

# EI Consulting Engineers

## Water Management Report

**S10518 – 215, 229-239 Pitt St, Merrylands NSW 2160**

09 OCTOBER 2025



Prepared For:  
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## Table of Contents

1.	INTRODUCTION .....	5
1.1	CERTIFICATION .....	5
1.2	RELATED REPORT & DOCUMENTS .....	6
1.3	SITE DESCRIPTION.....	7
1.4	SITE TOPOGRAPHY.....	7
1.5	PROPOSED DEVELOPMENT.....	8
2.	EROSION & SEDIMENT CONTROL.....	10
2.1	SEDIMENT & EROSION CONTROL MEASURES .....	10
3.	STORMWATER QUANTITY MANAGEMENT .....	11
3.1	WATER QUANTITY MANAGEMENT OBJECTIVES.....	11
3.2	WATER QUANTITY MANAGEMENT SCHEME .....	11
3.2.1	ON-SITE DETENTION (OSD) .....	11
3.2.2	ON-SITE RETENTION (OSR) – RAINWATER TANK.....	12
4.	STORMWATER QUALITY MANAGEMENT .....	13
4.1	WATER QUALITY MANAGEMENT OBJECTIVES .....	13
4.2	WATER QUALITY TREATMENT SCHEME.....	13
4.2.1	GROSS POLLUTANT TRAP (GPT) .....	13
4.2.2	STORMWATER QUALITY IMPROVEMENT DEVICE (SQID).....	13
4.3	WATER QUALITY POLLUTANT MODELLING .....	14
4.3.1	SUB-CATCHMENT SUMMARY.....	14
4.3.2	PROPOSED TREATMENT NETWORK .....	14
4.3.3	MUSIC MODELLING RESULTS .....	15
4.3.4	SQID MAINTENANCE PLAN.....	15
5.	FLOOD ASSESSMENT .....	16
6.	WATER & WASTEWATER DEMAND .....	17
6.1	POTABLE WATER AND SEWER CONNECTIONS .....	17
6.2	POTABLE WATER DEMAND AND SEWER DEMAND .....	17
6.3	FIRE WATER DEMAND .....	18
	APPENDIX A – CIVIL ENGINEERING DRAWINGS .....	19
	APPENDIX B – FORM B1 DRAINAGE DESIGN SUMMARY .....	20
	DISCLAIMERS.....	21

## List of Figures

FIGURE 1 – AERIAL PHOTOGRAPH OF SITE (SOURCE: SIX MAPS, JAN 2025).....	7
FIGURE 2 – DETAILED SURVEY PLAN (SOURCE: BEVERIDGE WILLIAMS, 04 SEPTEMBER 2024).....	8
FIGURE 3 – PROPOSED DEVELOPMENT SITE PLAN (SOURCE: FUSE ARCHITECTS, SHEET SSDA 005, REV. A, 22 JULY 2025).....	9
FIGURE 4 – PROPOSED TREATMENT NODE NETWORK.....	14
FIGURE 5 – MUSIC POLLUTANT MODELLING OUTCOME.....	15
FIGURE 6 – SYDNEY WATER INFRASTRUCTURE SERVING SITE.....	17

## List of Tables

TABLE 1 – CIVIL & STORMWATER DRAWINGS (SOURCE: EI CONSULTING ENGINEERS PTY LTD).....	6
TABLE 2 – STORMWATER QUALITY TARGETS (SOURCE: CUMBERLAND COUNCIL DCP 2021).....	13
TABLE 3 – PRE-DEVELOPMENT & POST-DEVELOPMENT CATCHMENT TYPES .....	14
TABLE 4 – AVERAGE POTABLE WATER & WASTEWATER DAILY DEMANDS (SOURCE: INTRAX CONSULTING ENGINEERS PTY LTD) .....	17
TABLE 5 – FIRE SYSTEM FLOW RATES (SOURCE: INTRAX CONSULTING ENGINEERS PTY LTD).....	18

## 1. Introduction

EI Consulting Engineers Pty Ltd (EIC) has been engaged by Anglicare Community Services to prepare civil engineering and stormwater management design documentation for the mixed-use development located at 215, 229-239 Pitt St, Merrylands, NSW, 2160. This report has been prepared to support the submission of a State Significant Development Application (SSDA) in the construction and operation of new stormwater drainage infrastructure.

This document has been prepared in accordance with Cumberland Council requirements and demonstrates that the development complies with stormwater management controls. The observations and conclusions presented in this report are based on information available from Council and existing site documentation provided by the client.

This report presents details for the following civil and stormwater works associated with the SSDA application:

- **Sedimentation and Erosion Controls** – Implementation of measures to control construction runoff from site polluting downstream areas and receiving waters.
- **Stormwater Quantity Management** – Stormwater drainage concept as well as on-site detention and retention assessment.
- **Stormwater Quality Management** – Proposed measures for pollutant reduction and pollutant modelling for pre and post developed site conditions.
- **Flooding** – Flood Impact Risk Assessment (FIRA) report (prepared separately by EIC).
- **Water & Wastewater Demand** – Details may be provided by Intrax Consulting Engineers Pty Ltd.

Furthermore, to minimize impacts of the proposed development to the water cycle and enhance re-use, the subject site has been designed with the following Water Sensitive Urban Design (WSUD) objectives:

- Ensuring peak runoff flow rates from the developed site do not exceed pre developed site values;
- Minimizing any increases in post-developed stormwater runoff volumes;
- Ensuring annual pollutant loads discharged from the site do not exceed pre developed site values;
- Ensuring nil flood impact as a result of the development;
- Provision of safe and flood free development; and
- Minimizing reliance on potable water for non-potable uses.

### 1.1 Certification

The contents of this report have been certified by Hasan Rana, who is a Chartered Civil Engineer with the institution of Engineers Australia.

## 1.2 Related Report & Documents

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

- Documentation prepared by EIC, as cited in Table 1 (also attached in Appendix A):

**Table 1 – Civil & Stormwater Drawings (Source: EI Consulting Engineers Pty Ltd)**

DWG NO.	DWG TITLES	REVISION
C000	INDEX SHEET	4
C001	STANDARD NOTES	2
C100	SEDIMENTATION & EROSION CONTROL PLAN	2
C101	SEDIMENTATION & EROSION CONTROL DETAILS	2
C102	AREA ANALYSIS & ENGINEER NOTES	2
C200	STORMWATER MANAGEMENT PLAN (BASEMENT 4)	3
C201	STORMWATER MANAGEMENT PLAN (BASEMENT 1-3)	3
C202	STORMWATER MANAGEMENT PLAN (GROUND FLOOR)	2
C203	STORMWATER MANAGEMENT PLAN (GROUND FLOOR – MEZZANINE)	3
C204	OSD LAYOUT PLAN & SECTION	3
C205	MISCELLANEOUS DETAILS	2
C206	BASEMENT PUMP OUT DETAILS	3
C207	POLLUTANT MODEL & TREATMENT OUTCOME	2
C300	DRIVEWAY PLAN	2
C301	EXISTING & PROPOSED DRIVEWAY SECTION	2
C302	B85 VEHICLE IN & OUT PROFILE SECTION A	2
C303	B85 VEHICLE IN & OUT PROFILE SECTION B	2
C304	PUBLIC DOMAIN WORK – FOOTPATH	2
C305	FOOTPATH SECTION A-A & B-B	2
C306	FOOTPATH SECTION C-C & D-D	2
C400	BULK EARTHWORKS PLAN (BASEMENT 4)	1
C401	BULK EARTHWORKS NOTES	0

- Cumberland City Council Development Control Plan (DCP), 2021;
- Cumberland City Council Flood Risk Management Policy (CFRMP), 2021;
- Managing Urban Stormwater: Soils & Construction – Volume 1 (2004), Landcom.
- Flood Impact & Risk Assessment (2025), EI Consulting Engineers Pty Ltd.
- AS/NZS 3500.3:2021 – Stormwater Drainage

### 1.3 Site Description

The subject site known as 215, 229-239 Pitt St, Merrylands, NSW, 2160 is formed by Lot 1 – DP 1079960, Lot J – DP 10354, Lot 1 – 537031, Lot 2 – DP 537031, and Lot 2 – DP 501597. The site is bounded by McFarlane St to the north, Short Ln to the south, Pitt St to the east, and Reyes Ln to the west. Moreover, the surrounding locality consists of an existing shopping centre to the north, a hotel to the south, mixed use development currently being built to the north-east, and commercial and retail developments to the east, west, and south.

The existing site contains one and two storey commercial tenancies, a hardstand parking area accessed from Reyes Ln, and is approximately 2,106m<sup>2</sup> in area. Furthermore, the site does not contain any landscaping but contains existing outdoor dining areas at the site frontage along McFarlane St.

Figure 1 below depicts the site boundaries and the surrounding locality from an aerial view.



Figure 1 – Aerial Photograph of Site (Source: SIX Maps, Jan 2025)

### 1.4 Site Topography

The current site generally falls from south-west to the north-east, with 17.45 mAHd at the highest point and 16.44 mAHd at the lowest point. Moreover, the site consists of mostly built form and impervious pavement.

Site topography is further detailed in the survey shown in Figure 2.

