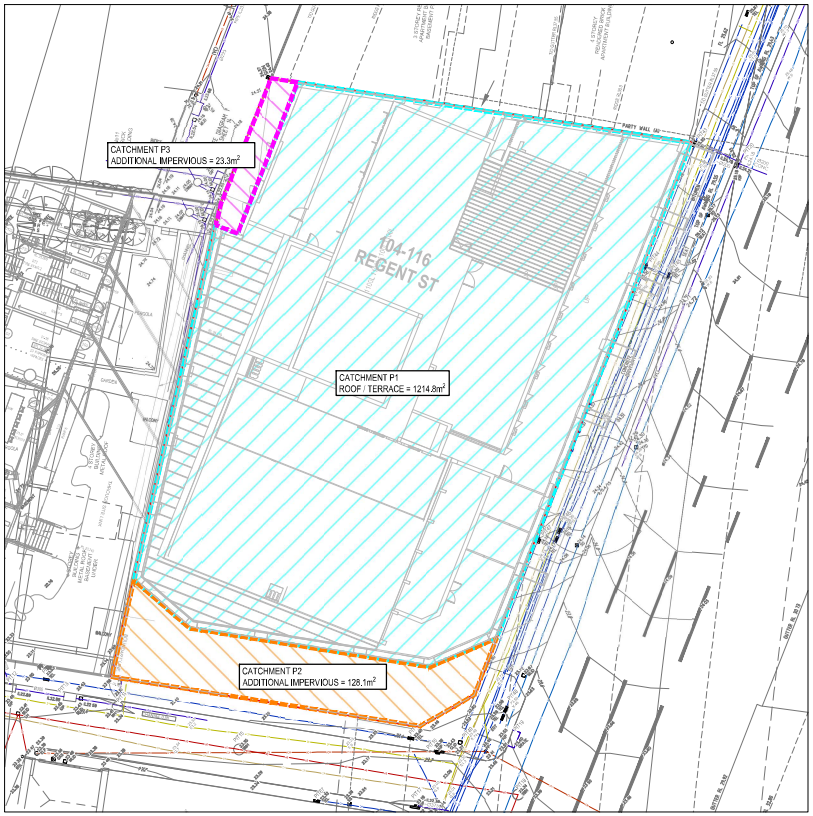
CITY OF SYDNEY COUNCIL

EXISTING CATCHMENT PLAN
SCALE 1:200

TOTAL IMPERVIOUS AREA = 1336.2m²



PROPOSED CATCHMENT PLAN
SCALE 1:200

TOTAL IMPERVIOUS AREA = 1336.2m²

NOTES

1. ALL WORKS SHALL BE UNDERTAKEN IN ACCORDANCE WITH AS3500.3 (2018) PLUMBING & DRAINAGE PART 3: STORMWATER DRAINAGE, CITY OF SYDNEY STORMWATER DRAINAGE MANUAL AND THE LATEST BASIX REQUIREMENTS.
2. IN ACCORDANCE WITH CITY OF SYDNEY REQUIREMENTS FOR THE PROPOSED DEVELOPMENT, ON-SITE DETENTION (OSD) REQUIRED. SYDNEY WATER HAVE CONFIRMED THE FOLLOWING SITE STORAGE REQUIREMENT AND PERMISSIBLE SITE DISCHARGE REQUIREMENTS:

   SITE STORAGE REQUIREMENT = 22.0 m^3
   PERMISSIBLE SITE DISCHARGE = 50.0 L/s
3. IN ACCORDANCE WITH CITY OF SYDNEY REQUIREMENTS FOR THE PROPOSED DEVELOPMENT, A STORMWATER QUALITY ASSESSMENT HAS BEEN UNDERTAKEN BY A SUITABLE QUALIFIED DRAINAGE ENGINEER DEMONSTRATING HOW THE DEVELOPMENT WILL BE DESIGNED TO ENSURE THAT THE FLOW OF POST-DEVELOPMENT POLLUTANTS FROM THE SITE DUE TO STORMWATER WILL BE REDUCED. REFER TO DRAWING C200 FOR DETAILS.
4. AN "APPLICATION FOR APPROVAL OF STORMWATER DRAINAGE CONNECTIONS" SHALL BE SUBMITTED TO COUNCIL WITH THE APPROPRIATE FEE AT THE TIME OF LODGEMENT OF THE PROPOSAL FOR CONNECTION FOR STORMWATER TO COUNCIL'S DRAINAGE SYSTEM

10 5 0 10 m

1 : 200-A1 1 : 400-A3

REVISIONS / AMENDMENTS

Rev.	Date	Description	Verified
P1	10.11.21	PRELIMINARY ISSUE	M.B.
P2	15.11.21	PRELIMINARY ISSUE	M.B.
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REVISIONS / AMENDMENTS

Rev	Date	Description	Verified

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PROJECT
104-116 REGENT STREET, REDFERN, NSW, 2016

TITLE
CIVIL SERVICES
EXISTING AND PROPOSED CATCHMENT PLAN

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	J.M.	SCALE @ A1
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CREATED	JUL 2021	
JOB No.	DRAWING No.	REV
210118	C100	P3

