M A T T E R

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STRUCTURAL ENGINEERS

Level 5/95 Grenfell Street
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259 – 269 Unley Road, Malvern, SA 5061

Stormwater Management Plan

Project No.: 2*4217*
28 October 2025
Revision No. 2

REVISION	DATE	COMMENT	AUTHOR	CHECKER
1	22nd October 2025	Issued for Review	DR	DR
2	28th October	Minor Updates to Civil Drawings	DR	DR

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Appendix D – OSD Calculations

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1 Executive Summary

This Stormwater Management Plan (SMP) has been prepared to support the proposed development located at 259 – 269 Unley Road, Malvern, SA within the local jurisdiction of the City of Unley (Council). The development comprises the construction of a multi-storey mixed-use building with residential apartments and commercial spaces at the subject site. These works will result in changes to the site's impervious areas, necessitating a robust and compliant stormwater strategy.

The SMP first evaluates the existing site conditions, current drainage infrastructure, and flood risks. Based on this assessment, it outlines a stormwater management approach that aligns with Council regulations, South Australian Water Sensitive Urban Design (WSUD) guidelines, and best practice principles. The strategy focuses on mitigating both stormwater quantity and quality impacts through:

- Implementation of On-site Stormwater Detention (OSD) to control peak flows and reduce effects downstream.
- Integration of WSUD measures, demonstrating compliance with best practice targets.
- Design of a new underground stormwater network to accommodate a 5% AEP year storm event, with conservative assumptions to address existing downstream capacity constraints.

The development is not subject to flooding inundation as it is located outside designated flood-prone areas. This SMP outlines key criteria for establishing effective mitigation measures for the proposed development against minor nuisance flood events and basement entries.

This SMP provides a performance-based framework that supports both development approval and future design progression, ensuring that stormwater is effectively managed to protect downstream environments, public infrastructure, and site users.

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2 Introduction

2.1 Purpose

Increased intensity of urbanisation of any site drives a need for effective stormwater management to appropriately manage effects of the proposed development on the natural receiving environment and existing drainage infrastructure. Consequently, regulatory authorities set criteria that new developments need to satisfy to ensure adverse effects are effectively mitigated. The stormwater mitigation measures are broadly characterised into two categories:

- Water Quantity – the increase in impervious surfaces will lead to increased volume of stormwater flows which will need to be mitigated. This is typically done by the provision of detention and retention of the increased runoff from the pre-development baseline in stormwater storage devices with controlled outlets.
- Water Quality – the proposed change in land use from the pre-existing greenfield baseline to an extensive impervious character will lead to generation of polluted stormwater from the various types of impervious surfaces created by the development. As such, mitigation measures need to be provisioned to ensure the treatment of stormwater to the required levels through the implementation of Water Sensitive Urban Design (WSUD) practises.

This Stormwater Management Plan (SMP) report has been prepared to provide a description of the proposed stormwater drainage strategy for Council approval. The information used to prepare this report includes the architectural drawings, project design team meetings, site investigations, existing condition surveys, existing infrastructure documents, advice from the relevant authorities, and associated reports. This report should be read in conjunction with the Design Development drawings including documentation and reports from other relevant design disciplines.

2.2 Objectives

The purpose of this report is to present a stormwater management strategy to collect, convey, treat and discharge stormwater for the proposed development which will meet the performance requirements of the proposed development whilst mitigating adverse impacts to surrounding environments and existing infrastructure.

The report will outline how the development will achieve the following key objectives:

- Safely and effectively convey stormwater away from the facility to approved points of discharge.
- Mitigate the flood impact of the development on existing infrastructure, overland flow paths and watercourses by controlling the quantity of stormwater discharged off the site.
- Incorporate best practice WSUD principles to protect downstream watercourses and reduce potable water demand.

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2.3 Legislation, Regulation & Guidelines

The proposed stormwater management has been formulated as basis of compliance with the legislation and associated regulatory documents as follows:

- Environmental Protection Act 1993
- Environment Protection (Water Quality) Policy 2015
- National Construction Code
- Australian/New Zealand Standard AS/NZS 3500.3-2018 (Plumbing and Drainage, Part 3: Stormwater Drainage)

Stormwater management measures outlined in this report will be designed in reference to the following guidelines and documents:

- South Australian MUSIC Modelling Guidelines
- Climate Change in Australia (CSIRO and Bureau of Meteorology) 2015
- Development and Stormwater Management Design Guide - City of Unley 2016
- Australian Rainfall and Runoff (ARR) 2019
- Bureau of Meteorology for Rainfall Data and IFD Charts

Site specific documents:

- Site Feature and Level Survey Plan by Hennig & Co dated 16.05.2025
- Architectural Drawings by Woods Bagot dated 10.10.2025
- Geotechnical Report by CMW Geosciences dated 20.08.2025
- ESD advice by ADP dated 23.09.2025

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3 Existing Condition

3.1 Site Description

Fig.01 - Site Location of the Proposed Development

The site is located at the 259-269 Unley Road, Malvern within a land parcel covering 3389m^2 in area. It is bounded by Eton Street to the north, Unley Street to the west and Fisher Street to the south.

The site is relatively flat, with a gentle slope down towards Eton Street in a northly direction. The landuse associated with the site is comericial with a highly built-up urban character. The site is predominantly impervious in surface coverage due to the high prevelance of buildings, asphalt and concrete surfaces. Refer to the Feature Level Survey contained in Appendix A for more detail.

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3.2 Existing Stormwater Infrastructure

The site located in intensely urban built-up environment and is therefore provisioned with public stormwater infrastructure located within the road reserves of Eton Street and Unley Road.

The following aerial photo with stormwater infrastructure was sourced from Location SA GIS platform which illustrates the surrounding stormwater network in the area

Fig.02 – Adjacent Stormwater Infrastructure

An existing DN900 trunk stormwater drain runs along Unley Road which acts a central collection drainage asset for adjacent minor public drains from side streets.

There two existing Side Entry Pits (SEP) directly adjacent to the which are the most viable Legal Point of Discharge (LPD) options. The SEP has been proposed as the nominated LPD for the development subject to final approval from Council.

Note that there may be discrepancies in drain sizes as noted on the GIS platform and further onsite verification is recommended.

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3.3 Flood Risk

Desktop research of available flood hazards at South Australian Property and Planning Atlas (SAPPA) and Enviro Data SA indicates that the site is not subject to flood inundattion and its associated hazards.

The site may be subject minor localised nuisance flooding due to undrained low points and minor flow paths. The design provisions within the building code in terms finished levels and stormwater is generally adequate to address any minor nuisance flooding (refer to Section 8.0).

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4 Proposed Development

4.1 Description

The developer proposes to construct a mixed-use development on the site. The project relates to seven levels of residential apartment along with commercial and retail spaces on ground floor and Level 1. The development also proposes to construct two basement level primarily for car park along with under-croft car parking on ground floor level.

