Site Stormwater Management

81 Rosedale Avenue – Rezoning Application





Prepared for Aurora

07 October 2025

Document Information

Prepared by
Enspire Solutions Pty Ltd
Level 7, 54 Miller Street
North Sydney NSW 2060
ABN 71 624 801 690

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Appendix A Concept Stormwater Management Plan

1 Introduction

Enspire Solutions (**Enspire**) has been engaged to assess the site flooding and stormwater conditions to support a Planning Proposal at 81 Rosedale Avenue, Greenacre. The Objective of this report is to assess the potential impacts on existing stormwater management measures associated with the proposed Planning Proposal and provide recommendations for future investigations and/or management with regards to any future development.

The Planning Proposal seeks the following changes:

- Rezone the site from SP2 Electricity Transmission and Distribution to E4 General Industrial; and
- Amend the Floor Space Ratio development standard to include the site to a maximum of approximately 1.1:1.

The intended outcome of the Planning Proposal is to establish planning controls that will facilitate industrial development to support Council's Employment Lands Strategy and retention of existing industrial lands.

2 Existing Site Conditions

The land to which this report applies is shown below in Figure 1.

The site is bounded by Rosedale Avenue to the west.

The site area is approximately 4,860m^2, developed and is currently occupied by Ausgrid.



Figure 1 – Site Location (NearMaps, 2025)

Table 1 Key Data for 81 Rosedale Avenue

Development Site	
LGA	Canterbury Bankstown Council
Street Address	81 Rosedale Avenue, Greenacre, NSW, 2190
Lot number and DP	1//DP449056, 251//DP14658, 252//DP14658, 253//DP14658, 254//DP14658 and 255//DP14658
Current landowner	Ausgrid
Current Land Zoning	SP2 – Electricity Generating Works
Bushfire Prone Zone	No
Flood Impact	No
Heritage	No

2.1 Topography

GIS contours information obtained for the subject site indicates a fall towards the west along Rosedale Avenue. The highest elevation of the site is approx. RL 64m AHD at the southeast corner of the subject site which falls to approx. elevation RL 61 AHD to the northwest.



Figure 2 - Site Elevation Contours (mAHD)

2.2 Existing Drainage Infrastructure

The site is largely impervious, consisting of hardstand surfaces with no apparent formal stormwater drainage infrastructure such as a pit and pipe network. Stormwater runoff is directed west towards the site boundary. The site is bounded by adjacent properties, which may influence to restrict overland flow across these properties. The ultimate legal discharge point for the site is to be determined during design development with survey data to verify existing stormwater pit locations along Rosedale Avenue. There is no known on-site detention (OSD) infrastructure servicing this site.

3 Existing Flooding Conditions

The subject site is situated on the western side of the Cooks River and falls under the Rookwood Road Catchment, which is a sub-catchment of the Cooks River Catchment. Enspire has reviewed the 'Rookwood Road Catchment Flood Study Report', prepared by BMT WBM (dated 12th September 2011), which was prepared on behalf of Canterbury Bankstown Council. The flood study has been undertaken for the Rookwood Road catchment area and defines the flood behaviour for the 1% Annual Exceedance Probability.

The Cooks River Catchment has an area of 100km^2 and drains into Botany Bay via an open channel. Sydney Water Corporation (SWC) owns the large trunk drainage assets including open concrete lines channel with the smaller pipe and pit networks owned by the various councils. Land use is mainly residential with industrial and commercial developments.