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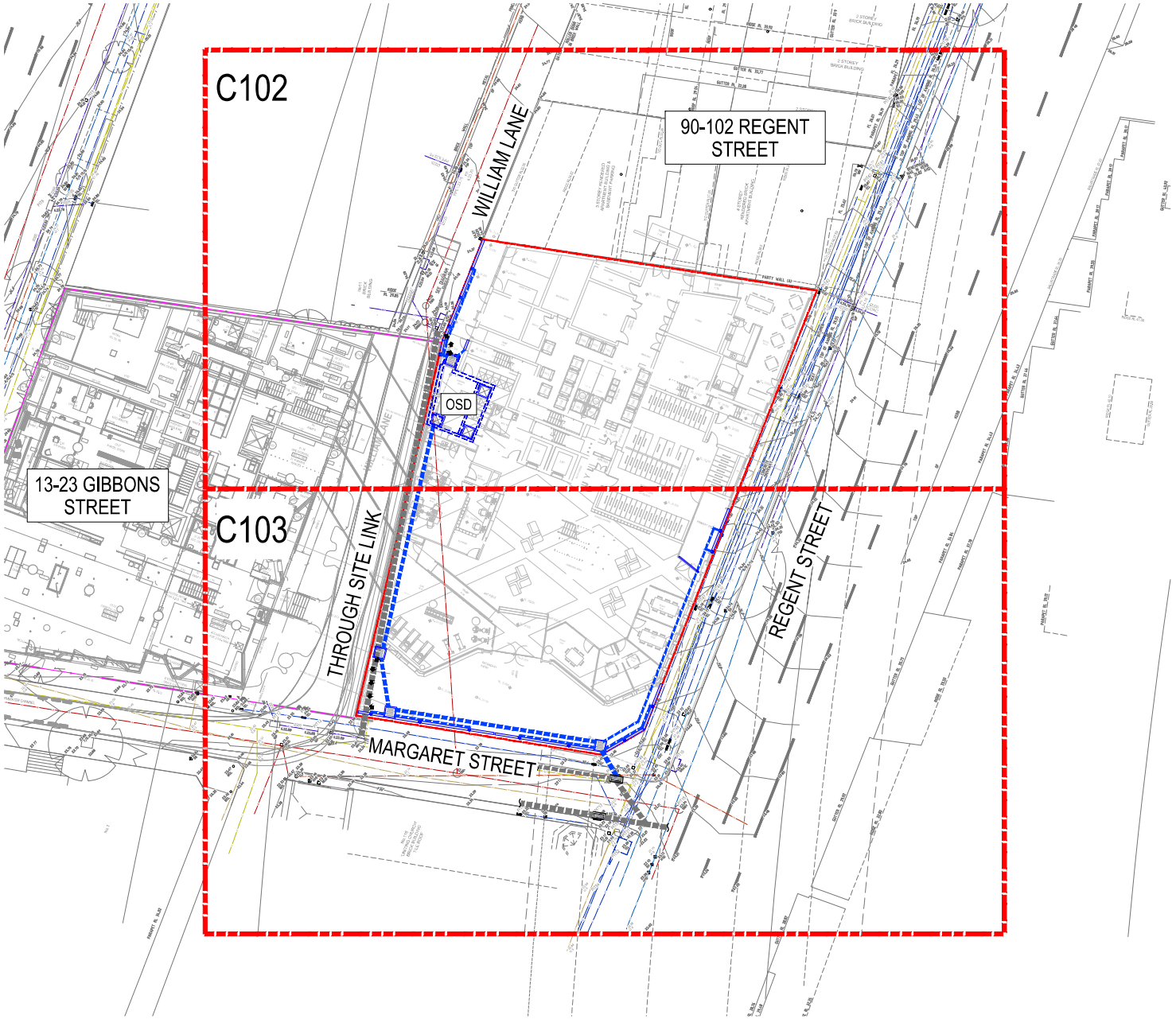

STORMWATER LAYOUT PLAN
SCALE 1:200

2 1 0 2 4 6 8 m

1 : 100-A1 1 : 200-A3

REVISIONS / AMENDMENTS

Rev.	Date	Description	Verified
P1	10.11.21	PRELIMINARY ISSUE	M.B.
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TITLE
CIVIL SERVICES
STORMWATER LAYOUT PLAN

PRELIMINARY ISSUE
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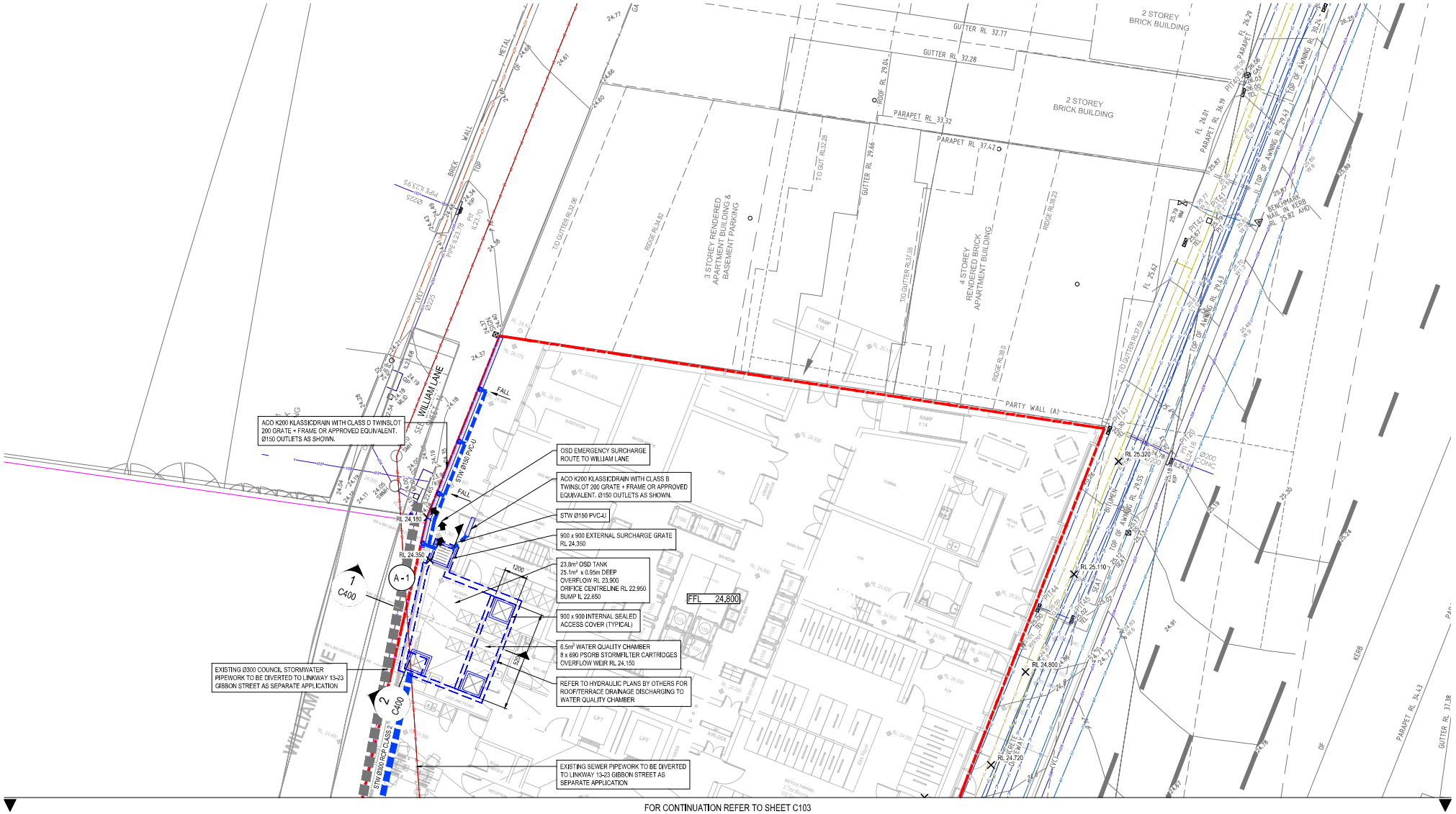

