Civil Engineering

Stormwater Management Plan

Project Name	17 Grosvenor St, Balaclava
Project Number:	23173
Date:	15-12-2023
Prepared by:	Dara McGrenaghan
Ref:	23177-CI-RPT-001

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Revision

Revision	Date	Comment	Prepared By	Approved By
A	26.10.2023	Preliminary	DMcG	DMcG
B	15.12.2023	Final	DMcG	DMcG

Checked, approved by:

Dara McGrenaghan
Director

Contents

Glossary of Terms

SWMP	Stormwater Management Plan
Average Recurrence Interval (ARI)	The average or expected value of the period between exceedances of a given rainfall total accumulated over a given duration. Eg. 1% AEP flood is expected to be exceeded once every 100 years on average (taken to be equivalent to 1% AEP). It is implicit in this definition that the periods between exceedances are generally random.
Catchment	Area draining to a site. It always relates to a particular location and may include the catchment of tributaries as well as the mainstream.
Discharge	The rate of flow of water measured in terms of volume over time.
Runoff	The amount of rainfall that actually ends up as stream or pipe flow, also known as rainfall excess.
PSD	Permissible Site Discharge
OSD	On-Site-Detention

1. Introduction

MCG Consult have been commissioned by Housing First to prepare a Stormwater Management Plan Report for the 17 Grosvenor St, Balaclava. This report demonstrates the application of suitable Water Sensitive Urban Design (WSUD) principles and illustrates that the proposed development complies with relevant authority requirements.

1.1 Purpose

The purpose of this SWMP is to evaluate the quantity and quality of stormwater associated with the proposed development plan to demonstrate that an appropriate stormwater management strategy has been adopted that complies with the relevant water authority requirements, in particular City of Port Phillip Council Planning Scheme 22.10, Water Sensitive Urban Design (Stormwater Management).

The SWMP specifically addresses the following items for operational phases of the development:

- Stormwater runoff volumes and detention (Stormwater Quantity);
- Stormwater quality treatment measures (Stormwater Quality); and
- Maintenance of water quality treatment devices.

The following will be achieved with the correct application of this SWMP report:

- Appropriate standards to be maintained on all aspects of stormwater within the site.
- Pollution control to be maintained.
- Examination of the surrounding area and properties to ensure they will not be adversely affected nor unduly disrupted by stormwater; and
- Establishment of a unified, clear and concise stormwater management strategy.

1.2 Scope

Key statutory requirements for the proposed development in relation to stormwater include the following:

- Whenever land is developed a duty of care is owed to any property owners who receive stormwater flows which may be altered by the development, to ensure that such properties are not adversely affected by hydraulic or water quality impacts during the construction, maintenance and operational phase of the development.
- Stormwater discharging from the site is to be at an acceptable discharge standard with respect to water quality.
- Reasonable and practical measures must be implemented to avoid inappropriate use of any floodway or waterway.
- All reasonable and practical measures must be taken to minimise or prevent environmental harm.
- All proposed stormwater infrastructure design must have due regard for public safety.

1.3 Reference Documents

The following standards and guidance documents were referred to in preparation of the SWMP.

Guidance documents:

- Bureau of Meteorology for Rainfall Data and IFD Charts.

- CSIRO, Urban Stormwater: Best Practice Environmental Management Guidelines, 1999.
- Melbourne Water, WSUD Engineering Procedures – Stormwater, 2005.
- Melbourne Water, MUSIC Guidelines.
- City of Port Phillip Council Planning Scheme 22.10, Water Sensitive Urban Design (Stormwater Management).

Reference documents:

- Drawings prepared for the development by H2O Architects.
- Geotech Report for the development by WSP Golder

2. Existing Site Characteristics

2.1 Site Details

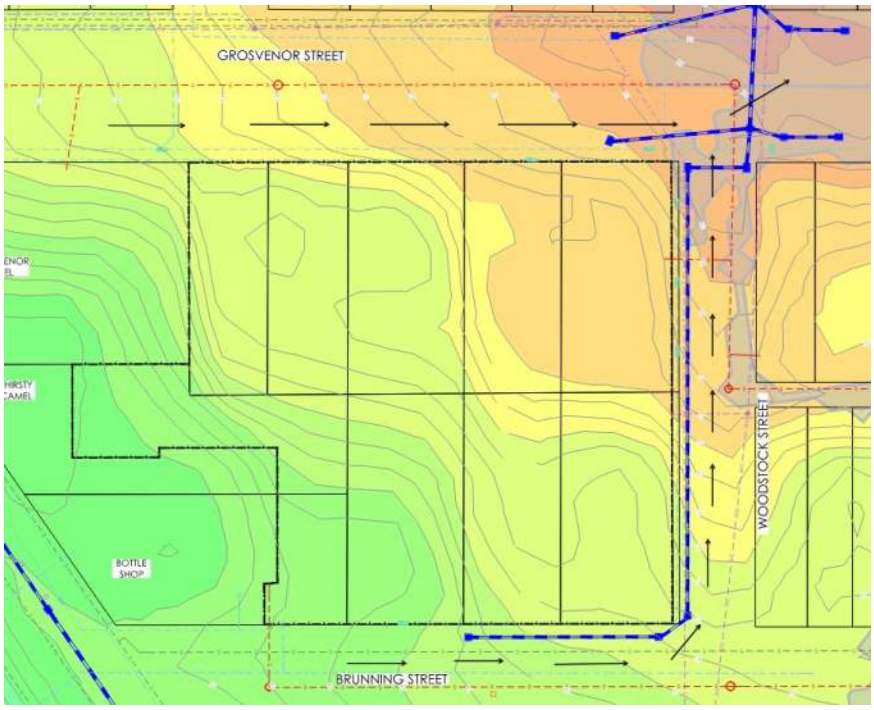
Site Address:	17 GROSVENOR STREET BALACLAVA 3183	**Total Site Area**	0.58 ha

As can be seen in the site location plan below, the site is bounded by Grosvenor St to the north, Woodstock St to the east and Brunning St to the south.

Figure 1 –Site Location Plan

2.2 Existing Topography

Provided in Figure 2 below is a screenshot of the Existing Topographiical Plan, which confirms the site generally falls towards the north east. The overland flow paths are shown by black arrows in the figure below. Notably there is approximately 1.3 m of fall from the southern corner of Essex St to the northern corner.



I.D	MIN. ELEVATION	MAX. ELEVATION	COLOUR
1	5.736m	6.100m	
2	6.100m	6.500m	
3	6.500m	6.800m	
4	6.800m	7.200m	
5	7.200m	7.500m	
6	7.500m	7.900m	
7	7.900m	8.200m	
8	8.200m	8.600m	
9	8.600m	8.900m	
10	8.900m	9.300m	
11	9.300m	9.600m	
12	9.600m	9.900m	
13	9.900m	10.300m	
14	10.300m	10.600m	
15	10.600m	11.000m	
16	11.000m	11.300m	
17	11.300m	11.700m	
18	11.700m	12.000m	
19	12.000m	12.400m	
20	12.400m	12.700m	

Figure 2 – Existing Topographical Plan

2.3 Existing Stormwater Discharge

The stormwater runoff from the site currently discharges to an existing Council drain which runs along Woodstock St towards Grosvenor St. The below screens shot identifies council's drainage assets in the streets around the perimeter of the development.