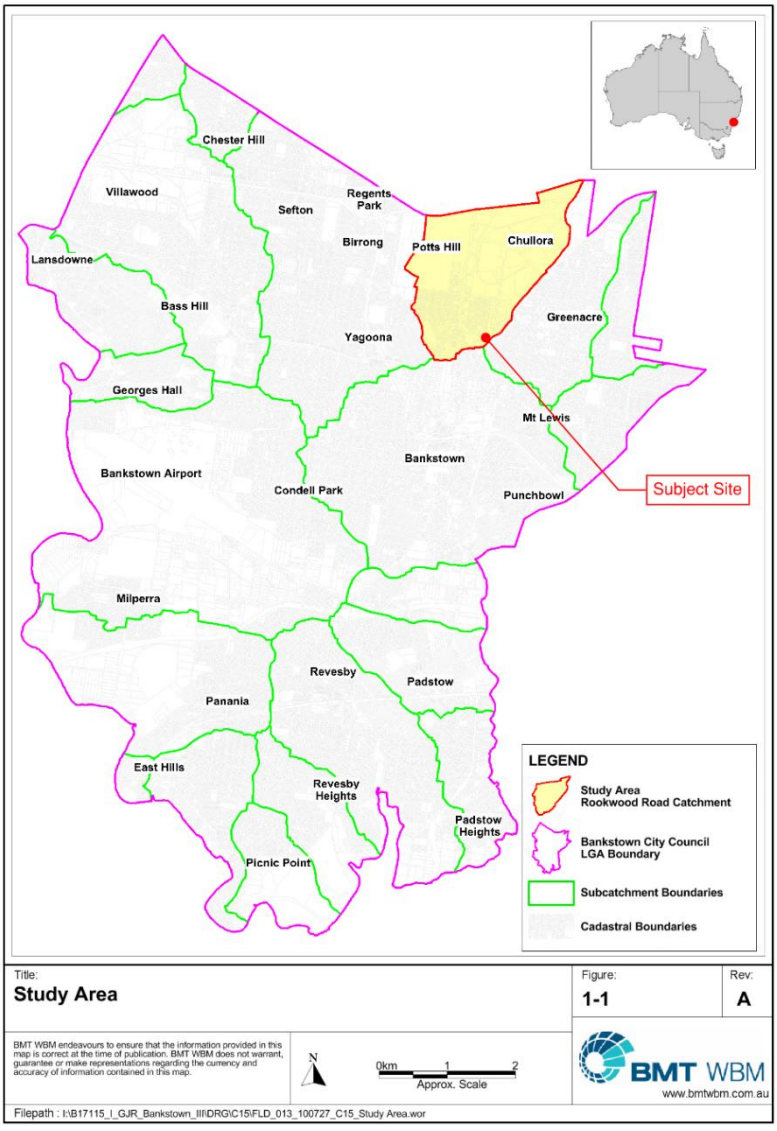


Figure 3 – Rookwood Road Catchment Flood Study – Canterbury Bankstown Council

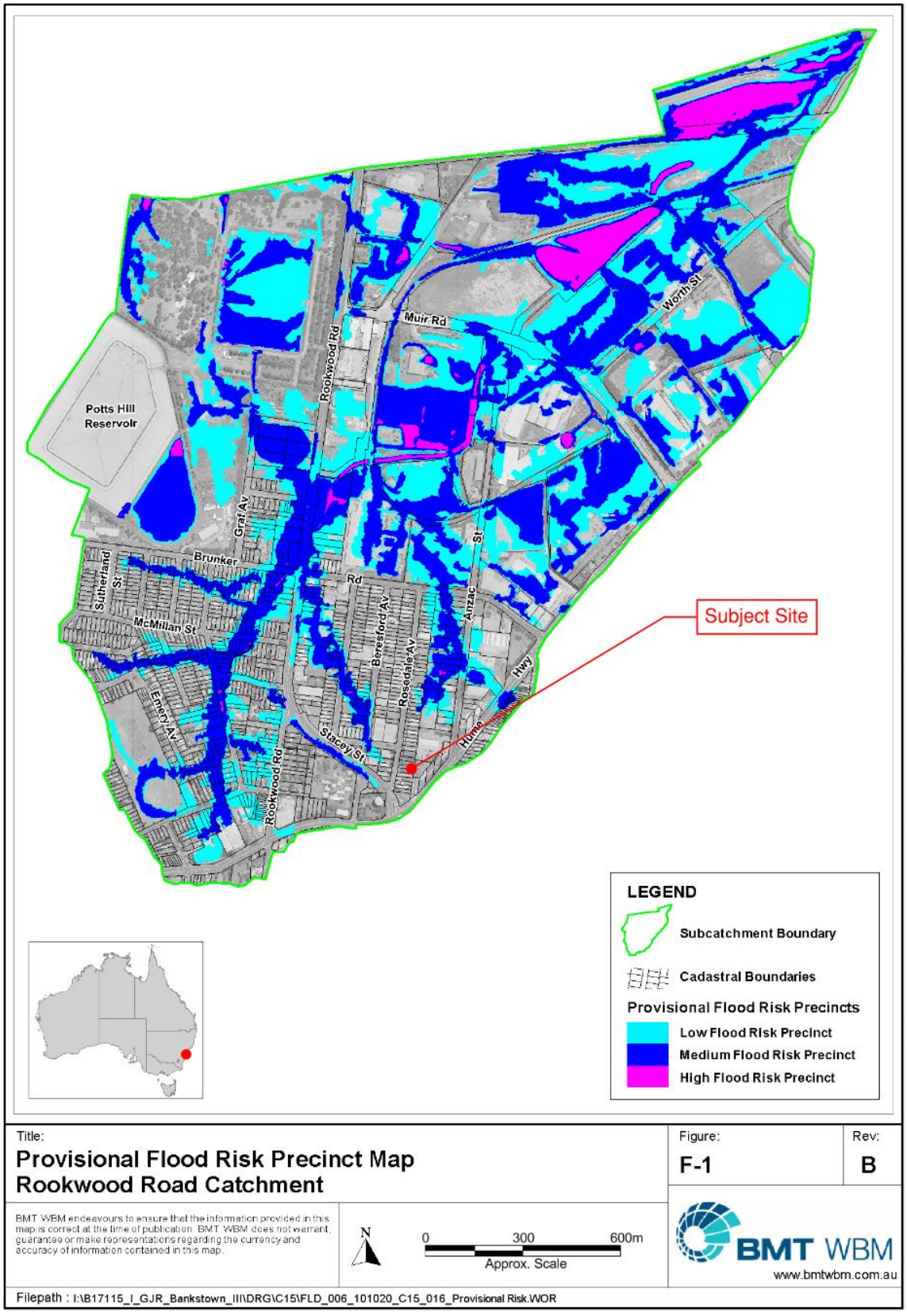


Figure 4 – Rookwood Road Catchment Flood Study Flood Risk – Canterbury Bankstown Council

3.1 1% AEP Event Peak Flood Depths

The peak flood depth mapping as shown on Figure 5 identifies that the site is not flood affected by the regional 1% AEP flood event.