FOR CONTINUATION REFER TO SHEET C103

STORMWATER LAYOUT PLAN - NORTH

SCALE 1:100

2 1 0 2 4 6 8 m

1 : 100-A1 1 : 200-A3

REVISIONS / AMENDMENTS			
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Rev.	Date	Description	Verified

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PROJECT
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TITLE
CIVIL SERVICES
STORMWATER LAYOUT PLAN - NORTH

PRELIMINARY ISSUE
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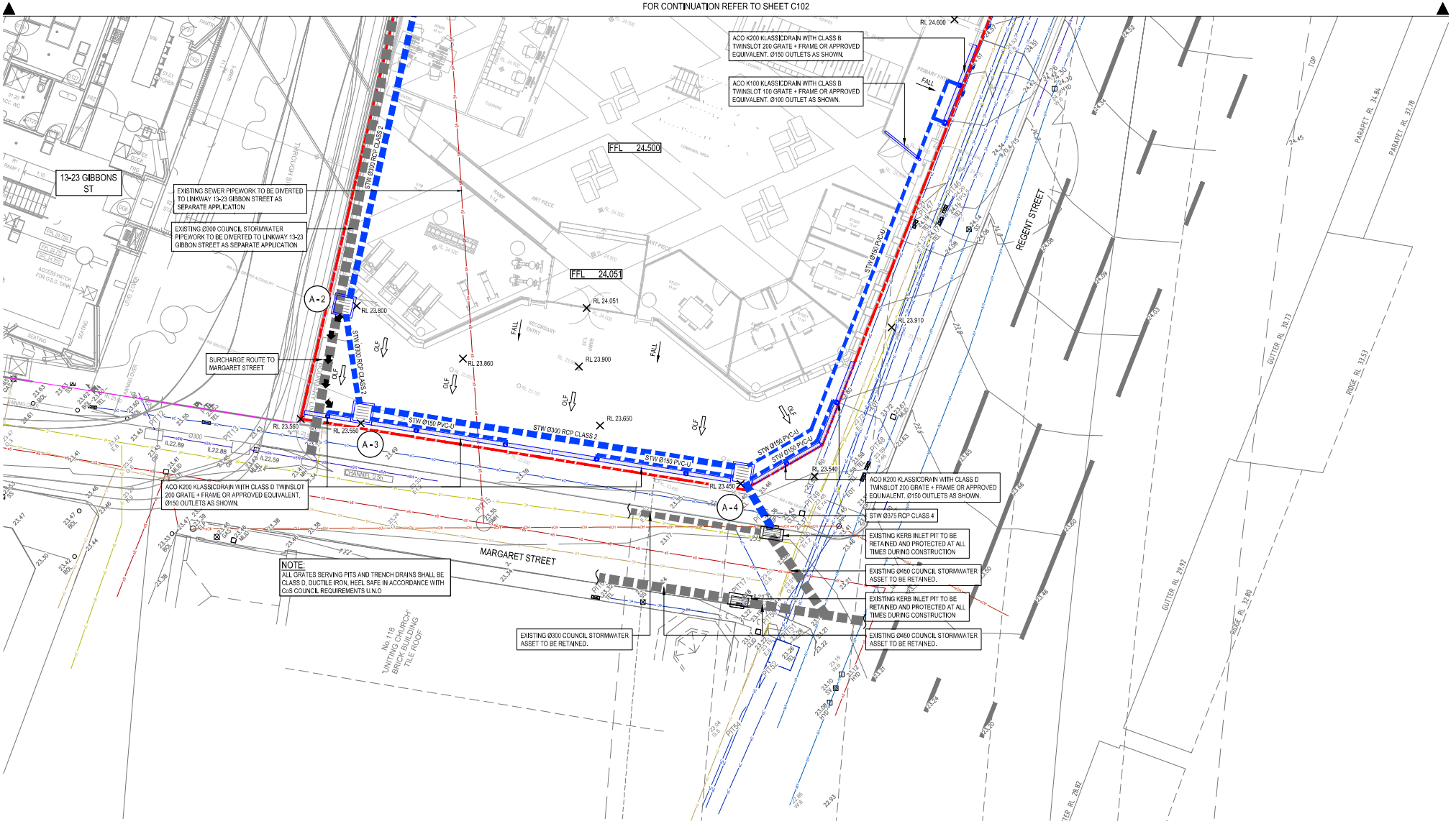
FOR CONTINUATION REFER TO SHEET C102



