



MPN
CONSULTING

Stormwater Management Plan

Multi-Residential Development

101-111 Mt. Gravatt Capalaba Road &
30-34 Mascar Street - Upper Mount Gravatt

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Prepared by

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1 > Executive Summary

This stormwater management plan has been commissioned by SCAS Leaf 4 PTY LTD in support of the Development Application for the proposed multi-residential development at 101-111 Mt. Gravatt Capalaba Road & 30-34 Mascar Street, Upper Mount Gravatt.

This report addresses the following engineering aspects at the concept design level:

- Topography
- Stormwater quality management
- Stormwater quantity management
- Erosion and sediment control.



2 > Purpose

This stormwater management plan has been prepared in support of the Development Application for the proposed multi-residential development at 101-111 Mt. Gravatt Capalaba Road & 30-34 Mascar Street, Upper Mount Gravatt.

3 > Introduction

3.1 Project Description

The current proposal involves construction of three (3) new 8 storey residential buildings with two basements. The existing residences on site will be demolished to accommodate the new building. The site is grading from south-eastern corner to north-eastern corner.

The project is delivered in two stages:

- Stage 1 – Construction of two new residential buildings with all the inter-connected basement, on grade parking and scattered landscaping will be constructed as a part of stage 1 development.
- Stage 2 – Construction of remaining building with on grade parking and landscaping will be constructed as a part of stage 2 development.

The proposed development will be accessed via a new crossover off Mascar Street. The basement and car parking will be accessed via an internal driveway. The pedestrian access for tower three will be from Mascar Street and for tower one & two will be via Mt. Gravatt-Capalaba Road. All redundant crossovers /driveways on both Mascar Street and Mt. Gravatt Capalaba Road will be removed and verge reinstated in accordance with Brisbane City Council requirements.

The site will be earthworked and regraded to allow for stormwater discharge to Mt. Gravatt Capalaba Road. The development works will ensure the proposed site are adequately serviced for site services including, water, sewer, and stormwater.

The shoring wall will be constructed along the site boundaries to tie in with adjacent properties.

The residential development is depicted on the architectural plan prepared by VSA Design attached in Appendix A, with excerpt below.



Figure 1 –Architectural Plan (Ground Floor)



4 > Site Characteristics

4.1 Site Location

The site is located at 101-111 Mt. Gravatt Capalaba Road and 30-34 Mascar Street. It is formally known as Lot 9, Lot 10, Lot 11 & Lot 12 on RP70000 and Lot 17 & Lot 18 on RP70001.

The site is bound by Mt. Gravatt Capalaba Road to the north, Mascar Street to the south, and residential properties to the west and east.

The site location is shown in Figure 2 below, with site survey plan attached in Appendix B.



Figure 2 – Site Location



4.2 Topography and Existing Site

The site currently contains existing residential dwellings within three lots and the remaining two lots are open lots with grass covers and trees. The existing residential developments are accessed via Mt. Gravatt Capalaba Road and Mascar Street.

The existing site has a max level of 59.01m AHD in the south-west corner of the site. The lowest point of the site is located in the north-east corner with a level of 53.05m AHD with a approx. average slope of 6.50%.

Stormwater runoff from the existing site discharges into the existing kerb and channel on Mt. Gravatt Capalaba Road north of the site.

A copy of a survey plan prepared by Lawson Surveys for the site is attached in Appendix B.

5 > Site Data

Site data has been obtained from the following sources of information:

- Bureau of Meteorology (BOM)
- Before You Dig Australia (BYDA)
- Discussions with relevant authorities
- Existing Site Plans
- Brisbane City Council (BCC)
- Satellite Imagery
- Site Inspection.
- Survey Plans.
- Relevant Reports.
- Australian Rainfall and Runoff Guidelines (2019)



6 > Stormwater

6.1 Flooding

The Brisbane City Council flood mapping indicates that the development site is not subject to flooding from any sources.

A copy of BCC FloodWise report for the site is attached to Appendix F.

6.2 Site Based Stormwater Management Plan

The aim of the Stormwater Management Plan outlined below is to:

- Prevent or minimise adverse social or environmental impacts from stormwater runoff originating from the proposed development.
- Achieve acceptable levels of stormwater runoff quality and quantity by not overloading the current systems in place.

The Stormwater Management Plan aims to identify Stormwater Quality and Quantity Best Management Practice for the site and demonstrate that water quality and quantity impacts will be minimised in receiving waters.

The Stormwater Management Plan outlines the site in two sections, the operational phase and the construction phase. The operational phase addresses the treatment of contaminated runoff from the developed site by mechanical methods whilst the construction phase of the Stormwater Management Plan addresses erosion and sediment control to prevent contamination of water sources by stormwater runoff during construction of the site.

6.3 Operational Phase

6.3.1 Lawful Point of Discharge

The lawful point of discharge of the site is to the new proposed underground stormwater drainage network in Mt. Gravatt Capalaba Road north-west of the site.



6.3.2 Proposed Site Drainage

Stormwater and roofwater runoff from the development will be collected and conveyed in a new stormwater pit and pipe network to the underground detention tank located to the north-western side of the site.

The detained flows will be discharged to a new stormwater manhole constructed on Mt. Gravatt Capalaba Road. A new stormwater line will be constructed along Mt. Gravatt Capalaba Road from the new proposed stormwater manhole to the existing gully pit to the north-east.

Stormwater runoff from development is proposed to be treated by using 15 Oceanprotect Stormfilters (or any approved equivalent device) fitted to the detention tank.

6 Oceanprotect Oceaguards will be fitted to all the new stormwater pits within the development.

A new proposed stormwater manhole on Mt. Gravatt Capalaba Road will connect to the existing stormwater pit to the east via a new 375mm dia. RCP pipe.

The existing and proposed stormwater infrastructure is shown on MPN Plan 10524-DA.03 attached in Appendix C.

6.3.3 Stormwater Quantity Management Strategy

Stormwater detention is proposed to be provided to limit discharge of site to the pre-development discharge.

For the management of stormwater quantity, an ILSAX model was prepared using DRAINS to calculate the stormwater runoff from the pre-development and the post-development conditions. Runoff flows were calculated to assess the peak runoff from the proposed development and check the exceedance compared to the peak runoff from the pre-development site.

The pre-development and post-development conditions on the site is shown in MPN Plan 10524 – DA.05 and DA0.6 attached in Appendix C.

Runoff flows for the AEPs from 39% to 1% and durations of 5 to 180 minutes were calculated. The most critical events for those two conditions listed in Table 1 below.

AEP (%)	Pre-Development Peak Flow (m ³ /sec)	Post-Development Peak Flow (m ³ /sec)
39	0.081	0.15
20	0.108	0.189
10	0.136	0.227
5	0.162	0.264
2	0.192	0.313
1	0.218	0.35

Table 1 – Pre and Post Development Peak Flows



A calculation check has been done using Rational method to assess the proximity of the ILSAX model in the post-development condition. Results shown in Table 2. As the difference of calculated flows are in a reasonable range and less than 10%, ILSAX model has been utilised for the next steps.

AEP (%)	Post-Development Peak Flow (m ³ /sec) – ILSAX Model	Post-Development Peak Flow (m ³ /sec) – Rational Method
39	0.150	0.125
20	0.189	0.167
10	0.227	0.207
5	0.264	0.250
2	0.313	0.296
1	0.350	0.344

Table 2 – ILSAX model and Rational Method Comparison

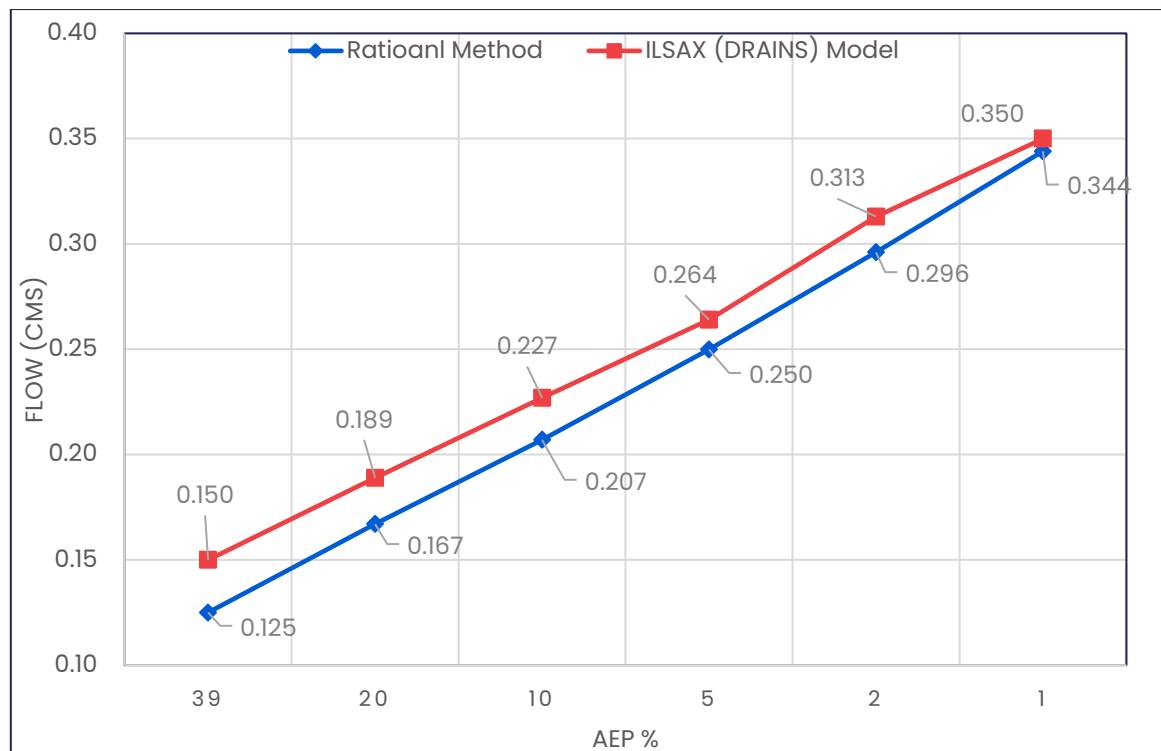


Figure 3 – DRAINS ILSAX model and Rational method results comparison



The peak flows calculated using the rational method and the DRAINS ILSAX model are considered to be generally comparable. The variances in the result are as expected and are within tolerance, given the differences between the DRAINS ILSAX model and the rational method. The flows calculated using the DRAINS ILSAX model are considered more conservative and therefore it is considered appropriate these flows are adopted for the purposes of detention tank analysis.

6.3.3.1 Detention tank design

In order to limit the site stormwater discharge, stormwater runoff from the development will be detained in a detention tank located towards the north-western side of the site.

The location of the detention tank is shown on MPN Plan 10524-DA.07 with the detention tank properties shown in Table 3 below.

Property	Detention Tank
Detention Area (Incl. Freeboard)	48.17m ²
Max. Water Depth (1% AEP)	53.23m AHD (0.32m Freeboard)
Max. Water Depth (5% AEP)	52.77m AHD (0.78m Freeboard)
Detention Base Level	50.85m AHD
Detention Ceiling Level	53.55m AHD
Outlet Arrangement	1 x 125mm Orifice Plate 1 @ IL50.85m AHD 1 x 100mm Orifice Plate 2 @ IL51.20m AHD 1 x 100mm Orifice Plate 3 @ IL51.20m AHD 1 x 165mm Orifice Plate 4 @ IL52.20m AHD
Weir management	0.90m Wide Weir @ RL53.15m AHD Overflow Weir - 0.90m Wide @ RL53.24m AHD

Table 3 - Detention Tank Design Properties

The elevation-area-volumes used for the modelling of the detention tank are listed in Table 4 below.

Height Above Tank Invert (m)	Elevation (m AHD)	Staged Area (m ²)	Cumulative Volume (m ³)
0	50.85	40.5	0
0.6	51.45	40.5	24.30
1.20	52.05	40.5	48.60
1.80	52.65	40.5	72.90
2.4	53.25	40.5	97.20
2.7	53.55	40.5	109.35

Table 4 - Detention Tank Staged Elevation-Area-Volume



Storm events for events from 39% to 1% AEP were calculated to ensure that peak runoff flows from the post development site would not exceed peak runoff flows from the pre-development site.

The most critical events for the site's catchment are compared in Table 5 below.

AEP (%)	Pre-Development Peak Flow (m³/sec)	Post-Development Mitigated Peak Flow (m³/sec)
39	0.081	0.069
20	0.108	0.092
10	0.136	0.123
5	0.162	0.137
2	0.192	0.154
1	0.218	0.192

Table 5 – Pre and Post Development Mitigated Peak Flows

As depicted in the above table, the peak runoff from the developed site does not exceed the peak runoff from the existing site.

The water level in the tank across the range of storm events analysed and listed in Table 6 below.

AEP (%)	Water Surface Elevation (m AHD)	Water Depth (m)
39	52.02	1.17
20	52.36	1.51
10	52.53	1.68
5	52.77	1.92
2	53.06	2.21
1	53.23	2.38

Table 6 – Detention Tank water Levels and depth

6.3.4 Stormwater Quality Management Strategy

In order to satisfy the requirements of the State Planning Policy July 2017 for the adequate treatment of stormwater runoff, mechanical treatment solutions have been provided to remove hydrocarbons, suspended solids and nutrients prior to being discharged from site.



6.3.4.1 Potential Pollutants Generated

The pollutants that could be potentially generated as a result of the development use are as follows:

- Litter
- Sediment
- Nutrients (Nitrogen and Phosphorous)
- Hydrocarbons (oils and grease)
- Surfactants
- Pathogens/Faecal Coliforms (bacteria and viruses).

The MUSIC computer modelling program developed by the Co-operative Research Centre for Catchment Hydrology was used to predict the performance of the proposed stormwater treatment train.

At this stage the pollutants modelled in MUSIC are Total Suspended Solids (TSS), Total Phosphorous (TP) and Total Nitrogen (TN).

6.3.4.2 Rainfall

The rainfall data used in the model was based on the Bureau of Meteorology data from rainfall station 40214 Brisbane City Council (central). The model was run for a 10-year period from 1 January 1980 to 31 December 1989. The modelling time step was 6 minutes.

6.3.4.3 Rainfall Runoff Properties

In accordance with the recommendations of Water By Design's MUSIC Modelling Guidelines for South East Queensland rainfall runoff properties for urban residential areas have been used. These are listed in Table 7 below.

Parameter	Value
Rainfall Threshold (mm)	1
Soil Storage Capacity (mm)	500
Initial Storage (% of capacity)	10
Field Capacity (mm)	200
Infiltration Capacity Co-efficient a	211
Infiltration Capacity Co-efficient b	5.0
Initial Depth (mm)	50
Daily Recharge Rate (%)	28
Daily Base Flow Rate (%)	27
Deep Seepage (%)	0

Table 7 – Music Rainfall Parameters (Urban residential)



6.3.4.4 Pollutant Export Parameters

Specific Pollutant Export Parameters must be applied to each node type as cited in the Water By Design MUSIC Modelling Guidelines. The values shown in Table 8 are for split catchment urban residential areas.

Runoff pollutant concentrations are generated stochastically from the defined mean and standard deviation.

Land Use – Commercial		Log10 TSS (mg/L)		Log10 TP (mg/L)		Log10 TN (mg/L)	
		Base Flow	Storm Flow	Base Flow	Storm Flow	Base Flow	Storm Flow
Roof	Mean	0	1.30	0	-0.89	0	0.26
	Std. Dev.	0	0.39	0	0.31	0	0.23
Roads	Mean	1.0	2.43	-0.97	-0.30	0.20	0.26
	Std. Dev.	0.34	0.39	0.31	0.31	0.20	0.23
Landscaping	Mean	1.0	2.18	-0.97	-0.47	0.20	0.26
	Std. Dev.	0.34	0.39	0.31	0.31	0.20	0.23

Table 8 – Pollutant Export Parameters (Urban Residential)

6.3.4.5 Water Quality Objectives

The Water Quality Objectives of the receiving waters for the proposed development have been obtained from State Planning Policy July 2017. The State Planning Policy load reduction targets are summarised in Table 9 below.

Water Quality Objectives				
Total Suspended Solids (TSS) % Reduction	Total Nitrogen (TN) % Reduction	Total Phosphorous (TP) % Reduction	Litter/ Gross Pollutants % Reduction	Oils/ Grease
80	45	60	90	No visible films or odours

Table 9 – Water Quality Objectives

6.3.4.6 Treatment Plan

In order to achieve the pollutant load reduction targets for the development, it is proposed to use mechanical treatment methods to treat the runoff prior to discharge from the site.

Stormwater runoff from the development is proposed to be treated by using 15 Oceanprotect Stormfilters (or any approved equivalent device) fitted to the detention tank.

6 Oceanprotect Oceanguards will be fitted to all the new stormwater pits within the development.

The treatment plan for the site is depicted on MPN Plan 10524-DA.06, attached in Appendix C, with MUSIC excerpt shown below.

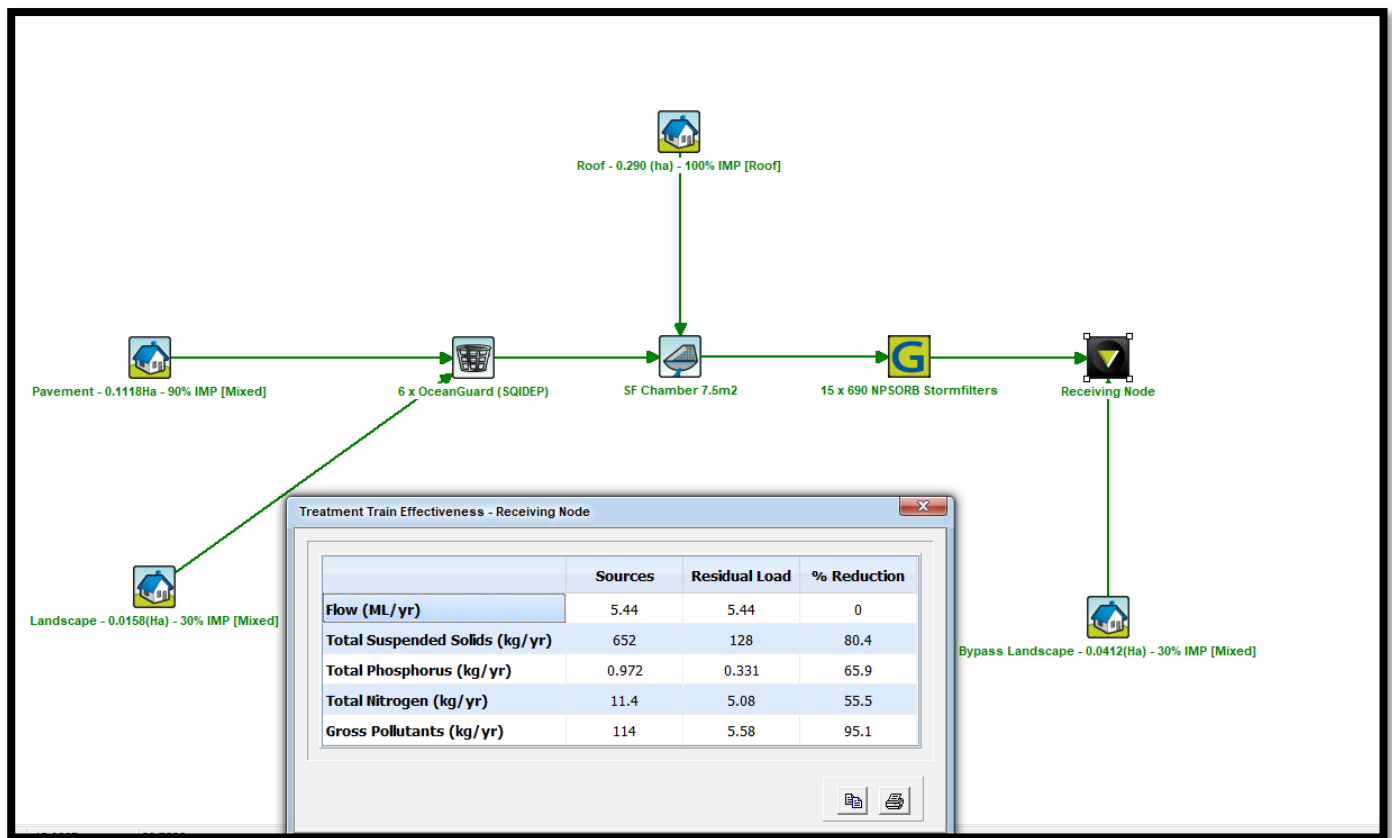


Figure 4 - Treatment Plan

6.3.4.7 MUSIC Results

The resulting percentage-based load reductions at the site outlet are shown in Table 10 below, together with the Water Quality Objectives for the receiving waters.

	Sources	Residual Load	% Reduction	Target %
Total Suspended Solids (kg/yr)	652	128	80.40	80
Total Phosphorous (kg/yr)	0.972	0.331	65.90	60
Total Nitrogen (kg/yr)	11.40	5.08	55.50	45
Gross Pollutants (kg/yr)	114	0	95.10	90

Table 10 - Percentage Based Load Reduction Result



6.3.4.8 POD Pollutant Reduction

6.3.4.8.1 Litter

Rubbish bins will be located within the buildings for use by staff and visitors. As a result of this and with the installation of the Ocean protect OceanGuard and StormFilters, levels of litter existing the site via stormwater are expected to be negligible.

6.3.4.8.2 Sediment

The TSS outflow for the site is identified in Table 10 above. As can be seen, the pollutant load reductions achieve the Water Quality Objectives. The TSS level is therefore considered acceptable.

6.3.4.8.3 Nitrogen and Phosphorous

The TN and TP loads are identified in Table 10 above. As can be seen the TN and TP loads leaving the site achieve the Water Quality Objectives. Significant reductions in Nitrogen and Phosphorous have been achieved. The Nitrogen and Phosphorous residual loads are therefore considered acceptable.

6.3.4.8.4 Hydrocarbons

Hydrocarbons will become trapped within the Ocean protect OceanGuard and StormFilters.

When there is a build-up of hydrocarbons in the Ocean protect OceanGuard and StormFilters, the oils can be vacuumed, ensuring that no hydrocarbons are discharged from site.

6.3.4.8.5 Surfactants

If car or truck washing occurs within the development, it will be within a bunded area where surfactants will be captured and treated prior to discharging into the stormwater network.

6.3.4.8.6 Heavy Metals

Heavy metals in stormwater runoff generally become attached to fine sediment. The Ocean protect OceanGuard and StormFilters will remove the majority of this fine sediment. The removal of the fine sediment should effectively remove most of the heavy metals in the runoff.

6.3.4.8.7 Pathogen/ Faecal Coliforms

Domestic animals within the development will be under the control of their owners at all times and the owners will be expected to clean up after them.

6.3.4.9 Proposed Stormwater Quality Treatment Devices

6.3.4.9.1 Locations

The location of the proposed stormwater quality treatment devices is shown on MPN Plan 10524-DA.03, attached in Appendix C.



6.3.4.9.2 Device and Size

The device type and size are depicted on MPN Plan 10524-DA.06 attached in Appendix C.

General arrangement plans for the Ocean protect OceanGuard and StormFilters are attached in Appendix D.