Figure 3 – Existing Council Stormwater Drainage

2.4 Planning Overlays

As shown in Figure 4 below, the site is affected by a Special Building Overlay (SBO2). City of Port Phillip have confirmed that the SBO2 overlay impacts the site and therefore the minimum finished floor level should provide 300mm freeboard to the designated flood level of 7.141m AHD. Refer to Appendix D for reference to Council Correspondence.

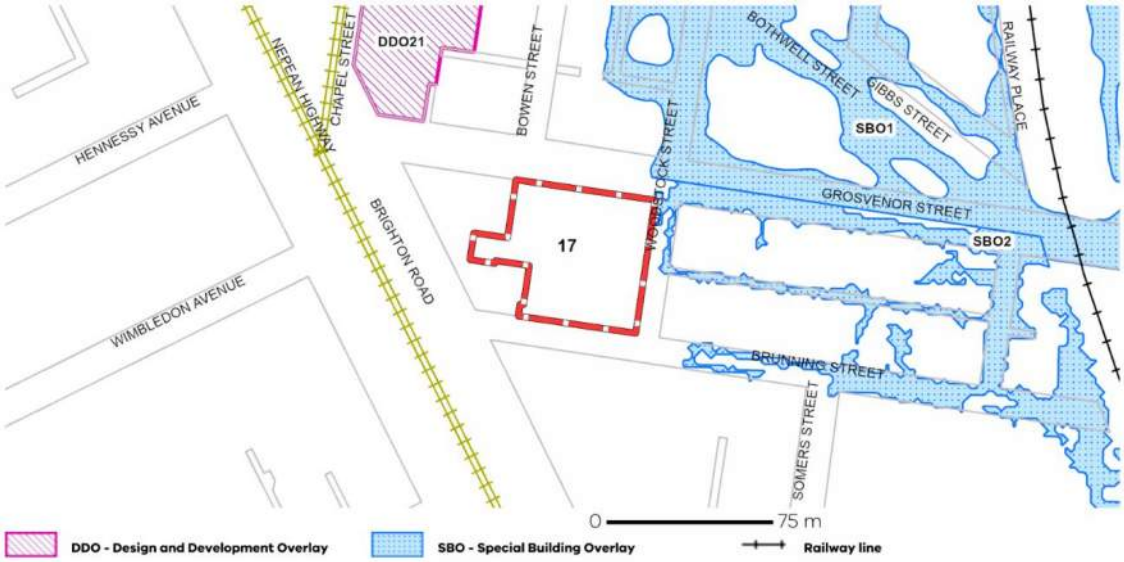


Figure 4 – Planning Overlays

3. Proposed Development

The architectural drawings for the proposed development site has been prepared by H2O Architects. A screenshot of the proposed Site Plan has been included in Figure 5 below.

It is proposed to develop the site into a mixture of social residential dwellings. The development proposal includes:

- Single level basement
- Two 3 storey tower blocks

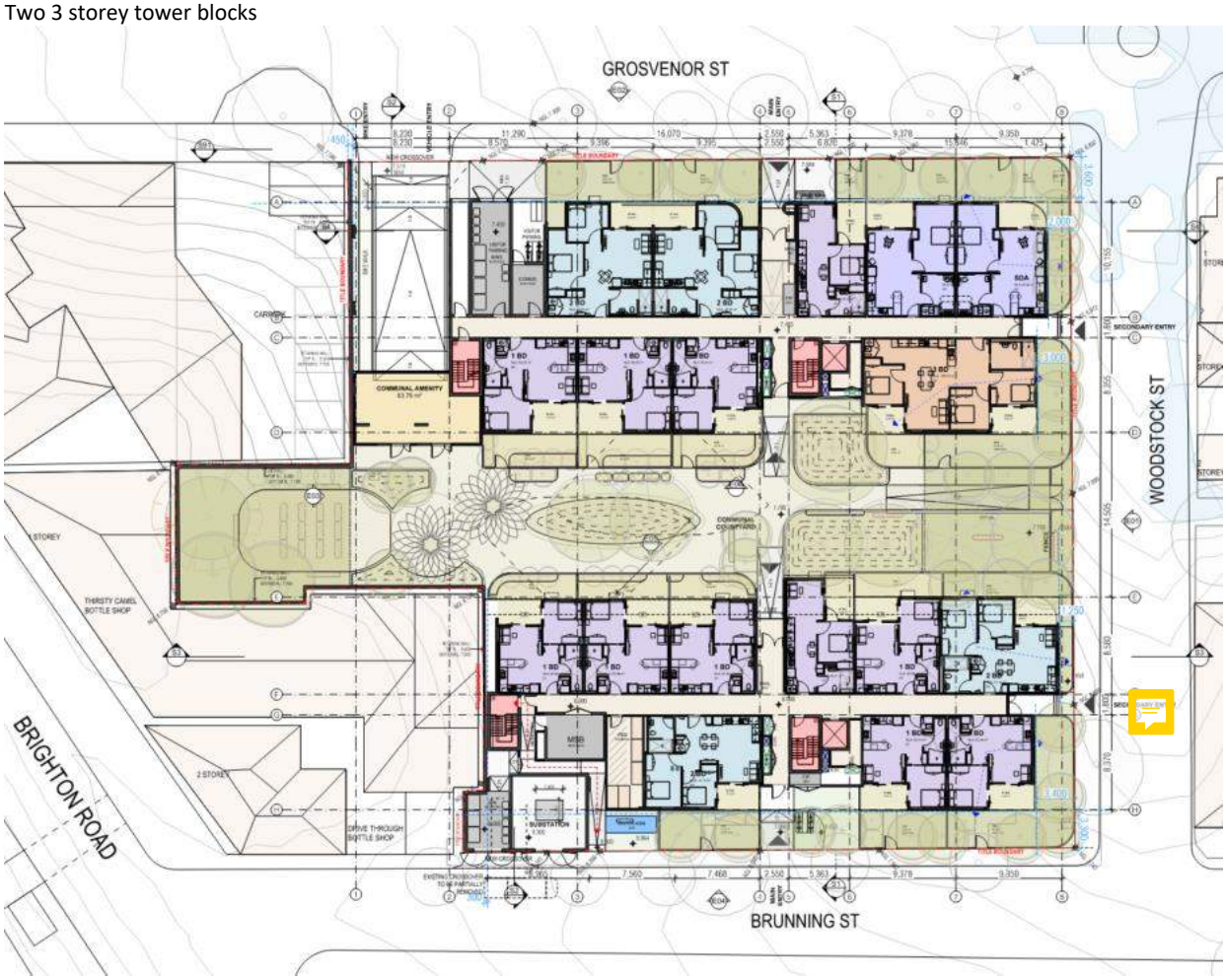


Figure 5 Proposed Site Plan

4. Stormwater Quantity - OSD

The design approach for the stormwater system of the development will be based on water sensitive urban design (WSUD) principles. The adopted principles for stormwater design will be consistent with Urban Stormwater Best-Practice Environmental Management Guidelines (CSIRO 2006). The following items will be considered during the design:

- Provide adequate drainage to ensure a free draining development.
- Pavement levels and drainage design to ensure ponding does not occur on adjacent properties.
- The discharge volume, timing and velocity of stormwater runoff from the site has no adverse effect on any surrounding properties or receiving waters. This has high importance.
- The pollutant discharge from the site is minimised so that the environmental value of surrounding properties and receiving water is maintained.
- Major overland flow paths / systems are considered in the design.

4.1 Stormwater Design Parameters

Parameter	Design Criteria
Minor design storm	20% AEP
Major design storm	1% AEP
Permissible Site Discharge (PSD)[1]	20% AEP
On-site-detention	10% AEP

[1]Refer to Appendix D for reference to Council Correspondence.