STORMWATER LAYOUT PLAN - SOUTH

SCALE 1:100

2 1 0 2 4 6 8 m

1 : 100-A1 1 : 200-A3

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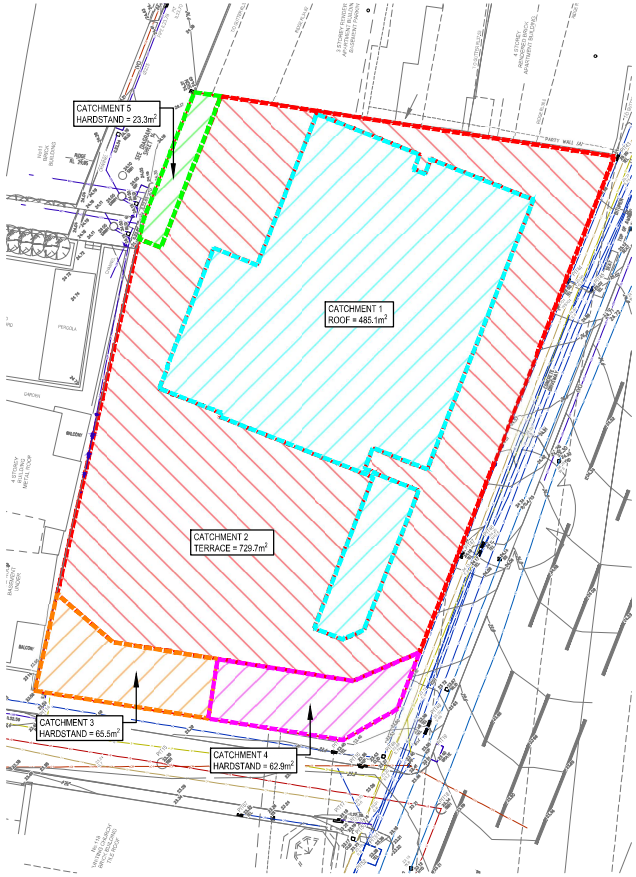
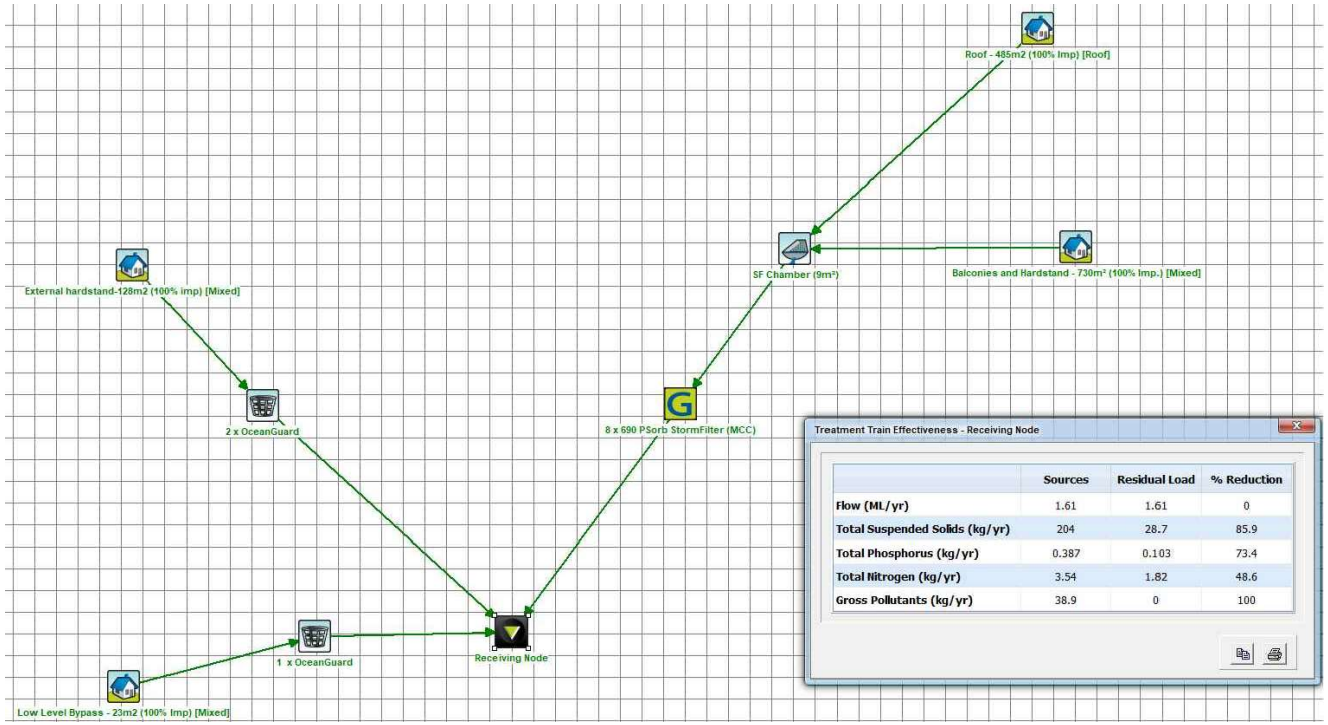


WATER QUALITY CATCHMENT PLAN
SCALE 1:200



	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.61	1.61	0
Total Suspended Solids (kg/yr)	204	28.7	85.9
Total Phosphorus (kg/yr)	0.387	0.103	73.4
Total Nitrogen (kg/yr)	3.54	1.82	48.6
Gross Pollutants (kg/yr)	38.9	0	100

MUSIC MODEL LAYOUT PLAN

10 5 0 10 m

1 : 200-A1 1 : 400-A3

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PROJECT
104-116 REGENT STREET, REDFERN, NSW, 2016

TITLE
CIVIL SERVICES
WATER QUALITY CATCHMENT PLAN & MUSIC MODEL LAYOUT PLAN

PRELIMINARY ISSUE
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210118	C200	P3

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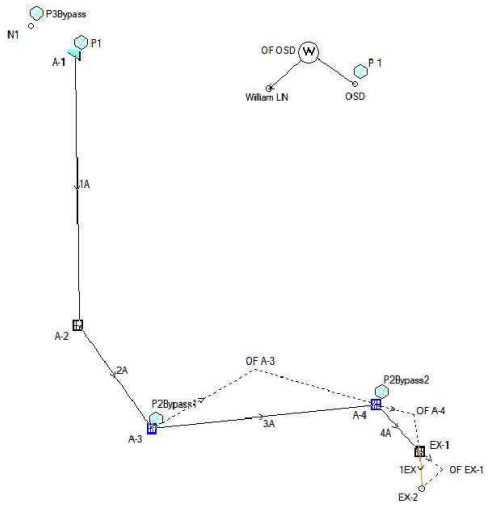
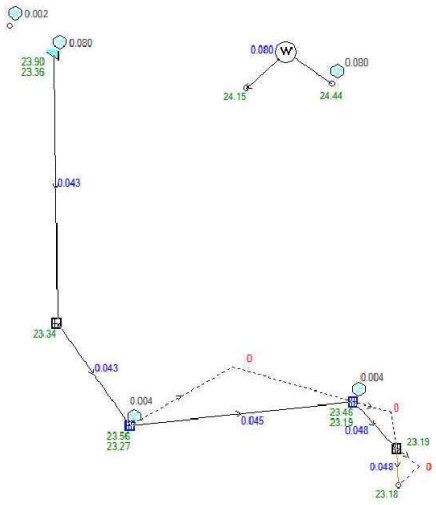
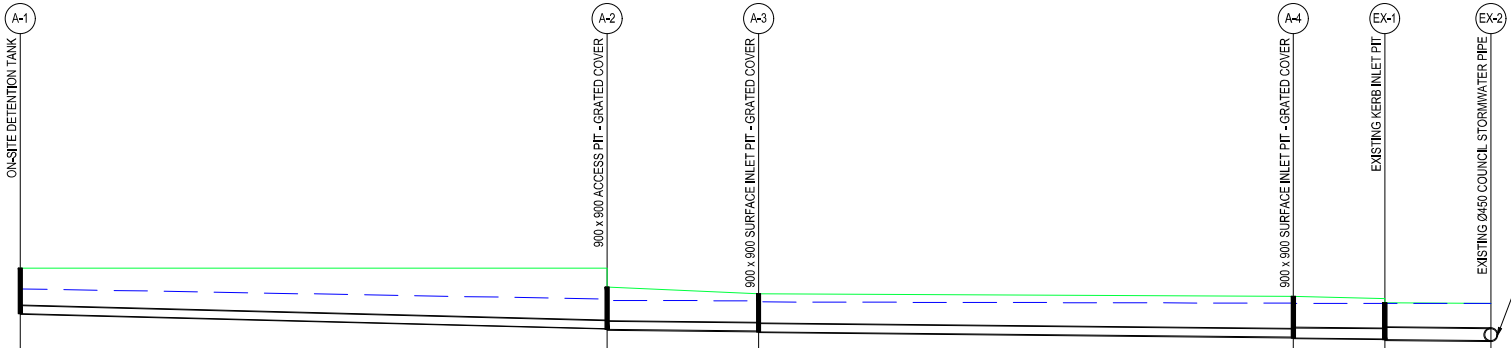


