

46-50 Cowan Road, St Ives, NSW 2075 - Stormwater Report

Prepared for Traders in Purple Pty Ltd

March 2026
Project Number S24288
Version D



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Document Control				
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1. Introduction

BG&E Pty Ltd (BG&E) has been engaged by Traders in Purple Pty Ltd to prepare a Stormwater Report for the proposed development of a residential building at 46-50 Cowan Road, St Ives, NSW 2075 (Site).

This report will outline the methodology adopted and the associated results of:

- Requirement of an on-site detention tank; and
- Water sensitive urban design.

It is understood that this report will be utilised in the Development Application submission and will also inform the basis of the next phases of design. This report is also being used to address some additional comments provided from council from the Facts and Contentions provided by Ku-ring-gai Chase Council filed 9th December 2025. Refer to the table below for all comments begin address in the report and the attached stormwater drawings

Facts and Contentions – Water Management	Responses
L. Detailed design and longitudinal section of the OSD tank must be provided.	As part of the submission to council, sheet CI-0350 has been provided, which clearly shows a detailed base level plan and section along the. For a DA submission, this level of detail is typically sufficient to provide all the information relevant to the tank design, including TWL, water depth, tank area, orifice size, and tank volume. Refer to sheet CI-0350
M. The OSD site storage requirement on the plan states volume provided is 150m ³ , whilst the conclusion within the report states the volume is 186m ³ . Clarification is sought.	This stormwater report has been updated to reflect the correct volumes as shown on the stormwater plans.
N. A high-level overflow pipe from the OSD is to be provided and connected to the proposed pipe network system, as well as an emergency overflow weir constructed within the tank.	The overflow for the OSD tank is the grates located on the OSD tank. This will provide a visual indicator of tank blockages. A high-level overflow and an overflow weir are 2 separate overflow measures. The design has been updated to include 1 overflow measure: a high-level discharge pipe, provided underground as requested by the council, and shown on sheet CI-0350. Providing 2 overflow measures is excessive and not required by Australian Standards or the Ku-ring-gai Council Water Management DCP Part 24. We believe 1 overflow measure is sufficient
O. No supporting hydraulic calculation submitted to demonstrate compliance with Part 24C.3-4 of the Ku-ring-gai DCP that requires rainwater retention and re-use to be provided to achieve a 50% reduction in runoff days. A water balance model has not been submitted.	Refer to section 5.3 for modelling information and details
P. No stormwater disposal system has been submitted for the basement levels.	Basement drainage will not affect the building's ability to be constructed. Typically, this is provided by the Hydraulic engineer at detailed design. To be conditioned post-approval
Q. The pump-out tank is to be designed based on the 100-year 2-hour storm as required under Part 24B.5 of the KDCP. Design details of the tank and supporting calculations must be shown on the stormwater plan with the rising main conveyed to the OSD tank.	See the reply to part p.
R. Water quality measures are to be indicated on the drawings showing the Ocean Protect 'OceanGuards'.	Written clarification provided on the plan to highlight all external pits to be installed with OceanGuards on sheet CI-0200 and CI-0201

S. Provide invert levels and surface levels of all stormwater pits within the site.	Surface levels and invert levels can be provided on sheet CI-0200 and CI-0201
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1.1 Relevant Documentation

The following documentation has been used as a reference in the preparation of this report and the stormwater concept plans:

- Architectural Drawings by Plus Architecture dated June 2024
- Detailed Survey by ATS Land & Engineering Surveyors Pty Ltd dated March 2024
- Ku-ring-gai Council Development Control Plan 2024 – Part 24 Water Management
- Australian Rainfall and Runoff Guidelines 2019

2. Existing Scenario

2.1 Existing Scenario

The subject site is located at 46-50 Cowan Road, St Ives, where the site has undergone demolition of the existing buildings. The site area is approximately 5,903m² and forms part of the local government area of the Ku-ring-gai Council. The site is bounded by Cowan Road to the East, residential buildings to the North and South, and Pymble Golf Club to the West.



Figure 1: Site Aerial Image (Nearmap, 28/05/2025)

2.2 Existing Site Drainage Description

The survey conducted by ATS Land & Engineering Surveyors Pty Ltd in March 2024 does not show any existing site drainage, as the land is currently clear of buildings. However, the survey indicates the presence of a drainage easement along the western boundary, which the proposed development intends to use to connect to the existing drainage network located near the easement.

2.3 Existing Land & Flooding

The intended site is currently excavated and clear of any existing structures. Ku-ring-gai Council's flood maps indicate that the site is unaffected by flooding. This information was obtained from the Council's online mapping portal, as illustrated in Figure 2.



Figure 2:Flood extent - Ku-ring-gai Council's online mapping portal

3. Proposed Development

3.1 Design Proposal

The proposed development at 46-50 Cowan Road, St Ives, involves constructing a residential building for Traders in Purple, with a lower ground level and two basement levels underground. Access to the development will be via a driveway situated at the south-east region of the site, allowing vehicles to reach the underground basement levels beneath the building.



Figure 3: Proposed Upper Ground Floor Plan (Plus Architecture)

4. Design Criteria

4.1 Stormwater Policies and Objectives

An integrated stormwater management and water sensitive urban design concept has been prepared for the development. The strategy has been developed to meet the following objectives and comply with:

- Ku-ring-gai Council Development Control Plan (DCP)2024 – Part 24 Water Management

On-Site Detention (OSD) is required for the proposed development, as outlined by Ku-ring-gai Council's DCP (2024) Part 24. The development must comply with Permissible Site Discharge (PSD) and Site Storage Requirements (SSR) as specified in parts 24R.2, 24R.3, and 24R.4. Refer to Section 5 for details.

To meet these requirements, the proposed OSD tank must:

- Limit the total discharge from the site.
- Minimise discharge by bypassing the site's OSD tank.
- Implement Water Sensitive Urban Design (WSUD) products to control and enhance the quality of the water discharging from the site.

4.2 Proposed Drainage Design

In accordance with Ku-ring-gai Council's DCP (2024) Part 24R.3, the PSD and SSR rates are determined in accordance with the proposed site's location in the relevant catchment. The site is located within the Cowan Creek (BC1) Catchment Area, and therefore, the SSR and PSD rates have been determined based on the figures noted for the BC1 catchment as shown in Figure 4.

WATER MANAGEMENT		24R.3 PERMITTED SITE DISCHARGE AND MINIMUM ON-SITE DETENTION STORAGE VOLUMES	
		The codes in the table below are found in <i>Part 25R.1 of this DCP</i>	
Code	Catchment Area	Permitted Site Discharge (l/s/ha)	Equivalent Minimum OSD Storage Volume (m ³ /ha)
AC1	Avondale Creek	102	398
AC2	Avondale Creek	166	241
BB1	Blackbutt Creek	141	302
BB2	Blackbutt Creek	166	241
BC1	Cowan Creek	96	414
BC2	Cowan Creek	166	241
BG1	Blue Gum Creek	147	287
BG2	Blue Gum Creek	166	241

Figure 4: Excerpt from Ku-ring-gai Council's DCP (2024)- Part 24R.3- PSD & SSR

4.3 Water Sensitive Urban Design

The main objectives for stormwater quality are indicated in Part 24C.6 of Ku-ring-gai Council's DCP 2024-Stormwater Quality Control. The technical requirements are presented below:

- Achieve a minimum of 70% retention of the Gross Pollutants (GP) average annual load.
- Achieve a minimum of 85% retention of the Suspended Solids (TSS) average annual load.
- Achieve a minimum of 65% retention of the Total Phosphorus (TP) average annual load.
- Achieve a minimum of 45% retention of the Total Nitrogen (TN) average annual load.

Methods to achieve the above treatment targets can include the use of proprietary products, rainwater reuse, raingardens, detention basins or treatment further downstream within the external stormwater network. The proposed development catchments are shown plan in Table 2.

Table 1: Summary of Catchment Plan Areas

Catchment Areas	<i>m</i> ²
Roof Catchment	1,434
Paving Bypassing	26
Paving to Treatment	1,702
Landscape Bypassing	458
Landscape to Treatment	2,283
Total	5,903

5. Analysis Results

5.1 On-Site Detention

The onsite detention tank has been sized in accordance with Section 4.2. As the proposed development is located within the BC1 Catchment, it must comply with the PSD and SSR requirements specified in Council's DCP (2024), Part 24R.3. Therefore, the development is required to match the following criteria:

PSD: 96 L/s/ha

SSR: 414 m³/ha

The proposed development includes the design of an OSD tank located in the basement along the western side of the site. The site is proposed for development with OSD tanks to restrict flow from the site. The tanks have been designed to allow for 1,050 m² to bypass the tank, in line with council requirements. The OSD tanks must have a volume of 146.65 m³ and a PSD rate of 25.5 l/s. The proposed OSD tank has a volume of 150m³, and a PSD rate of 25 L/s. Refer to Appendix C for civil plans. Attached also is the council checklist to show the PSD and SSR rates required by the council

5.2 Water Sensitive Urban Design Implementation

The water quality modelling software MUSIC v6.3 was used to analyse the treatment train's performance. Figure 5 below shows the MUSIC node-and-link diagram used to describe the proposed treatment train. The model has been built to assess the adequacy of the proposed stormwater treatment measure and ensure that stormwater quality meets the objectives prior to stormwater runoff leaving the site.

