
# 37 ARCHER ST, CHATSWOOD NSW 2067

## Integrated Water Management Plan

## Prepared for SSDA

JN
Responsive Engineering

N0241372 - CRPT.01C

# Revision History

| REVISION | DATE | BY | CHECKED | COMMENTS |
|---|---|---|---|---|
| A | 07/03/2025 | MZ | SD | ISSUE FOR SSDA |
| B | 30/04/2025 | MZ | SD | Final for SSDA |
| C | 06/05/2025 | MZ | SD | Final for SSDA |

*The recipient of the latest issue as noted above will be responsible for superseding/destroying all previous documents.*

# Contents

# 1. Executive Summary

This report has been prepared by JN to accompany a detailed State Significant Development Application (SSDA) for the development of a mixed-use residential tower with infill affordable housing at 37 Archer Street, Chatswood NSW 2067. The existing site consists of attached townhouses within a large rectangular lot. The legal description of the site is outlined in Table 1.

*Table 1 Legal Description*

| Property Address | Title Description |
|---|---|
| 37 Archer Street, Chatswood NSW 2067 | SP 38065 |
| Project Site Area | 2,201m$^2$ |

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEAR**s**) issued for the project (SSD-73277714).

This report concludes that the proposed development is suitable and warrants approval subject to the implementation of the following mitigation measures:

- On-site detention (OSD) system to control stormwater discharge
- Water-sensitive urban design (WSUD) elements to minimise water quality impacts and achieve stormwater re-use.

Following implementation of the aforementioned mitigation measures, the remaining impacts are appropriate.

# 2. Introduction

This report has been prepared by JN on behalf of Hyecorp Property Group to accompany the civil design submission for SSDA lodgement of the proposed mixed-used development at 37 Archer Street Chatswood.

The report is to be read in conjunction with the civil design drawings (sheets N0241372 C001 to C200) in Appendix A.

## 2.1. Site Description

The site is located at 37 Archer Street, Chatswood (NSW 2067), approximately 8 kilometres north of Sydney CBD. The site is legally described as SP 38065 with a total area of approximately 2201m$^2$. The site is bounded by Archer Street to the west and Bertram Street to the east. The existing site consists of a residential development with 14 townhouses which are accessible from both Archer Street and Bertram Street. Low scale residential developments generally surround the site. Levels of the existing site generally fall from southeast to northwest at grades of approximately 3.0%.

Refer to Figure 1. for the site location.


*Figure 1. Site locality with site boundary outlined in red*

## 2.2. Proposed Development

The proposed mixed-use development at 37 Archer Street aims to create affordable housing options for essential local workers from institutions such as the Royal North Shore Hospital, Chatswood Police Station and nearby schools.

The proposed development consists of a 28-storey building with six levels of basement parking as indicated in Figure 2. Ground floor and Level 1 will comprise of retail stores, building access and commercial areas, with a portion of Level 2 used for commercial purposes. Residential apartment units will occupy the remaining floor levels.

A through-site link path connecting Archer Street and Bertram Street will also be provided for public access through the site.

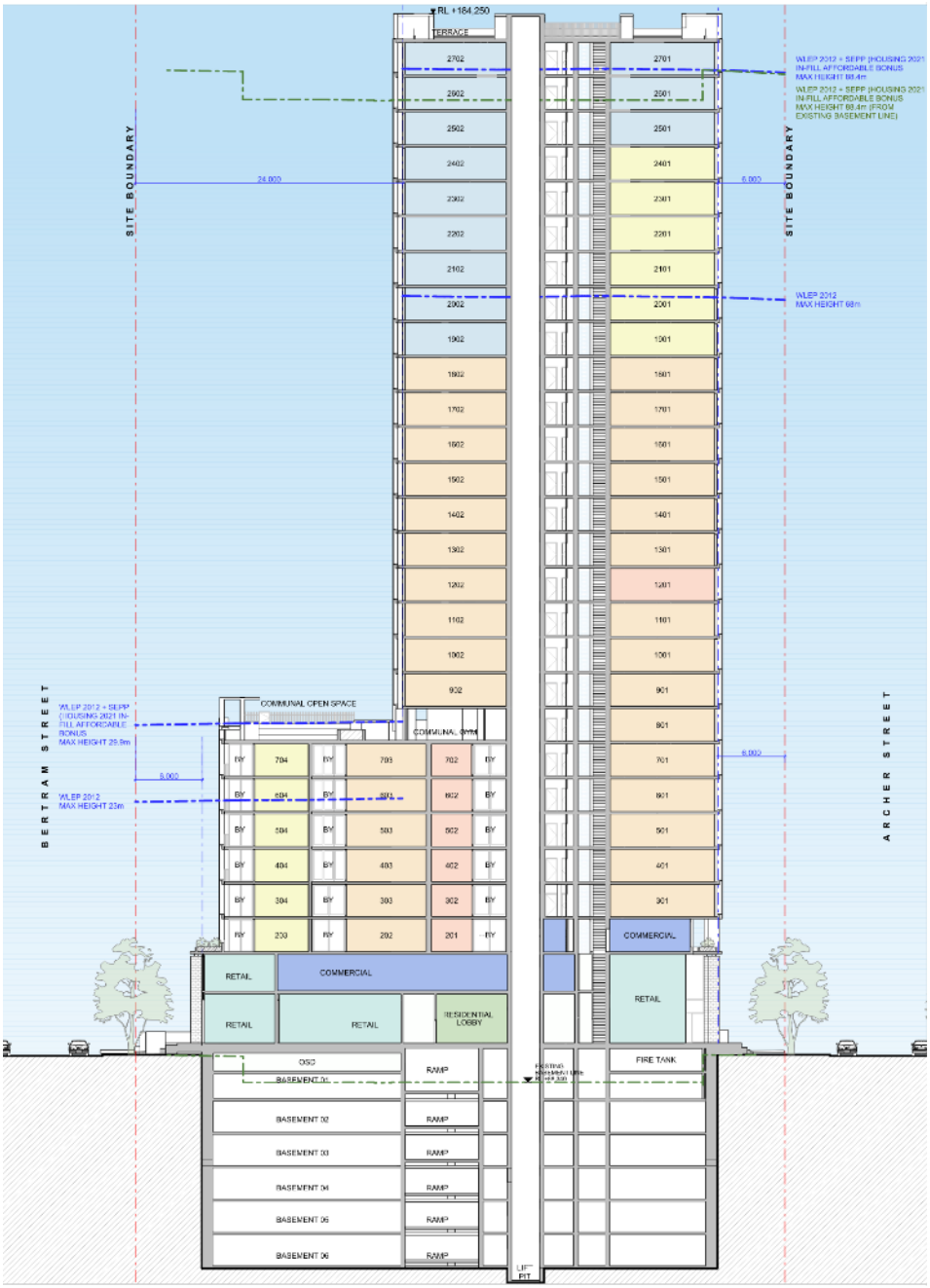


*Figure 2. Architectural cross section of site*

## 2.3. Scope of Design Works

This report accompanies the civil design drawings of 37 Archer Street Residential Development for SSDA lodgement. This report outlines the compliance of the proposed design against Council Policies and Authority Controls in relation to:

- On-site detention (OSD)
- Water Quality / Water Sensitive Urban Design (WSUD) – stormwater treatment devices and water re-use
- Basement stormwater drainage – subsoil drainage and stormwater pump-out pit
- Gravity stormwater drainage – pit and pipe system

## 2.4. Consultation with Stakeholders

Consultation was undertaken with Willoughby Council via email correspondence from the 3rd to 4th December 2024, to confirm OSD design requirements for the site. Council have confirmed OSD systems must be designed in accordance with the most recent Council documentation (Part I of the Willoughby DCP 2023 and Technical Standard 1) to achieve compliance with their requirements. OSD system for the site has been designed in accordance with this advice as detailed in section 3.1.2.

# 3. Stormwater Management

The proposed development is classified as a major development under section 3 of the Willoughby Development Control Plan Part I Stormwater Management 2023 (WDCP Part I 2023). This section specifies that for all major developments, stormwater runoff must be captured and detained via an OSD system for storm events up to and including the 1% AEP event. Section 11.2 of the WDCP Part I 2023 specifies that all stormwater runoff from storm events up to and including 50% AEP event, must also be treated before discharging out of the site.

Section 3.1 of this report details the conveyance and detention of all site runoff to the existing drainage network on Bertram Street. This existing drainage system along Bertram Street serves as the final stormwater discharge point for the development.

Section 3.2 outlines the treatment train approach to remove pollutants from runoff before discharging out of the site. The proposed water re-use strategy is also detailed in section 3.2.

Erosion and sediment controls to be employed during the construction phase of the development are outlined in section 3.3.

## 3.1. Stormwater Quantity

### 3.1.1. Design Criteria and Requirements

The stormwater drainage for the proposed development has been designed in accordance with Willoughby City Council DCP (WDCP) Part I Stormwater Management 2023 and AS/NZ 3500.3.

Table 2 summarizes key design criteria for the proposed development which is in Zone 2 of the onsite detention catchments as per Appendix 1 of the WDCP Part I Stormwater Management.

*Table 2 Key Functional Performance Criteria*

| Drainage design element | Minimum Design Criteria | Reference |
|---|---|---|
| **Pipe Grade** | 1% minimum | Section 4.1.3. of WDCP Part I Stormwater Management 2023 |
| **On-site Detention** | 1% AEP Storm Event | Section 3.1. of WDCP Part I Stormwater Management 2023 |
| **Water Quality** | 50% AEP Storm Event<br><br>Refer to Section 3.2, Table 7 for minimum average annual load reductions for each pollutant type | Section 11.2.1. (a) of WDCP Part I Stormwater Management 2023<br><br>Section 11.2.2, Table 12 of WDCP Part 1 Stormwater Management 2023 |

### 3.1.2. On-Site Detention (OSD) Design

An OSD system is proposed on ground floor to retain stormwater runoff for the 1% AEP storm event (as per Section 3.1. of WDCP Part I Stormwater Management) and control the release of this runoff to a permissible site discharge (PSD) as outlined in WDCP. Stormwater inflows are first treated in a water quality filter chamber within the OSD tank, before discharging to the main OSD chamber. Flows from the OSD tank ultimately drain eastwards to the existing stormwater system on Bertram Street. The through-site link path between Archer and Betram Street serves as the emergency overflow route in the event of surcharge from the OSD system.

OSD must provide the minimum storage volume as specified in Table 3 and must ensure post-development flows don't exceed the permissible site discharge rate (refer to Table 4).

For a total site area of 2,201m$^2$:

- Minimum site storage (SSR) = 80m$^3$ as per Table 3.
- Maximum permissible site discharge (PSD) = 37.4 L/s as per Table 4.

*Table 3 Minimum site storage required (SSR)*

| Catchment Zone | Volume of storage required (m$^3$/100m$^2$) | Site Area (m$^2$) | Storage Required (m$^3$) | Reference |
|---|---|---|---|---|
| **2** | 3.6 | 2,201 | SSR:<br>3.6 x (2,201/100) = 80m$^3$ | Section 6.2.(a) of WDCP Part I Stormwater Management |

*Table 4 Permissible site discharge (PSD)*

| Catchment Zone | Permissible site discharge (L/s/100m$^2$) | Site Area (m$^2$) | PSD (L/s) | Reference |
|---|---|---|---|---|
| **2** | 1.7 | 2,201 | PSD:<br>1.7 x (2,201/100) = 37.4 L/s | Section 6.2.(b) of WDCP Part I Stormwater Management |

**Note:** In accordance with WDCP Part I Stormwater Management, section 6.2 (c) where there is flow bypassing the OSD from impervious areas, the PSD shall be reduced by a rate equal to the flow from the bypass area in the 1% AEP event.

The proposed stormwater design accounts for 14m$^2$ of pervious deep soil bypass and 95m$^2$ of impervious bypass area, as modelled in DRAINS. Combined 1% AEP post-development flow from the site is 37 L/s which is below the maximum PSD (37.4 L/s).

Total site discharge includes:

- 29 L/s from the OSD system
- 8 L/s from uncontrolled bypass areas (7 L/s from impervious areas and 1 L/s from pervious areas)

Hydraulic analysis of the OSD system was assessed in DRAINS (version 2023) using ILSAX hydrology. Australian Rainfall & Runoff 2019 temporal patterns and IFD data sourced from Bureau of Meteorology (BoM) Data were used. The IFD data as summarized in Table 5, was obtained on January 2025 for coordinates 33.7875 south and 151.1875 east.

*Table 5 IFD Data from BoM*

| DURATION | 4EY (MM/HR) | 2EY (MM/HR) | 1EY (MM/HR) | 50% AEP (MM/HR) | 20% AEP (MM/HR) | 10% AEP (MM/HR) | 5% AEP (MM/HR) | 2% AEP (MM/HR) | 1% AEP (MM/HR) |
|---|---|---|---|---|---|---|---|---|---|
| **1 min** | 88.2 | 116 | 145 | 163 | 219 | 259 | 299 | 353 | 396 |
| **2 min** | 76.8 | 98.5 | 120 | 134 | 176 | 207 | 237 | 282 | 318 |
| **3 min** | 70.4 | 90.8 | 111 | 124 | 164 | 193 | 222 | 263 | 297 |
| **4 min** | 65.3 | 84.9 | 105 | 117 | 156 | 183 | 211 | 250 | 281 |
| **5 min** | 61 | 79.8 | 99.1 | 111 | 148 | 175 | 201 | 239 | 268 |
| **10 min** | 46.6 | 62.1 | 78.4 | 87.9 | 119 | 140 | 162 | 192 | 215 |
| **15 min** | 38.2 | 51.2 | 65.3 | 73.2 | 99 | 117 | 135 | 160 | 179 |
| **20 min** | 32.6 | 44 | 56.2 | 63.1 | 85.2 | 101 | 116 | 137 | 154 |
| **25 min** | 28.7 | 38.7 | 49.6 | 55.6 | 75 | 88.6 | 102 | 121 | 136 |
| **30 min** | 25.7 | 34.7 | 44.6 | 50 | 67.2 | 79.4 | 91.6 | 108 | 121 |
| **45 min** | 20 | 27 | 34.7 | 38.8 | 52 | 61.3 | 70.7 | 83.7 | 94 |
| **1 hour** | 16.6 | 22.5 | 28.9 | 32.2 | 43 | 50.7 | 58.5 | 69.3 | 77.9 |
| **1.5 hour** | 12.7 | 17.3 | 22.2 | 24.7 | 32.9 | 38.8 | 44.7 | 53.1 | 59.9 |
| **2 hour** | 10.6 | 14.3 | 18.5 | 20.5 | 27.3 | 32.1 | 37.1 | 44.1 | 49.8 |
| **3 hour** | 8.17 | 11.1 | 14.3 | 15.9 | 21.1 | 24.9 | 28.9 | 34.4 | 38.9 |
| **4.5 hour** | 6.35 | 8.65 | 11.2 | 12.4 | 16.6 | 19.6 | 22.8 | 27.2 | 30.8 |
| **6 hour** | 5.33 | 7.28 | 9.43 | 10.5 | 14.1 | 16.7 | 19.4 | 23.3 | 26.4 |
| **9 hour** | 4.19 | 5.76 | 7.49 | 8.36 | 11.3 | 13.5 | 15.7 | 18.9 | 21.4 |
| **12 hour** | 3.54 | 4.89 | 6.38 | 7.14 | 9.71 | 11.6 | 13.6 | 16.3 | 18.5 |

ILSAX model parameters are provided in Table 6. Catchments assessed were based on the proposed landscape, roof and paved areas for the site. Time of concentration for impervious and pervious catchments was assumed to be 5 minutes and 7 minutes respectively.

*Table 6 ILSAX model parameters*

| PARAMETER | VALUE |
|---|---|
| **Antecedent Moisture Content (AMC)** | 3 |
| **Impervious storage loss** | 1 mm |
| **Pervious storage loss** | 5 mm |
| **Soil factor** | C – Slow infiltration |

The following Manning's roughness values were adopted as hydraulic model inputs, with bypass or overland flow routes modelled based on the expected design surface:

- 0.013 for concrete pipe
- 0.015 for asphaltic surface
- 0.03 for vegetated surface

Key details and results of the OSD design include the following:

- Outlet pipe from the OSD tank is 300mm diameter
- 135mm diameter circular orifice (centre IL 89.55m AHD) will be used as the low flow outlet control

- 92.86m$^3$ of storage is provided which is above the minimum required (80 m$^3$).
- OSD control reduced the 1% AEP post-development flow to 29 L/s which is below the PSD (30.4 L/s), after accounting for 7 L/s of flow from impervious areas bypassing the OSD tank, as per section 6.2.(c) of the WDCP Part I Stormwater Management.
- The through-site link path serving as the overflow route for the OSD system, is capable of conveying flows from a 1% AEP storm event to the existing drainage system on Bertram Street. Hydraulic analysis in DRAINS showed that the overflow route is not engaged at the 1% AEP storm event due to adequate storage being provided in the OSD, as the water level within the OSD system (90.163m AHD) is below the overtopping grate level of the OSD access pits (90.380m AHD). This overland flow route is therefore only required as an emergency overflow provision if the OSD system malfunctions or becomes completely blocked.

