



Crows Nest Over Station Development (Site A)
Detailed SSDA

Integrated Water Management Report (Stormwater Components Only)

32 Hume Street, Crows Nest, NSW, 2065

Issue F

Prepared For Project

Date: Monday, 13 October 25

File Ref: 20240112-R02_Stormwater Management_detailed SSDA.docx



REVISION TABLE

Revision	Date	Issue Description	Issued by	Approved by	Signed
P1	20.11.2024	Preliminary	MS	SELH	
P2	25.11.2024	Issue for Review	MS	SELH	
A	05.12.2024	Issue for Approval	MS	SELH	
B	19.02.2025	Issue for Approval	MS	SELH	
C	24.02.2025	Issue for Approval	MS	SELH	
D	27.02.2025	Issue for Approval	MS	SELH	
E	03.03.2025	Issue for Approval	MS	SELH	
F	09.10.2025	Issue for Approval	MSW	SELH	

The information given in this document takes into account the particular instructions and requirements of our Client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

This document is copyright and may not be reproduced or copied in any form or by any other means (graphic, electronic or mechanical including photocopying) without the written permission of **S&G Consultants Pty Limited**. Any license, express or implied, to use this document for any purpose whatsoever is restricted to the terms of agreement between our Client and **S&G Consultants Pty Limited**.



ADDRESSING RELEVANT SEAR

Item	Description	Section Reference
14. Water Management	Integrated Water Management Plan is prepared in consultation with the local council and any other relevant drainage or water authority.	Section 4.2
	Integrated Water Management Plan details the proposed drainage design (stormwater and wastewater) for the site including any on-site treatment, reuse and detention facilities, water quality management measures, and nominated discharge points.	Section 4.3 (On-site Detention) Section 4.4 (Stormwater Water Quality & Treatment) Section 4.5 Stormwater Disposal (Stormwater Onsite Detention, Water Quality & Treatment and Discharge arrangements have been included in the Stormwater scope)
	Integrated Water Management Plan demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.	Section 4.5
	Where water and 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.	Please Refer to the Stormwater Drainage Design Concept Plan prepared by S&G Consultants P/L



Table of Contents

1	Executive Summary	6
2	Introduction.....	7
2.1	Brief.....	7
2.2	Objectives	7
2.3	Limitations	8
3	Natural & Built Environment.....	8
3.1	Existing Site	8
3.2	Proposed Development	9
4	On-Site Stormwater Management	11
4.1	General	11
4.2	Authorities Requirements	11
4.3	On-site Detention (Water Quantity Mitigation)	11
4.4	Stormwater Management & Treatment (Water Quality Mitigation).....	13
4.5	Stormwater Disposal.....	15
5	Soil & Water Management (Sediment Erosion/ Dust Mitigation)	16
5.1	Construction Stage	16
6	Comparative analysis between the approved concept and the proposed modified concept.....	17
7	Maintenance Schedule.....	17
8	Design Statement.....	22

List of Figures

Figure 1.1	Proposed Site Plan	6
Figure 3.1	Locality Plan.....	9
Figure 4.1	Pre-Dev Drains Model Schematics.....	12
Figure 4.2	Pre-Dev Drains Model Results (20% AEP).....	12
Figure 4.3	Pre-Dev Drains Model Schematics.....	12



Figure 4.4	Post-Dev Drains Model Results (1% AEP)	13
Figure 4.5	Music Model Network	14
Figure 4.6	Music Model Results.....	14
Figure 4.7	NORBE Results	15

List of Tables

Table 4.1	DRAINS Model Results Summary.....	13
Table 4.2	Target Pollutant Reduction	13
Table 4.3	MUSIC Model Results	14
Table 7.1	OSD Maintenance Schedule	17
Table 7.2	OceanGuard Maintenance Frequency	20
Table 7.3	StormFilter Maintenance Schedule	21

1 Executive Summary

This document is a stormwater management strategy report for the proposed mixed-use development located at 32 Hume Street, Crows Nest.

Majority of the development is proposed on existing Crows Nest Metro Station along the Pacific Highway. The other portion is on the empty area at the south-east site of the Crows Nest Metro station.

Thirdi is proposing a mixed-use development consisting of three tower as per the Masterplan concept plans prepared by Woods Bagot.