4.2 Legal Point of Discharge (LPD)

The intended legal point of discharge for the proposed development is the existing City of Port Phillip 300mm diameter drain located in Woodstock St. The connection will be situated at the lowest point of the site – the north-east corner as shown in the screen shot below.

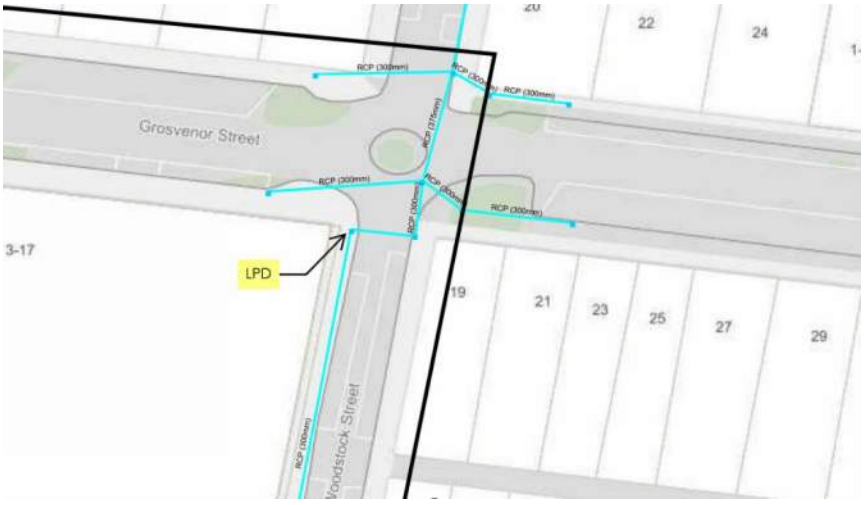


Figure 6 Proposed Legal Point of Discharge

4.3 Catchment Analysis

The pre and post-development catchment areas are presented in Table 1 below. Refer to Appendix A & B for the Existing and Proposed Catchment Details.

Catchment	Runoff Coefficient	Pre-Development Area (ha)	Post-Development Area (m^2)
Roof	1.0	0.13	0.21
Podium	0.9	0.12	0.07
Landscape/Pavement	0.6	0.13	0.10
Total	-	0.38	0.38

Table 1 – Pre/Post Developed Catchment Analysis

4.4 On-Site-Detention

An increase in the density of development will increase the amount of impervious area, reduce the time of concentration, decrease infiltration and will thus increase the amount of stormwater runoff created by the site. In order to ensure that a non-worsening stormwater discharge from the post-development site can be achieved, attenuation is required to mitigate peak stormwater flows.

This hydraulic assessment will demonstrate that through the use of a stormwater attenuation device the proposed development has no adverse effect external to the site and that the proposed lots will be flood free for all storm events up to and including the 100yr ARI event. To determine the attenuation storage volumes needed to ensure a non-worsening post-development scenario is achieved, the stormwater drainage system design and analysis program DRAINS has been utilised. The following parameters have been used.

DRAINS model hydrological input parameters	
Impervious & Supplementary area depression storage	1 mm
Pervious area depression storage	5 mm
Antecedent Moisture Condition	4

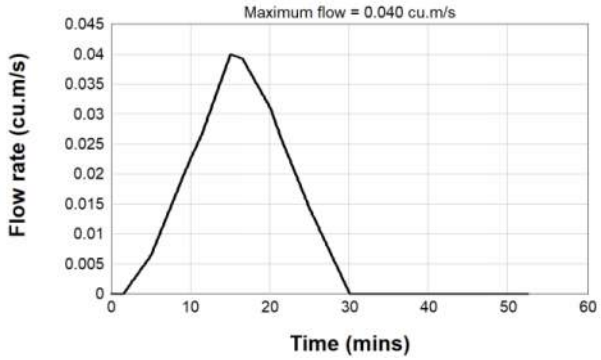
Stormwater detention and outlet control requirements have been evaluated for each storm event to ensure non-worsening peak outflows were established from the post-development catchment design. The proposed stormwater attenuation device to be utilised for this site is an underground storage tank. The peak pre and post-development runoff hydrographs for the 20%AEP and the 10% AEP events respectively have been established by DRAINS can be seen below in the Graphs below.

The inflow and outflow arrangement for the attenuation device will be controlled by an orifice flow control pit. This outflow arrangement and detention system for site has been modelled with a Storage Volume vs Height profile and an Outflow vs Height profile as shown in the graphs below. Please note that the below Volume vs Height graph does not include the storage available within the upstream pipe and pit system, and as such, it is a conservative approximation of the available total system storage thus providing a factor of safety for the system design.

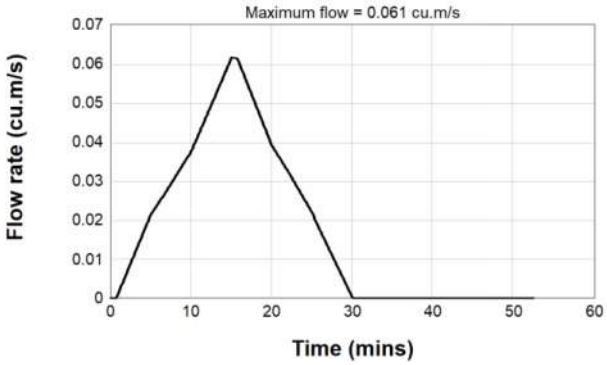
A similar analysis was undertaken for the 10% ARI storm events to establish the peak mitigated post-development flows, the detention storage required and the resultant maximum water elevation in the detention system. The results of this can be seen in the table below.

Detention Tank Properties	Critical Storm Event	
Peak Pre-development flows	20% AEP	$0.04m^3/s$
Peak Post-development flow (unmitigated)	10% AEP	$0.062m^3/s$
Peak Mitigated Post-development flows	10% AEP, 15 min	$0.031m^3/s$
Minimum OSD Tank Storage Volume	10% AEP, 15 min	**$13.0m^3$**

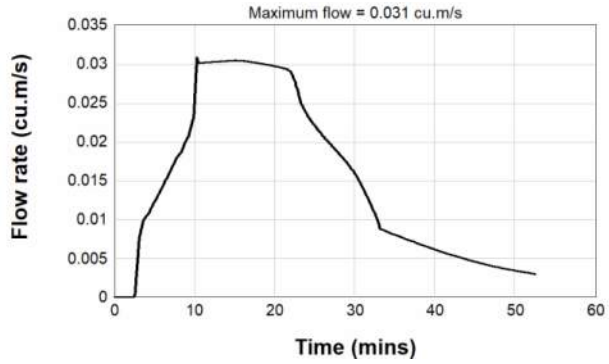
As a result of the established size and outflow arrangement of the attenuation device, the peak storage volume required for the post-development 10yr ARI event can be seen in the Detention Tank Maximum Storage Volume Graph below. This modelling demonstrates that the proposed attenuation device adequately accommodates the catchment's runoff to ensure non-worsening post-development stormwater discharge levels are achieved. Refer to Appendix D for details on the proposed OSD tank.



