

Stormwater Design Report



APEX
CIVIL ENGINEERS



May 13, 2025

CSW2025.40

Address: 14-16 Marshall Avenue, 2-10 Berry Road, St Leonards

Governing Council: Lanecove City Council

Client: Dasco Australia

Project ID: CSW2025.40

Prepared By	Reviewed By	Revision	Date
CS	SCH	01	May 13, 2025

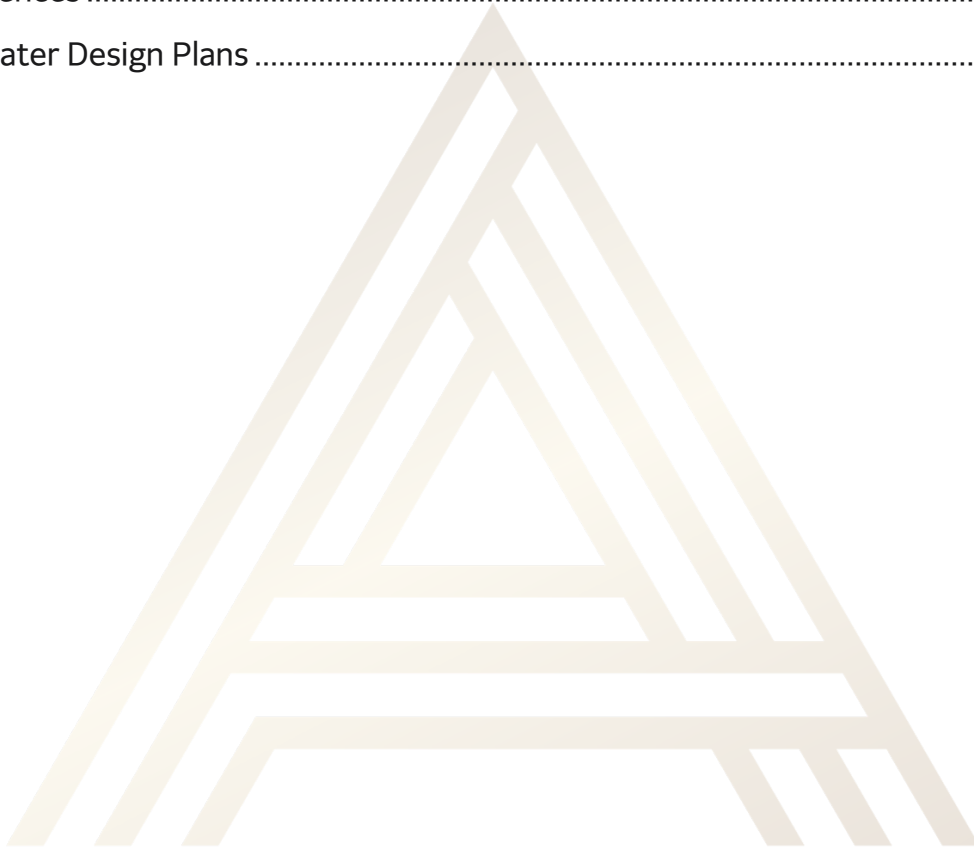
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Contents

Introduction	3
Description	3
Water Management	4
Water Quantity	4
Water Quality	6
Conclusion	7
References	8
Stormwater Design Plans	9





Introduction

Apex Civil Engineers has been commissioned by Dasco Australia to prepare a stormwater management design to accompany a development modification application for a proposed Residential Flat Building. No changes to the building's footprint are present. Minor changes to the stormwater design are proposed, presenting a more efficient and cost-effective construction approach.

Description

The site is legally known as 2/2/DP7259 governed by the local government of Lane Cove. The site is located at 14-16 Marshall Avenue, 5-9 Holdsworth Avenue & 2-10 Berry Rd, St Leonards. It is bound by Berry Rd to the West and Holdsworth Avenue to the East. There are currently 10 residential dwellings on the site, refer to image below.