6.3.4.9.3 Operation

The Ocean protect OceanGuard consist of a screening bag supported by a filter box and structural cage. Modular plastic deflector panels attach to the filter box and guide the flow of water to the screening bag. The screening bag captures pollutants and allows water to pass through to the outlet pipe. Openings in the filter box allow water to bypass the screening bag during high flow conditions.

The Atlan Filters operate by filtering stormwater through media-filled filter cartridges. As the stormwater percolates through the cartridges, pollutants, particulates, surface scums and floating oil and greases are captured within the filter media. Once filtered through the media, the treated stormwater is directed to a collection pipe.

6.3.4.9.4 Maintenance

For the Ocean protect OceanGuard and StormFilters, maintenance can be performed with a vacuum truck to remove captured soil, sediment and floatables. Detailed maintenance techniques can be found in the Ocean protect Operations and Maintenance Manual attached in Appendix D.

6.4 Construction Phase (Sediment and Erosion Control)

6.4.1 Intent of Erosion and Sediment Control Management Plan

To prevent stormwater contamination (of watercourses) and the release of contaminated stormwater and wastewater by ensuring compliance with the Environmental Protection Act 1994 and Environmental Protection (Water) Policy 2009.

6.4.2 Implementation Strategy

Establish control measures and best practice approaches to prevent stormwater contamination and minimise the risk and adverse effects of erosion and sedimentation. All Erosion and Sediment Control measures must be designed, constructed and maintained in a manner that is commensurate with the site's erosion risk.

6.4.3 Erosion and Sediment Control Measures

- Obtain a licence or approval to operate activities that are classed as environmentally relevant activities (i.e. they have the potential to cause environmental harm).
- Implement and maintain appropriate control measures to prevent sediment laden wastewater and other potential pollutants such as oil, paint and wet concrete from entering the stormwater system via stormwater drains and gullies. The control measures which must be considered to be adopted are:
 - Limit site access during construction to minimise disruption to traffic



- Install a temporary construction entry/exit sediment trap at all site accesses to minimise mud and sediment from the site being tracked onto public road, particularly during wet weather or when the site is muddy.
- Install and maintain appropriate sediment fences around construction areas.
 - Divert clean stormwater runoff, using catch drains, around construction areas to existing or new stormwater drainage system.
 - Install sandbags and other pollution containment devices around stormwater drains and any other locations where required to prevent sediment entering the trunk stormwater system.
 - Cover open earth/soil areas progressively (with concrete slabs and pavements or mulch) to minimise areas of bare earth/soil.
 - Any stockpiles of excavated soil and demolition / construction waste must be located where risk of erosion and sediment is minimal and must be protected from wind and water erosion.
- Implement and maintain appropriate control measures such as catch drains and sediment fences to prevent ponding of stormwater or discharge of stormwater from the site to adjacent properties.
- Provision of spill / pollution control equipment that is readily accessible to clean up spills and leaks.
- Ensure spill/pollution control measures are available and maintained in working condition.
- Sediment contained by the sediment control devices such as sandbags, sediment fences and containment bunds must be frequently removed and placed in a controlled area.
- Implement an inspection schedule for any spill or leaks of any potential polluting areas or activities.

6.4.4 Erosion and Sediment Control Management Goals

- Licenses, approvals, permits and inspection reports are in order.
- Sediment or pollution control devices such as sandbags, sediment fences and containment bunds are in place, maintained and effective.
- Spill/ pollution control equipment is readily accessible at designated locations.
- No accumulated sediment is contained by the sediment control devices such as hay bales, sediment fences and containment bunds.
- No sediment exceeding a depth of 300mm in the pollution control devices (e.g. silt trap).



6.4.5 Erosion and Sediment Control Implementation Program

- Licenses, permits or approvals for each environmentally relevant activity must be obtained prior to the commencement of the particular activity.
- Appropriate control measures such as sediment fences, temporary construction entry/ exit sediment traps, pollution containment devices (e.g. sandbags), stormwater diversion and administrative controls must be installed and established prior to commencement of the earthworks and construction activities.
- Pollution control devices such as spill control equipment must be inspected on a regular basis (at least weekly).
- Other sediment and pollution control equipment such as containment bunds, hay bales and sediment fences must be inspected on a regular basis (at least daily).
- Inspection for any leaks, spills or potential contaminating activity must be performed on a regular basis (at least daily).
- Remove accumulated sediment or other contaminants from sediment/ pollution control devices on a regular basis.
- All erosion and sediment control measures must be inspected within 24 hours of expected rain and within 18 hours of a rainfall event.

6.4.6 Responsible Person or Organisation

The contractor shall be responsible for the implementation and maintenance of the Erosion and Sediment Control Measures.

6.4.7 Reporting / Review

Records such as licences, approvals, permits and inspection reports must be reviewed on a regular basis (e.g. at least monthly) to ensure that legal compliance is met, complaints are reviewed and systems are working to prevent contamination.

6.4.8 Corrective Actions

- Perform clean-up of any spills immediately.
- Any mud or sediment which is tracked onto public roads is to be immediately removed using dry clean-up methods i.e. shovel and broom.
- Remove or relocate any stockpiles of waste where there is a reasonable risk of erosion and sedimentation.
- Replace or repair sediment or pollution control devices if they are not maintained in good working condition.



7 > Conclusion

This Stormwater Management Plan demonstrates that under the proposed concept plan Stormwater Quality and Quantity Treatment is achievable to the levels required by State Planning Policy July 2017.

BCC Flood mapping indicates that the development site is not subject to flooding from any sources.

The lawful point of discharge of the site is to the new proposed underground stormwater drainage network in Mt. Gravatt Capalaba Road north-west of the site.

Stormwater and roofwater runoff from the development will be collected and conveyed in a new stormwater pit and pipe network to the underground detention tank located to the north-western side of the site.

The detained flows will be discharged to a new stormwater manhole constructed on Mt. Gravatt Capalaba Road. A new stormwater line will be constructed along Mt. Gravatt Capalaba Road from the new proposed stormwater manhole to existing gully pit to the north-east.

A new proposed stormwater manhole on Mt. Gravatt Capalaba Road will connect to the existing stormwater pit to the east via a new 375mm dia. RCP pipe.

Stormwater detention is proposed to be provided to limit discharge of site to the pre-development discharge.

Stormwater runoff from the development is proposed to be treated by using 15 Oceanprotect Stormfilters (or any approved equivalent device) fitted to the detention tank.

6 Oceanprotect Oceanguards will be fitted to all the new stormwater pits within the development.

The multi-residential development on the lot will incorporate 'best management practices such as roof-water first flush diverters and landscape swales, where possible, to minimize impacts and satisfy water quality requirements.

8 > Limitations of Report

MPN have prepared this report to support Development Application for the proposed multi-residential development at 101-111 Mt. Gravatt Capalaba Road & 30-34 Mascar Street, Upper Mount Gravatt. This report is provided for the exclusive use SCAS Leaf 4 PTY LTD for this specific project and its requirements. It should not be used or relied upon by a third party and MPN accepts no responsibility for the use of this report by any party other than SCAS Leaf 4 PTY LTD Architectural Plans.



Appendix A. Architectural Plan

PROPOSED MULTI-RESIDENTIAL
DEVELOPMENT
30 MASCAR STREET
UPPER MOUNT GRAVATT 4122

DEVELOPMENT APPLICATION

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DA-04.04	LEVEL 2 FLOOR PLAN
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DA-05.02	NORTH EAST ELEVATION
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DA-05.04	TOWER 2/3 (S), TOWER 3 (W)
DA-05.05	SECTION A & B
DA-05.06	SECTION C & D



ARDEN SC APARTMENTS



VSA DESIGN

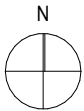
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MULTI-RESIDENTIAL DEVELOPMENT

30 Mascar Street & 101 to 111 Mt Gravatt Capalaba Rd, UMG
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Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP

**LOCAL CONTEXT PLAN
DEVELOPMENT APPLICATION**

**NOT TO BE USED FOR CONSTRUCTION

DA-03.01

0246
DA - 10/06/2026

MULTI-RESIDENTIAL DEVELOPMENT

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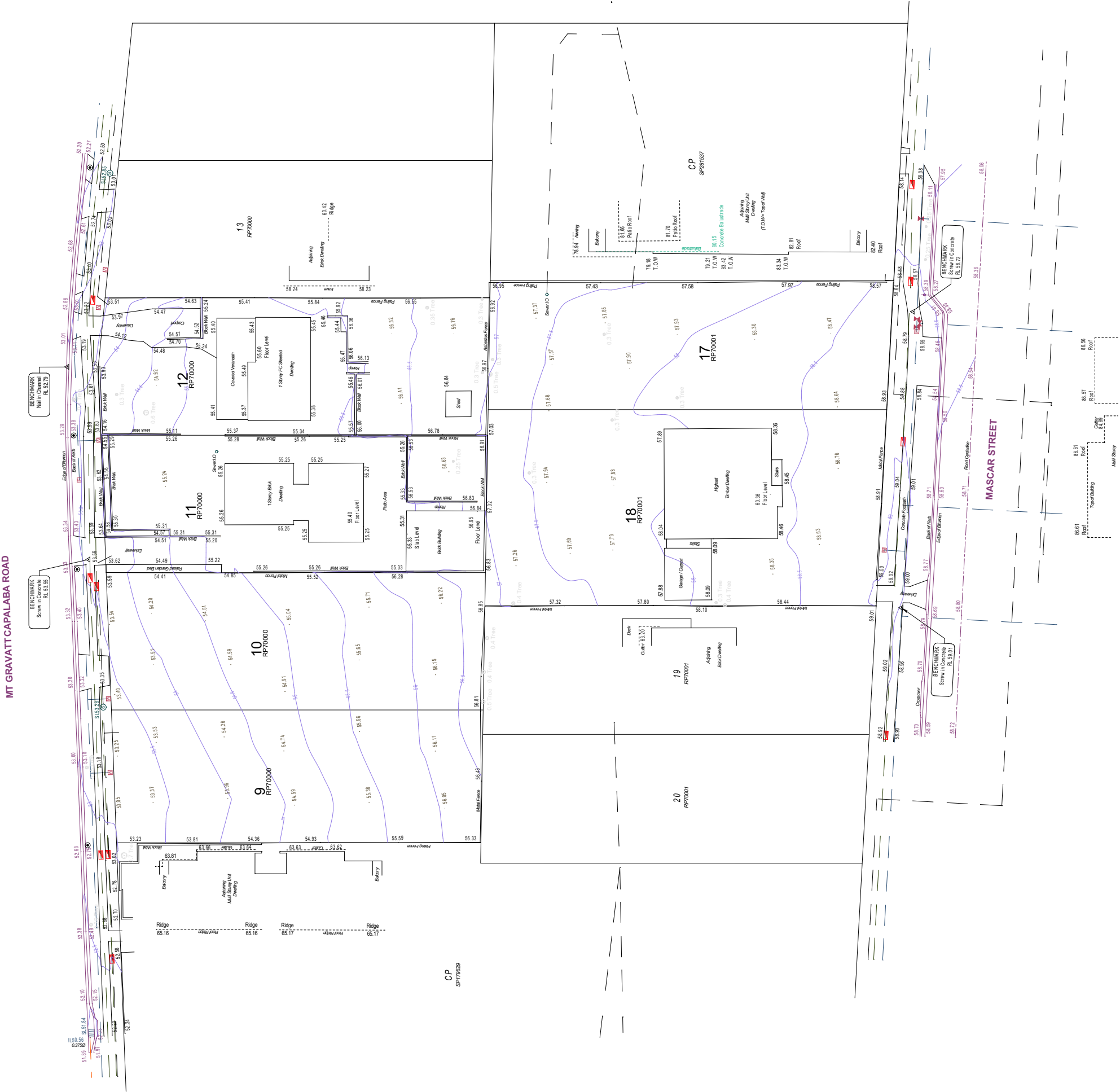
Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP

SURVEY PLAN (BY OTHERS)
DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-03.02

scale 1:500 @ A3 0246
DA - 10/06/2026



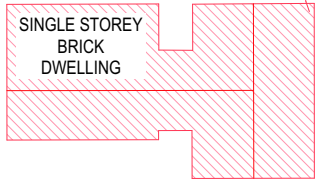
ALL MOUNT GRAVATT CAPALABA ROAD CROSSOVERS TO BE DEMOLISHED, REINSTATE FOOTPATH & VERGE TO COUNCIL STANDARD DETAILS

MOUNT GRAVATT CAPALABA ROAD

LOT 12
RP70000



LOT 11
RP70000

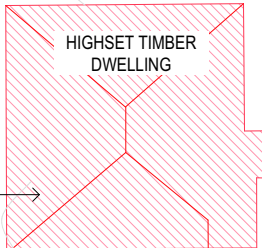


LOT 10
RP70000

LOT 9
RP70000

SHED

DEMOLISH EXISTING BUILDINGS AND ALL ASSOCIATED ELEMENTS AND SERVICES



LOT 17
RP70001

LOT 18
RP70001

CROSSOVER TO BE DEMOLISHED, REINSTATE FOOTPATH & VERGE TO COUNCIL STANDARD DETAILS

CROSSOVER TO BE DEMOLISHED, REINSTATE FOOTPATH & VERGE TO COUNCIL STANDARD DETAILS

LOT 19
RP70001

LOT 20
RP70001

DEMOLISH & REMOVE ALL TREES WITHIN SUBJECT SITE, LOCATION OF TREES SHOWN ARE INDICATIVE ONLY.

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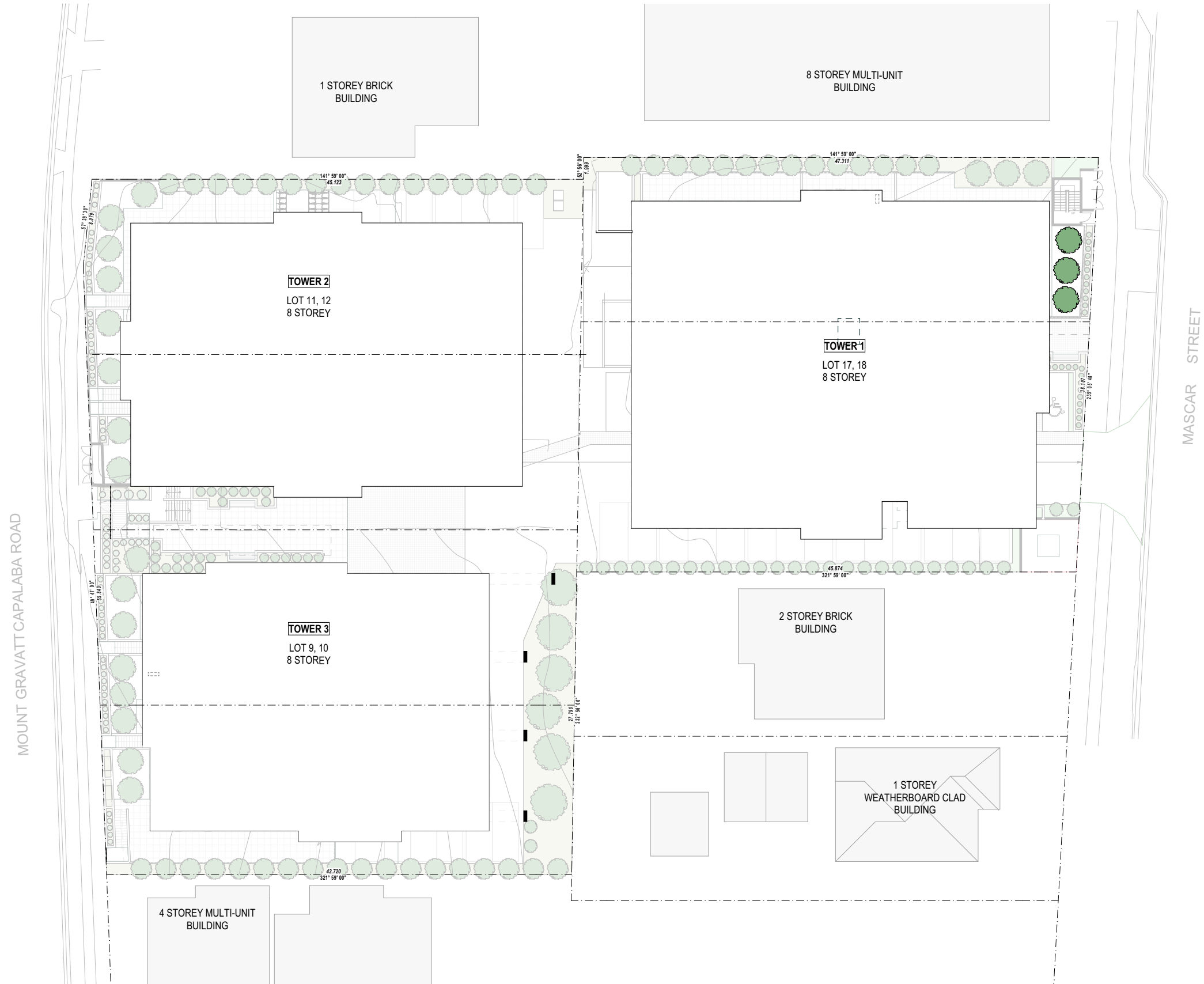
DEMOLITION PLAN DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-03.03

scale 1:400 @ A3 0246

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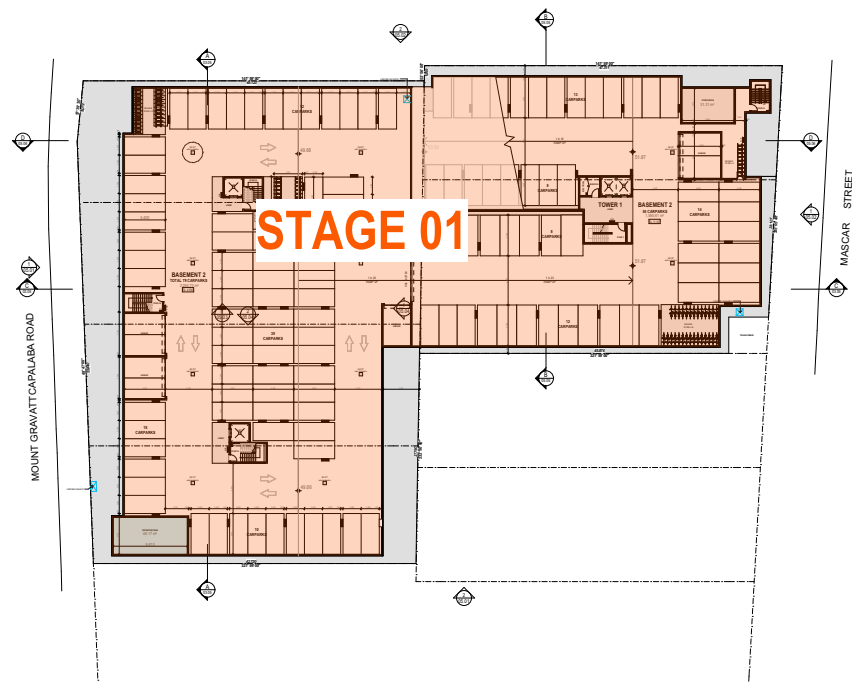
PROPOSED SITE PLAN DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

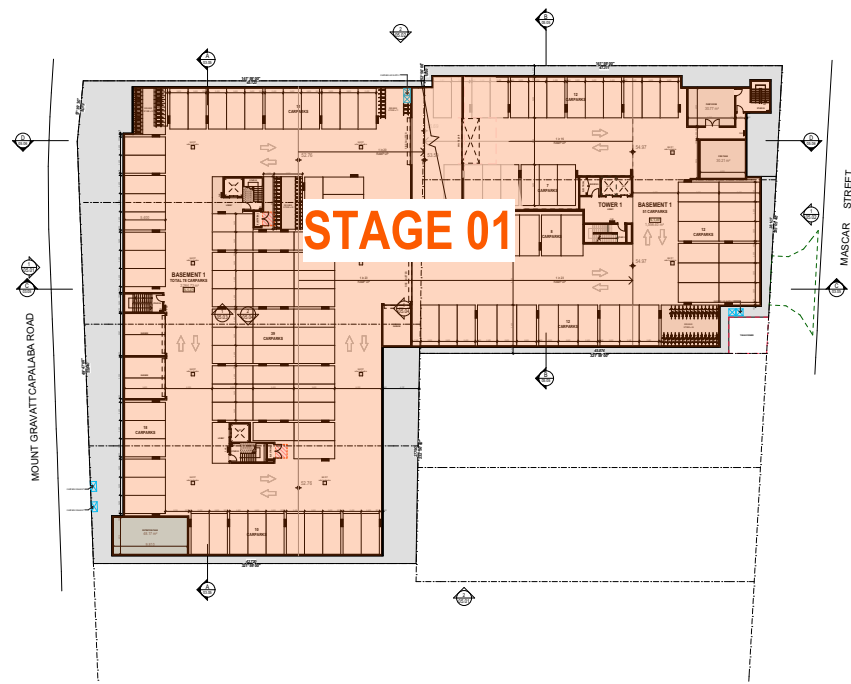
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scale 1:400 @ A3 0246