DRAINS LAYOUT



DRAINS RESULTS - 100YR ARI



DATUM (m)	20.00					
PIPE CLASS	PVC-U	RCP CLASS 2		RCP CLASS 4	EXISTING RCP	
PIPE SIZE (mm)	300	300	300	375	450	
PIPE COVER MIN (m)	1.24	1.07	1.10	0.94	0.90	
PIPE GRADE (%)	2.59	1.01	1.00	0.99	1.01	
FULL PIPE VELOCITY (m/s)	0.61	0.63	0.67	0.45	0.30	
PEAK FLOW (L/s)	43	43	45	48	48	
HYDRAULIC GRADE LINE	23.726	23.335 / 23.284	23.273 / 23.234	23.193 / 23.187	23.165 / 23.181	23.180
DESIGN SURFACE LEVEL	24.500	24.500 / 23.800	23.550	23.450 / 23.360	23.210	23.180
INVERT LEVEL	23.100	22.231 / 22.211	22.154 / 22.124	21.924 / 21.894	21.860 / 21.830	21.790
PIPE CHAINAGE	0.00	21.96	27.63	47.64	51.06	55.03

200 100 0 200 400 600 800 mm

1 : 10-A1 1 : 20-A3

10 5 0 10 m

1 : 200-A1 1 : 400-A3

STORMWATER LONG-SECTION

SCALE 1:100

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TITLE
CIVIL SERVICES
DRAINS RESULTS & STORMWATER LONG-SECTION

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210118	**C300**	**P3**

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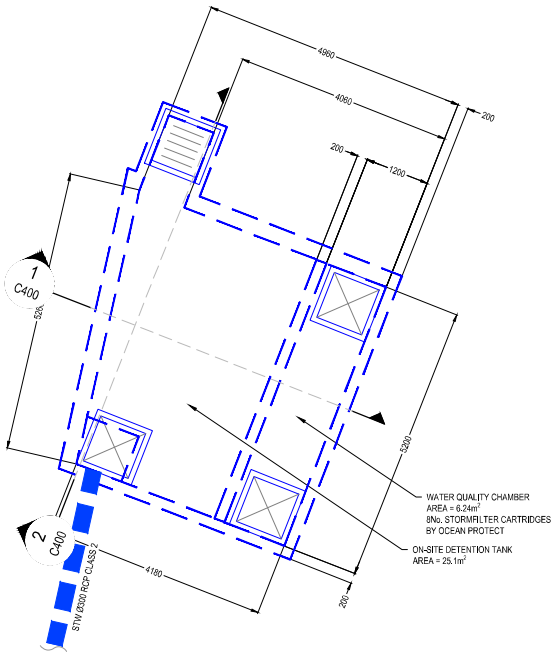
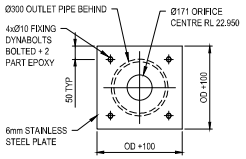
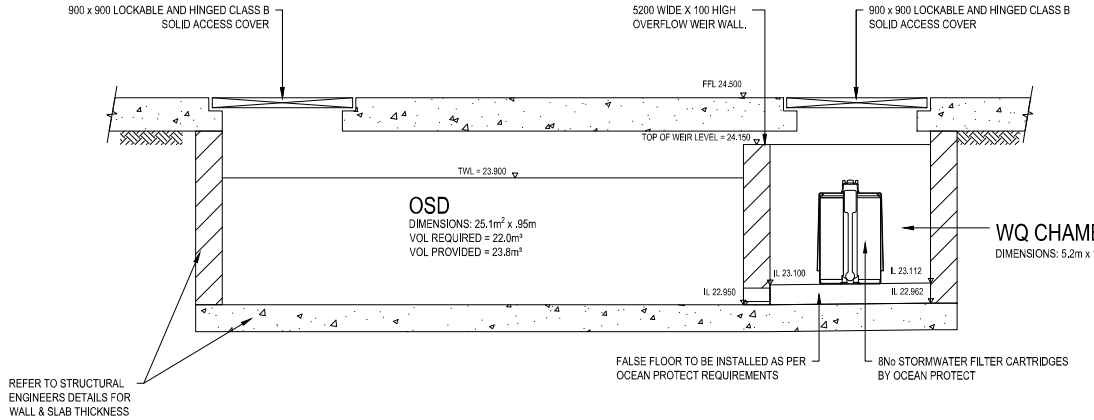


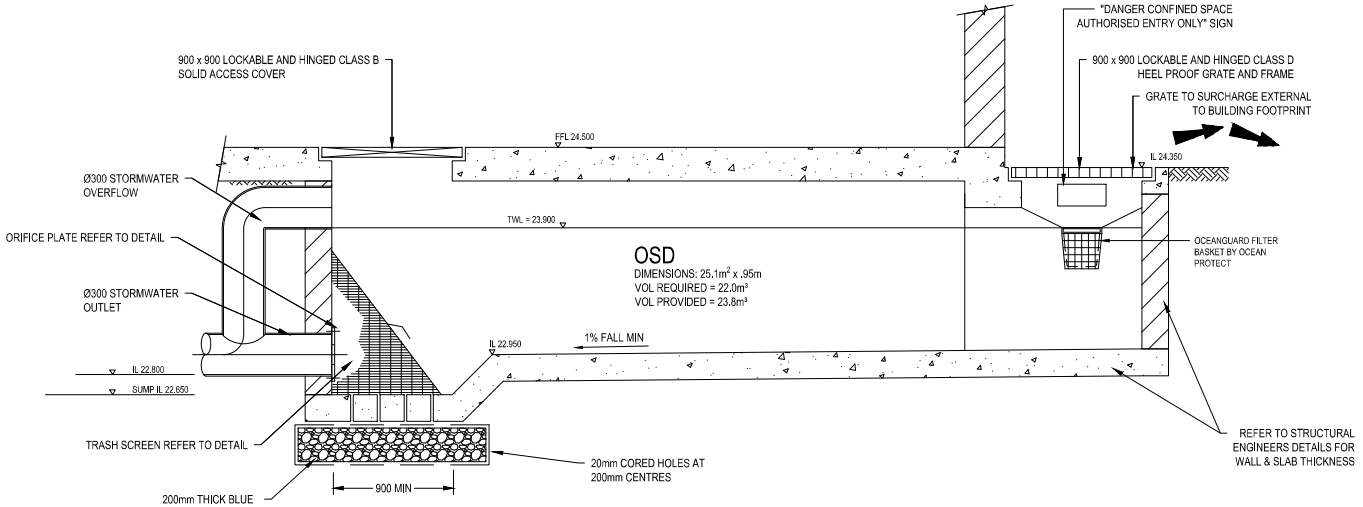
ON-SITE DETENTION TANK LAYOUT
SCALE 1:50