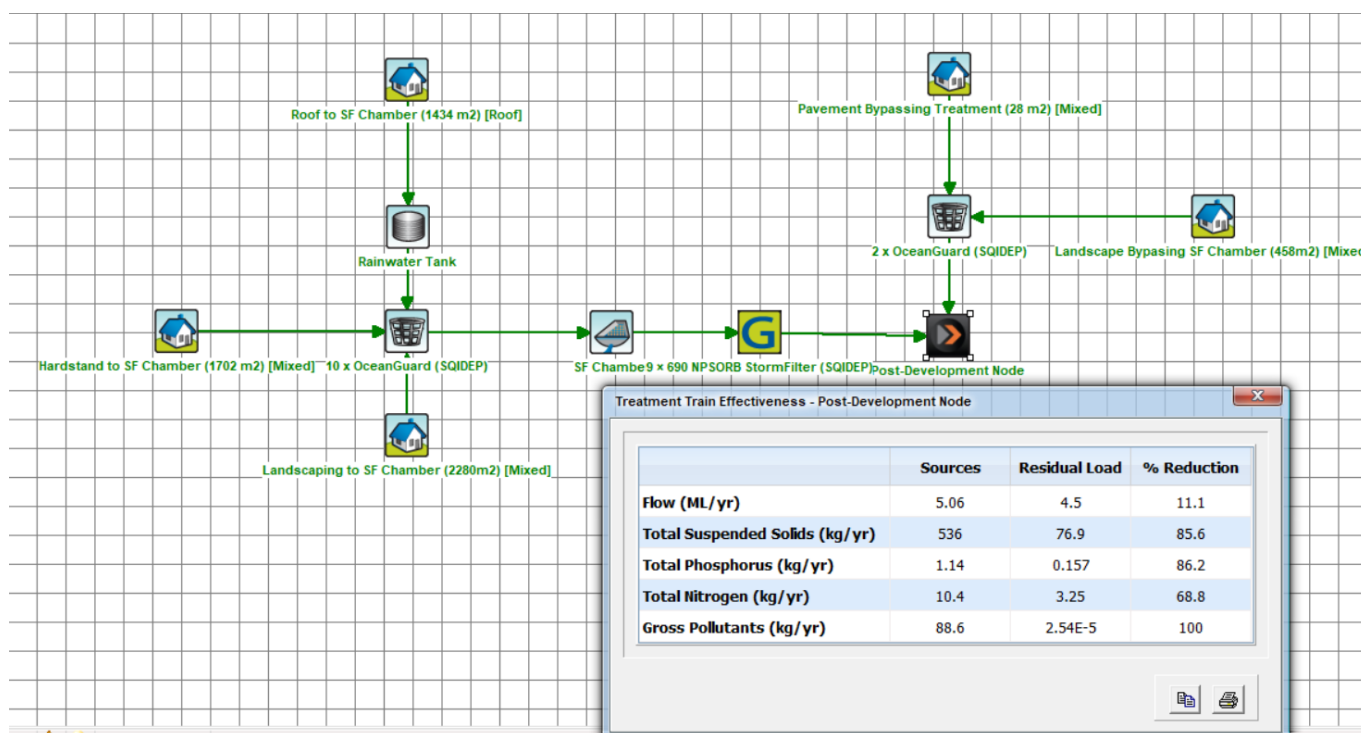


Figure 5: MUSIC Model and Results

The results of the analysis showed the treatment train would achieve the water quality targets set out in Council's Stormwater Management Policy - Section 7. Table 3 below displays the effectiveness of the treatment train for the primary and secondary treatment. To meet the requirements set out by Council, the following treatment devices

were implemented: 11 x OceanGuards and 9 x 690 NP sorb (MCC) StormFilters within a 5m² chamber from Ocean Protect or equivalent product. The water quality model created using MUSIC software provides an indication of the pollutant removal rates expected when a treatment train of water quality measures is applied to the proposed layout of the development.

Table 2: MUSIC Model Results

Pollutant	Prior Treatment (kg/yr.)	Post Treatment (kg/yr.)	Percentage Reduction Achieved (%)	Water Quality Objective (%)
Gross Pollutants (GP)	88.6	2.54E-5	100	70
Total Suspended Solids (TSS)	536	76.9	85.6	85
Total Phosphorus (TP)	1.14	0.157	86.2	65
Total Nitrogen (TN)	10.4	3.25	68.8	45

5.3 Rainwater Reuse and Water Balance Modelling

Through the reuse of collected rainwater, the proposed demand on potable water resources is reduced. The proposed Development will capture roof water from the building roof area (1434 m²). This will be conveyed to a rainwater tank, and its re-use will primarily be for irrigation. A water balance for the proposed reuse system has been completed to assess its effectiveness and efficiency. The water balance model was constructed using the MUSIC software package with the following inputs:

- Ku-ring-gai Council's MUSIC Link data
- Annual re-use Demand = 1096 kL (2741m² total irrigation area x 0.4 kL/m)

Using the above-determined non-potable demand, the MUSIC model determined that the rainwater tank has an estimated efficiency of 50%. This resulting efficiency complies with the minimum 50% as per the Council's DCP. A MUSICLink report is provided in Appendix D.

	Flow (ML/yr)	TSS (kg/yr)	TP (kg/yr)	TN (kg/yr)	GP (kg/yr)
Flow In	1.65	42.73	0.25	3.64	40.07
ET Loss	0.00	0.00	0.00	0.00	0.00
Infiltration Loss	0.00	0.00	0.00	0.00	0.00
Low Flow Bypass Out	0.00	0.00	0.00	0.00	0.00
High Flow Bypass Out	0.00	0.00	0.00	0.00	0.00
Pipe Out	0.75	18.00	0.11	1.65	0.00
Weir Out	0.34	8.19	0.05	0.75	0.00
Transfer Function Out	0.00	0.00	0.00	0.00	0.00
Reuse Supplied	0.56	9.94	0.08	1.16	0.00
Reuse Requested	1.11	0.00	0.00	0.00	0.00
% Reuse Demand Met	50.35	0.00	0.00	0.00	0.00
% Load Reduction	33.88	38.72	34.76	34.20	100.00

Figure 5: Node Balance MUSIC

6. Conclusion

BG&E Pty Ltd (BG&E) has been engaged by Traders in Purple Pty Ltd to prepare a Stormwater Report for the proposed development of a residential building at 46-50 Cowan Road, St Ives, NSW 2075. This report outlined the methodology adopted and associated results of:

- Requirement of an on-site detention tank; and
- Water sensitive urban design.

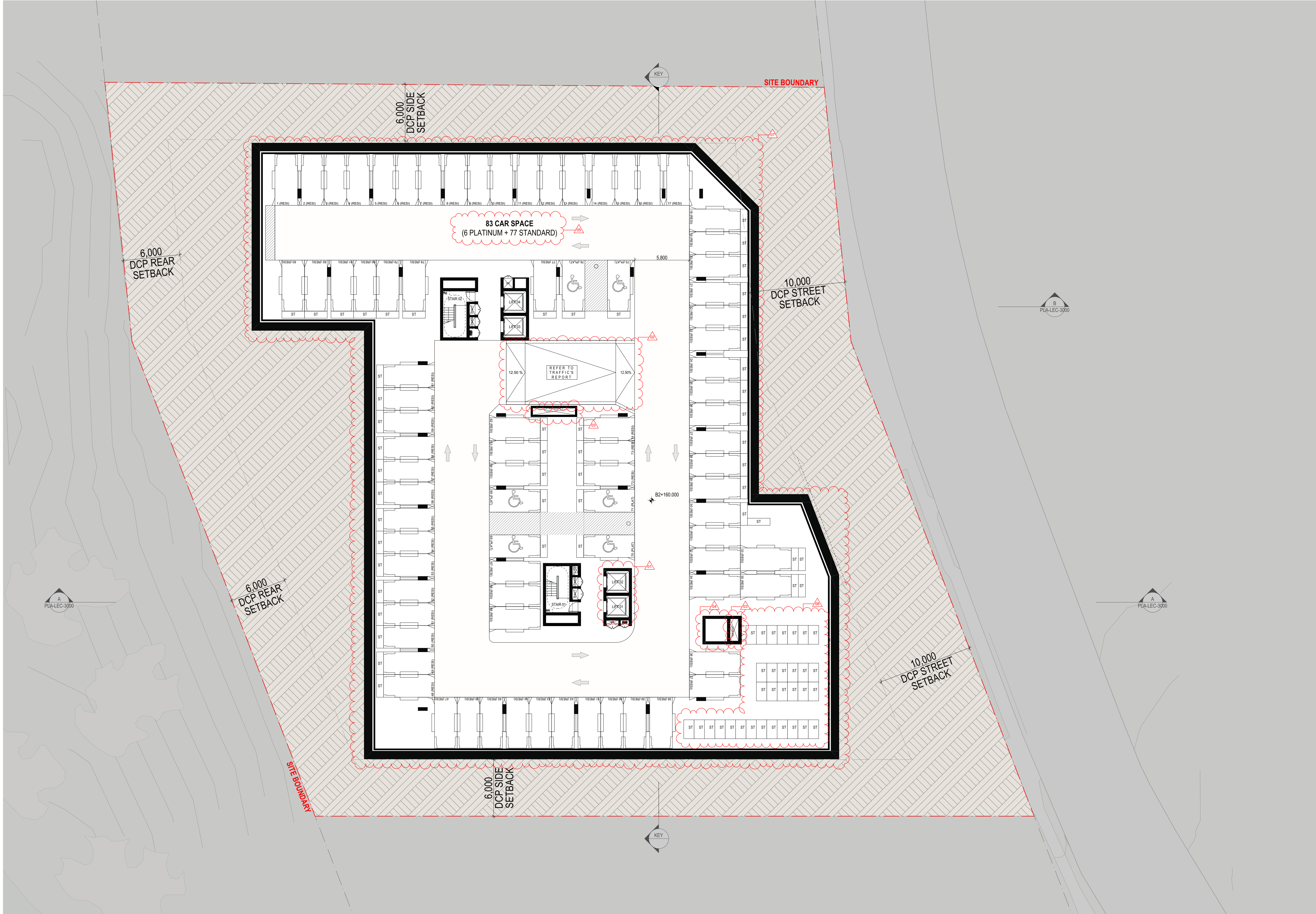
As outlined in this report, the following key items have been identified:

- The proposed site will drain to the existing drainage adjacent to the drainage easement along the western boundary of the site.
- The site is not affected by flooding.
- A detention tank is required for this proposed development as required by Council.
- The proposed development contains an OSD tank with a volume of 150m³, exceeding the required 146.63m³ storage requirement.
- The OSD tank has been designed with orifice plates to limit the flow from the site to 25.5 L/s.
- Water-sensitive urban design measures are required as part of the site's development. This is achieved using proprietary products, including:
 - A 19 kL rainwater tank.
 - 11 Oceanguard pit inserts.
 - 9 x 690 NPsorb (MCC) StormFilters from Ocean Protect, or equivalent products, installed according to the manufacturer's instructions.

These measures will need to be finalised and rationalised during the detailed design phase based on final area calculations

Appendices

Appendix A - Architectural Plans



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GENERAL FLOOR PLAN - BASEMENT
02

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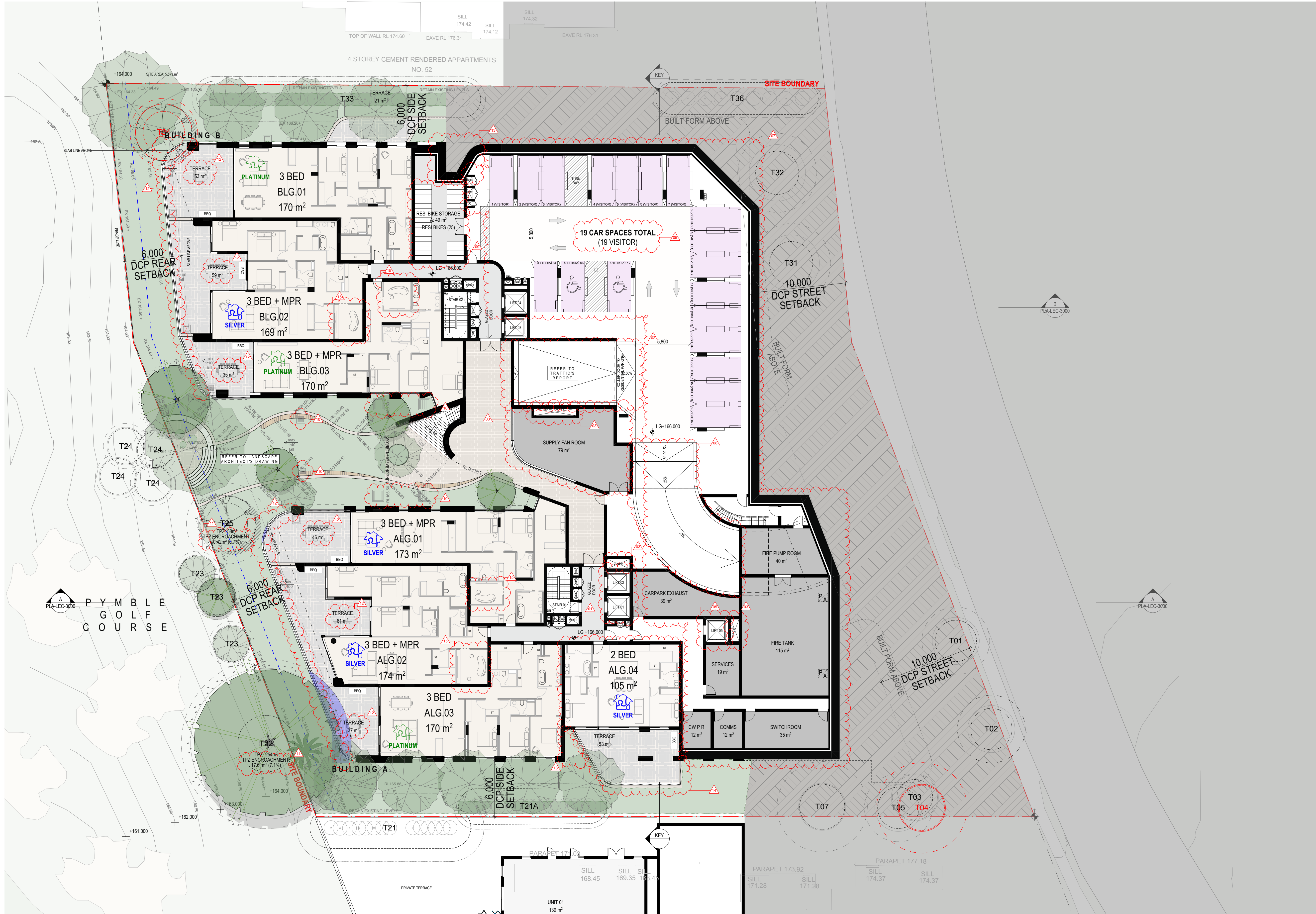
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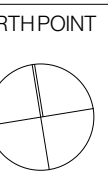
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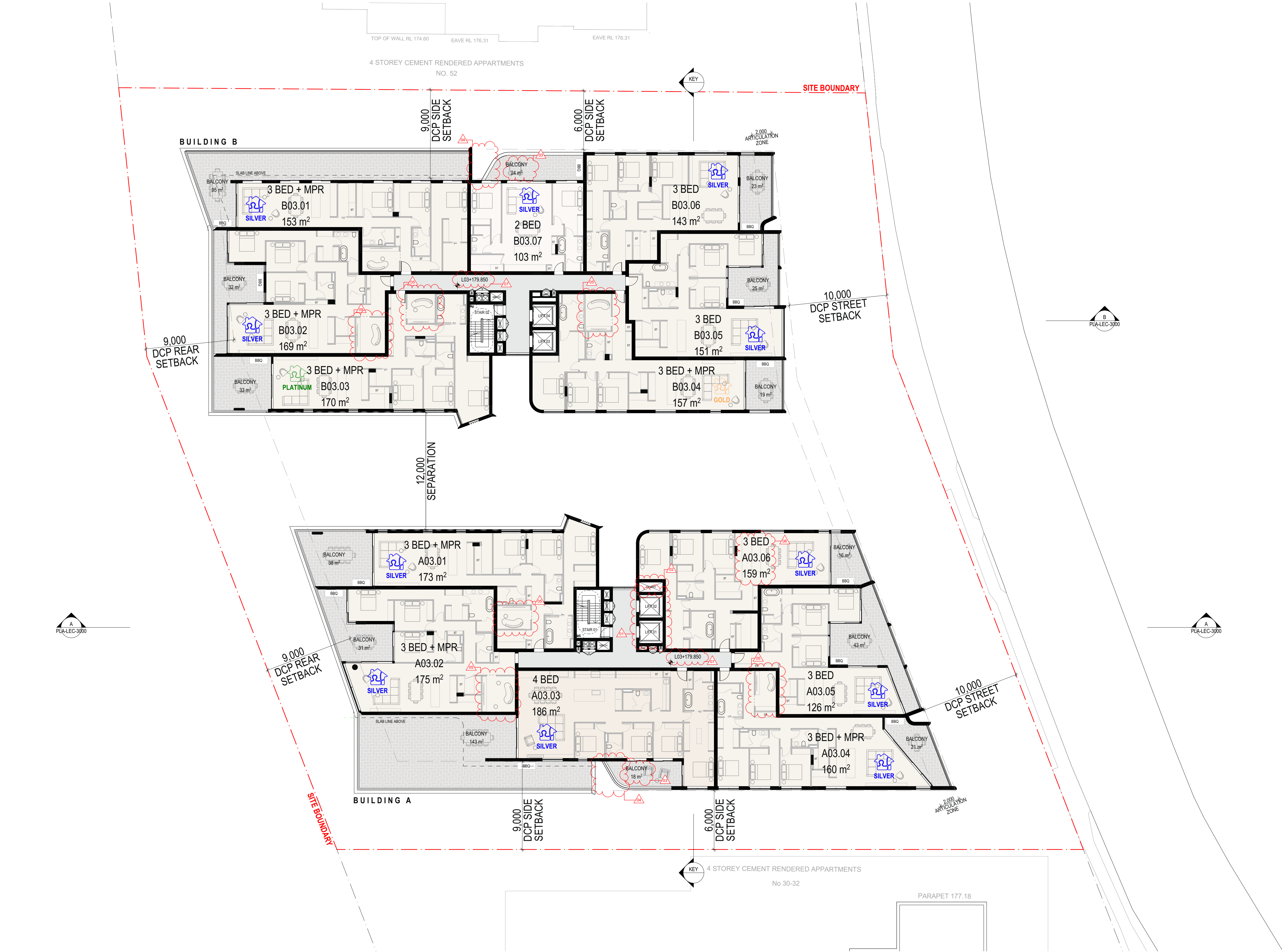
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STRUCTURAL
BG&E (02) 9770 3300
LANDSCAPE
LOCI 0401 271 241
ACCESS/DDA
ACCESSIBLE BUILDING SOLUTIONS 0450 334 995