Access to the OSD tank for maintenance purposes is provided via four access lids and associated step irons where required.

Refer to drawing N0241372 C052 for details of the OSD system. Refer to drawing N0241372 C200 for details of the ground floor drainage connections to the OSD system.

### 3.1.3. Basement Stormwater Design

The stormwater pump-out pit on basement level 6 (refer to drawing N0241372 C100), collects and conveys all basement stormwater drainage to the OSD chamber located on ground floor via rising mains. The minimum required capacity of the pump has been determined based on the exposed areas draining to the basement (refer to drawing N0241372 C200) and the expected subsoil infiltration rates for the subsoil drainage behind the basement retaining walls, as informed by preliminary Geotechnical investigations.

Refer to drawing N0241372 C051 for calculations and further details of the pump-out pit design. Refer to drawings N0241372 C100 to C140 for plans of the basement drainage system.

### 3.1.4. Ground Floor Stormwater Design

Rainwater outlets are proposed throughout the building access areas to drain runoff tracked from vehicle movements. Grated trench drains are proposed in locations where runoff needs to be captured from driveways and ramps. Stormwater pits in landscaped areas capture and convey runoff to the OSD system, whilst also providing maintenance access to the stormwater pipework across the site. The stormwater infrastructure ultimately discharges to the OSD chamber via pit and pipe connections.

Refer to drawing N0241372 C200 for the details of the ground floor drainage.

### 3.1.5. Building Stormwater Design

Stormwater drainage for all building levels (ground floor to rooftop) including the rainwater tank overflows on Level 8, is to discharge to the OSD tank on ground floor via gravity stormwater connections.

Refer to hydraulic engineering drawings for details of building stormwater drainage.

### 3.1.6. Existing Retained Stormwater Infrastructure

The OSD tank will drain to the existing stormwater network on Bertram Street. The development proposed to reconstruct the existing stormwater pipe across Betram street as depicted on plans to ensure that the level of the pipe interfaces correctly with the designed OSD system. All works are to be to Council Specifications with a detailed design to be completed and approved by Council's Engineering unit prior to construction. Refer to drawing N0241372 C200 for details.

It is assumed that the existing drainage system has sufficient capacity to take flows from the proposed development with no adverse impacts anticipated downstream of the site due to the development, as the site stormwater drainage system has been designed to Council Policies and Codes to ensure that post-development stormwater flows are not worse than the pre-development scenario.

## 3.2. Stormwater Quality and Water Sensitive Urban Design (WSUD)

### 3.2.1. Design Criteria and Requirements

WDCP Part I Stormwater Management specifies that all major developments must address water quality requirements during and after construction, in accordance with section 11.2.2. as summarized in Table 7.

*Table 7 Water Quality Requirements*

| Pollutant | Average Annual Pollutant Load Reduction (%) |
|---|---|
| **Gross pollutants** | 90 |
| **Total suspended solids (TSS)** | 85 |
| **Total phosphorus (TP)** | 60 |
| **Total nitrogen (TN)** | 45 |

To comply with ESD requirements, a minimum 20kL rainwater tank must be provided on the site for water reuse. As such, this rainwater tank volume has been adopted in our MUSIC modelling for WSUD compliance.

### 3.2.2. Design Description

The treatment train approach for the site has been modelled in MUSIC Version 6.3.0 (refer to Figure 3. ). The model was developed in accordance with NSW Music Modelling Guidelines (August 2015) using modified percent impervious area, rainfall threshold, soil properties and pollutant concentration. Hydrological data was obtained using Rainfall Station 066062 Sydney Observation Hill at 6-minute time steps from 1962 to 1966. Catchment plan for the treatment train design is provided in Appendix B.

Proposed treatment train consists of:

- 20kL rainwater tank located on Level 8 to capture runoff from all non-trafficable roof areas above Level 8. Rainwater will be re-used for irrigating landscape and planter box areas, as well for some toilet flushing. Any overflows from the rainwater tank, will drain via gravity drainage connections to the OSD tank on ground floor for treatment and controlled discharge from the site.
- OceanGuard pit insert baskets (200 micron) will be installed in stormwater pits to capture gross pollutants from key areas such as the driveway and through-site link path, before the runoff is conveyed into the OSD tank for final treatment. Refer to drawing N0241372 C200 for locations of the OceanGuard pit baskets.
- 15 x 460mm high Ocean Protect StormFilters located within a chamber in the OSD tank, will provide final treatment of all site runoff (including basement, ground floor and building drainage) before the runoff enters the main OSD chamber for detention. A trash screen will protect the inlet of the OSD outlet pipe. Refer to drawing N0241372 C052 for layout of the treatment filter chamber within the OSD tank.

Refer to drawing N0241372 C053 for details of the proposed stormwater treatment devices.

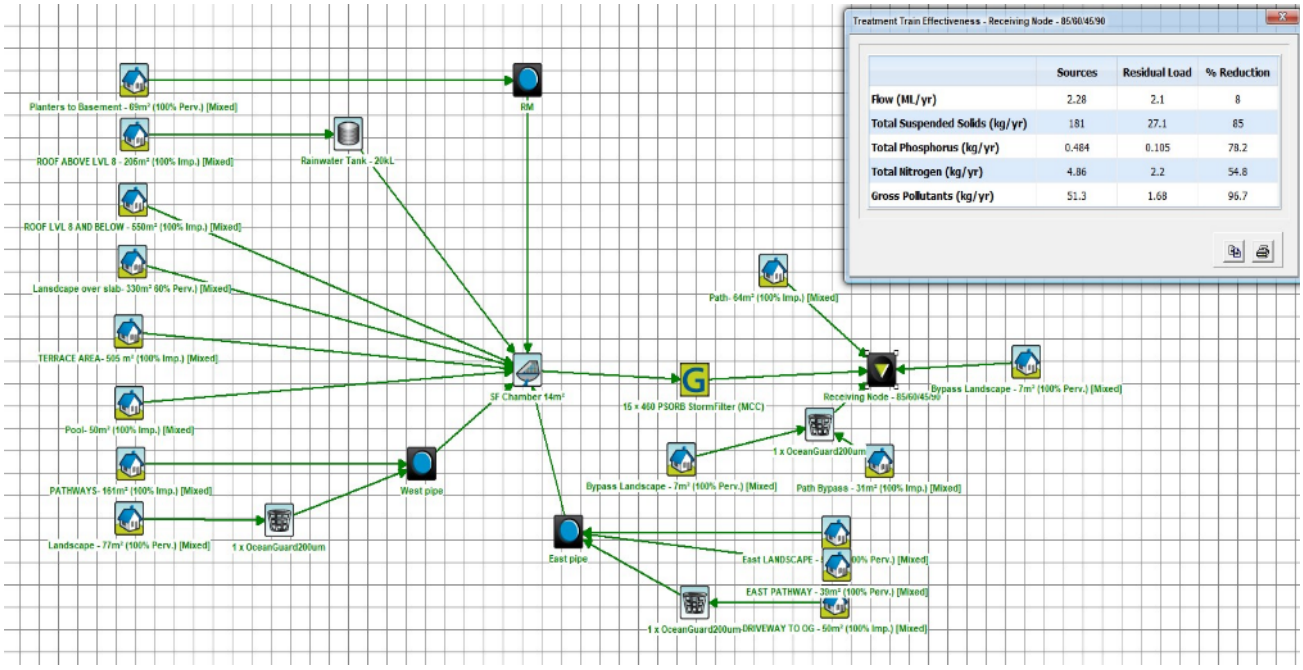


*Figure 3. MUSIC Model Layout, Catchment Areas and Results*

### 3.2.3. Design Outcomes

Results from the MUSIC model (refer to Table 8) indicate that the proposed treatment train reduces all pollutant loads to levels compliant with Willoughby City Council water quality requirements as specified in Table 7.

*Table 8 Proposed treatment train effectiveness against council water quality targets*

| Pollutant | Sources | Residual Load | % Reduction | % Minimum Reduction (Council Requirement) |
|---|---|---|---|---|
| **Total Suspended Solids (kg/yr)** | 181 | 27.1 | 85 | 85 |
| **Total Phosphorus (kg/yr)** | 0.484 | 0.105 | 78.2 | 60 |
| **Total Nitrogen (kg/yr)** | 4.86 | 2.20 | 54.8 | 45 |
| **Gross Pollutants (kg/yr)** | 51.3 | 1.68 | 96.7 | 90 |

## 3.3. Erosion and Sediment Control

Erosion and sediment control measures are to be implemented during the construction phase of the proposed development to manage sediments and site runoff (refer to drawing N0241372 C020).

Impacts of soil erosion and sediment pollution within the site and downstream of the development, will be mitigated using the following devices:

- Silt fence barriers
- Filter tubes / sediment traps for inlets
- Stabilized construction site access and truck cleaning facilities (shaker pad)
- Temporary pump-out pit and settling basin for the basement excavation phase of works

These erosion and sediment controls have been designed in accordance with NSW Office of Environment and Heritage Managing Urban Stormwater guide (Blue Book).

# 4. Conclusion

This report has been prepared by JN on behalf of Hyecorp Property Group and should be read in conjunction with the civil design drawings in Appendix A, submitted for the SSDA of the proposed development.

The proposed stormwater drainage design is summarized as follows:

- Site runoff will first be conveyed to the treatment chamber in the OSD tank on ground floor, and then into the main OSD chamber for detention. A pump-out pit will discharge all basement drainage to the OSD system. Building and ground floor drainage will connect to the OSD system via a gravity stormwater network.
- OSD system including the through site-link overland flow path, has capacity for the 1 % AEP storm event. Detention system reduces post-development runoff to a rate below the PSD via an orifice control outlet.
- Treatment measures include using a 20kL rainwater tank on Level 8, Ocean Guard pit insert baskets in stormwater pits and Ocean Protect StormFilters in the OSD system. Devices reduced pollutant loads by percentages at or above the minimum water quality targets. Water re-use is also achieved on-site as per ESD requirements.
- Erosion and sediment control measures will be implemented during construction

The proposed stormwater drainage system complies with Willoughby Council DCP requirements relevant to the management and treatment of runoff for the site.

Copies of the DRAINS and MUSIC Modelling used to inform the civil design can be provided upon request.

# Appendix A – Civil Design Drawings 100% IFC Transmittal

# RESIDENTIAL DEVELOPMENT

## 37 ARCHER ST CHATSWOOD NSW 2067

## Job No. N0241372

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 13.02.25 | ISSUE FOR COORDINATION | ER |
| 2 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
| | | | |
| | | | |
| | | | |

## STORMWATER SERVICES

- STORMWATER PIPE
- STORMWATER RISING MAIN PIPE
- EXISTING STORMWATER PIPE
- RAINWATER PIPE
- SUB-SOIL DRAINAGE LINE
- CAST IN SLAB PIPE

## STORMWATER LEGEND

- PROPOSED SEALED JUNCTION PIT
- PROPOSED GRATED SUFACE INLET PIT
- EXISTING PIT
- PIT TO BE REMOVED
- PROPOSED KERB INLET PIT
- PROPOSED GRATED DRAIN
- PROPOSED RAINWATER TANK
- DOWNPIPE, RISER OR VERTICAL DROP
- RWO - RAINWATER OUTLET FOR BALCONIES, ROOF, CARPARK ETC
- GS1 - DOWNPIPE WITH RAIN HEAD OVERFLOW
- GS2 - DOWNPIPE WITH SUMP SIDE OVERFLOW
- GS3 - DOWNPIPE WITH SUMP HIGH CAPACITY OVERFLOW
- SWALE DRAIN
- OVERLAND FLOW PATH
- ROOF FALL DIRECTION
- RL 35.05 — PROPOSED PAVEMENT SURFACE LEVEL
- GL 35.05 — PROPOSED PIT SURFACE LEVEL
- IL 34.75 — PROPOSED PIT INVERT LEVEL
- FFL 23.56 — PROPOSED FINISHED FLOOR LEVEL
- +35.11 — EXISTING SURFACE LEVEL
- 36.00 — EXISTING SURVEY CONTOUR

## GENERAL PIPEWORK LEGEND

- SERVICE SIZE — FLOW DIRECTION
- PIPE FROM ABOVE
- SERVICE SIZE — PIPE TO BELOW
- FALL DIRECTION
- STW Ø225 @ 1.0% — PIPE TYPE, SIZE AND GRADE
- CONNECTION
- CONTINUATION
- END CAP
- ? — KEYNOTE TAG

## ENVIRONMENTAL SITE MANAGEMENT LEGEND

- PROPOSED BUILDING LINE
- PROPRIETARY SILT FENCE
- PROVIDE TEMPORARY CHAIN WIRE FENCING ( HOARDING ) ALONG THE SITE BOUNDARY.
- TEMPORARY STABALISED CONSTRUCTION ENTRY/EXIT. (SHAKER PAD)
- TEMPORARY FILTER TUBE WITH SAFETY BARRICADE TO KERB INLET PITS.
- NOMINATED DISPOSAL ROUTE FOR TRUCK MATERIAL TRANSPORTATION.
- TEMPORARY MASS CONCRETE FOOTPATH CROSSING.
- UNDISTURBED NON-TRAFFICABLE AREA
- DIVERSION BANK
- SURFACE INLET DRAINAGE PIT WITH SURROUNDING FILTER FABRIC INLET SEDIMENT TRAP OR FILTER TUBES (SANDBAGS)
- TEMPORARY GEOTEXTILE WRAPPED HAY BALES/SAND BAGS
- STOCK MATERIALS
- SITE EQUIPMENT LOCATIONS

## PROJECT INFORMATION TABLE

THE TABLES BELOW ARE TO BE READ IN CONJUNCTION WITH THE ADJACENT NOTES

## GEOTECHNICAL INFORMATION

| COMPANY | REPORT No. | DATED |
|---|---|---|
| EI AUSTRALIA | E26577.G03 | 15.02.2025 |

## SURVEY INFORMATION

THE SURVEY INFORMATION ON THESE DRAWINGS HAS BEEN PROVIDED BY

| COMPANY | DATED |
|---|---|
| LTS | 01.12.23 |

## SAFETY IN DESIGN

THERE ARE INHERENT RISKS WITH CONSTRUCTING, MAINTAINING, OPERATING, DEMOLISHING, DISMANTLING AND DISPOSING THIS DESIGN THAT ARE TYPICAL OF SIMILAR DESIGNS, AS FAR AS IS REASONABLY PRACTICABLE RISKS HAVE BEEN ELIMINATED OR MINIMISED THROUGH THE DESIGN PROCESS. HAZARD CONTROLS MUST STILL BE IMPLEMENTED BY THE CONTRACTOR, OWNER OR OPERATOR TO ENSURE THE SAFETY OF WORKERS.

• JN DO NOT CONSIDER THAT THERE ARE ANY UNIQUE RISKS ASSOCIATED WITH THE DESIGN OF THIS PROJECT.

## GENERAL

1. ALL EXISTING LEVELS TO BE CONFIRMED ON SITE PRIOR TO COMMENCEMENT OF WORKS
2. ALL WORKS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE NOMINATED OR APPLICABLE COUNCIL SPECIFICATION. WHERE A SPECIFICATION HAS NOT BEEN NOMINATED THEN THE CURRENT NSW DEPARTMENT OF HOUSING CONSTRUCTION SPECIFICATION IS TO BE USED. THE NOMINATED SPECIFICATION SHALL TAKE PRECEDENCE TO THESE NOTES.
3. THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW THE GENERAL ARRANGEMENT. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE CONTRACTOR ON SITE. ENGINEERS DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH THE RELEVANT ARCHITECTURAL DRAWINGS & DRAWINGS FROM OTHER CONSULTANTS.
5. THE CONTRACTOR SHOULD REPORT ANY DISCREPANCIES ON THE DRAWINGS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN.
6. THE CONTRACTOR SHOULD LOCATE AND LEVEL ALL EXISTING SERVICES PRIOR TO COMMENCING CONSTRUCTION AND PROTECT AND MAKE ARRANGEMENTS WITH THE RELEVANT AUTHORITY TO RELOCATE AND/OR ADJUST IF NECESSARY. INFORMATION GIVEN ON THE DRAWINGS IN RESPECT TO SERVICES IS FOR GUIDANCE ONLY AND IS NOT GUARANTEED COMPLETE NOR CORRECT.
7. CONTRACTOR IS NOT TO ENTER UPON NOR DO ANY WORK WITHIN ADJACENT LANDS WITHOUT THE PERMISSION OF THE OWNER.
8. SURPLUS EXCAVATED MATERIAL SHALL BE PLACED WHERE DIRECTED OR REMOVED FROM SITE.
9. ALL NEW WORKS SHALL MAKE A SMOOTH JUNCTION WITH EXISTING.
10. ALL DRAINAGE LINES THROUGH ADJACENT LOTS SHALL BE CONTAINED WITHIN EASEMENTS CONFORMING TO COUNCIL'S STANDARDS.
11. THE CONTRACTOR SHALL CLEAR THE SITE BY REMOVING ALL RUBBISH, FENCES AND DEBRIS ETC. TO THE EXTENT SPECIFIED.
12. PRIOR TO COMMENCEMENT OF WORK, THE CONTRACTOR SHALL PROVIDE A TRAFFIC MANAGEMENT PLAN PREPARED BY AN ACCREDITED PERSON IN ACCORDANCE WITH RMS REQUIREMENTS, FOR ANY WORK ON OR ADJACENT TO PUBLIC ROADS, PLAN TO BE SUBMITTED TO COUNCIL & RMS.