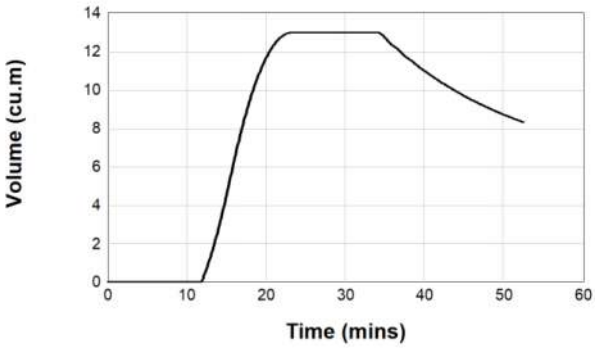
Graph 1 - Peak Pre-development Runoff Hydrograph, 20%AEP



Graph 2 - Peak Post-development Runoff Hydrograph, 10%AEP



Graph 3 - Peak Mitigated Post-development flows 10%AEP



Graph 4 - Detention Tank Maximum Storage Volume

5. Stormwater Quality - Treatment

The stormwater management plan has been developed to comply with the Port Phillip City Council Planning. Specifically, the proposed development is to treat stormwater runoff from the site to best practice in accordance with the values set out in the Victorian Stormwater Committee (1999) *Urban Stormwater Best Practice Environmental Management Guidelines (BPEM) that* have been reproduced in the table below.

Criteria	BPEM Pollutant Reduction Target
Suspended Solids (SS)	80% retention of typical urban annual load
Total Phosphorous (TP)	45% retention of typical urban annual load
Total Nitrogen (TN)	45% retention of typical urban annual load
Gross Pollutants/Litter (GP)	70% retention of typical urban annual load.

Table 1 Best Practice Performance Objectives

To achieve the stormwater performance objectives, it is proposed to incorporate current best practice water sensitive urban design (WSUD) principals into the drainage scheme that is discussed in the following sections.

5.1 Stormwater Treatment Measures

Measures to treat stormwater runoff prior to discharge into the receiving watercourse will include a series of primary, secondary and tertiary treatment systems aimed to target a range of stormwater pollutants including:

- Primary treatment - nutrients, heavy metals hydrocarbons, fine particles and attached pollutants.
- End of line treatment - targeting gross pollutants and coarse sediments

Catchment	Area	Primary Treatment	End of Line Treatment
Roof	0.21Ha	40kL Rainwater Tank Reuse: Toilet Flushing = 1.9kL/day	Gross Pollutant Trap SPEL Ecoceptor 1500 (or similar approved)
Podium	0.07Ha	10kL Rainwater Tank Reuse: Irrigation = 270 kL/yr	
Landscape /Pavement	0.10Ha	Infiltration: Filter area – 10m2, exfiltration 10 mm/h	

Presented Appendix C is the Civil Works Plans that details the proposed pipe drainage network and discharge points.

5.1.1 Rainwater Harvesting and Re-use

Rainwater harvesting and reuse is proposed for the development. It will reduce the overall volume of stormwater load going to the receiving water course. It is proposed to provide rainwater harvesting tanks (RWT's) to capture roof runoff for re-use as irrigation, cleaning and toilet flushing etc. The use of rainwater tanks will allow for a reduction of TSS by the settling of particles over time and through the screening of water before it enters the tank. These tanks will be installed when the development is constructed.

5.2 MUSIC Modelling

The effectiveness of proposed treatment measures and impact of the proposed development against performance targets has been modelled in MUSIC. The modelling has been completed in accordance with Melbourne MUSIC Guidelines. Climate data used in the MUSIC model has been selected to align with MW Rainfall Distribution mapping for Greater Melbourne aligns with Melbourne City band with rainfall range of 650 to 750mm. The Melbourne City 6-minute rainfall template used in the model was downloaded from the MW website.

5.2.1 Treatment Train

The stormwater treatment train schematics as modelled in MUSIC are shown below:

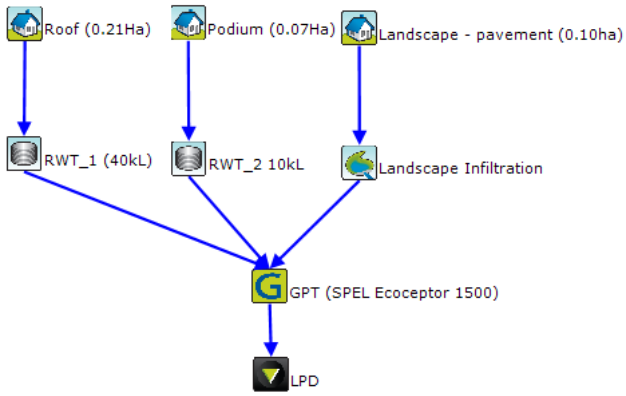


Figure 7 - MUSIC Model Treatment Train Schematic

5.3 Stormwater Treatment Train Effectiveness

The effectiveness of the treatment device proposed in the above section has been modelled using MUSIC with the overall treatment train efficiency results shown in 4 below.

	Unit	Source Load	Residual Load	Reduction %	BPEM Target Reduction %
Flow	ML/yr	1.7	0.7	60.0	N/A
Total Suspended Solids, TSS	kg/yr	61.2	4.2	93.2	80
Total Phosphorous, TP	kg/yr	0.3	0.1	64.5	45
Total Nitrogen, TP	kg/yr	3.8	1.4	62.7	45
Gross Pollutants	kg/yr	63.1	0.0	100.0	70

Table 4 Treatment Train Effectiveness

From the results presented in Table 4 it can be seen that the proposed WSUD treatment train provides effective mitigate the water quality impacts of the development and meet the required Water Quality Objectives thus ensuring stormwater quality is appropriately managed.

5.4 Construction Phase

5.4.1 Construction Works

It is expected that the construction phase works will comprise of:

- Clearing

- Bulk Earthworks
- Trimming and Profiling
- Site Drainage & Services construction
- Landscaping and associated drainage

During the construction phase, the management of stormwater runoff from the exposed earthworks surfaces will be based on containment, diversion and retention. Throughout the stages of construction these include:

- Erosion controls such as sediment fences surrounding stripped earth
- Sediment fences surrounding stockpiles of soil and debris
- Construction of perimeter bunding at toe and/or top of earthworks batters
- Catch drains, including check dams, though the site to catch direct runoff.
- The containment of runoff from the site into a temporary sediment basin during the construction works.
- Diversion drains to re-direct clean water around the site.

An Erosion and Sediment Control plan will be included with the Contractor's building permit application and will be implemented during the construction phase. This will be prepared in accordance with the latest International Erosion Control Association (IECA) standards and applicable Council standards. A suitably qualified person will inspect construction works to ensure compliance.

During the construction phase the maintenance and monitoring of erosion and sediment control measures remains the responsibility of the Contractor. Details of the inspection frequency expected will be noted within the Contractor's Erosion and Sediment Control Drawings. If during the construction phase it is deemed required, monitoring will also be undertaken by qualified consultants to determine the impact of activities on the subject site.

6. Maintenance of Treatment Devices

Table 5 provides the maintenance summary proposed for the various treatment devices to ensure they continue to operate as planned.

Stormwater Quality Improvement Devices	Maintenance Responsibility	
	Construction	Operation
Rainwater Tanks	Developer	Building Operator
Gross Pollutant Trap	Developer	Building Operator

Table 5 - Summary of treatment device maintenance responsibility

6.1 Rainwater Tanks

The responsibility to maintain water tanks to the manufacturer's specifications will be the responsibility of Building Operator.