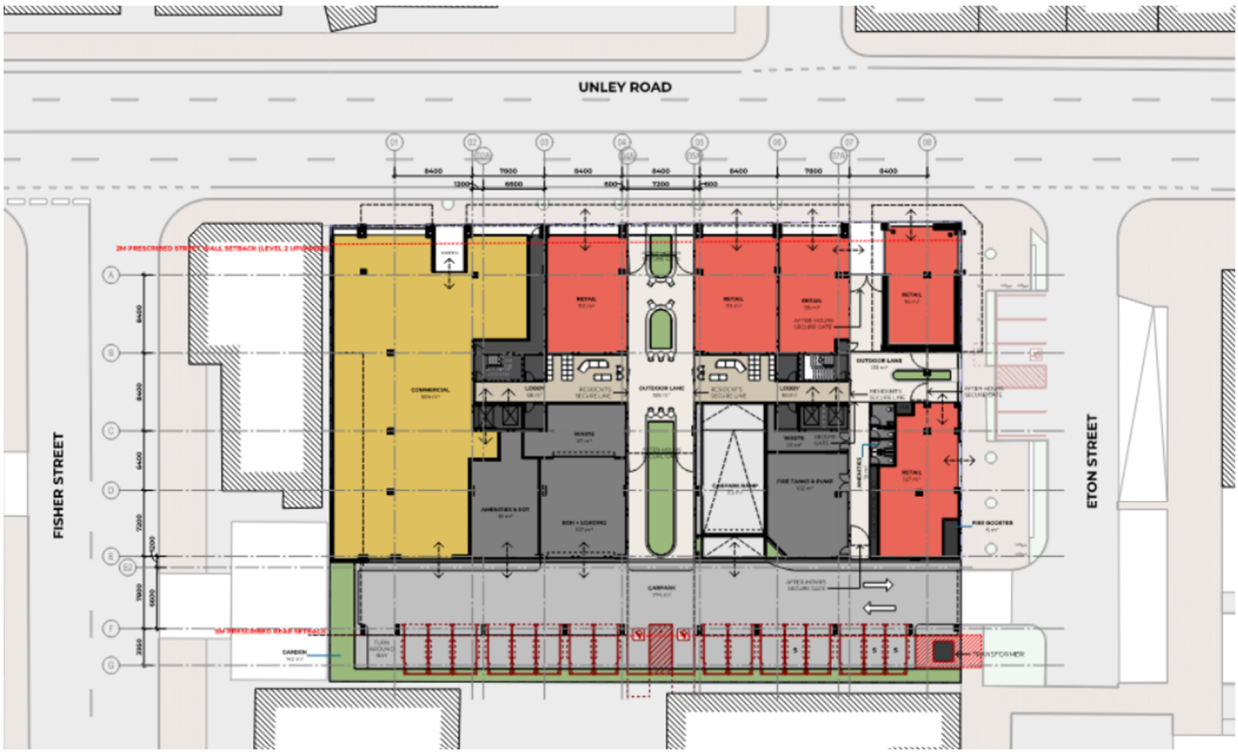

Fig.03 – Proposed Development

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5 Stormwater Management Strategy

5.1 Pre and Post Development Comparative Analysis

The following tables present the pre-development and post-development site areas, enabling a clear comparison of impervious surfaces and the changes in site runoff characteristics. Comparative analysis shows that the existing has a composite impervious coefficient of **0.95**, which marginally increases to **0.98**.

Coverage Type	Runoff Coefficient (C)	Pre-Development		Post-Development	
		Area	%	Area	%
Grass	0.30	-	-	74.3	2
Paved	0.90	1783	53	30.7	1
Building	1.00	1606	47	3284	97
Total		**14460**	**100**	**14460**	**100**

Table 01: Pre to Post Development Imperviousness

Refer to Appendix C for site coverage plans.

5.2 Design Objectives

The following are the general technical requirements for stormwater management as specified by relevant authorities and the Building Code:

- Volume Control - On-Site Detention (OSD): Combined retention/detention tanks must accommodate required OSD storage in accordance with prescribed tables with City of Unley's "*Development and Stormwater Management Design Guide*".
- Flow Discharge Control: Post-development peak discharge must not exceed the pre-development for 5% AEP event as a minimum through the attenuation of flows.
- Freeboard Requirements: Habitable floor levels must maintain a minimum freeboard, governed by the higher of:
    - 300 mm above kerb level
    - 300 mm above the 100-year floodplain level

The design and mitigative solutions developed through this report will target the above objectives.

5.3 Legal Point of Discharge (LPD)

Given the proximity of the existing public SEP on Eton Street to the subject site, it is advisable that this pit serve as the LPD for the development. Hence, the design nominates this pit as the LPD, subject to Council's approval (refer to the nominated LPD on Fig.02).

A DN300 Reinforced Concrete Pipe (RCP) is proposed as the LPD connection which be extended into site that will drain the internal private stormwater network and the OSD tank.

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5.4 WSUD Systems

Water Sensitive Urban Design (WSUD) aims to integrate water management into urban planning and development in a sustainable and environmentally conscious manner. Its primary technical goal is the removal of pollutants from stormwater generated primarily by newly created impervious surfaces. Council has confirmed the requirement of WSUD pollutant removal targets will need to be demonstrated as part of the SMP.

In accordance with the South Australian MUSIC Modelling guidelines, the performance targets for pollutant removal as follows:

Polluntant Type	Target Removal
Total Suspended Solids (TSS)	80% of annual load
Total Phosphorus (P)	60% of annual load
Total Nitrogent	45% of annual load

Table 02: MUSIC Model Performance Targets

- Retention of litter greater than 50 mm for flows up to a 3-month Average Recurrence Interval (ARI) peak flow
- No visible oils for flows up to a 3-month ARI peak flow

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6 Stormwater Quantity

Stormwater quantity (volume) reduction will be required as a mitigation measure for the proposed development. The overarching approach is to reduce post-development outflows to align with pre-development flow rates. This will be achieved through the implementation of On-site Stormwater Detention (OSD), using a detention storage device, such as a tank, located near the legal point of discharge. The underground pipe drainage system will be designed to accommodate the 5% AEP storm, in accordance with National Construction Code (NCC) requirements.

6.1 Storage & Peak Flow Mitigation

The primary objective of the stormwater volume management is to mitigate the increase in peak flows resulting from the proposed development. The City of Unley detention storage requirements stipulate a prescriptive method of tank sizing is outlined in Table 3.1 of "*Development and Stormwater Management Design Guide*". Using the supplied sizing data as it correlates with apartment allotment sizes, the minimum tank size is approximately 11.90m^3 (or 11.90 KL).

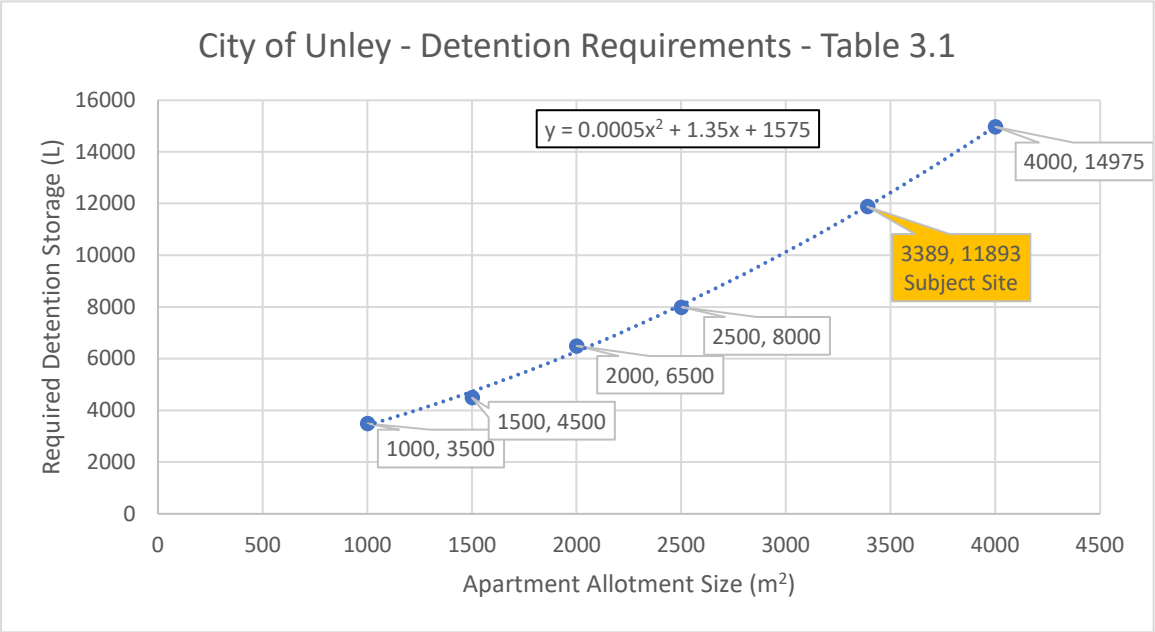

Fig.04 Site Specific Stormwater Detention Volume

The proposed tank was hydrologically analysed using the DRAINS for the post-development scenarios, based on the following computational parameters:

Computation Methodology	DRAINS (IL-CL)
Location	Malvern, South Australia
Pre-Development Flows (TC = 10mins)	20% AEP = 118 L/s ; 1% AEP = 82 L/s
Onsite Detention (OSD) Storage	11.90m^3
Orifice Size	142mm

Table 03: OSD Computational Parameters

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6.2 OSD Storage Volumes

The following figure illustrates the outputs from the computation. Refer to Appendix D for detailed OSD calculations.