## DRAWING STATUS

### PRELIMINARY

PRELIMINARY DRAWINGS ARE NOT TO BE USED FOR TENDER OR CONSTRUCTION PURPOSES.

### TENDER

TENDER DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES AND ARE INTENDED FOR AN EXTENT OF WORKS. ALL OTHER CONSULTANT DRAWINGS AND CONTRACT DOCUMENTS SHOULD BE READ IN CONJUNCTION WITH THESE DOCUMENTS TO DETERMINE THE FULL EXTENT OF WORKS.

### CONSTRUCTION CERTIFICATE

CONSTRUCTION CERTIFICATE DRAWINGS ARE NOT TO BE USED FOR CONSTRUCTION UNLESS APPROVED & STAMPED BY THE PCA.

### CONSTRUCTION

CONSTRUCTION DRAWINGS CAN BE USED FOR CONSTRUCTION PURPOSES AND/OR FOR THE CREATION OF FABRICATION DRAWINGS.

### AS BUILT

AS-BUILT DRAWINGS ARE PROVIDED BY THE SURVEYOR SHOWN IN RED ON AMENDED JN DRAWINGS. AS-BUILT DRAWINGS MUST CLEARLY STATE THE SURVEYORS COMPANY NAME AND THE NAMES OR INITIALS OF THE INDIVIDUAL AMENDING THE DRAWINGS, ALONG WITH THE DATE.
JN DOES NOT TAKE ANY RESPONSIBILITY FOR THE DETAILS & CONTENT OF THE AS-BUILT DRAWINGS.

## SURVEY

1. JONES NICHOLSON IS NOT RESPONSIBLE FOR THE ACCURACY OF ANY 3RD PARTY INFORMATION PROVIDED ON THIS DRAWING.
2. ALL LEVELS ARE TO A.H.D.
3. ALL CHAINAGES AND LEVELS ARE IN METRES, AND DIMENSIONS IN MILLIMETRES.
4. SET OUT COORDINATES ARE BASED ON SURVEY DRAWINGS PROVIDED FOR THE PURPOSE OF CARRYING OUT THE ENGINEERING DESIGN.
5. CONTRACTOR SHALL VERIFY ALL SET OUT COORDINATES SHOWN ON THE PLANS BY A REGISTERED SURVEYOR
6. CONTRACTORS SHALL ARRANGE FOR THE WORKS TO BE SET OUT BY A REGISTERED SURVEYOR.
7. A REGISTERED SURVEYOR IS TO PROVIDE A WAE SURVEY ON THE JN DESIGN DRAWINGS AT COMPLETION OF WORKS TO ALLOW CERTIFICATION OF AS-BUILTS
8. ANY DISCREPANCIES SHOULD BE CLARIFIED IN WRITING WITH THE ENGINEER PRIOR TO COMMENCEMENT OF THE WORK FOR CONFIRMATION OF THE SURVEY.

## EARTHWORKS

1. PROVIDE PROTECTION BARRIERS TO PROTECTED/SENSITIVE AREAS PRIOR TO ANY BULK EXCAVATION.
2. OVER FULL AREA OF EARTHWORKS, CLEAR VEGETATION, RUBBISH, SLABS ETC. AND STRIP TOP SOIL, AVERAGE 200mm THICK. REMOVE FROM SITE, EXCEPT TOP SOIL FOR RE-USE.
3. CUT AND FILL OVER THE SITE TO LEVELS REQUIRED.
4. PRIOR TO ANY FILLING IN AREAS OF CUT OR IN EXISTING GROUND, PROOF ROLL THE EXPOSED SURFACE. REFER TO PROJECT INFORMATION TABLES FOR MINIMUM ROLLER WEIGHT AND THE MINIMUM NUMBER OF PASSES.
5. EXCAVATE AND REMOVE ANY SOFT SPOTS ENCOUNTERED DURING PROOF ROLLING AND REPLACE WITH APPROVED FILL COMPACTED IN LAYERS. THE WHOLE OF THE EXPOSED SUBGRADE AND FILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%.
6. FOR ON SITE FILLING AREAS, THE CONTRACTOR SHALL TAKE LEVELS OF EXISTING SURFACE AFTER STRIPPING TOPSOIL AND PRIOR TO COMMENCING FILL OPERATIONS.
7. WHERE HARD ROCK IS EXPOSED IN THE EXCAVATED SUB-GRADE, THIS WILL BE INSPECTED AND A DECISION MADE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
8. FILL IN 200mm MAXIMUM (LOOSE THICKNESS) LAYERS TO UNDERSIDE OF BASECOURSE USING THE EXCAVATED MATERIAL AND COMPACTED TO 98% STANDARD (AS 1289 5.1.1), MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2% SHOULD THERE BE INSUFFICIENT MATERIAL FROM SITE EXCAVATIONS, IMPORT AS NECESSARY CLEAN GRANULAR FILL TO THE DESIGN ENGINEERS APPROVAL.
9. COMPACTION TESTING TO BE CARRIED OUT IN ACCORDANCE WITH THE PROJECT INFORMATION TABLE. THE COSTS OF TESTING AND RE-TESTING ARE TO BE ALLOWED FOR BY THE BUILDER.
10. BATTERS TO BE AS SHOWN, OR MAXIMUM 1 VERT : 4 HORIZ. ALL CONDUITS AND MAINS SHALL BE LAID PRIOR TO LAYING FINAL PAVEMENT.
11. ALL BATTERS AND FOOTPATHS ADJACENT TO ROADS SHALL BE TOP SOILED WITH 150mm APPROVED LOAM AND SEEDED UNLESS OTHERWISE SPECIFIED.

## STORMWATER DRAINAGE

1. STORMWATER DRAINAGE SHALL BE GENERALLY IN ACCORDANCE WITH CURRENT AUSTRALIAN STANDARDS AND COUNCIL'S SPECIFICATION.
2. PIPES OF 225mm DIA. AND UNDER SHALL BE UPVC.
3. PIPES OF 300mm DIA. AND LARGER SHALL BE FRC OR CONCRETE CLASS 2 RUBBER RING JOINTED UNO.
4. ALL FRC OR RCP STORMWATER PIPES WITHIN ROAD RESERVE AREAS TO BE CLASS 3 U.N.O. PIPES UNDER VEHICLE LOADS WITH LESS THAN 600mm COVER TO BE CLASS 4 U.N.O.
5. MINIMUM COVER TO PIPES 300mm DIA. AND OVER GENERALLY SHALL BE 600mm IN CARPARK & ROADWAY AREAS UNO.
6. PIPES SHALL GENERALLY BE LAID AT THE GRADES INDICATED ON THE DRAWINGS.
7. PIPES UP TO 150mm DIA SHALL BE LAID AT 1.0% MIN. GRADE U.N.O.
8. PIPES 225mm DIA AND OVER SHALL BE LAID AT 0.5% MIN. GRADE U.N.O.
9. BACKFILL TRENCHES WITH APPROVED FILL COMPACTED IN 200mm LAYERS TO 98% OF STANDARD DENSITY.
10. ANY PIPES OVER 16% GRADE SHALL HAVE CONCRETE BULKHEADS AT ALL JOINTS.
11. PITS SHALL BE AS DETAILED WITH METAL GRATES AT LEVELS INDICATED. ALL PITS DEEPER THAN 1200mm TO HAVE CLIMB IRONS.
12. BUILD INTO UPSTREAM FACE OF ALL PITS A 3.0m SUBSOIL LINE FALLING TO PITS TO MATCH PIT INVERTS.
13. ALL COURTYARD & LANDSCAPED PITS TO BE 450 SQUARE LOAD CLASS A UNLESS NOTED OTHERWISE.
14. ALL DRIVEWAY & OSD PITS TO BE MIN 600 SQUARE LOAD CLASS D UNLESS NOTED OTHERWISE.
15. INSTALL TEMPORARY SEDIMENT BARRIERS TO INLET PITS, TO COUNCIL'S STANDARDS UNTIL SURROUNDING AREAS ARE PAVED OR GRASSED.
16. PITS & DOWNPIPE LOCATIONS AND LEVELS MAY BE VARIED TO SUIT SITE CONDITIONS AFTER CONSULTING THE ENGINEER.
17. DOWNPIPES SHOWN ARE INDICATIVE ONLY, ALL ROOF GUTTERING AND DOWNPIPES TO THE CURRENT AUSTRALIAN STANDARDS.
18. ALL PLANTER BOXES AND BALCONIES TO BE CONNECTED TO THE PROPOSED STORMWATER DRAINAGE LINE.
19. ALL BALCONIES AND COURTYARDS ARE TO BE PROVIDED WITH EMERGENCY OVERFLOWS TO PREVENT STORMWATER ENTERING THE BUILDING IF A BLOCKAGE OCCURS TO THE MAIN DRAINAGE OUTLETS.
20. HAND-EXCAVATE STORMWATER PIPES IN VICINITY OF TREE ROOTS.
21. FOOTPATH CROSSING LEVELS SHOWN ARE TO BE ADJUSTED TO FINAL COUNCIL'S ISSUED LEVELS.
22. GEOTEXTILE FABRIC TO BE PLACED UNDER RIP RAP SCOUR PROTECTION.
23. ALL BASES OF PITS TO BE BENCHED TO HALF PIPE DEPTH AND PROVIDE GALVANISED ANGLE SURROUNDINGS TO GRATE.
24. SUBSOIL LINE PIPES AND FITTINGS SHALL BE PERFORATED PLASTIC TO CURRENT AUSTRALIAN STANDARDS. LAY PIPES ON FLOOR OF TRENCH GRADED AT 1% MIN. AND OVERLAY WITH FILTER MATERIAL EXTENDING TO WITHIN 200mm OF SURFACE. PROVIDE FILTER FABRIC OF PERMEABLE POLYPROPYLENE BETWEEN FILTER MATERIAL AND TOPSOIL
25. SUBSOIL DRAINAGE IS TO BE PLACED ALONG THE UPSLOPE SIDE OF ALL ROAD PAVEMENTS BEHIND THE KERB AND UNDER THE SUBGRADE. THE NEED FOR ADDITIONAL SUB-PAVEMENT DRAINS MAY BECOME APPARENT DURING CONSTRUCTION DUE TO CHANGES IN SITE MOISTURE CONDITIONS OR AREAS OF POOR SUBGRADE NOT IDENTIFIED IN THE GEOTECHNICAL INVESTIGATIONS.
26. SUBSOIL DRAIN CONNECTIONS FROM UNDER KERB LINES, BEHIND RETAINING WALLS OR FROM UNDER IMPERMEABLE AREAS ARE TO CONNECT TO RECEIVING STORMWATER NETWORK WITH NON-PERFORATED PIPES.
27. SHOULD THE CONTRACTOR ELECT TO INSTALL PRECAST STORMWATER PITS AND THEY ARE PERMITTED BY COUNCIL AND THE CLIENT, THE PRECAST PITS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH RMS STANDARDS INCLUDING:
    1. SEAL THE SEGMENTS TOGETHER USING A SITE-APPROVED NON-SHRINK GROUT OR MASTIC-TYPE PRODUCT. APPLY THE SEALANT IN ACCORDANCE WITH THE PRODUCT MANUFACTURER'S REQUIREMENTS.
    2. ENSURE THAT NO GAPS REMAIN AND THAT A SMOOTH FACE EXISTS BETWEEN MULTIPLE UNITS.
    3. LEAVE THE SEGMENTS UNDISTURBED UNTIL THE PERIOD OF CURING IS COMPLETED IN ACCORDANCE WITH THE GROUT OR SEALANT PRODUCT MANUFACTURER'S REQUIREMENTS.

## STORMWATER DRAINAGE INSTALLATION

1. SUPPLY & INSTALLATION OF DRAINAGE WORKS TO BE IN ACCORDANCEWITH THESE DRAWINGS, THE COUNCIL SPECIFICATION AND THE CURRENT APPLICABLE AUSTRALIAN STANDARDS.
2. BEDDING OF THE PIPELINES IS TO BE TYPE 'HS2' IN ACCORDANCE WITH THE STANDARDS AND AS FOLLOWS:
    a. COMPACTED GRANULAR MATERIAL IS TO COMPLY WITH THE FOLLOWING GRADINGS:

| SIEVE SIZE (mm) | 19 | 2.36 | 0.60 | 0.30 | 0.15 | 0.075 |
|---|---|---|---|---|---|---|
| % MASS PASSING | 100 | 50-100 | 20-90 | 10-60 | 0-25 | 0-10 |

- AND THE MATERIAL PASSING THE 0.075 SIEVE HAVING LOW PLASTICITY AS DESCRIBED IN APPENDIX D OF AS1726.

    b. BEDDING DEPTH UNDER THE PIPE TO BE 100mm.
    c. BEDDING MATERIAL TO BE EXTENDED FROM THE TOP OF THE BEDDING ZONE UP TO 0.3 TIMES PIPE OUTSIDE DIAMETER. THIS REPRESENTS THE 'HAUNCH ZONE.'
    d. THE BEDDING & HAUNCH ZONE MATERIAL IS TO BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF
        98% WITHIN ROAD RESERVES AND TRAFFICABLE AREAS AND
        95% ELSEWHERE FOR COHESIVE MATERIAL OR A MINIMUM DENSITY INDEX OF 70% IN ACCORDANCE WITH THE STANDARDS FOR COHESIONLESS MATERIAL.
    e. COMPACTION TESTING SHALL BE CARRIED OUT BY AN APPROVED ORGANISATION WITH A NATA CERTIFIED LABORATORY FOR ALL DRAINAGE LINES LAID WHOLLY OR IN PART UNDER THE KERB & GUTTER OR PAVEMENT.
3. BACKFILL SHALL BE PLACED & COMPACTED IN ACCORDANCE WITH THE SPECIFICATION. A GRANULAR GRAVEL AGGREGATE MATERIAL (<10mm) BACKFILL IS RECOMMENDED FOR THE BEDDING, HAUNCH SUPPORT AND SIDE ZONE DUE TO IT'S SELF COMPACTING ABILITY.
4. A MINIMUM OF 150mm CLEARANCE IS TO BE PROVIDED BETWEEN THE OUTSIDE OF THE PIPE BARREL AND THE TRENCH WALL FOR PIPES < 600 DIA. 200mm CLEARANCE FOR PIPES 600 TO 1200 DIA AND D/6 CLEARANCE FOR PIPES > 1200 DIA.

## EXISTING SERVICES WARNING

1. ANY EXISTING UNDERGROUND SERVICES IN THE THE VICINITY OF WORKS IS TO HAVE DEPTH & LOCATION CONFIRMED BY THE BUILDER PRIOR TO COMMENCEMENT OF CONSTRUCTION WORKS.
2. CONTRACTOR IS TO ALLOW TO LOCATE AND IDENTIFY ANY EXISTING SERVICES ON SITE THAT MAY NOT HAVE BEEN IDENTIED BY THE SERVICES SEARCH. ALLOW TO RELOCATE OR ADJUST THESE AS REQUIRED BY THE AUTHORITY PROVIDERS.