ORIFICE PLATE DETAIL
N.T.S



ON-SITE DETENTION TANK LONG-SECTION
SCALE 1:20
1 C102



ON-SITE DETENTION TANK LONG-SECTION
SCALE 1:20
2 C102

1000 500 0 1000 mm
1 : 20-A1 1 : 40-A3
1 0.5 0 1 2 3 4 m
1 : 50-A1 1 : 100-A3

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PROJECT
104-116 REGENT STREET,
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TITLE
CIVIL SERVICES
ON-SITE DETENTION PLAN
& LONG SECTIONS

PRELIMINARY ISSUE
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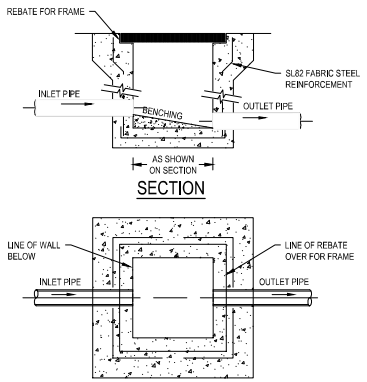
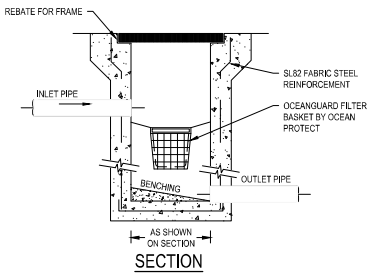


PLAN WITHOUT GRATE

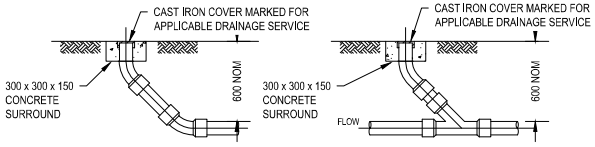
TYPICAL GRATED INLET PIT

N.T.S



TYPICAL GRATED INLET PIT
w/ OCEAN GUARD BASKET

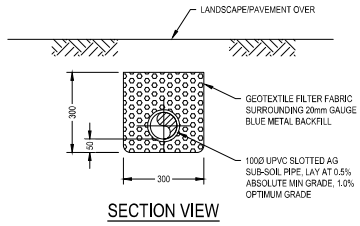
N.T.S



PROVIDE CLEAR OUTS INSTALLED IN ACCORDANCE WITH A.S. 3500 AT LOCATIONS WHERE NOTED CO ON PLAN

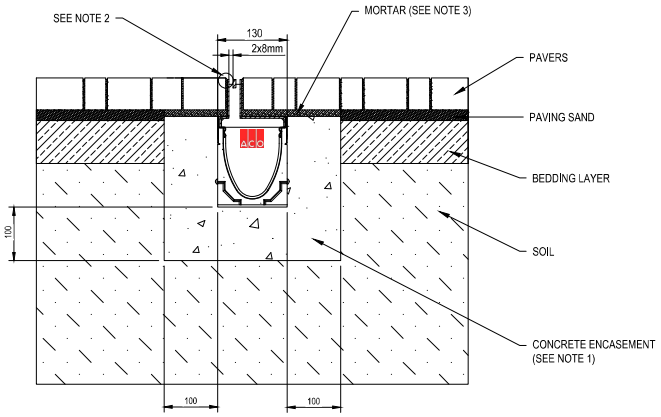
TYPICAL DRAINAGE CLEAR OUT (INSPECTION OPENING)

N.T.S



TYPICAL SUB-SOIL DRAINAGE TRENCH

N.T.S

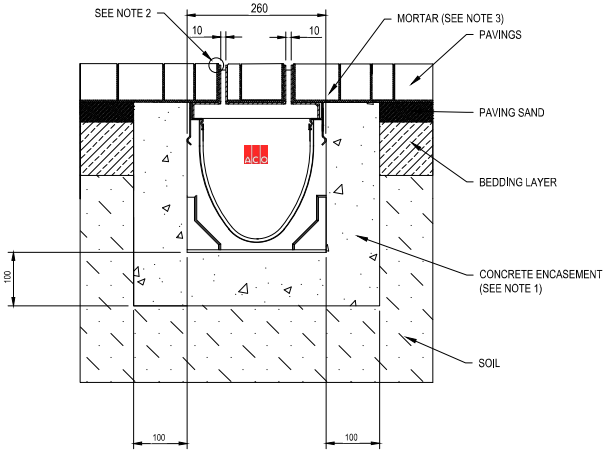


TWINSLOT 200 WITH K200 - CLASS D WHEEL LOAD FOR PAVERS

N.T.S

NOTES:

1. SPECIFIC SITE CONDITIONS MAY REQUIRE AN INCREASE IN THE CONCRETE ENCASEMENT DIMENSIONS AND/OR REINFORCEMENT. IT IS THE CUSTOMER'S RESPONSIBILITY TO ENSURE THE CONCRETE ENCASEMENT IS DESIGNED FOR THE APPLICATION. A MINIMUM CONCRETE STRENGTH OF 25MPA IS RECOMMENDED. THE CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS. ENGINEERING ADVICE MAY BE REQUIRED.
2. THE FINISHED LEVEL OF THE PAVERS MUST BE APPROXIMATELY 3MM ABOVE THE TOP OF THE CHANNEL EDGE.
3. THE PAVER COURSE ADJACENT TO THE CHANNEL EDGE MUST BE FULLY BONDED TO THE CONCRETE ENCASEMENT.
4. FOR FURTHER DETAILS, REFER TO ACO'S DESIGN & SITE INSTALLATION FILES AT WWW.ACODRAIN.COM.AU/PRODUCT-SUPPORT/DOWNLOADS.