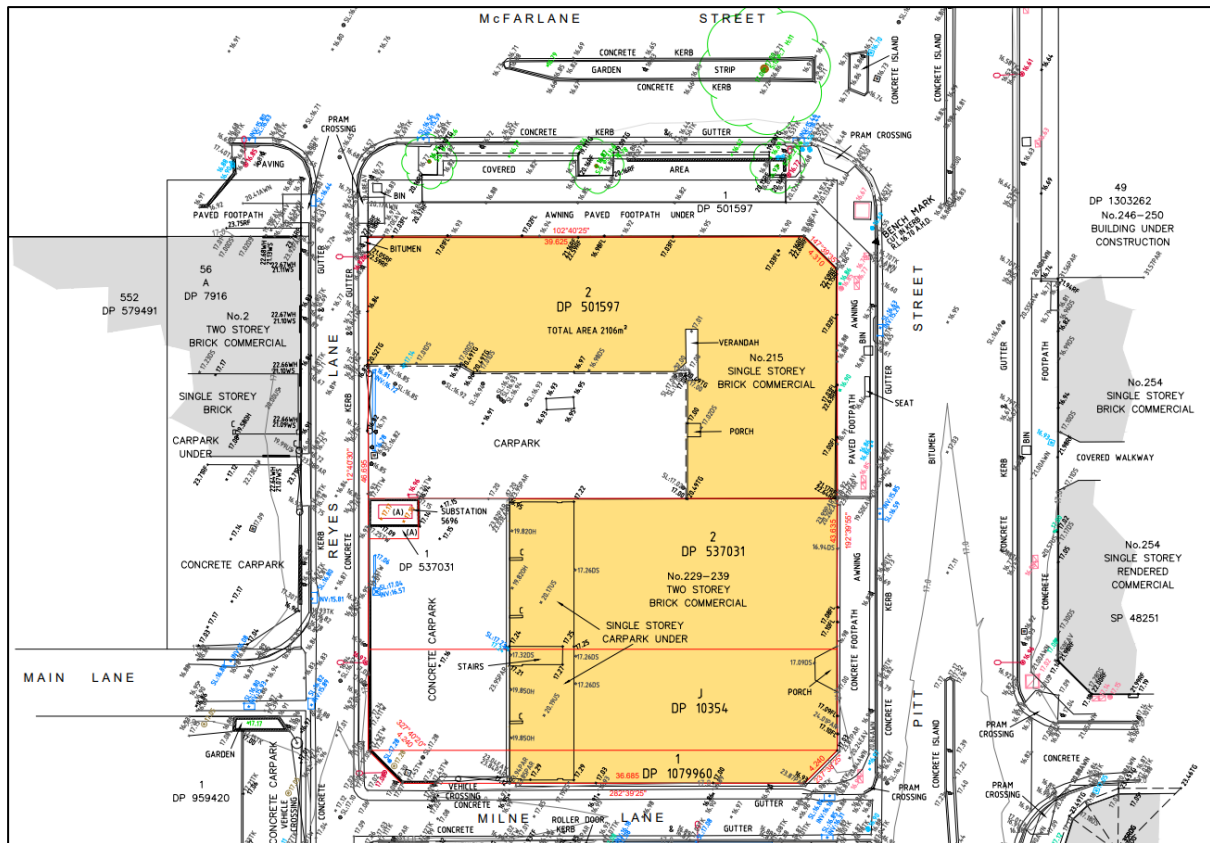


Figure 2 – Detailed Survey Plan (Source: Beveridge Williams, 04 September 2024)

## 1.5 Proposed Development

The proposed activity, within the State Significant Development Application (SSDA), is for the construction and operation of a 35 storey shop top housing development.

Specifically, the SSDA proposal involves the following works:

- Tower with 238 affordable housing units pursuant to Chapter 2, Part 2, Division 1 of the State Environmental Planning Policy (Housing) 2021;
- Two storey podium for commercial usage;
- Ground floor retail spaces;
- 4 levels of basement parking with 185 spaces; and
- Public domain upgrade works.

Moreover, the proposed site access arrangements are as follows:

- Through-site pedestrian passageway linking Reyes Ln and Pitt St.
- Residential and commercial car parking access via Reyes Ln.
- Heavy vehicle loading dock on Short Lane.

The overall development layout plan is portrayed below in **Figure 3**. Refer to the architectural package prepared by Fuse Architects.

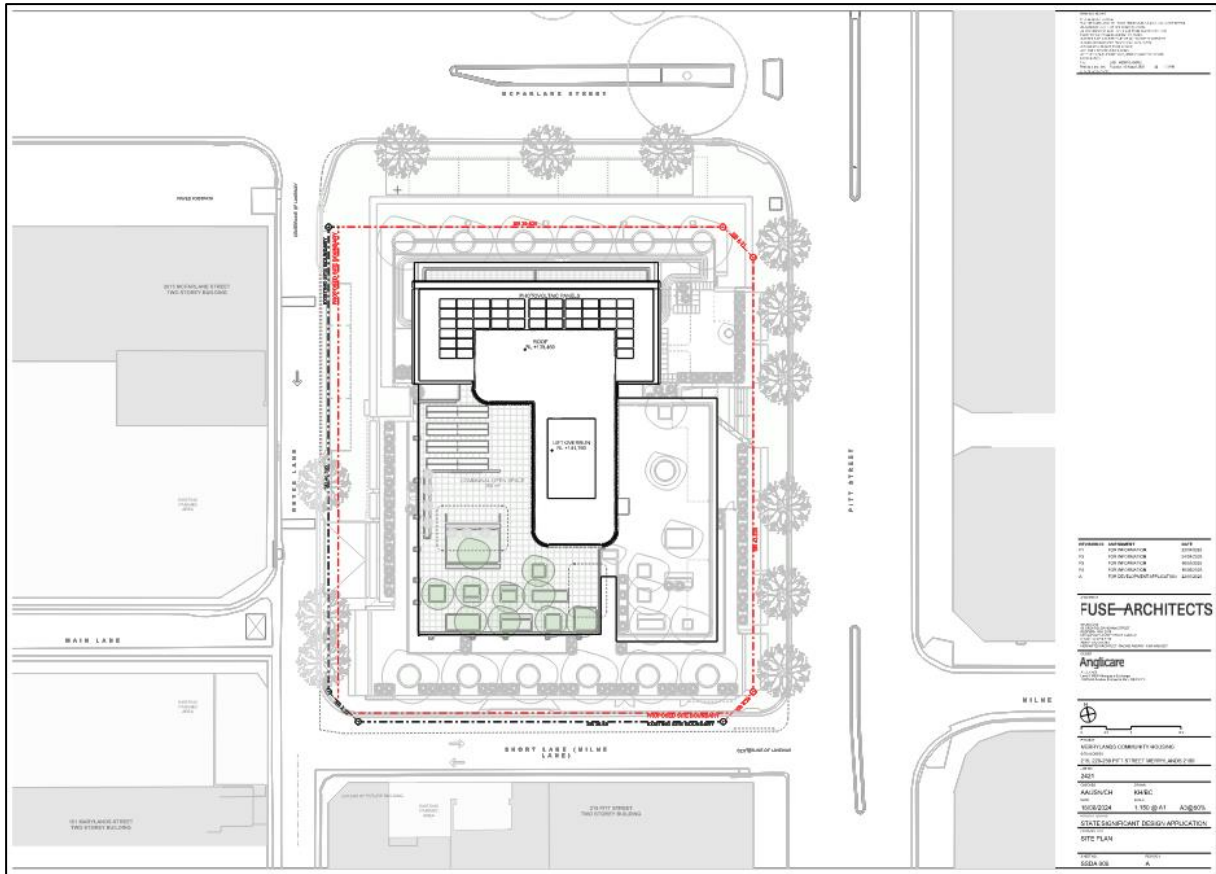


Figure 3 – Proposed Development Site Plan (Source: Fuse Architects, Sheet SSDA 005, Rev. A, 22 July 2025)

## 2. Erosion & Sediment Control

The sediment and erosion control (SEC) planning for the development aims to achieve the following objectives:

- All runoff from surrounding land is diverted away from the area disturbed and polluted runoff is retained on site.
- All disturbed areas are stabilised with vegetation immediately after site workings are completed.
- Water discharging from site complies with Cumberland Council requirements.
- Ongoing maintenance of sediment and erosion control measures throughout construction.

### 2.1 Sediment & Erosion Control Measures

Prior to any earthworks commencing on site, sedimentation and erosion control for the proposed construction needs to be implemented as per the Sedimentation & Erosion Control Plan prepared by EIC in accordance with Council requirements and the guidelines 'Managing Urban Stormwater – Soils & Construction' (2008), published by Landcom. The measures shown in the EIC drawings are provided as a minimum treatment only, and may need to be modified to suit site conditions and the staging of construction activities.

The following measures can be staged by the contractor on site with respect to construction programming, sequencing and work methodology:

- Temporary site security/safety fencing is to be installed around the active construction site.
- Sediment fencing is to be installed downstream of disturbed topsoil, stockpiles and/or embankments.
- Preservation of nearby properties or watercourses from construction runoff through the installation of sediment fencing.
- Stockpiles should be installed far from any natural watercourses or temporary overland flow paths.
- Dust control needs to be ensured by covering stockpiles, installing fence hessian and watering disturbed areas with disturbed topsoil.
- The extent of disturbed surfaces should be minimized at one time, i.e. staging of earthworks.
- Stockpiles and embankments should be stabilized by hydro seeding or hydro mulching on formation.
- Straw bales, or mesh and gravel inlet filters, should be placed around and along proposed catch drains and stormwater inlet pits that may be clogged.
- A stabilized and restricted site access should be provided at vehicle entry/exit points.
- Vehicle wash down areas should be established at the exit of disturbed areas.
- Provision of overland flow paths upstream of disturbed work areas to divert rainfall runoff eroding topsoil and polluting the downstream discharge areas.
- Preservation of public or private infrastructure, such as street light poles and existing Council assets.

Water quality monitoring during construction or the use of additional measures such as coagulants or flocculants after assessment is not documented in this submission and should be implemented by the contractor on site as required by Council and site conditions.

## 3. Stormwater Quantity Management

### 3.1 Water Quantity Management Objectives

As per Cumberland Council DCP 2021, water quantity management for the proposed development aims to ensure the following objectives:

- Stormwater drainage from the subject site is directed to Council's stormwater drainage system.
- Avoid environmental impacts on private property and the public domain.

To satisfy these objectives, the following controls have been provided:

- Roof and surface stormwater shall be collected within the property to be discharged into Council's stormwater system or water course without impacting the nature of receiving body.
- Stormwater runoff from major and minor storm events is to be controlled within the property prior to it being discharged into Council's stormwater system.
- Overland flow through the property shall be maintained without impacting adjacent and downstream properties.
- Stormwater runoff shall be controlled and water quality improved where required.

### 3.2 Water Quantity Management Scheme

To ensure an adequate volume of stormwater can be stored on site and a controlled discharge can be accomplished in accordance with Council guidelines, the stormwater management network for the site has been developed using the On-Site Stormwater Detention Handbook published by Upper Parramatta River Catchment Trust (UPRCT).

To ensure the development comply with these requirements, a network of pits and pipes has been designed for the development in accordance with AS3500.3 and Council guidelines for conveyance of rainfall runoff to the legal point of discharge, i.e. the Council owned inlet pit located on Macfarlane St. Furthermore, stormwater is proposed to be captured within the building footprint and conveyed via gravity to the On-Site Detention (OSD) and rainwater tanks, with trafficable areas treated in the OSD and non-trafficable areas reutilized in the rainwater tank. Design details for the tanks are discussed further below.

#### 3.2.1 On-Site Detention (OSD)

Since the development lies in proximity to A'Becketts Creek, which forms part of the Duck River catchment, the following UPRCT OSD design constraints apply to the development:

- Site Storage Requirement (SSR) = 300 m<sup>3</sup>/ha
- Permissible Site Discharge (PSD) = 140 l/s/ha

Hence, 60 m<sup>3</sup> of OSD is required for the development with runoff limited to 80 l/s/ha in accordance with UPRCT guidelines. This is to ensure no increase in flood discharges anywhere in catchment for all storm durations.

Therefore, to comply with these requirements the OSD has been proposed as follows:

- Surface Area = 66 m
- Effective Depth = 1.85 m
- Total Volume = 122.1 m<sup>3</sup>

The orifice opening has been designed to 77mm as per **Form B1 Drainage Design Summary** published by UPRCT attached with this report in Appendix B.