## ENVIRONMENTAL SITE MANAGEMENT

1. EROSION & SEDIMENT CONTROLS TO BE INSTALLED IN ACCORDANCE WITH COUNCIL'S SPECIFICATION & THE NSW DEPARTMENT OF HOUSING "BLUE BOOK" - SOILS AND CONSTRUCTION - MANAGING URBAN STORMWATER, 2004. REFER TO THE BLUE BOOK FOR STANDARD DRAWINGS "SD"
2. SEDIMENT & EROSION CONTROLS MUST BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY EARTHWORKS OR DEMOLITION ACTIVITY. THE LOCATION OF SUCH DEVICES IS INDICATIVE ONLY AND FINAL POSITION SHOULD BE DETERMINED ON SITE.
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT ALL MEASURES ARE TAKEN DURING THE COURSE OF CONSTRUCTION TO PREVENT SEDIMENT EROSION AND POLLUTION OF THE DOWNSTREAM SYSTEM. SUPERVISING ENGINEER SHOULD BE CONTACTED IF IN DOUBT. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED SOIL STOCKPILE SITE.
4. RETAIN ALL EXISTING GRASS COVER WHEREVER POSSIBLE. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE. A SEDIMENT FENCE TO BE PLACED DOWNHILL OF STOCKPILE.
5. AREAS OF SITE REGRADING ARE TO BE COMPLETED PROGRESSIVELY DURING THE WORKS AND STABILISED AS EARLY AS POSSIBLE. THE SUPERVISING ENGINEER MAY DIRECT THE CONTRACTOR TO HAVE AREAS OF DISTURBANCE COMPLETED AND STABILISED DURING THE COURSE OF THE WORKS.
6. ALL DISTURBED AREAS ARE TO BE SEEDED & FERTILISED WITHIN 14 DAYS OF EXPOSURE.
7. ALL EXISTING TREES TO BE RETAINED UNLESS SHOWN OTHERWISE ON APPROVED DRAWINGS. TREES RETAINED ARE TO BE PROTECTED WITH A HIGH VISIBILITY FENCE, PLUS FLAGGING TO INDIVIDUAL TREES AS NECESSARY.
8. INSTALL TEMPORARY SEDIMENT BARRIERS TO ALL INLET PITS LIKELY TO COLLECT SILT LADEN WATER, UNTIL SURROUNDING AREAS ARE PAVED OR REGRASSED. GRAVEL OR GEOTEXTILE INLET FILTERS TO SD6-11 & SD6-12.
9. ALL SILT FENCES & BARRIERS ARE TO BE MAINTAINED IN GOOD ORDER & REGULARLY DESILTED DURING THE CONSTRUCTION PERIOD. SILT FENCES TO SD6-8 OR SD6-9.
10. STOCKPILES OF LOOSE MATERIALS SUCH AS SAND, SOIL, GRAVEL MUST BE COVERED WITH GEOTEXTILE SILT FENCE MATERIAL. PLASTIC SHEETING OR MEMBRANE MUST NOT BE USED. SAFETY BARRICADING SHOULD BE USED TO ISOLATE STOCKPILES OF SOLID MATERIALS SUCH AS STEEL REINFORCING, FORMWORK AND SCAFFOLDING.
11. WASTE MATERIALS ARE TO BE STOCKPILED OR LOADED INTO SKIP-BINS LOCATED ON SITE AS SHOWN ON PLAN.
12. NO MORE THAN 150m OF TRENCHING TO BE OPEN AT ANY ONE TIME. IMMEDIATELY AFTER TRENCH BACKFILLING, PROVIDE SANDBAGS OR SAUSAGE FILTERS ACROSS EACH TRENCH AT MAXIMUM 20m SPACINGS. FILTERS TO REMAIN IN PLACE UNTIL REVEGETATION HAS OCCURRED.
13. ALL VEHICLES LEAVING THE SITE MUST PASS OVER THE STABILISED SITE ACCESS BALLAST AREA (SIMILAR TO SD6-14) TO SHAKE OFF SITE CLAY AND SOIL. IF NECESSARY WHEELS AND AXLES ARE TO BE HOSED DOWN. BALLAST IS TO BE MAINTAINED & REPLACED AS NECESSARY DURING THE CONSTRUCTION PERIOD.
14. THE HEAD CONTRACTOR IS TO INFORM ALL SITE STAFF AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
15. ANY SEDIMENT DEPOSITED ON THE PUBLIC WAY, INCLUDING FOOTPATH RESERVE AND ROAD SURFACE, IS TO BE REMOVED IMMEDIATELY.
16. PROVIDE BARRIERS AROUND ALL CONSTRUCTION WORKS WITHIN THE FOOTPATH AREA TO PROVIDE SAFE ACCESS FOR PEDESTRIANS.
17. CONCRETE PUMPS AND CRANES ARE TO OPERATE FROM WITHIN THE BALLAST ENTRY DRIVEWAY AREA AND ARE NOT TO OPERATE FROM THE PUBLIC ROADWAY UNLESS SPECIFIC COUNCIL PERMISSION IS OBTAINED.
18. TRUCKS REMOVING EXCAVATED / DEMOLISHED MATERIAL SHOULD TRAVEL ON STABILISED CONSTRUCTION PATHS. MATERIAL TO BE TAKEN TO THE TRUCK TO REDUCE TRUCK MOVEMENT ON SITE. TRUCKS TO BE LIMITED TO SINGLE UNIT HEAVY RIGID VEHICLES. ( NO SEMITRAILERS )
19. ANY EXCAVATION WORK ADJACENT TO ADJOINING PROPERTIES OR THE PUBLIC ROADWAY IS NOT TO BE COMMENCED UNTIL THE STRUCTURAL ENGINEER IS CONSULTED AND SPECIFIC INSTRUCTIONS RECEIVED FROM THE ENGINEER.
20. TOILET FACILITIES MUST BE EITHER A FLUSHING TYPE OR APPROVED PORTABLE CHEMICAL CLOSET. CHEMICAL CLOSETS ARE TO BE MAINTAINED & SERVICED ON A REGULAR BASIS SO THAT OFFENSIVE ODOUR IS NOT EMITTED.
21. DURING TRENCH EXCAVATION ALL SPOIL SHALL BE MOUNDED ON THE UPHILL SIDE OF TRENCHES AND PLACEMENT IS TO COMPLY WITH THE SUPERINTENDENTS REQUIREMENT.
22. DIVERSION BANKS SHOULD BE CONSTRUCTED BY MOUNDING STRIPPED TOPSOIL (MIN HEIGHT 600mm) WHERE DIRECTED. MATERIAL TO BE RESPREAD ON FOOTWAYS AFTER FINAL TRIMMING.
23. UNDISTURBED BUFFER ZONE AREAS ARE CLOSED TO ALL TRAFFIC MOVEMENTS UNLESS OTHERWISE NOTED BY THE SUPERINTENDENT AND ACCESS TO THE SEWER OR C.D.L. TRENCHING WILL BE AS SHOWN, OR HEAVY PENALTIES MAY BE IMPOSED.
24. TRAFFIC MANAGEMENT MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH 'R.T.A. TRAFFIC CONTROL AT WORK SITES - CURRENT EDITION' AND AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.'
25. PEDESTRIAN CONTROL MEASURES ARE REQUIRED TO BE IMPLEMENTED AND MAINTAINED DURING CONSTRUCTION. IN ACCORDANCE WITH AS 1742 'MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

## CIVIL DRAWING LIST

| No. | SHEET NAME |
|---|---|
| C001 | NOTES & LEGEND |
| C020 | EROSION AND SEDIMENT CONTROL PLAN |
| C025 | EROSION AND SEDIMENT CONTROL DETAILS |
| C050 | TYPICAL DETAILS - SHEET 1 |
| C051 | TYPICAL DETAILS - SHEET 2 |
| C052 | OSD DETAILS |
| C053 | OCEAN PROTECT DETAILS |
| C080 | BULK EARTHWORKS PLAN |
| C100 | BASEMENT 6 STORMWATER PLAN |
| C110 | BASEMENT 3-5 TYPICAL STORMWATER PLAN |
| C120 | BASEMENT 2 STORMWATER PLAN |
| C130 | BASEMENT 1 STORMWATER PLAN |
| C140 | BASEMENT 1 MEZZANINE STORMWATER PLAN |
| C200 | GROUND STORMWATER PLAN |

JN
Responsive Engineering

CLIENT
HYECORP

STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
NOTES & LEGEND

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE As indicated
PROJECT MGR SD

N0241372
C001 2

WWW.JN.COM.AU

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |

PROVIDE SITE SHED AND AMENITIES. INDICATIVE LOCATION SHOWN.

PROVIDE TEMPORARY SILT FENCE BARRIER TO LOW SIDE OF RUNOFF AREAS.

SB 58.26

THROUGH SITE LINK

RL 90.22

RL 90.41

RL +90,380

TGSI

RL +91,850

TGSI

RL +90,553

RL +91,850

RETAIL 01
F+B
110 m²
RL +91,850

FHR

FS-04

FS-01

EXH

E

C

F

CPEX

FHR

MAIL ROOM

FCR

R - LF 1

R - LF 2

R - LF 3

RESIDENTIAL LOBBY
62 m²

LOADING BAY
4.5M HEIGHT
CLEARANCE

TEMPORARY WASTE
LOADING AREA

RL 90.64

RL 90.73

SB 37.78

SP

FH

FS-03

FH

EXH

GBC
TRANSFER

SR

WM

HYD

C - LF

BOH

1:4

1:8

RL +91,380

RL +91,630

TRAFFIC SIGNAL

COMMERCIAL LOBBY

FHR

RL 90.91

1 : 20

RETAIL 02
F+B
119 m²
RL +91,850

FBV BOOSTER

CPS

TURNING BAY
4.5M HEIGHT
CLEARANCE

CM

RL 91.19

SB 58.26

TRAFFIC SIGNAL

RL 91.29

35 ARCHER STREET
SINGLE STOREY
RESIDENTIAL BUILDING

RL +91,850

FH +96,300

LR

SP

RETAIL 05
48 m²

FHR

SP

FS-02

FS-05

RL+91,850

SP

BUILDING MANAGER

SUBSTATION +91,850

RL+91,630

RL+91,670

RL +91,670

1 : 20

TRAFFIC SIGNAL

INTERCOM

WAITING BAY

RL 90.10

RL 90.16

PROVIDE TEMPORARY PUMPOUT PIT AT LOCATION OF PROPOSED PUMPOUT PIT ON BASEMENT 6 LEVEL.

RL 90.42

900Ø

1 : 20

RL 90.30

RL 90.54

NEW STREET TREE PROPOSED

PROVIDE FILTER FABRIC SEDIMENT TRAP OR FILTER TUBES (SANDBAGS) AROUND PROPOSED INLET PITS, GRATED DRAINS AND RWO'S/PO'S. TYPICAL.

RL 90.72

SB 37.78

GAS METER/ REGULATOR

PROVIDE TEMPORARY CHAIN WIRE FENCE (HOARDING) ALONG ENTIRE SITE BOUNDARY.

1 : 20

RL 91.05

PROVIDE WASTE BIN AND STOCK PILE. INDICATIVE LOCATION SHOWN.

RL 91.03

SITE ENTRY. PROVIDE TEMPORARY STABILISED CONSTRUCTION ENTRY/EXIT (SHAKER PAD)

RL +91,220

RL 91.22

RL 91.43

# EROSION AND SEDIMENT CONTROL PLAN

SCALE 1 : 100

JN
Responsive Engineering

CLIENT
HYECORP

STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN

DRAWING TITLE
EROSION AND SEDIMENT CONTROL PLAN

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 100 |
| PROJECT MGR | SD |

WWW.JN.COM.AU

N0241372
C020 1

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
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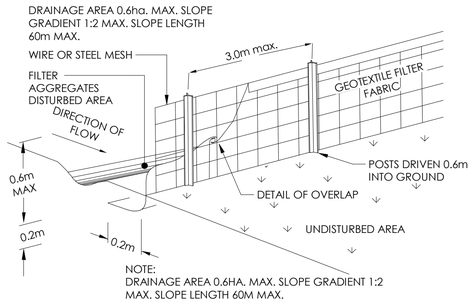
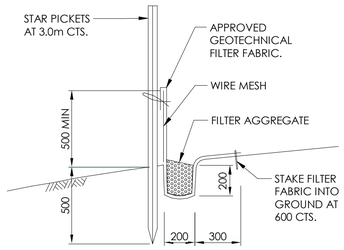


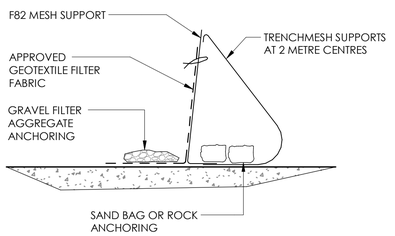

SEDIMENT FENCE

**GENERAL CONSTRUCTION NOTES**
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS IN GROUND 3m APART.
3. DIG A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150m OVERLAP.



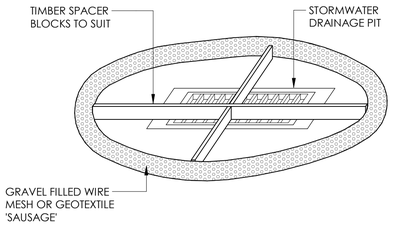

SILT FENCE DETAIL

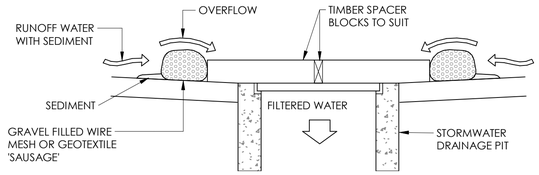
## SEDIMENT SILT FENCE DETAIL




**GENERAL CONSTRUCTION NOTES:**
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
3. JOIN SECTIONS OF FABRIC AT A SUPPORT WITH A 150mm OVERLAP.
4. REFER TO DETAIL SD 6-9 "BLUE BOOK"

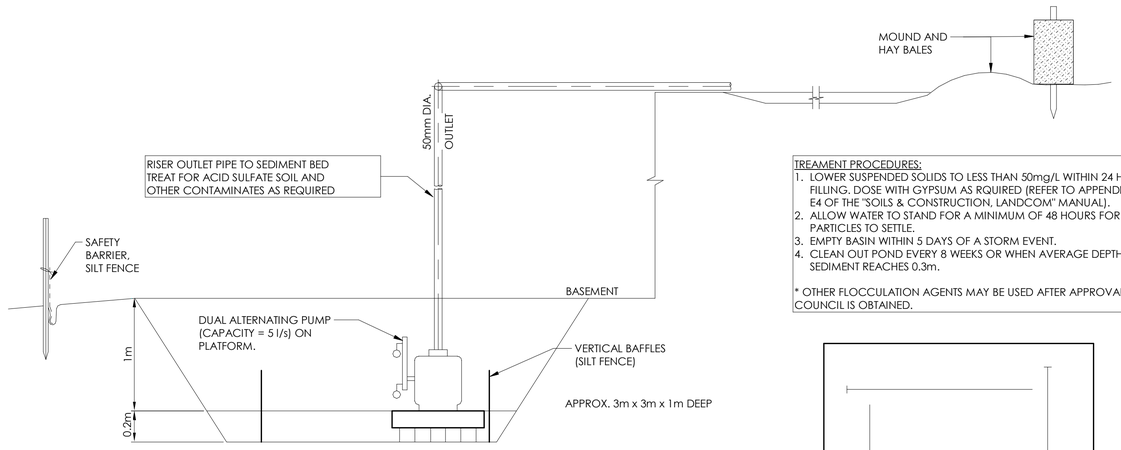
SEDIMENT FENCE - ALTERNATIVE




1. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH ON THE INLET PIT.
2. FILL THE SLEEVE WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. MAINTAIN A CLEAR DISTANCE AWAY FROM THE PIT WITH SPACER BLOCKS.

SAUSAGE BARRIER DETAIL



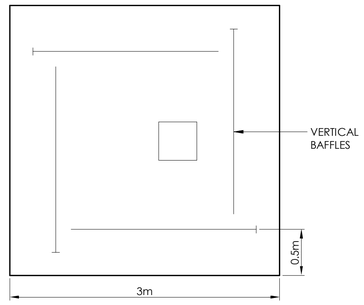

TEMPORARY PUMP OUT SUMP AND SEDIMENTATION POND

(FOR SITE SURFACE RUN OFF)

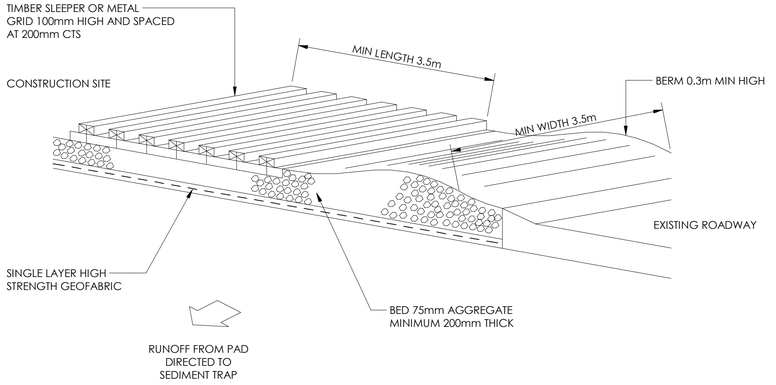
**TREAMENT PROCEDURES:**
1. LOWER SUSPENDED SOLIDS TO LESS THAN 50mg/L WITHIN 24 HOURS OF FILLING. DOSE WITH GYPSUM AS RQUIRED (REFER TO APPENDIX E, SECTION E4 OF THE "SOILS & CONSTRUCTION, LANDCOM" MANUAL).
2. ALLOW WATER TO STAND FOR A MINIMUM OF 48 HOURS FOR FLOCCULATED PARTICLES TO SETTLE.
3. EMPTY BASIN WITHIN 5 DAYS OF A STORM EVENT.
4. CLEAN OUT POND EVERY 8 WEEKS OR WHEN AVERAGE DEPTH OF TRAPPED SEDIMENT REACHES 0.3m.