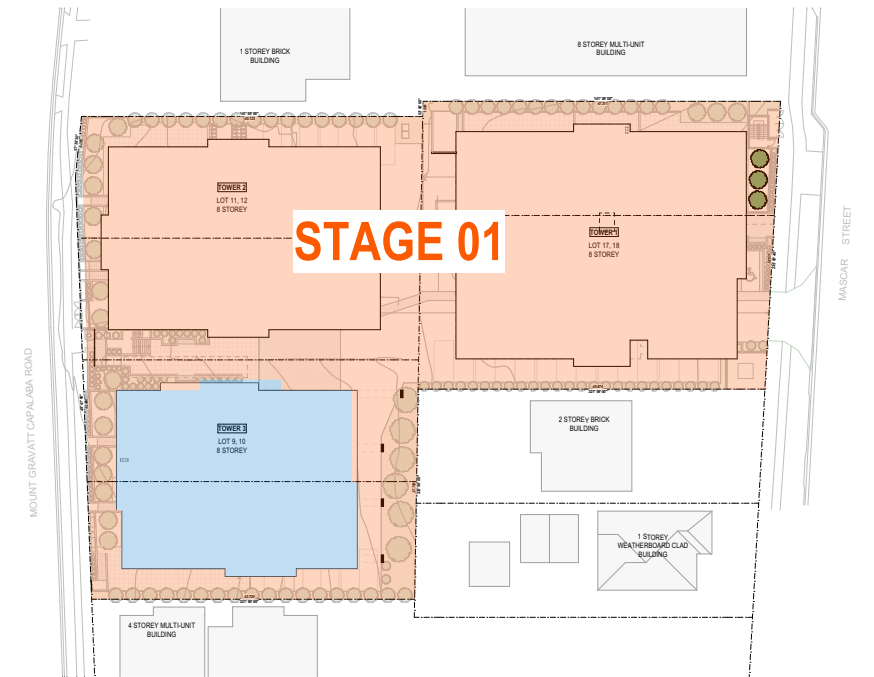
DA - 10/06/2026



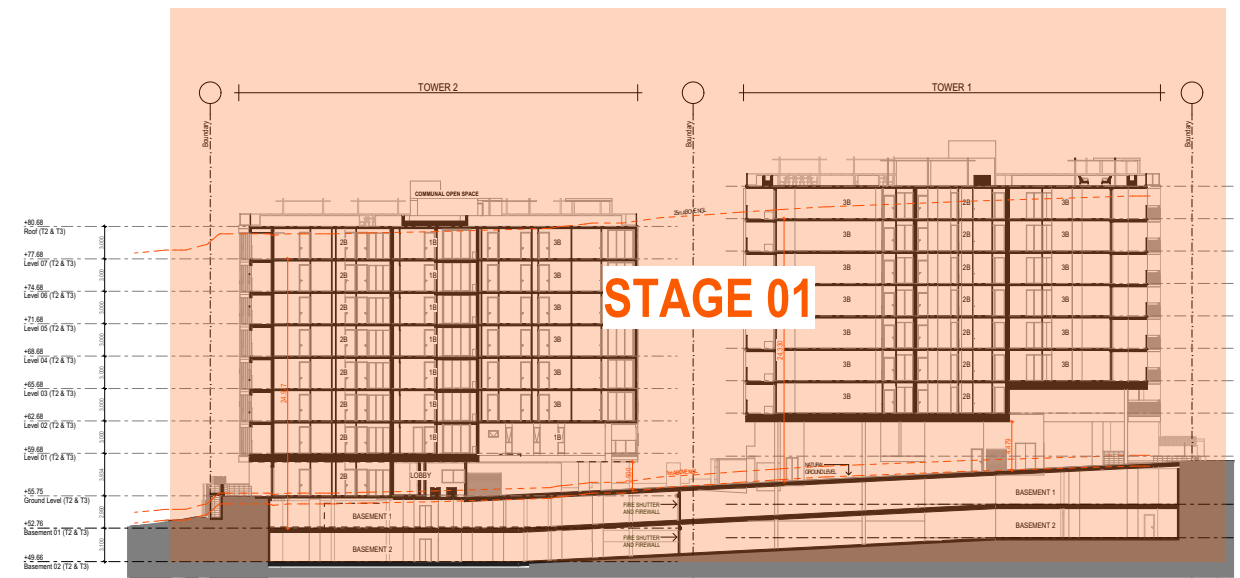
1 Basement Plan 02 1:1000



2 Basement Plan 01 1:1000



4 A section staging 1:700



5 C section staging 1:700



Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP

STAGING PLAN DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DEVELOPMENT SUMMARY

site information

RPD	Lots 17 & 18 on RP70001 - 30 Mascar St	1771m²
Lot & RP	Lot 9 on RP70000 - 101 Mt Gravatt Cap Rd	670m²
	Lot 10 on RP70000 - 105 Mt Gravatt Cap Rd	706m²
	Lot 11 on RP70000 - 109 Mt Gravatt Cap Rd	721m²
	Lot 12 on RP70000 - 111 Mt Gravatt Cap Rd	731m²
Total Site Area:		4599m²

Local Authority:	Brisbane City Council
Site Classification:	High Density Residential Zone

Apartments Proposed:

No of Stories	8
Units proposed (MUD)	175

TOWER 1 - Mascar (STAGE 1)

Level Mix:	1 bed	2 bed	3 bed	4 bed	Total
Level 1 - Gnd	-	1	-	1	2
Level 2	-	6	1	1	8
Level 3	-	5	3	1	9
Level 4	-	5	3	1	9
Level 5	-	5	3	1	9
Level 6	-	5	3	1	9
Level 7	-	5	3	1	9
Level 8	-	5	3	1	9
(8 level) Total:	37	19	8	64	
	57.8%	29.7%	12.5%		

Residential carparks required

2 Bedroom (x 1.5)	55.50
3 Bedroom (x 2.0)	38.00
4 Bedroom (x 3.0)	24.00
Visitors (x 0.25)	16.00
TOTAL	133.50

TOWER 2 - 109 & 111 Mt Gravatt Cap Rd (STAGE 1)

Level Mix:	1 bed	2 bed	3 bed	Total
Level 1 - Gnd	carpark	3	-	3
Level 2	3	4	1	8
Level 3	2	4	2	8
Level 4	2	4	2	8
Level 5	2	4	2	8
Level 6	2	4	2	8
Level 7	2	4	2	8
Level 8	2	4	2	8
(8 level) Total:	15	31	13	59
	25.4%	52.5%	22.1%	

Residential carparks required

1 Bedroom/Studio (x 1.0)	15.00
2 Bedroom (x 1.5)	46.50
3 Bedroom (x 2.0)	26.00
Visitors (x 0.25)	14.75
TOTAL	102.25

TOWER 3 - 101 & 105 Mt Gravatt Cap Rd (STAGE 2)

Level Mix:	1 bed	2 bed	3 bed	Total
Level 1 - Gnd	carpark	1	2	3
Level 2	2	3	2	7
Level 3	2	3	2	7
Level 4	2	3	2	7
Level 5	2	3	2	7
Level 6	2	3	2	7
Level 7	2	3	2	7
Level 8	2	3	2	7
(8 level) Total:	14	22	16	52
	27.0%	42.3%	30.7%	

Residential carparks required

1 Bedroom/Studio (x 1.0)	14.00
2 Bedroom (x 1.5)	33.00
3 Bedroom (x 2.0)	32.00
Visitors (x 0.25)	13.00
TOTAL	92.00

TOTAL UNITS OVER (STAGE 1 & 2)

Level Mix:	1 bed	2 bed	3 bed	4 bed	Total
Tower 1	-	37	19	8	64
Tower 2	15	31	13	-	59
Tower 3	14	22	16	-	52
Total:	29	90	48	8	175
	16.6%	51.4%	27.4%	4.6%	

TOTAL CARPARKS (STAGE 1 & 2)

Residential carparks required

1 Bedroom/Studio (x 1.0)	29.00
2 Bedroom (x 1.5)	135.00
3 Bedroom (x 2.0)	96.00
4 Bedroom (x 3.0)	24.00
Visitors (x 0.25)	43.75
TOTAL	327.75

Residential carparks Provided

1 Bedroom/Studio (x 1.0)	29.00	-
2 Bedroom (x 1.5)	57.00 (57 units x1car)	64.00 (32 units x2car)
3 Bedroom (x 2.0)	96.00	-
4 Bedroom (x 3.0)	24.00	-
Visitors (x 0.25)	44.00	-
TOTAL	250.00	64.00

TOTAL CARS PROVIDED 314.00

Bicycles required

1 space per unit plus	- 175	Provided
1 visitor per 4 units.	- 44	Gnd 47.00
TOTAL	- 219	L1 Basement 89.00
		L2 Basement 87.00
		223.00

Site cover : Tower 1 1156.30m²

Tower 2 893.05m²

Tower 3 770.64m²

Total: 2819.99m²

2819.99m² = 61.32%

Communal Open Space - 5% min:

Tower 1 Rooftop 614.89m²

Tower 2 Rooftop 429.21m²

Tower 3 Rooftop 345.58m²

Total: 1389.68m²

1389.68m² = 30.21%

Deep Planting Required 133.65m² + 122.29m² + 47.99m²
(10%): 303.93m² = 6.61%



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Work in Progress	-	01 - WIP

DEVELOPMENT SUMMARY

DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-03.06

0246
DA - 10/06/2026



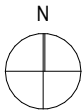
9:00am



12:00pm



3:00pm



Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP



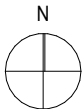
9:00am



12:00pm



3:00pm



Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP



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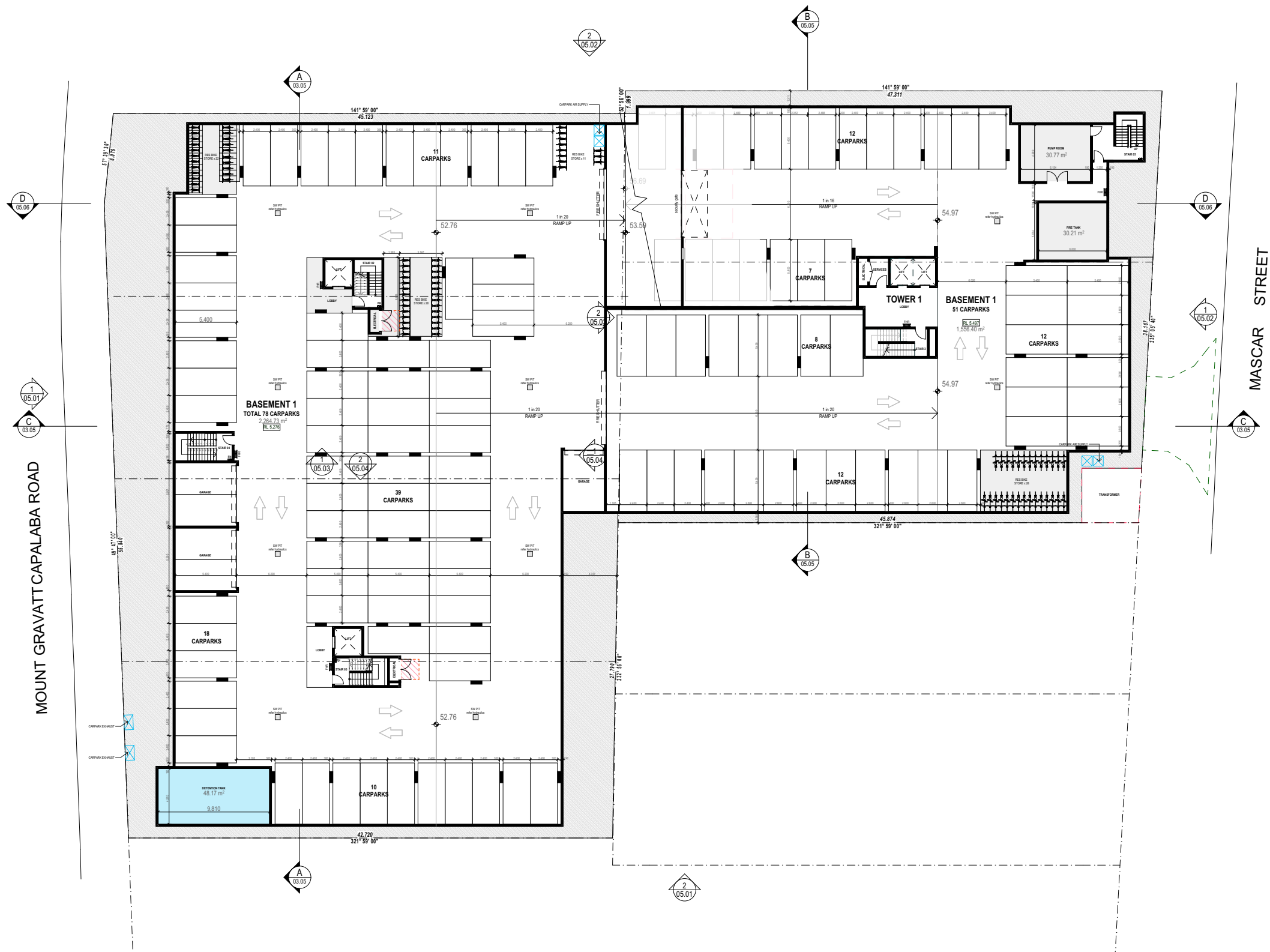
Date	Transmittal Set Name	Rev
11/02/2026	FOR CO-ORDINATION	01
6/03/2026	FOR CO-ORDINATION	02
Work in Progress	-	03 - WIP

BASEMENT 2 CARPARK DEVELOPMENT APPLICATION

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DA-04.01

scale 1:400 @ A3 0246
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BASEMENT 1 CARPARK DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-04.02

scale 1:400 @ A3 0246
DA - 10/06/2026



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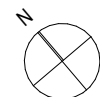
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GROUND FLOOR (LEVEL 1)
DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-04.03

scale 1:400 @ A3 0246
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Date	Transmittal Set Name	Rev

LEVEL 2 FLOOR PLAN

DEVELOPMENT APPLICATION

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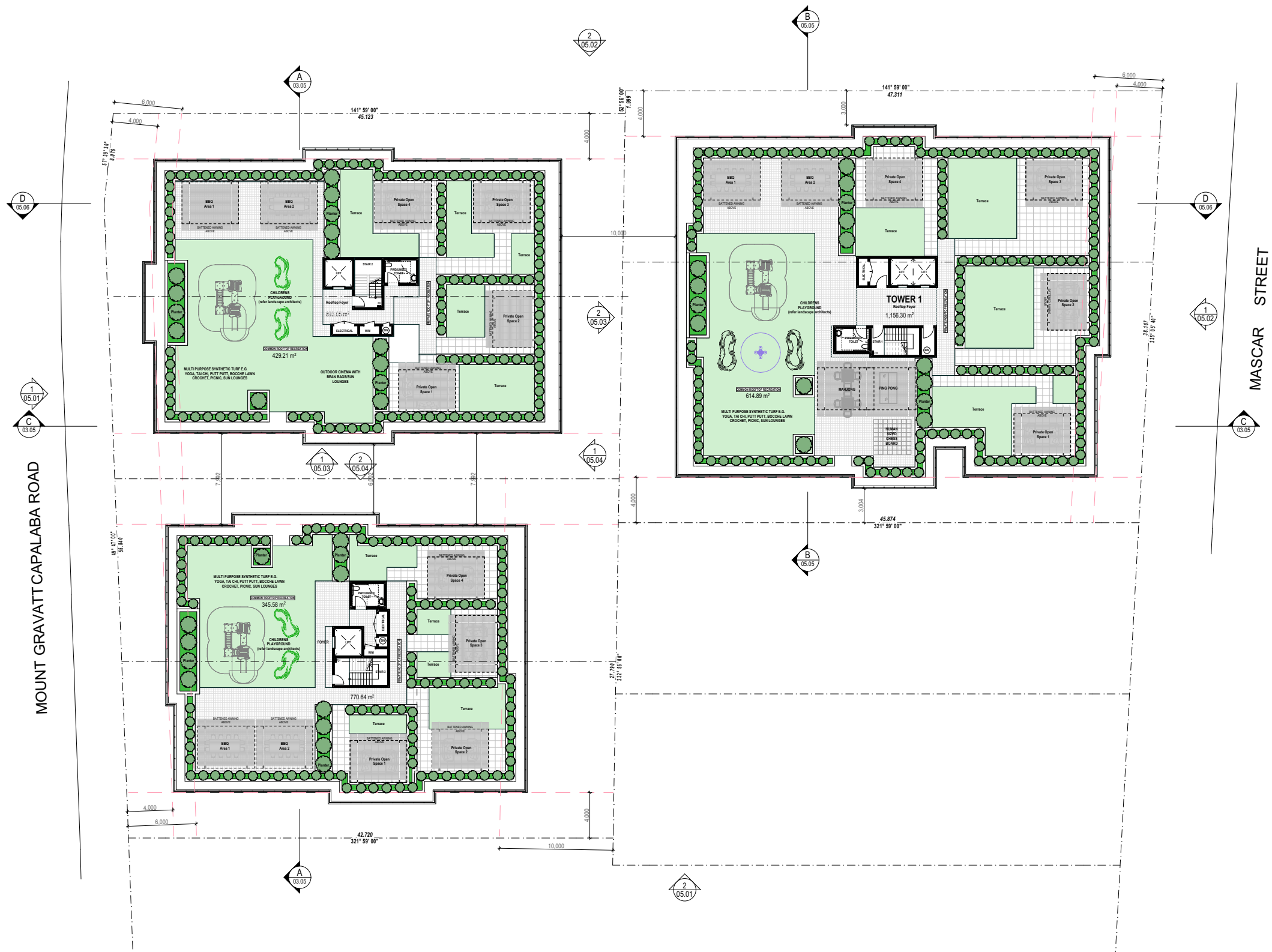
TYPICAL LEVELS 3-8

DEVELOPMENT APPLICATION

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DA-04.05

scale 1:400 @ A3 0246
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ROOF TOP COMMUNAL - TWR 1, 2 & 3 DA-04.06

DEVELOPMENT APPLICATION

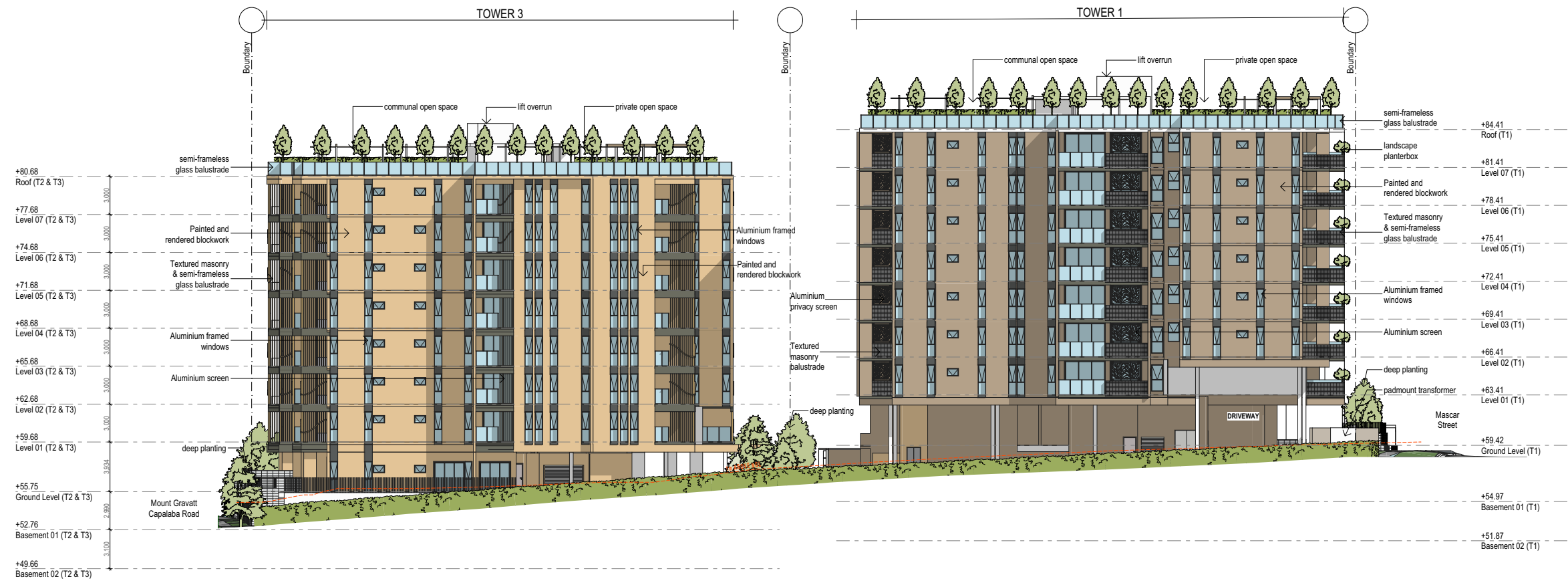
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DA - 10/06/2026

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1
-
North West Elevation (Street view)
1:400



2
-
South West Elevation
1:400

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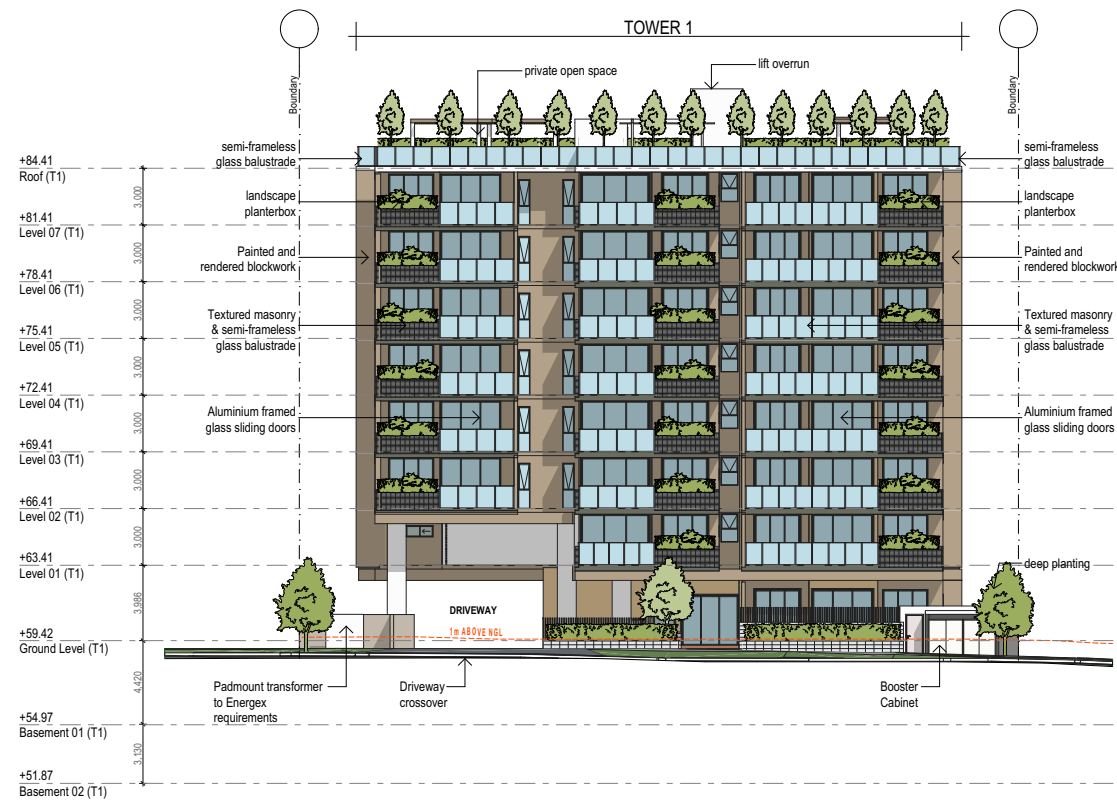
NORTH & SOUTH WEST ELEVATION DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