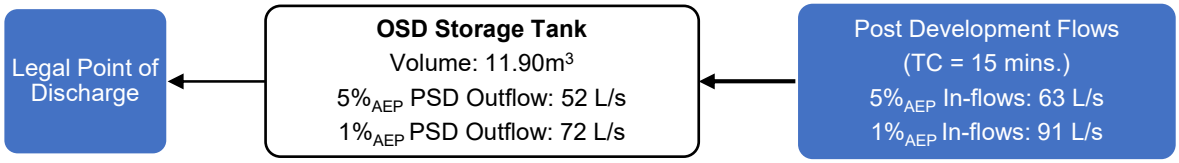

Fig.05 – OSD Storage Summary

The detention system will consist of a storage tank that will capture stormwater runoff during design rainfall events up to the 1% Annual Exceedance Probability (AEP). The tank will discharge at a controlled rates to below pre-development flow rates, with the stored volume generally draining out within a 6-hour period. Table 5 summarises the proposed OSD design:

Catchment	Area (m^2)	Orifice (mm)	Storage (m^3)	Storage Device Type	Nominal Device Size
Subject Site	3,389	141	11.90	Rectangular	4.0m^2 (Plan Area) x 3.0m (D)

Table 04: OSD Design Summary

6.3 Rainwater Reuse (Retention)

The development proposes the capture and retention of roof water in a tank for reuse in non-potable applications, primarily toilet flushing.

Following are rainwater reuse parameters as confirmed by the ESD consultant:

Rainwater Tank Size	25 KL (60 reliability)
Proposed connection for Toilet Flushing	30%
Toilet Water Demand	2,026 KL / Year

Table 05: Rainwater Reuse Parameters

Overflow from the rainwater reuse tank will discharge into the civil stormwater drainage network. On-site detention (OSD) tanks will be positioned downstream of the rainwater tanks to provide flow attenuation.

For further details on water reuse initiatives, rainwater tank sizing and water balance calculations, refer to the Environmental Sustainability Consultant (ESD).

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6.4 Private Stormwater Drainage Network

A new primary underground stormwater drainage network will be constructed to manage surface water runoff generated during the 5% AEP storm event. The system will comprise pipes, pits, detention tanks, subsoil drains, pit covers, and inspection points, all designed to capture and convey runoff to the Legal Point of Discharge (LPD).

The drainage network will be designed in accordance with *AS/NZS 3500.3: Plumbing and Drainage – Part 3: Stormwater Drainage*. Pits will be constructed as reinforced concrete chambers, while pipework will comprise either concrete or high-strength plastic, selected based on site-specific load and hydraulic requirements. All drainage components will utilise industry-standard sizes and materials. Refer to Appendix B for civil drainage drawings.

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7 Stormwater Quality

7.1 MUSIC Model

The recognised tool for establishing expected pollutant loads from the site's constituent surface types (paved, roof, carpark, landscape) is a software called MUSIC which is an acronym for Model for Urban Stormwater Improvement Conceptualization. MUSIC is a widely used tool in the industry which assists engineers, urban planners, and environmental professionals to analyse and optimize stormwater management strategies in urban areas.

The MUSIC software scan simulates a wide range of stormwater management devices and measures, such as detention basins, green roofs, permeable pavements, proprietary devices and biofiltration systems. Overall, the MUSIC model provides a performance rating of the stormwater management system in terms of percentage removal of the target pollutants.

7.2 Treatment Train Configuration

The following diagram provides an illustration of proposed treatment train for the development:

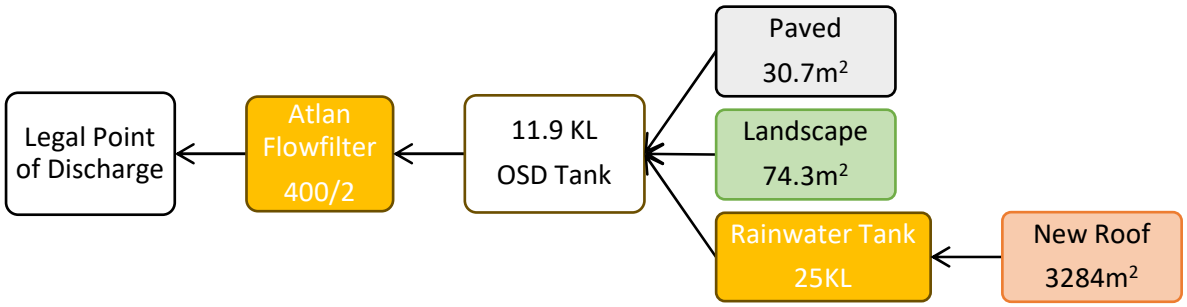

Fig.06 – Treatment Train Schematic

Area Description	Surface Type	Area (m^2)	Treatment Device	Device Size
Roof	Impervious	3284	Rainwater Tank & Atlan FlowFilter	25 KL & 400/2
Paved	Impervious	30.7	Atlan FlowFilter	400/2
Grass	Pervious	74.6	Atlan FlowFilter	400/2

Table 06: Proposed WSUD Measures

The above is to serve as a performance specification for the respective treatment devices. Refer to Hydraulics Engineer and ESD Consultant for rainwater tank details.

7.3 Results – Pollutant Removal

The treatment train configuration as outlined above was tested on MUSIC model to assess its effectiveness against the targeted pollutant removal rates. The following table outlines the performance of the proposed stormwater management in relation to WSUD objectives:

Polluntant Type	Target Removal Rates	Removal Rates Achieved %
Total Suspended Solids (TSS)	80% of annual load	95
Total Phosphorus (P)	60% of annual load	93
Total Nitrogen	45% of annual load	67

Table 07: MUSIC Modelling Results

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8 Overland Flows and Flooding

8.1 Design Provisions for Flood Protection

Desktop research of available published flood maps shows that the site is not subject to flooding. However, considerations to localised minor overland flow paths and prevention of surface water ingress into the building are recommended to avoid or minimise risks where damage or operational disruption is likely.

As per the Deemed-to-Satisfy (DTS) standard within the Plan SA guidelines and standard practise, the proposed development will achieve the following:

- building floor levels are set 300 mm above the adjacent street top of kerb level.
- prevent ingress of flood waters, driveways into basements to be crested at an elevation that achieves 300mm clearance to the adjacent street top of kerb level prior to ramping down to basement below.
- critical infrastructure like sub-stations is set at an elevated level in context of surrounding levels, especially if placed external to buildings.
- storage areas containing hazardous materials are not subject to overland flow paths
- in accordance with Building Code requirements, external paved areas will be graded away from buildings to reduce the risk of surface water ingress.

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9 Conclusions

9.1 Strategy Schematic

The following schematic diagram summarises the stormwater management strategy proposed to service the development.