* OTHER FLOCCULATION AGENTS MAY BE USED AFTER APPROVAL FROM COUNCIL IS OBTAINED.

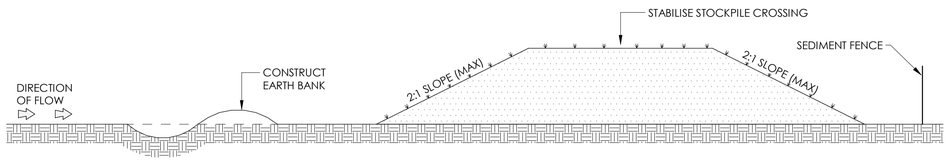
TEMPORARY PUMP OUT PIT




TEMPORARY PUMP OUT - PLAN VIEW




TEMPORARY CONSTRUCTION EXIT DETAIL - SHAKER




STOCKPILES

N.T.S

**GENERAL CONSTRUCTION NOTES:**
1. LOCATE STOCKPILE AT LEAST 5m FROM VEGETATION, CONCENTRATED WATER FLOWS, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS A LOW FLAT ELONGATED MOUND.
3. WHERE THERE IS A SUFFICIENT AREA TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT. (TO ALLOW AIR VENTILATION FOR FUTURE REUSE)
4. REHABILITATE IN ACCORDANCE WITH THE SWMP/ESCP.
5. CONSTRUCT EARTH BANK ON THE UPSLOPE SIDE TO DIVERT RUN OFF AROUND THE STOCKPILE AND A SEDIMENT FENCE 1m TO 2m DOWNSLOPE OF STOCKPILE.

STOCKPILES

Responsive Engineering

CLIENT
HYECORP

STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
EROSION AND SEDIMENT CONTROL DETAILS

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 20 |
| PROJECT MGR | SD |

N0241372

C025 1

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| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 13.02.25 | ISSUE FOR COORDINATION | ER |
| 2 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
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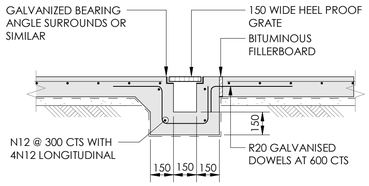
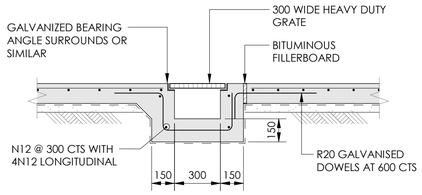


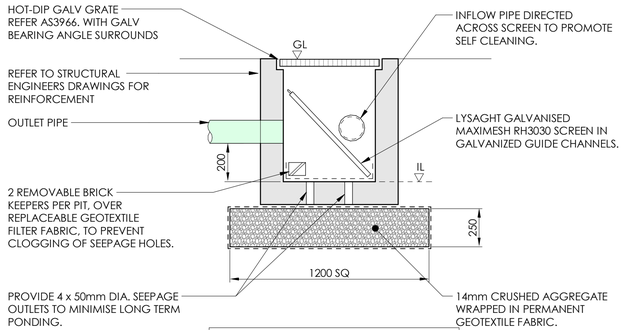

## TYPICAL 150mm GRATED DRAIN DETAIL

NOTE: ALTERNATIVE CONSTRUCTION (I.E. PRECAST / PREFAB) MAY BE USED SUBJECT TO ENGINEERS REVIEW AND APPROVAL



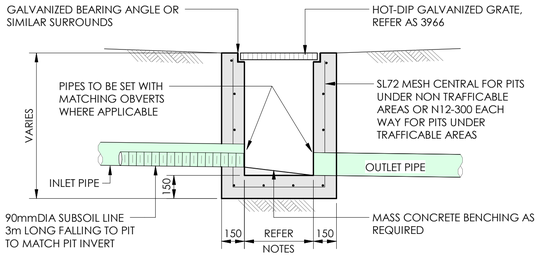

## TYPICAL 300mm GRATED DRAIN DETAIL

NOTE: ALTERNATIVE CONSTRUCTION (I.E. PRECAST / PREFAB) MAY BE USED SUBJECT TO ENGINEERS REVIEW AND APPROVAL




NOTE:
MAINTENANCE OF SILT ARRESTOR PIT IS TO BE CARRIED OUT AT LEAST EVERY SIX MONTHS AND AFTER EVERY SIGNIFICANT STORM EVENT.

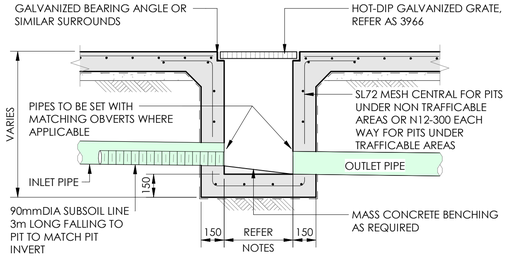
## TYPICAL SILT ARRESTOR PIT




| MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS | | | |
|---|---|---|---|
| DEPTH OF INVERT OF OUTLET | | DEPTH OF INVERT OF OUTLET | |
| | | WIDTH | LENGTH |
| | < 600 | 450 | 450 |
| > 600 | | 600 | 600 |
| > 900 | | 600 | 900 |
| > 1200 | | 900 | 900 |
| *STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1000mm | | | |

NOTE:
1. CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
2. PROVIDE 90Dia x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC. (BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
4. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
5. CONCRETE STRENGTH F'c = 32 MPa

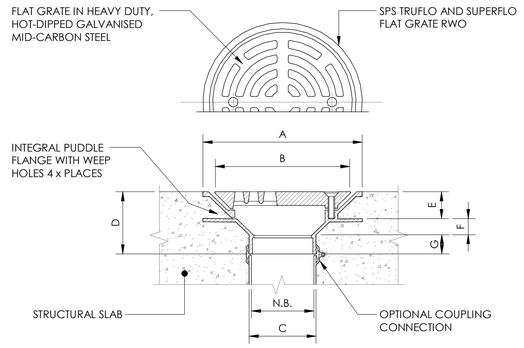
## TYPICAL CONCRETE INLET PIT - NATURAL SURFACE




| MINIMUM INTERNAL DIMENSIONS FOR STORMWATER PITS | | | |
|---|---|---|---|
| DEPTH OF INVERT OF OUTLET | | DEPTH OF INVERT OF OUTLET | |
| | | WIDTH | LENGTH |
| | < 600 | 450 | 450 |
| > 600 | | 600 | 600 |
| > 900 | | 600 | 900 |
| > 1200 | | 900 | 900 |
| *STEP IRONS SHALL BE PROVIDED FOR PITS WITH DEPTHS EXCEEDING 1000mm | | | |

NOTE:
1. CLIMB IRONS SHALL BE PROVIDED UNDER LID AT 300 CTS TO COUNCIL STANDARDS WHERE PIT DEPTH IS DEEPER THAN 1000.
2. PROVIDE 90Dia x 3000 LONG SUBSOIL DRAINAGE STUB PIPE SURROUNDED WITH 100mm THICKNESS OF NOMINAL 20mm COARSE FILTER MATERIAL WRAPPED IN GEOTEXTILE FILTER FABRIC.(BIDUM A24 OR APPROVED SIMILAR). TO BE PARALLEL TO UPSTREAM SIDE OF EACH INLET PIPE.
3. ALTERNATIVE PIT CONSTRUCTION MAY BE USED SUBJECT TO THE ENGINEERS APPROVAL.
4. CONCRETE STRENGTH F'c = 32 MPa

## TYPICAL CONCRETE INLET PIT - CONCRETE SURFACE




| N.B. | A | B | C | D | E | F | G | FLOW RATE * L/S |
|---|---|---|---|---|---|---|---|---|
| 100 | 260 | 200 | 110 | 95 | 44 | 26 | 25 | 8.2 |
| 150 | 260 | 200 | 160 | 80 | 48 | 29 | 28 | 10.2 |
| SUPERFLO** | 400 | 290 | 160 | 143 | 66 | 39 | 38 | 17 |

* BASED ON 50mm HEAD OF WATER ABOVE SURFACE LEVEL. FOR FURTHER DATA REFER TO FLOW CHARTS.

** SUPERFLO AVAILABLE IN 150mm OUTLET ONLY.

**SPECIFICATION CODE:**
- TIA100F (100mm TRUFLO CI BODY, GALVANISED FLAT GRATE).
- TIA150F (150mm TRUFLO CI BODY, GALVANISED FLAT GRATE).
- TIA100/90F2 (150mm SUPERFLO CI BODY, GALVANISED FLAT GRATE).

**SUGGESTED APPLICATIONS:**
- CAR PARK DECKS.
- PLANT ROOMS.
- PEDESTRIAN PRECINCTS.

DETAILS BY SPS DRAINS PTY LTD. FOR REFERENCE ONLY. REFER TO MANUFACTURE INSTALLATION SPECIFICATIONS

## SPS TRUFLO & SUPERFLO FLAT GRATE RWO

JN
Responsive Engineering

CLIENT
HYECORP

STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
TYPICAL DETAILS - SHEET 1

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE As indicated
PROJECT MGR SD
WWW.JN.COM.AU

N0241372
C050 2

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 13.02.25 | ISSUE FOR COORDINATION | ER |
| 2 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
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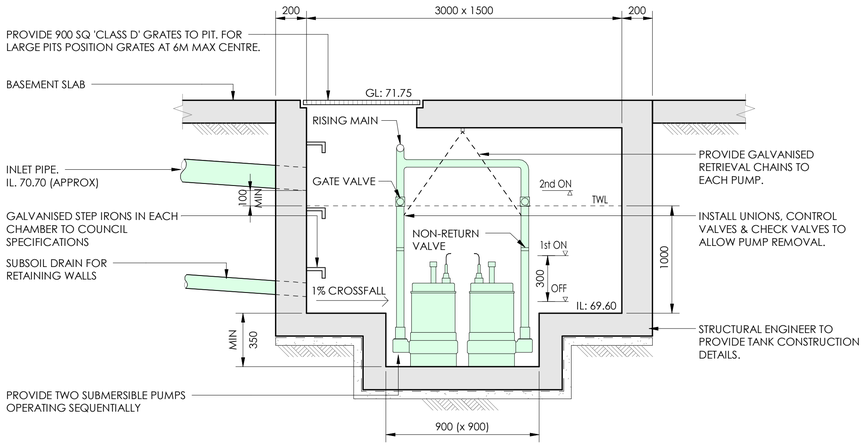



**NOTE:**
THE PUMP OUT SYSTEM SHALL BE DESIGNED TO BE OPERATED IN THE FOLLOWING MANNER:

- THE PUMPS SHALL BE PROGRAMMED TO WORK ALTERNATELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE. PUMPS TO BE DUTY/ASSIST
- A LOW LEVEL FLOAT SHALL BE PROVIDED TO ENSURE THAT THE MINIMUM REQUIRED WATER LEVEL IS MAINTAINED WITHIN THE SUMP AREA OF THE BELOW GROUND TANK. IN THIS REGARD THIS FLOAT WILL FUNCTION AS AN OFF SWITCH FOR THE PUMPS.
- A SECOND FLOAT SHALL BE PROVIDED AT A HIGHER LEVEL, APPROXIMATELY 300mm ABOVE THE MINIMUM WATER LEVEL, WHEREBY ONE OF THE PUMPS WILL OPERATE AND DRAIN THE TANK TO THE LEVEL OF THE LOW LEVEL FLOAT.
- A THIRD FLOAT SHALL BE PROVIDED AT A HIGH LEVEL, WHICH IS APPROXIMATELY THE ROOF LEVEL OF THE BELOW GROUND TANK. THIS FLOAT SHOULD START THE OTHER PUMP THAT IS NOT OPERATING AND ACTIVATE THE ALARM
- AN ALARM SYSTEM SHALL BE PROVIDED WITH A FLASHING STROBE LIGHT AND A PUMP FAILURE WARNING SIGN WHICH ARE TO BE LOCATED AT THE DRIVEWAY ENTRANCE TO THE BASEMENT LEVEL. THE ALARM SYSTEM SHALL BE PROVIDED WITH A BATTERY BACK-UP IN CASE OF POWER FAILURE.
- CONTRACTOR IS TO CONFIRM PUMP ELECTRICAL LOAD AND CONNECTION WITH ELECTRICAL CONTRACTOR AT THE BEGINNING OF THE PROJECT.
- PUMPS AND RISING MAIN TO BE SPECIFIED BY HYDRAULIC ENGINEER OR PLUMBER TO MEET MINIMUM FLOW REQUIREMENTS AS SPECIFIED BY CIVIL ENGINEER

**PUMP OUT CALCULATIONS**

**DRIVEWAY/EXPOSED AREA**
AREA OF EXPOSED PLANTER BOX DRAINING TO BASEMENT = 60m²
REQUIRED VOLUME: 3.5m³
QPEAK: 100 YR, 5 MIN = 4.8 L/s

**SUBSOIL CALCULATIONS**

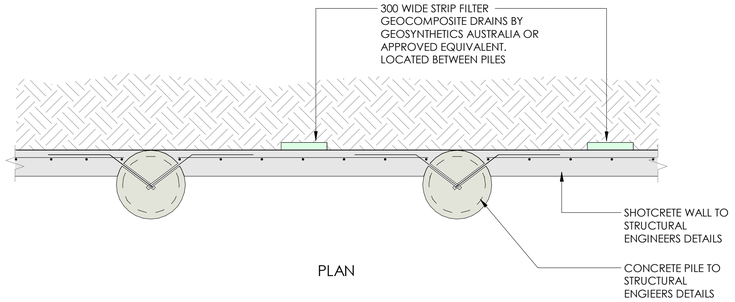
ASSUME SOIL IS SATURATED TO GROUND LEVEL AND INFLOWS CAN BE APPROXIMATED BY SUB-SOIL FLOW NET:
Q= 2/3 x K x H (m3/s PER M OF SUBSOIL LINE)
ASSUMED SUBSOIL INFILTRATION, K = 7.5 x 10^-8 (refer Geotech Report)
H= HEIGHT = 20m, LENGTH OF SUBSOIL = 180m
Q= 2/3 x 1x10^ -5 X (180x20) = >1 L/S

**COMBINED**

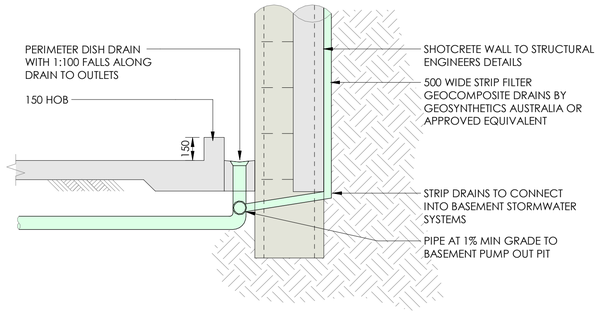
THEREFORE SUGGESTED PUMP CAPACITY
=1.1 x (4.8 + 1) = 6.4L/s
NOTE: AS3500 STATES MIN PUMP CAPACITY TO BE 10L/s
THEREFORE ADOPTED CAPACITY TO BE 10L/s. PUMP DESIGN TO BE COORDINATED WITH HYDRAULIC ENGINEER AT DETAILED DESIGN PHASE

NOTE:
1. CONTRACTOR TO VERIFY SUBSOIL INFILTRATION RATES VIA GEOTECHNICAL ENGINEERS TESTING, PRIOR TO CONSTRUCTION AND POST EXCAVATION. SUPERVISING ENGINEER TO VERIFY CHANGES IF INFILTRATION RATES DIFFER SIGNIFICANTLY FROM ASSUMED VALUES.
2. PUMP CAPACITY TO BE COORDINATED WITH ANY HYDRANT TEST PIT DRAINAGE REQUIREMENTS, IF REQUIRED

BASEMENT PUMPOUT TANK DETAIL




PLAN




SECTION

TYPICAL BASEMENT DRAINAGE DETAIL

**NOTE:** DETAIL IS INDICATIVE ONLY. TO BE DEVELOPED DURING DETAILED DESIGN WITH STRUCTURAL ENGINEER AND ARCHITECT

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STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
TYPICAL DETAILS - SHEET 2