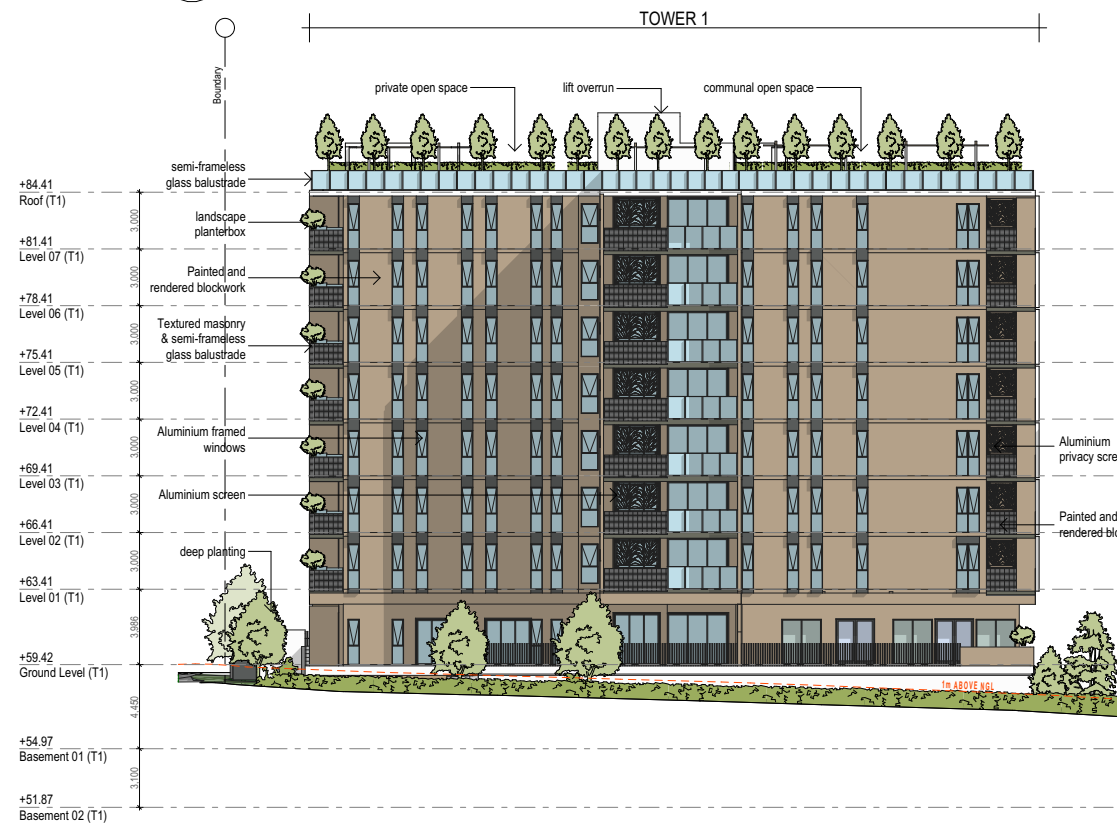
DA-05.01

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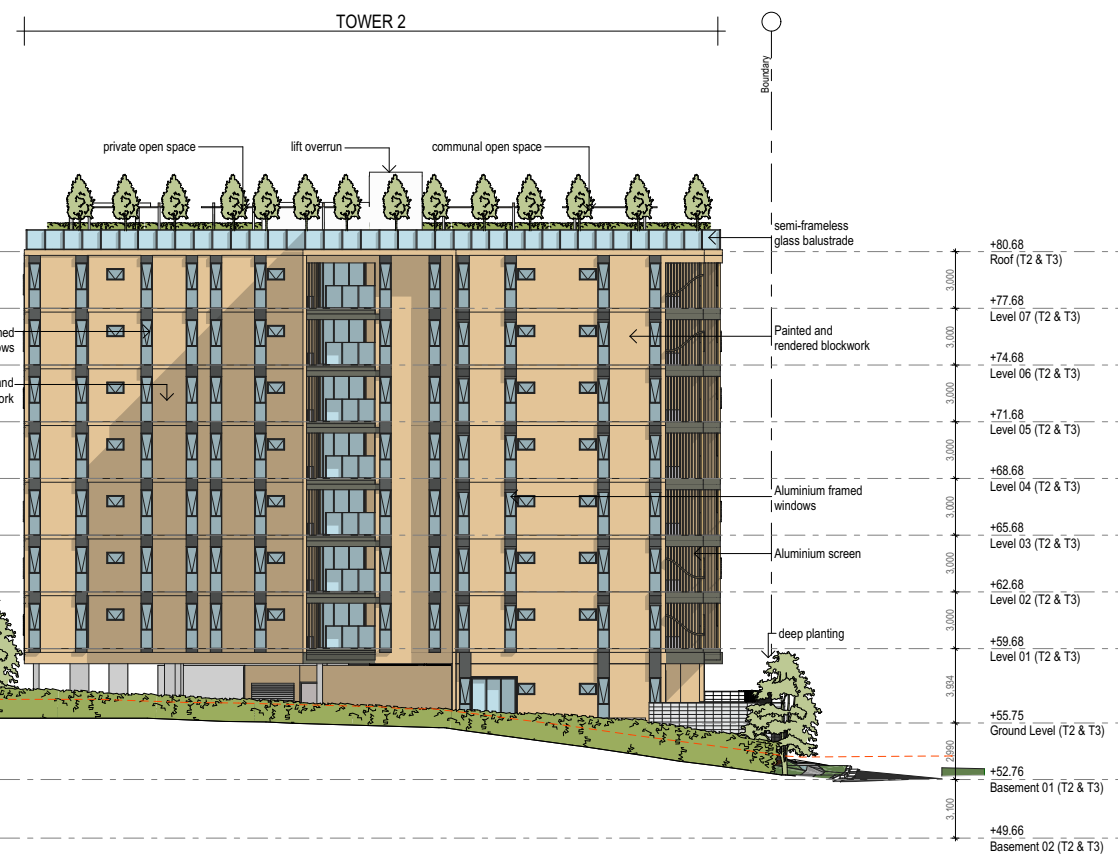
DA - 10/06/2026

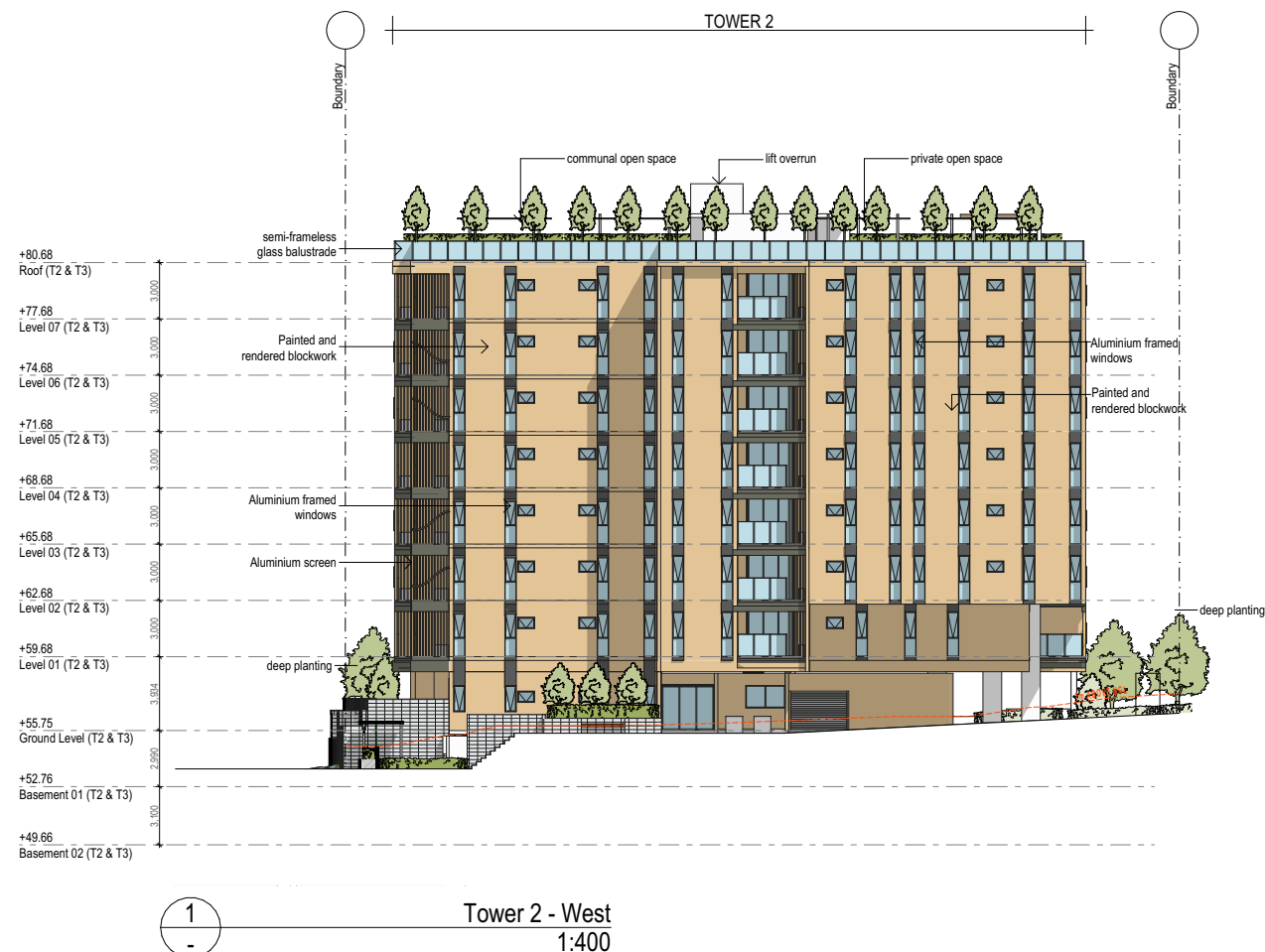
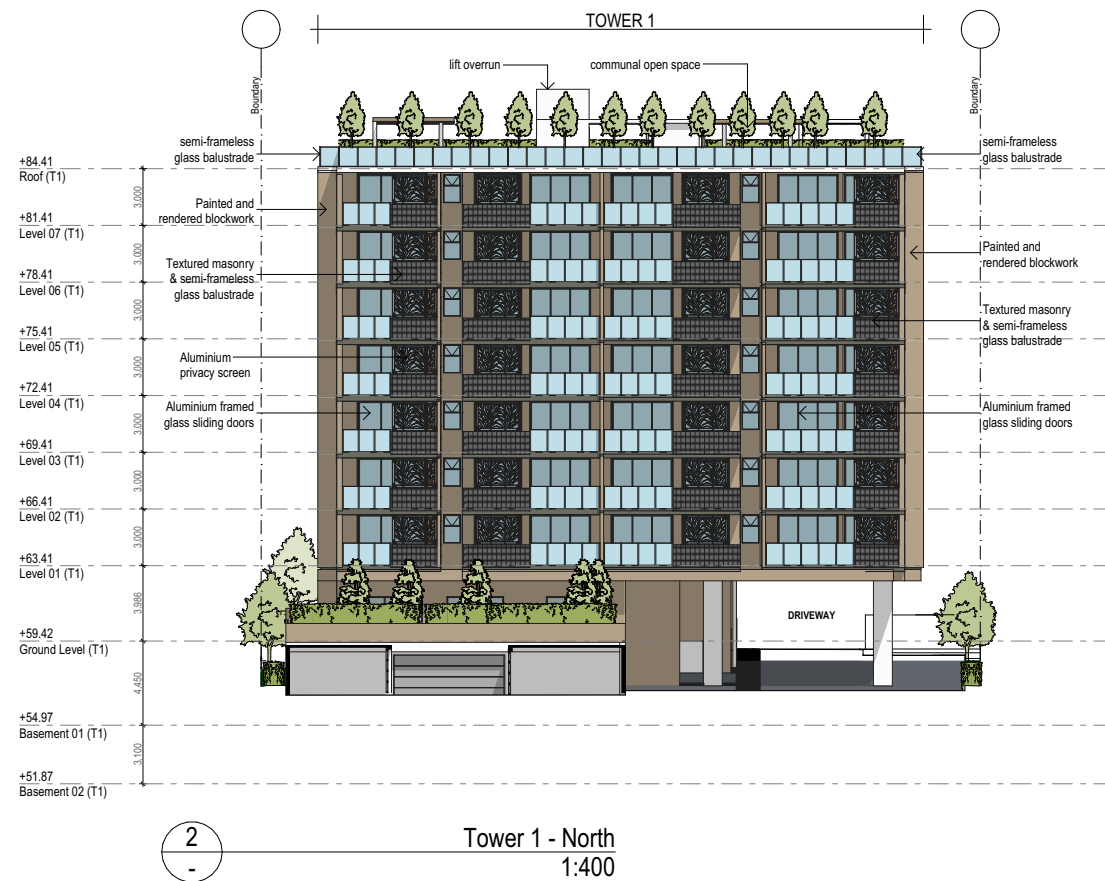


1 South East Elevation
1:400



2 North East Elevation
1:400





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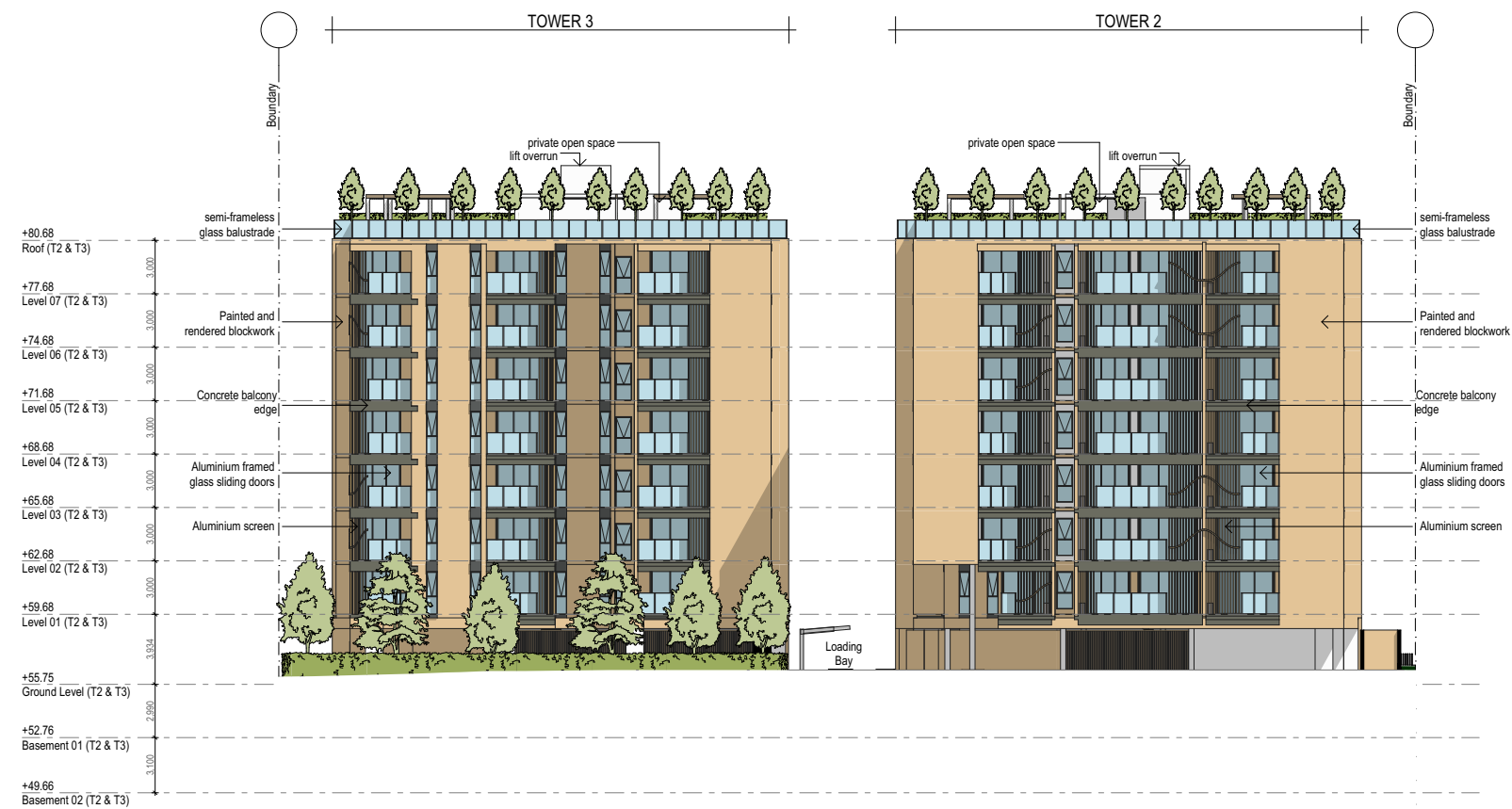
Date	Transmittal Set Name	Rev
Work in Progress	-	01 - WIP

TOWER 1 (N), TOWER 2 (W)
DEVELOPMENT APPLICATION

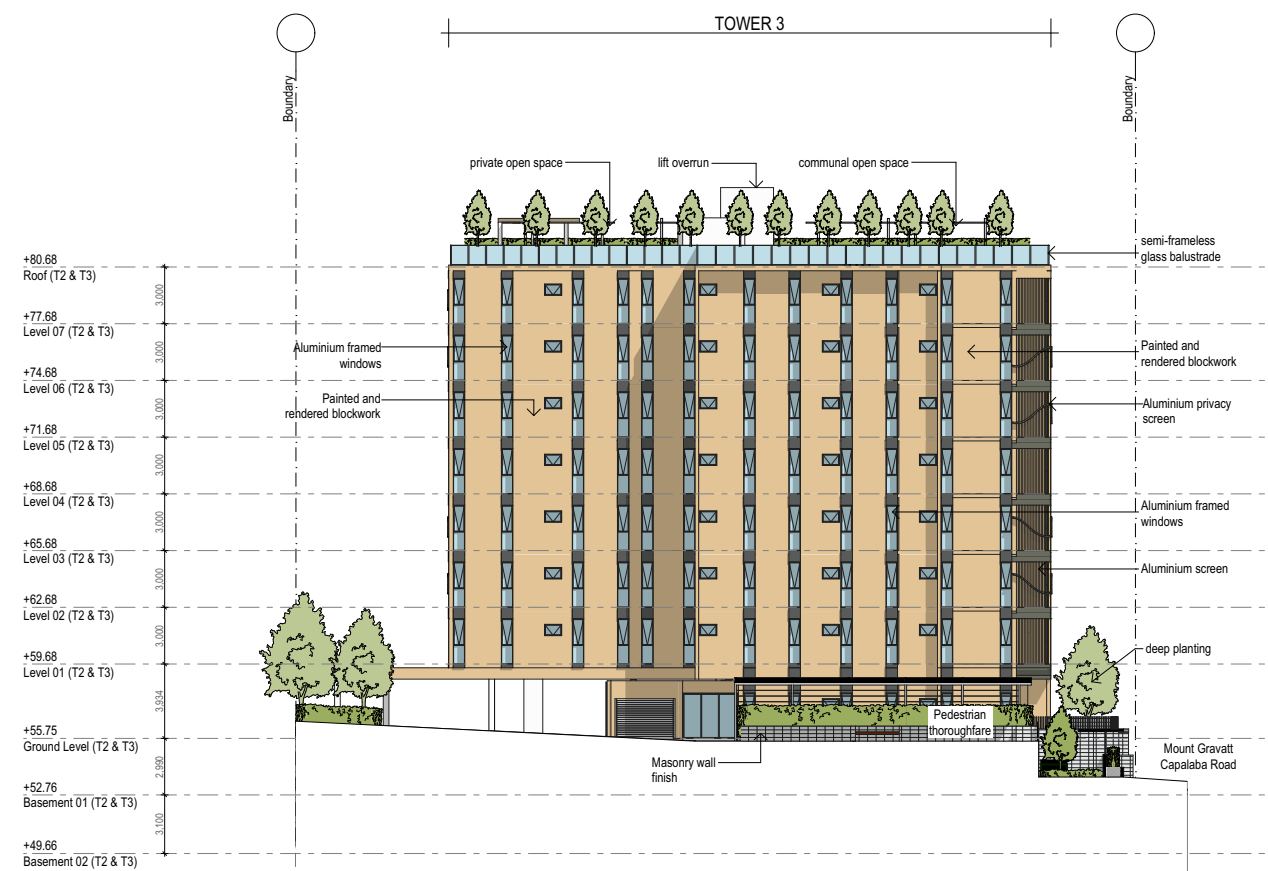
DA-05.03

0246
DA - 10/06/2026

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1
-
Tower 2 & Tower 3 - South
1:400



2
-
Tower 3 - West
1:400

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TOWER 2/3 (S), TOWER 3 (W)
DEVELOPMENT APPLICATION

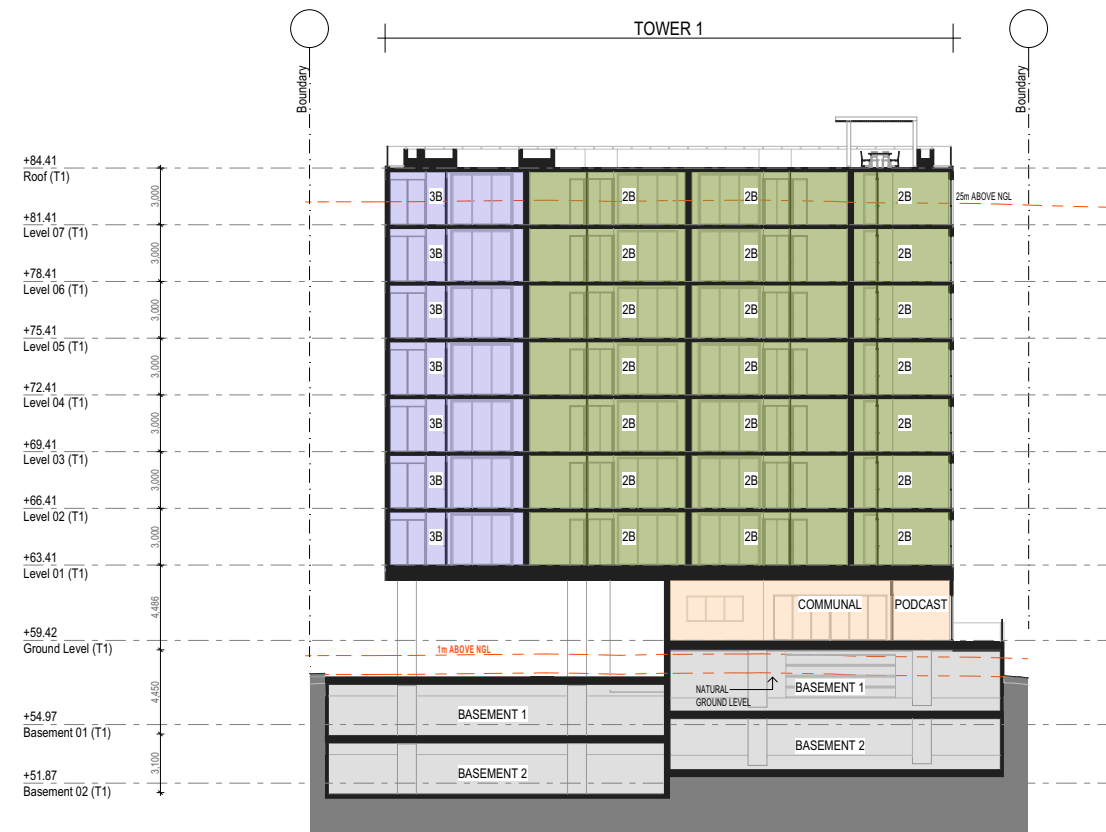
DA-05.04

0246
DA - 10/06/2026

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1
-
Section A
1:400



2
-
Section B
1:400

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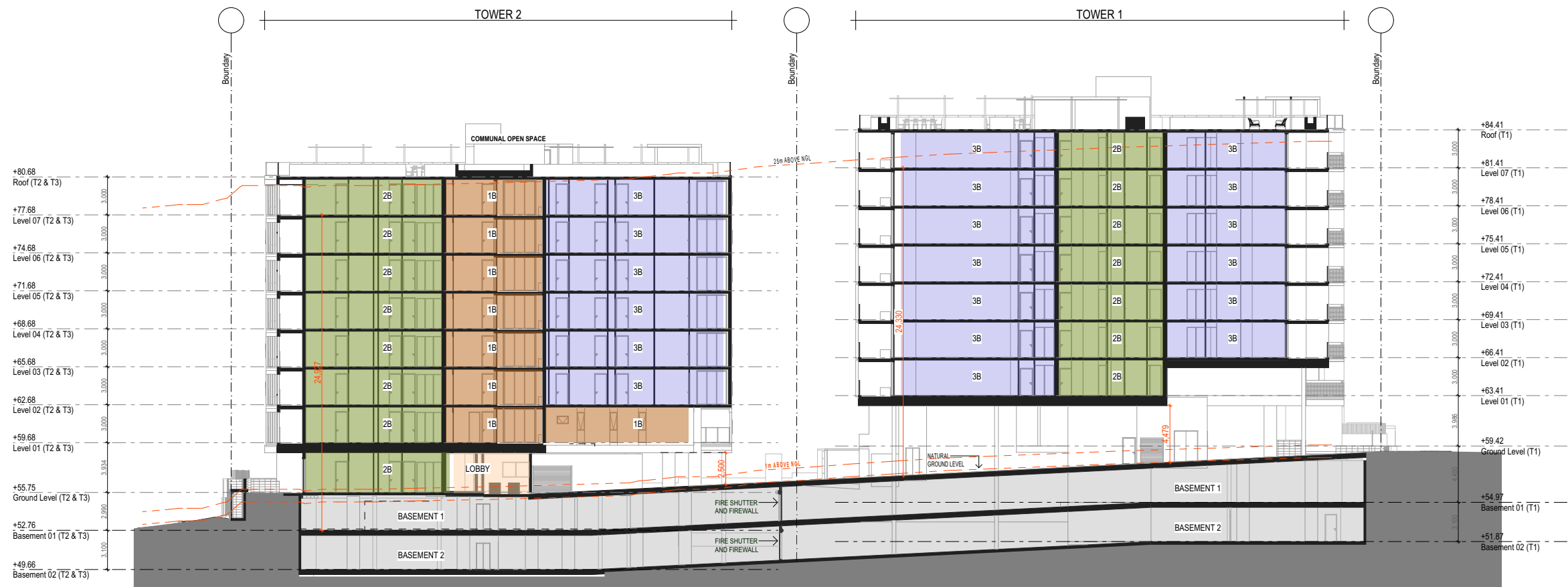
SECTION A & B DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