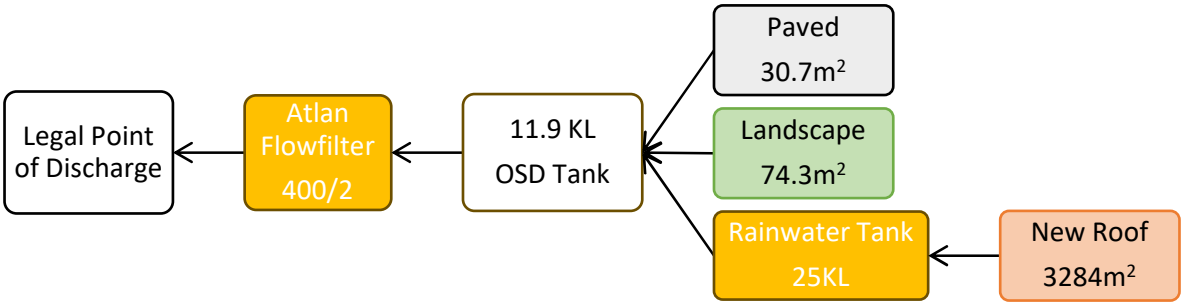

Fig.07 – Stormwater Management Summary

9.2 Summary

This SMP analyses the existing site and the proposed development to prepare a robust means of stormwater management to enable the proposed development at the subject site. The report considers the existing site features and nature of the development whilst incorporating the best practise design objectives as targeted by the compliance requirements.

The SMP demonstrates that the proposed stormwater management measures as outlined in the report and supporting drawings are the best practical option to minimize any potential for adverse effects on the existing infrastructure and surrounding receiving environments.

9.3 Design Progression

This report has been compiled for use by the developer and their consultant team directly involved with the project in relation to this site. The report will be used to support the development approval processes as part of an overall submission package. The report should not be used or relied upon for any other developments.

The SMP will be updated to reflect design progress and stakeholder input. Throughout this process, the core objectives of the proposed strategy as outlined in this report will be retained.

10 Limitations

The report has been prepared for this specific project as described to Matter Consulting and its extent is limited to the scope of work agreed between the parties. The assessment contained herein is largely desktop based relying on survey, architectural and other data provided by the client along with services information from Dial Before U Dig and publicly available GIS information. All third-party information is considered current at the time of this document's production. No responsibility is accepted by Matter Consulting for the accuracy of information from third party sources and/or the use of any part of this report in any other context or for purposes other than intended.

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Appendix A – Feature Level Survey

LEGEND

LINETYPE	DESCRIPTION
	BOUNDARY LINE
	ADJACENT BOUNDARY
	EDGE OF BITUMEN
	WATER TABLE
	BACK OF KERB
	BUILDING RIDGE
	HEDGE LINE
	OVERHEAD VERANDAH
	EDGE OF PAVED PATH

SYMBOL	DESCRIPTION
+52.05	NATURAL SURFACE ELEVATION
	PSM
	TBM
	MASONRY NAIL (MN)
	GAS PIT (GAS)
	WATER METER (WM)
	SEWER IP (SIP)
	FINISHED FLOOR LEVEL (FFL)
	TELECOM PIT (TP)
	JUNCTION PIT (JP)
	RUBISH BIN
	ETSA PIT (EP)
	LAMP POST (LP)
	BOLLARD
	SEWER MANHOLE
	IRRIGATION PIT
	HYDRANT
	GRATED PIT (GP)
	ELECTRICAL SWITCH BOARD (ESB)
	SEP
	STOBIE

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SHEET @ A3 = 1:800

SCALE METRES

0 16 32 48 64 80

Parcel Information
259 - 269 UNLEY ROAD
ALLOTMENT 3 - 4 IN F102954
ALLOTMENT 272 - 273 & 179 IN D1153
AREA OF MALVERN
HUNDRED OF ADELAIDE
CT 5151/175-176; 6126/704; 6145 / 798

Survey Information
BEARING DATUM: MGA
ELEVATION DATUM: AHD
ORIGIN OF LEVELS:
PSM 6628/26547
RL=51.528m
CONTOUR INTERVAL: 0.25m

Job Number	Survey Type
19677	IDENTIFICATION ☐ DETAIL ☒ CONTOUR ☒ DAP ☐
Date of Plan: 16-03-2025	
Surveyor: MK	Draftsperson: JMV
	Revision: Rev A

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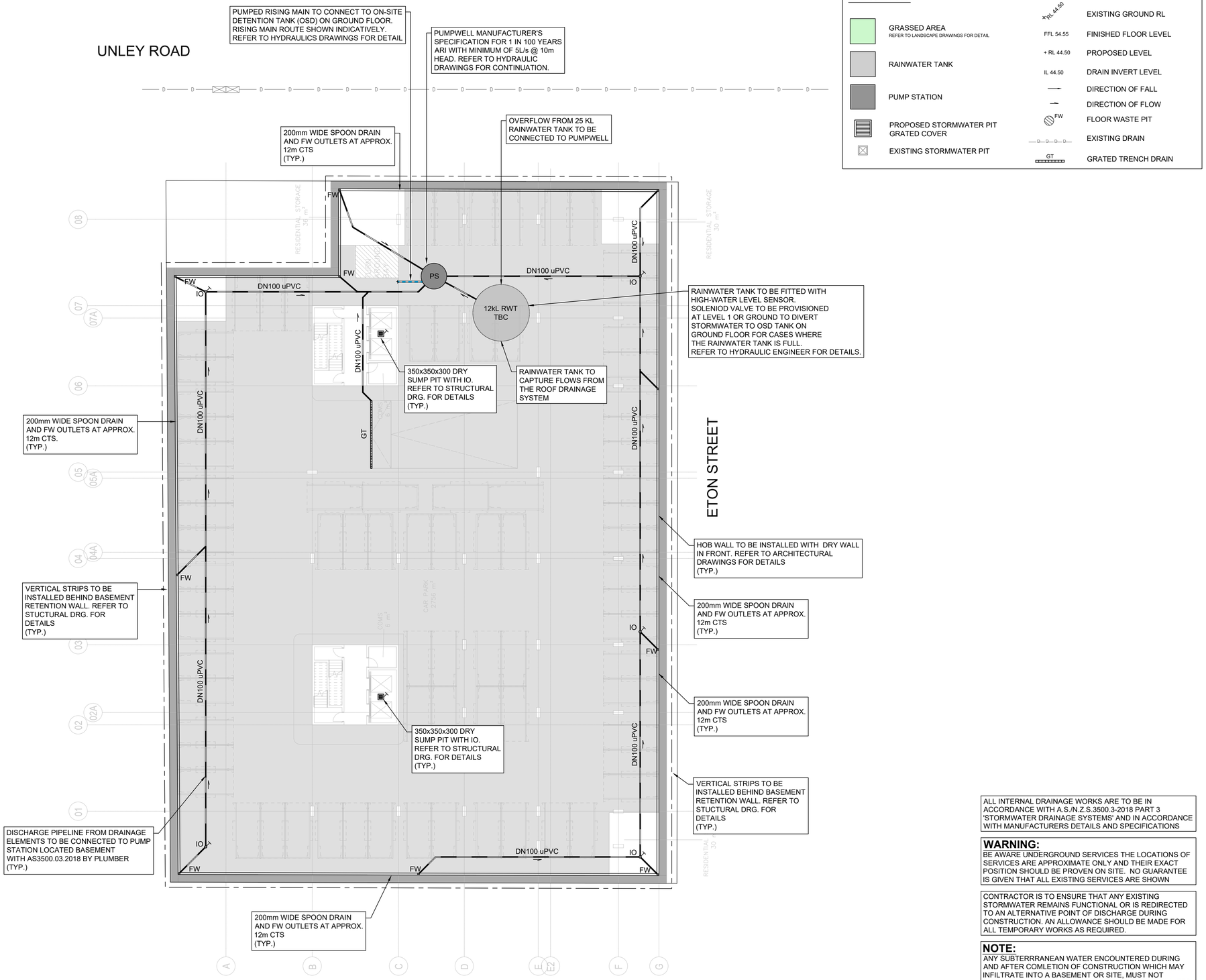
Appendix B – Civil Drawings