The proposed development is illustrated in Figure 1.1 Proposed Site Plan below.

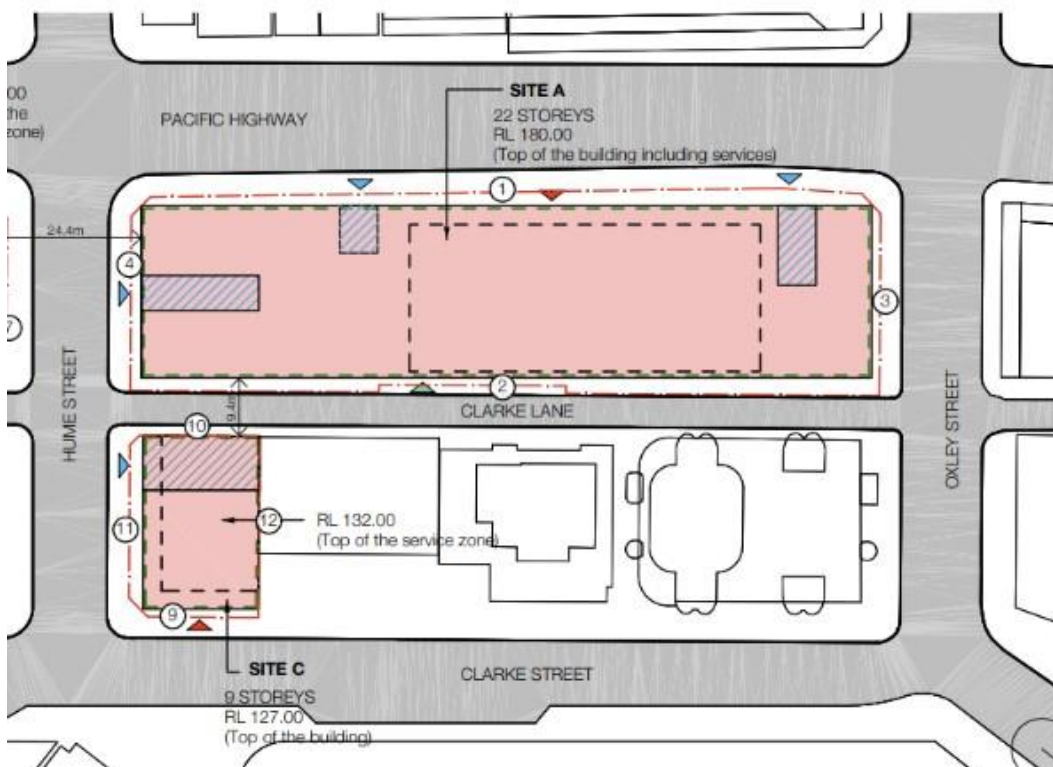


Figure 1.1 Proposed Site Plan

This report describes any stormwater related controls applicable to the proposed development and how they have been addressed the Stormwater drainage concept plan. An On-Site Detention System has been proposed to reduce the site discharge in the proposed scenario. Furthermore, Oceanguard baskets and Stormfilters have been incorporated in the design to satisfy council's water quality targets.

Stormwater management components denoted in the Detailed SSDA (SSD-75660711) are in accordance with the Concept SSDA (SSD-75662958).



2 Introduction

2.1 Brief

S&G Consultants Pty Ltd (SGC) have been engaged by Thirdi (the Client) to prepare a stormwater strategy in support of Amending Concept SSDA (SSD-75662958) for the proposed mixed-use development at 32 Hume Street, Crows Nest.

Woods Bagot have prepared the architectural documents showing the proposed site layout.

The following tasks were carried out:-

- A site visit was undertaken to ascertain on-site conditions and familiarise with the catchment;
- Supplied documents and previous studies were reviewed;
- A stormwater drainage design involving the setting up of hydrology & water quality models was carried out;
- A flood assessment was carried out;
- Conceptual design drawings have been prepared; 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;
- Soil and water management; and
- Maintenance Strategy.

2.3 Limitations

This report is intended solely for Thirdi 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 site observations and to the information including the referenced documents made available at the time when this report was written.