6.2 Gross Pollutant Trap (GPT)

GPT's should be maintained in accordance with the manufacturers' specifications, but in general will include 3 monthly inspections with annual maintenance for full cleaning recommended. GPT's are generally (depending on model) cleaned as outlined below:

- A vacuum truck lowers its suction hose to the surface of the water in the holding chamber and skims across the surface to capture the floating litter.
- Once this has been achieved then the hose should be lowered to the bottom of the holding chamber to remove sediments, organic matter and litter, which have sunk.
- It is sometimes appropriate to de-water the system before attempting to suck the pollutants out of the holding chamber. This can be done onto adjacent ground or into council's sewer systems, with the authority's consent.

Generally, the need for maintenance can be determined easily by opening the unit from the surface and inspecting it. A dip stick to determine how much sediment and gross pollutants have been caught in the holding chamber.

7. Conclusion

This Stormwater Management Plan report has been prepared for the proposed development at 17 Grosvenor St, Balaclava. The proposed development comprises the construction of a mulit-storey building over a common basement. If unmitigated, the proposed development will increase the volume of stormwater runoff from the site due to the new impervious surfaces. Furthermore, the development would have an effect on runoff water quality from the site.

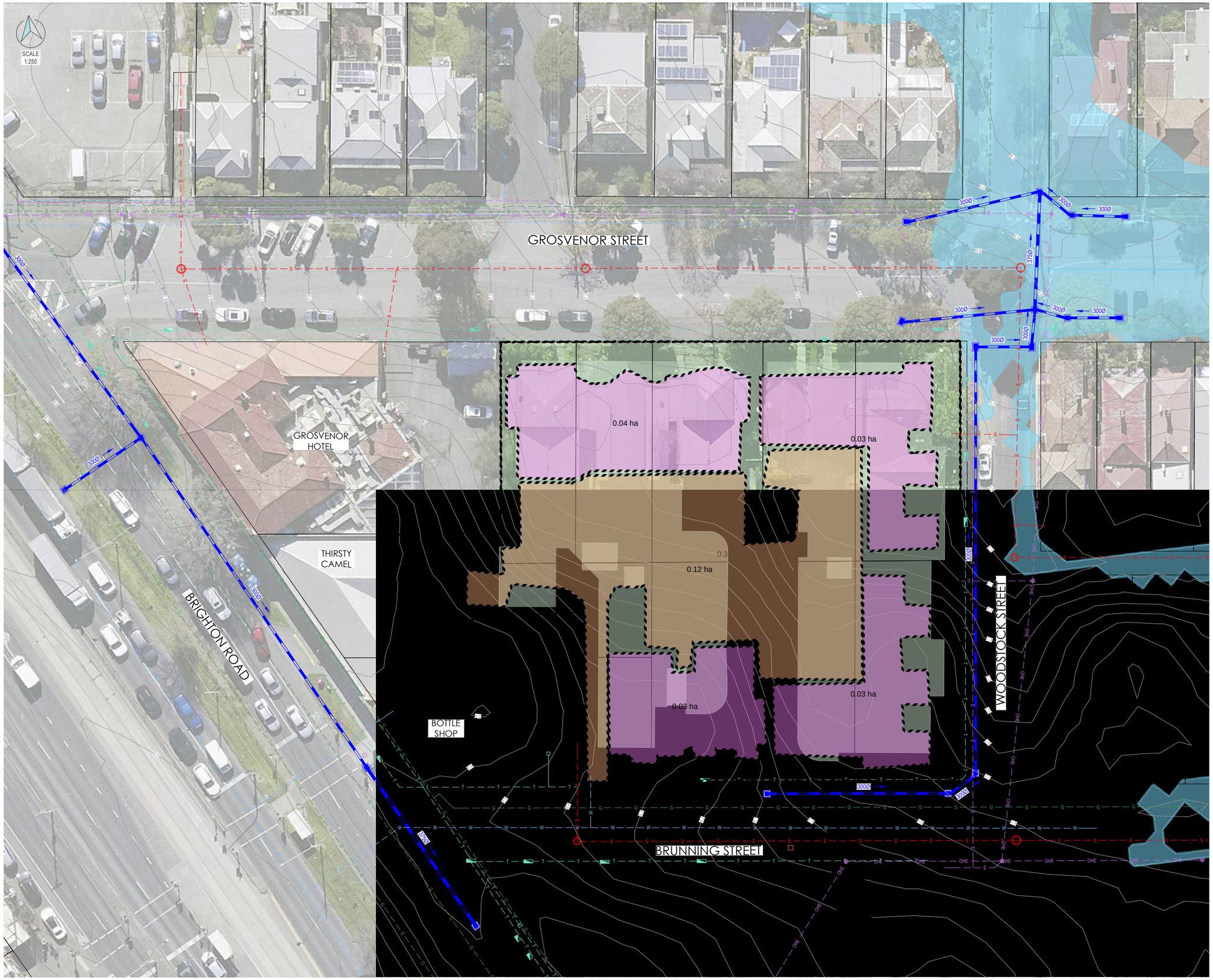
Stormwater attenuation and treatment devices have been proposed in this report to minimise the impact the development has on the external environment. The below table summaries the recommended stormwater devices for the project.

Stormwater Attenuation /Treatment Devices	
On-site-Detention Tank	Underground 15kL Tank
Rainwater Tank	40kL Rainwater Tank 10kL Rainwater Tank
GPT	Gross Pollutant Trap SPEL Ecoceptor 1500 (or similar approved)

This report has demonstrated that the recommended devices exceed the required best practice water quality performance objectives by incorporating Water Sensitive Urban Design into the proposed stormwater drainage system for Total Suspended Solids, Total Phosphorous, Total Nitrogen and Gross Pollutants.

Furthermore, the report has shown that the proposed detention methods ensure a non-worsening effect in runoff volumes for all flows up to and including the 1% AEP storm event. As such from a stormwater management perspective, we believe the development complies with the Port Phillip City Council Planning Scheme and should be endorsed for approval.

Appendix A - Existing Conditions Plan



1:250 5 0 5 10 A1
1:500 A3

LAYOUT
1:250

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LEGEND

- CADASTRAL BOUNDARY
- 32.0 EXISTING CONTOUR (0.1m INTERVAL - LIDAR DATA)
- 900Ø EXISTING STORMWATER DRAINAGE
- W EXISTING WATER MAIN
- E EXISTING ELECTRICAL CABLE
- OHE EXISTING ELECTRICAL OVERHEAD
- G EXISTING GAS MAIN
- T EXISTING TELECOMMUNICATIONS CABLE
- S EXISTING SEWER MAIN AND ASSOCIATED MANHOLES AND MAINTENANCE SHAFT
- EXISTING UNKNOWN PIT
- PROPOSED SITE
- SBO - SPECIAL BUILDING OVERLAY
- TOTAL SITE AREA = 0.38HA
- TOTAL LANDSCAPE AREA = 0.13HA
- TOTAL PAVEMENT AREA = 0.12HA
- TOTAL ROOF AREA = 0.13HA