Refer to the EIC prepared stormwater drawings and architectural drawing SSDA 107 Rev. A prepared by Fuse-Architects (project reference: 2421) for details of the layout plan and set out.

### **3.2.2 On-Site Retention (OSR) – Rainwater Tank**

A 10,000 L rainwater tank has been proposed for the development in accordance with BASIX requirements.

Refer to the hydraulic engineer drawings for details regarding reuse.

## 4. Stormwater Quality Management

### 4.1 Water Quality Management Objectives

As per Cumberland Council DCP 2021, the proposed development aims to ensure implementation of appropriate water quality treatment for stormwater runoff to achieve the following stormwater quality targets:

**Table 2 – Stormwater Quality Targets (Source: Cumberland Council DCP 2021)**

Pollutant	Description	Load Reduction
Litter e.g. cans, bottles, wrapping materials, food scraps	All anthropogenic materials with a minimum dimension >5mm	90%
Coarse sediment	Coarse sand and soil particles (<0.5mm diameter)	85%
Nutrients	Total phosphorous nitrogen	60%
Fine Particles	Coarse sand and soil particles	85%
Cooking oil and grease	Free floating oils that do not emulsify aqueous solutions	90%
Hydrocarbons incl. motor fuels, oils and greases	Anthropogenic hydrocarbons that can be emulsified	90%

### 4.2 Water Quality Treatment Scheme

The treatment system for the development involves the integration and operation of gross pollutant traps (GPTs) and stormwater quality improvement devices (SQIDs). The combination of these two systems allows the proposed development to meet the water quality targets set out by Cumberland Council.

#### 4.2.1 Gross Pollutant Trap (GPT)

A gross pollutant traps (GPT) is a primary stormwater treatment measure, typically applied first in a treatment train to capture and retain debris, sediments and pollutants from stormwater runoff. GPTs come in various forms, from simple trash racks to more complex Stormwater Quality Improvement Devices (SQIDs) with components such as continuous deflection screens and hydrodynamic separation.

For this development, 5 OceanGuard® GPTs have been proposed as part of the treatment plan to capture pollution via a filtration bag and cag inserted into stormwater pits.

Refer to the Ocean Protect manufacturer specifications for additional details.

#### 4.2.2 Stormwater Quality Improvement Device (SQID)

A stormwater quality improvement device (SQID) further serves to remove pollutants from stormwater runoff, including sediments, metals, oils and nutrients, prior to discharging into receiving waters.

The StormFilter® stormwater treatment system has been proposed for the development, as it allows the filtration and removal of common pollutants such as total suspended solids, hydrocarbons, nutrients, soluble heavy metals and others. Therefore, 4 x 690 NPSORB StormFilter® cartridges have been proposed within the on-site detention tank to comply with the water quality discharge targets advised by Cumberland Council.

### 4.3 Water Quality Pollutant Modelling

A water quality analysis has been undertaken to assess the performance of the proposed water sensitive urban design (WSUD) strategy against the adopted stormwater quality targets. The stormwater quality analysis for this study was undertaken using the industry standard software titled ‘MUSIC’ (Model for Urban Stormwater Improvement Conceptualisation) Version 6.3.

#### 4.3.1 Sub-Catchment Summary

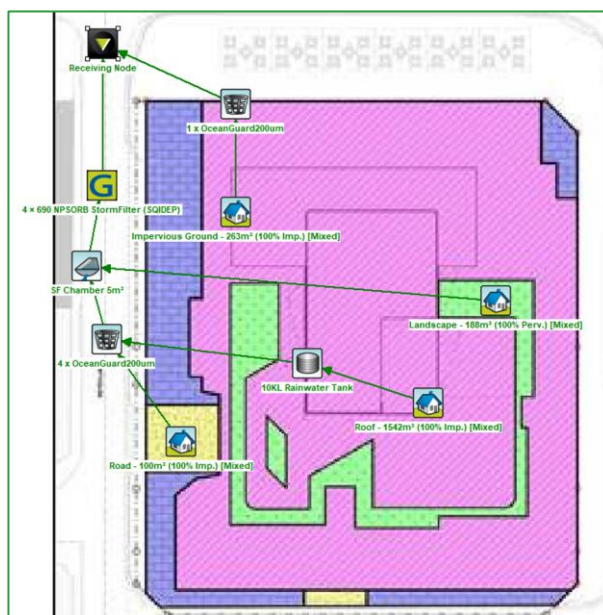
A summary of surface types within the proposed site boundary adopted for pre-development and post-development catchments are provided in Table 3.

**Table 3 – Pre-Development & Post-Development Catchment Types**

Catchment Type	Pre-Development Area	Post-Development Area
Impervious (Roof)	1,398	1,524
Impervious (Hardstand)	18	263
Impervious (Driveway)	615	56
Pervious (Landscape / Planters)	0	188
<b>Total</b>	<b>2,031</b>	<b>2,031</b>

#### 4.3.2 Proposed Treatment Network

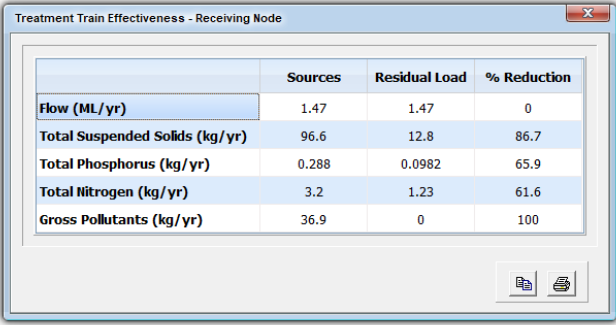
The MUSIC model was undertaken in accordance with the inputs associated with the MUSIC Link tool. Refer to Figure 4 for the proposed stormwater treatment network layout modelled in MUSIC.



**Figure 4 – Proposed Treatment Node Network**

### 4.3.3 MUSIC Modelling Results

Figure 5 summarizes the average annual pollutant loads and reductions at the downstream point of discharge.



	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.47	1.47	0
Total Suspended Solids (kg/yr)	96.6	12.8	86.7
Total Phosphorus (kg/yr)	0.288	0.0982	65.9
Total Nitrogen (kg/yr)	3.2	1.23	61.6
Gross Pollutants (kg/yr)	36.9	0	100

**Figure 5 – MUSIC Pollutant Modelling Outcome**

This result clearly demonstrates that the development and proposed stormwater system meets Council’s target reductions for the pollutant loads at the ultimate discharge location.

### 4.3.4 SQID Maintenance Plan

To ensure the stormwater quality treatment train remains effective in the operation stage of the development, the stakeholder may stage the maintenance program in two main stages.

6 month minor service inspection:

- GPT visual inspection of inlet aperture.
- Removal of large floatable pollutants.
- Measuring of sediment depth.

12 month major service inspection:

- Removal of accumulated sediment and gross pollutants.
- GPT screening element inspection and cleaning every 1-2 years as required.
- Maintenance and repair as required.

Refer to manufacturer product operation and maintenance manuals for further details and any additional measures that may be required.

## 5. Flood Assessment

A Flood Impact and Risk Assessment (FIRA) report (ref: S10518\_FIRA001) has also been prepared by EIC in conjunction with this report to support the construction and operation of the mixed use development at 215, 229-239 Pitt St, Merrylands NSW 2160. The FIRA recommends the flood mitigation measures and strategy to be adopted at the construction stage of documentation and to minimize risks associated with the safety of occupants. Refer to this report for water management with regards to flooding.

## 6. Water & Wastewater Demand

### 6.1 Potable Water and Sewer Connections

The water and wastewater design for the proposed development has been prepared by Intrax Consulting Engineers Pty Ltd. As per their assessment, the new development will be connected to the Sydney Water water and sewer mains fronting the site as follows:

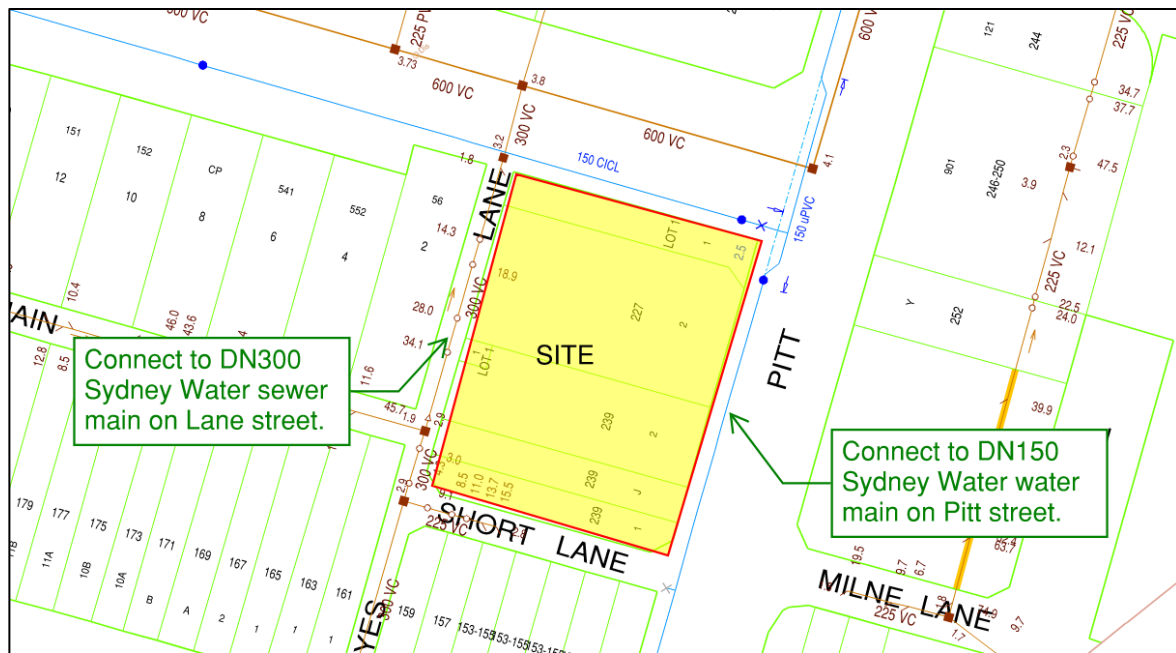


Figure 6 – Sydney Water Infrastructure Serving Site

### 6.2 Potable Water Demand and Sewer Demand

The potable water demand for the proposed development has been calculated by Intrax Consulting Engineers Pty Ltd based on Sydney Water’s average daily use guideline document. This guide uses the floor area of the liveable space to determine the average water demand based on past water usage survey. For Wastewater, Sydney Water guidelines indicate that non-residential development discharge 92% of their water consumption to the wastewater (sewer) systems. Furthermore, the daily peak water and sewer consumption has been assumed to be 30% above the daily average values.

The table below summarizes the average daily potable water and wastewater usage for the project.