3 Natural & Built Environment

3.1 Existing Site

The subject site, referred to as Crows Nest Over Station Development (Site A), is located within Crows Nest and within the North Sydney Local Government Area (LGA). The site is located at 32 Hume Street, Crows Nest. The site is located directly above and adjacent to the operational Crows Nest Metro Station.

The site comprises the entirety of the block and is bound by Pacific Highway to the west, Hume Street to the south, Clarke Lane to the east, and Oxley Street to the north. It is 3,879 square meter in size legally referred to as Lot 2 of DP1296669. It is noted that Lot 1 of DP1296669 relates to the Crows Nest Metro Station intertwines with Lot 2 (Site A) on some levels.

Address	Legal description of lots that constitute the Scope of Works under the Subject SSDA Site A	Details
505 Pacific Highway, Crows Nest, NSW, 2065	Lot 1 of DP1296669	Station Lot (Crows Nest Metro Station)
32 Hume Street, Crows Nest, NSW, 2065	Lot 2 of DP1296669	Development for Lot A – Site A Thirdi (Subject to the SSDAs).

Note:

- The Plan of Subdivision for the Metro (DP1296669) was registered with NSW Land Registry Services (LRS) on the 5 August 2024. The Plan of Subdivision, once registered, created the following lots:
 - Lot 1 (Metro Station),
 - Lot 2 (Site A for Thirdi)
 - Lot 3 (Site B for Thirdi)
 - Lot 4 (Parcel on the northern side of Clarke Lane).
- Lot 1 of DP1296669 relates to the Crows Nest Metro Station.
- Lot 2 of DP1296669 relates to Crows Nest OSD (Site A) (works subject to this SSDA).
- Lot 1 and 2 are intertwined (on some levels, with Lot 2 (Site A) located above the Lot 1 (the Crows Nest Metro Station)).



Figure 3.1 Locality Plan

3.2 Proposed Development

Detailed SSDA

This Detailed SSDA seeks approval for the construction and operation of a residential mixed use (including affordable housing and commercial/retail components) over station development (known as Crows Nest OSD - Site A).

Crows Nest OSD - Site A will be located above and will be integrated with the Crows Nest Metro Station. The proposed development includes 2 build-to-rent towers located above the existing Crows Nest Metro Station. An additional tower, situated at the corner of Hume Street and Pacific Highway, is proposed to be affordable housing, extending down to the ground level. The ground floor, adjacent to the metro station between grids 11 and Hume Street, will feature a mix of lobbies, retail spaces, and service areas.

Site Area	3,879m ²
Maximum Building Height	Proposed variable building heights: <ul style="list-style-type: none"> • Tower 1: RL 188.30 • Tower 2: RL 188.30 • Tower 3 (Affordable housing): RL 140.770
Proposed OSD GFA (FSR) –	Proposed: 43,683m ² (FSR 11.26) comprising: <ul style="list-style-type: none"> • Residential (build-to-rent): 32,000m² (FSR 8.25:1)