FACADEENGINEER
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ACOUSTIC
ACOUSTIC LOGIC (02) 9299 8058
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ASON GROUP (02) 9083 6601

CIVIL
BG&E (02) 9770 3300
BCA
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WASTE
COLLIERS (03) 9140 6074

BUILDING SERVICES
NEUPRON 0401 222 862
BASIX
JENSEN HUGHES (02) 9411 5360
FIRE ENGINEER
INCODE SOLUTIONS 0415 508 019

NORTH POINT

SCALE
1200 @ A1 Size

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PLUS STUDIO

PROJECT TITLE

46-50 Cowan Road, St Ives

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DRAWING TITLE

GENERAL FLOOR PLAN - LEVEL 03

PROJECT NUMBER

20819

DRAWING NUMBER

PLA-LEC-1003

STAGE

LEC

REVISION

WIP



LEGEND

- LHA PLATINUM
- LHA GOLD
- LHA SILVER

REV	DATE	REVISION DESCRIPTION	BY	CHK
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Traders In Purple

ISSUE TITLE

LEC CASE NUMBER
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ACCESS/DDA
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NORTH POINT

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SCALE
1200 @ A1 Size

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DRAWING TITLE

GENERAL FLOOR PLAN - LEVEL 04

PROJECT NUMBER

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DRAWING NUMBER

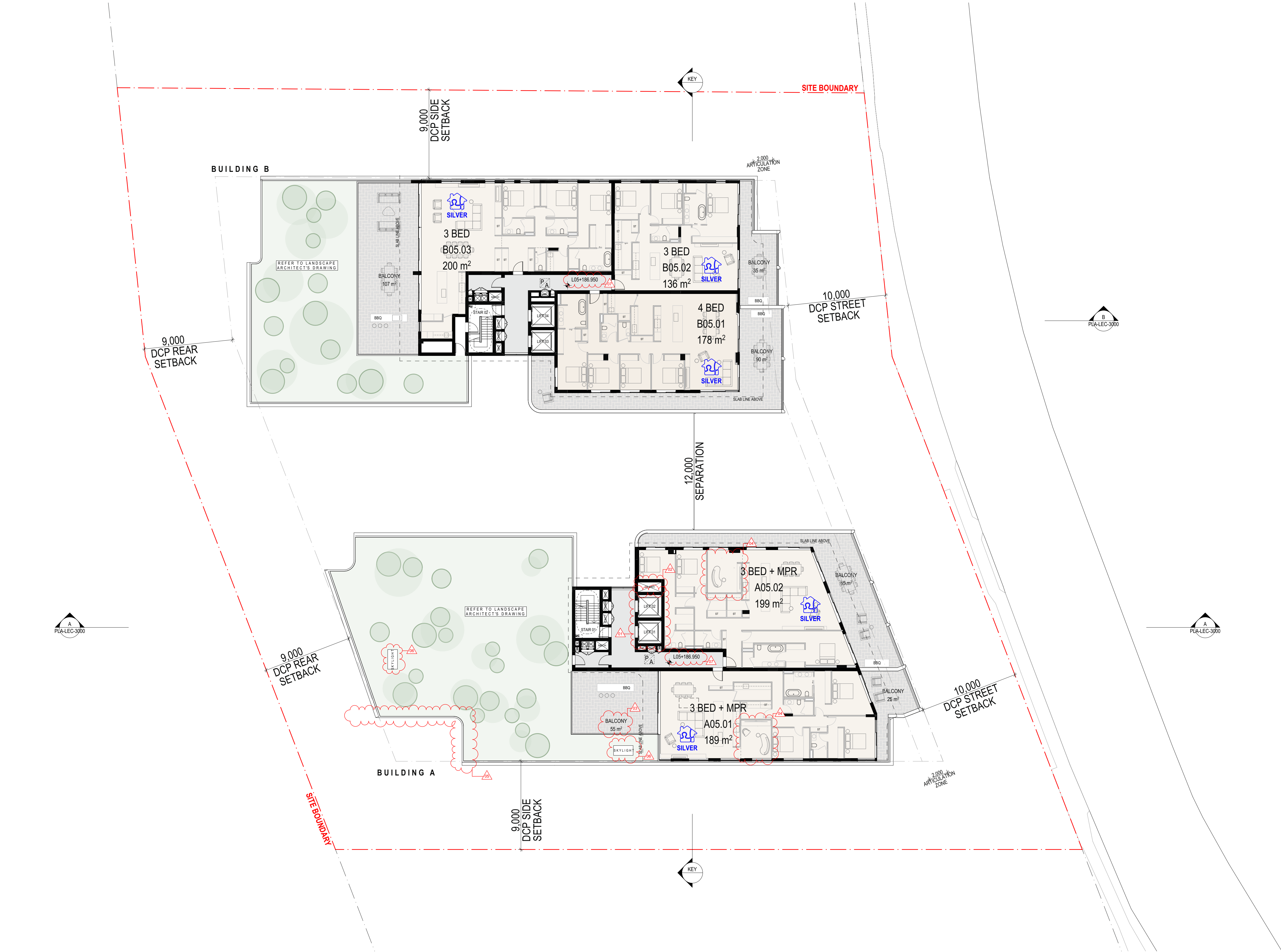
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NORTH POINT

SCALE

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LEGEND

LHA PLATINUM

LHA GOLD

LHA SILVER

DRAWING TITLE

GENERAL FLOOR PLAN - LEVEL 05

PROJECT NUMBER

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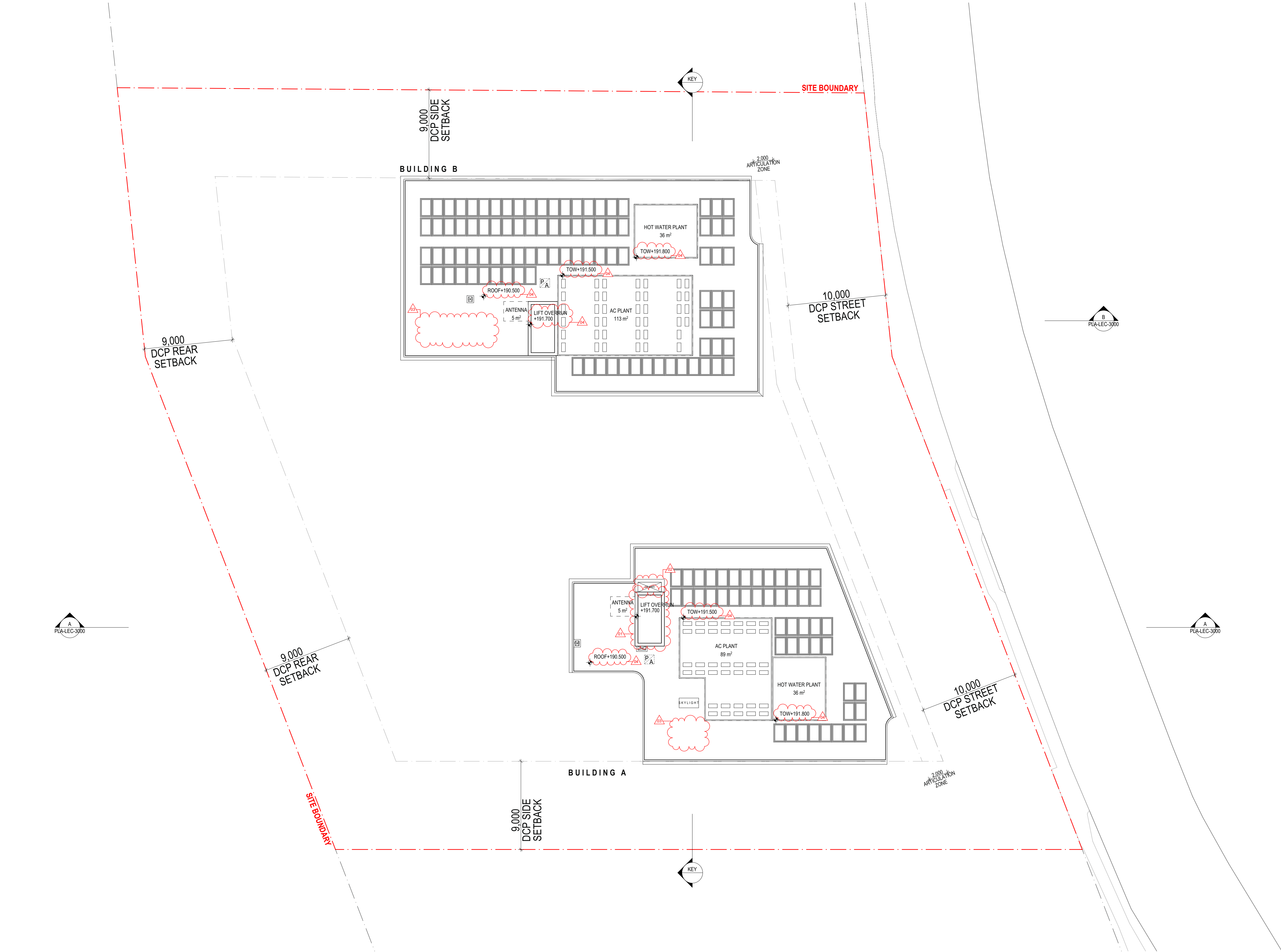
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IC