Table 4 – Average Potable Water & Wastewater Daily Demands (Source: Intrax Consulting Engineers Pty Ltd)

	Area (m <sup>2</sup> )	Rate (KL/m <sup>2</sup> /day)	Total	Units
Residential Units	16,645	0.00334	55.59	KL/Day
Retail	615	0.00248	1.53	KL/Day
Commercial	2,372	0.00227	5.38	KL/Day
		Average Water Demand	62.50	KL/Day
		Average Wastewater Demand	53.13	KL/Day

Water	Total	Units
Maximum Daily Demand	81.25512	KL/Day
Average Daily Demand	62.50394	KL/Day

Waste	Total	Units
Maximum Daily Demand	74.75471	KL/Day
Average Daily Demand	57.50362	KL/Day

### 6.3 Fire Water Demand

Further to the above, the following are the internal firefighting flow rates for firefighting systems as evaluated by Intrax Consulting Engineers Pty Ltd, required to be drawn from Sydney Water water assets serving the site:

**Table 5 – Fire System Flow Rates (Source: Intrax Consulting Engineers Pty Ltd)**

Fire System	Flow Rates (L/s)
Hydrants	30
Sprinklers	22

Onsite fire storage tanks with 210kL capacity will be provided for the building in accordance with the Australian Standards.

Further details on the water and wastewater strategy for the development can be provided by Intrax Consulting Engineers Pty Ltd.

**Appendix A – Civil Engineering Drawings**

**Appendix B – Form B1 Drainage Design Summary**

## Disclaimers

This report has been prepared for the exclusive use of the Client, who is the only intended beneficiary of EI's work. The scope of the assessment carried out for the purpose of this report is limited to those agreed with the Client.

No other party should rely on the document without the prior written consent of EIC, and EIC undertakes no duty, or accepts any responsibility or liability, to any third party who purports to rely upon this document without EI's approval.

EI has exercised a degree of care and skill ordinarily exercised in similar investigations by reputable members of the civil industry in Australia as at the date of this document. No other warranty, expressed or implied, is made or intended. Each section of this report must be read in conjunction with the whole of this report, including its appendices and attachments.

The conclusions presented in this report are based on an investigation of existing conditions, with limitations of the investigation as specified in this report and only representative under the given circumstances.

EI's professional opinions are reasonable and based on its professional judgment, experience, training and results from analytical data and similar observations. EI may also have relied upon information provided by the Client and other third parties to prepare this document, some of which may not have been verified by EI.

EI's professional opinions contained in this document are subject to modification if additional information is obtained through further investigation, observations, or validation testing and analysis during construction. In some cases, further testing and analysis may be required, which may result in a further report with different conclusions. We have not documented this report for any litigation procedures and thus it should not be used for such intentions.

Should you have any queries regarding this report, please do not hesitate to contact EI team for further clarification. Please be advised that any assumptions that are made are on the basis of provided information which will be used for the outcome of your assessment. We can only advise items on the basis of our evaluation, non-destructive testing and limited access to the site.



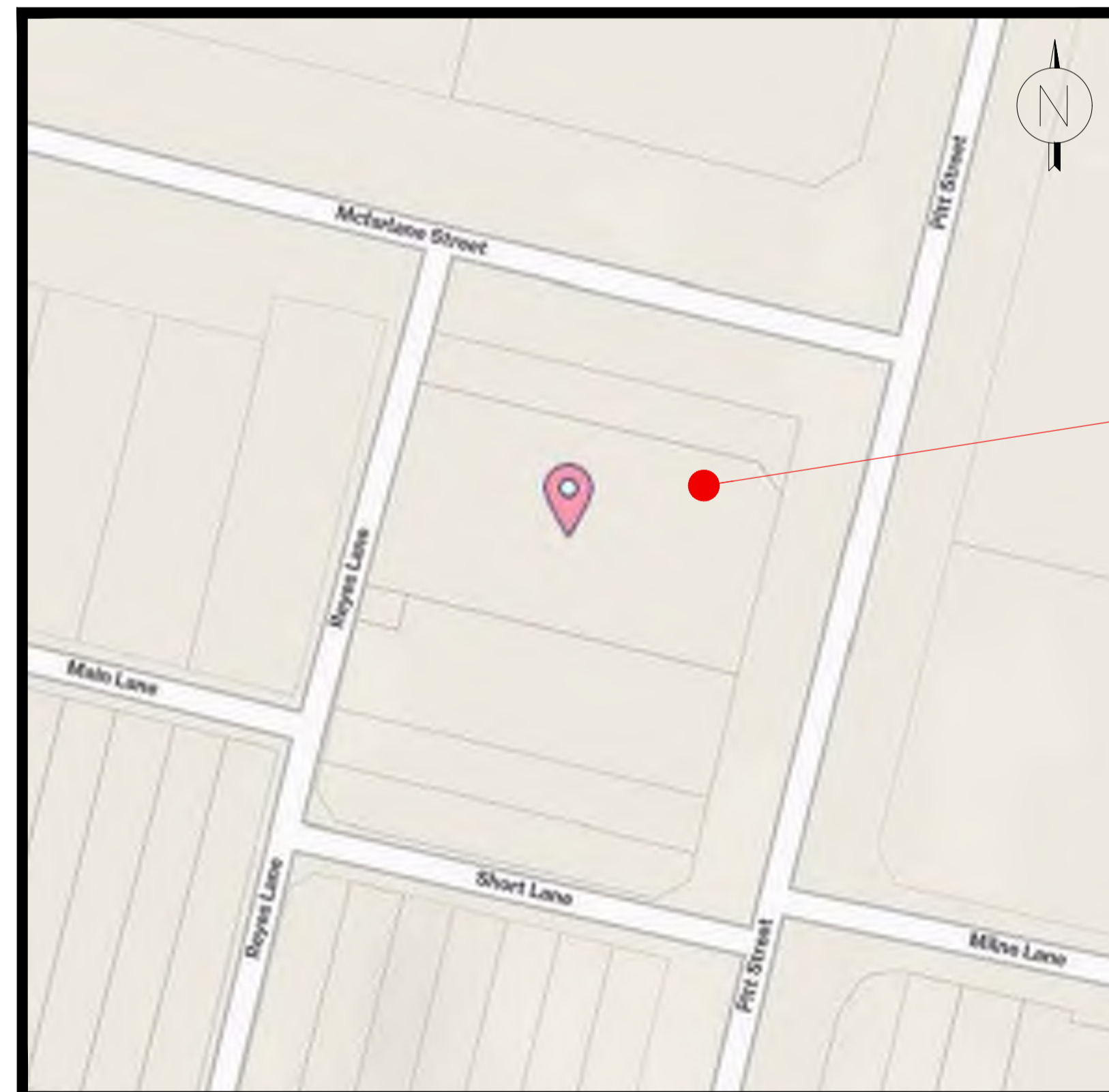
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PROJECT ADDRESS:  
215, 229-239 PITT STREET MERRYLANDS 2160  
DRAWING INDEX & COVER SHEET: **CIVIL & STORMWATER**

DWG No.	DWG TITLES	REVISION
C000	INDEX SHEET	4
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C306	FOOTPATH SECTION CC & DD	2
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C401	BULK EARTHWORKS NOTES	0



NAVIGATION MAP (SOURCE: SDT EXPLORER)



TOPGRAPHIC MAP (SOURCE: SDT EXPLORER)

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25
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4	ISSUED FOR APPROVAL	HR	08.10.25

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Project  
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Title  
**INDEX SHEET**

Drawn	Designed	Approved
HMR	SA	HR
Project No. <b>S10518</b>		Scale at A1. N.T.S
Drawing No. <b>C000</b>		Revision <b>4</b>
Issued By HR	Checked By HR	Date 08.10.25

**FOR APPROVAL**

### STANDARD NOTES

- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANT'S DRAWINGS AND SPECIFICATIONS AND SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
- MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT CODES AND AUTHORITY.
- THE CONTRACTOR SHALL COMPLY WITH ALL REGULATIONS OF AUTHORITIES HAVING JURISDICTION OVER THE WORKS.
- ALL DIMENSIONS SHALL BE VERIFIED ON-SITE. ALL DIMENSIONS NOTED ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- ENGINEERS' DRAWINGS MUST NOT BE SCALED.
- ALL REDUCED LEVELS MUST BE VERIFIED ON-SITE BEFORE THE COMMENCEMENT OF ANY WORK.
- SUBSTITUTIONS MUST BE APPROVED BY THE ENGINEER.
- ALL LEVELS ARE FROM THE AUSTRALIAN HEIGHT DATUM.
- SERVICE INFORMATION SHOWN IS BASED ON PLANS GIVEN BY AUTHORITIES AND IS APPROXIMATE ONLY. BEFORE COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES AND COMPLY WITH ALL REQUIREMENTS OF THOSE AUTHORITIES.
- EXISTING SURFACE CONTOURS, WHERE SHOWN, ARE INTERPOLATED AND MAY NOT BE ACCURATE.
- UNLESS NOTED OTHERWISE, ALL VEGETATION SHALL BE STRIPPED TO A MINIMUM DEPTH OF 150mm UNDER ALL PROPOSED PAVEMENT AND BUILDING AREAS.
- BEFORE THE PLACEMENT OF ANY PAVEMENTS, BUILDINGS, OR DRAINS THE EXPOSED SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 100% STANDARD COMPACTION IN ACCORDANCE WITH TEST 'E1.1' OF AS 1289 FOR THE TOP 300mm. ANY SOFT SPOTS SHALL BE REMOVED AND REPLACED WITH GRANULAR FILL TO THE ENGINEER'S APPROVAL AND COMPACTED IN ACCORDANCE WITH THE COMPACTION REQUIREMENTS SET OUT BELOW. ON HIGHLY REACTIVE CLAY AREAS SITE EXCAVATED MATERIAL MAY BE USED WITH THE PRIOR AUTHORIZATION OF THE ENGINEER.
- ALL FILL AND PAVEMENT MATERIALS SHALL BE COMPACTED IN 200mm MAXIMUM LOOSE THICKNESS LAYERS TO THE DENSITIES SPECIFIED BELOW:
 

LANDSCAPED AREAS	90% STD
FILL UNDER ANY FOOTINGS AND FLOOR SLABS FOR ANY STRUCTURE	
- FINE CRUSHED ROCK	95% MOD
- OTHER FILL	95% SMDD
FILL UNDER ROAD PAVEMENTS	
- FINE CRUSHED ROCK	95% MOD
- OTHER FILL	100% SMDD
ROAD PAVEMENT MATERIALS	
- SUB-BASE	95% MOD
- BASE COURSE	98% MOD
- GRADE EVENLY BETWEEN FINISHED SURFACE SPOT LEVELS. FINISHED SURFACE CONTOURS ARE SHOWN FOR CLARITY. WHERE FINISHED SURFACE LEVELS ARE NOT SHOWN, THE SURFACE SHALL BE GRADED SMOOTHLY SO THAT IT WILL DRAIN AND MATCH ADJACENT SURFACES OR STRUCTURES.
- UNLESS NOTED OTHERWISE ON HYDRAULIC CONSULTANT'S DESIGN DRAWINGS, ALL DOWNPIPES AND GRATED INLETS SHALL BE CONNECTED TO PITS OR MAIN STORMWATER DRAINS WITH UPVC OR EARTHENWARE PIPES OF THE FOLLOWING SIZES LAID AT A MINIMUM GRADE OF 1 IN 100:
 