Residential & non-residential	<ul style="list-style-type: none"> Residential (Affordable Housing): 4,861m² (FSR 1.25:1) Non-residential: 6,822m² (FSR 1.76:1) 																																						
Uses	<ul style="list-style-type: none"> Residential component: <ul style="list-style-type: none"> Tower 1 and 2 – build-to-rent apartments from Level 4 to 23 with amenity on Level 24 and open outdoor space on the rooftops Tower 3 – affordable housing apartments from Level 3 to 10 with affordable housing indoor and outdoor amenity areas on Level 11 Retail tenancies: located on the lower ground and ground levels Gym: located on Level 2 and Mezzanine Level Residential amenity and back of house located on Mezzanine and Level 2 to 3 Residential amenity on Level 24 on Towers 1 and 2 Rooftop bar on Tower 1 																																						
Apartments and mix	<p>Total 568 apartments broken down into the following configurations:</p> <table border="1"> <thead> <tr> <th rowspan="2">Beds</th> <th colspan="2">Build to Rent Apartments</th> <th>Affordable Housing</th> <th rowspan="2">Total (Combined)</th> </tr> <tr> <th>Tower 1</th> <th>Tower 2</th> <th>Tower 3</th> </tr> </thead> <tbody> <tr> <td>Studio</td> <td>100 (39%)</td> <td>100 (39%)</td> <td>16 (29%)</td> <td>216 (38%)</td> </tr> <tr> <td>1 bed</td> <td>132 (52%)</td> <td>132 (52%)</td> <td>8 (14%)</td> <td>272 (48%)</td> </tr> <tr> <td>2 bed</td> <td>22 (9%)</td> <td>22 (9%)</td> <td>24 (43%)</td> <td>68 (12%)</td> </tr> <tr> <td>3 bed</td> <td>2 (1%)</td> <td>2 (1%)</td> <td>8 (14%)</td> <td>12 (2%)</td> </tr> <tr> <td>Sub-Total</td> <td>256</td> <td>256</td> <td>56</td> <td>568 (100%)</td> </tr> <tr> <td>Total</td> <td colspan="2">512</td> <td>56</td> <td>568 (100%)</td> </tr> </tbody> </table>	Beds	Build to Rent Apartments		Affordable Housing	Total (Combined)	Tower 1	Tower 2	Tower 3	Studio	100 (39%)	100 (39%)	16 (29%)	216 (38%)	1 bed	132 (52%)	132 (52%)	8 (14%)	272 (48%)	2 bed	22 (9%)	22 (9%)	24 (43%)	68 (12%)	3 bed	2 (1%)	2 (1%)	8 (14%)	12 (2%)	Sub-Total	256	256	56	568 (100%)	Total	512		56	568 (100%)
Beds	Build to Rent Apartments		Affordable Housing	Total (Combined)																																			
	Tower 1	Tower 2	Tower 3																																				
Studio	100 (39%)	100 (39%)	16 (29%)	216 (38%)																																			
1 bed	132 (52%)	132 (52%)	8 (14%)	272 (48%)																																			
2 bed	22 (9%)	22 (9%)	24 (43%)	68 (12%)																																			
3 bed	2 (1%)	2 (1%)	8 (14%)	12 (2%)																																			
Sub-Total	256	256	56	568 (100%)																																			
Total	512		56	568 (100%)																																			
Access	<ul style="list-style-type: none"> Loading dock (only) access off Clarke Lane – no car park provided Retail access off Pacific Highway and Hume St Rooftop bar access off Pacific Highway Build-to-rent apartment and sky lobby access off Pacific Highway Gym access off Pacific Highway Affordable Housing access off Hume St 																																						

The amendments to the Concept SSDA do not constitute any physical works over the site. Any proposed physical works will be captured under the Detailed SSDA.



4 On-Site Stormwater Management

4.1 General

This report details the stormwater strategy proposed for the development as follows:

- On-site stormwater management including:
 - a. On-site detention
 - b. Stormwater management and treatment;
 - c. Stormwater disposal;

These components have been designed to address the requirements of the North Sydney Council.

4.2 Authorities Requirements

The council requirements for water management are provided in North Sydney Council's Development Control Plan 2013 Part B Section 2 Clause 2.6.7.

The object of the stormwater management is detailed in the DCP as follows:

- To mimic pre-development or natural drainage systems through the incorporation of WSUD on-site.
- To protect watersheds by minimising stormwater discharge and maximising stormwater quality.
- To minimise off-site localised flooding or stormwater inundation.

4.3 On-site Detention (Water Quantity Mitigation)

The OSD tanks have been sized to reduce the site runoff in the 1% AEP proposed development to 20% AEP pre-development flows using DRAINS model, which is consistent with the previous On-site detention volume determination method as per the DA approved stormwater management report.

The site has been broken up into two catchments:

Catchment T3: 1271m² (32 Hume Street, Crows Nest)

Catchment T1 - T2: 2609 m² (505 Pacific Highway, Crows Nest)

The results of the DRAINS model are summarised in Table 4.1.



Figure 4.1 Pre-Dev Drains Model Schematics



Figure 4.2 Pre-Dev Drains Model Results (20% AEP)



Figure 4.3 Pre-Dev Drains Model Schematics



Figure 4.4 Post-Dev Drains Model Results (1% AEP)

Table 4.1 DRAINS Model Results Summary

Catchment ID	Pre-Dev Flows (m ³ /s) 20%AEP	Post-Dev Uncontrolled Flows (m ³ /s) 1%AEP	Post-Dev OSD Flows (m ³ /s)	OSD Volume required (m ³)
Catchment T1 - T2	0.097	0.176	0.097	42.49
Catchment T3	0.047	0.086	0.047	21.74

4.4 Stormwater Management & Treatment (Water Quality Mitigation)

A treatment train approach is adopted to meet the water quality requirements of Council. A combination of Oceanguards and Stormfilters has been used to achieve the council’s water quality targets.