TWINSLOT 200 WITH K200 - CLASS B WHEEL LOAD FOR PAVERS

N.T.S

NOTES:

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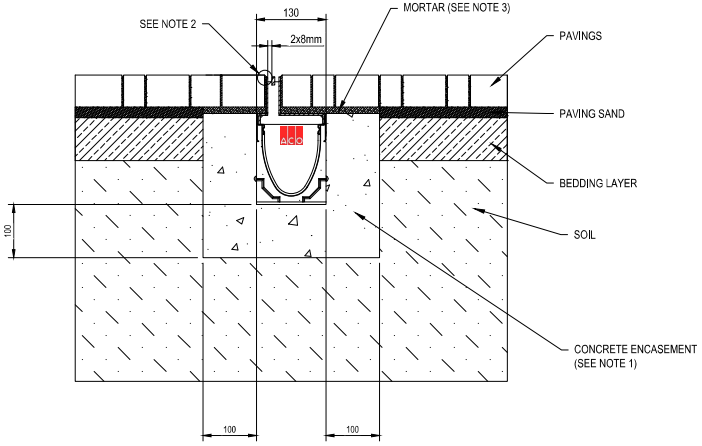

DOUBLE BRICKSLOT 100 WITH K100 - CLASS B WHEEL LOAD FOR PAVERS

N.T.S

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2. THE FINISHED LEVEL OF THE PAVERS MUST BE APPROXIMATELY 3MM ABOVE THE TOP OF THE CHANNEL EDGE.
3. THE PAVER COURSE ADJACENT TO THE CHANNEL EDGE MUST BE FULLY BONDED TO THE CONCRETE ENCASEMENT.
4. FOR FURTHER DETAILS, REFER TO ACO'S DESIGN & SITE INSTALLATION FILES AT WWW.ACODRAIN.COM.AU/PRODUCT-SUPPORT/DOWNLOADS.

STRUCTURE ID	SURFACE RL (m AHD)	INLET PIPE IL (m AHD)	OUTLET PIPE IL (m AHD)	DEPTH TO STRUCTURE INVERT (m)	INTERNAL PIT SIZE (mm x mm)	COVER AND FRAME TYPE/CLASS	COMMENTS
A-1	24.350	-	-	-	900 x 900	CLASS D ACCESS GRATE (HEEL PROOF) AND FRAME	1 x OCEANGUARD INSERT OR APPROVED EQUIVALENT
A-2	23.800	22.231	22.211	1.589	900 x 900	CLASS B ACCESS GRATE (HEEL PROOF) AND FRAME	
A-3	23.550	22.154	22.124	1.426	900 x 900	CLASS D ACCESS GRATE (HEEL PROOF) AND FRAME	1 x OCEANGUARD INSERT OR APPROVED EQUIVALENT
A-4	23.450	21.924	21.894	1.556	900 x 900	CLASS D ACCESS GRATE (HEEL PROOF) AND FRAME	1 x OCEANGUARD INSERT OR APPROVED EQUIVALENT

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PROJECT: 104-116 REGENT STREET, REDFERN, NSW, 2016

TITLE: CIVIL SERVICES DETAILS

PRELIMINARY ISSUE
NOT TO BE USED FOR CONSTRUCTION

DRAWN	J.M.	SCALE @ A1
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CREATED	JUL 2021	
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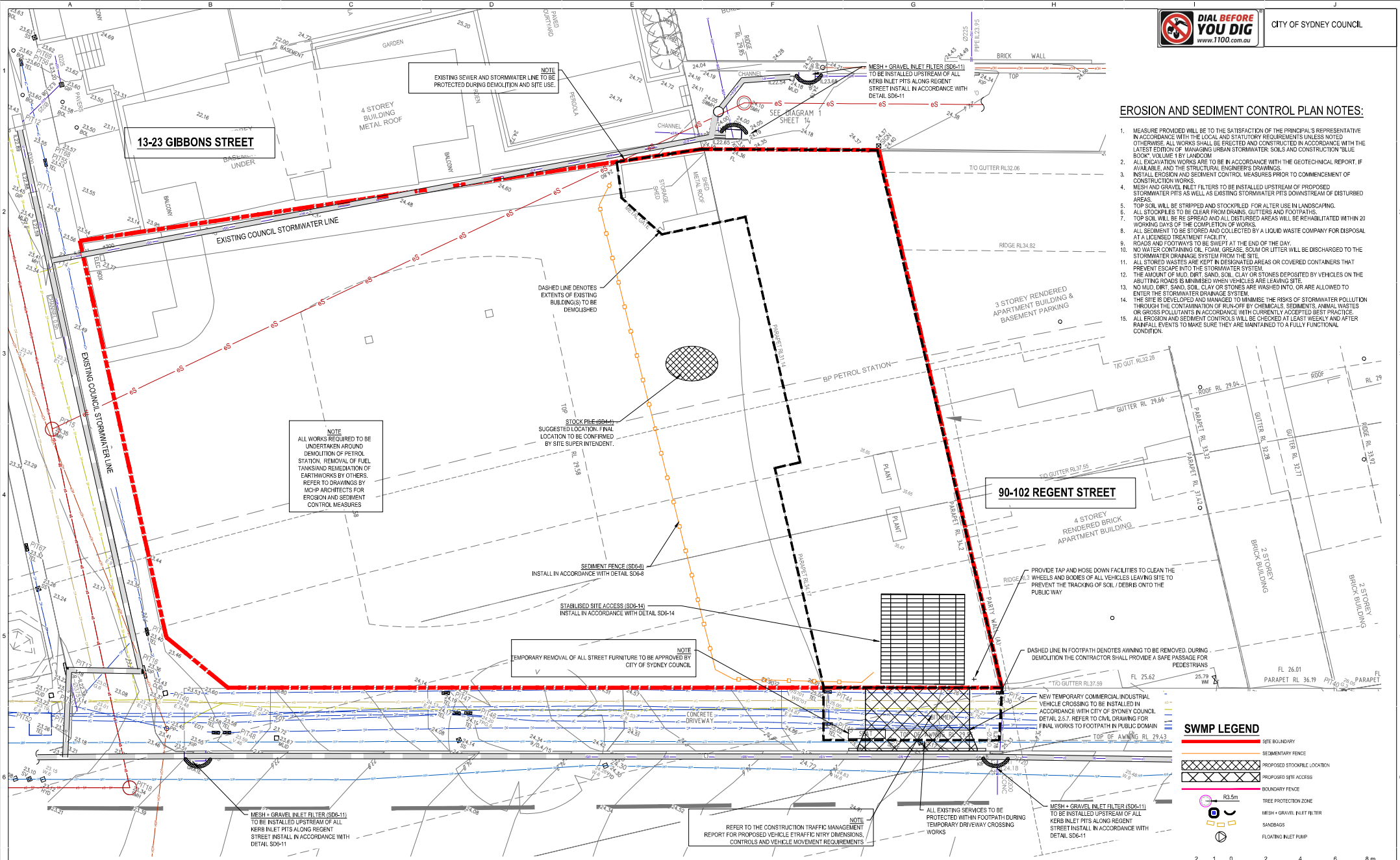