A. 100 DIA. FOR DOMESTIC CONSTRUCTION
B. 150 DIA. FOR COMMERCIAL/ INDUSTRIAL CONSTRUCTION
C. 100 DIA. FOR BASEMENT GRATED INLETS

FOR SIPHONIC ROOF DRAINAGE SYSTEMS ALL DOWNPIPE CONNECTION DRAIN SIZES TO BE CONNECTED TO MAIN STORMWATER DRAINS SHALL BE IN ACCORDANCE WITH THE HYDRAULIC ENGINEER'S DRAWINGS.
- ALL MAIN STORMWATER DRAINS SHALL BE CONSTRUCTED USING ONE OF THE FOLLOWING TYPES OF PIPES WITH RUBBER RING JOINTS:
 

A. CLASS 2 RCP IN ACCORDANCE WITH AS 4058
B. SEWER CLASS SEH UPVC IN ACCORDANCE WITH AS 1260.
C. CLASS 2 FRC TO AS 4139.

ANY OTHER TYPES OF PIPE MUST BE REFERRED TO THE ENGINEER FOR APPROVAL PRIOR TO USE. IF UPVC OR OTHER PIPES ARE TO BE USED APPROVAL MUST BE GIVEN BY THE ENGINEER FOR CLASS, BEDDING, AND BACKFILL REQUIREMENTS.
- GENERALLY FOR TRENCHING WORKS THE CONTRACTOR MUST:
 

A. COMPLY WITH THE GENERAL PROVISIONS OF SECTION 21 OF THE 'OCCUPATIONAL HEALTH AND SAFETY ACT'
B. COMPLY WITH WITH THE 'OCCUPATIONAL HEALTH AND SAFETY CODE OF PRACTICE FOR SAFETY PRECAUTIONS IN TRENCHING OPERATIONS'

### STANDARD NOTES

- PRIOR TO THE EXCAVATION OF ANY TRENCH DEEPER THAN 1.5 METERS THE CONTRACTOR MUST:
 

A. NOTIFY THE OCCUPATIONAL HEALTH AND SAFETY AUTHORITY OF THE APPROPRIATE FORM.
B. NOMINATE THE MINE MANAGER FOR THE PROJECT.
C. CARRY OUT ALL EXCAVATION WORKS IN ACCORDANCE WITH THE REQUIREMENTS OF THE 'MINES ACT 1958 REGULATIONS AND STATUTORY RULES'.
- ALL DIMENSIONS GIVEN ARE TO THE FACE OF THE KERB, CENTER OF PIPE, OR EXTERIOR FACE OF THE BUILDING UNLESS NOTED OTHERWISE.
- ANY STRUCTURES, PAVEMENTS, OR SURFACES DAMAGED, DIRTIED, OR MADE UNSERVICEABLE DUE TO CONSTRUCTION WORK SHALL BE REINSTATED TO THE SATISFACTION OF THE ENGINEER.
- REFER TO STRUCTURAL DRAWINGS FOR FOOTING AND FOUNDATION DETAILS.
- ANY FILL REQUIRED SHALL BE APPROVED BY THE ENGINEER.
- THE CONTRACTOR IS TO ENSURE THAT ALL EXCAVATIONS ARE MAINTAINED IN A DRY CONDITION WITH NO WATER ALLOWED TO REMAIN IN THE EXCAVATIONS.
- ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE BUILDING CODE OF AUSTRALIA AND THE RELEVANT CURRENT AUSTRALIAN STANDARDS.
- ANY DISCREPANCIES, OMISSIONS OR ERRORS SHALL BE REPORTED TO THE SUPERINTENDENT/ ENGINEER FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- IF ANY DISCREPANCY OCCURS IN THE ENGINEER DRAWING OR BETWEEN DRAWINGS AND SPECIFICATION, THE CONTRACTOR SHALL DURING TENDER ASSUME THE GREATER/LARGER.
- ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE BUILDING CODE OF AUSTRALIA AND THE RELEVANT CURRENT AUSTRALIAN STANDARDS. WHERE A STANDARD DOES NOT EXIST SHALL BEAR THE "WATER MARK" APPROVAL. WHERE AN AUSTRALIAN STANDARD EXISTS, NO SUBSTITUTION IS PERMITTED.
- ALL EXISTING PROPERTY SERVICES' LOCATIONS AND DEPTHS ARE APPROXIMATE AND MUST BE VERIFIED ON-SITE.
- THE CONTRACTOR SHOULD SUPPLY PRECISE LOCATIONS AND DEPTHS TO THE ENGINEER FOR REVIEW BEFORE ANY WORKS THAT MAY AFFECT THESE SERVICES.
- BEFORE THE COMMENCEMENT OF BUILDING WORKS ON SITE, THE CONTRACTOR MUST VERIFY THE FEASIBILITY OF THE OUTFALL STORMWATER DRAINAGE SYSTEMS TO THE LEGAL POINT OF DISCHARGE AS DOCUMENTED BY:
 

A. VERIFICATION OF THE INVERT LEVEL OF THE DRAIN FORMING THE LEGAL POINT OF DISCHARGE.
B. VERIFICATION THAT THE ROUTE FROM THE SITE TO THE LEGAL POINTS OF DISCHARGE IS CLEAR OF ALL OTHER AUTHORITY SERVICES.

IF EITHER OF THE ABOVE CANNOT BE VERIFIED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT MANAGER OR CONSULTING CIVIL ENGINEER.
- BEFORE THE COMMENCEMENT OF ANY WORKS, THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND SERVICES, NOTIFY THE AUTHORITIES RESPONSIBLE FOR THOSE SERVICES AND COMPLY WITH ALL OF THE REQUIREMENTS OF THOSE AUTHORITIES.
- DURING CONSTRUCTION THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVER-STRESSED.
- SUBSTITUTION MUST BE APPROVED BY THE ENGINEER AND INCLUDED IN ANY TENDER.
- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITY EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
- REFER TO ARCHITECTURAL DRAWINGS FOR THE LOCATION OF FIXTURES AND THE BUILDING LAYOUT AND DIMENSIONS WHERE DRAWINGS SHOWING SPECIFIC SERVICES ARE SUPERIMPOSED ON BUILDING PLANS. USE THEM ONLY FOR HYDRAULIC SERVICE PURPOSES. IF THE ULTIMATE CONDITIONS OF THE BUILDING NECESSITATE ANY ALTERATIONS IN ARRANGEMENT OBTAIN APPROVAL OF THE ENGINEER BEFORE PROCEEDING.
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANT'S DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS ISSUED FOR THE DURATION OF THE CONTRACT.
- SAFETY ISSUES MUST BE CONSIDERED AT ALL TIMES, INCORPORATE TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT.

### SITWORKS NOTES

- DATUM: AUSTRALIAN HEIGHT DATUM (AHD)  
 ORIGIN OF LEVELS: SSM 156777  
 ORIGIN OF CO-ORDINATES: R.L. 21.22 (AHD)  
 SURVEY PREPARED BY: BEVERIDGE WILLIAMS
- THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE BEFORE COMMENCEMENT OF WORK, AND REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
  - MAKE SMOOTH CONNECTIONS WITH EXISTING WORKS.
  - ALL EXISTING SERVICES (INCLUDING ANY NOT SHOWN ON THE PLANS) MUST BE ACCURATELY LOCATED IN POSITION AND LEVEL BEFORE ANY EXCAVATION. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. MINIMUM SERVICE CLEARANCES SHALL BE MAINTAINED FROM THE RELEVANT SERVICE AUTHORITY.
  - THE CONTRACTOR SHALL ARRANGE FOR ALL SETTING OUT BY A REGISTERED SURVEY OR,
  - THE CONTRACTOR SHALL OBTAIN ALL REGULATORY AUTHORITY APPROVALS AT THEIR OWN EXPENSE.
  - WHERE NEW WORKS BUT EXISTING, THE CONTRACTOR MUST ENSURE THAT A SMOOTH AND EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
  - ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION UNLESS SPECIFIED OTHERWISE.
  - EXCAVATED TRENCHES SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT NATURAL MATERIAL. ANY SUBSIDIES DURING THE PERIOD TO BE RECTIFIED AS DIRECTED BY THE SUPERINTENDENT.
  - ANY EXISTING TREES THAT FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S DETAILS AND/OR BY PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE, ENSURING THAT NOTHING IS NAILED TO THEM, PROHIBITING PAVING, GRADING, SEDIMENT WASH, OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS -
 

A. ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5m OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICHEVER IS THE GREATER.
B. A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (e.g. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300mm. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.
  - RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHTWEIGHT WASTE MATERIALS, AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT OR AS SPECIFIED IN THE WORKS CONTRACT.
  - ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH SAND TO 300mm ABOVE PIPE. WHERE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO UNDERSIDE OF PAVEMENT WITH SAND OR APPROVED GRANULAR MATERIAL COMPACTED IN 150mm LAYERS TO MINIMUM 98% MODIFIED MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75).
  - ALL BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051, COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m<sup>2</sup> OF BASE COURSE MATERIAL PLACED.
  - ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH RMS FORM 3051, AND COMPACTED TO MINIMUM 95% MODIFIED DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m<sup>2</sup> OF SUB-BASE COURSE MATERIAL PLACED.
  - AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (14) A CERTIFIED RECYCLED CONCRETE COMPLYING WITH R.M.S. FORM 3051 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF NR ENGINEERING.
  - PROVIDE 10mm WIDE EXPANSION JOINTS BETWEEN BUILDINGS AND ALL CONCRETE OR UNIT PAVEMENTS.
  - SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE INDICATED.
  - WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (LIKE ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF THESE WORKS.

### EXISTING SERVICE NOTES

- EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES BEFORE THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, AND REMOVAL IF REQUIRED OF ALL REDUNDANT EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
- THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
- IF REQUIRED, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE SERVICES ARE COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY.
- INTERRUPTION TO THE SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. THE CONTRACTOR IS TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIMES OF INTERRUPTION - THE CONTRACTOR IS RESPONSIBLE FOR ALL LIAISON.
- ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN 980mm U.P.V.C SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND THE EDGE OF PAVING.
- CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE THE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.
- CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.