DRAWING TITLE

GENERAL FLOOR PLAN - ROOF PLAN

PROJECT NUMBER

20819

DRAWING NUMBER

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STAGE

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REVISION

WIP

Appendix B - Survey

Appendix C - Civil Drawings

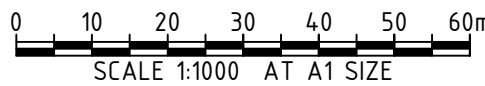
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LGA: CITY OF SYDNEY COUNCIL
ISSUED FOR APPROVAL



LOCALITY PLAN
SCALE 1:1000

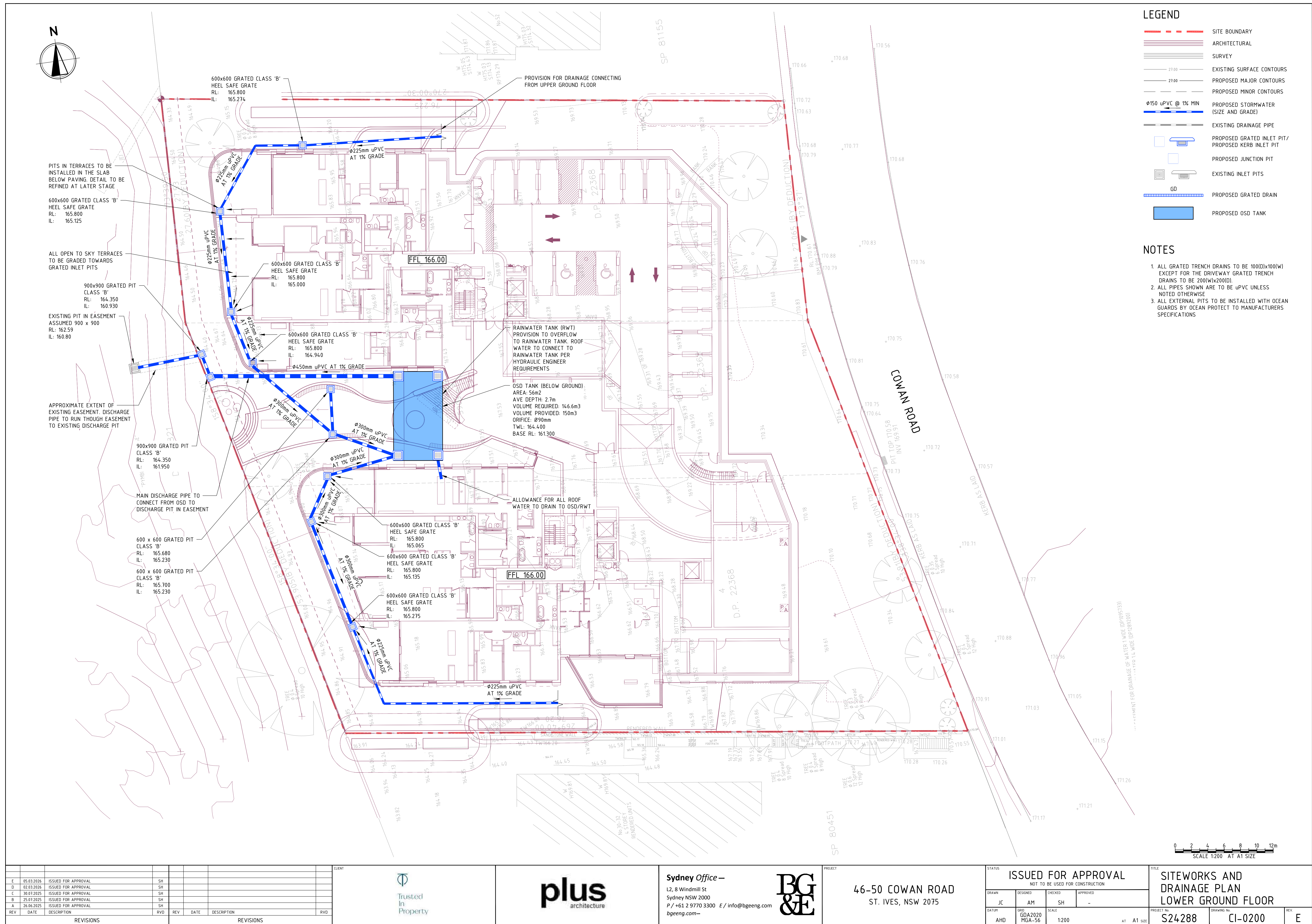
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CI-0201	SITEWORKS AND DRAINAGE PLAN UPPER GROUND FLOOR
CI-0270	DRIVEWAY SECTION KERB RETURNS SHEET 1
CI-0271	DRIVEWAY SECTION KERB RETURNS SHEET 2
CI-0300	CATCHMENT PLAN
CI-0340	DRAINAGE DETAILS
CI-0350	OSD PLAN, SECTIONS AND DETAILS
CI-0700	EROSION AND SEDIMENT CONTROL PLAN
CI-0710	EROSION AND SEDIMENT CONTROL DETAILS