HousingFirst

Client
Housing First

Project Name
17 GROSVENOR STREET & 1A-F WOODSTOCK STREET

Project Location
17 Grosvenor Street
Balaclava VIC 3183

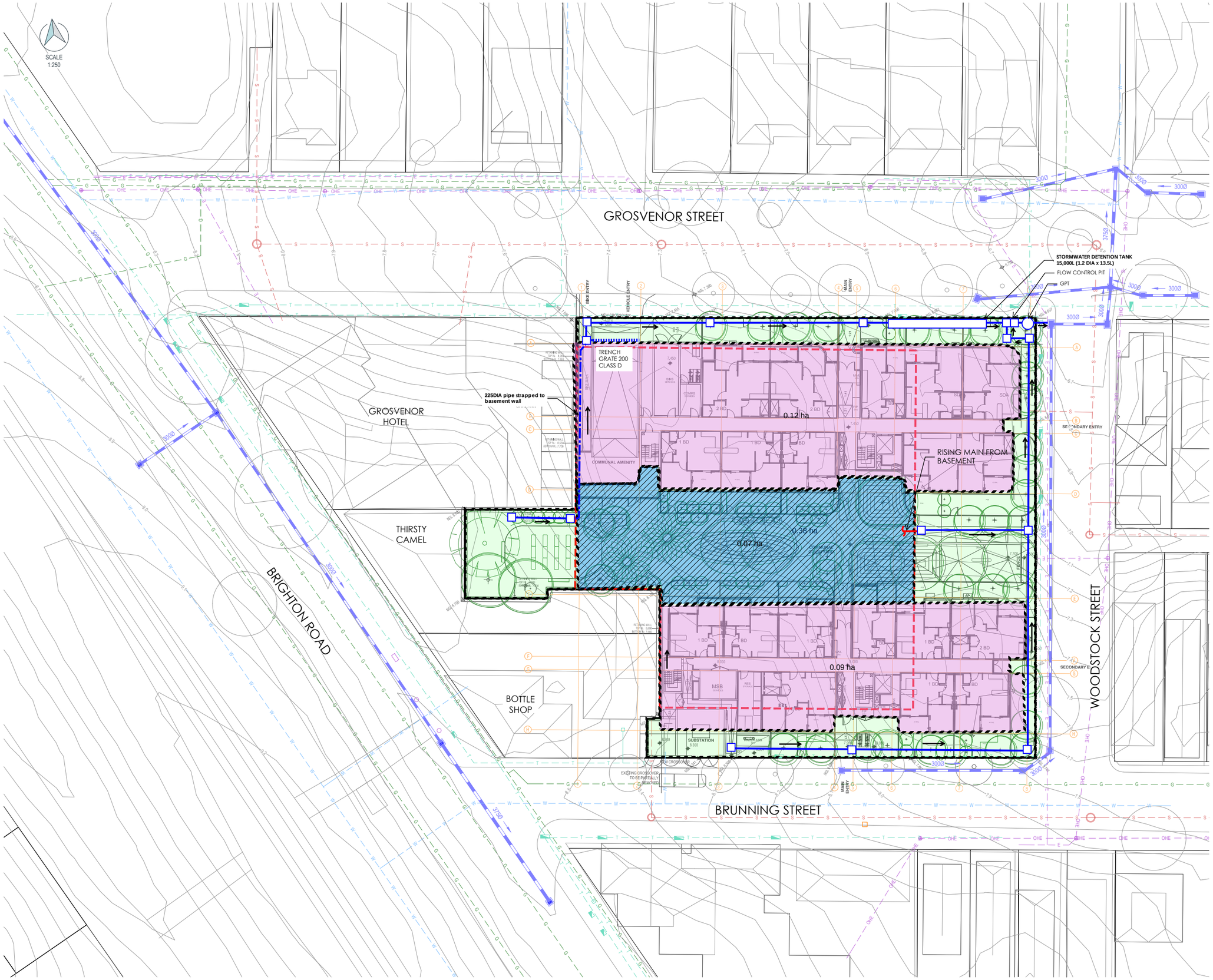
PRELIMINARY
NOT FOR CONSTRUCTION

Revision	By	Appd	Date
A PRELIMINARY ISSUE	NH	DMCG	17.10.23

Drawing Title
EXISTING CONDITIONS PLAN

Project Number	Drawing Number	Revision
23173	CI-0005	A

Appendix B – Civil Works Plan Ground & Basement



LAYOUT
1:250

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LEGEND

- CADASTRAL BOUNDARY
- 32.0 EXISTING CONTOUR (0.1m INTERVAL - LIDAR DATA)
- BASEMENT 1 BOUNDARY
- 900Ø EXISTING STORMWATER DRAINAGE
- W EXISTING WATER MAIN
- E EXISTING ELECTRICAL CABLE
- OHE EXISTING ELECTRICAL OVERHEAD
- G EXISTING GAS MAIN
- T EXISTING TELECOMMUNICATIONS CABLE
- S EXISTING SEWER MAIN AND ASSOCIATED MANHOLES AND MAINTENANCE SHAFT
- EXISTING UNKNOWN PIT
- PROPOSED TREES
- EXISTING TREES
- TOTAL SITE AREA = 0.38HA
- TOTAL LANDSCAPE/PAVING AREA = 0.10HA
- TOTAL PODIUM AREA = 0.07HA
- TOTAL ROOF AREA = 0.21HA
- PROPOSED STORMWATER PIPE (300DIA) /PIT (900X900)
- PROPOSED STORMWATER TRENCH GRATE 200 WIDE CLASS D

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Client
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Project Name
17 GROSVENOR STREET & 1A-F WOODSTOCK STREET

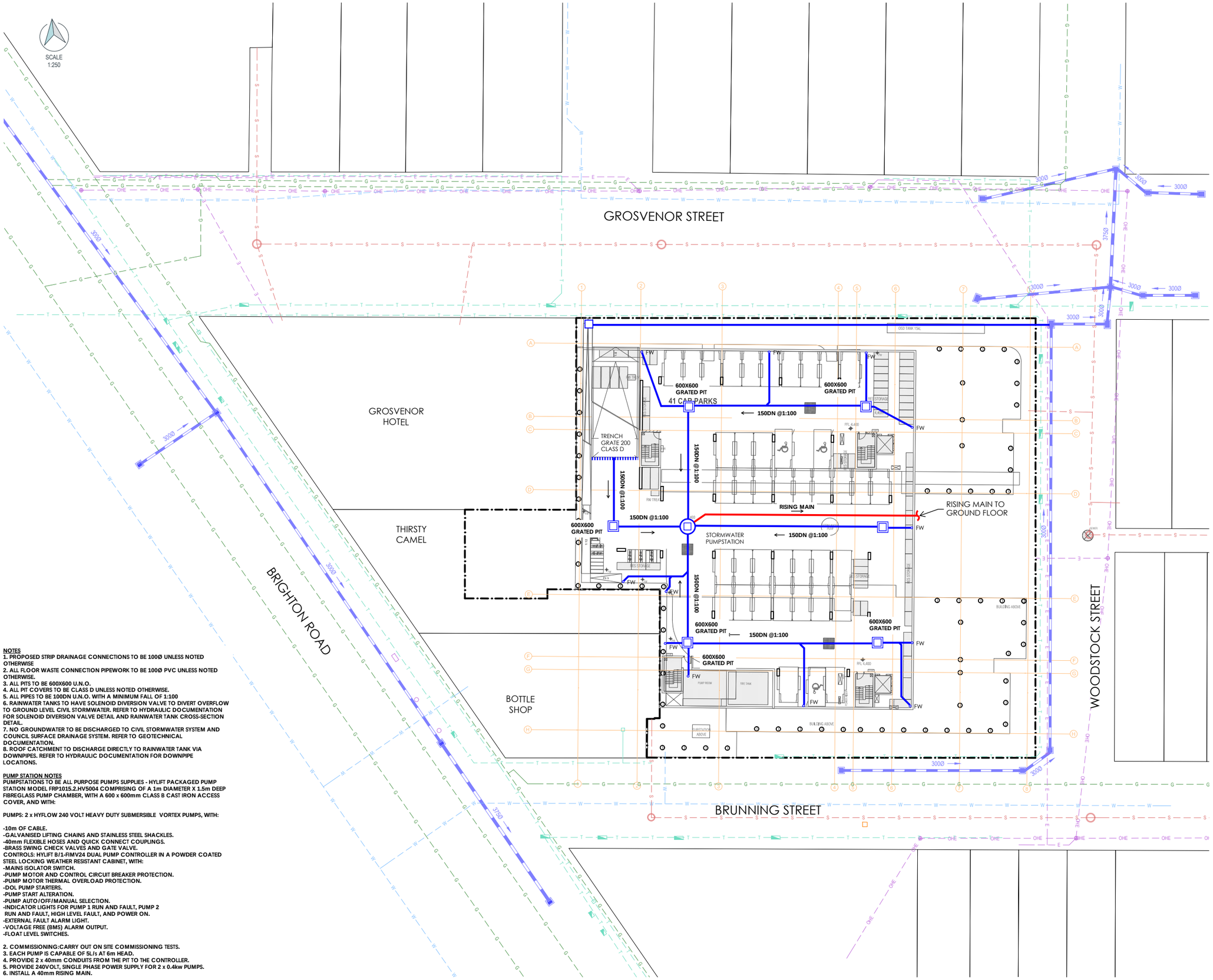
Project Location
17 Grosvenor Street
Balaclava VIC 3183

