



CIVIL ENGINEERING REPORT: STORMWATER MANAGEMENT
REPORT

242-244 Beecroft Road, Epping (SSD-31576972 / SSD-68708456)

PREPARED FOR
DASCO
Level 2
9 George Street
North Strathfield, NSW 2137

Ref: SY212798
Rev: D
Date: 30.09.25

Civil Engineering Report: Stormwater Management Report

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
06.07.2022	A	Issued for SSDA	S. Ford	M. Lee
07.07.2022	B	Issued for SSDA	S. Ford	M. Lee
05.07.2024	C	Issued for SSDA	M. Swift	S. Ford
30.09.2025	D	Issued for SSDA	S. Ford	S. Ford

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

© 2025 Northrop Consulting Engineers Pty Ltd. All rights reserved.

This document has been prepared on behalf of and for the exclusive use of Beecroft Property Development, and is subject to and issued in accordance with the agreement between Beecroft Property Development and Northrop Consulting Engineers. Northrop Consulting Engineers accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this document by any third party. Copying this document without the permission of Beecroft Property Development or Northrop Consulting Engineers is not permitted.

Table of Contents

1.	General.....	3
1.1	Introduction.....	3
1.2	Related Reports and Documents	4
1.3	The Development	4
2.	Stormwater Management.....	6
2.1	Stormwater Management Overview.....	6
2.2	Site Drainage.....	6
2.3	Stormwater Quantity Management	6
2.4	Stormwater Quality Management	8
3.	Conclusion.....	10
	Appendix A: Civil Engineering Drawings.....	11
	Appendix B: Sydney Water OSD Requirements	12

1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Dasco Australia Pty Ltd to prepare the Civil Engineering: Stormwater Management Report and documentation for the proposed development at 242-244 Beecroft Road, Epping NSW 2121, herein referred to as the subject site or the site.

This report covers the works shown as the Northrop Drawing Package in support of the State Significant Development (SSD-31576972 / SSD68708456) Application submission to the Department of Planning and Environment. This includes:

- Stormwater Drainage
- On-site Stormwater Detention
- Stormwater Quality / Water Sensitive Urban Design.

The proposed development was initially approved in September of 2023, with a modification approved in August 2025. This modification seeks approval for the following changes:

- Revised through site link design including the external lift vestibules. This is a result of further design coordination with client, NCC compliance & consultants.
- Revised basement mechanical strategy which has resulted in a new BBQ structure in the podium between Building C & E.
- Increased NSA to apartment layouts by reducing corridors.
- Revised location of hot water units and plant areas to suit (Building B & C rooftop) due to hydraulic engineer advising of non compliance.
- Amendments to all apartments to include nibs on facade to accommodate mechanical requirements.
- Modification to liveable apartment types in alternate locations.
- Some external material changes from precast to metal cladding, however, the design intent (i.e. the terracotta colour) remains the same.
- Modification to units D106, D206, D306, D406, D506, D606 to include new study and window in redundant core.
- Building C fan room extended to align with flood model footprint.
- Modification of floor to floor heights to suit coordination. Note: Lobby entry on both Beecroft Road and Ray Road remain the same as approved.

The modelling and report prepared as part the original submission (s) (SSD-31576972 / SSD68708456) has been updated to reflect the changes to the layout and civil design.

This report specifically relates to Issue and Assessment Requirements identified as *item 14. Stormwater and Wastewater* of the SEARS related for the development which pertains to:

1. Provide an Integrated Water Management Plan for the development that:
 - is prepared in consultation with the local council and any other relevant drainage or water authority.
 - details the proposed drainage design for the site including any on-site treatment, reuse and detention facilities, water quality management measures, and the nominated discharge points.
 - demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse impacts on any downstream properties
2. Where drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards, the local council or other drainage or water authority.