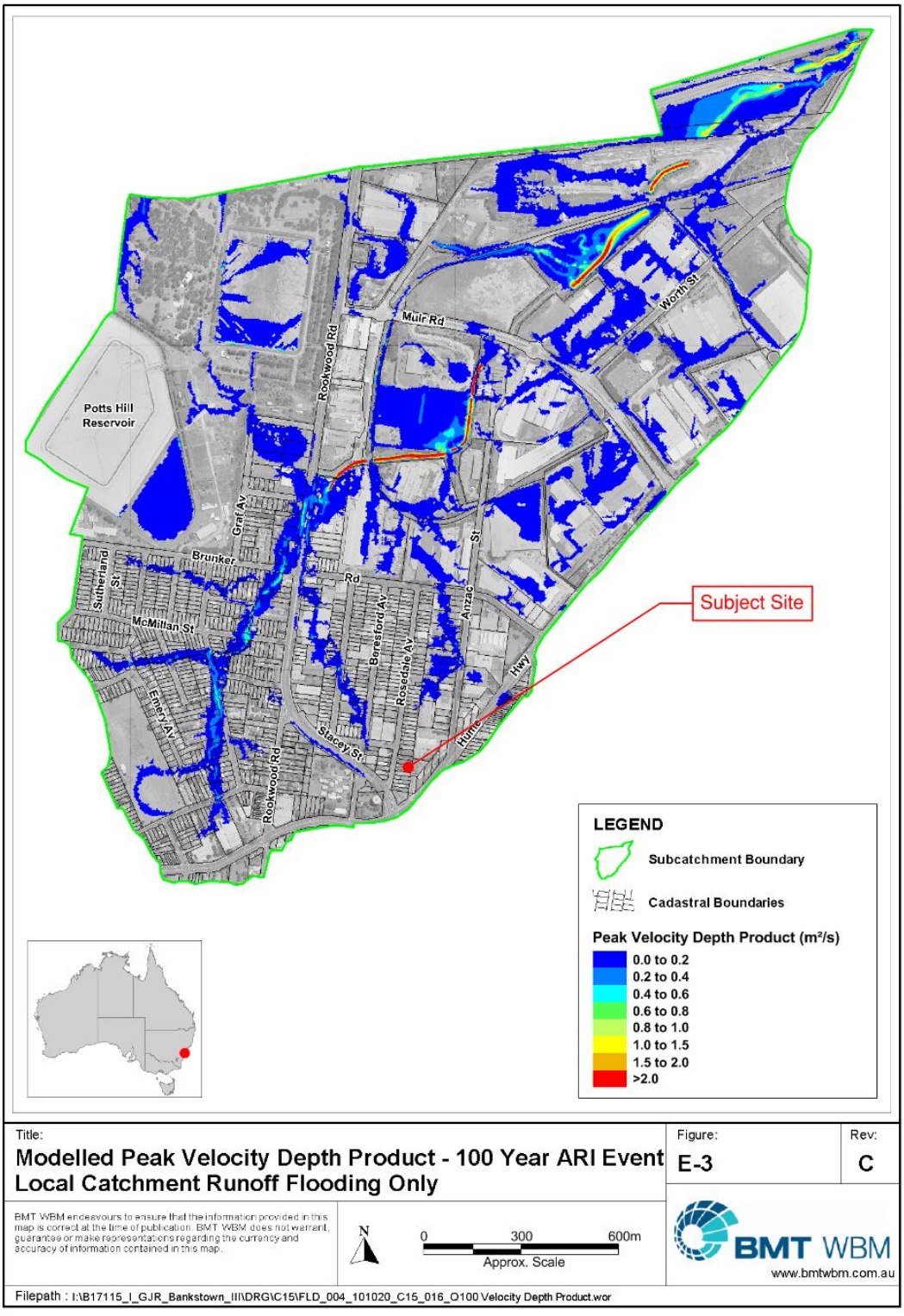


Figure 5 - 1% AEP Event Peak Flood Depths

4 Stormwater Management Strategy

4.1 Local Authority Requirements

The stormwater management systems associated with any proposed development will be developed to comply with the following policy set by Canterbury-Bankstown Council:

1. Canterbury-Bankstown Council – Canterbury-Bankstown Development Control Plan 2023 – Chapter 3: General Requirements – 3.1 Development Engineering Standards

4.2 Objective and Controls

The stormwater strategy for future development will be developed in accordance with Canterbury-Bankstown Council Development Control Plan 2023 (DCP). The DCP outlines the following stormwater objectives:

- To establish a high standard of stormwater drainage infrastructure within the site
- To ensure that the proposed and constructed stormwater drainage system do not adversely impact on Council's stormwater drainage system, the development itself and adjoining sites.
- To ensure that buildings are not affected by inundation from stormwater runoff resulting from the 100-year ARI storm event.
- To ensure that any proposed stormwater drainage works are designed to minimise any nuisance caused by stormwater drainage flows from local catchment flooding or mainstream flooding from rivers
- To manage stormwater runoff and prevent damage to buildings and property and reduce hazardous flows
- To avoid the location of stormwater drainage infrastructure within tree driplines and deep soil zones
- To give special consideration to development requiring the submission of BASIX Certificate where the use of rainwater storage tanks fitted into stormwater drainage systems may supplement the domestic water supply.

4.3 Proposed Stormwater Management Strategy

The stormwater management strategy for future development will be designed to ensure site stormwater runoff is managed in the following key areas:

- Stormwater Quantity; and
- Stormwater Quality.

The concept stormwater management plan as presented in **Appendix A** documents a concept layout with stormwater drainage components including an on-site detention tank and water quality treatment.

The stormwater management strategy provided is intended to meet minimum requirements for future development to comply with council requirements. It is expected the stormwater management strategy will be refined at during design phase to confirm existing site parameters and constraints such as identifying the legal point of discharge location and level. These site parameters will be validated by survey data and may influence the overall stormwater management strategy including OSD tank positioning, volume and levels.

As outlined in Canterbury-Bankstown Development Engineering Standards guide, Section 9.1.3, where the stormwater drainage system is unavailable or the Council stormwater drainage system must be extended to the development site, it is the developer's responsibility to undertake all

acquisitions and construction required to extend the Council system to the site. The minimum pipe size Council will maintain is 375mm diameter Reinforced Concrete. Council does not undertake to provide or assist in providing stormwater drainage infrastructure to facilitate proposed developments.