BASEMENT 02 - DRAINAGE PLAN

LEGEND

- GRASSED AREA — REFER TO LANDSCAPE DRAWINGS FOR DETAIL
- RAINWATER TANK
- PUMP STATION
- PROPOSED STORMWATER PIT GRATED COVER
- EXISTING STORMWATER PIT
- STORMWATER PIPE MIN 100 DIA UPVC 1:100 (U.N.O)
- +RL 44.50 — EXISTING GROUND RL
- FFL 54.55 — FINISHED FLOOR LEVEL
- + RL 44.50 — PROPOSED LEVEL
- IL 44.50 — DRAIN INVERT LEVEL
- DIRECTION OF FALL
- DIRECTION OF FLOW
- FW — FLOOR WASTE PIT
- EXISTING DRAIN
- GT — GRATED TRENCH DRAIN

ALL INTERNAL DRAINAGE WORKS ARE TO BE IN ACCORDANCE WITH A.S./N.Z.S.3500.3-2018 PART 3 'STORMWATER DRAINAGE SYSTEMS' AND IN ACCORDANCE WITH MANUFACTURERS DETAILS AND SPECIFICATIONS

WARNING:
BE AWARE UNDERGROUND SERVICES THE LOCATIONS OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

CONTRACTOR IS TO ENSURE THAT ANY EXISTING STORMWATER REMAINS FUNCTIONAL OR IS REDIRECTED TO AN ALTERNATIVE POINT OF DISCHARGE DURING CONSTRUCTION. AN ALLOWANCE SHOULD BE MADE FOR ALL TEMPORARY WORKS AS REQUIRED.

NOTE:
ANY SUBTERRRANEAN WATER ENCOUNTERED DURING AND AFTER COMLETION OF CONSTRUCTION WHICH MAY INFILTRATE INTO A BASEMENT OR SITE, MUST NOT DISCHARGE TO THE POINT OF DISCHARGE AS NOMINATED BY THE COUNCIL.

REV.	DATE	DESCRIPTION	BY
01	24/09/2025	PRELIMINARY ISSUE	TN
02	27/10/2025	DESIGN DEVELOPMENT	TN
03	28/10/2025	DD - MINOR UPDATES	TN

CLIENT
HYGGE PROPERTY

PROJECT
259 - 269 UNLEY ROAD
259 UNLEY ROAD, MALVERN, SA 5061

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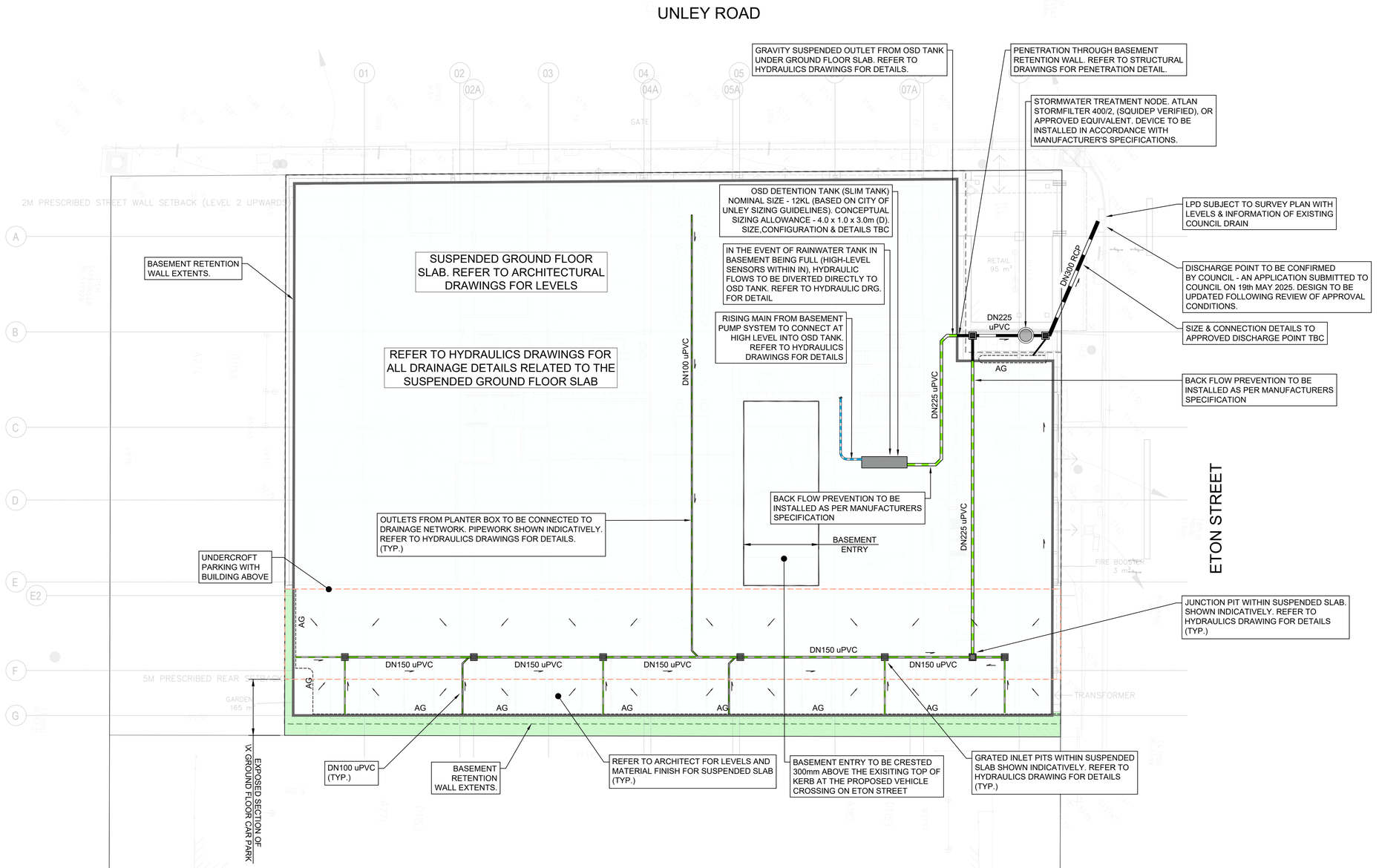
SHEET TITLE
CIVIL WORKS PLAN BASEMENT LEVEL B2 DRAINAGE PLAN

DESIGN DEVELOPMENT

DRAWN BY:	CHECKED BY:	APPROVED BY:	SCALE: at A1	DRAWN DATE:
TN	DR	DK	1:200	24/09/2025

PROJECT NO:	SHEET NO:	REVISION NO:
24217	C.0010	03



LEGEND

- GRASSED AREA — REFER TO LANDSCAPE DRAWINGS FOR DETAIL
- RAINWATER TANK
- DETENTION TANK
- PROPOSED STORMWATER PIT GRATED COVER
- EXISTING STORMWATER PIT
- STORMWATER PIPE MIN 100 DIA UPVC 1:100 (U.N.O)
- +RL 44.50 — EXISTING GROUND RL
- FFL 54.55 — FINISHED FLOOR LEVEL
- + RL 44.50 — PROPOSED LEVEL
- IL 44.50 — DRAIN INVERT LEVEL
- DIRECTION OF FALL
- DIRECTION OF FLOW
- AG — 100mm dia. AGRICULTURAL DRAIN WRAPPED IN GEOTEXTILE SLEEVE.
- FW — FLOOR WASTE PIT
- EXISTING DRAIN
- GT — GRATED TRENCH DRAIN
- RISING MAIN
- GRAVITY SUSPENDED DRAIN (INDICATIVE). REFER HYDRAULICS FOR DETAILS

ALL INTERNAL DRAINAGE WORKS ARE TO BE IN ACCORDANCE WITH A.S./N.Z.S.3500.3-2018 PART 3 'STORMWATER DRAINAGE SYSTEMS' AND IN ACCORDANCE WITH MANUFACTURERS DETAILS AND SPECIFICATIONS

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CONTRACTOR IS TO ENSURE THAT ANY EXISTING STORMWATER REMAINS FUNCTIONAL OR IS REDIRECTED TO AN ALTERNATIVE POINT OF DISCHARGE DURING CONSTRUCTION. AN ALLOWANCE SHOULD BE MADE FOR ALL TEMPORARY WORKS AS REQUIRED.