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 20 |
| PROJECT MGR | SD |

N0241372
C051 2

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| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 13.02.25 | ISSUE FOR COORDINATION | ER |
| 2 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
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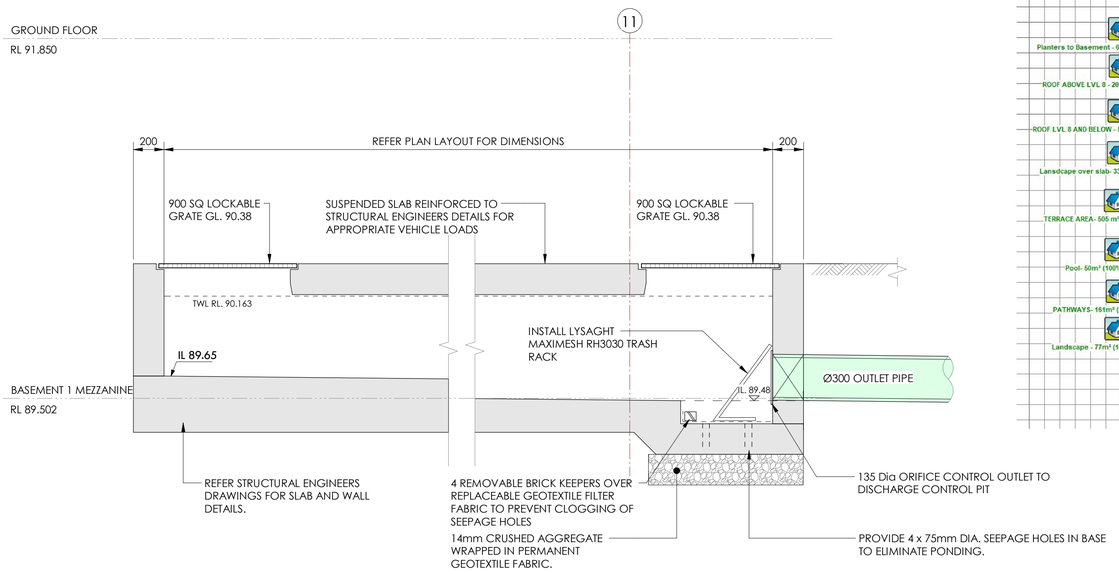
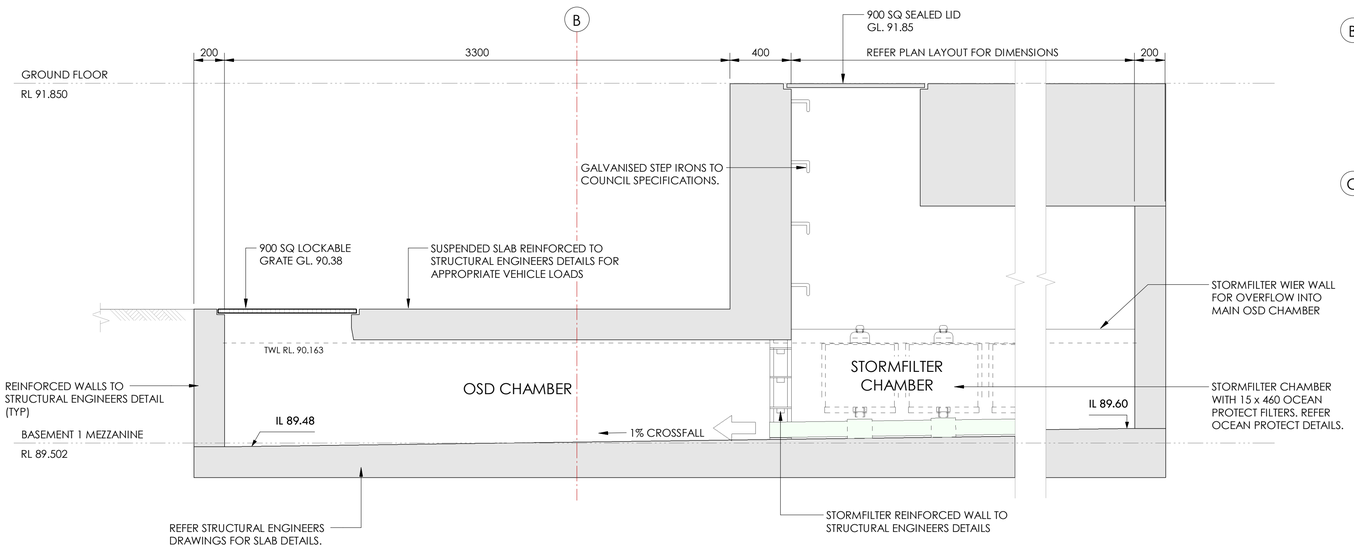


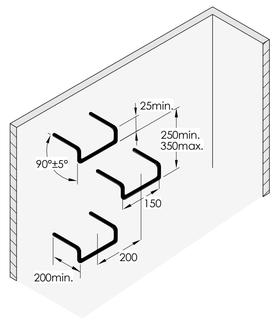

NOTE: CONTRACTOR IS TO VERIFY THE LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION FOR DRAINAGE.

## SECTION 1 / C052
SCALE 1 : 20

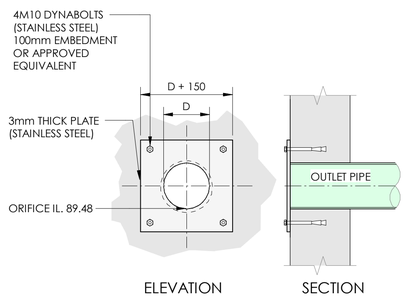



NOTE: CONTRACTOR IS TO VERIFY THE LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT OF EXCAVATION FOR DRAINAGE.

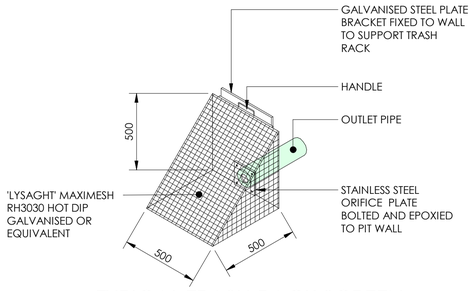
## SECTION 2 / C052
SCALE 1 : 20



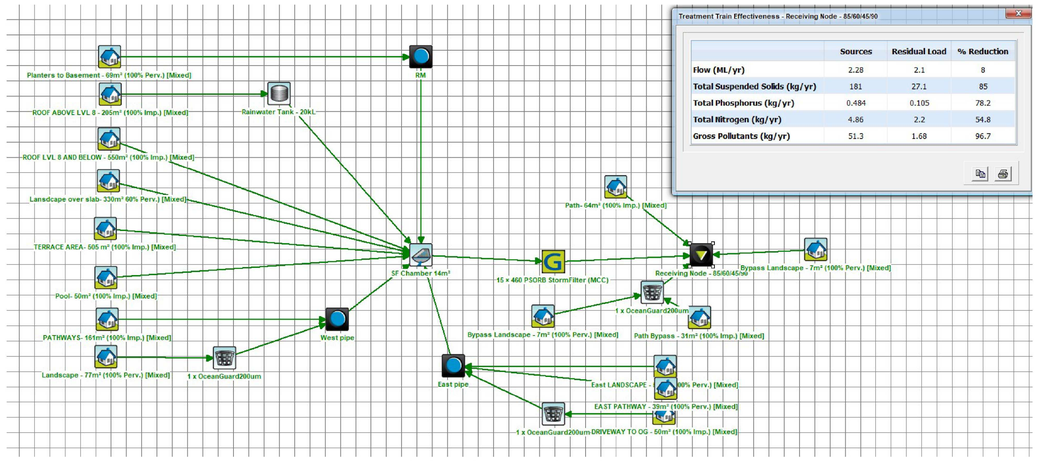

STEP IRON DETAIL



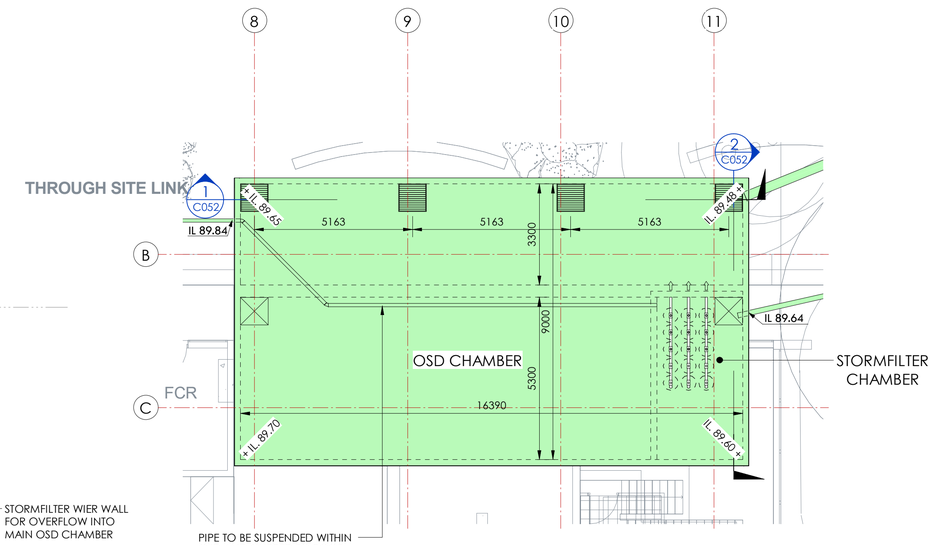

TYPICAL ORIFICE PLATE DETAIL




TYPICAL TRASH RACK SCREEN DETAIL




MUSIC MODEL RESULTS




## OSD PLAN LAYOUT
SCALE 1 : 100

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CLIENT
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STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
OSD DETAILS

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE As indicated
PROJECT MGR SD
WWW.JN.COM.AU

N0241372
C052 2

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
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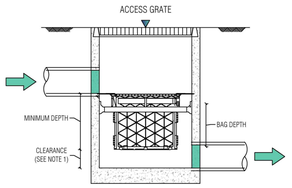
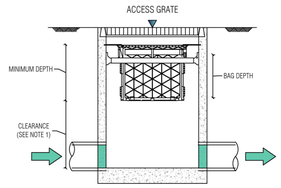
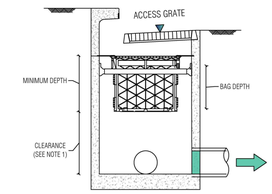


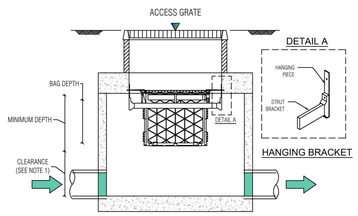

PIPE FLOW CONFIGURATION




SURFACE FLOW CONFIGURATION

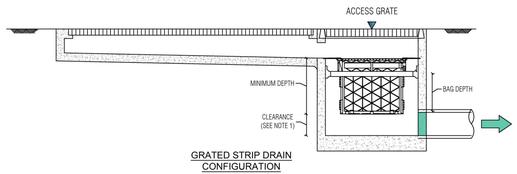



SURFACE FLOW CONFIGURATION




SURFACE FLOW CONFIGURATION

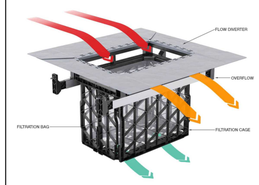
HANGING BRACKET




GRATED STRIP DRAIN CONFIGURATION

## OCEANGUARD

| PRODUCT ID | MAX. PIT DIMENSIONS (mm × mm) | MINIMUM DEPTH (mm) | BAG DEPTH (mm) |
|---|---|---|---|
| OG4 | 450 × 450 | 350 | 200 |
| OG6-S | 600 × 600 | 350 | 200 |
| OG6-D | 600 × 600 | 475 | 300 |
| OG9-S | 600 × 900 | 400 | 300 |
| OG9-S | 900 × 900 | 400 | 300 |
| OG9-D | 900 × 900 | 600 | 500 |
| OG12-S | 1200 × 1200 | 420 | 300 |
| OG12-D | 1200 × 1200 | 600 | 500 |




GENERAL NOTES

1. CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS. THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
2. OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:
   a. 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING
   b. COARSE BAG FOR TARGETING GROSS POLLUTANTS.
3. DRAWINGS NOT TO SCALE.

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PHONE: 1300 354 722 www.oceanprotect.com.au

OCEAN PROTECT
OCEANGUARD
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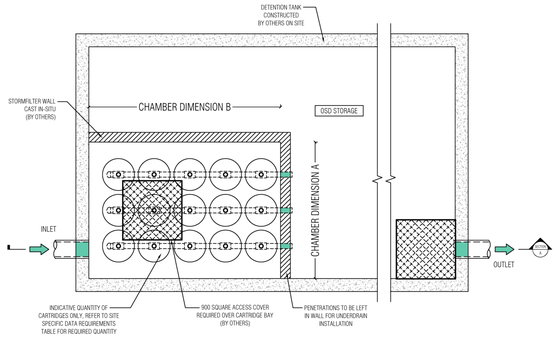
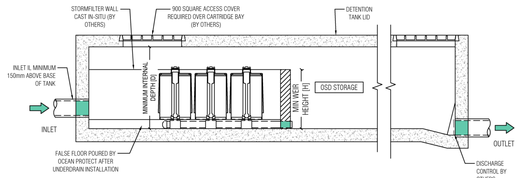
SPECIFICATION DRAWING

NOT FOR CONSTRUCTION




PLAN LAYOUT




SECTION A

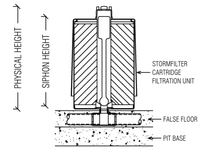
*LAST MODIFIED:* 06.03.2025

## STORMFILTER DESIGN TABLE

- STORMFILTER TREATMENT CAPACITY VARIES BY NUMBER OF FILTER CARTRIDGES INSTALLED.
- THE STANDARD CONFIGURATION IS SHOWN. ACTUAL CONFIGURATION OF THE SPECIFIED STRUCTURE(S) PER CERTIFYING ENGINEER WILL BE SHOWN ON SUBMITTAL DRAWING(S).
- FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF-CLEANING. RADIAL MEDIA DEPTH SHALL BE 178mm.

| CARTRIDGE NAME / SIPHON HEIGHT (mm) | 690 | 460 | 310 |
|---|---|---|---|
| CARTRIDGE PHYSICAL HEIGHT (mm) | 840 | 600 | 600 |
| MINIMUM WEIR HEIGHT* **[H]** (mm) | 910 | 690 | 540 |
| MINIMUM INTERNAL DEPTH* **[D]** (mm) | 1050 | 850 | 850 |
| CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s) | 1.6 | 1.1 | 0.7 |
| CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s) | 0.9 | 0.46 | 0.39 |

** MINIMUM WEIR HEIGHT MAY BE REDUCED IN CERTAIN CIRCUMSTANCES. CONTACT OCEAN PROTECT FOR MORE INFORMATION.*




**STORMFILTER CARTRIDGE DETAIL**

GENERAL NOTES

1. INLET AND OUTLET PIPES TO BE IN ACCORDANCE WITH APPROVED PLANS.
2. A HIGH FLOW BYPASS ARRANGEMENT OR DISSIPATION STRUCTURE MAY BE REQUIRED TO MINIMISE RE-SUSPENSION OF SOLIDS OR ANY SIGNIFICANT INERTIAL FORCES ON THE CARTRIDGES.
3. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE. REFER TO OPERATION AND MAINTENANCE MANUAL FOR GUIDELINES AND ACCESS REQUIREMENTS.
4. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
5. THE INVERT LEVEL OF THE INLET PIPE MUST BE GREATER THAN THE RL OF THE FALSE FLOOR WITHIN THE CARTRIDGE CHAMBER.
6. CONCRETE STRUCTURE AND ACCESS COVERS DESIGNED AND PROVIDED BY OTHERS. ACCESS COVERS TO BE A MINIMUM 900 X 900 ABOVE CARTRIDGES. OH&S REGARDING ACCESS COVERS AND TANK ACCESS TO BE ASSESSED BY OTHERS ON SITE.
7. THE STRUCTURE THICKNESSES SHOWN ARE FOR REPRESENTATIONAL PURPOSES.
8. DRAWINGS NOT TO SCALE.