Table 4.2 Target Pollutant Reduction

Pollutant	Reduction
Gross Pollutants (GP)	90%
Total Suspended Solids (TSS)	85%
Total Phosphorus (TP)	65%
Total Nitrogen (TN)	45%

Table 4.3 MUSIC Model Results

Pollutant	Source Load	Residual Load	% Reduction
Gross Pollutants	108	0	100
Total Suspended Solids (TSS)	549	60.2	89
Total Phosphorus (TP)	1.06	0.349	67
Total Nitrogen (TN)	9.52	4.93	48.3

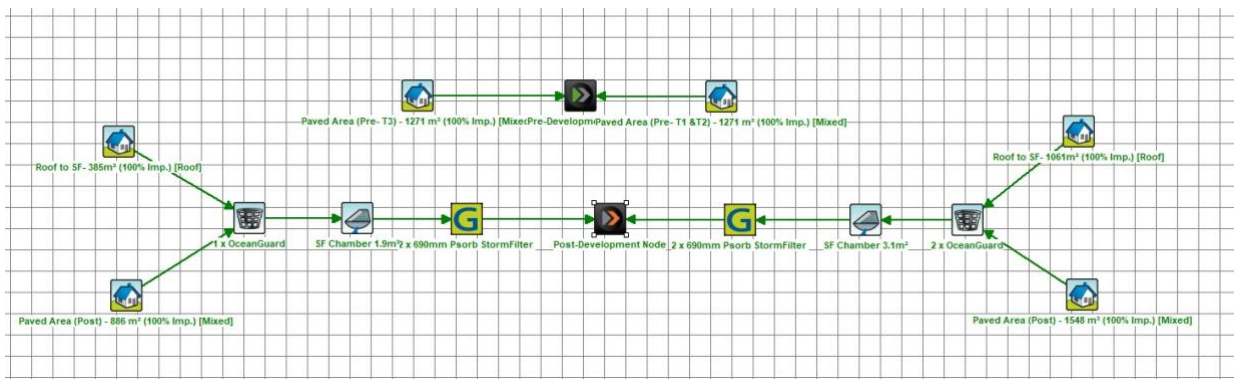


Figure 4.5 Music Model Network

	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	2.84	4.35	2.84	4.35	0	0
Total Suspended Solids (kg/yr)	536	548	536	61.9	0	88.7
Total Phosphorus (kg/yr)	0.842	1.06	0.842	0.349	0	67.1
Total Nitrogen (kg/yr)	6.23	9.52	6.23	4.94	0	48.1
Gross Pollutants (kg/yr)	70.8	108	70.8	0	0	100

Include Pre-Development

Figure 4.6 Music Model Results



Pre-Development	Source (kg/yr)	Residual Load (kg/yr)	% Reduction
Flow (ML/yr)	2.84E+00	2.84E+00	0
Total Suspended Solids (kg/yr)	5.18E+02	5.18E+02	0
Total Phosphorus (kg/yr)	8.47E-01	8.47E-01	0
Total Nitrogen (kg/yr)	6.27E+00	6.27E+00	0
Gross Pollutants (kg/yr)	70.8	70.8	0
Post-Development			
	Source (kg/yr)	Residual Load (kg/yr)	% Reduction
Flow (ML/yr)	4.35E+00	4.35E+00	5.37
Total Suspended Solids (kg/yr)	5.41E+02	58.7	85.6
Total Phosphorus (kg/yr)	1.06E+00	3.52E-01	77.7
Total Nitrogen (kg/yr)	9.53	4.95	53.6
Gross Pollutants (kg/yr)	108	0.00E+00	100
NorBE			
	Pre-Development Load (kg/yr)	Post Development Load (kg/yr)	% Pre. Vs Post Reduction
Flow (ML/yr)	2.84	4.35	-53.2%
Total Suspended Solids (kg/yr)	5.18E+02	58.7	88.7%
Total Phosphorus (kg/yr)	0.847	0.352	58.4%
Total Nitrogen (kg/yr)	6.27	4.95	21.1%
Gross Pollutants (kg/yr)	70.8	0	100.0%