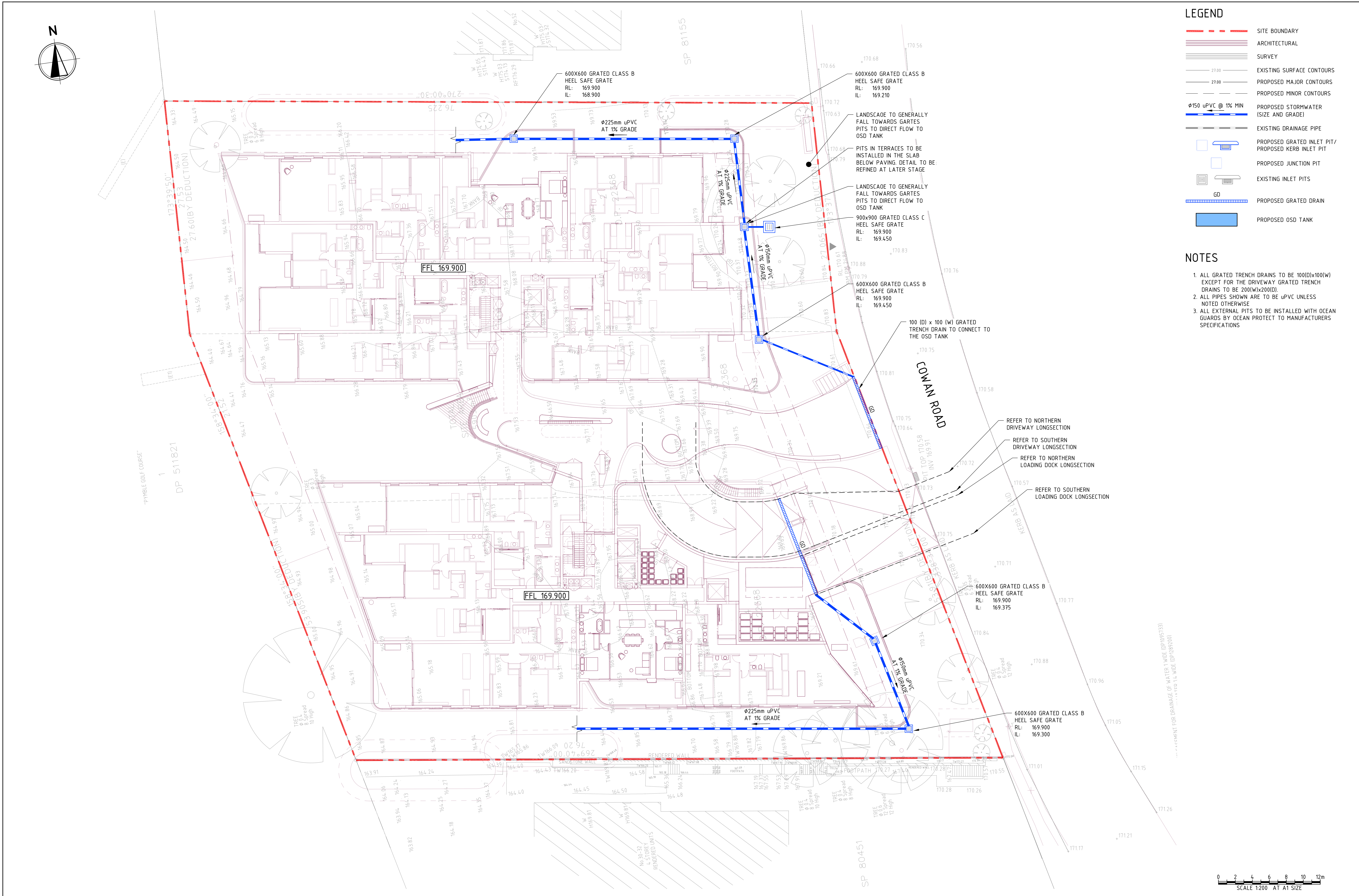


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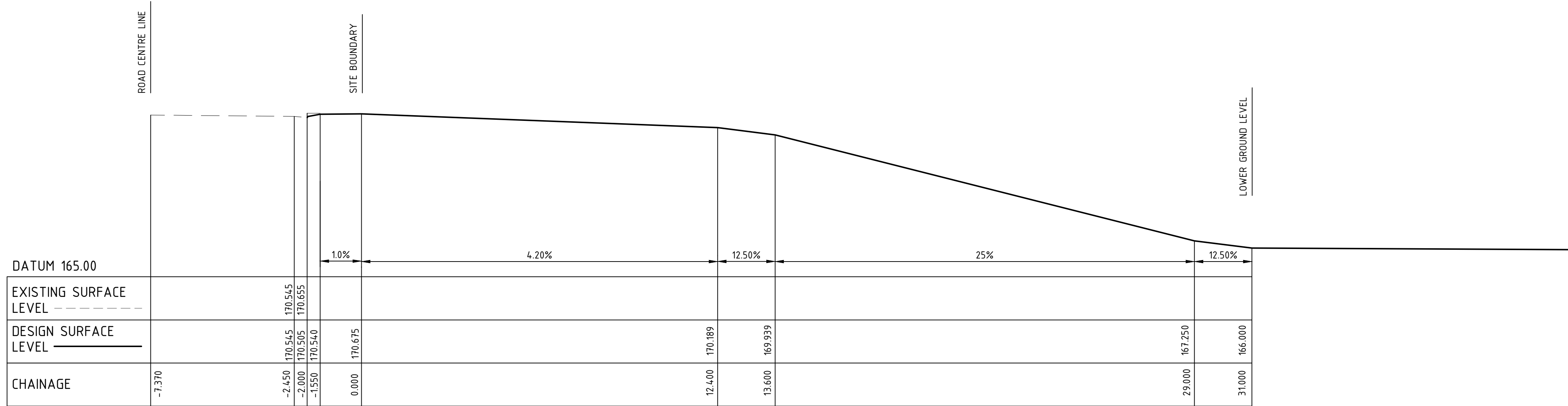
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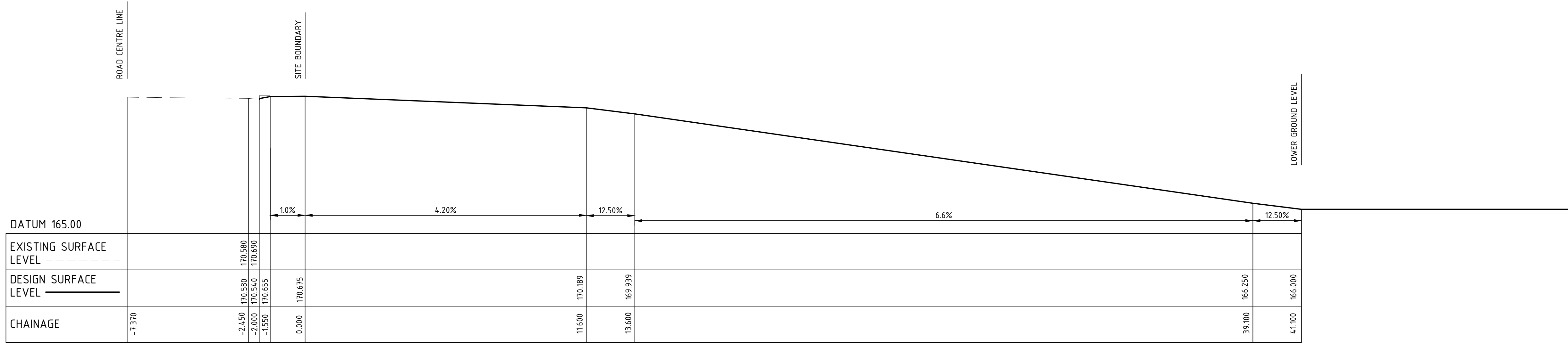
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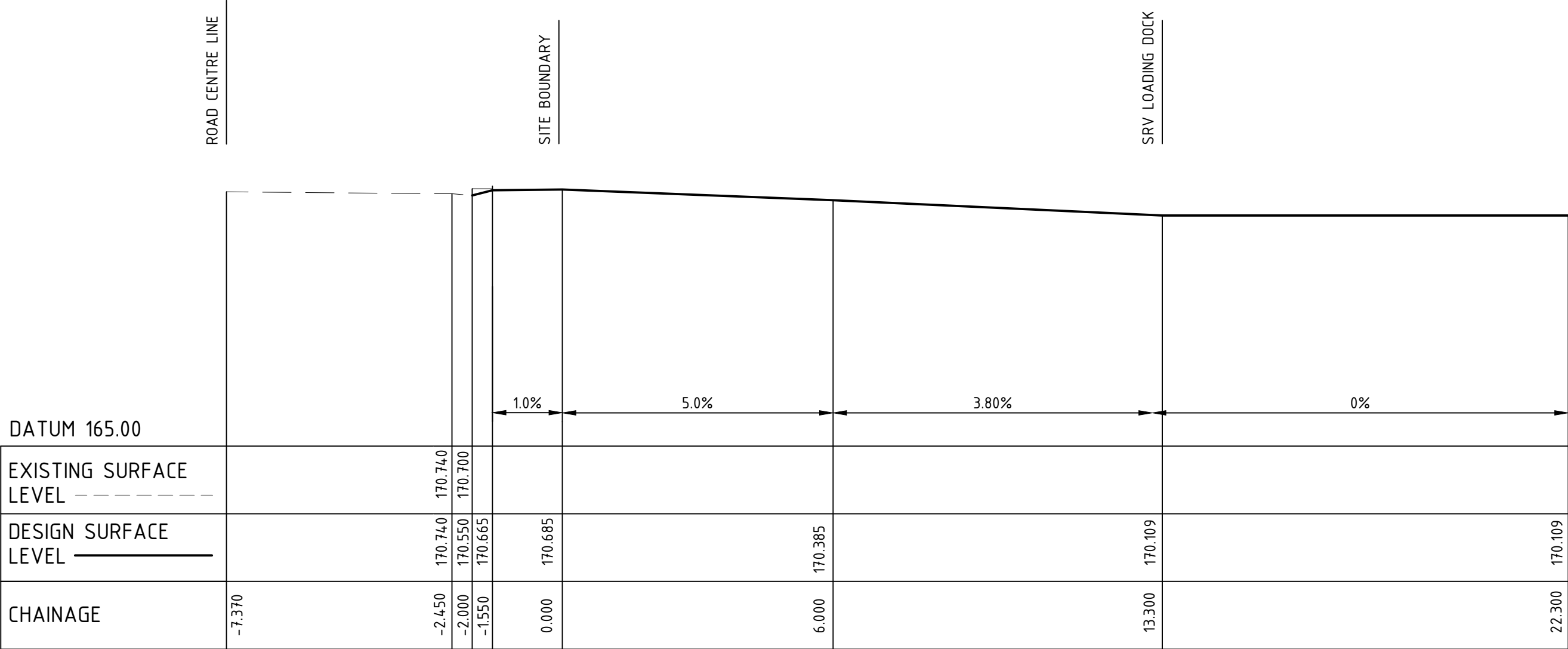
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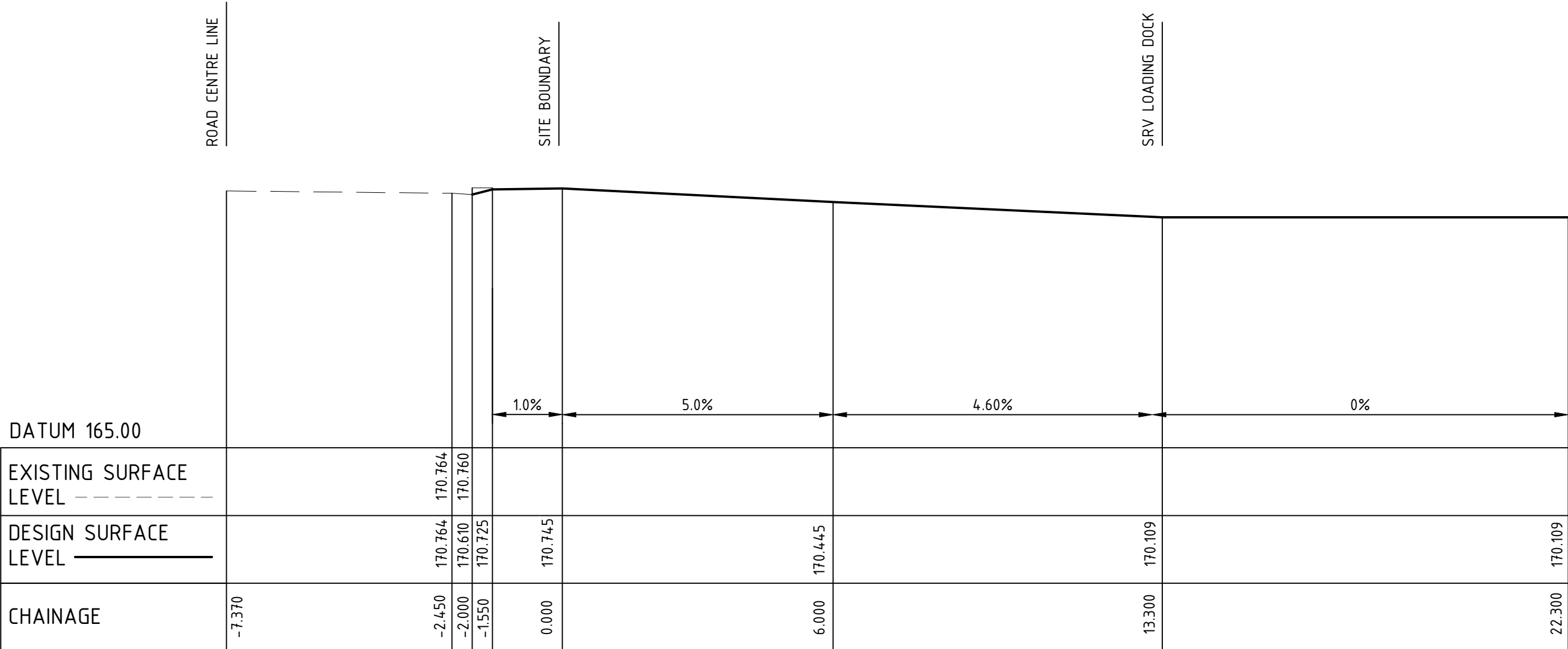
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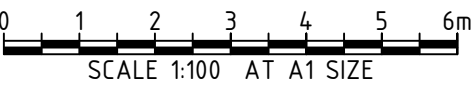
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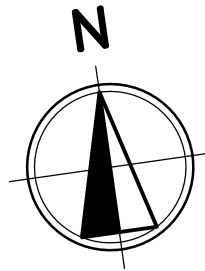