INSTALLATION NOTES

1. UNDERDRAIN AND FALSE FLOOR INSTALLED BY OCEAN PROTECT.

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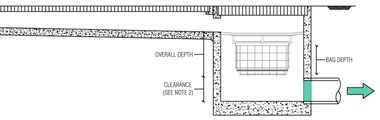
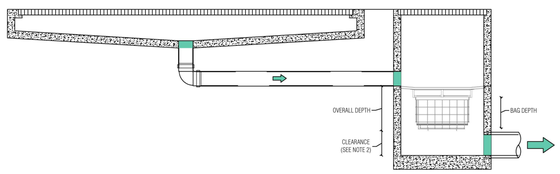
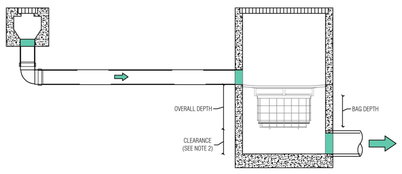
OCEAN PROTECT
STORMFILTER SYSTEM
DETENTION TANK ARRANGEMENT
SPECIFICATION DRAWING




GRATED STRIP DRAIN INTERNAL OCEANGUARD CONFIGURATION




GRATED STRIP DRAIN EXTERNAL OCEANGUARD PIT CONFIGURATION




GRATED STRIP DRAIN EXTERNAL OCEANGUARD PIT CONFIGURATION

*LAST MODIFIED: 04-12-19*

| PLAN ID | MAXIMUM PIT PLAN DIMENSIONS |
|---|---|
| S | 450mm x 450mm |
| M | 600mm x 600mm |
| L | 900mm x 900mm |
| XL | 1200mm x 1200mm |

| DEPTH ID | BAG DEPTH | OVERALL DEPTH |
|---|---|---|
| 1 | 170 | 270 |
| 2 | 300 | 450 |
| 3 | 600 | 700 |

| PLAN ID | DEPTH ID 1 | DEPTH ID 2 | DEPTH ID 3 |
|---|---|---|---|
| S | ■ | | |
| M | ■ | ■ | |
| L | ■ | ■ | ■ |
| XL | ■ | ■ | ■ |


GENERAL NOTES

1. THE MINIMUM CLEARANCE DEPENDS ON THE CONFIGURATION (SEE NOTE 2) AND THE LOCAL COUNCIL REQUIREMENTS.
2. CLEARANCE FOR ANY PIT WITHOUT AN INLET PIPE (ONLY USED FOR SURFACE FLOW) CAN BE AS LOW AS 50mm. FOR OTHER PITS, THE RECOMMENDED CLEARANCE SHOULD BE GREATER OR EQUAL TO THE PIPE OBVERT SO AS NOT TO INHIBIT HYDRAULIC CAPACITY.
3. OCEAN PROTECT PROVIDES TWO FILTRATION BAG TYPES:- 200 MICRON BAGS FOR HIGHER WATER QUALITY FILTERING AND A COARSE BAG FOR TARGETING GROSS POLLUTANTS.
4. DRAWINGS NOT TO SCALE.

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OCEAN PROTECT
OCEANGUARD
GRATED STRIP DRAIN TYPICAL ARRANGEMENTS
SPECIFICATION DRAWING

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HYECORP

STATUS
SSDA LODGEMENT



DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
OCEAN PROTECT DETAILS

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | |
| PROJECT MGR | SD |

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C053 1

BASEMENT 1 MEZZANINE UNDER THROUGH SITE LINK IS SET BACK FROM BOUNDARY. DEEP EXCAVATION IS PROPOSED BELOW THIS LEVEL, WITH SOIL DEPTHS MAINTAINED ABOVE THIS LEVEL TO SUPPORT PLANTING ON GROUND FLOOR. REFER TO ARCHITECTURAL DRAWING PLANS AND SECTIONS FOR FURTHER DETAILS.

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |

## EARTHWORKS LEGEND

| CUT COLOURS | DEPTH OF CUT |
|---|---|
| | GREATER THAN -18.00m |
| | - 18.00m TO - 15.00m |
| | - 15.00m TO - 10.00m |
| | - 10.00m TO - 6.00m |
| | - 6.00m TO - 4.00m |
| | - 4.00m TO - 2.00m |
| | - 2.00m TO - 1.00m |
| | - 1.00m TO - 0.50m |
| | - 0.50m TO - 0.25m |
| | - 0.25m TO - 0.00m |

| FILL COLOURS | DEPTH OF FILL |
|---|---|
| | 0.00m TO 0.10m |
| | 0.10m TO 0.25m |
| | 0.25m TO 0.50m |
| | 0.50m TO 0.75m |
| | 0.75m TO 1.00m |
| | 1.00m TO 1.50m |
| | 1.50m TO 2.00m |
| | 2.00m TO 3.00m |
| | 3.00m TO 5.00m |
| | GREATER THAN 5.00m |

## VOLUMES

CUT VOLUME: -35,298.410m³
FILL VOLUME: 11,641m³
BALANCE: -35,286.769m³

## BULK EARTHWORKS NOTES:

PRELIMINARY BULK EARTHWORKS CUT AND FILL BASED ON FINISHED DESIGN SURFACE.

NO ALLOWANCES HAVE BEEN MADE FOR STRIPPING, BOXING, TRENCHING, BULKING FACTORS ETC.

NO ALLOWANCE FOR STRUCTURAL SLABS/FOOTINGS/LIFT PITS ETC. BULK FIGURES AND HATCHES SHOWN ARE DIFFERENCE BETWEEN EXISTING SURFACE LEVEL AND DESIGN SURFACE LEVEL

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CIVIL DESIGN R24

DRAWING TITLE
BULK EARTHWORKS PLAN

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE As indicated
PROJECT MGR SD
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C080 1

# GROUND FLOOR BULK EARTHWORKS PLAN
SCALE 1 : 100

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
| 1 | 13.02.25 | ISSUE FOR COORDINATION | ER |
| 2 | 07.03.25 | ISSUE FOR SSDA LODGEMENT | ER |
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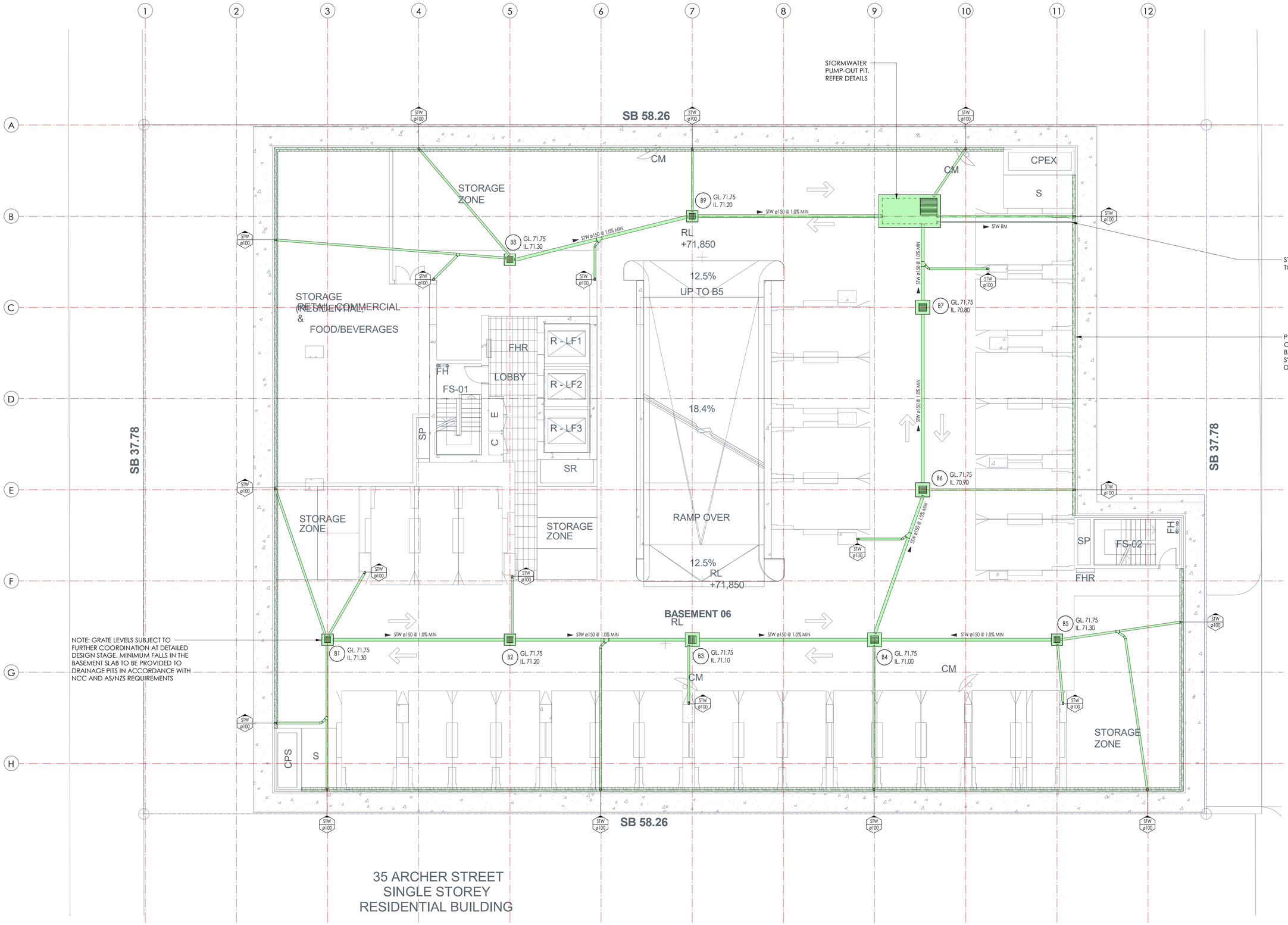


35 ARCHER STREET
SINGLE STOREY
RESIDENTIAL BUILDING

BASEMENT 6 STORMWATER PLAN
SCALE 1 : 100

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DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
BASEMENT 6 STORMWATER PLAN

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
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PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE 1 : 100
PROJECT MGR SD
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C100 2

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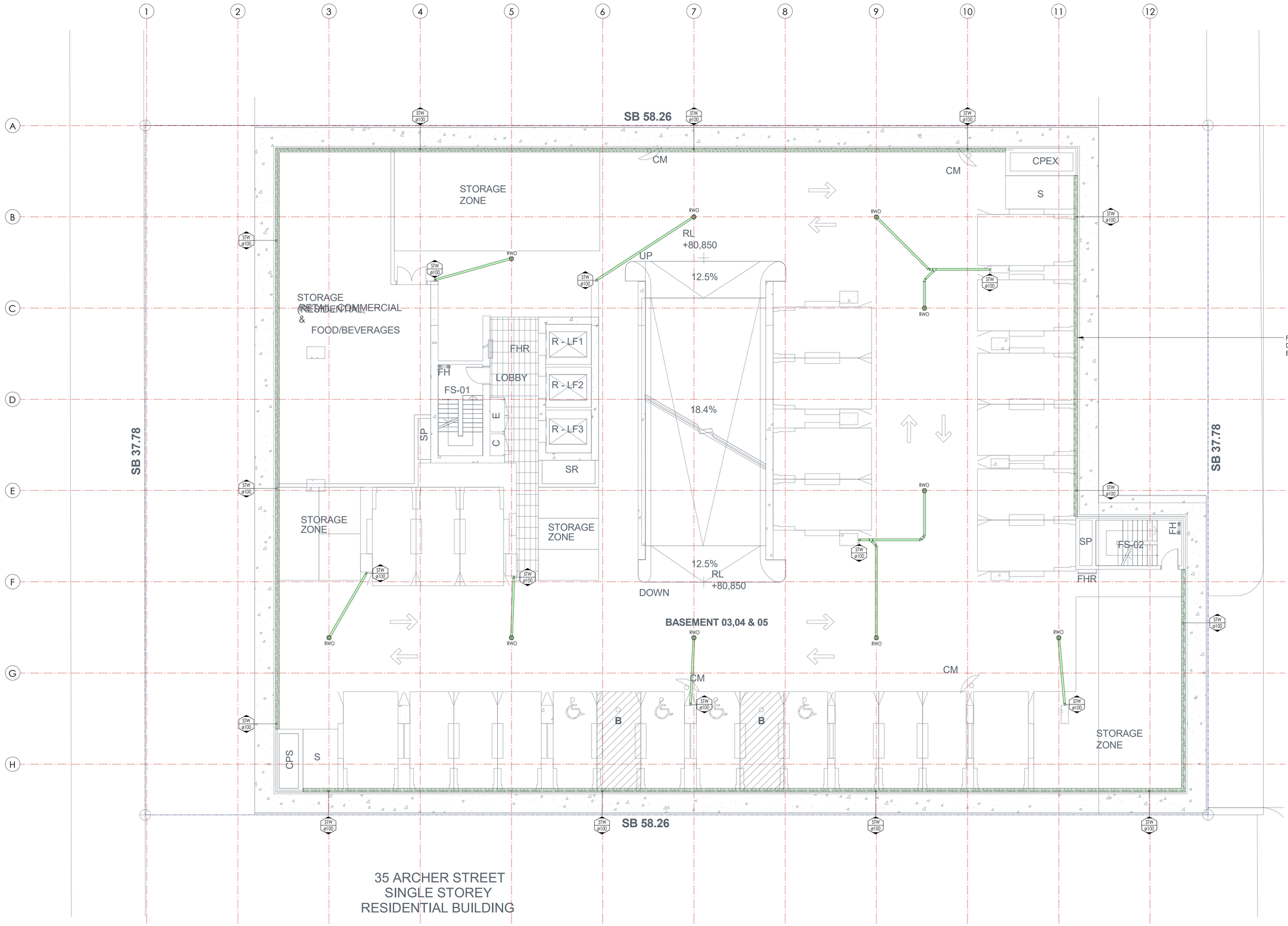


35 ARCHER STREET
SINGLE STOREY
RESIDENTIAL BUILDING

BASEMENT 3-5 TYPICAL STORMWATER PLAN
SCALE 1 : 100

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DISCIPLINE
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DRAWING TITLE
BASEMENT 3-5 TYPICAL STORMWATER PLAN

PROJECT
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ADDRESS
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PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE 1 : 100
PROJECT MGR SD
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C110 2

| No | DATE | DESCRIPTION | BY |
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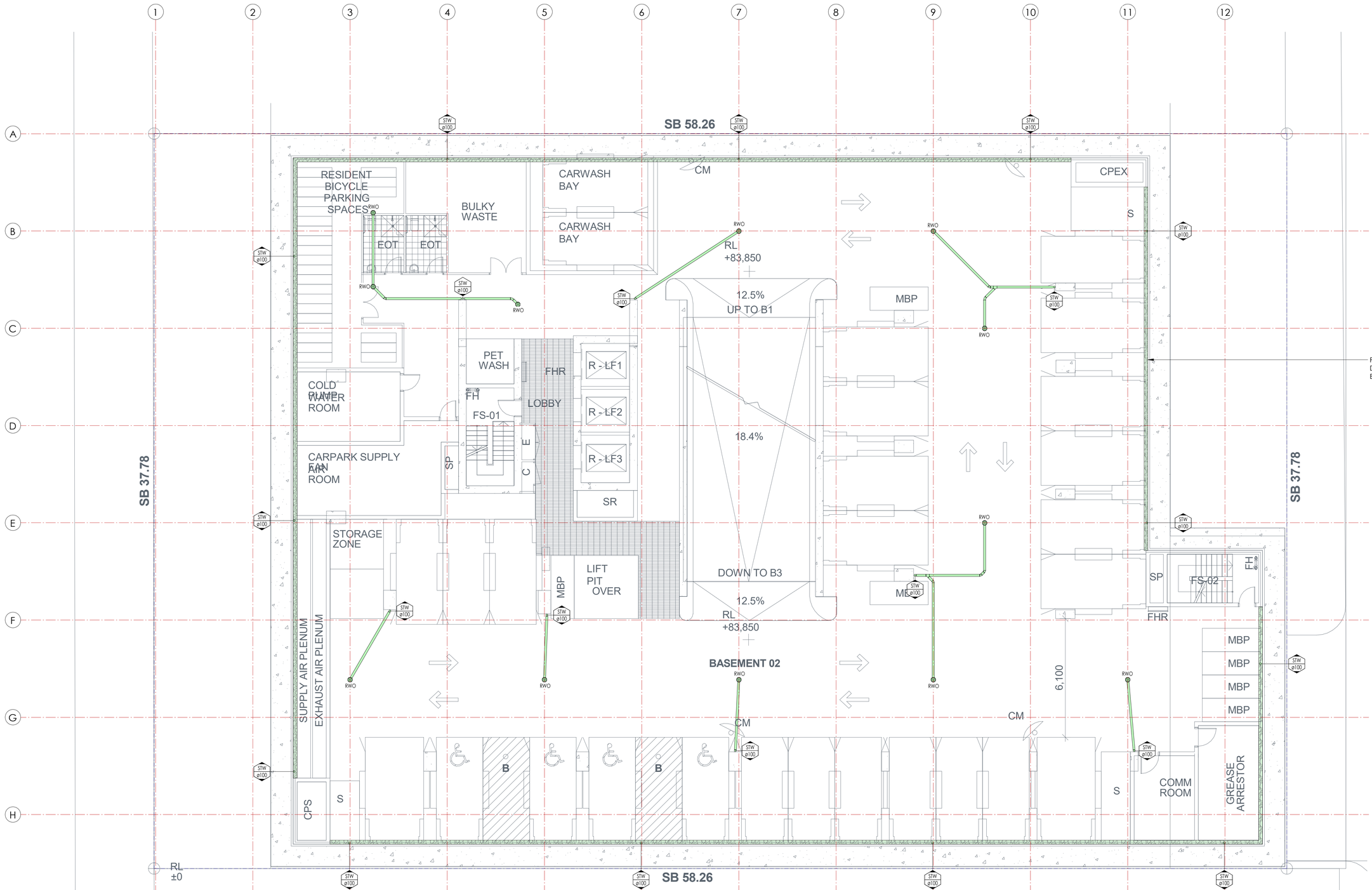


PERIMETER DISH DRAIN WITH DP'S DROPPING TO BASEMENT BELOW. TYPICAL.

