



Stormwater Management Report

35-39 Darley Street, Mona Vale
Issue B

Prepared For The Trustee for IPG Dev 2 Unit
Trust & GOP AFF 1 Unit Trust & IPG AFF 1
Unit

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1 Executive Summary

This document details the water management statement for the proposed residential apartment development at 35-39 Darley Street, Mona Vale.

This report describes the stormwater quality and quantity measures proposed to address the local Council's requirements for stormwater drainage.

In summary, the following is proposed:

- An OSD system is provided to reduce the site discharge; and
- Water quality devices including a rainwater tank is provided to meet the pollutants reduction targets.

2 Introduction

2.1 Brief

S&G Consultants Pty Ltd (SGC) have been engaged by The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit to prepare the water management statement for the proposed residential apartment at 35-39 Darley Street, Mona Vale.

The following tasks were carried out:

- Supplied documents and previous studies were reviewed;
- A concept stormwater drainage design has been prepared including supporting calculations; and
- This report has been compiled.

2.2 Objectives

The purpose of this report is to outline the stormwater strategy for the proposed development and respond to the requirements of the guidelines by the relevant authorities.

The report addresses the following matters:-

- On-site stormwater management including:
- Authorities requirements;
- Internal drainage and discharge;
- On-site detention;
- Water quality;
- Overland Flowpath Management;
- Soil and water management; and
- Maintenance Strategy.

2.3 Limitations

This report is intended solely for The Trustee for IPG Dev 2 Unit Trust & GOP AFF 1 Unit Trust & IPG AFF 1 Unit as the Client of SGC and no liability will be accepted for use of the information contained in this report by other parties than this client.

This report is limited to visual observations and to the information including the referenced documents made available at the time when this report was written.



2.4 Reference Documents

The following documents have been referenced in this report:-

1. Site survey prepared by Norton Survey Partners dated 28/08/2025;
2. Architectural plans prepared by Plus Studio;
3. Pittwater Council 21 DCP Part B & C;
4. WorkCover Authority of NSW Occupational Health & Safety Act 1983 and Confined Spaces Regulation;
5. Occupational Health & Safety Act 2000;
6. Occupational Health & Safety Regulation 2001; and
7. Workers Compensation Act 1987.

3 Natural & Built Environment

3.1 Existing Site

The site is located along Darley Street in the suburb of Mona Vale. The land is located in the Local Government Area of the Northern Beaches Council.

The site is bounded a mix of medium to high density residential zones and is currently occupied by medium density residential flat buildings.

Figure 3.1 Locality Plan shows the location of the site.



Figure 3.1 Locality Plan



3.2 Proposed Development

The proposed development involves the demolition of the existing residential building and the re-development of the site into residential apartment as follows:-

- A 8-storey residential building;
- 3-level of basement containing 124 spaces;
- Communal facilities;
- Associated landscaping; and
- Provision of plant and infrastructure services.

Reference should be made to the architectural drawings by Plus Architecture International Pty Ltd.

4 On-Site Water Management

4.1 General

The management of the stormwater on site covers several aspects of the design. It is divided into the following sections:

- Internal drainage design including provision of on-site detention and discharge into Council's infrastructure; and
- Water quality control.

These components have been designed to address the requirements of Northern Beaches Council, the site falling into the former Pittwater Council.

4.2 Authorities Requirements

The council requirements for water management are provided in the former Pittwater Council's 2021 DCP Part B5 Water Management. The stormwater detailed requirements are as follows:-

- Council's PSD and SSR values must be utilized for On-site detention (OSD) design;
- Stormwater OSD system shall be designed with an unobstructed overflow spillway in case of any pipe blockage;
- Stormwater quality shall be maintained through the use of treatment measures and rainwater tank;

4.3 Internal Drainage

4.3.1 Roof Drainage

The roof drainage system is a conventional rainwater outlet system designed to cater for 20-year ARI storm event. The system is a series of outlets and downpipes to be coordinated with the architectural layout in future detailed design stages. As a concept design, only indicative outlet locations have been documented and to be confirmed during CC stage.

4.3.2 Surface Drainage

The internal drainage system will be generally designed in accordance with Council's guidelines.