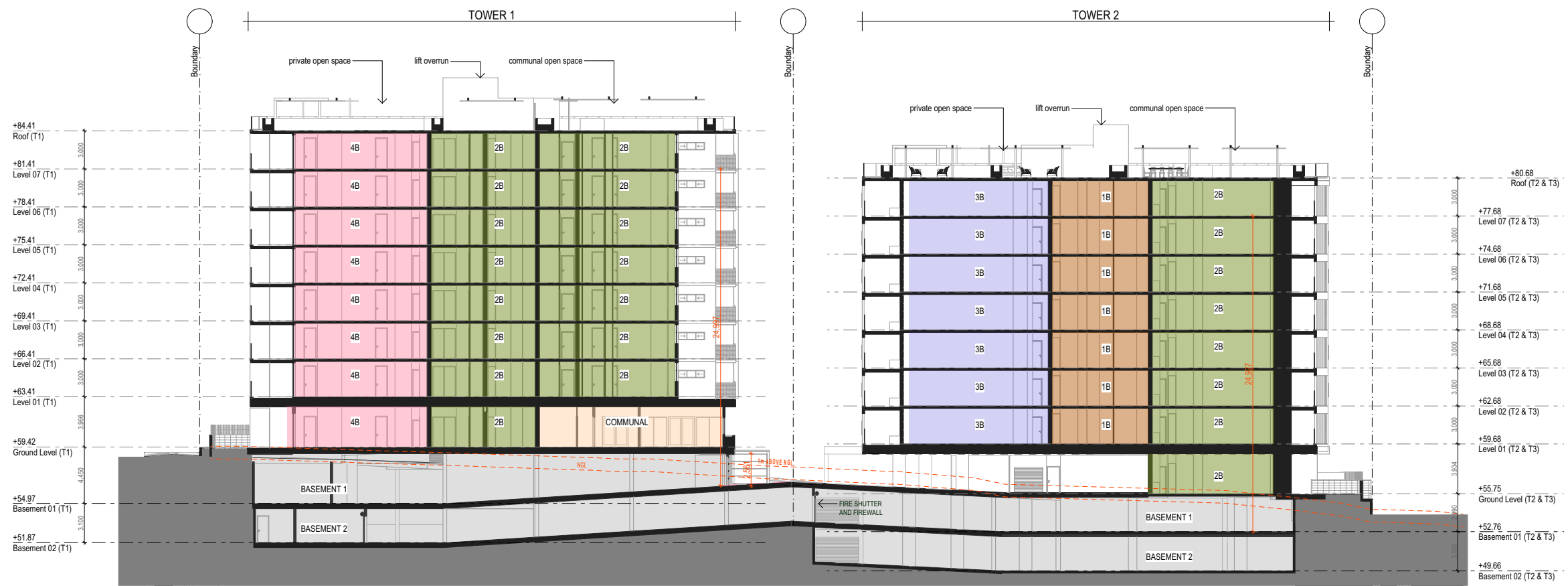
DA-05.05

scale 1:400 @ A3 0246

DA - 10/06/2026



1
-
Section C
1:400



2
-
Section D
1:400

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SECTION C & D

DEVELOPMENT APPLICATION

**NOT TO BE USED FOR CONSTRUCTION

DA-05.06

scale 1:400 @ A3 0246

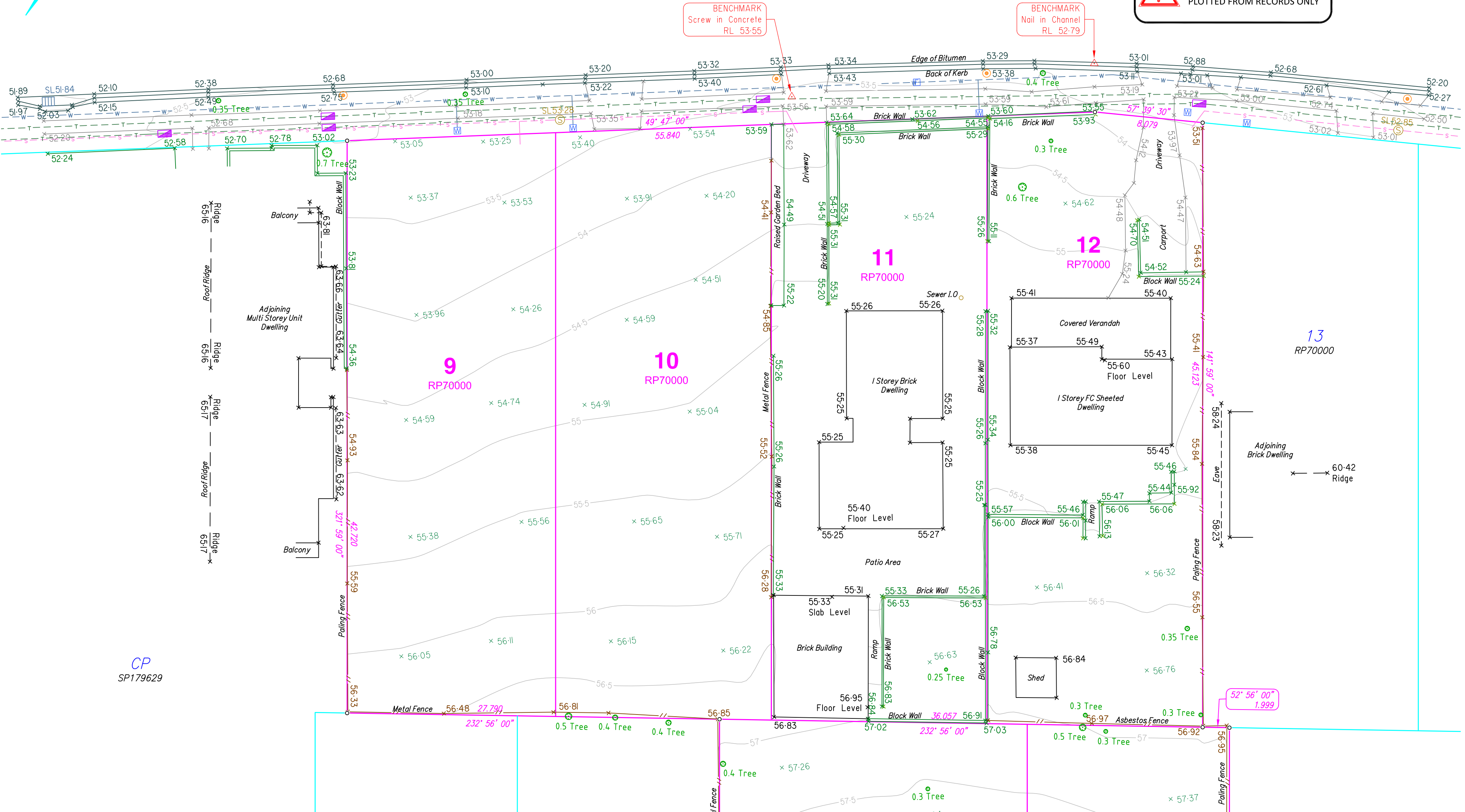
DA - 10/06/2026



Appendix B. Site Survey Plan

MT GRAVATT CAPALABA ROAD

SERVICES ALERT
ALL UNDERGROUND SERVICES
PLOTTED FROM RECORDS ONLY



FLOOD SEARCH ALERT
Lawson Surveys has not completed a flood search on this property. Check council for flood information.
Please contact Lawson Surveys for a quote or for further advice.

TITLE SEARCH ALERT
Lawson Surveys has not carried out a Title Search on this property. Check DoR for easements & encumbrances.
Please contact Lawson Surveys for a quote or for further advice.

"GROUND LEVEL" ALERT
As per Brisbane City Council City Plan 2014 the contours shown on this plan can not be used to determine Maximum Building Heights.
Please contact Lawson Surveys for a quote or for further advice on calculation of Maximum Building Heights.

SERVICES ALERT
Underground services shown have been plotted from records only and possibly from visible features on site. The location of all services must be identified & located prior to any excavation. Service identification has been determined by visible feature marking & needs to be confirmed prior to construction.
The services are symbolic representations only, and whilst they are accurately positioned, they are not to scale.

IDENTIFICATION SURVEY ALERT
The Surface Detail & Contour Survey, as prepared by Lawson Surveys, does not guarantee the location of boundary pegs.
Please contact Lawson Surveys for a quote or for further advice.

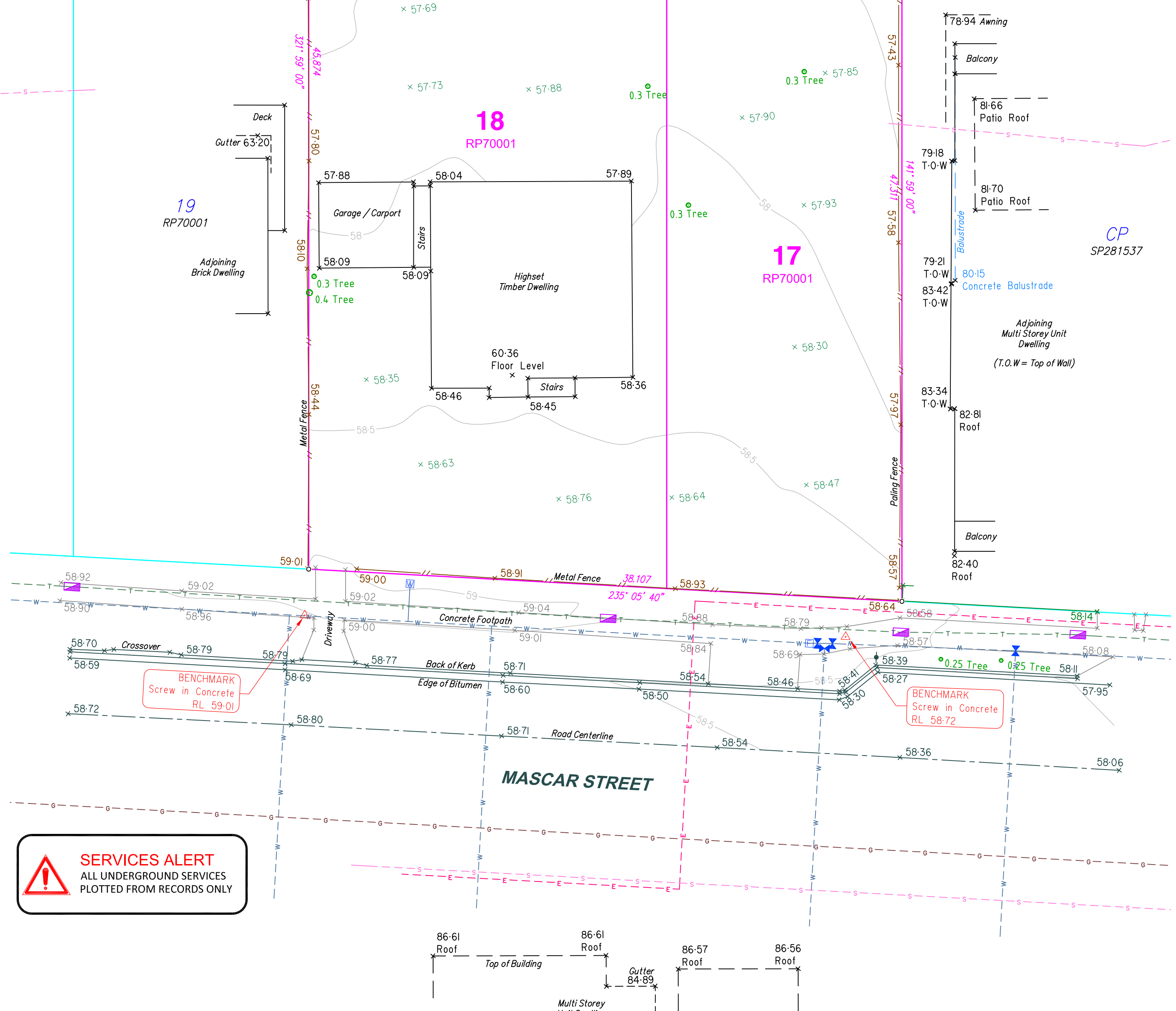
GENERAL NOTES
Contour Interval 0.5m
Boundaries have been accurately positioned but remain subject to an Identification Survey.
Tree Species may not be accurate - it is an indication of tree type only.
North Point is indicative only & may not be an accurate representation of True North.
If in doubt contact Lawson Surveys.

LINETYPE TABLE	
LINETYPE	DEFINITION
---	SUBJECT LOT BOUNDARY
---	ADJOINING LOT BOUNDARY
---	EASEMENT/LEASE BOUNDARY
---	BUILDING
---	GUTTER/FASCIA
---	FENCELINE
---	TOP/BOTTOM OF BANK
---	CHANGE OF GRADE
---	DRAINAGE
---	ELECTRICAL
---	GAS
---	SEWERAGE
---	TELSTRA/COMMS
---	WATER
---	VEGETATION

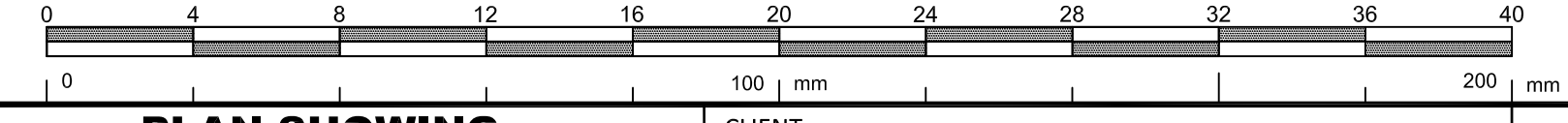
DB4YD LINETYPE TABLE	
LINETYPE	DEFINITION
---	DRAINAGE - DB4YD
---	ELECTRICAL - DB4YD
---	GAS - DB4YD
---	SEWER - DB4YD
---	TELSTRA - DB4YD
---	WATER - DB4YD

SYMBOL TABLE	
SYMBOL	DEFINITION
---	AIR VALVE
---	FIRE HYDRANT
---	WATER METER
---	WATER VALVE
---	WATER TAP
---	GAS VALVE
---	GAS METER
---	COMMUNICATIONS PIT
---	COMMUNICATIONS PILLAR
---	ELECTRICITY PIT
---	ELECTRICITY PILLAR
---	LIGHT POLE OR AS MARKED
---	TRAFFIC LIGHT
---	TRAFFIC SIGNAL BOX/PIT
---	POWER POLE
---	POLE GROUND STAY
---	SEWER MANHOLE
---	DRAINAGE MANHOLE
---	FIELD INLET/GULLY TRAP
---	SIGN POST/BOLLARD
---	BENCHMARK/SURVEY STATION
---	UNKNOWN SERVICE

SERVICES ALERT
ALL UNDERGROUND SERVICES
PLOTTED FROM RECORDS ONLY



SCALE 1:200 at A1 - Lengths are in metres



PLAN SHOWING SURFACE DETAIL & CONTOURS

LEVEL DATUM AHD - VIDE PSM 61265 RL 51.337	SCALE 1:200 @ A1
LOCAL AUTHORITY BRISBANE CITY COUNCIL	DATE 11/12/2025
MERIDIAN SP179629	SURVEYED BY RC
DWG NAME ACAD-21856-DT	DRAWN BY RC

CLIENT SCAS LEAF PTY LTD	LOCATION 101-111 MT GRAVATT CAPALABA RD & 30-34 MASCAR ST UPPER MT GRAVATT
RPD LOTS 9-12 ON RP70000 & LOTS 17-18 ON RP70001	



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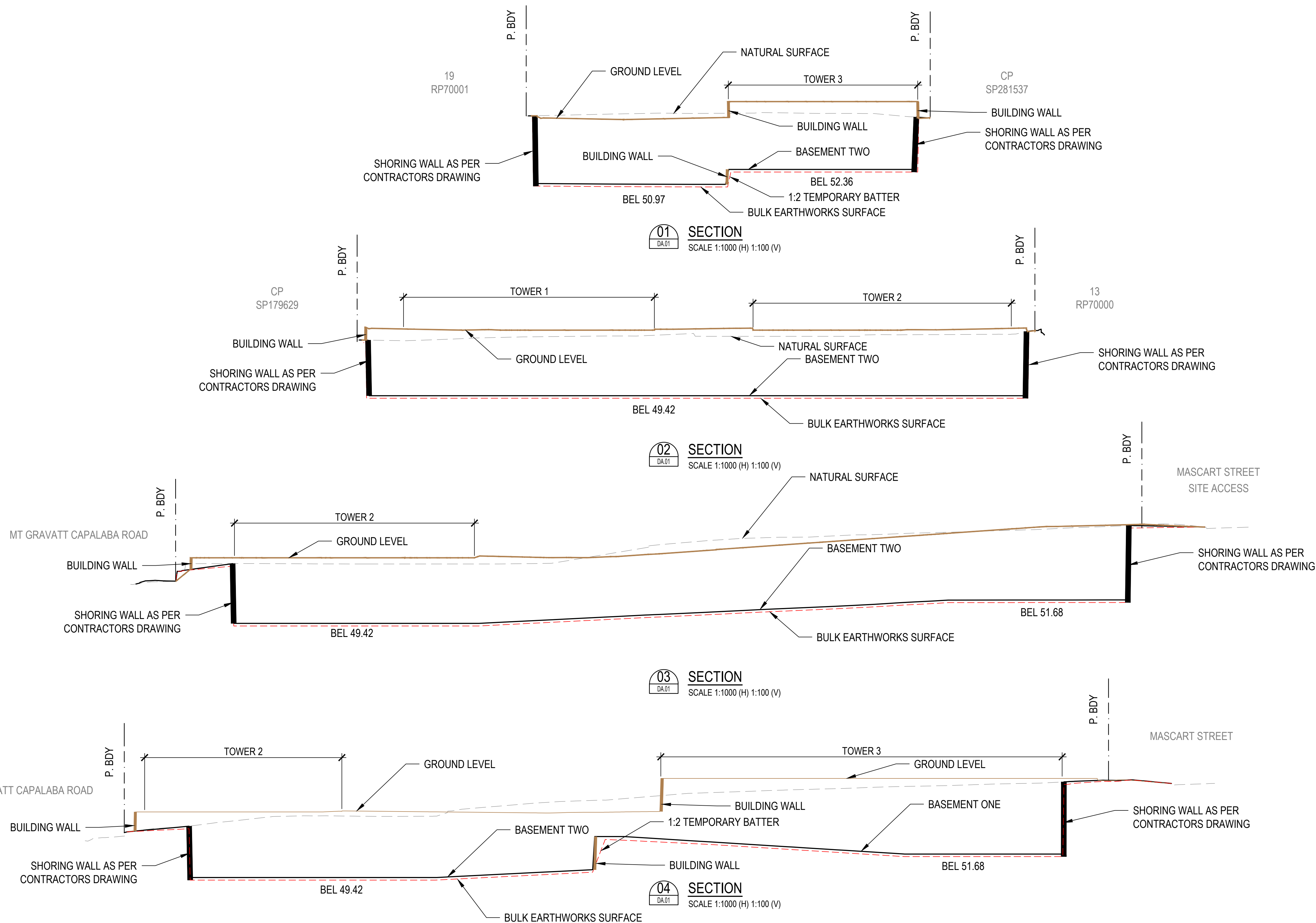
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REFERENCE **21856-DT**

A	11/12/2025	INITIAL ISSUE
ISSUE	DATE	COMMENTS



Appendix C. MPN Plans



VER: 0 10 20 30 40 50
SCALE 1:1000 (A1) 1:2000 (A3)

HOR: 0 1 2 3 4 5
SCALE 1:100 (A1) 1:200 (A3)

B	03.07.26	FOR APPROVAL	MG	LS	
A	20.03.26	FOR APPROVAL	MG	SS	
ISSUE DATE		AMENDMENT		BY APP	

MULTI-RESIDENTIAL DEVELOPMENT
30 MASCART STREET &
101 TO 111 MT GRAVATT CAPALABA RD, UMG

SCALES: AS SHOWN

DESIGN: MG

DRAWN: MG

CHKD: NS

APPRD: SS

DATE:

CLIENT:
SCAS Leaf 4 PTY LTD

BULK EARTHWORKS SECTIONS

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Level 4, Building 3,
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MPN CONSULTING

mpn JOB
10524

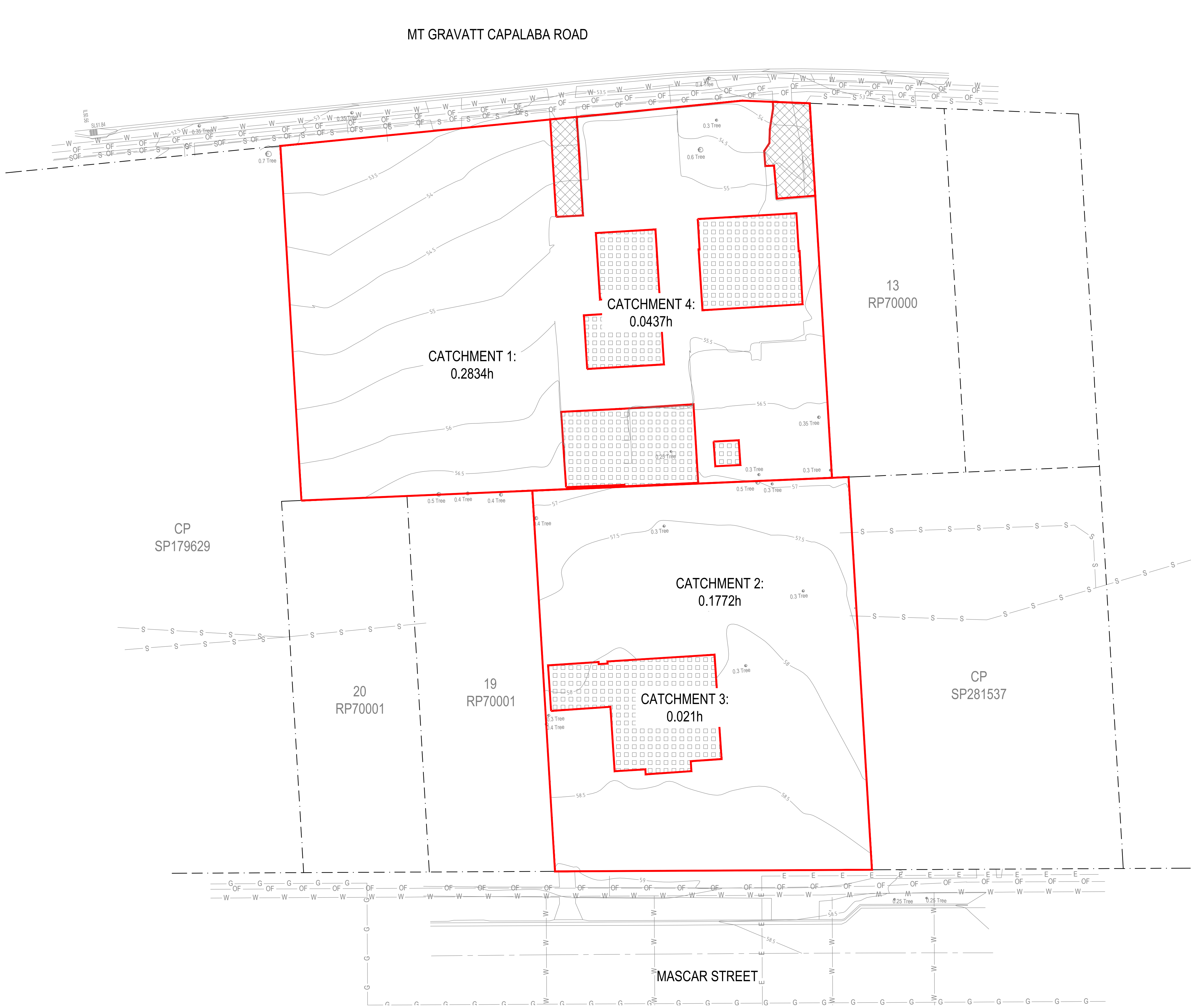
DRAWING No.
DA.02

REV
B

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EXISTING

PROPOSED

PROPERTY BOUNDARY

EASEMENT BOUNDARY

BUILDING

STORM WATER MAIN
(COMPILED DATA)

PAVEMENT AREA

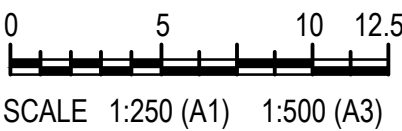
ROOF AREA

LANDSCAPE AREA

CATCHMENT TABLE

CATCHMENT TYPE	CATCHMENT AREA (Ha)
1	0.2834
2	0.1772
3	0.021
4	0.0437

FOR APPROVAL



B	03.07.26	FOR APPROVAL	MG	SR	
A	20.03.26	FOR APPROVAL	MG	SS	
ISSUE	DATE	AMENDMENT	BY	APP	

MULTI-RESIDENTIAL DEVELOPMENT

30 MASCAR STREET & 101 TO 111 MT GRAVATT CAPALABA RD, UMG

SCALES: AS SHOWN

DESIGN: MG

DRAWN: MG

CHKD: NS

APPRD: SR

DATE:

CLIENT:

SCAS Leaf 4 PTY LTD

PRE-DEVELOPMENT CATCHMENT PLAN

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MT GRAVATT CAPALABA ROAD



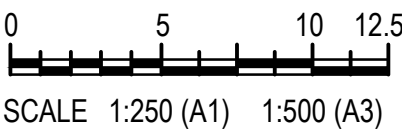
EXISTING	LEGEND	PROPOSED
	PROPERTY BOUNDARY	---
	EASEMENT BOUNDARY	---
	BUILDING	---
	STORM WATER MAIN (COMPILED DATA)	---
	PAVEMENT AREA	---
	ROOF AREA	---
	LANDSCAPE AREA	---

CATCHMENT TABLE

CATCHMENT TYPE	CATCHMENT AREA (Ha)
PAVEMENT	0.1118
ROOF	0.2901
LANDSCAPE	0.057

TREATMENT TABLE

CATCHMENT TYPE	TREATMENT TYPE	CATCHMENT AREA(Ha)	IMPERVIOUS AREA(%)
PAVEMENT AREA CATCHMENT	15X OCEAN PROTECT STORM FILTERS 690mm (7.5m² SF CHAMBER)	0.1118	90
ROOF AREA CATCHMENT		0.2901	100
LANDSCAPE AREA CATCHMENT		0.057	30



ISSUE	DATE	AMENDMENT	BY	APP
A	20.03.26	FOR APPROVAL	MG	SS

MULTI-RESIDENTIAL DEVELOPMENT
30 MASCAR STREET & 101 TO 111 MT GRAVATT CAPALABA RD, UMG

SCALES:	AS SHOWN
DESIGN:	MG
DRAWN:	MG
CHKD:	NS
APPRD:	SR
DATE:	

CLIENT:
SCAS Leaf 4 PTY LTD
POST-DEVELOPMENT CATCHMENT PLAN

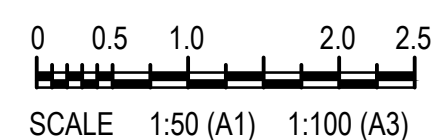
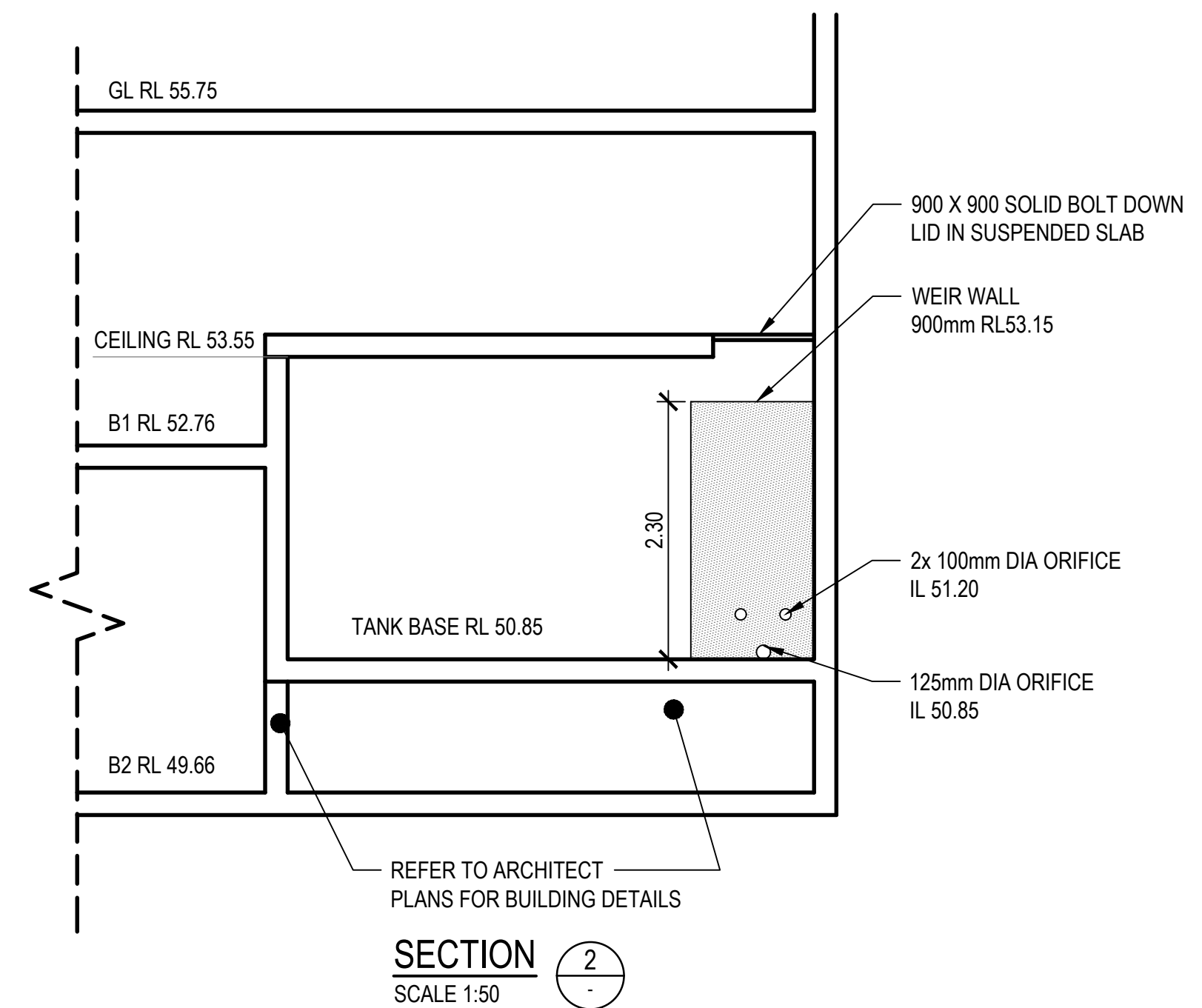
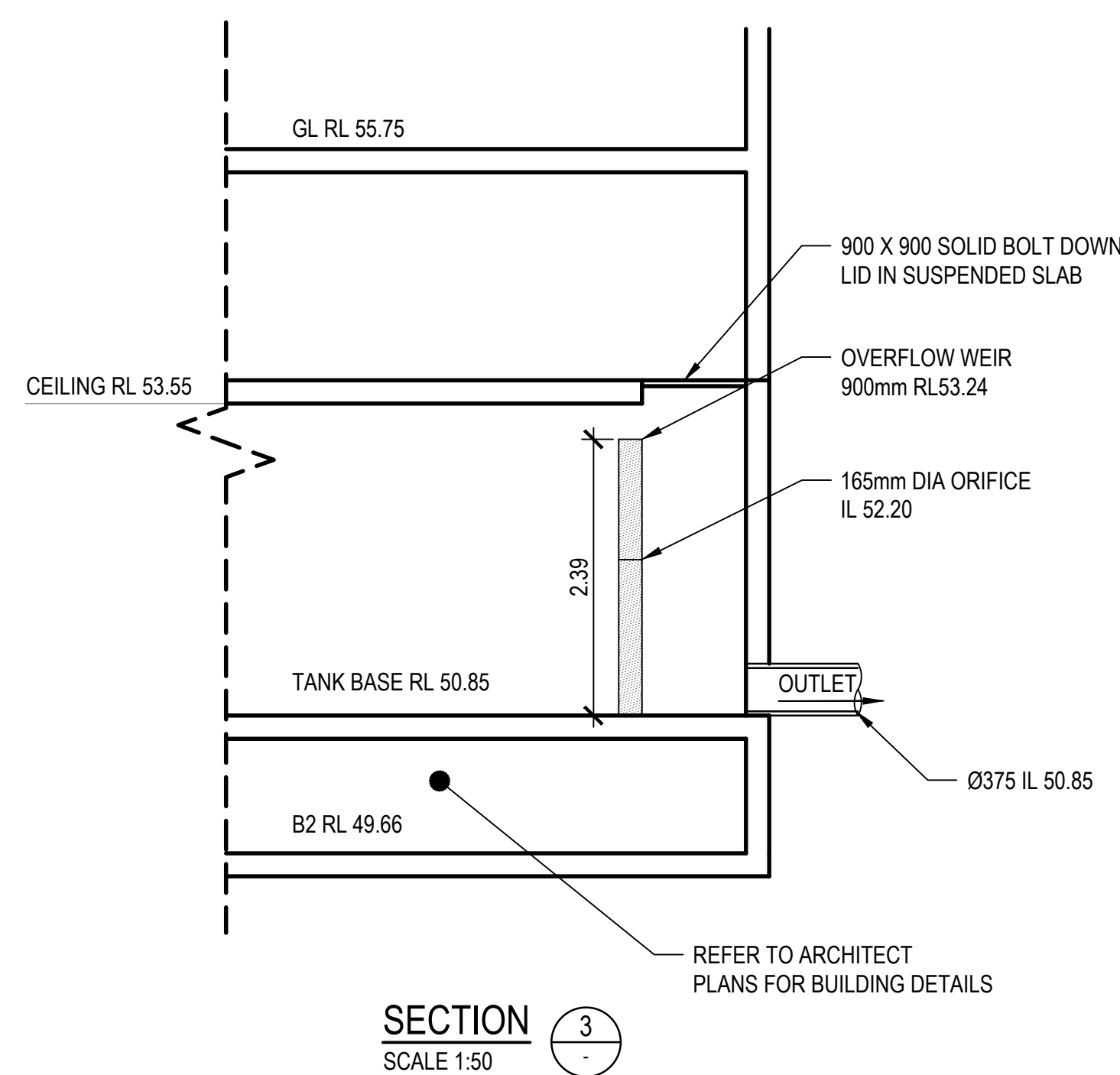
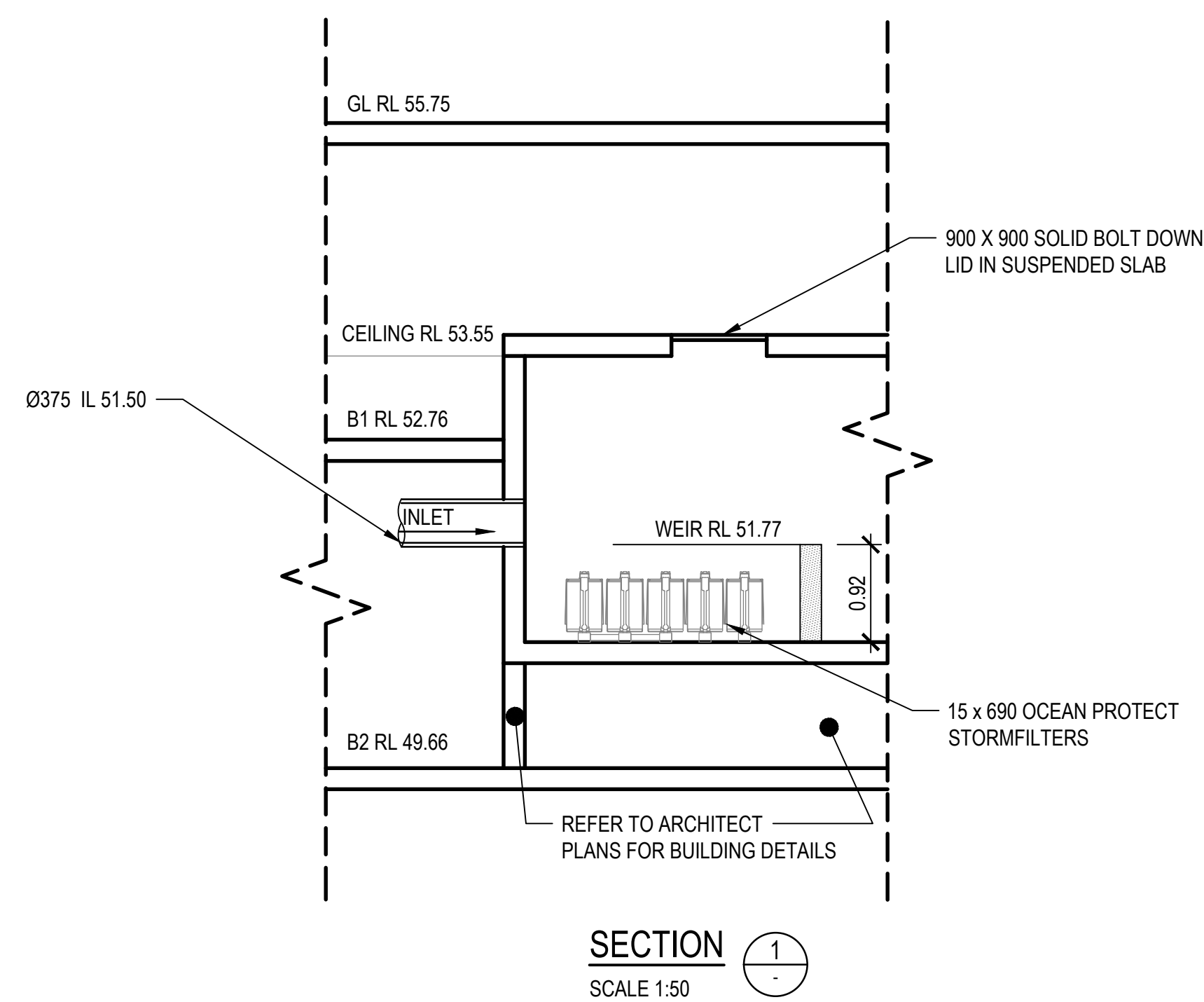
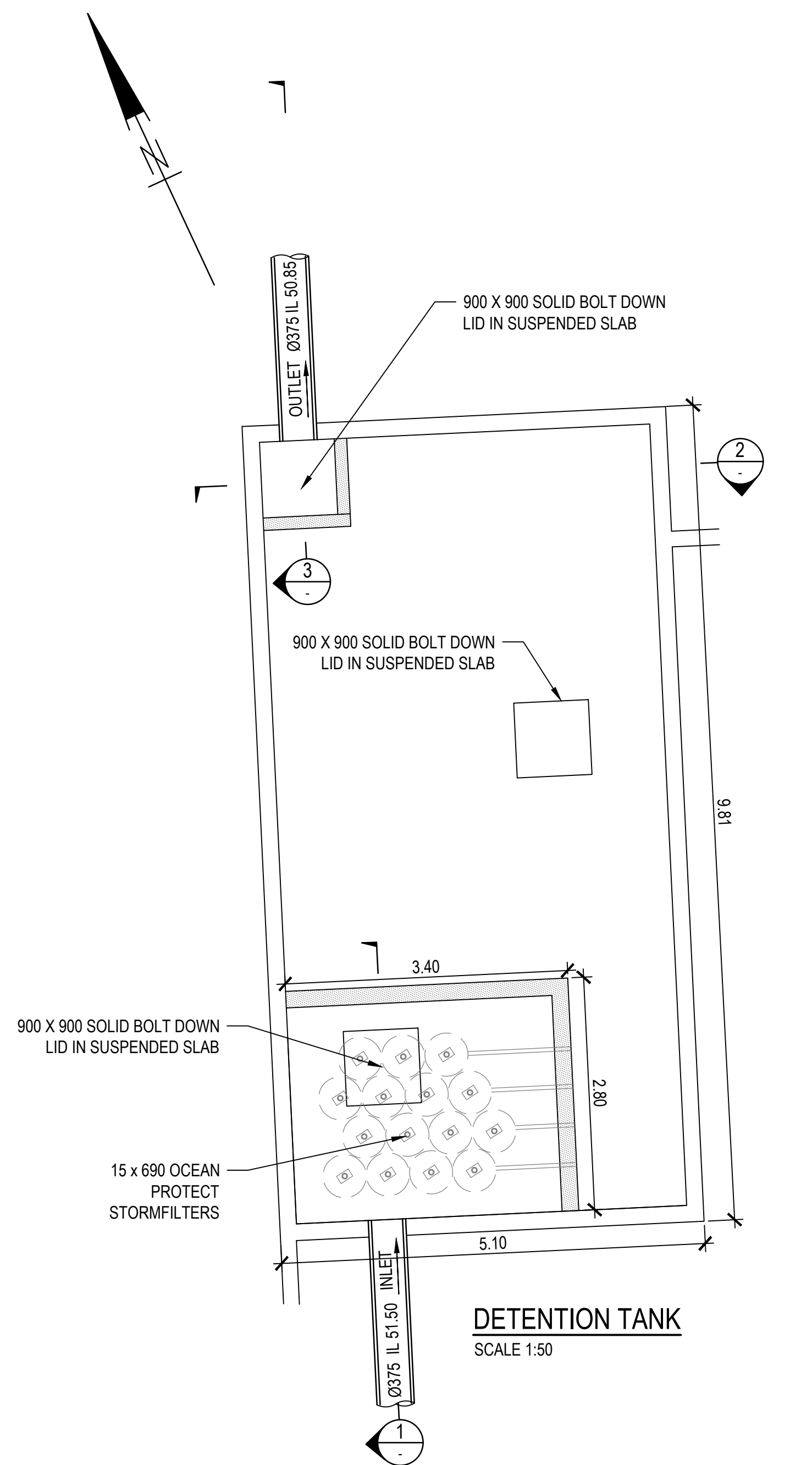


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MULTI-RESIDENTIAL DEVELOPMENT

30 MASCAR STREET & 101 TO 111 MT GRAVATT CAPALABA RD, UMG

SCALES: AS SHOWN

DESIGN: MG

DRAWN: MG

CHKD: NS

APPRD: SR

DATE:

CLIENT:

SCAS Leaf 4 PTY LTD

STORMWATER TANK DETAILS

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Appendix D. Oceanprotect Operations and Maintenance Guidelines



OceanGuard™

Operations & Maintenance Manual

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Introduction

The primary purpose of stormwater treatment devices is to capture and prevent pollutants from entering waterways, maintenance is a critical component of ensuring the ongoing effectiveness of this process. The specific requirements and frequency for maintenance depends on the treatment device and pollutant load characteristics of each site. This manual has been designed to provide details on the cleaning and maintenance processes as recommended by the manufacturer.

The OceanGuard technology is a gully pit basket designed to fit within new and existing gully pits to remove pollution from stormwater runoff. The system has a choice of Filtration liners, designed to remove gross pollutants, total suspended solids and attached pollutants as either a standalone technology or as part of a treatment train with our StormFilter or Jellyfish Filtration products. OceanGuard pit baskets are highly effective, easy to install and simple to maintain.

Why do I need to perform maintenance?

Adhering to the maintenance schedule of each stormwater treatment device is essential to ensuring that it functions properly throughout its design life.

During each inspection and clean, details of the mass, volume and type of material that has been collected by the device should be recorded. This data will assist with the revision of future management plans and help determine maintenance interval frequency. It is also essential that qualified and experienced personnel carry out all maintenance (including inspections, recording and reporting) in a systematic manner.

Maintenance of your stormwater management system is essential to ensuring ongoing at-source control of stormwater pollution. Maintenance also helps prevent structural failures (e.g. prevents blocked outlets) and aesthetic failures (e.g. debris build up), but most of all ensures the long term effective operation of the OceanGuard.

Health and Safety

Access to pits containing an OceanGuard typically requires removing (heavy) access covers/grates, but typically it is not necessary to enter into a confined space. Pollutants collected by the OceanGuard will vary depending on the nature of your site. There is potential for these materials to be harmful. For example, sediments may contain heavy metals, carcinogenic substances or sharp objects such as broken glass and syringes. For these reasons, there should be no primary contact with the waste collect and all aspects of maintaining and cleaning your OceanGuard require careful adherence to Occupational Health and Safety (OH&S) guidelines.

It is important to note that the same level of care needs to be taken to ensure the safety of non-work personnel, as a result it may be necessary to employ traffic/pedestrian control measures when the device is situated in, or near areas with high vehicular/pedestrian activity.