Figure 1 - Aerial Imagery - Source: Mecone

The site is located at 14-16 Marshall Avenue, 5-9 Holdsworth Avenue & 2-10 Berry Rd, St Leonards. It is bound by Berry Rd to the West and Holdsworth Avenue to the East. There are currently 10 residential dwellings on the site.



The development application is to support the proposed s4.55 application for a Multi Residential Flat building. As per the council's Water Management for Development Policy (WMDP), a stormwater management report is required to accompany the application.

Water Management

In accordance with council's DCP Lane Cove Council Part O – Stormwater Management Development Control Plan, water quantity and quality need to be addressed.

Water Quantity

Increases in impervious areas because of proposed development (such as roofs, driveways, etc) has the potential to increase stormwater flows from the site during storm events. To prevent impact on downstream properties, the site stormwater system must be designed to safely convey flows through the site and within the capacity of the downstream drainage system.

In accordance with the stormwater management plan prepared by C&M, Report No. R02527 Rev C, for the original DA submission, an incorrect site area was adopted for the OSD calculation. For this reason, new calculations were adopted. Based on the correct area, the OSD volume increased from 135.6m³ as per C&M results, to 149.80m³.



Appendix 14 – OSD Calculation Sheet

ON-SITE DETENTION CALCULATION SHEET

DEVELOPMENT TYPE: Multi Residential Flat Building

ADDRESS: 14-16 Marshall Avenue, 2-10 Berry Road, 5-9 Holdsworth



Site Area (m ²)	<u>5874</u>	(A)
Total Impervious Area (roofs, driveways, hardstand etc) (m ²)	<u>3638.75</u>	(B)
Total Area draining to the Storage Facility (m ²) (impervious and pervious areas)	<u>5348</u>	(C)
New Impervious Area bypassing the Storage Facility	<u>526.00</u>	(D)
$\frac{(B)+(D)}{(B)} =$	<u>1.14</u>	(E)

cannot be greater than 1.25.

Permitted Site Discharge (PSD) rate per m²

If (D) = 0 then PSD = 0.014 l/sec/m²

If (D) ≠ 0 then PSD = 0.014 x (E)^{-1.37} l/sec/m² 0.01218 (F)

PERMITTED SITE DISCHARGE (l/s) (C) x (F)

65.13 l/s

Storage Volume per m²

(G) = 0.0255 m³/m² for all Catchments

0.0255 (G)

SITE STORAGE REQUIREMENT (m³) ((C) + (D)) x (G)

149.8 m³

OUTLET CONTROL - using a Sharp Edged Orifice Plate

Height Difference between top water level and Centre of Orifice (m) 3.32 (H)

ORIFICE DIAMETER (mm)

128 mm

$$= 21.9 \sqrt{\frac{PSD}{\sqrt{(H)}}}$$

Should pipe and pit losses be used to control outflow, the calculations are to be attached.

Figure 2 - OSD calculation sheet

As per the calculation sheet above, the site will require on-site storage of 149.8m³ minimum and a PSD of 65.13l/s. A direct connection to a kerb inlet pit has been



proposed.

Water Quality

In accordance with Chapter O of council's stormwater management plan, there are no specific requirements about water quality objectives. After a discussion with council's officer, it was advised to complete NorBE assessment. Neutral or Beneficial Effect on Water Quality, ensures that new developments do not negatively impact water quality or preferably improve it.

A NorBE assessment was modelled utilizing MUSIC comparing the pre vs post development results. The following was adopted:

1. No treatment for the pre site conditions
2. A RWT tank of 15kl was proposed for the post development with water usage requirements towards irrigation and car washing.
3. A gross pollutant trap is proposed post controlled flows. A Cascade CS-1500-080, an 80l/s Separator Style GPT.

With the above, we have ensured a lower pollutant outflow load compared to the pre, satisfying council's requirements.