1.2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents:

1. Development Application Civil Documentation prepared by Northrop:
 - Civil Engineering Drawings C30001.01-C39103.
2. NSW Department of Planning and Environment (DPIE) - Secretary's Environmental Assessment Requirements (SEARS)
3. Sydney Water connections to Sydney Water Assets and On-Site Detention Policy 2021
4. City of Parramatta Development Control Plan (DCP) 2011
5. City of Parramatta Council Engineering Guidelines 2018

1.3 The Development

1.3.1 Precinct and Surrounds

The Precinct is located within the suburb of Epping in the City of Parramatta (Council) Local Government Area (LGA). The development is located on approximately 1.012 hectares of land, comprising privately owned lots (lot 220 and 222, DP 1251471). The site is bound by Ray Road to the west, Beecroft Road to the east, and a service station to the south. Devlin's Creek sits adjacent the north western boundary of the site.

The proposed development is located within the Upper Parramatta River catchment (Devlin's Creek) managed by Sydney Water. Currently, the site does not have any existing Council stormwater drainage systems. This will be proposed as part of the development. The site is currently sloping towards the northwest corner, draining into the stormwater channel connected to Devlin's Creek.



Figure 1.1: Locality Plan

1.3.2 Proposed Development

The proposed development will involve the demolition of existing buildings and associated infrastructure shown within the site boundary in Figure 1.1 above. The development will comprise of the following elements:

- Five levels of residential apartments (Building A);
- One level of commercial space and thirteen levels of residential apartments (Building B);
- Thirteen levels of residential apartments (Building C);
- One level of commercial space and four levels of residential apartments (Building D);
- Fifteen levels of residential apartments (Building E).

Three levels of basement carparking will be excavated below the ground floor (Beecroft Road level) of the development.

2. Stormwater Management

2.1 Stormwater Management Overview

A stormwater management plan for 242-244 Beecroft Road, Epping has been prepared by Northrop in order to satisfy the requirements of DPIE SSD Secretary's Environmental Assessment Requirements (SEARS), Sydney Water, and the DCP as stated above. The key elements of the stormwater management include:

- Internal Site Drainage network
- Stormwater Quantity Management (detention storage and permitted site discharge)
- Stormwater Quality Management (Water Sensitive Urban Design)

2.2 Site Drainage

Internal site drainage collected as roof/podium runoff is to be conveyed via an above ground network (to be designed by a hydraulic engineer in the detailed design phase), sized to accept the 1% AEP event. Stormwater runoff from proposed roof/podium areas is to drain via the hydraulic system into the onsite detention (OSD) system, prior to discharging directly to a Sydney Water open channel that flows into Devlin's creek.

Approximately 28% of the total site area cannot be drained to the proposed onsite detention system (topographical constraint). Note the unattenuated runoff associated with areas bypassing the OSD system has been included within the allowable site discharge rate to the open concrete channel flowing into Devlin's Creek.

Further details regarding stormwater catchment(s) within the site, are documented on Drawing C34201

2.3 Stormwater Quantity Management

The OSD is proposed to discharge to a Sydney Water Asset (open concrete channel flowing into Devlin's Creek) and as such, stormwater quantity management requirements are governed by Sydney Water's On-site Detention policy. The requirements of this policy are as follows:

- The OSD system must be able to store the run-off caused by a storm event up to the 100-year Average Recurrence interval (ARI) for that site
- Discharge the run-off at a controlled rate which downstream stormwater assets can handle

The following on-site detention requirements apply to the development site, as per correspondence with Sydney Water (see Appendix B):

- OSD Storage 109m³ (up to 1% AEP)
- Permitted site discharge 310 L/s (up to 1% AEP)

In order to achieve the required discharge performance criteria, an On-site Detention Tank with a High Early Discharge system is proposed. Refer to Northrop engineering drawing C39102-39103 for OSD design details.

2.3.1 Methodology

A one-dimensional stormwater model for the proposed system has been produced in DRAINS Dynamic Drainage Software (ILSAX) to determine the hydraulic performance under the storm event specified by the Sydney Water On-Site Detention Policy 2021

Rainfall intensity duration and frequency data was adopted from the 2019 version of Australian Rainfall and Runoff (AR&R) with the Initial and Continuing Loss model.