35 ARCHER STREET
SINGLE STOREY
RESIDENTIAL BUILDING

BASEMENT 2 STORMWATER PLAN
SCALE 1 : 100

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DISCIPLINE
CIVIL DESIGN R24

DRAWING TITLE
BASEMENT 2 STORMWATER PLAN

PROJECT
RESIDENTIAL DEVELOPMENT

ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 100 |
| PROJECT MGR | SD |

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C120 2

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
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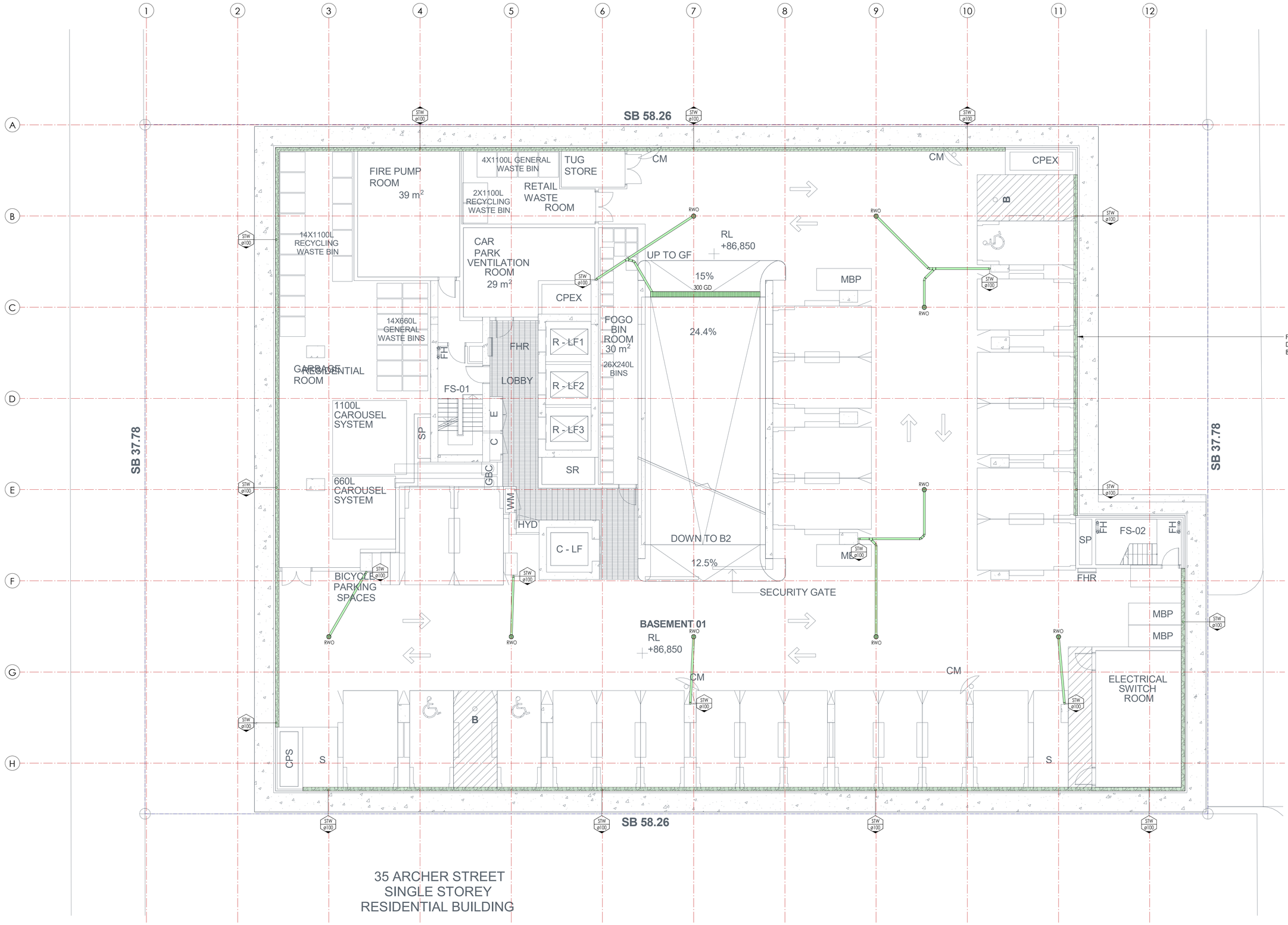


35 ARCHER STREET
SINGLE STOREY
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BASEMENT 1 STORMWATER PLAN

SCALE 1 : 100

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DRAWING TITLE
BASEMENT 1 STORMWATER PLAN

PROJECT
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ADDRESS
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PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 100 |
| PROJECT MGR | SD |

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C130 2

| No | DATE | DESCRIPTION | BY |
|---|---|---|---|
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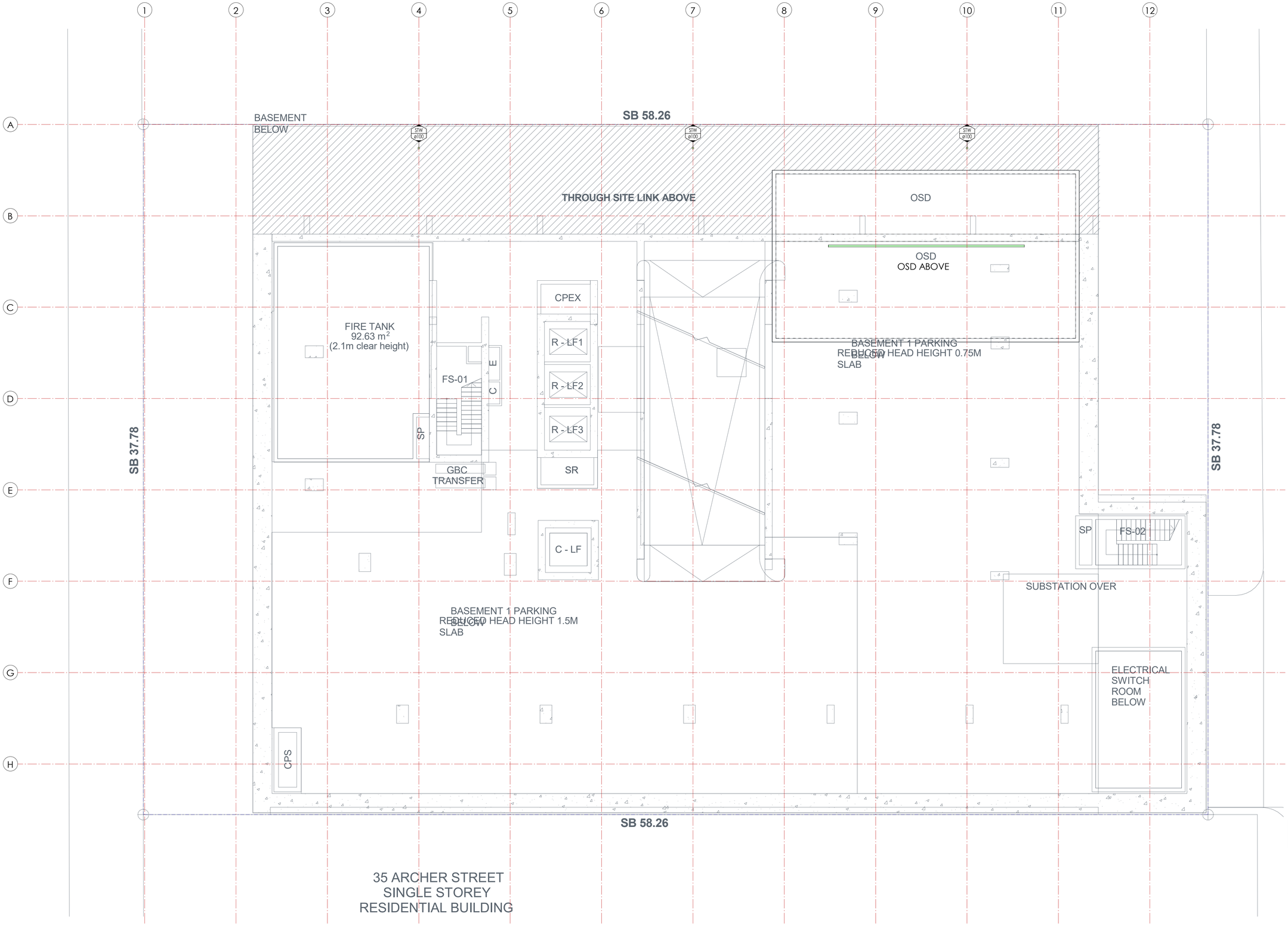


BASEMENT 1 MEZZANINE STORMWATER PLAN

SCALE 1 : 100

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DRAWING TITLE
BASEMENT 1 MEZZANINE
STORMWATER PLAN

PROJECT
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ADDRESS
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PROJECT DETAILS

| | |
|---|---|
| DESIGN | SD |
| DRAWN | ER |
| START DATE | FEB 25 |
| DRG SIZE | A1 |
| SCALE | 1 : 100 |
| PROJECT MGR | SD |

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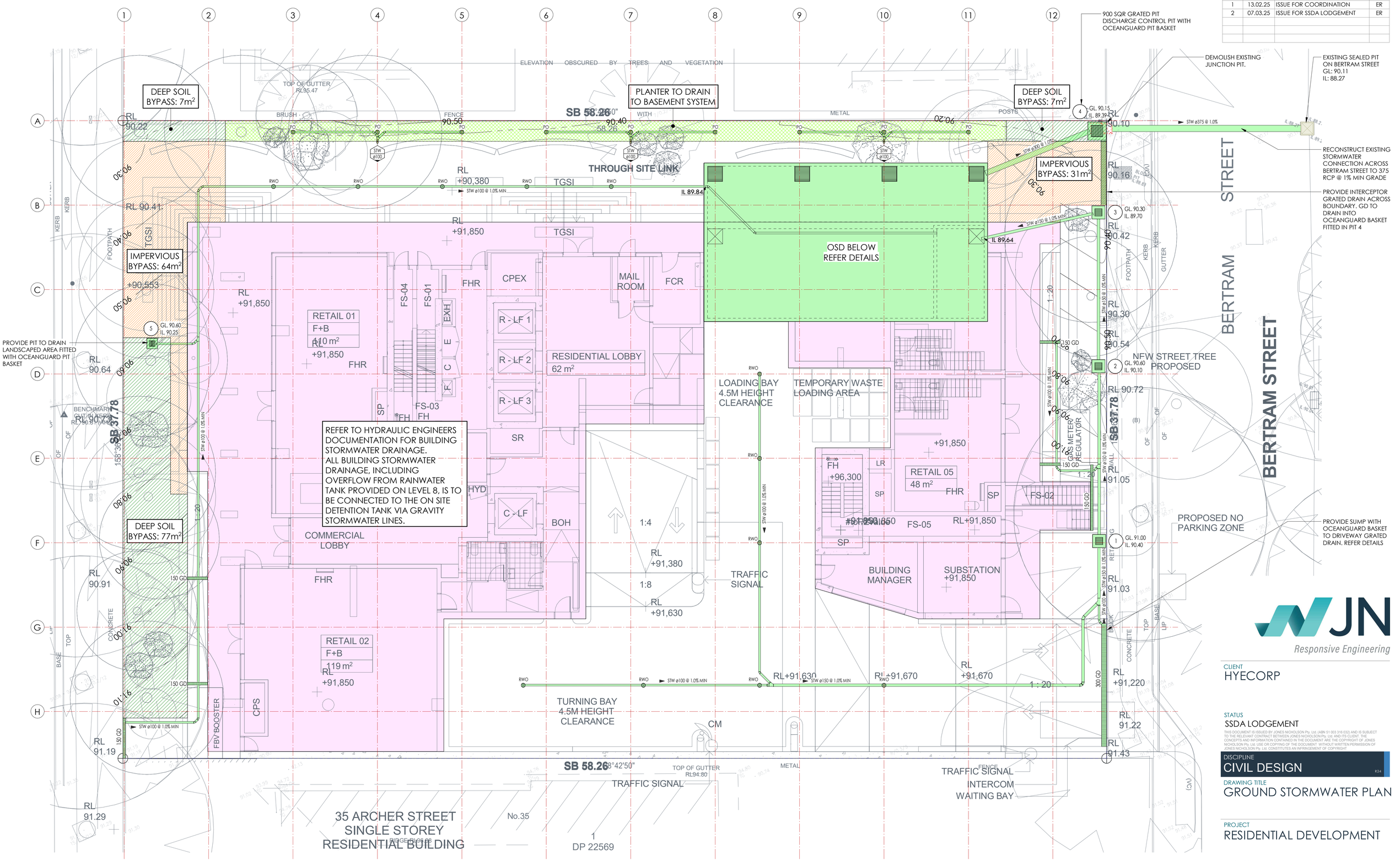


GROUND FLOOR STORMWATER PLAN
SCALE 1 : 100

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DRAWING TITLE
GROUND STORMWATER PLAN

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ADDRESS
37 ARCHER ST CHATSWOOD NSW 2067

PROJECT DETAILS
DESIGN SD
DRAWN ER
START DATE FEB 25
DRG SIZE A1
SCALE 1 : 100
PROJECT MGR SD
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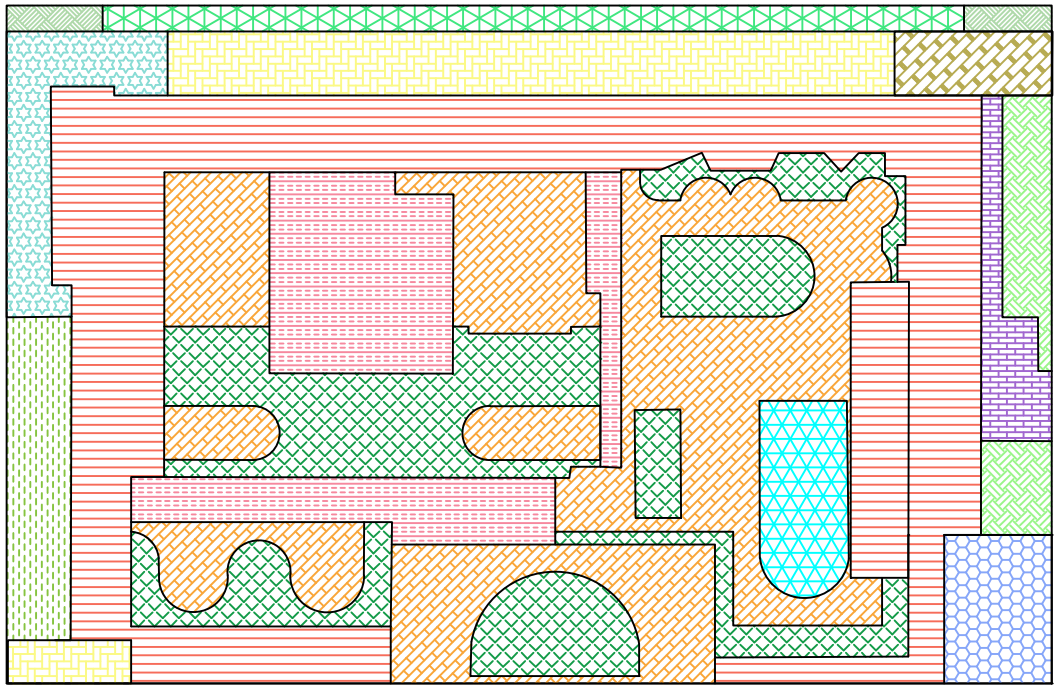
# Appendix B – Water Quality Catchment Plan

# WSUD SITE AREA BREAK-UP

*37 Archer Street Chatswood*

March 3, 2025



**CATCHMENT 1 (EAST PIPE):**

EAST PATHWAYS: 39m²
*100% IMPERVIOUS*

EAST LANDSCAPE: 57m²
*100% IMPERVIOUS*

DRIVEWAY TO OG: 50m²
*100% IMPERVIOUS*

**CATCHMENT 2 (WEST PIPE):**

PATHWAYS TO OSD: 161m²
*100% IMPERVIOUS*

LANDSCAPE TO OG: 77m²
*100% IMPERVIOUS*

PLANTERS TO BASEMENT: 69m²
*100% IMPERVIOUS*

**CATCHMENT 3 (UPPER LEVELS):**

ROOFS ABOVE LEVEL 8 TO RWT: 205m²
*100% IMPERVIOUS*

ROOFS LEVEL 8 AND BELOW TO OSD: 550m²
*100% IMPERVIOUS*

LANDSCAPE OVER SLAB: 330m²
*60% IMPERVIOUS*

TRAFFICABLE TERRACE: 505m²
*100% IMPERVIOUS*

POOL: 50m²
*100% IMPERVIOUS*

**BYPASS :**

LANDSCAPE BYPASS: 7 m²
*100% PERVIOUS*

PATH BYPASS OSD THROUGH OG: 31M2
*100% IMPERVIOUS*

PATH BYPASS: 64M2
*100% IMPERVIOUS*

TOTAL AREA: 2202m²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