Figure 4.7 NORBE Results

4.5 Stormwater Disposal

There are existing connections from the roof of Crows Nest Metro station into the council's existing drainage infrastructure under Clake Lane. The existing method of disposal is not to be altered. The on-site detention tank outlet from the development (Tower 1 & Tower 2) above the Crows Nest Metro station is to discharge to the installed pipe system of Crows Nest station Roof. Please refer to the Stormwater drainage design concept plan.

For Tower three (32 Hume Street, Crows Nest); the discharge connection has been designed as per the Drainage Design for Sydney Metro Crows Nest Station by Crows Nest Design Consortium (Drawing Number: SMCSWCN-SMC-SCN-DD-DWG-207012); revision 07.



5 Soil & Water Management (Sediment Erosion/ Dust Mitigation)

5.1 Construction Stage

A Soil and Water Management Plan (SWMP) has been prepared for 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).

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 diversion banks and sediment fences;
- Early installation and progressive implementation of erosion controls;
- Early construction of permanent drainage structures, sediment basins traps and catch drains;
- Progressive revegetation of disturbed areas, if required;
- Use of geotextile to stabilise disturbed surfaces during construction, as required
- 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, as required;
- 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 vehicle, 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 collection 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 Schedule

The Stormwater system is designed to collect and dispose stormwater in a safe manner during and after rainfall events. Ponding of water within pits may temporarily occur but should not last after rain subsides. If ponding persists, it is likely that maintenance attention is required.

Most components of the Stormwater system should be checked for blockages after each significant storm to ensure that they continue to function effectively. The build up of sludge and debris depends on the individual site and more frequent maintenance may be required where there are many trees, especially after windy conditions.

In general, owners could often maintain Stormwater systems where the depth of pits is less than 1.2 m. For deeper pits or where there are other confined spaces, such as tanks, experienced personnel should be used to ensure that the system is safely maintained. The maintenance schedule should include appropriate notes of the hazard of confined space entry where this is required.

The following schedule provides a guide to the timing of typical maintenance actions for a Rainwater tank as well as defining the person responsible and describing the actions required.

Table 6.1 OSD Maintenance Schedule

Maintenance Action	Frequency	Responsibility	Procedure
Discharge Control Pit (DCP)			

Maintenance Action	Frequency	Responsibility	Procedure
Inspect & remove any blockage on orifice	Six monthly	Maintenance Contractor	Remove grate & screen to inspect orifice. See plan for location of DCP.
Check attachment of orifice plate to wall of pit (gaps less than 5mm)	Annually	Maintenance Contractor	Remove grate and screen. Ensure plate mounted securely, tighten fixings if required. Seal gaps as required.
Check orifice diameter correct and retains sharp edge.	Five yearly	Maintenance Contractor	Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged.
Inspect screen and clean.	Six monthly	Maintenance Contractor	Remove grate and screen if required to clean it.
Check attachment of screen to wall of pit.	Annually	Maintenance Contractor	Remove grate and screen. Ensure screen fixings secure. Repair as required.
Check screen for corrosion.	Annually	Maintenance Contractor	Remove grate and examine screen for rust or corrosion, especially at corners or welds.
Inspect flap valve & remove any blockage.	Six monthly	Maintenance Contractor	Remove grate. Ensure flap valve moves freely and remove any blockages or debris.
Check attachment of flap valve to wall of pit.	Annually	Maintenance Contractor	Remove grate. Ensure fixings of valve are secure.
Check flap valve seals against wall of pit.	Annually	Maintenance Contractor	Remove grate. Fill pit with water and check that flap seals against side of pit with minimal leakage.
Check any hinges of flap valve move freely.	Six monthly	Maintenance Contractor	Remove grate. Test valve hinge by moving flap to full extent.
Inspect overflow weir & remove any blockage.	Six monthly	Maintenance Contractor	Remove grate and open cover to ventilate underground storage if present. Ensure weir clear of blockages.