The internal drainage system would generally be designed to cater for 100-year ARI storm.

The runoff from the buildings and the open areas will be directed to the On-Site Detention (OSD) systems and the water quality treatment measures prior to discharging into the receiving pit.

The subsoil discharge and any runoff from the basement car park ramps will be collected in pump-out pits inside the basement, prior to being pumped into the OSD systems. The design of pump out systems will be in accordance with council's guidelines

4.4 On-Site Detention

On-Site Stormwater Detention is a Council requirement to reduce the runoff from the site and its impact on public infrastructure and main waterways. Council's DCP B5.7 Stormwater Management – On-Site Stormwater Detention, states residential developments within the Council resulting in additional hard (impervious) surface area of greater than 50m² should require an OSD tank.

4.4.1 Sizing

The design of the OSD is determined with the use of DRAINS. The DRAINS model determined the minimum volume of the OSD for the 1% AEP storm.

As the development formerly located in Pittwater Council and now within Northern Beaches Council, the following OSD parameters apply:

Table 4.1. below shows the volume and flow rate for the development.

Table 4.1 Previous and Proposed Development Site Flows from DRAINS Model

Site Area (ha)	Storm	Total Pre-Development Flows (L/s)		Total Post-Development Flows (L/s)
	(%AEP)	0% Impervious		85% Impervious
0.262	20	79		67
	1	156		100

4.5 Water Quality

4.5.1 Objectives

The quality of the discharge from the site is controlled by Council's DCP Part B & C Water Management in B5.9. These requirements are extracted and included below for reference.

Land Size greater than 1500 sqm

Development shall incorporate stormwater quality improvement measures (as indicated on Table 1) to undertake (where specified) the following:

- Pre-screening of organic matter (eg. leaf litter) prior to collection of rainwater.
- Primary treatment (eg. physical screening, rapid sedimentation techniques) of stormwater to collect and retain gross pollutants (i.e. litter and organic matter), coarse sediments (with associated entrained pollutants), and oil and grease prior to the discharge of stormwater from the land
- Secondary treatment (eg. fine particle sedimentation and filtration techniques) of stormwater to collect and retain medium to fine sediments (with associated entrained pollutants) prior to the discharge of

CP Part B and Part C

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26/05/2015

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elopment Control Plan 2014

- stormwater from the land
- Tertiary treatment (eg. enhanced sedimentation and filtration, biological uptake, absorption onto sediments) to remove dissolved pollutants (including nutrients and heavy metals) prior to the discharge of stormwater from the land.

Figure 4.1 Council's Water Quality Requirements

A 10kL rainwater tank has been proposed as per council's DCP, a stormfilter chamber has been proposed with 6 x 690 PSORB stormfilter cartridges for water treatment. In addition, three ocean guard baskets have been fitted. The reductions results suit the Council requirements and are documented in the table below.

Table 4.1 Pollutants Reduction Targets

Pollutant	Source Load	Residual Load	% Reduction
Gross Pollutants	65.3	1.13	98.3
Total Suspended Solids (TSS)	261	29	88.9
Total Phosphorus (TP)	0.567	0.142	74.9
Total Nitrogen (TN)	5.4	2.58	52.1

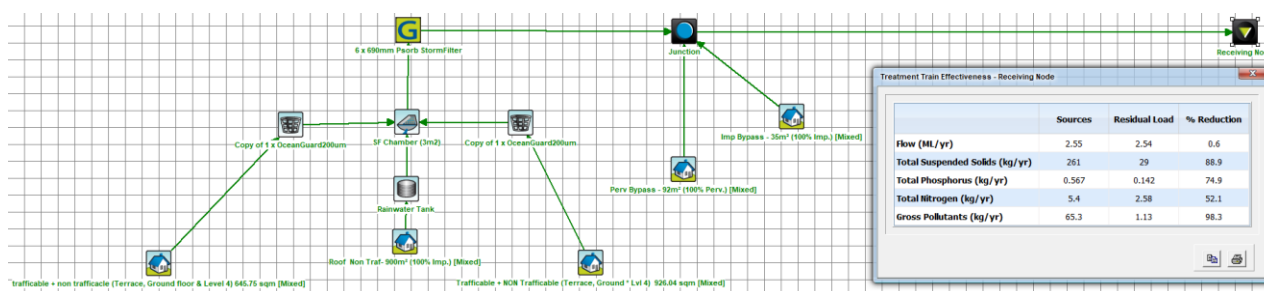


Figure 4.2 Music Model Results

4.5.2 Approach

A treatment train approach is proposed to achieve the water quality targets. The approach is as follows:-