EROSION AND SEDIMENT CONTROL PLAN NOTES:

1. MEASURE PROVIDED WILL BE TO THE SATISFACTION OF THE PRINCIPAL'S REPRESENTATIVE IN ACCORDANCE WITH THE LOCAL AND STATUTORY REQUIREMENTS UNLESS NOTED OTHERWISE. ALL WORKS SHALL BE ERECTED AND CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF 'MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION "BLUE BOOK", VOLUME 1 BY LANDCOM.
2. ALL EXCAVATION WORKS ARE TO BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, IF AVAILABLE, AND THE STRUCTURAL ENGINEER'S DRAWINGS.
3. INSTALL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.
4. MESH AND GRAVEL INLET FILTERS TO BE INSTALLED UPSTREAM OF PROPOSED STORMWATER PITS AS WELL AS EXISTING STORMWATER PITS DOWNSTREAM OF DISTURBED AREAS.
5. TOP SOIL WILL BE STRIPPED AND STOCKPILED FOR ALTER USE IN LANDSCAPING.
6. ALL STOCKPILES TO BE CLEAR FROM DRAINS, GUTTERS AND FOOTPATHS.
7. TOP SOIL WILL BE RE SPREAD AND ALL DISTURBED AREAS WILL BE REHABILITATED WITHIN 20 WORKING DAYS OF THE COMPLETION OF WORKS.
8. ALL SEDIMENT TO BE STORED AND COLLECTED BY A LIQUID WASTE COMPANY FOR DISPOSAL AT A LICENSED TREATMENT FACILITY.
9. ROADS AND FOOTWAYS TO BE SWEPT AT THE END OF THE DAY.
10. NO WATER CONTAINING OIL, FOAM, GREASE, SCUM OR LITTER WILL BE DISCHARGED TO THE STORMWATER DRAINAGE SYSTEM FROM THE SITE.
11. ALL STORED WASTES ARE KEPT IN DESIGNATED AREAS OR COVERED CONTAINERS THAT PREVENT ESCAPE INTO THE STORMWATER SYSTEM.
12. THE AMOUNT OF MUD, DIRT, SAND, SOIL, CLAY OR STONES DEPOSITED BY VEHICLES ON THE ABUTTING ROADS IS MINIMISED WHEN VEHICLES ARE LEAVING SITE.
13. NO MUD, DIRT, SAND, SOIL, CLAY OR STONES ARE WASHED INTO, OR ARE ALLOWED TO ENTER THE STORMWATER DRAINAGE SYSTEM.
14. THE SITE IS DEVELOPED AND MANAGED TO MINIMISE THE RISKS OF STORMWATER POLLUTION THROUGH THE CONTAMINATION OF RUN-OFF BY CHEMICALS, SEDIMENTS, ANIMAL WASTES OR GROSS POLLUTANTS IN ACCORDANCE WITH CURRENTLY ACCEPTED BEST PRACTICE.
15. ALL EROSION AND SEDIMENT CONTROLS WILL BE CHECKED AT LEAST WEEKLY AND AFTER RAINFALL EVENTS TO MAKE SURE THEY ARE MAINTAINED TO A FULLY FUNCTIONAL CONDITION.

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CITY OF SYDNEY COUNCIL

EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:100

REVISIONS / AMENDMENTS

Rev.	Date	Description	Verified
P1	10.11.21	PRELIMINARY ISSUE	M.B.
P2	15.11.21	PRELIMINARY ISSUE	M.B.
P3	03.12.21	PRELIMINARY ISSUE	M.B.

REVISIONS / AMENDMENTS

Rev	Date	Description	Verified

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PROJECT
104-116 REGENT STREET, REDFERN, NSW, 2016

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EROSION & SEDIMENT CONTROL PLAN

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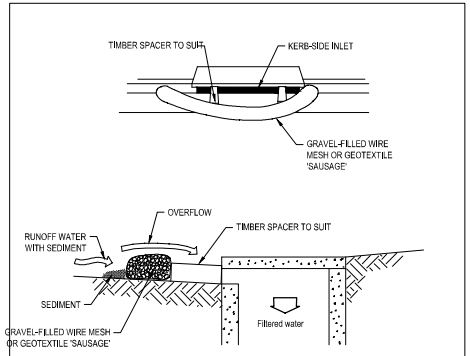
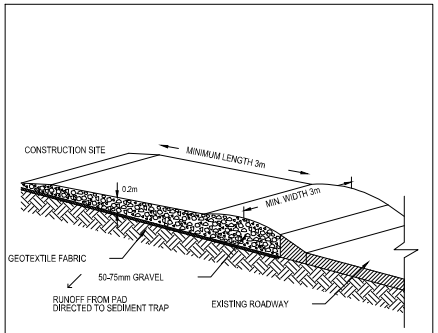


NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL WITH 25MM TO 50MM GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150 HIGH AND 400MM WIDE.
4. PLACE THE FILTER AT THE OPENING LEVEL AT LEAST A 100MM SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN BE SUBSTITUTE A MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT LADEN WATERS CANNOT PASS BETWEEN

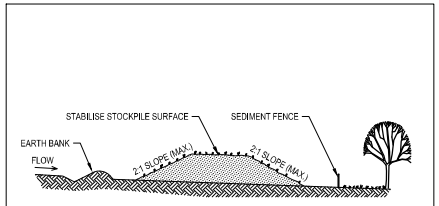
MESH AND GRAVEL INLET FILTER SD 6-11



CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200 MM THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30 MM AGGREGATE.
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE.

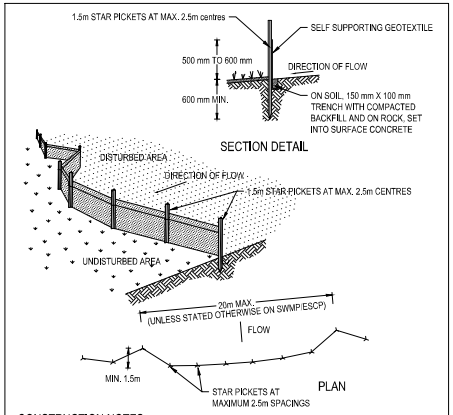
STABILISED SITE ACCESS SD 6-14



CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE.

STOCKPILES SD 4-1



CONSTRUCTION NOTES:

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150-MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUND AT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH. FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150-MM OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE SD 6-8

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