NOTE:
ANY SUBTERRRANEAN WATER ENCOUNTERED DURING AND AFTER COMLETION OF CONSTRUCTION WHICH MAY INFILTRATE INTO A BASEMENT OR SITE, MUST NOT DISCHARGE TO THE POINT OF DISCHARGE AS NOMINATED BY THE COUNCIL.

REV.	DATE	DESCRIPTION	BY
01	24/09/2025	PRELIMINARY ISSUE	TN
02	27/10/2025	DESIGN DEVELOPMENT	TN
03	28/10/2025	DD - MINOR UPDATES	TN

CLIENT
HYGGE PROPERTY

PROJECT
259 - 269 UNLEY ROAD
259 UNLEY ROAD, MALVERN, SA 5061

MATTER
CONSULTING STRUCTURAL ENGINEERS
Level 8/550 Bourke Street
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SHEET TITLE
CIVIL WORKS PLAN
GROUND LEVEL
DRAINAGE PLAN

NOTE:
ALL DIMENSIONS ARE IN MILLIMETRES. VERIFY ALL DIMENSIONS ON SITE PRIOR TO COMMENCEMENT OF WORKS. DO NOT SCALE OFF DRAWING. COPYRIGHT REMAINS THE PROPERTY OF MATTER CONSULTING PTY. LTD.

DESIGN DEVELOPMENT

DRAWN BY:	CHECKED BY:	APPROVED BY:	SCALE: at A1	DRAWN DATE:
TN	DR	DK	1:200	24/09/2025

PROJECT NO:	SHEET NO:	REVISION NO:
24217	C.0011	03

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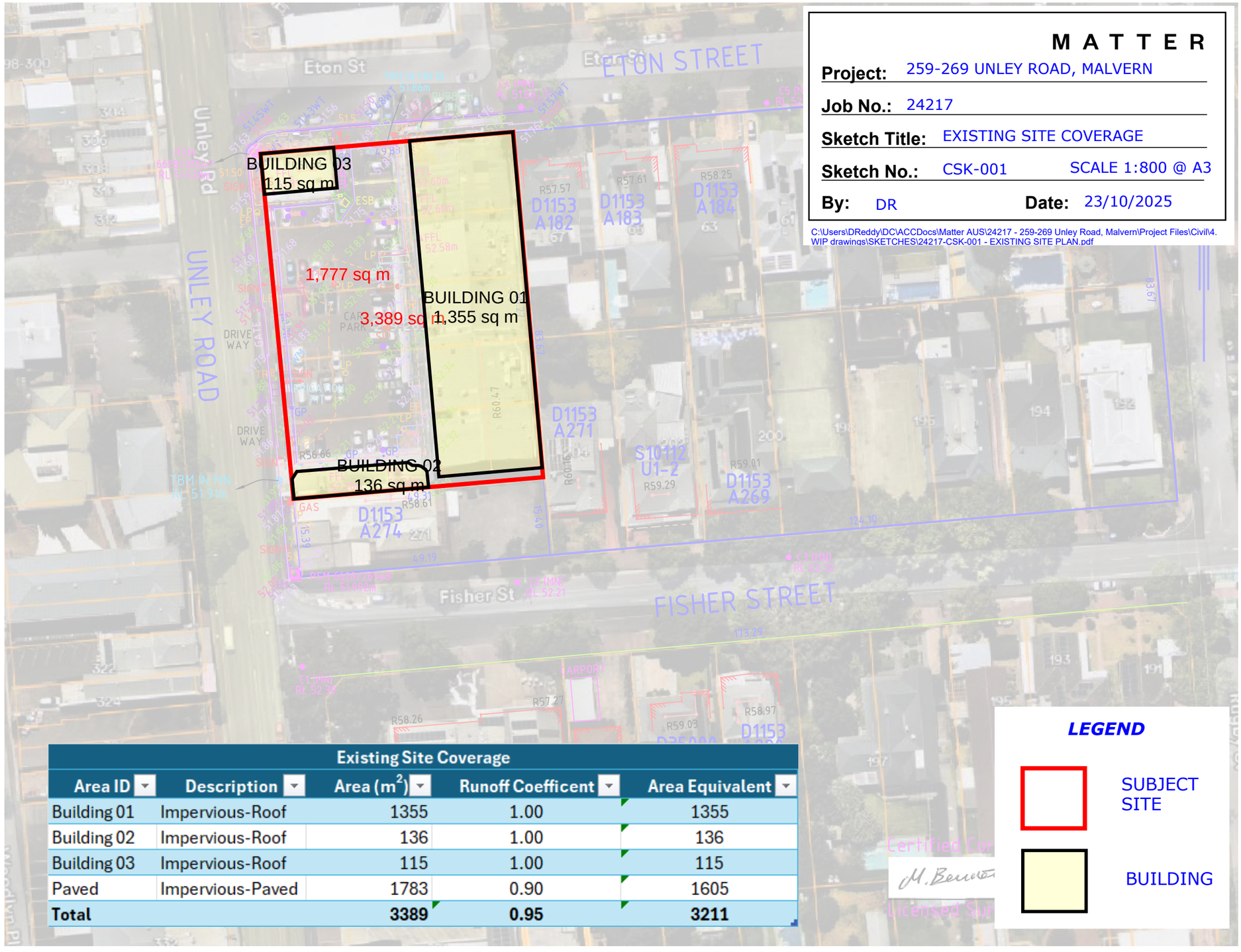
Appendix C – Site Coverage

LEGEND

LINETYPE	DESCRIPTION
	BOUNDARY LINE
	ADJACENT BOUNDARY
	EDGE OF BITUMEN
	WATER TABLE
	BACK OF KERB
	BUILDING RIDGE
	HEDGE LINE
	OVERHEAD VERANDAH
	EDGE OF PAVED PATH

SYMBOL	DESCRIPTION
+52.05	NATURAL SURFACE ELEVATION
PSM	PSM
TBM	TBM
MN	MASONRY NAIL (MN)
GAS	GAS PIT (GAS)
WM	WATER METER (WM)
SIP	SEWER IP (SIP)
FFL	FINISHED FLOOR LEVEL (FFL)
TP	TELECOM PIT (TP)
JP	JUNCTION PIT (JP)
RUBISH BIN	RUBISH BIN
EP	ETSA PIT (EP)
LP	LAMP POST (LP)
BOLLARD	BOLLARD
SEWER MANHOLE	SEWER MANHOLE
IRRIGATION PIT	IRRIGATION PIT
HYDRANT	HYDRANT
GP	GRATED PIT (GP)
ESB	ELECTRICAL SWITCH BOARD (ESB)
SEP	SEP
STOBIE	STOBIE



Existing Site Coverage

Area ID	Description	Area (m^2)	Runoff Coefficent	Area Equivalent
Building 01	Impervious-Roof	1355	1.00	1355
Building 02	Impervious-Roof	136	1.00	136
Building 03	Impervious-Roof	115	1.00	115
Paved	Impervious-Paved	1783	0.90	1605
Total		**3389**	**0.95**	**3211**