### GENERAL DRAINAGE NOTES

- IT IS THE RESPONSIBILITY OF THE OWNER TO CHECK AND ENSURE THE EXISTENCE AND THE LEGAL ASPECTS OF ANY EASEMENTS. IT IS THE RESPONSIBILITY OF THE BUILDER TO CHECK AND ENSURE THE EXISTENCE OF ANY DRAINAGE PIPES AND OTHER SERVICES ON SITE PRIOR TO CONSTRUCTION. ALL LEVELS MUST BE VERIFIED ON SITE START FROM THE MOST DOWNSTREAM POINT.
- THIS DRAINAGE PLAN SHOULD BE READ STRICTLY IN ACCORDANCE WITH THE COUNCIL-APPROVED ARCHITECTURAL PLANS.
- LOCATIONS OF DOWNPIPES TO BE CONFIRMED BY THE ARCHITECT.
- DEPTH AND LOCATION OF SERVICES TO BE ESTABLISHED PRIOR TO COMMENCEMENT OF DRAINAGE WORKS.
- ALL BALCONIES TO HAVE FLOOR WASTE CONNECTED TO DOWNPIPE.
- ALL DRAINAGE PIPES ARE TO BE UPVC GRADE UNLESS NOTED OTHERWISE.
- THE MINIMUM COVER OVER ALL DRAINAGE PIPES IS TO BE 150mm.
- ALL DRAINAGE PIPES ARE TO HAVE A MINIMUM PIPE GRADIENT OF 1%.
- ALL DRAINAGE PITS ARE TO BE INSTALLED WITH A CHILD-PROOF SAFETY LATCH ON THE ACCESS GRATE.
- ALL DOWNPIPES ARE TO BE 100 x 50 SQUARE BOX SECTIONS UNLESS NOTED OTHERWISE.
- ALL PITS TO BE CONSTRUCTED ARE SHOWN IN REINFORCED CONCRETE, HOWEVER PRECAST OR BRICK PITS OF SIMILAR SIZE AND CONSTRUCTION AND TO THE SAME LEVELS ARE ACCEPTABLE.

**NOTE:**

THESE NOTES ARE DOCUMENTED FOR GENERAL PURPOSE. SOME NOTES MIGHT NOT BE APPLICABLE TO THE SPECIFIC SITE. PLEASE CONSULT THE DESIGN ENGINEER FOR ANY CLARIFICATION.

WE UNDERSTAND THAT THE CONTRACTOR AND BUILDER HAVE UNDERSTOOD ALL THE ASSOCIATED DUTY OF CARE.



### TELSTRA - DUTY OF CARE NOTES

TELSTRA'S PLANS SHOW ONLY THE PRESENCE OF CABLES AND PLANT. THEY ONLY SHOW THEIR POSITION RELATIVE TO ROAD BOUNDARIES, PROPERTY FENCES ETC. AT THE TIME OF INSTALLATION TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME THE DEPTH OR ALIGNMENT OF CABLES OR PLANTS AS THESE VARY SIGNIFICANTLY. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANTS. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POT-HOLING TO IDENTIFY LOCATION. TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO PROPERTY AND LOSSES CAUSED TO TELSTRA AND ITS CUSTOMERS.

### EXISTING UNDERGROUND SERVICES NOTES

THE LOCATIONS OF UNDERGROUND SERVICES SHOWN IN THIS SET OF DRAWINGS HAVE BEEN PLOTTED FROM SURVEY INFORMATION. THE SERVICE INFORMATION HAS BEEN PREPARED ONLY TO SHOW THE APPROXIMATE POSITIONS OF ANY KNOWN SERVICES AND MAY NOT BE AS CONSTRUCTED OR ACCURATE. EI CAN NOT GUARANTEE THAT THE SERVICES INFORMATION SHOWN ON THESE DRAWINGS ACCURATELY INDICATES THE PRESENCE OR ABSENCE OF SERVICES OR THEIR LOCATION AND WILL ACCEPT NO LIABILITY FOR INACCURACIES IN THE SERVICES INFORMATION SHOWN FROM ANY CAUSE WHATSOEVER.

CONTRACTORS SHALL TAKE DUE CARE WHEN EXCAVATING ONSITE INCLUDING HAND EXCAVATION WHERE NECESSARY. CONTRACTORS ARE TO CONTACT THE RELEVANT SERVICE AUTHORITY BEFORE THE COMMENCEMENT OF EXCAVATION WORKS. CONTRACTORS ARE TO UNDERTAKE A SERVICES SEARCH, BEFORE COMMENCEMENT OF WORKS ON SITE. SEARCH RESULTS ARE TO BE KEPT ON-SITE AT ALL TIMES.

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								HR	HR	07.07.25	

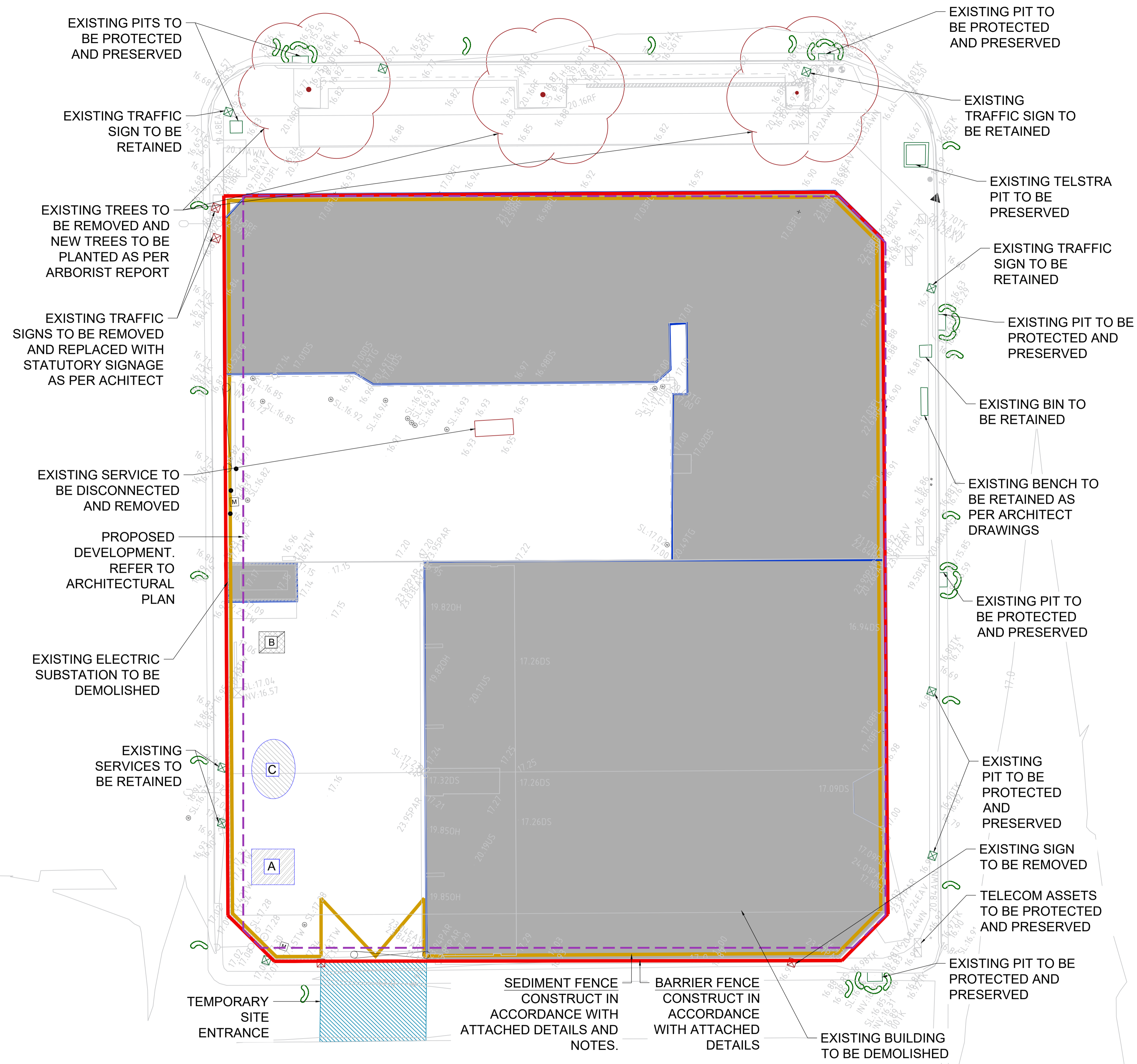
**FUSE ARCHITECTS**

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Title  
**STANDARD NOTES**



300mm  
200mm  
100  
50  
0 10mm

## SEDIMENTATION & EROSION CONTROL PLAN

SCALE = 1:150

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Architect  
**FUSE ARCHITECTS**