Personnel health and safety

Whilst performing maintenance on the OceanGuard pit insert, precautions should be taken in order to minimise (or when possible prevent) contact with sediment and other captured pollutants by maintenance personnel. In order to achieve this the following personal protective equipment (PPE) is recommended:

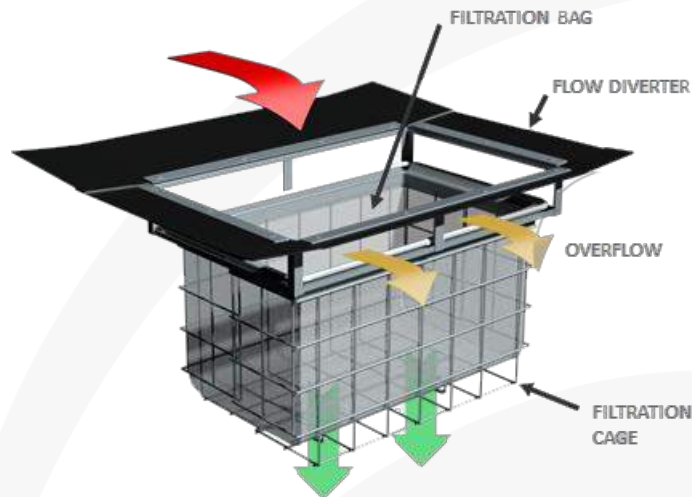
- Puncture resistant gloves
- Steel capped safety boots,
- Long sleeve clothing, overalls or similar skin protection
- Eye protection
- High visibility clothing or vest

During maintenance activities it may be necessary to implement traffic control measures. Ocean Protect recommend that a separate site specific traffic control plan is implemented as required to meet the relevant governing authority guidelines.

The OceanGuard pit insert is designed to be maintained from surface level, without the need to enter the pit. However depending on the installation configuration, location and site specific maintenance requirements it may be necessary to enter a confined space occasionally. It is recommended that all maintenance personnel evaluate their own needs for confined space entry and compliance with relevant industry regulations and guidelines. Ocean Protect maintenance personnel are fully trained and carry certification for confined space entry.

How does it Work?

OceanGuard is designed to intercept stormwater as it enters the stormwater pits throughout a site. The OceanGuard has diversion panels that sit flush with the pit walls, this ensures that as stormwater enters at the top of the pit it is directed to the middle of the insert where the Filtration bag is situated. The filtration bag allows for screening to occur removing 100% of pollutants greater than the opening of the filtration material (200micron, 1600micron bags available).



During larger rain events the large flows overflow slots in the flow diverter of the OceanGuard ensure that the conveyance of stormwater is not impeded thus eliminating the potential for surface flooding. As the flow subsides, the captured pollutants are held in the OceanGuard Filtration bag dry. The waste then starts to dry which reduces the magnitude of organic material decomposition transitioning between maintenance intervals.

Maintenance Procedures

To ensure that each OceanGuard pit insert achieves optimal performance, it is advisable that regular maintenance is performed. Typically the OceanGuard requires 2-4 minor services annually, pending the outcome of these inspections additional maintenance servicing may be required.

Primary Types of Maintenance

The table below outlines the primary types of maintenance activities that typically take place as part of an ongoing maintenance schedule for the OceanGuard.

	Description of Typical Activities	Frequency
Minor Service	Filter bag inspection and evaluation Removal of capture pollutants Disposal of material	2-4 Times Annually
Major Service	Filter Bag Replacement Support frame rectification	As required

Maintenance requirements and frequencies are dependent on the pollutant load characteristics of each site. The frequencies provided in this document represent what the manufacturer considers to be best practice to ensure the continuing operation of the device is in line with the original design specification.

Minor Service

This service is designed to return the OceanGuard device back to optimal operating performance. This type of service can be undertaken either by hand or with the assistance of a Vacuum unit.

Hand Maintenance

1. Establish a safe working area around the pit insert
2. Remove access cover/grate
3. Use two lifting hooks to remove the filtration bag
4. Empty the contents of the filtration bag into a disposal container
5. Inspect and evaluate the filtration bag
6. Inspect and evaluate remaining OceanGuard components (i.e. flow diverter, filtration cage and supporting frame)
7. Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
8. Re-install filtration bag and replace access cover/grate

Vacuum Maintenance

1. Establish a safe working area around the pit insert
2. Remove access cover/grate
3. Vacuum captured pollutants from the filtration bag
4. Remove filtration bag
5. Inspect and evaluate the filtration bag
6. Inspect and evaluate remaining OceanGuard components (i.e. flow diverter, filtration cage and supporting frame)
7. Rejuvenate filtration bag by removing pollutant build up with a stiff brush, additionally the filtration bag can be washed using high pressure water
8. Re-install filtration bag and replace access cover/grate

Major Service (Filter Bag Replacement)

For the OceanGuard system, a major service is a reactionary process based on the outcomes from the minor service.

Trigger Event from Minor Service	Maintenance Action
Filtration bag inspection reveals damage	Replace the filtration bag ^[1]
Component inspection reveals damage	Perform rectification works and if necessary replace components ^[1]

[1] Replacement filtration bags and components are available for purchase from Ocean Protect.

Additional Reasons of Maintenance

Occasionally, events on site can make it necessary to perform additional maintenance to ensure the continuing performance of the device.

Hazardous Material Spill

If there is a spill event on site, all OceanGuard pits that potentially received flow should be inspected and cleaned. Specifically all captured pollutants from within the filtration bag should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. All filtration bags should be rejuvenated (replaced if required) and re-installed.

Blockages

The OceanGuards internal high flow bypass functionality is designed to minimise the potential of blockages/flooding. In the unlikely event that flooding occurs around the stormwater pit the following steps should be undertaken to assist in diagnosing the issue and implementing the appropriate response.

1. Inspect the OceanGuard flow diverter, ensuring that they are free of debris and pollutants
2. Perform a minor service on the OceanGuard
3. Remove the OceanGuard insert to access the pit and inspect both the inlet and outlet pipes, ensuring they are free of debris and pollutants

Major Storms and Flooding

In addition to the scheduled activities, it is important to inspect the condition of the OceanGuard pit insert after a major storm event. The inspection should focus on checking for damage and higher than normal sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants disposed.

Disposal of Waste Materials

The accumulated pollutants found in the OceanGuard must be handled and disposed of in a manner that is in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. If the filtration bag has been contaminated with any unusual substance, there may be additional special handling and disposal methods required to comply with relevant government/authority/industry regulations.

Maintenance Services

With over a decade and a half of maintenance experience Ocean Protect has developed a systematic approach to inspecting, cleaning and maintaining a wide variety of stormwater treatment devices. Our fully trained and professional staff are familiar with the characteristics of each type of system, and the processes required to ensure its optimal performance.

Ocean Protect has several stormwater maintenance service options available to help ensure that your stormwater device functions properly throughout its design life. In the case of our OceanGuard system we offer long term pay-as-you-go contracts, pre-paid once off servicing and replacement filter bags.

For more information please visit www.OceanProtect.com.au



StormFilter

Operations & Maintenance Manual

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Maintenance Services.....	6

Introduction

The primary purpose of stormwater treatment devices is to capture and prevent pollutants from entering waterways, maintenance is a critical component of ensuring the ongoing effectiveness of this process. The specific requirements and frequency for maintenance depends on the treatment device and pollutant load characteristics of each site. This manual has been designed to provide details on the cleaning and maintenance processes for the StormFilter as recommended by the manufacturer.

The StormFilter is designed and sized to meet stringent regulatory requirements. It removes the most challenging target pollutants (including fine solids, soluble heavy metals, oil, and soluble nutrients) using a variety of media. For more than two decades, StormFilter has helped clients meet their regulatory needs and, through ongoing product enhancements, the design continues to be refined for ease of use and improved performance.

Why do I need to perform maintenance?

Adhering to the inspection and maintenance schedule of each stormwater treatment device is essential to ensuring that it functions properly throughout its design life.

During each inspection and clean, details of the mass, volume and type of material that has been collected by the device should be recorded. This data will assist with the revision of future management plans and help determine maintenance interval frequency. It is also essential that qualified and experienced personnel carry out all maintenance (including inspections, recording and reporting) in a systematic manner.

Maintenance of your stormwater management system is essential to ensuring ongoing at-source control of stormwater pollution. Maintenance also helps prevent structural failures (e.g. prevents blocked outlets) and aesthetic failures (e.g. debris build up), but most of all ensures the long term effective operation of the StormFilter.

Health and Safety

Access to a StormFilter unit requires removing heavy access covers/grates, and it is necessary to enter into a confined space. Pollutants collected by the StormFilter will vary depending on the nature of your site. There is potential for these materials to be harmful. For example, sediments may contain heavy metals, carcinogenic substances or objects such as broken glass and syringes. For these reasons, all aspects of maintaining and cleaning your StormFilter require careful adherence to Occupational Health and Safety (OH&S) guidelines.

It is important to note that the same level of care needs to be taken to ensure the safety of non-work personnel. As a result, it may be necessary to employ traffic/pedestrian control measures when the device is situated in, or near areas with high vehicular/pedestrian activity.

Personnel health and safety

Whilst performing maintenance on the StormFilter, precautions should be taken in order to minimise (or, if possible, prevent) contact with sediment and other captured pollutants by maintenance personnel. The following personal protective equipment (PPE) is subsequently recommended:

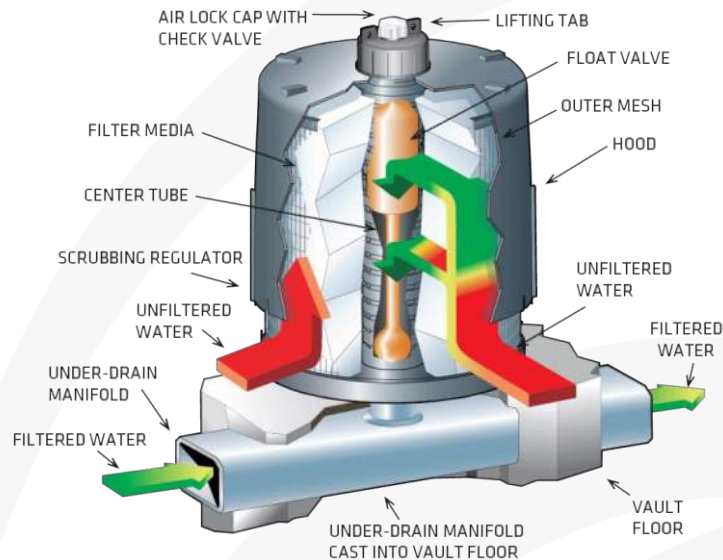
- Puncture resistant gloves
- Steel capped safety boots
- Long sleeve clothing, overalls or similar skin protection
- Eye protection
- High visibility clothing or vest

During maintenance activities, it may be necessary to implement traffic control measures. Ocean Protect recommend that a separate site-specific traffic control plan is implemented as required to meet the relevant governing authority guidelines.

Whilst some aspects of StormFilter maintenance can be performed from surface level, there will be a need to enter the StormFilter system (confined space) during a major service. It is recommended that all maintenance personnel evaluate their own needs for confined space entry and compliance with relevant industry regulations and guidelines. Ocean Protect maintenance personnel are fully trained and carry certification for confined space entry applications.

How does it Work?

Stormwater enters the cartridge chamber, passes through the filtration media and begins filling the cartridge center tube. When water reaches the top of the cartridge the float valve opens and filtered water is allowed to drain at the designed flow rate. Simultaneously, a one-way check valve closes activating a siphon that draws stormwater evenly throughout the filter media and into the center tube. Treated stormwater is then able to discharge out of the system through the underdrain manifold pipework.



As the rain event subsides, the water level outside the cartridge drops and approaches the bottom of the hood, air rushes through the scrubbing regulators releasing the water column and breaking the siphon. The turbulent bubbling action agitates the surface of the cartridge promoting trapped sediment to drop to the chamber floor. After a rain event, the chamber is able to drain dry by way of an imperfect seal at the base of the float valve.

Maintenance Procedures

To ensure optimal performance, it is advisable that regular maintenance is performed. Typically, the StormFilter requires an inspection every 6 months with a minor service at 12 months. Additionally, as the StormFilter cartridges capture pollutants the media will eventually become occluded and require replacement (expected media life is 1-3 years).

Primary Types of Maintenance

The table below outlines the primary types of maintenance activities that typically take place as part of an ongoing maintenance schedule for the StormFilter.

	Description of Typical Activities	Frequency
Inspection	Visual Inspection of cartridges & chamber Remove larger gross pollutants Perform minimal rectification works (if required)	Every 6 Months
Minor Service	Evaluation of cartridges and media Removal of accumulated sediment (if required) Wash-down of StormFilter chamber (if required)	Every 12 Months
Major Service	Replacement of StormFilter cartridge media	As required

Maintenance requirements and frequencies are dependent on the pollutant load characteristics of each site. The frequencies provided in this document represent what the manufacturer considers to be best practice to ensure the continuing operation of the device is in line with the original design specification.

Inspection

The purpose of the inspecting the StormFilter system is to assess the condition of the StormFilter chamber and cartridges. When inspecting the chamber, particular attention should be taken to ensure all cartridges are firmly connected to the connectors. It is also an optimal opportunity to remove larger gross pollutants and inspect the outlet side of the StormFilter weir.

Minor Service

This service is designed to ensure the ongoing operational effectiveness of the StormFilter system, whilst assessing the condition of the cartridge media.

1. Establish a safe working area around the access point(s)
2. Remove access cover(s)
3. Evaluate StormFilter cartridge media (if exhausted schedule major service within 6 months)
4. Measure and record the level of accumulated sediment in the chamber
(if sediment depth is less than 100 mm skip to step 9)
5. Remove StormFilter cartridges from the chamber
6. Use vacuum unit to removed accumulated sediment and pollutants in the chamber
7. Use high pressure water to clean StormFilter chamber
8. Re-install StormFilter cartridges
9. Replace access cover(s)

Major Service (Filter Cartridge Replacement)

For the StormFilter system a major service is reactionary process based on the outcomes from the minor service, specifically the evaluation of the cartridge media.

Trigger Event	Maintenance Action
Cartridge media is exhausted ^[1]	Replace StormFilter cartridge media ^[2]

[1] Multiple assessment methods are available, contact Ocean Protect for assistance

[2] Replacement filter media and components are available for purchase from Ocean Protect.

This service is designed to return the StormFilter device back to optimal operating performance

1. Establish a safe working area around the access point(s)
2. Remove access cover(s)
3. By first removing the head cap, remove each individual cartridge hood to allow access to the exhausted media.
4. Utilise a vacuum unit to remove exhausted media from each cartridge
5. Use vacuum unit to remove accumulated sediment and pollutants in the chamber
6. Use high pressure water to clean StormFilter chamber
7. Inspect each empty StormFilter cartridges for any damage, rectify damage as required
8. Re-fill each cartridge with media in line with project specifications
9. Re-install replenished StormFilter cartridges
10. Replace access cover(s)

Additional Types of Maintenance

Occasionally, events on site can make it necessary to perform additional maintenance to ensure the continuing performance of the device.

Hazardous Material Spill

If there is a spill event on site, the StormFilter unit should be inspected and cleaned. Specifically, all captured pollutants and liquids from within the unit should be removed and disposed in accordance with any additional requirements that may relate to the type of spill event. Additionally, it will be necessary to inspect the filter cartridges and assess them for contamination, depending on the type of spill event it may be necessary to replace the filtration media.

Blockages

In the unlikely event that flooding occurs upstream of the StormFilter system the following steps should be undertaken to assist in diagnosing the issue and determining the appropriate response.

1. Inspect the upstream diversion structure (if applicable) ensuring that it is free of debris and pollutants
2. Inspect the StormFilter unit checking the underdrain manifold as well as both the inlet and outlet pipes for obstructions (e.g. pollutant build-up, blockage), which if present, should be removed.

Major Storms and Flooding

In addition to the scheduled activities, it is important to inspect the condition of the StormFilter after a major storm event. The focus is to inspect for damage and higher than normal sediment accumulation that may result from localised erosion. Where necessary damaged components should be replaced and accumulated pollutants should be removed and disposed.

Disposal of Waste Materials

The accumulated pollutants found in the StormFilter must be handled and disposed of in a manner that is in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. If the filter media has been contaminated with any unusual substance, there may be additional special handling and disposal methods required to comply with relevant government/authority/industry regulations.

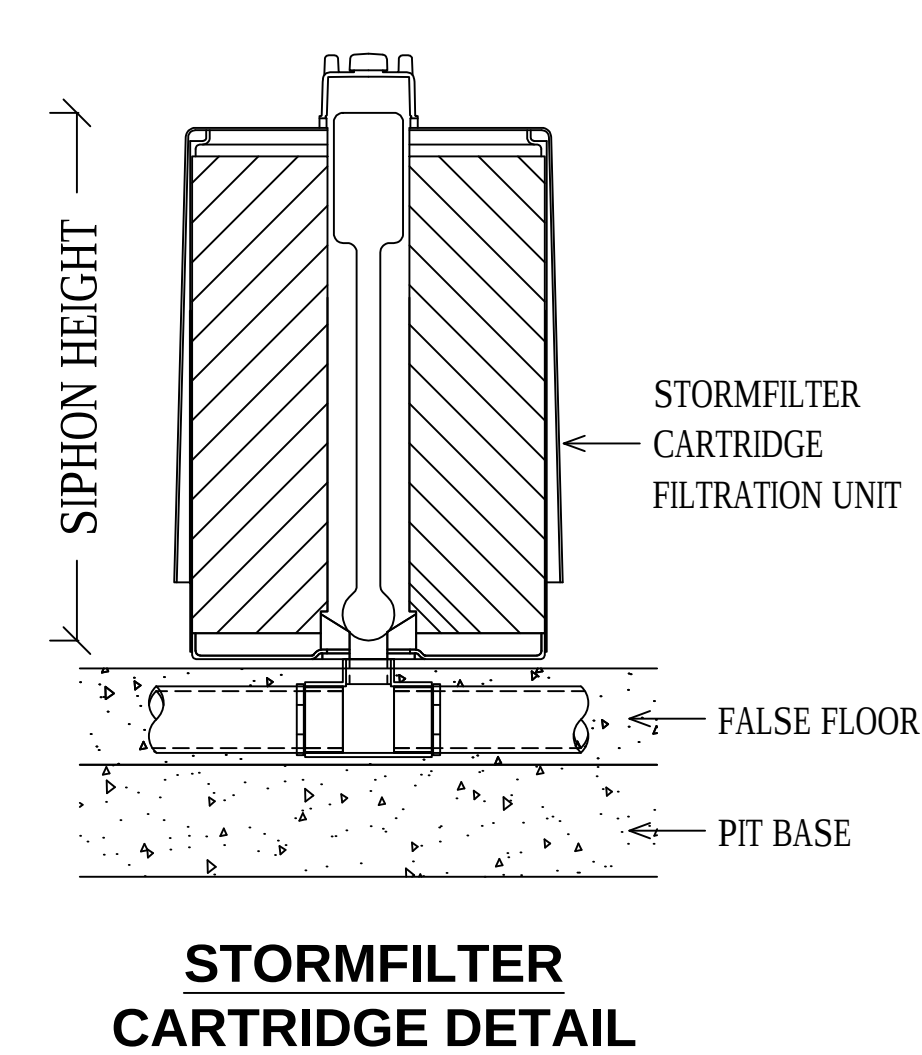
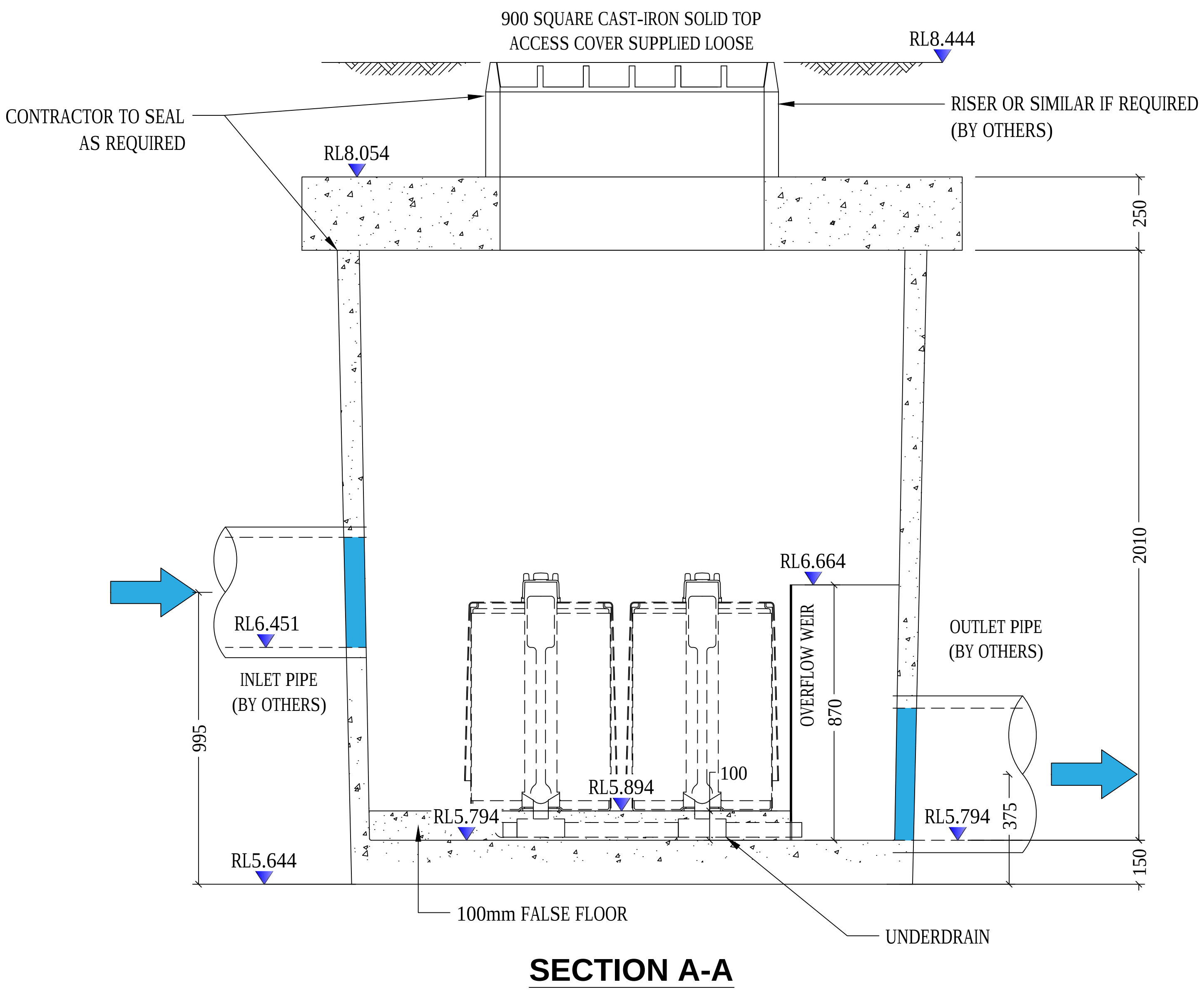
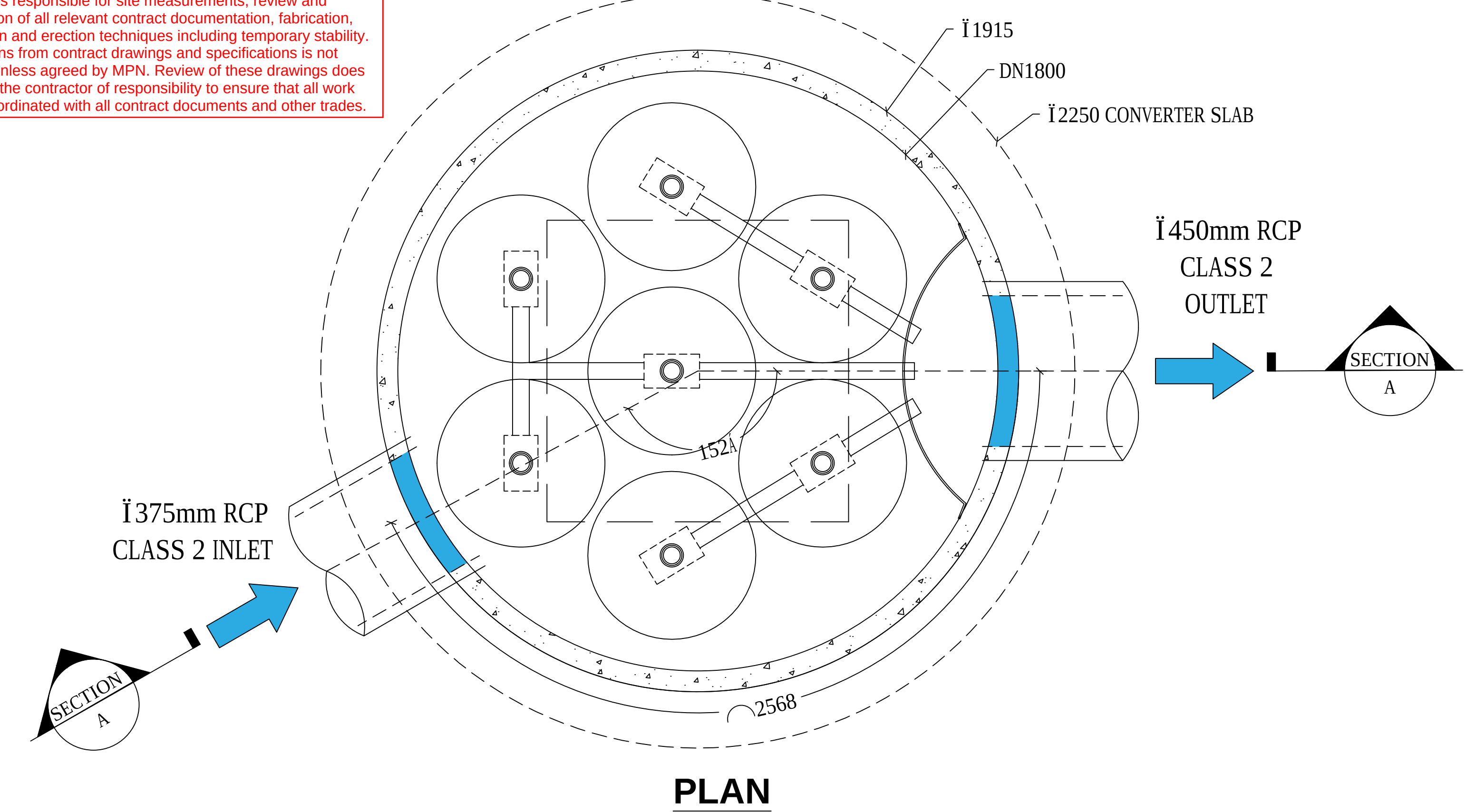
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For more information please visit www.OceanProtect.com.au