PRELIMINARY
NOT FOR CONSTRUCTION

Revision		By	Appd	Date
B	PRELIMINARY ISSUE	NH	DMCG	14.12.2023
A	PRELIMINARY ISSUE	NH	DMCG	19.10.2023

Drawing Title
CIVIL WORKS PLAN - GROUND FLOOR

Project Number	Drawing Number	Revision
23173	CI-0010	B



NOTES
1. PROPOSED STRIP DRAINAGE CONNECTIONS TO BE 100Ø UNLESS NOTED OTHERWISE
2. ALL FLOOR WASTE CONNECTION PIPEWORK TO BE 100Ø PVC UNLESS NOTED OTHERWISE.
3. ALL PITS TO BE 600X600 U.N.O.
4. ALL PIT COVERS TO BE CLASS D UNLESS NOTED OTHERWISE.
5. ALL PIPES TO BE 100DN U.N.O. WITH A MINIMUM FALL OF 1:100
6. RAINWATER TANKS TO HAVE SOLENOID DIVERSION VALVE TO DIVERT OVERFLOW TO GROUND LEVEL CIVIL STORMWATER. REFER TO HYDRAULIC DOCUMENTATION FOR SOLENOID DIVERSION VALVE DETAIL AND RAINWATER TANK CROSS-SECTION DETAIL.
7. NO GROUNDWATER TO BE DISCHARGED TO CIVIL STORMWATER SYSTEM AND COUNCIL SURFACE DRAINAGE SYSTEM. REFER TO GEOTECHNICAL DOCUMENTATION.
8. ROOF CATCHMENT TO DISCHARGE DIRECTLY TO RAINWATER TANK VIA DOWNPIPES. REFER TO HYDRAULIC DOCUMENTATION FOR DOWNPIPE LOCATIONS.

PUMP STATION NOTES
PUMPSTATIONS TO BE ALL PURPOSE PUMPS SUPPLIES - HYLIFT PACKAGED PUMP STATION MODEL FRP1015.2.HV5004 COMPRISING OF A 1m DIAMETER X 1.5m DEEP FIBREGLASS PUMP CHAMBER, WITH A 600 x 600mm CLASS B CAST IRON ACCESS COVER, AND WITH:

PUMPS: 2 x HYFLOW 240 VOLT HEAVY DUTY SUBMERSIBLE VORTEX PUMPS, WITH:

-10m OF CABLE.
-GALVANISED LIFTING CHAINS AND STAINLESS STEEL SHACKLES.
-40mm FLEXIBLE HOSES AND QUICK CONNECT COUPLINGS.
-BRASS SWING CHECK VALVES AND GATE VALVE.
CONTROLS: HYLIFT B/1-FIMV24 DUAL PUMP CONTROLLER IN A POWDER COATED STEEL LOCKING WEATHER RESISTANT CABINET, WITH:
-MAINS ISOLATOR SWITCH.
-PUMP MOTOR AND CONTROL CIRCUIT BREAKER PROTECTION.
-PUMP MOTOR THERMAL OVERLOAD PROTECTION.
-DOL PUMP STARTERS.
-PUMP START ALTERATION.
-PUMP AUTO/OFF/MANUAL SELECTION.
-INDICATOR LIGHTS FOR PUMP 1 RUN AND FAULT, PUMP 2 RUN AND FAULT, HIGH LEVEL FAULT, AND POWER ON.
-EXTERNAL FAULT ALARM LIGHT.
-VOLTAGE FREE (BMS) ALARM OUTPUT.
-FLOAT LEVEL SWITCHES.

2. COMMISSIONING:CARRY OUT ON SITE COMMISSIONING TESTS.
3. EACH PUMP IS CAPABLE OF 5L/s AT 6m HEAD.
4. PROVIDE 2 x 40mm CONDUITS FROM THE PIT TO THE CONTROLLER.
5. PROVIDE 240VOLT, SINGLE PHASE POWER SUPPLY FOR 2 x 0.4kw PUMPS.
6. INSTALL A 40mm RISING MAIN.

1:250 5 0 5 10 A1
1:500 A3

LAYOUT
1:250

MCG CONSULT

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Level 2, 696 Bourke St
Melbourne VIC 3000
admin@mcgconsult.com.au

LEGEND

- CADASTRAL BOUNDARY
- 900Ø EXISTING STORMWATER DRAINAGE
- W EXISTING WATER MAIN
- E EXISTING ELECTRICAL CABLE
- OHE EXISTING ELECTRICAL OVERHEAD
- G EXISTING GAS MAIN
- T EXISTING TELECOMMUNICATIONS CABLE
- S EXISTING SEWER MAIN AND ASSOCIATED MANHOLES AND MAINTENANCE SHAFT
- EXISTING UNKNOWN PIT