LEGEND

SUBJECT SITE

BUILDING

MATTER

Project: 259-269 UNLEY ROAD, MALVERN

Job No.: 24217

Sketch Title: EXISTING SITE COVERAGE

Sketch No.: CSK-001 SCALE 1:800 @ A3

By: DR **Date:** 23/10/2025

C:\Users\DReddy\DC\ACCDocs\Matter AUS\24217 - 259-269 Unley Road, Malvern\Project Files\Civil\4. WIP drawings\SKETCHES\24217-CSK-001 - EXISTING SITE PLAN.pdf

HENNIG & CO PTY LTD
LICENSED SURVEYORS
"Sub Division Experts!"
275 Marion Road, North Plympton S.A. 5037
Ph: (08)82970883 Fax: (08)82971170
Email. hennig @ hennig.com.au

SCALE SHEET @ A3 = 1:800 METRES

0 16 32 48 64 80

Parcel Information
259 - 269 UNLEY ROAD
ALLOTMENT 3 - 4 IN F102954
ALLOTMENT 272 - 273 & 179 IN D1153
AREA OF MALVERN
HUNDRED OF ADELAIDE
CT 5151/175-176; 6126/704; 6145 / 798

Survey Information
BEARING DATUM: MGA
ELEVATION DATUM: AHD
ORIGIN OF LEVELS:
PSM 6628/26547
RL=51.528m
CONTOUR INTERVAL: 0.25m

Job Number 19677

Date of Plan 16-03-2025

Surveyor MK

Draftsperson JMV

Revision Rev A

Survey Type
IDENTIFICATION ☐
DETAIL ☒
CONTOUR ☒
DAP ☐

UNLEY ROAD

FISHER STREET

ETON STREET

2M PRESCRIBED STREET WALL SETBACK (LEVEL 2 UPWARDS)

RESCRIBED REAR SETBACK

BUILDING 02
123.6 sq m
RAVED (GREY)
30.7 sq m

BUILDING 01 (BASEMENT EXTENTS)
3,160.4 sq m

LANDSCAPE
74.3m²

ENTRY
COMMERCIAL 584 m²
RETAIL 112 m²
LOBBY 66 m²
RESIDENT'S SECURE LINE
AFTER-HOURS SECURE GATE
OUTDOOR LANE 195 m²
RETAIL 115 m²
LOBBY 65 m²
RETAIL 98 m²
OUTDOOR LANE
WASTE 57 m²
AMENITIES & EOT 91 m²
BOH + LOADING 107 m²
CARPARK RAMP 113 m²
FIRE TANKS & PUMP 102 m²
WASTE 23 m²
SECURE GATE
AMENITIES 19 m²
RETAIL 127 m²
FIRE BOOSTER 6 m²
CARPARK 774 m²
TURN AROUND BAY
GARDEN 142 m²
TRANSFORMER

01	02	02A	03	04	04A	05	05A	06	07	07A	08
8400	1200	6600	8400	600	7200	600	8400	7800	8400		
8400	7800		8400	8400							

A	8400
B	8400
C	6400
D	7200
	200

MATTER

Project: 259-269 UNLEY ROAD, MALVERN

Job No.: 24217

Sketch Title: PROPOSED SITE COVERAGE

Sketch No.: CSK-001 SCALE 1:200 @ A1

By: DR **Date:** 23/10/2025

C:\Users\DReddy\DC\ACCDocs\Matter AUS\24217 - 259-269 Unley Road, Malvern\Project Files\Civil\4. WIP drawings\SKETCHES\24217-CSK-003 - Proposed Site Coverage.pdf

Proposed Site Coverage

Area ID	Description	Area (m^2)	Runoff Coefficent	Area Equivalent
Building 01	Impervious - Building	3160.4	1.00	3160.4
Building 02	Impervious - Building	123.6	1.00	123.6
Paved	Impervious - Paved	30.7	0.90	27.6
Landscape	Pervious - Grass	74.3	0.30	22.3
Total		**3389**	**0.98**	**3312**

W—B WOODS BAGOT

Client: Hygge Property

Project: 259-269 Unley Road

Sheet title: Ground Floor

DRAFT

Project no. 140697

Sheet no. 2203

Scale 1 : 200

Revision D

Sheet size A1

Date 10/10/2025

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Appendix D – OSD Calculations

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M A T T E R

24217 – 259-269 Unley Road, Malvern
DRAINS OSD Model Summary

Rainfall Data

Source	ARR Data Hub
Longitude	-34.957
Latitude	138.608
Location	Unley, SA

Model Parameters

Hydrological Model	Initial Loss – Continuing Loss (IL – CL)
Impervious IL	0 mm
Impervious CL	0 mm
Pervious IL	45 mm
Pervious CL	3 mm

Detention Design Parameters

Site Storage Requirement (SSR)	11.89 KL (minimum)

Results - Pre-Development

Site: Pre-Development
Area : 3389m^2
Tc : 10 mins.
IL-CL Model
$Q_{1\% AEP}$: 118 L/s
$Q_{5\% AEP}$: 82 L/s

Results - Post-Development

Site: Post-Development
Area : 3389m^2
Tc : 15 mins.
IL-CL Model
$Q_{1\% AEP}$: 91L/s
$Q_{5\% AEP}$: 63 L/s

→

OSD Storage Tank
Volume: **11.90m^3**
Orifice Restricted Outlet = 141mm
Tank Size = 4.0 x 1.0 x 3m (D)

→

Post Development Outflows
$Q_{1\% AEP}$: 71 L/s
$Q_{5\% AEP}$: 52 L/s

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Appendix E – MUSIC Modelling

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24217 – 259-269 Unley Road, Malvern

MUSIC Model Summary

Rainfall Data

Source	Water Sensitive SA
Location	Adelaide Wet & Foothills
Mean Annual Rainfall	585mm
Mean Annual Pet	1143mm
Model Setup	6 min time interval

Design Treatment Train Schematic

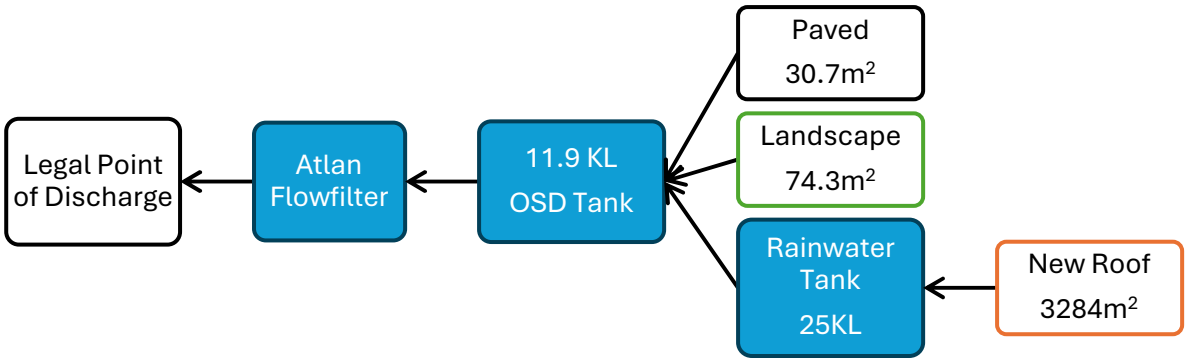

Fig.01 – Model 01 – Design Treatment Train

The above treatment trains were tested in MUSIC X software for efficacy in pollutant removal.

Results

	Target Benchmark	Model 01
Total Suspended Solids (TSS)	80%	95%
Total Phosphorus (P)	60%	93%
Total Nitrogen (N)	45%	67%

The design treatment train for Model 01 meets minimum performance requirements for Water Sensitive Urban Design (WSUD).