4.4 Stormwater Quality

4.4.1 Stormwater Quantity Objectives

The Canterbury Bankstown Council DCP and design specification requires new developments do not increase stormwater peak flows in any downstream areas for rainfall events up to and including the 1 in 100 Average Recurrence Interval (ARI) event.

The subject site is currently utilised as a distribution substation (Ausgrid) and is largely impervious. As a result, the redevelopment of the site may allow an exemption to provide OSD if it can be demonstrated there will be no adverse impacts downstream including confirming sufficient capacity of the existing drainage network where the site will connect to. Any exemption for OSD will require Council confirmation.

For this report, an assumption is made to apply OSD, with the permissible site discharge modelled to attenuate post development peak flows to match state-of-nature (pre-development, 100% pervious) conditions.

4.4.2 Assumptions for Stormwater Quantity Modelling

The stormwater quantity management strategy and modelling are based on the following assumptions:

- Existing Levels are based on data from mAHD elevation contours
- Tailwater level connecting to Rosedale Avenue for the major 1% AEP storm = 60.90m (adopting 150mm above kerb invert)
- Tailwater level connecting to Rosedale Avenue for the minor 10% AEP storm = 60.60m (adopting 150mm below kerb invert)
- Tailwater levels and outlet capacities are assumed to remain stable throughout the design storm events
- Existing pit invert level = 59.60m (location and level to be confirmed by survey)
- Assumed 15% max site bypass

These assumptions are intended to reflect a potential operational scenario for the future development of the site. Any deviation from these assumptions may influence the performance of the proposed stormwater infrastructure.

One (1) main discharge point has been identified for the works as being a kerb inlet pit connecting to Rosedale Avenue. The presence of existing stormwater infrastructure in Rosedale Avenue has not been verified, which would be required via existing site survey to be commissioned as part of the Development Application works. Street view mapping identifies an existing kerb inlet pit located at the northwest corner of the subject site.

4.4.3 Stormwater Quantity Drainage Modelling Results

The stormwater drainage network associated with the proposed development was analysed using DRAINS software (standard hydraulic model using ARR 2019 procedures). A pre-

development and post-development flow analysis was conducted to size the proposed OSD tank, with results outlined in **Table 2.**

Table 2 Stage 1 Basin Pre/ Post-Development Flow Assessment

AEP (%)	Pre-Development Flow (m^3)	Post-Development Flow (m^3)	Tank TWL	Tank Volume (m^3)
50	0.05	0.049	60.84	46.41
20	0.83	0.059	61.13	71.50
10	0.103	0.065	61.31	86.18
5	0.125	0.071	61.48	101.00
2	0.145	0.137	61.61	111.73
1	0.165	0.157	61.65	115.10

From the calculations shown in **Table 2,** the following detention requirements are required for the site:

- Detention Volume = 115.1m^3
- Orifice 1 Diameter = 200mm
- Orifice 2 Diameter = 300mm

These requirements may vary depending on the adopted permissible site discharge value to be determined as part of the future development.

Details of the proposed tank is provided in **Appendix A.**

An overview of the proposed DRAINS model is provided in **Figure 6.**

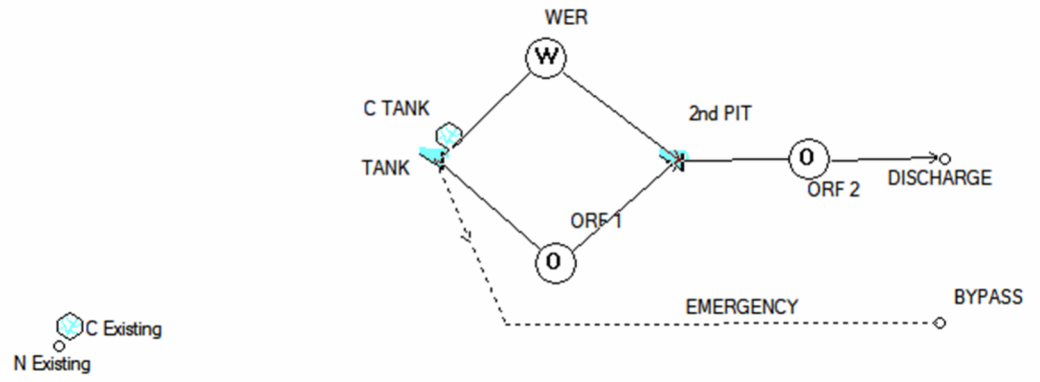


Figure 6 - DRAINS Model

The model includes the following assumptions and key input parameters:

- Post developed impervious fraction (Industrial) 85%;
- Depression Storage;
  - 1mm for paved areas;
  - 5mm for grassed areas;
- Antecedence moisture condition 3.
- Time of concentration 5mins for impervious areas; 8mins for pervious areas.