MPN Review of this drawing is limited to a general check for conformance of civil elements documented by MPN. Check of dimensions remain the responsibility of the contractor. The contractor is responsible for site measurements, review and co-ordination of all relevant contract documentation, fabrication, construction and erection techniques including temporary stability. Modifications from contract drawings and specifications is not authorise unless agreed by MPN. Review of these drawings does not relieve the contractor of responsibility to ensure that all work has be co-ordinated with all contract documents and other trades.



SITE SPECIFIC DATA REQUIREMENTS			
STRUCTURE ID		TD5/04	
NUMBER OF CARTRIDGES REQ'D		7	
SIPHON HEIGHT (310 / 460 / 690)		690	
MEDIA TYPE (ZPG / PSORB)		PSORB	
WATER QUALITY FLOW RATE (L/S)		6.3	
HYDRAULIC CAPACITY (L/S)		85	
PIPE DATA:	I.L.	MATERIAL	DIAMETER
INLET PIPE # 1	SHOWN	SHOWN	SHOWN
INLET PIPE # 2	N/A	N/A	N/A
INLET PIPE # 3	N/A	N/A	N/A
OUTLET PIPE	SHOWN	SHOWN	SHOWN
PRECAST MANHOLE WEIGHT		TBA	
PRECAST LID WEIGHT		TBA	

GENERAL NOTES

- INLET AND OUTLET PIPING SHALL BE SPECIFIED BY CERTIFYING ENGINEER. PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
- PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m AND A GROUND WATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
- ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
- DRAWING NOT TO SCALE.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY CERTIFYING ENGINEER.
- CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING DETAIL & INSTALLATION GUIDE PROVIDED SEPARATELY).
- CONTRACTOR TO APPLY SEALANT TO ALL JOINTS AND TO PROVIDE, INSTALL AND GROUT INLET AND OUTLET PIPES.

PRODUCTION DRAWING SIGN OFF

ALL DETAILS ON THIS PRODUCTION DRAWING HAVE BEEN REVIEWED AND MEET SITE SPECIFIC REQUIREMENTS. UPON RECEIPT OF SIGN-OFF, PRODUCTION WILL COMMENCE IN ACCORDANCE WITH THIS SITE SPECIFIC DRAWING. ALTERATIONS TO THE UNITS DESIGN AFTER RECEIPT OF SIGNED SITE SPECIFIC PRODUCTION DRAWING MAY INCUR ADDITIONAL CHARGES.

APPROVED BY	
SIGNATURE	
DATE	



PHONE: 1300 354 722 www.oceanprotect.com.au

14808 - QIC Office, Robina Town Centre Dr, Robina

7 CARTRIDGE STORMFILTER SYSTEM

DN1800 MANHOLE

SITE SPECIFIC PRODUCTION DRAWING

DRAWING

1

A

DATE: 20-09-2021

DRAWN: NR

CHECKED: WJ



Appendix E. DRAINS Modelling Results

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.03		0.255				
N3	57.02		0.092				
N4	57		0.009				
N257338	54.01		0.024				
N212774	51.22		0				
Outlet pit	51.11		0.024				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.218	0.058	0.18		5	15	2 1% AEP, 15 min burst, Storm 2
Post-Developed Road	0.237	0.237	0		5	15	2 1% AEP, 5 min burst, Storm 1
Post-Developed Road	0.085	0.082	0.002		5	15	2 1% AEP, 5 min burst, Storm 1
Post-Developed Land	0.008	0.004	0.005		5	15	2 1% AEP, 15 min burst, Storm 1
Post-Developed Land	0.021	0.01	0.013		5	15	2 1% AEP, 15 min burst, Storm 1

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.184	1.87	51.217	51.114	1% AEP, 25 min burst, Storm 5

CHANNEL DETAILS			
Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.237	0.237	1.148	0.037	0.1	4	2.69	1% AEP, 5 min burst, Storm 1
OF4	0.085	0.085	1.148	0.027	0.05	4	1.74	1% AEP, 5 min burst, Storm 1
OF3	0.008	0.008	1.148	0.012	0.01	1.23	1.03	1% AEP, 15 min burst, Storm 1
Weir	0.066	0.066						1% AEP, 25 min burst, Storm 5
Orifice 2	0.05	0.05						1% AEP, 25 min burst, Storm 5
Orifice 1	0.069	0.069						1% AEP, 25 min burst, Storm 4
OF228969	0.02	0.02	1.401	0.023	0.01	4	0.62	1% AEP, 15 min burst, Storm 1

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	53.91	125.4	0.185	0	0.185

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:40:48 on 19/3/2026.

Flows were safe in all overflow routes.

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.03		0.23				
N3	57.02		0.084				
N4	57		0.008				
N257338	54.01		0.021				
N212774	51.12		0				
Outlet pit	51.05		0.021				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.192	0.053	0.158		5	15	2 2% AEP, 15 min burst, Storm 2
Post-Developed Road	0.212	0.212	0		5	15	2 2% AEP, 5 min burst, Storm 1
Post-Developed Road	0.076	0.073	0.002		5	15	2 2% AEP, 5 min burst, Storm 1
Post-Developed Land	0.007	0.004	0.005		5	15	2 2% AEP, 15 min burst, Storm 1
Post-Developed Land	0.018	0.009	0.012		5	15	2 2% AEP, 15 min burst, Storm 1

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.117	1.48	51.115	51.052	2% AEP, 25 min burst, Storm 4

CHANNEL DETAILS			
Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.212	0.212	1.148	0.036	0.09	4	2.52	2% AEP, 5 min burst, Storm 1
OF4	0.076	0.076	1.148	0.026	0.04	4	1.7	2% AEP, 5 min burst, Storm 1
OF3	0.007	0.007	1.148	0.011	0.01	1.13	1.08	2% AEP, 15 min burst, Storm 1
Weir								
Orifice 2	0.049	0.049						2% AEP, 25 min burst, Storm 4
Orifice 1	0.068	0.068						2% AEP, 25 min burst, Storm 4
OF228969	0.018	0.018	1.401	0.023	0.01	4	0.55	2% AEP, 15 min burst, Storm 1

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	53.78	120.1	0.117	0	0.117

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:40:07 on 19/3/2026.

Flows were safe in all overflow routes.

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.03		0.218				
N3	57.01		0.078				
N4	57		0.007				
N257338	54.01		0.018				
N212774	51.1		0				
Outlet pit	51.04		0.018				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.162	0.041	0.13		5	15	2 5% AEP, 15 min burst, Storm 4
Post-Developed Road	0.179	0.179	0		5	15	2 5% AEP, 5 min burst, Storm 1
Post-Developed Road	0.064	0.062	0.002		5	15	2 5% AEP, 5 min burst, Storm 1
Post-Developed Land	0.006	0.003	0.004		5	15	2 5% AEP, 15 min burst, Storm 4
Post-Developed Land	0.015	0.007	0.01		5	15	2 5% AEP, 15 min burst, Storm 4

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.104	1.41	51.097	51.037	5% AEP, 20 min burst, Storm 6

CHANNEL DETAILS			Due to Storm
Name	Max Q (cu.m/s)	Max V (m/s)	

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.179	0.179	1.148	0.034	0.08	4	2.35	5% AEP, 5 min burst, Storm 1
OF4	0.064	0.064	1.148	0.025	0.04	4	1.57	5% AEP, 5 min burst, Storm 1
OF3	0.006	0.006	1.148	0.01	0.01	1.04	1.07	5% AEP, 15 min burst, Storm 4
Weir								
Orifice 2	0.043	0.043						5% AEP, 20 min burst, Storm 6
Orifice 1	0.061	0.061						5% AEP, 20 min burst, Storm 6
OF228969	0.015	0.015	1.401	0.022	0.01	4	0.52	5% AEP, 15 min burst, Storm 4

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	53.22	97	0.104	0	0.104

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:39:44 on 19/3/2026.

Flows were safe in all overflow routes.

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.02		0.189				
N3	57.01		0.068				
N4	57		0.006				
N257338	54.01		0.016				
N212774	51.08		0				
Outlet pit	51.03		0.015				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.136	0.036	0.108		5	15	2 10% AEP, 15 min burst, Storm 4
Post-Developed Road	0.154	0.154	0		5	15	2 10% AEP, 5 min burst, Storm 1
Post-Developed Road	0.055	0.053	0.001		5	15	2 10% AEP, 5 min burst, Storm 1
Post-Developed Land	0.005	0.002	0.003		5	15	2 10% AEP, 15 min burst, Storm 4
Post-Developed Land	0.013	0.006	0.008		5	15	2 10% AEP, 15 min burst, Storm 4

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.094	1.36	51.084	51.025	10% AEP, 20 min burst, Storm 6

CHANNEL DETAILS			
Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.154	0.154	1.148	0.032	0.07	4	2.25	10% AEP, 5 min burst, Storm 1
OF4	0.055	0.055	1.148	0.024	0.04	4	1.49	10% AEP, 5 min burst, Storm 1
OF3	0.005	0.005	1.148	0.01	0.01	1.04	0.9	10% AEP, 15 min burst, Storm 4
Weir								
Orifice 2	0.039	0.039						10% AEP, 20 min burst, Storm 6
Orifice 1	0.055	0.055						10% AEP, 20 min burst, Storm 6
OF228969	0.013	0.013	1.401	0.019	0.01	1.92	0.68	10% AEP, 15 min burst, Storm 4

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	52.84	81.8	0.094	0	0.094

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:39:28 on 19/3/2026.

Flows were safe in all overflow routes.

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.02		0.145				
N3	57.01		0.052				
N4	57		0.005				
N257338	54.01		0.013				
N212774	51.07		0				
Outlet pit	51.01		0.012				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.108	0.027	0.085		5	15	2 20% AEP, 15 min burst, Storm 6
Post-Developed Road	0.129	0.129	0		5	15	2 20% AEP, 5 min burst, Storm 1
Post-Developed Road	0.046	0.045	0.001		5	15	2 20% AEP, 5 min burst, Storm 1
Post-Developed Land	0.004	0.002	0.002		5	15	2 20% AEP, 15 min burst, Storm 6
Post-Developed Land	0.01	0.005	0.006		5	15	2 20% AEP, 15 min burst, Storm 6

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.083	1.3	51.068	51.011	20% AEP, 30 min burst, Storm 9

CHANNEL DETAILS			
Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.129	0.129	1.148	0.03	0.06	4	2.13	20% AEP, 5 min burst, Storm 1
OF4	0.046	0.046	1.148	0.023	0.03	4	1.39	20% AEP, 5 min burst, Storm 1
OF3	0.004	0.004	1.148	0.009	0.01	0.94	0.88	20% AEP, 15 min burst, Storm 6
Weir								
Orifice 2	0.034	0.034						20% AEP, 30 min burst, Storm 9
Orifice 1	0.049	0.049						20% AEP, 30 min burst, Storm 9
OF228969	0.01	0.01	1.401	0.018	0.01	1.82	0.61	20% AEP, 15 min burst, Storm 6

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	52.45	65.8	0.083	0	0.083

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:39:03 on 19/3/2026.

Flows were safe in all overflow routes.

DRAINS results prepared from Version 2025.01.9147.24925

PIT / NODE DETAILS		Version 8					
Name	Max HGL	Max Pond HGL	Max Surface Flow (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N2	57.02		0.118				
N3	57.01		0.042				
N4	57		0.004				
N257338	54.01		0.01				
N212774	51.05		0				
Outlet pit	50.99		0.01				

SUB-CATCHMENT DETAILS							
Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
Pre-Developed	0.081	0.022	0.066		5	15	2 0.5EY AEP, 20 min burst, Storm 8
Post-Developed Road	0.103	0.103	0		5	15	2 0.5EY AEP, 5 min burst, Storm 1
Post-Developed Road	0.036	0.036	0.001		5	15	2 0.5EY AEP, 5 min burst, Storm 1
Post-Developed Land	0.003	0.001	0.002		5	15	2 0.5EY AEP, 15 min burst, Storm 6
Post-Developed Land	0.008	0.004	0.005		5	15	2 0.5EY AEP, 15 min burst, Storm 6

PIPE DETAILS					
Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Outlet	0.07	1.23	51.048	50.993	0.5EY AEP, 20 min burst, Storm 5

CHANNEL DETAILS			
Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS								
Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF2	0.103	0.103	1.148	0.028	0.05	4	1.96	0.5EY AEP, 5 min burst, Storm 1
OF4	0.036	0.036	1.148	0.022	0.03	4	1.26	0.5EY AEP, 5 min burst, Storm 1
OF3	0.003	0.003	1.148	0.008	0.01	0.84	0.83	0.5EY AEP, 15 min burst, Storm 6
Weir								
Orifice 2	0.028	0.028						0.5EY AEP, 20 min burst, Storm 5
Orifice 1	0.042	0.042						0.5EY AEP, 20 min burst, Storm 5
OF228969	0.008	0.008	1.401	0.016	0.01	1.63	0.58	0.5EY AEP, 15 min burst, Storm 6

DETENTION BASIN DETAILS					
Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Detention E	52.07	49.8	0.07	0	0.07

Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3
Run Log for DRAINS v2025.01.9147.24925 - 10524 - Preliminary 3.drn run at 14:38:47 on 19/3/2026.

Flows were safe in all overflow routes.



Appendix F. BCC Floodwise Property Report

FloodWise Property Report

101 MT GRAVATT-CAPALABA RD, UPPER MOUNT GRAVATT 4122
Lot 9 on RP70000, Lot 10 on RP70000



Dedicated to a better Brisbane

THE PURPOSE OF THIS REPORT IS FOR BUILDING AND DEVELOPMENT

Brisbane City Council's FloodWise Property Report provides technical flood planning information including estimated flood levels, habitable floor level requirements and more. This report uses the adopted flood planning information in Brisbane City Plan 2014, that guides how land in Brisbane is used and developed for the future. Find out more about [planning and building](#). To understand how to be resilient and prepare for floods, visit Council's [Be Prepared](#) web page. Find more information about [how to read a FloodWise Property Report](#).

This property has no flood levels

Brisbane City Council has not assigned flood level information for this property however it may be affected by one or more flood or property development flags. Please refer to the Flood Planning and Development Information below for details. The property may have 0.2% AEP flood level which will appear on the Flood Planning Information table if applicable. For professional advice or detailed assessment of a property contact a Registered Professional Engineer of Queensland.

Visit the [Be Prepared](#) page to find more information on how to prepare your home or business for potential flooding.

 **Combined** 1% AEP for river, creek and storm tide flood extent (if applicable) from the adopted Brisbane City Plan 2014. Read more about [Brisbane City Plan 2014](#).



Are you resilient and ready for flood?

- Sign up to the Brisbane Severe Weather Alert at brisbane.qld.gov.au/beprepared
- Visit bom.gov.au for the latest weather updates.
- Have an evacuation plan, emergency kit and important phone numbers ready.
- Observe where water flows from and to during heavy rain.
- Consider how flood-resilient building techniques will have you home faster and with less damage.

Life threatening emergencies
000 Police/fire/ambulance
(mobiles **000** and **112**)

State Emergency Service (SES) **132 500**
Energex **13 19 62**
Brisbane City Council **3403 8888**

Technical Summary

This section of the FloodWise Property Report contains more detailed flood information for this property so **surveyors, builders, certifiers, architects, and engineers can plan and build** in accordance with Council's planning scheme.

Find more information about [planning and building](#) in Brisbane or talk to a Development Services Planning Information Officer via Council's Contact Centre on (07) 3403 8888.

Flood Planning and Development Information

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

Flood overlay code

The Flood overlay code of Council's planning scheme uses the following information to provide guidelines when developing properties. The table below summarises the flood planning areas (FPAs) that apply to this property. Development guidelines for the FPAs are explained in [Council's planning scheme](#).

Flood planning areas (FPA)		
River	Creek / waterway	Overland flow
		Not Applicable

To find more information about Council's flood planning areas (FPAs) for Brisbane River and Creek/waterway flooding to guide future building and development in flood prone areas, please review [Council's Flood Planning Provisions](#).

Coastal hazard overlay code

The Coastal hazard overlay code of Council's planning scheme uses the following information to provide guidelines when conducting new developments. The table below summarises the coastal hazard categories that apply to this property. Development guidelines for the following Coastal hazard overlay sub-categories are explained in Council's [planning scheme](#).

Coastal hazard overlay sub-categories
There are currently no Coastal hazard overlay sub-categories that apply to this property.

Note: Where land is identified within one for more flood planning areas on the Flood overlay or is identified within one of the Storm tide inundation area sub-categories on the Coastal hazard overlay, the assessment criteria that provides the highest level of protection from any source of flooding applies.

Property development flags

Large allotment - This property is either a Large Allotment of over 1000 square metres or is located within a Large Allotment. Flood levels may vary significantly across allotments of this size. Further investigations may be warranted in determining the variation in flood levels and the minimum habitable floor level across the site.

For more information or advice, please consult a Registered Professional Engineer of Queensland (RPEQ).

Useful Flood Information Definitions

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

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

- **0.2% AEP** - A flood event of this size is considered rare but may still occur. A flood of size or larger has a 1 in 500 chance or a 0.2% probability of occurring in any year.
- **1% AEP** - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
- **2% AEP** - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.
- **5% AEP** - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
- **20% AEP** - A flood of this size or larger has a 1 in 5 chance or a 20% probability of occurring in any year.

Data quality

- **Data Quality Code A** - Level data based on recent surveyor report or approved as-constructed drawings.
- **Data Quality Code B** - Level data based on ground-based mobile survey or similar.
- **Data Quality Code C** - Level data derived from Airborne Laser Scanning or LiDAR information.

Defined Flood Level (DFL) - The DFL is used for commercial and industrial development. The Defined flood level (DFL) for Brisbane River flooding is a level of 3.7m AHD at the Brisbane City Gauge based on a flow of 6,800 m/s. DFL is only applicable for non-residential uses affected by Brisbane River flooding.

Flood planning area (FPA) - Council has developed five Flood planning areas (FPAs) as part of Brisbane City Plan 2014 Flood overlay mapping for Brisbane River, Creek/waterway flooding and Overland flow to guide future building and development in flood prone areas. Storm tide flooding is mapped separately. The FPAs are designed to recognise the flood hazard for different flooding types. Flood hazard is a combination of frequency of flooding, the flood depth, and the speed at which the water is travelling. [Find more information here.](#)

Maximum and minimum ground level - Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.

Minimum habitable floor level (dwelling house) - The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family, and rumpus rooms) must be constructed as required by the Brisbane City Plan 2014.

Indicative existing floor level - The approximate level in metres AHD of the lowest habitable floor in the existing building (excluding apartments). The data is sourced from a range of sources with varying accuracy levels.

Property - A property will contain 1 or more lots. The multiple lot warning is shown if you have selected a property that contains multiple lots.

Residential flood level (RFL) - This flood level for the Brisbane River equates to the 1% annual exceedance probability (AEP) flood level.

To learn more, visit [Brisbane City Council's Flood Information Hub](#)

Brisbane City Council's Online Flood Tools

Council provides several online flood tools:

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

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

- **FloodWise Property Report**
- **Flood Overlay Code**

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

- phone (07) 3403 8888 and ask to talk to a Development Services Planning Information Officer

- visit brisbane.qld.gov.au/planning-building

Council's Planning Scheme - The Brisbane City Plan 2014 (planning scheme) has been prepared in accordance with the Sustainable Planning Act as a framework for managing development in a way that advances the purpose of the Act. In seeking to achieve this purpose, the planning scheme sets out the Council's intention for future development in the planning scheme area, over the next 20 years.

Disclaimer

1. Defined flood levels and residential flood levels, minimum habitable floor levels and indicative existing floor levels are determined from the best available information to Council at the date of issue. These levels, for a particular property, may change if more detailed information becomes available or changes are made in the method of calculating levels.
2. Council makes no warranty or representation regarding the accuracy or completeness of a FloodWise Property Report. Council disdaims any responsibility or liability in relation to the use or reliance by any person on a FloodWise Property Report.



Planning to build or renovate?

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

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