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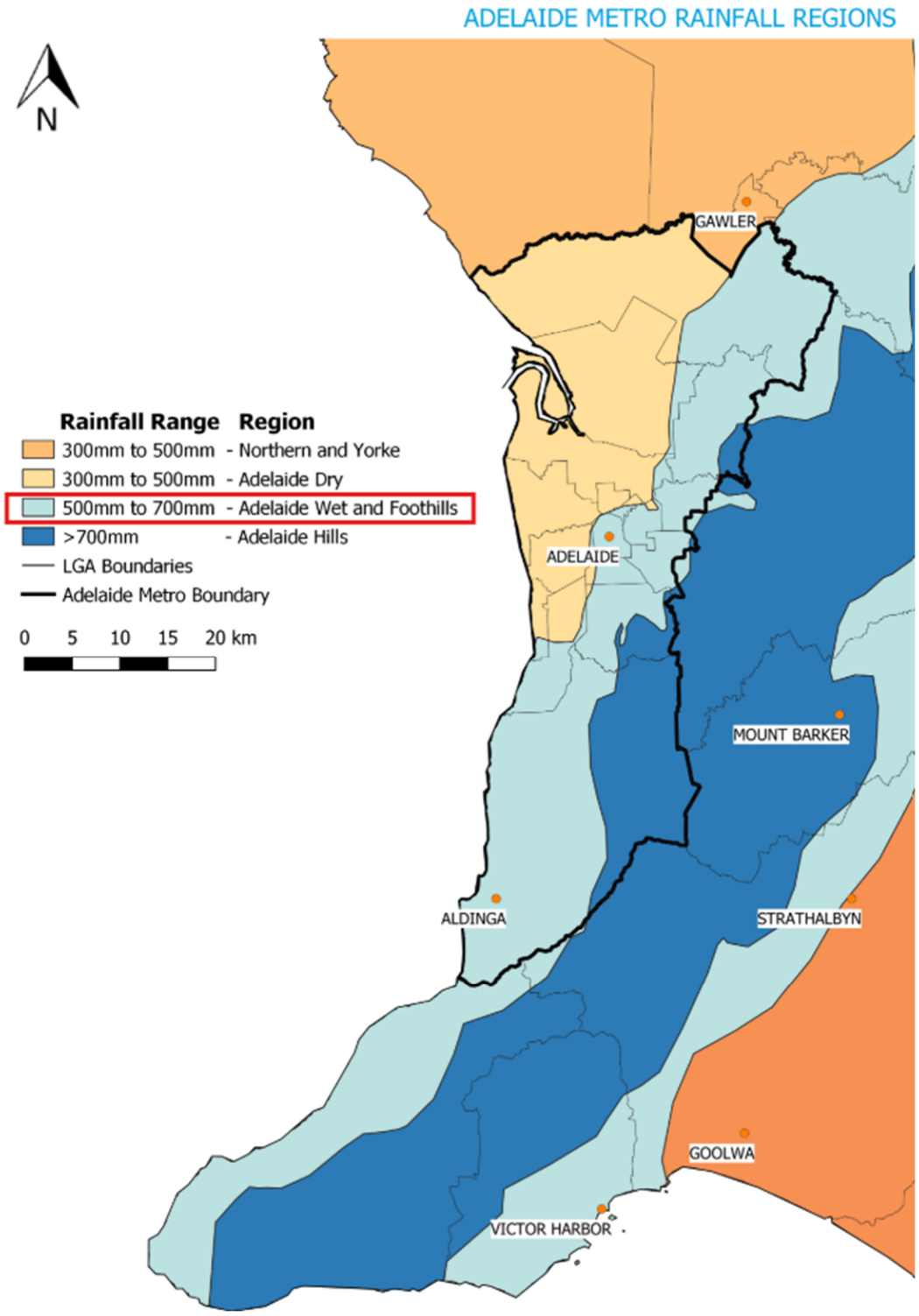
Rainfall Template



Source: Water Sensitive SA

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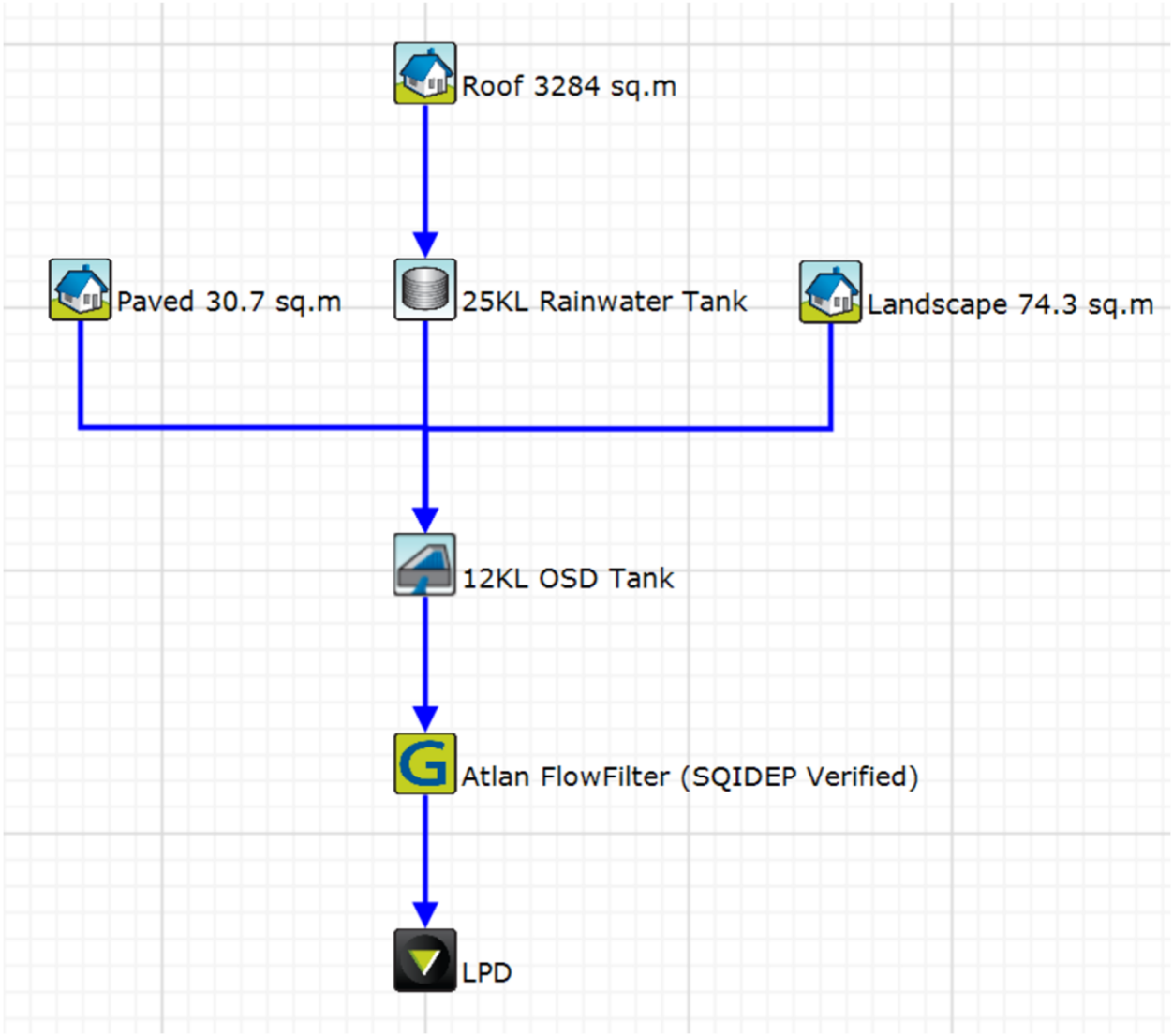
MUSIC Model Configuration



MUSIC Results

Latest Run : Treatment Train Effectiveness : LPD

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.6	0.9305	41.84
Total Suspended Solids (kg/yr)	47.43	2.231	95.3
Total Phosphorus (kg/yr)	0.2508	0.01531	93.9
Total Nitrogen (kg/yr)	3.537	1.133	67.96
Gross Pollutants (kg/yr)	64.12	0	100