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LOADING DOCK SOUTHERN LONGITUDINAL SECTION





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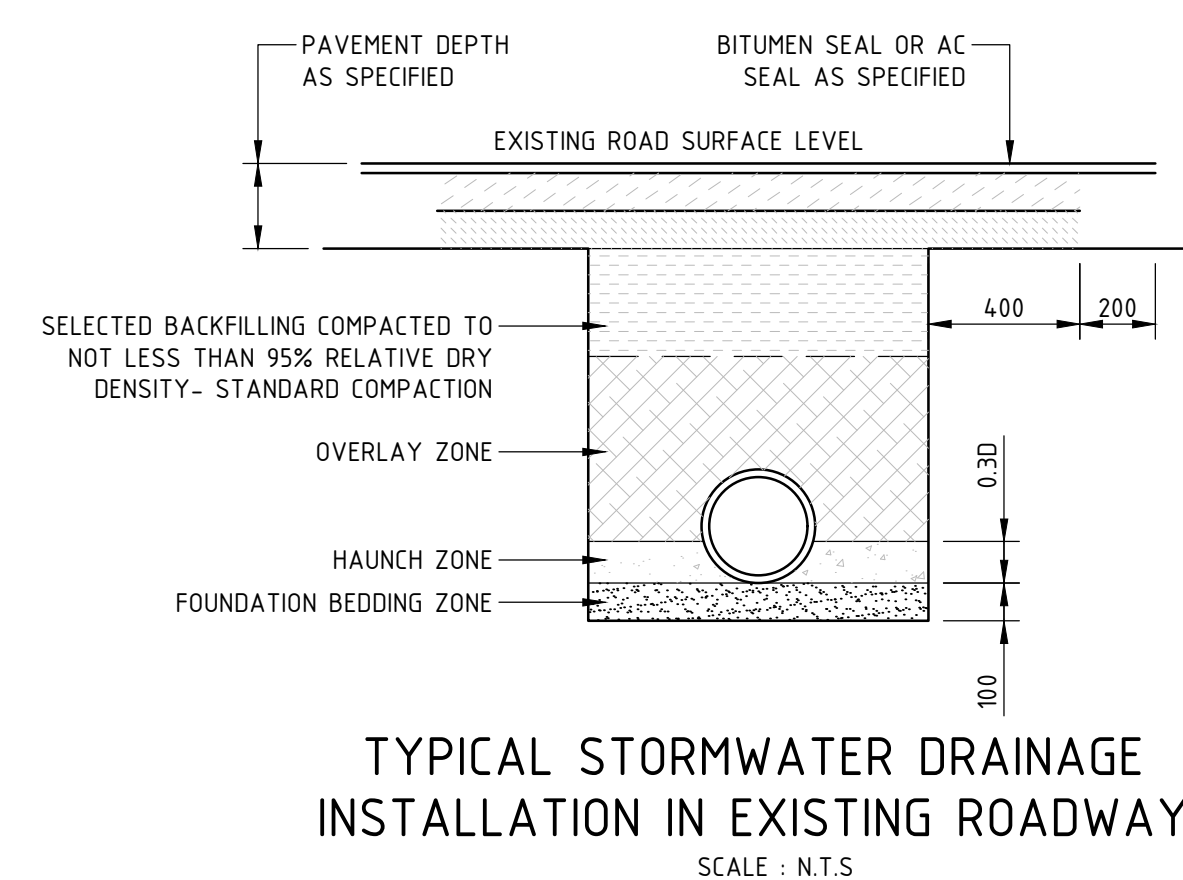
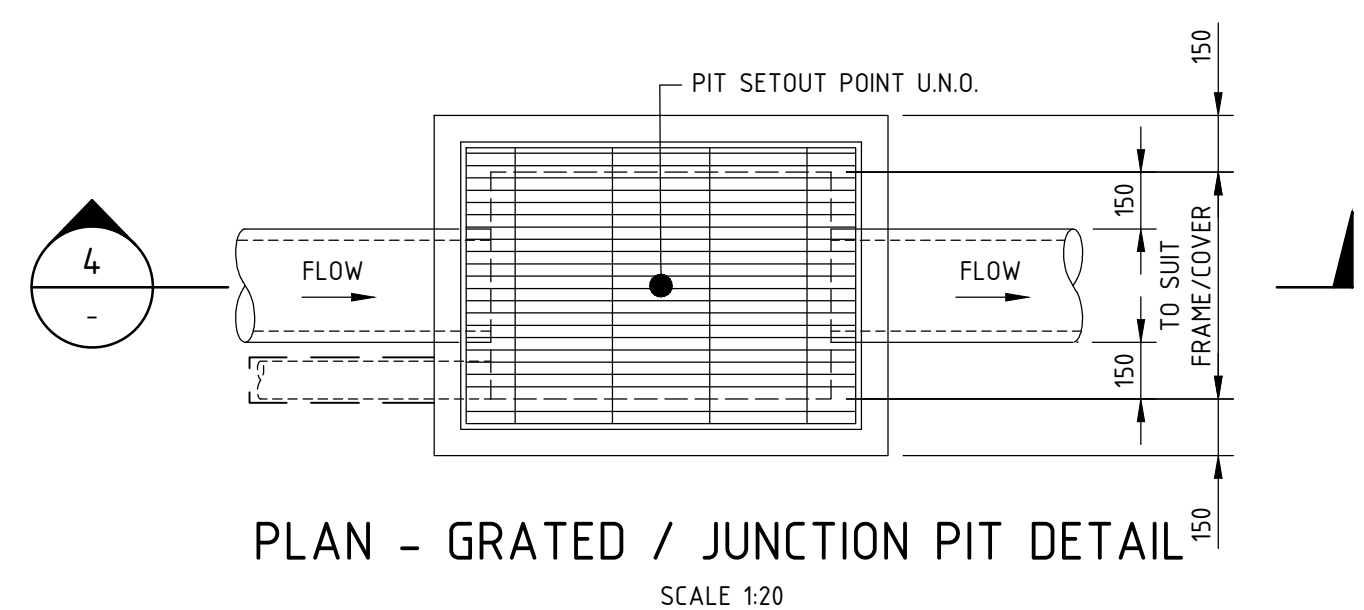
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Sydney NSW 2000
P / +61 2 9770 3300 E / info@bgeeng.com
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	PROJECT
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46-50 COWAN ROAD
ST. IVES, NSW 2075

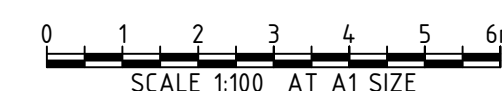
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AHD	GDA2020 MGA-56	AS SHOWN	
			AT A1 S1

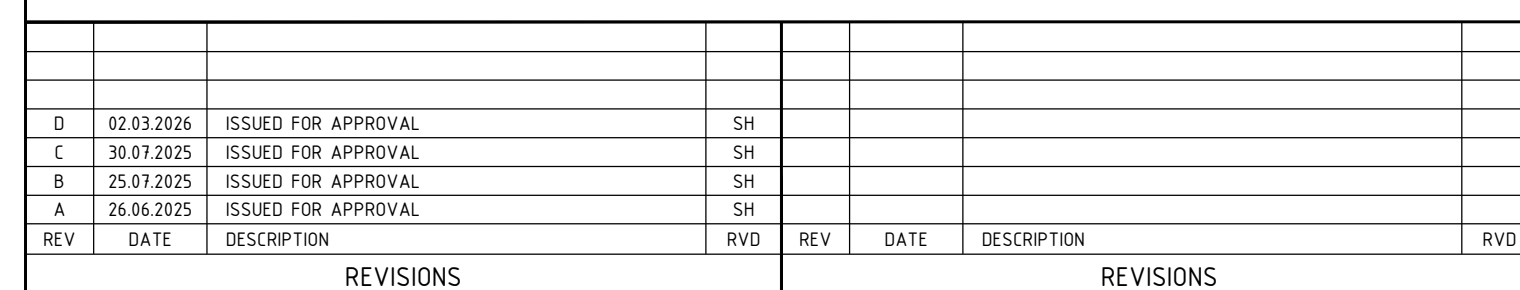
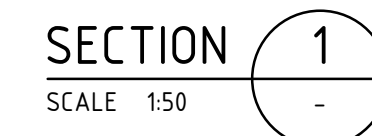
TITLE	DRAINAGE DETAILS
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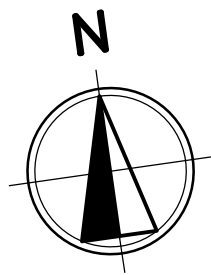
PROJECT No. S24288