- The stormwater outlet to Rosedale Avenue was not surveyed at the time of this submission and will need to be further investigated in Development Application design. Pit invert levels and surface levels are assumed for the purpose of modelling a potential scenario for the Site Stormwater Management Strategy.

4.5 Stormwater Quality

4.5.1 Water Quality Objectives

The Canterbury Bankstown Council Engineering Guidelines (2009) does not provide water quality targets, thus assumed targets were implemented based on Sydney Water Stormwater Quality Targets (2021) in Table 3 below:

Table 3 Water Quality Targets

Pollutant	% Reduction Post-Development Average Annual Load Reduction
Total Suspended Solids (TSS)	85
Total Phosphorus (TP)	65
Total Nitrogen (TN)	45

Reduction targets will require Council confirmation.

4.5.2 MUSIC Modelling

A water quality analysis has been undertaken to assess the performance of the proposed WSUD strategy against the adopted stormwater quality targets. The stormwater quality analysis was undertaken using the industry standard software model MUSIC (Model for Urban Stormwater Improvement Conceptualisation) Version 6.3.

The proposed treatment system involves the use drainage pit litter baskets (Enviropods or approved equivalent) and water quality filter cartridges located within the detention tank.

Refer **Figure 7** for the proposed treatment train layout.

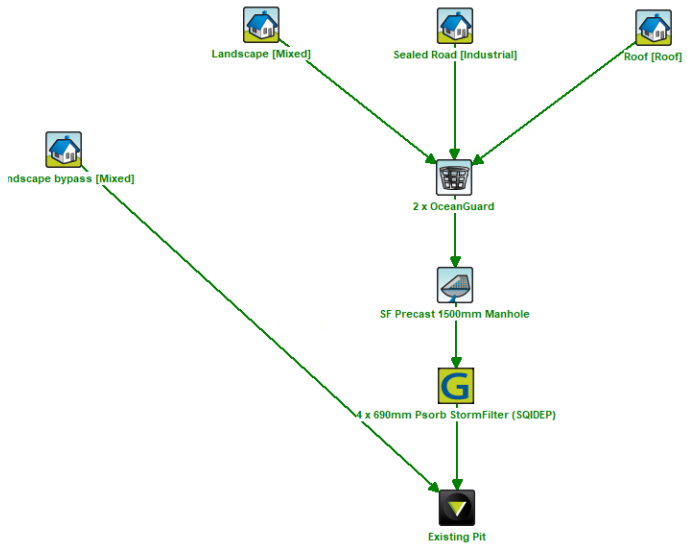


Figure 7 - Proposed MUSIC Model

4.5.3 MUSIC Model Results

The MUSIC model was run to estimate the annual pollutant loads generated by the proposed development, as well as the resultant pollutant loads discharging from the site after flows pass through the proposed treatment train.

Table 4 summaries the average annual pollutant loads and reductions at the existing pit node.

Table 4 Estimated Average Annual Pollutant Load Reduction

Criteria	Target % Reduction	Achieved % Reduction
Total Suspended Solids (TSS)	85	87
Total Phosphorus (TP)	65	67.3
Total Nitrogen (TN)	45	48.5

The results above demonstrate that the development meets the assumed minimum target reductions for pollutant loads at the discharge location.