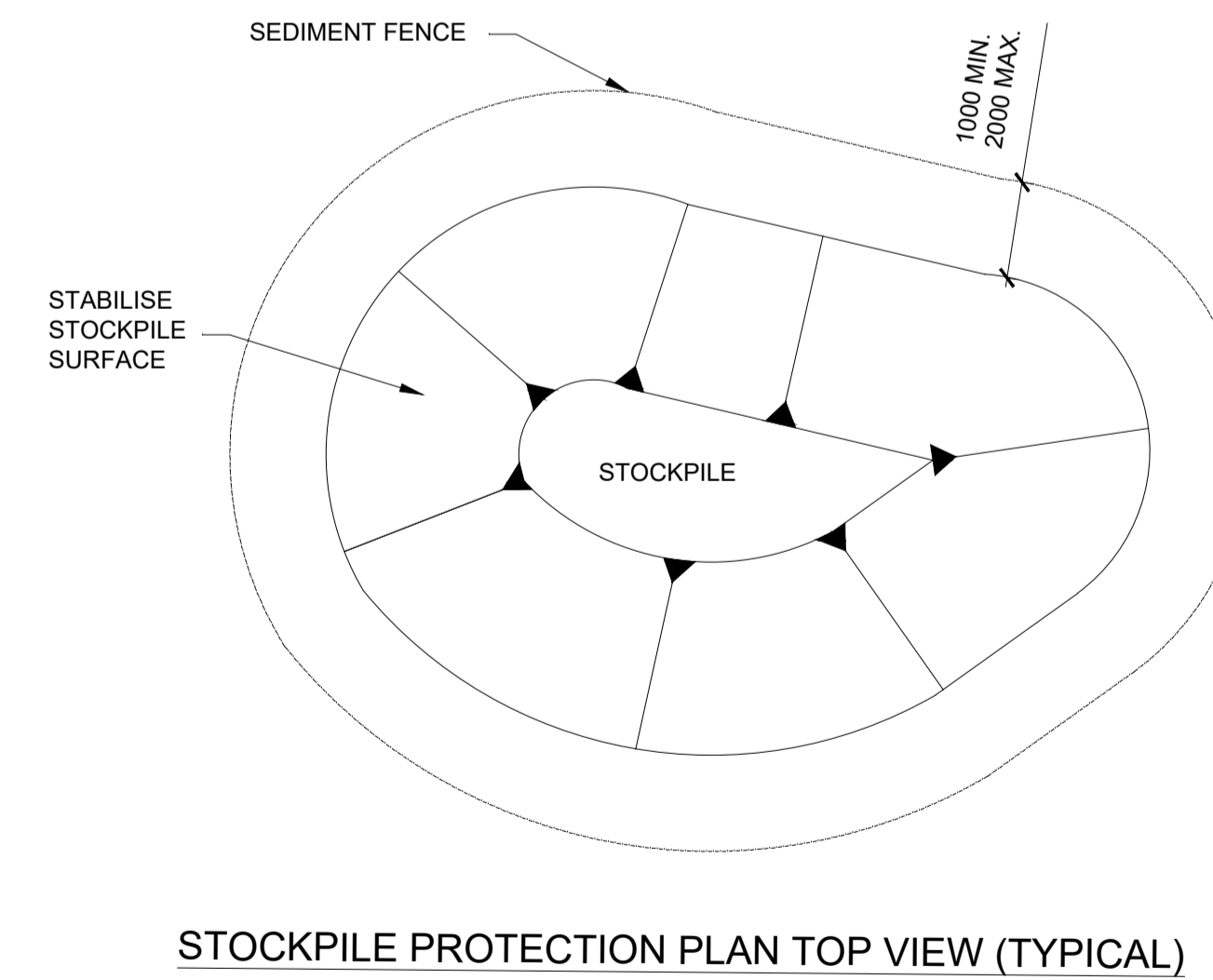
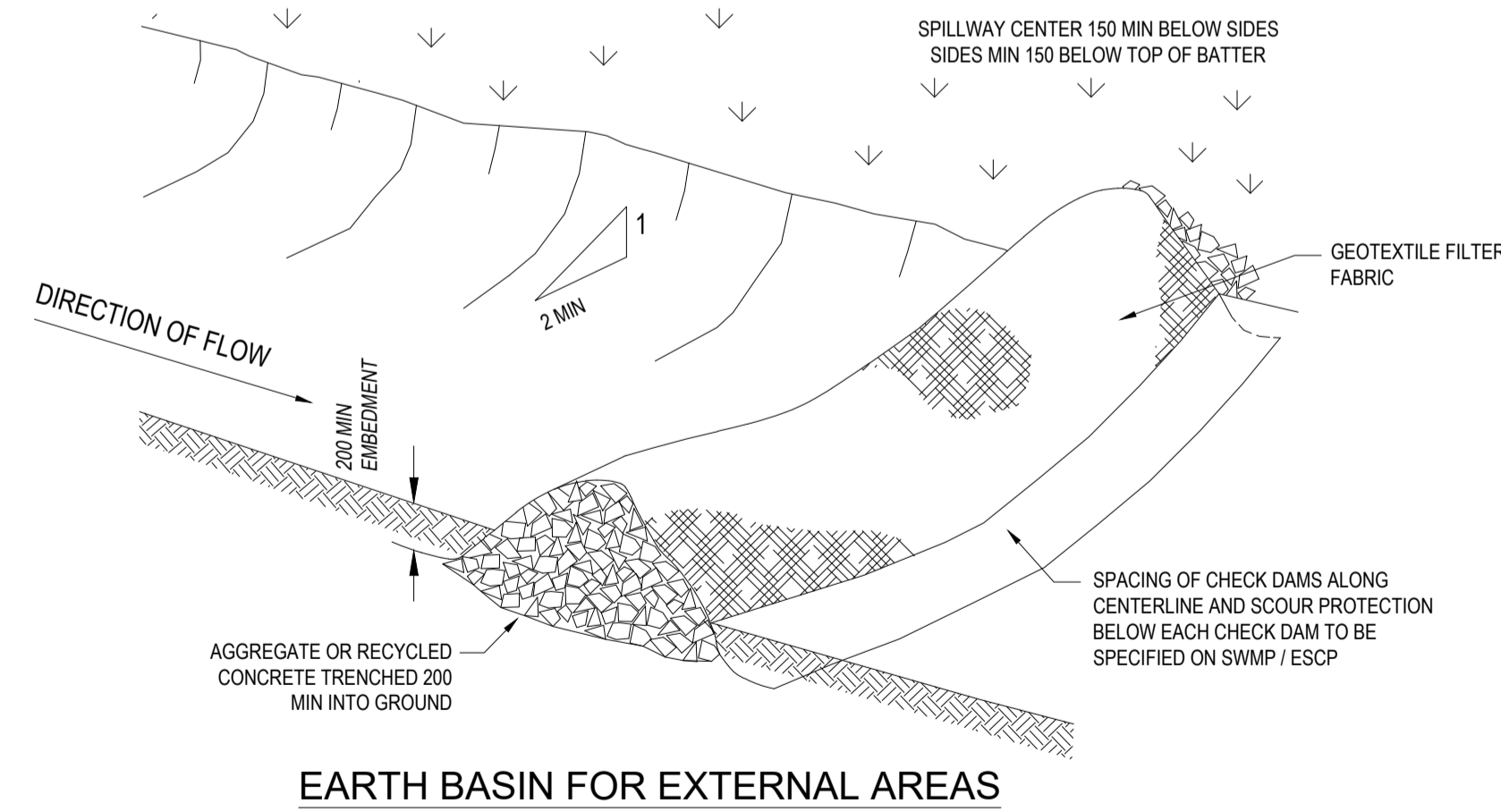
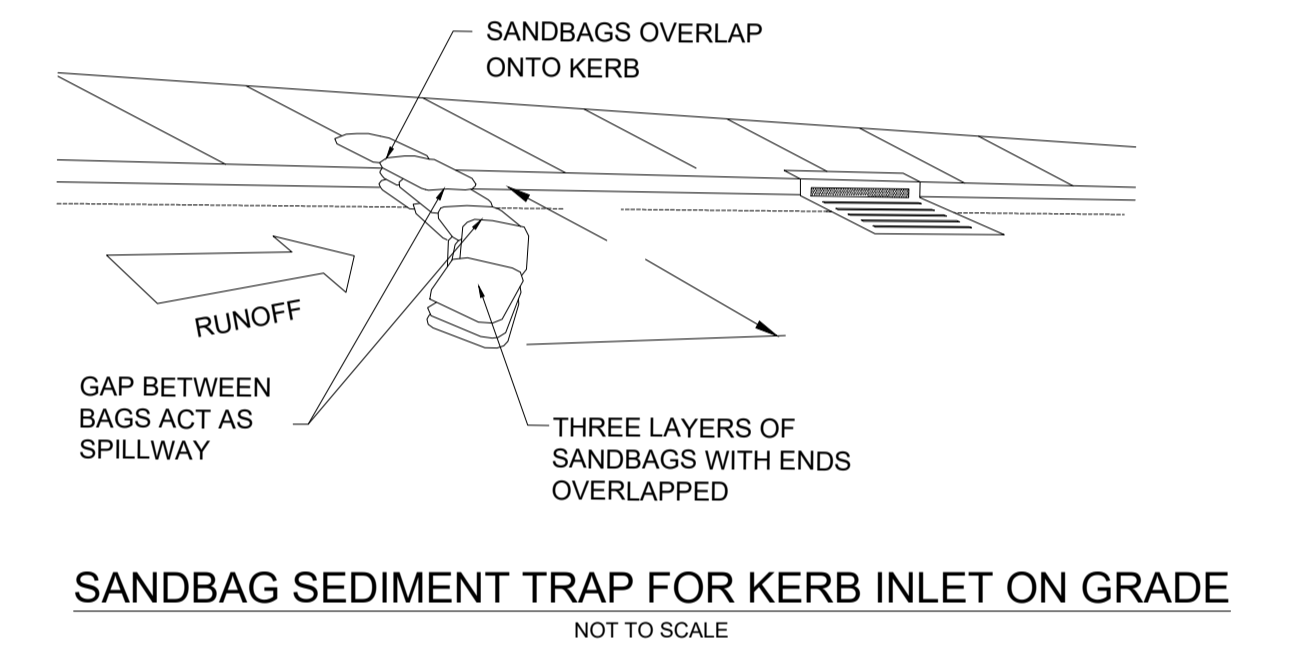
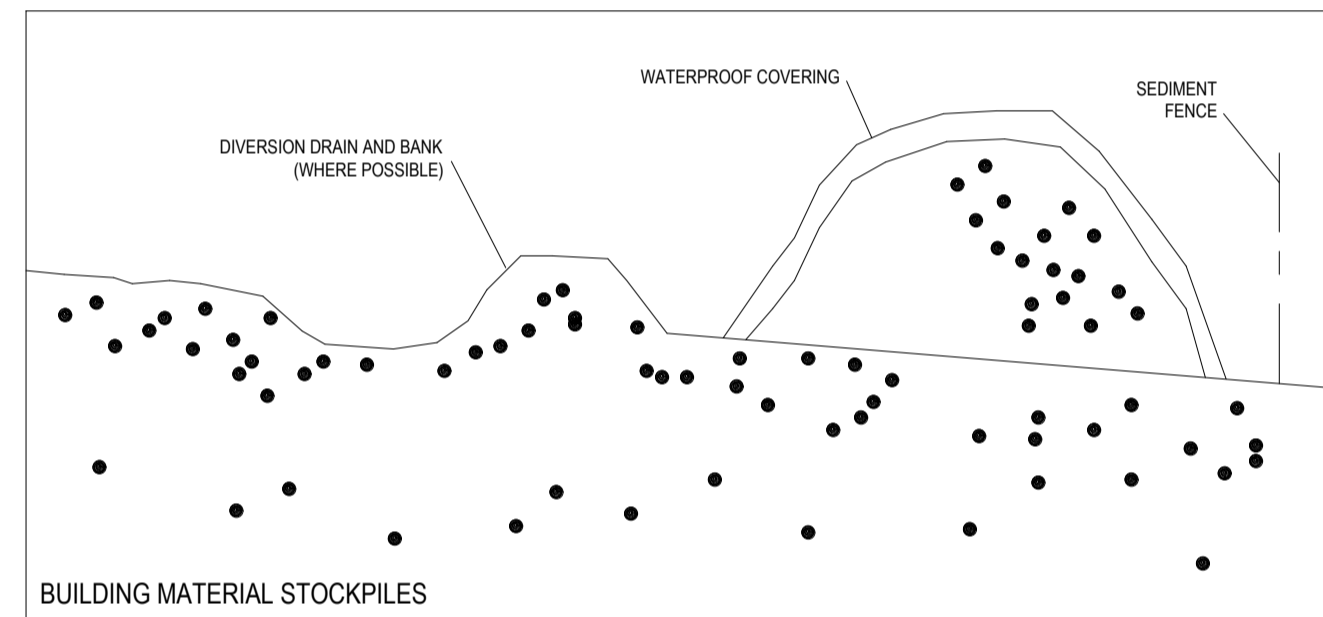
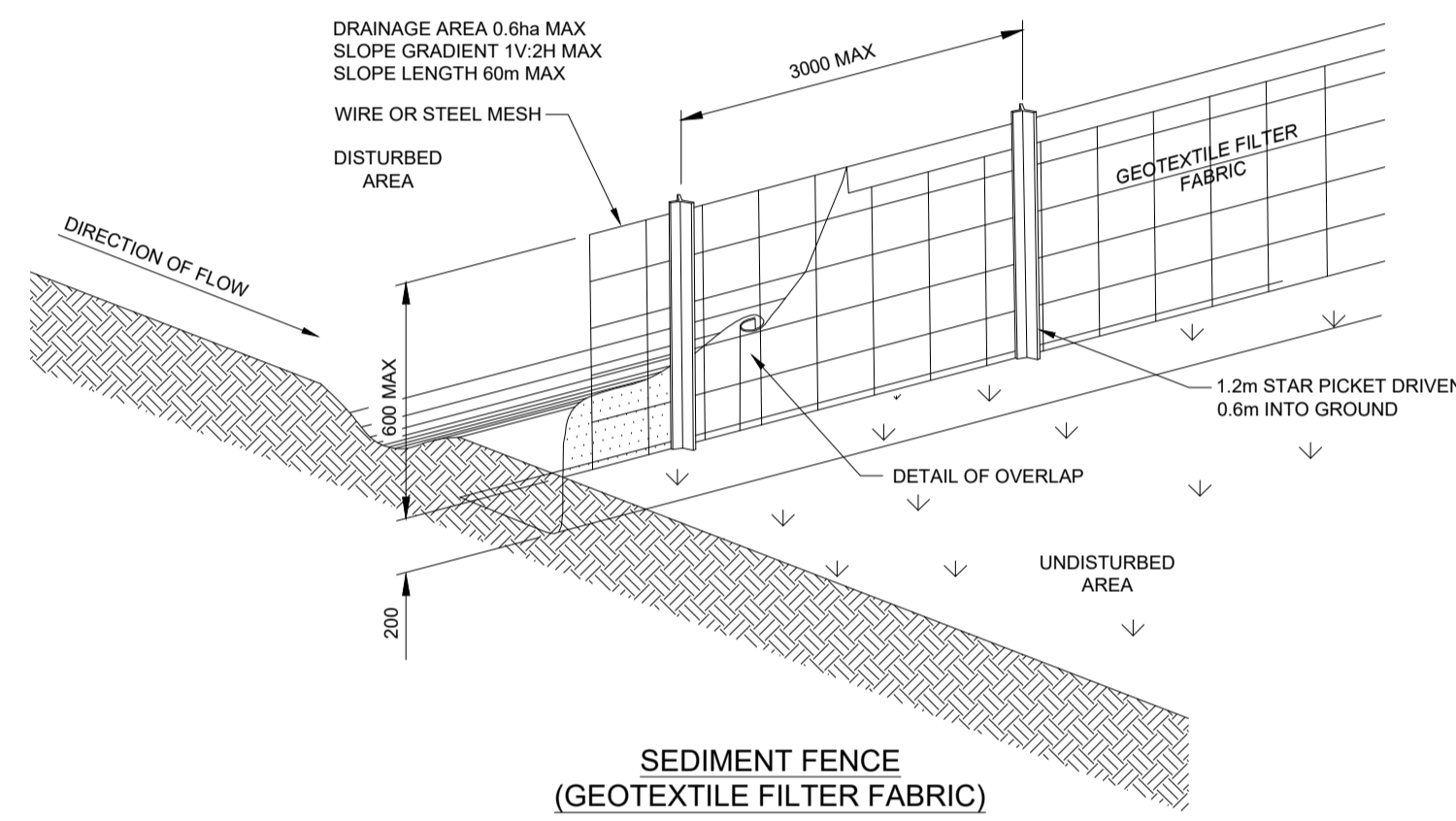
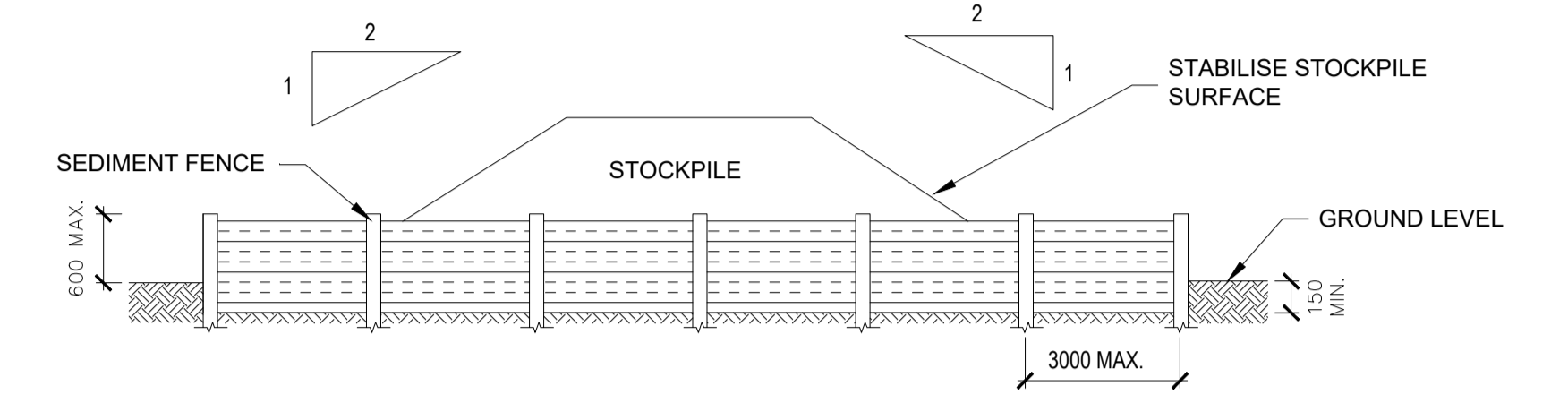
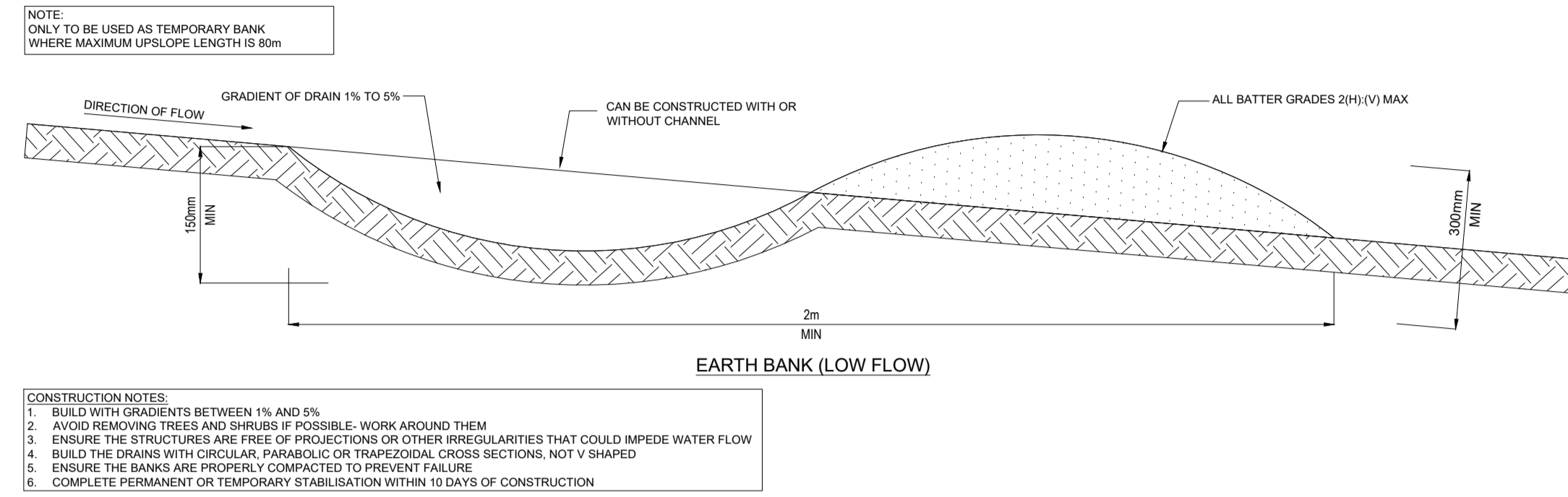