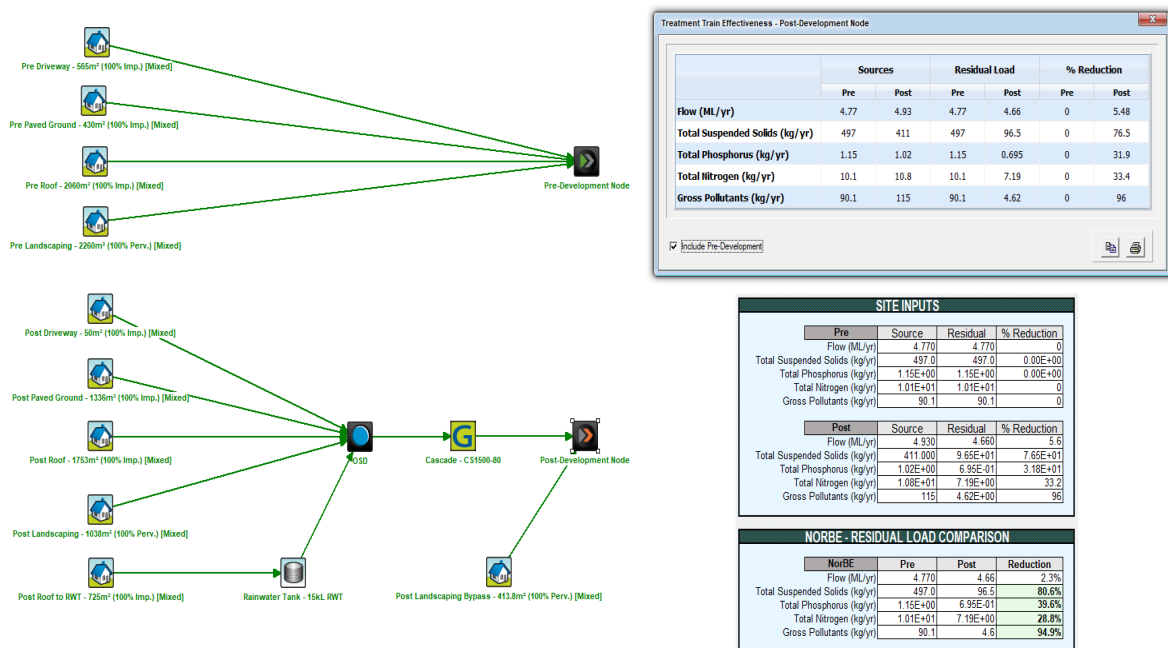


Figure 3 - MUSIC results - NorBE



Conclusion

The s4.55 application does not propose changes to building footprint or increase in impervious areas. The approved stormwater plans prepared by C&M, factored an incorrect site area for the OSD calculation. An updated OSD investigation was completed and resulted in a larger OSD system.

A MUSIC model was prepared to assess NorBE as per Council's instructions. Propriety devices were proposed to achieve a reduction in pollutants. The propriety devices, a gross pollutant trap, was combined with a rainwater tank to promote water re-use.

The proposed water quality and quantity measures address and comply with the requirements of chapter O of Council's stormwater management code.

Yours faithfully

Samir C Hakim

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References

- Concept Civil Engineering Drawings for the Development Application submission prepared by C&M Consulting Engineers;
- Architectural Plans by PTW Architects;
- Sydney Water – Water Quality Monitoring Program for Lane Cove Council (2019);
- Sydney Water – Stormwater Quality Target 2016;
- Lane Cove Council – Part O LCC Stormwater Management DCP;
- eWater – MUSIC Version 6.2 (Build 1.1592)





APEX
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Stormwater Design Plans

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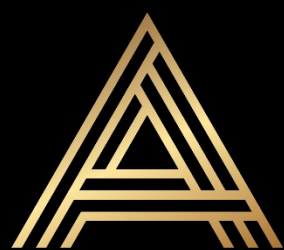
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