DRAWING No.	CI-0340
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REV.	
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LEGEND

- SITE BOUNDARY
- SURVEY
- CONSTRUCTION VEHICLE ENTRANCE/EXIT
- SEDIMENT FENCE
- SECURITY FENCE
- LOCKABLE CHAINWIRE GATE
- GEOTEXTILE INLET FILTER
- MESH & GRAVEL INLET FILTER
- SUGGESTED TEMPORARY STOCKPILE LOCATION

NOTES

- REFER DRAWING CI-0710 FOR EROSION AND SEDIMENT CONTROL DETAILS.
- CONTRACTOR TO ENSURE SITE DRAINAGE IS NOT ADVERSELY IMPACTED DURING CONSTRUCTION.
- CONTRACTOR TO PROVIDE 'SANDBAG SEDIMENT TRAP' TO ALL PAVED/ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
- CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
- INSTALL AND MAINTAIN SANDBAG FILTERS ACROSS ALL PAVEMENT INTERFACES.

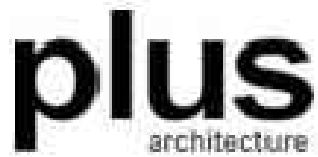
SEDIMENT BASIN CALCULATION
CATCHMENT AREA: 1,475m²
SOIL TYPE D
VSZ = 10 x CV x A x R
= 10 x 0.35 x 0.1475 x 32.8
= 17 m³
VSS = VSZ x 0.5
= 8.5 m³

VREQUIRE, VSB = 25.5m³

0 2 4 6 8 10 12m
SCALE 1:200 AT A1 SIZE

REV	DATE	DESCRIPTION	REVISIONS	RVD	REV	DATE	DESCRIPTION	REVISIONS	RVD
D	02.03.2026	ISSUED FOR APPROVAL	SH						
C	30.07.2025	ISSUED FOR APPROVAL	SH						
B	25.07.2025	ISSUED FOR APPROVAL	SH						
A	28.06.2025	ISSUED FOR APPROVAL	SH						

CLIENT



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bgeeng.com



PROJECT

46-50 COWAN ROAD
ST. IVES, NSW 2075

STATUS

ISSUED FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

DRAWN	DESIGNED	CHECKED	APPROVED
JC	AM	SH	-
DATUM	GRID	SCALE	AT
AHD	GDA2020 MGA-56	1:200	A1 SIZE

TITLE

EROSION AND SEDIMENT
CONTROL PLAN

PROJECT No.	DRAWING No.	REV.
S24288	CI-0700	D

Appendix D - MUSIC Link



MUSIC-link Report

Project Details		Company Details			
Project:	46-50 Cowan Road St Ives	Company:	BG&E		
Report Export Date:	2/03/2026	Contact:	Abrar Mohammed		
Catchment Name:	LEC DA	Address:	8 Windmill St, Millers Point NSW 2000		
Catchment Area:	0.59ha	Phone:	+61 2 9770 3333		
Impervious Area*:	53.55%	Email:	abrar.mohammed@bgeeng.com		
Rainfall Station:	66062 SYDNEY				
Modelling Time-step:	6 Minutes				
Modelling Period:	1/01/1963 - 31/12/1993 11:54:00 PM				
Mean Annual Rainfall:	1275mm				
Evapotranspiration:	1261mm				
MUSIC Version:	6.4.0				
MUSIC-link data Version:	6.41				
Study Area:	Ku-ring-gai Council				
Scenario:	Ku-ring-gai				
* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes					
Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Post-Development Node	Reduction	Node Type	Number	Node Type	Number
Flow	11.1%	Sedimentation Basin Node	1	Urban Source Node	5
TSS	85.6%	Rain Water Tank Node	1		
TP	86.2%	GPT Node	2		
TN	68.8%	Generic Node	1		
GP	100%				
Comments					
Water Quality Targets Achieved					



Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	10 x OceanGuard (SQIDEP)	Hi-flow bypass rate (cum/sec)	None	None	0.2
GPT	2 x OceanGuard (SQIDEP)	Hi-flow bypass rate (cum/sec)	None	None	0.02
Post	Post-Development Node	% Load Reduction	None	None	11.1
Post	Post-Development Node	GP % Load Reduction	70	None	100
Post	Post-Development Node	TN % Load Reduction	45	None	68.8
Post	Post-Development Node	TP % Load Reduction	65	None	86.2
Post	Post-Development Node	TSS % Load Reduction	85	None	85.6
Sedimentation	SF Chamber	% Reuse Demand Met	None	None	0
Sedimentation	SF Chamber	High Flow Bypass Out (ML/yr)	None	None	0
Urban	Hardstand to SF Chamber (1702 m2)	Area Impervious (ha)	None	None	0.17
Urban	Hardstand to SF Chamber (1702 m2)	Area Pervious (ha)	None	None	0
Urban	Hardstand to SF Chamber (1702 m2)	Total Area (ha)	None	None	0.17
Urban	Landscape Bypassing SF Chamber (458m2)	Area Impervious (ha)	None	None	0
Urban	Landscape Bypassing SF Chamber (458m2)	Area Pervious (ha)	None	None	0.046
Urban	Landscape Bypassing SF Chamber (458m2)	Total Area (ha)	None	None	0.046
Urban	Landscaping to SF Chamber (2280m2)	Area Impervious (ha)	None	None	0
Urban	Landscaping to SF Chamber (2280m2)	Area Pervious (ha)	None	None	0.228
Urban	Landscaping to SF Chamber (2280m2)	Total Area (ha)	None	None	0.228
Urban	Pavement Bypassing Treatment (28 m2)	Area Impervious (ha)	None	None	0.003
Urban	Pavement Bypassing Treatment (28 m2)	Area Pervious (ha)	None	None	0
Urban	Pavement Bypassing Treatment (28 m2)	Total Area (ha)	None	None	0.003
Urban	Roof to SF Chamber (1434 m2)	Area Impervious (ha)	None	None	0.143
Urban	Roof to SF Chamber (1434 m2)	Area Pervious (ha)	None	None	0
Urban	Roof to SF Chamber (1434 m2)	Total Area (ha)	None	None	0.143

Only certain parameters are reported when they pass validation



Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Rain	Rainwater Tank	% Reuse Demand Met	80	None	50.34
Sedimentation	SF Chamber	Notional Detention Time (hrs)	8	12	0.0343
Sedimentation	SF Chamber	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation

Appendix E – Council Checklist

PART 4: On-site Stormwater Detention

4.1 On-site Detention Calculation Sheet

On-Site Detention Calculation Sheet

Address 46-50 Cowan Road, St Ives					
Catchment Detail					
1.	Catchment Name Cowan Street				
2.	Catchment Discharge Rate	0.0096	l/sec/m ²	A	
3.	Catchment Storage Rate	0.0414	m ³ /m ²	B	
Site Details					
4.	Site Area	5904	m ²	60% of site area	3542.40 m ² C
5.	Area(s) not draining to the detention system 1050 m ²				
6.	Total impervious area (roofs, driveways, paving, etc.)	4371	m ²	D	
7.	Impervious area bypassing detention system	1050	m ²	E	
Permitted Site Discharge					
8.	C [3542.40 m ²] x A [0.0096 l/sec/m ²] = 34.01 l/sec Flow 1				
9.	Adjustment for any uncontrolled impervious flow E / D = 0.24 (<0.25) F				
10.	Flow 1 [34.01 l/sec] x F [0.25] = 5.51 l/sec Flow 2				
11.	Flow 1 [34.01] - Flow 2 [5.51] = 28.5 l/sec PSD				
Site Storage Requirement PSD LIMIT 25.5 DUE TO EASEMENT RESTRICTION					
12.	C [3542.40 m ²] x B [0.0414 m ³ /m ²] = 146.65 m ³ SSR1				
13.	If the storage is in a landscaped basin, SSR1 x 1.2 = NA m ³ SSR2				
Outlet Control					
14.	Height difference between top water surface level and the centre of the orifice 2.74 m G				
15.	Orifice Diameter	21.8 x $\sqrt{\frac{PSD}{G}}$	85	mm	OD
PSD = Permitted Site Discharge SSR1 = Site Storage Requirement (except for landscaped basins) SSR2 = Site Storage Requirement (landscaped basins) (Note: Use only SSR1 or SSR2) OD = Orifice Diameter					
Signature			Name		
Qualifications			Date		

At BG&E, we are united by a common purpose – we believe that truly great engineering takes curiosity, bravery and trust, and is the key to creating extraordinary built environments.

Our teams in Australia, New Zealand, South East Asia, the United Kingdom and the Middle East, design and deliver engineering solutions for clients in the Property, Transport, Ports and Marine, Water, Defence, Renewables and Resources sectors.

We collaborate with leading contractors, developers, architects, planners, financiers and government agencies, to create projects for today and future generations.

ABN 67 150 804 603