Maintenance Action	Frequency	Responsibility	Procedure
Empty basket at overflow weir (if present).	Six monthly	Maintenance Contractor	Remove grate and ventilate underground storage chamber if present. Empty basket, check fixings secure and not corroded.
Inspect DCP walls (internal and external if appropriate) for cracks or spalling.	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect DCP sump & remove any sediment/sludge.	Six monthly	Maintenance Contractor	Remove grate and screen. Remove sediment/sludge build-up and check orifice and flap valve clear.
Inspect grate for damage or blockage.	Six monthly	Maintenance Contractor	Check both sides of grate for corrosion, (especially corners and welds) damage or blockage.
Inspect return pipe from storage & remove any blockage.	Six monthly	Maintenance Contractor	Remove grate and screen. Ventilate underground storage if present. Open flap valve and remove any blockages in return line. Check for sludge/debris on upstream side of return line.
Inspect outlet pipe & remove any blockage	Six monthly	Maintenance Contractor	Remove grate and screen. Ventilate underground storage if present. Check orifice and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream side of return line.
Check step irons for corrosion.	Annually	Maintenance Contractor	Remove grate. Examine step irons and repair any corrosion or damage.
Check fixing of step irons is secure.	Six monthly	Maintenance Contractor	Remove grate and ensure fixings secure prior to placing weight on step iron.

Maintenance Action	Frequency	Responsibility	Procedure
Storage			
Inspect return pit & remove any sediment/sludge in pit.	Six monthly	Owner	Remove grate and screen. Remove sediment/sludge build-up.
Inspect internal walls of return pit (and external, if appropriate) for cracks or spalling.	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect & remove any debris/litter/mulch etc blocking grates of return pit.	Six monthly	Maintenance Contractor	Remove blockages from grate and check if pit blocked.
Inspect storage areas & remove debris/mulch/litter etc likely to block screens/grates.	Six monthly	Maintenance Contractor	Remove debris and floatable material likely to be carried to grates.
Compare storage volume to volume approved. (Rectify if loss > 5%).	Annually	Maintenance Contractor	Compare actual storage available with Work-as-Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost. Council to be notified of the proposal.
Inspect storages for subsidence near pits.	Annually	Maintenance Contractor	Check along drainage lines and at pits for subsidence likely to indicate leakages.

Table 6.2 OceanGuard Maintenance Frequency

ITEM	PERIOD	RESPONSIBILITY	MAINTENANCE PROCEDURE
Inspection – Minor Maintenance	12 monthly and after major storms	Maintenance Contractor	Follow recommended procedure set out in OceanProtect’s “Operation and Maintenance Guidelines”

ITEM	PERIOD	RESPONSIBILITY	MAINTENANCE PROCEDURE
Inspection – Major Maintenance	2-6 years except in case of spill	Maintenance Contractor	Follow recommended procedure set out in OceanProtect’s “Operation and Maintenance Guidelines”

Table 6.3 StormFilter Maintenance Schedule

ITEM	PERIOD	RESPONSIBILITY	MAINTENANCE PROCEDURE
Inspection	Six Monthly	Maintenance Contractor	Visual inspection of cartridges and chamber. Remove larger gross pollutants. Perform minimal rectification works (if required). Evaluation of cartridges and media.
Minor Service	Annually	Maintenance Contractor	Removal of accumulated sediment (if required). Wash-down of StormFilter chamber (if required).
Major Service	As Required	Maintenance Contractor	Replacement of StormFilter cartridge media.



7 Design Statement

I Sam Haddad from S&G Consultants P/L confirm that this report for detailed SSDA addresses the requirement of SEAR No. 15.0 Water Management (Stormwater Components Only) and relevant State and local legislation, policies and guidelines including DCP of the North Sydney Council. I further confirm that none of the information contained in the detailed SSDA is false or misleading.

Yours faithfully,

For & on behalf of S&G Consultants Pty Ltd

A handwritten signature in blue ink, appearing to read 'S Haddad', is written over a faint, light blue circular stamp or watermark.

Sam Haddad

Director (Civil)

MIEAust CPEng NER

P: 02 8883 4239

W: www.sgce.com.au

A: Suite 311, Level 3,
480 Pacific Highway,
St Leonards, NSW 2065