- Roof water runoff and surface runoff to be collected and drained to stormfilter chamber inside the OSD tank.
- Water stored in stormfilter chamber overtops stormfilter weir and gets into OF chamber prior to discharging with the nominated flow rate.
- Surface runoff bypassing the OSD tank will be directed to the Ocean Guard before discharging off-site.

4.5.3 Rainwater Tank

A 10kL rainwater tank has been proposed as per council's requirement and located on ground floor. The rainwater tank is to collect runoff from 900m² of non-trafficable roof areas. Water stored in rainwater tank is to re-used for landscape irrigation only.

4.6 Overland Flowpath Management

Council's Flood Information notes a low-risk flood with max depth 0.2m (1% AEP), at the rear of the site. Maintain the existing natural level of the land in the rear of the site to flow stormwater towards the north-western edge of the site towards Darley Street. See Appendix 4 for location of Flood Point ID.

Table 4.3 Flood Levels

Location	Flood Point ID	1% AEP Max Depth (m)	Flood Level (Natural R.L. + 1% AEP Max Depth)
Rear of Site	4	0.19	16.01
Rear of Site	5	0.20	15.07
Rear of Site	6	N/A	14.80

5 Soil & Water Management

5.1 Construction Stage

A Soil and Water Management Plan (SWMP) has been prepared for the DA submission. The implementation of the SWMP shall be in accordance with the guidelines of the NSW Department of Housing publication “Managing Urban Stormwater: Soils & Construction” (The Blue Book) and Sections B8.2 Construction and Demolition – Erosion and Sediment Management of the Pittwater Council DCP.

The SWMP outlines the erosion and sediment control processes for the duration of the project. Emphasis should be placed firstly on minimising erosion then on preventing movement of sediment.

The clearing of the site leaves the land surface susceptible to increased erosion. The eroded particles can be transported off site and into natural waterways causing siltation, loss of hydraulic capacity and environmental stress. The SWMP aims to minimise the extent of erosion of the site, restrict movement of soil particles and mitigate the impacts of the works on the natural environment.

The SWMP provides for the:-

- Protection of disturbed ground through devices such as temporary vegetation, diversion banks and sediment fences;
- Early installation and progressive implementation of erosion controls;
- Early construction of permanent drainage structures, culverts, sediment basins traps and catch drains;
- Progressive revegetation of disturbed areas;
- Use of geotextile to stabilise disturbed surfaces during construction of culverts;
- Control of runoff from embankments through shaping of fill and construction of temporary windrows and batter drains;
- Implementation of erosion control measures at associated sites, including access tracks, roads, office/compound site and extraction sites;
- Progressive and continual implementation of temporary sediment controls;
- Diversion of runoff from disturbed areas to sediment control structures;
- Management of turbid water in basins after rain through flocculation or extraction and use for construction or dust suppression;
- Construction of temporary sediment traps at strategic locations;
- Routine maintenance of sediment control devices to ensure that they remain fully functional at all times;



- Removal of sediment from basins and other structures and placement in secure locations where further movement will not occur;
- Minimisation of transportation of mud and soil by vehicles onto Darley Street, through the use of shakers and wash-bays;
- Provision for regular inspections of the control measures by a trained personnel to review and update control measures. Inspections should be conducted weekly and immediately after every significant storm event;
- Dust control through progressive revegetation and application of water;
- A procedure to ensure that water is not released from basins until achieving the appropriate quality standard; and
- Meeting EPA requirements & the guidelines of the Department of Housing publication “Managing Urban Stormwater: Soils & Construction” (Blue Book).

6 Maintenance Strategy

The maintenance strategy relating to the internal drainage system involves inspecting and maintaining the following structures:-

- On-Site Detention systems including the orifice plates and the mesh screens;
- Stormfilter Chamber;
- Ocean guard Baskets; and
- Rainwater tank.