5 Conclusion

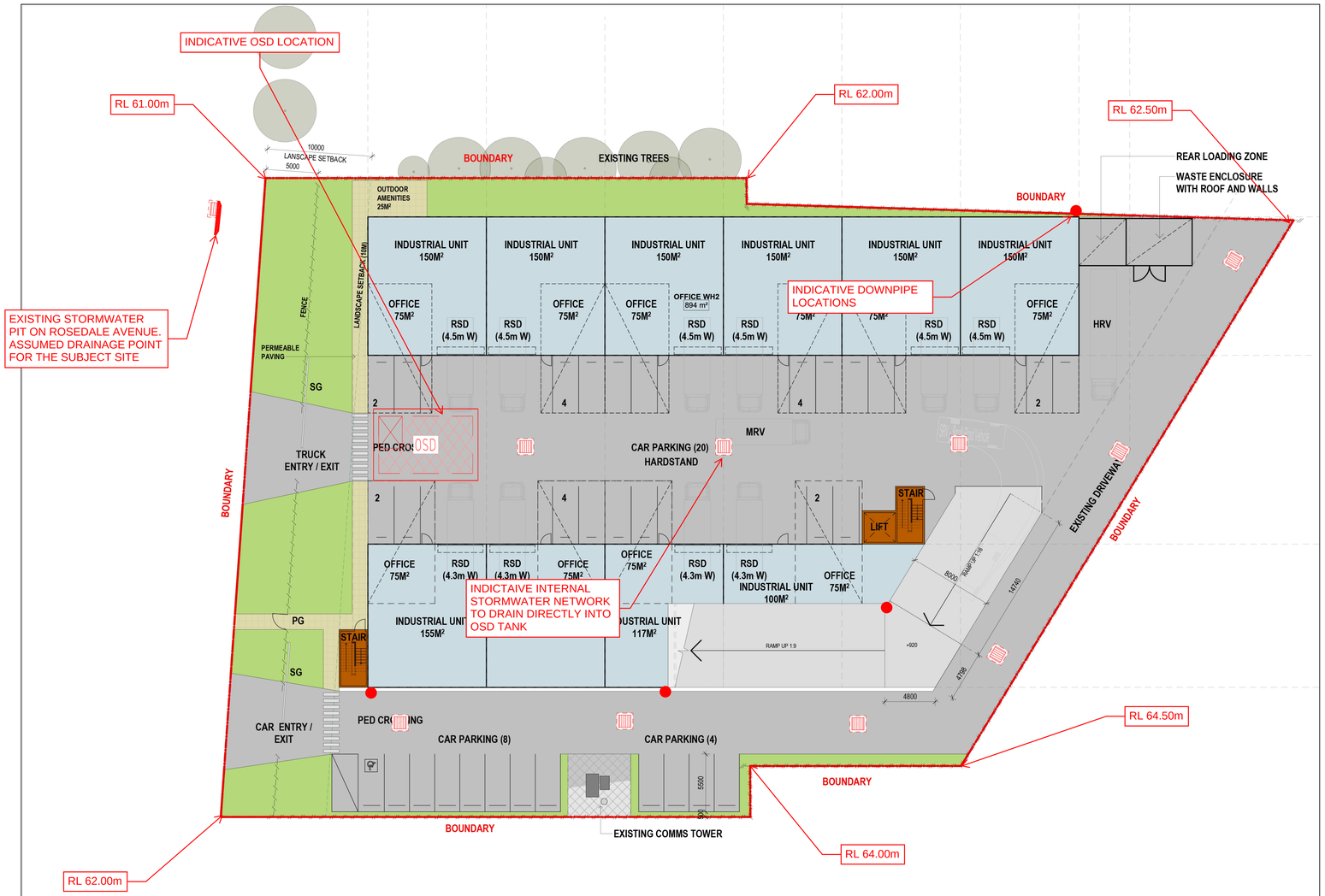
This Stormwater Management Strategy report has been prepared to provide an understanding of the design assumptions, inputs and guide to the stormwater quantity and quality management techniques for the proposed development in support of a rezoning.

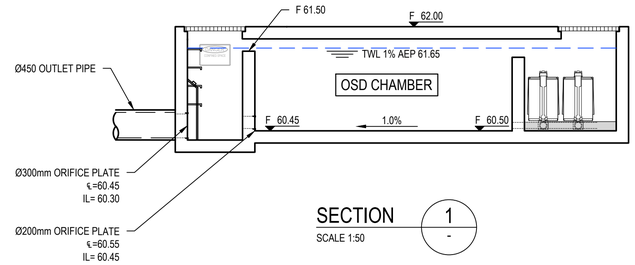
This report demonstrates that the stormwater drainage objectives as outlined in the Canterbury Bankstown Council DCP are achieved.