The model adopts the following parameters:

- Paved (impervious) area depression storage = 1mm
- Supplementary area depression storage = 0mm
- Grassed (pervious) area depression storage = 5 mm
- Soil type = 3
- AMC = 3

2.3.2 Modelling Results

The total allowable site discharge rate is 310L/ with the modeling results shown in Table 2.1 below.

Table 2.1: Development Site Discharge

Description	Area (m ²)	Post-Development Site Discharge (L/s)
Catchment to OSD	6460	111
Catchment bypassing OSD	3660	199
Total	10,120	310

Note: Peak catchment runoff from areas bypassing OSD and the OSD peak outflow occur at different times, i.e. the summation of each flow does not equate to the total peak site discharge value.

2.4 Stormwater Quality Management

2.4.1 Adopted Water Quality Objectives

Stormwater quality management aims to reduce the pollutant load of stormwater runoff using a series of treatment devices prior to discharge into receiving waters.

Stormwater quantity and quality management measures have been modelling using MUSIC software. The targets for stormwater quality are outlined in the City of Parramatta Development Control Plan (Section 3.3.6 Water Sensitive Urban Design):

Table 1 - Water Quality Targets

Pollutant	% Reduction Post-Development Average Annual Load Reduction
Gross Pollutants	90
Total Suspended Solids (TSS)	85
Total Phosphorous (TP)	60
Total Nitrogen (TN)	45

2.4.2 Stormwater Quality Management Scheme

The stormwater quality objectives for the site, as defined by Council's WSUD Reference Guidelines, can be achieved by the installation of Ocean Protect, Ocean Guard(s) at all inlet locations into the OSD tank (inlet locations to be determined by the project Hydraulic Engineer), and 10 x Ocean Protect 690mm StormFilter Cartridges (or equivalent) within the proposed OSD tank. An additional 10 x Ocean Protect, Ocean Guards (located in all grated pits external to the building footprint) will be required to treat parts of the catchment bypassing OSD. The grated pits capturing the site bypass are typically located in swales.

2.4.3 Methodology

The water quality software MUSIC was utilised to model the performance of the stormwater quality strategy. Catchment and treatment parameters were included in accordance with the NSW Music Modelling Guidelines and The City of Parramatta Council. Figure 2 demonstrates the model developed within MUSIC Link.



Figure 2 - MUSIC Link and Node Diagram

2.4.4 MUSIC Model Results

The results of the MUSIC model presented in Table 2.2 demonstrate that the stormwater quality measures will achieve the water quality targets stated in the Council DCP.

Table 2.2 - MUSIC Model Results

Pollutant	Source	Residual Load	% Reduction	% Objective	Compliance
Gross Pollutants	159	5.72	96.4	90	OK
Total Suspended Solids (kg/yr)	527	78.3	85.1	85	OK
Total Phosphorus (kg/yr)	1.29	0.375	71.0	60	OK
Total Nitrogen (kg/yr)	13.3	6.47	51.3	45	OK

3. Conclusion

Northrop Consulting Engineers has prepared this report to provide information to NSW Department of Planning and Environment, Sydney Water and City of Parramatta Council to address the requirements under the SEARS for the SSD submission of the proposed development at 242-244 Beecroft Road, Epping.

The OSD tank will connect into Sydney Water's open concrete channel flowing into Devlin's Creek located adjacent the north west boundary of the development site.

The proposed stormwater management strategy demonstrates compliance with council's engineering guidelines and Sydney Water's OSD Policy. The proposed on-site detention tank has been sized to meet Sydney Water's discharge requirements whilst the installation of 10 x OceanGuard 690mm StormFilter Cartridges, 1 x Ocean Protect Ocean Guard devices (or approved equivalent) along with a series of swales and 10 x additional Ocean Protect Ocean Guard devices (or approved equivalent) across the remainder of the site are required to meet City of Parramatta Council's water quality targets.

Appendix A: Civil Engineering Drawings

Appendix B: Sydney Water OSD Requirements