The corporate body managing the development, or their contractors have the obligation to inspect and maintain these structures.

The following table indicates the minimum requirements for the inspection of the above structures and the maintenance procedures to be adopted.

Table 6.1 OSD & Ocean Guard Basket & Rainwater tank Maintenance Strategy Requirements

Item	Inspection Frequency	Inspection Check Items	Maintenance Procedures
OSD Tanks	6m	Clogging and blockage of mesh screen. Sediment depth in trap.	Leaves and debris to be removed from screen. Trap flood to be cleaned out
Ocean Guard Basket	6m	Maintenance Contractor	Follow recommended procedure set out in Stormwater 360 "Operation and Maintenance Guidelines"
Rainwater Tank	6m-1yr	Clogging and blockage of tank	First flush device and tank to be cleared of any debris.

Table 6.2 Stormfilter Maintenance Strategy Requirements

Item	Inspection Frequency	Inspection Check Items	Maintenance Procedures
Inspection – Minor Maintenance	2 years and after major storms	Maintenance Contractor	Follow recommended procedure set out in Stormwater 360 "Operation and Maintenance Guidelines"
Inspection – Major Maintenance	1 year (except in case of spill)	Maintenance Contractor	Follow recommended procedure set out in Stormwater 360 "Operation and Maintenance Guidelines"

Inspection Frequency Key:-

1yr one year

6m six monthly

3m three monthly



7 Conclusion

To summarise, the proposed Stormwater Management Scheme complies with all relevant Council's requirements.

Summary of key recommendations are:

- On-Site Detention and overflows from the tank to be constructed at correct levels;
- Stormfilter chamber including cartridges and ocean guard baskets to be installed correctly; and
- Ensure timely and periodic maintenance of all stormwater elements.