The included stormwater quantity calculations demonstrate how peak flows from the proposed development site in post-development conditions are attenuated to no greater than the existing peak flows for all design storms up to an including the 1% AEP event.

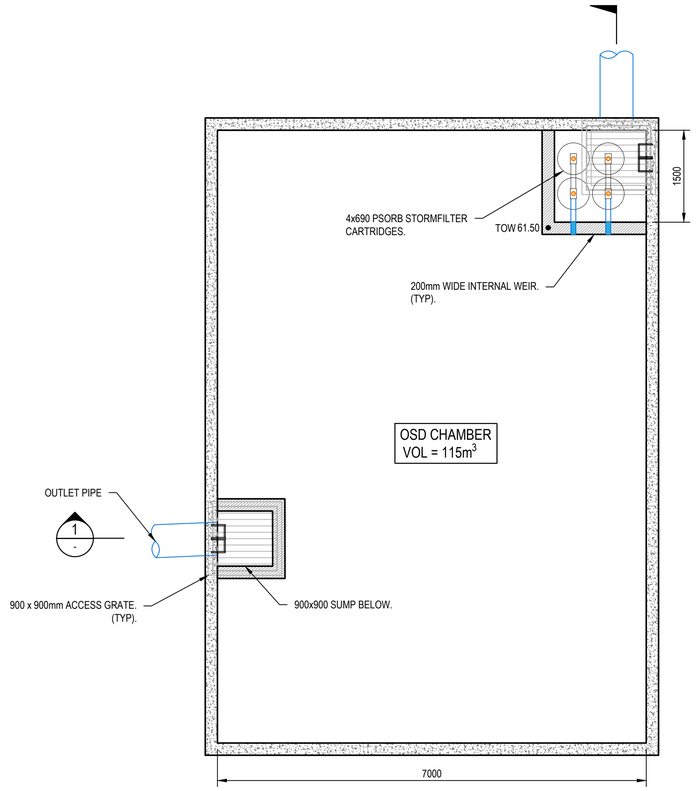
The stormwater quality assessment demonstrates that a specifically tailored treatment system will be required to meet the pollutant removal targets as defined in Sydney Water Stormwater Quality Targets (2021) during the operational phase of the proposed development.

Appendix A Concept Stormwater Management Plan





SECTION 1
SCALE 1:50



- EXISTING LEVELS ARE BASED ON DATA FROM GIS CONTOURS
- TAILWATER LEVEL CONNECTING TO GOW STREET FOR THE MAJOR 1% AEP STORM = 21.90M (ADOPTING 150MM ABOVE KERB INVERT)
- TAILWATER LEVEL CONNECTING TO GOW STREET FOR THE MINOR 10% AEP STORM = 21.60M (ADOPTING 150MM BELOW KERB INVERT)
- TAILWATER LEVELS AND OUTLET CAPACITIES ARE ASSUMED TO REMAIN STABLE THROUGHOUT THE DESIGN STORM EVENTS
- EXISTING PIT INVERT LEVEL = 20.75M (LOCATION AND LEVEL TO BE CONFIRMED BY SURVEY)
- ASSUMED 15% MAX SITE BYPASS

THESE ASSUMPTIONS ARE INTENDED TO REFLECT A POTENTIAL OPERATIONAL SCENARIO FOR THE FUTURE DEVELOPMENT OF THE SITE. ANY DEVIATION FROM THESE ASSUMPTIONS MAY INFLUENCE THE PERFORMANCE OF THE PROPOSED STORMWATER INFRASTRUCTURE.

REV.	DATE	DESCRIPTION	DRN.	DES.	VERIF.	APPD.
1	2/10/2025	ISSUED FOR INFORMATION	JO	JO	-	RH

Client: Ausgrid

Scale: 0 1000 2000 3000 4000 5000mm — SCALE 1:50 @A1
0 5 10 15 20 25m — SCALE 1:250 @A1

North

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enspire
Enspire Solutions Pty Ltd
Level 7, 54 Miller Street, North Sydney NSW 2060
ABN: 71 624 801 690
Phone: 02 9922 6135
enspiresolutions.com.au

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81 ROSEDALE AVENUE, GREENACRE

Title: CONCEPT SITEWORKS AND DETAIL PLAN

Scale: AS SHOWN
First Issue Date: 02/10/2025
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