HousingFirst

Client
Housing First

Project Name
17 GROSVENOR STREET & 1A-F WOODSTOCK STREET

Project Location
17 Grosvenor Street
Balaclava VIC 3183

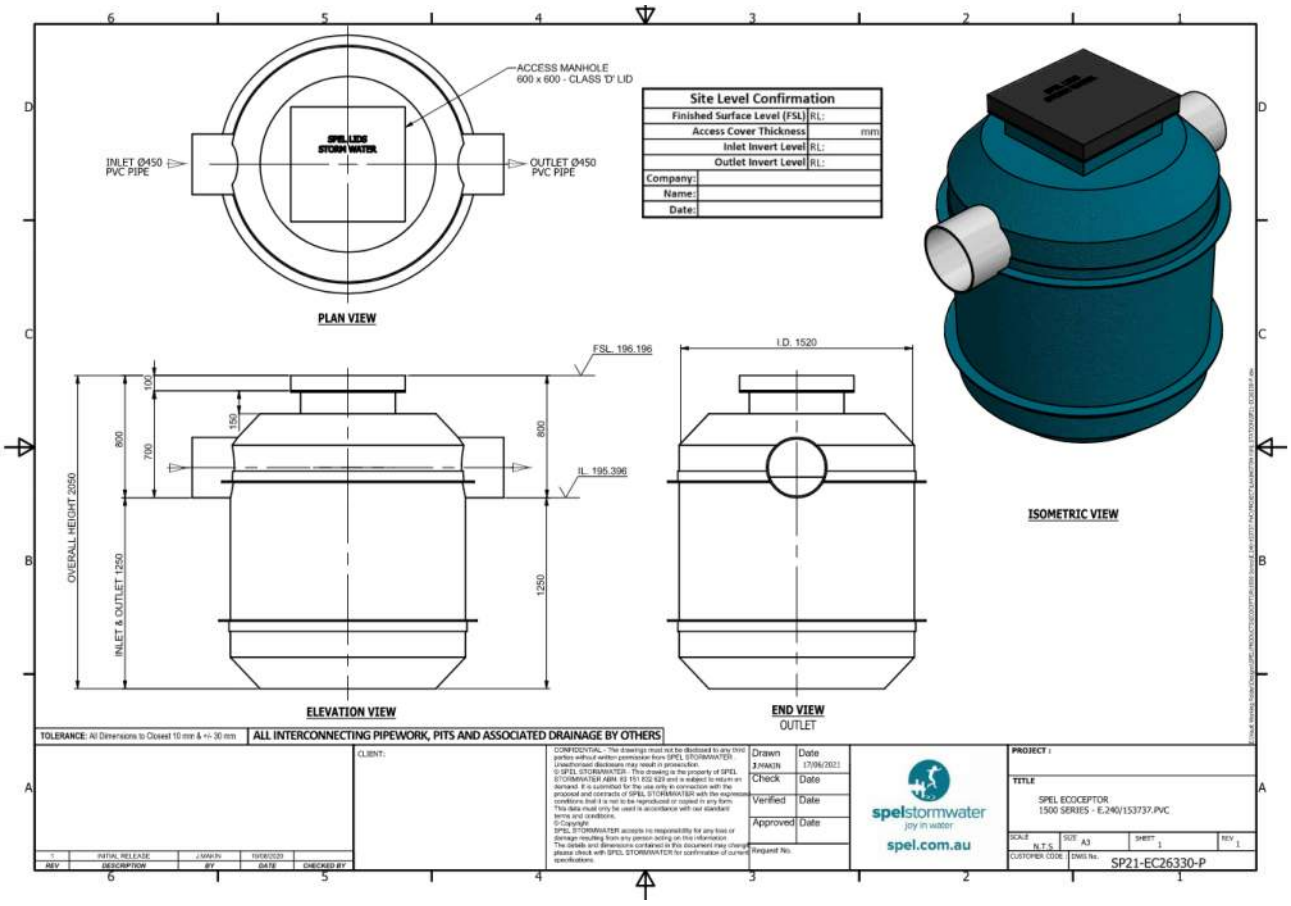
PRELIMINARY
NOT FOR CONSTRUCTION

Revision		By	Appd	Date
B	PRELIMINARY ISSUE	NH	DMCG	14.12.2023
A	PRELIMINARY ISSUE	NH	DMCG	19.10.2023

Drawing Title
CIVIL WORKS PLAN - BASEMENT 1

Project Number	Drawing Number	Revision
23173	CI-0011	B

Appendix C – GPT SPEL Ecoceptor 1500 Series



Operation & Maintenance Manual – available online

Appendix D – OSD Tank – Atlan TankStor Series 200

TANK SIZES

Diameter (mm)	Capacity (l)	Overall Length (mm)
1200	5000	4700
1200	10000	9100
1200	15000	13500

Operation & Maintenance Manual – available online

Appendix E – City of Port Phillip Correspondence

From: Sam Paudel <Sam.Paudel@portphillip.vic.gov.au>
Sent: Tuesday, 10 October 2023 8:07 AM
To: Dara McGrenaghan
Cc: LPD
Subject: RE: 17 GROSVENOR ST, BALACLAVA

Hi Dara,

Please find below my comments in blue.

Regards
Sam Paudel
City Development Engineer | Property and Assets
T: 03 8563 7495 | M: 0466 948 537
St Kilda Town Hall | 99a Carlisle Street, St Kilda, Victoria 3182

From: Dara McGrenaghan <dara@mcgconsult.com.au>
Sent: Monday, 9 October 2023 3:27 PM
To: Sam Paudel <Sam.Paudel@portphillip.vic.gov.au>
Subject: 17 GROSVENOR ST, BALACLAVA

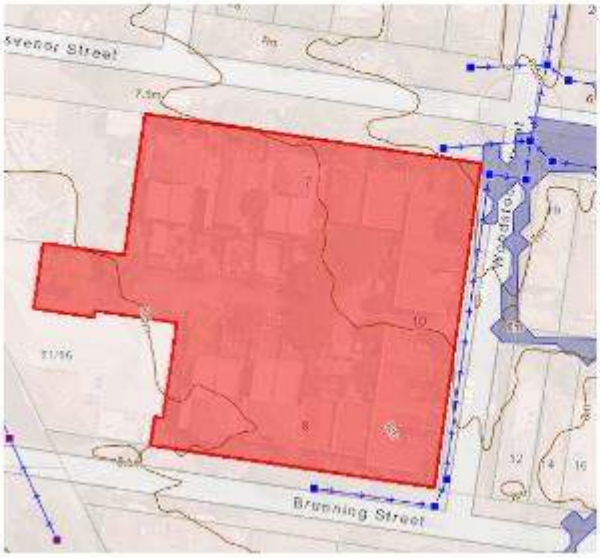
[External Email] This email originated outside the City of Port Phillip. Always verify the sender, and check the content, links and attachments carefully. Report suspicious emails.

Hi Sam,

I hope you are keeping well.

We are starting a new project, located at 17 Grosvenor St, Balaclava. I'm wondering if your team can provide some advice with respect to flooding, OSD & basement drainage.

- **Flooding.** The site is not impacted by the SBO (as per the attached Building Property Information report). Can you advise if there is a minimum floor level that we need to satisfy?
- As shown below, the extent of SBO2 is slightly touching the boundary along Woodstock Street. For your guidance, the designated flood level of the adjacent property on eastern boundary is 7.141m AHD. As discussed, we can further advise you once we have a markup plan and feature survey of the area.



- **On-Site-Detention (OSD)**. Can you confirm if the following detention parameters are acceptable: OSD parameters below are acceptable.
    - Permissible site discharge - 5 year ARI (20%AEP) existing
    - Site storage requirement - 10 year ARI (10% AEP) proposed
- **Basement Drainage.** The attached prelim Geotech report indicates that the site is not impacted by groundwater. Can you confirm that we can discharge seepage water to the LPD?

- Council requirement is that the seepage water needs to be managed onsite through reuse such as irrigation or toilet flushing. See below the notation.

Notes:

Any subterranean water encountered during and after completion of construction which may infiltrate into a basement or site, must not discharge to the point of discharge as nominated by the Council.

Definitions:

"stormwater" means:

Naturally occurring water that results from rainfall on or around the site, or water flowing onto the site.

"stormwater drainage system" means:

The roof drainage system, surface drainage system and subsoil drainage system on a property, which is used for the collection and conveyance of stormwater.

"subterranean water" means:

Any water (including any matter dissolved or suspended in any such water) which –

(a) exists or occurs in or can be obtained from any geological structure or formation, any natural or artificial land fill or any soil beneath the surface of the land; and

(b) arises (or has originated) from any surface or underground flow of water (including any discharge, release, escape, percolation, seepage or passage of such water).

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03 8000 4080