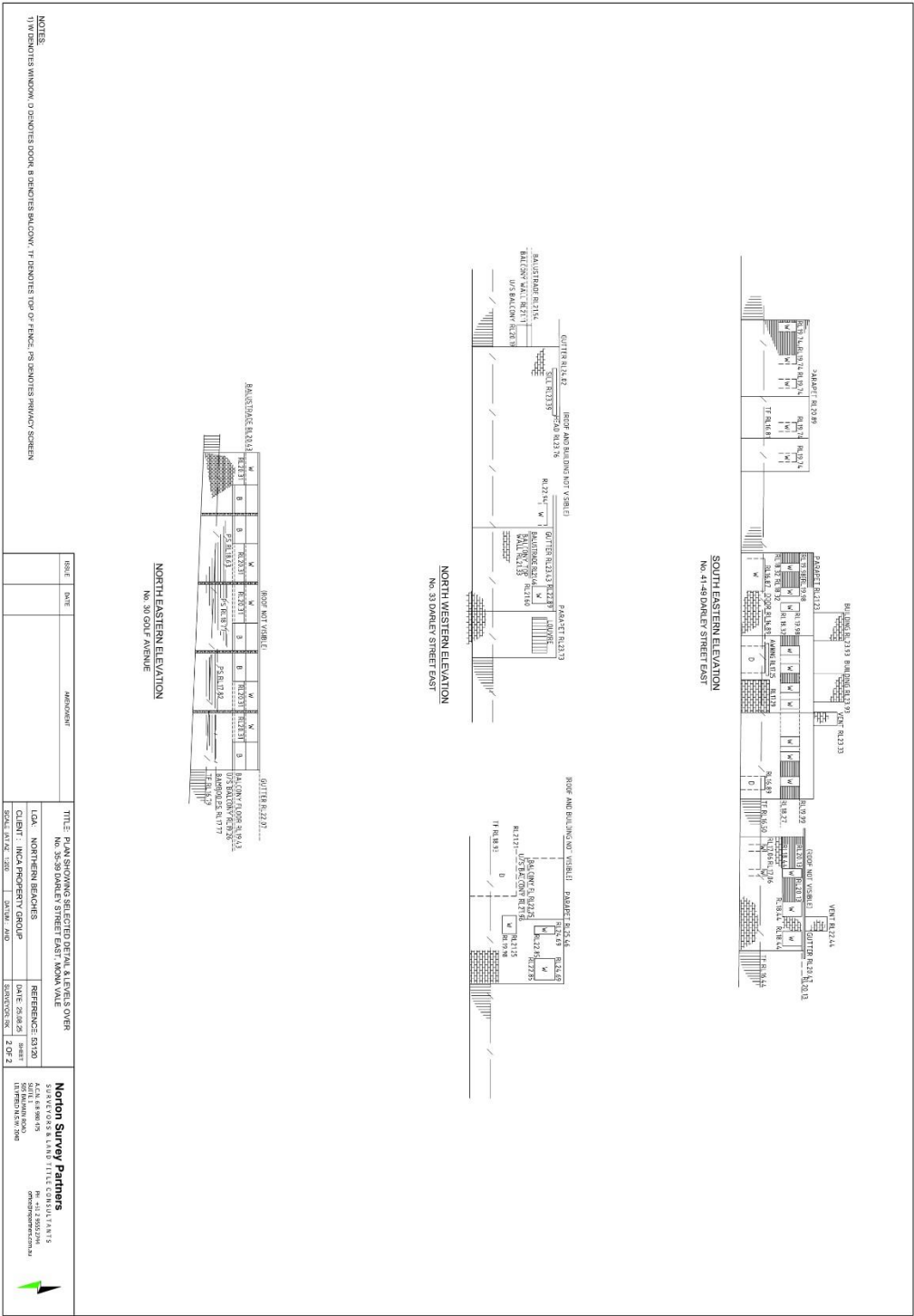


Figure A 1.2 Survey Plan

A2 Appendix 2

Architectural Plans

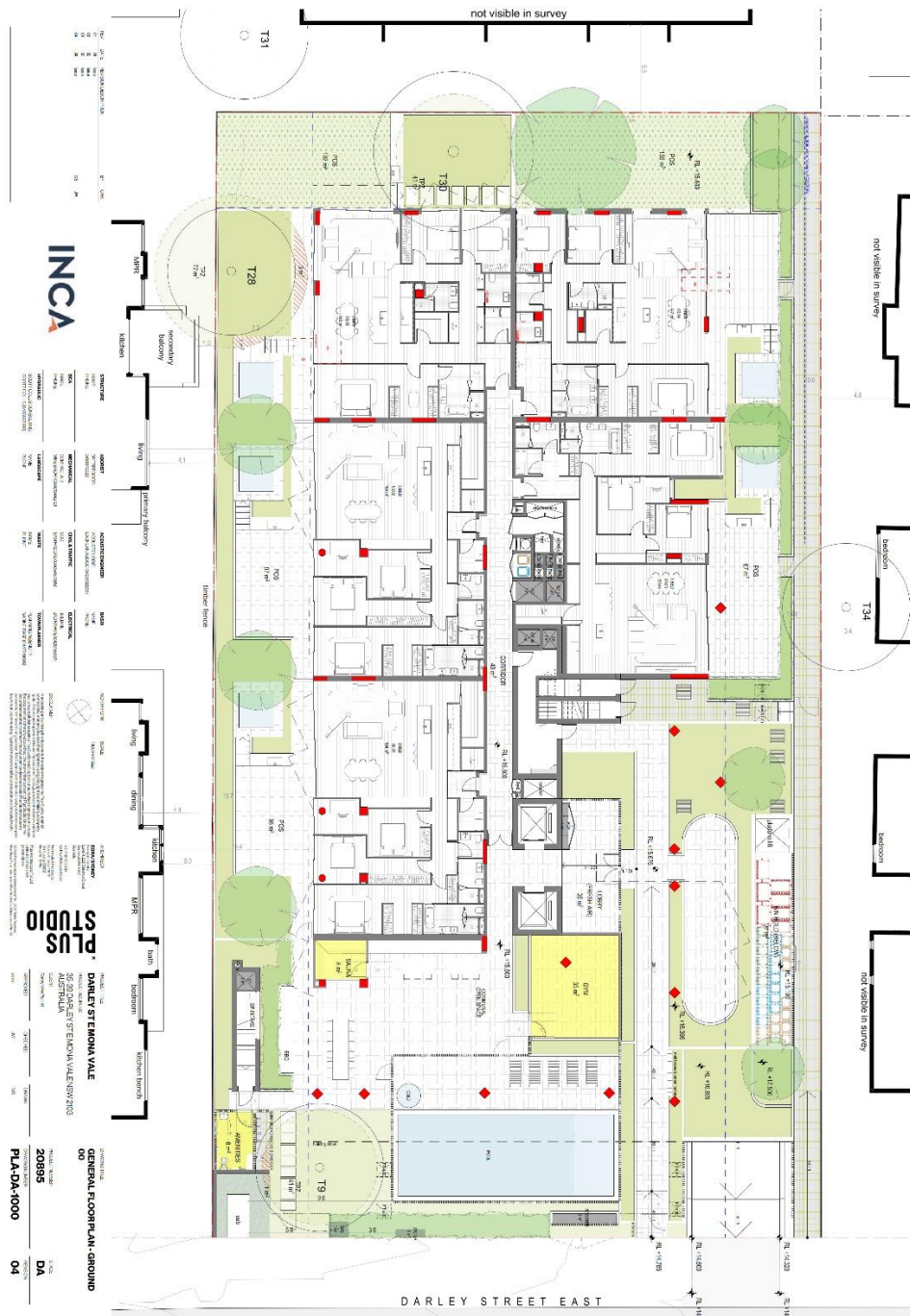


Figure A 2.1 Ground Floor Plan

A3 Appendix 3

Stormwater Design Drawings

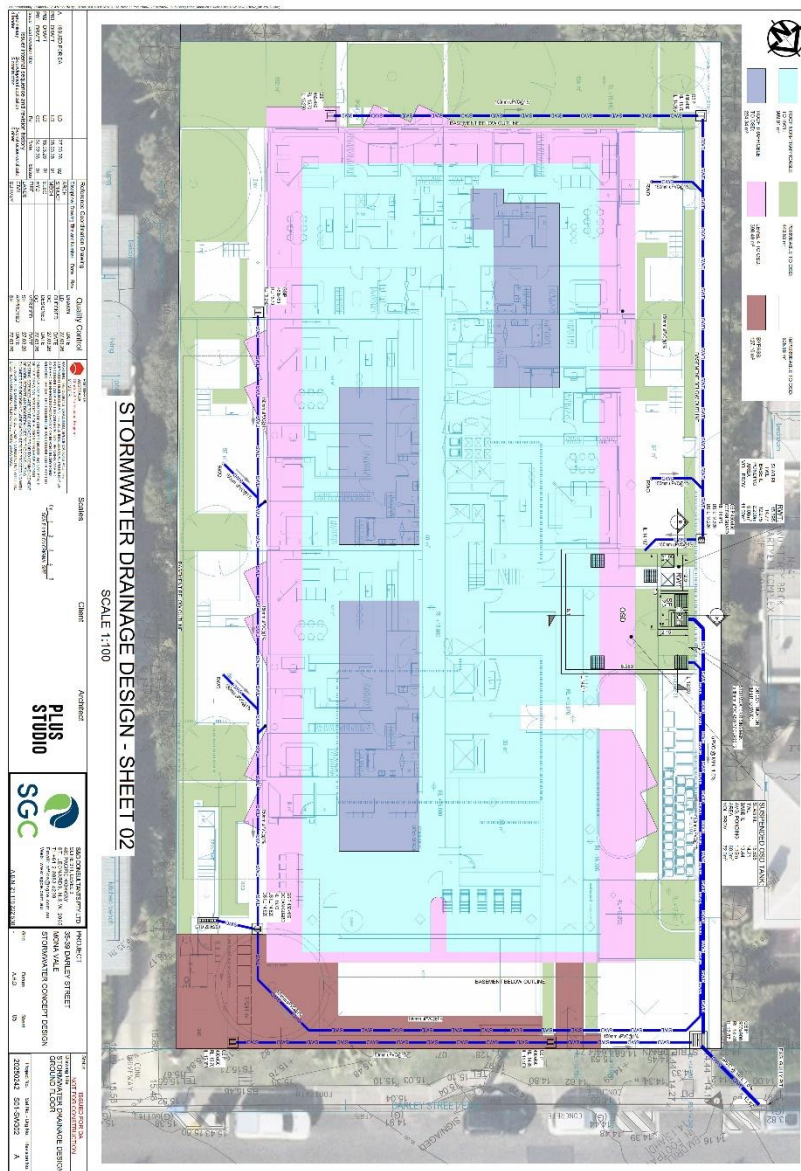
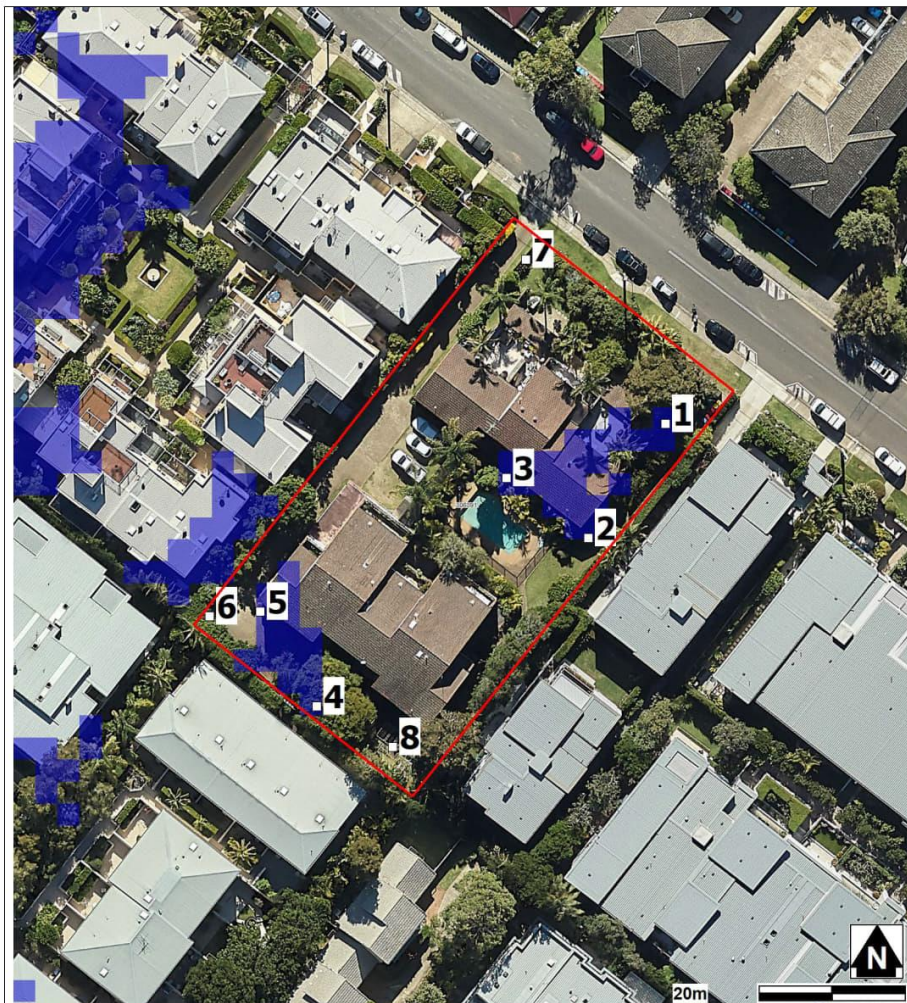


Figure A 3.1 Ground Floor Stormwater Plan

A4 Appendix 4

Flood Information – Northern Beaches Council

MAP B: FLOODING - 1% AEP EXTENT & KEY POINTS



Notes:

- Extent represents the 1% Annual Exceedance Probability (AEP) flood event.
- Flood events exceeding the 1% AEP can occur on this site.
- Extent does not include climate change.
- Cadastre Lines (Source: NSW Government Land and Property Information), flood levels/extents (Source: McCarrs Creek, Mona Vale and Bayview Flood Study Review 2017, Royal HaskoningDHV) and aerial photography (Source Near Map 2014) are indicative only.

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