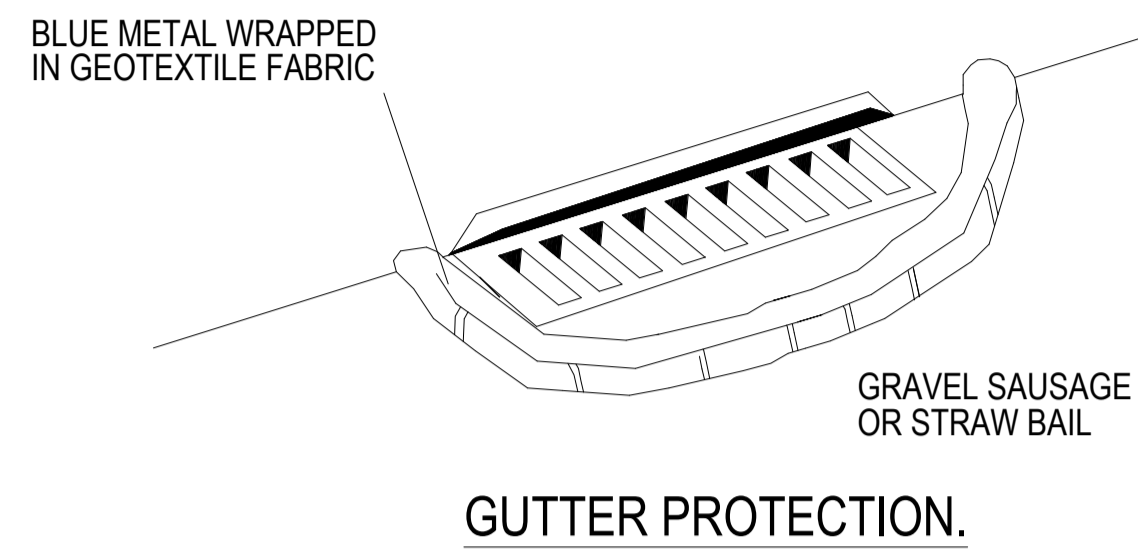
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Project  
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Title  
**SEDIMENTATION & EROSION CONTROL PLAN**

Drawn	Designed	Approved
HMR	SA	HR
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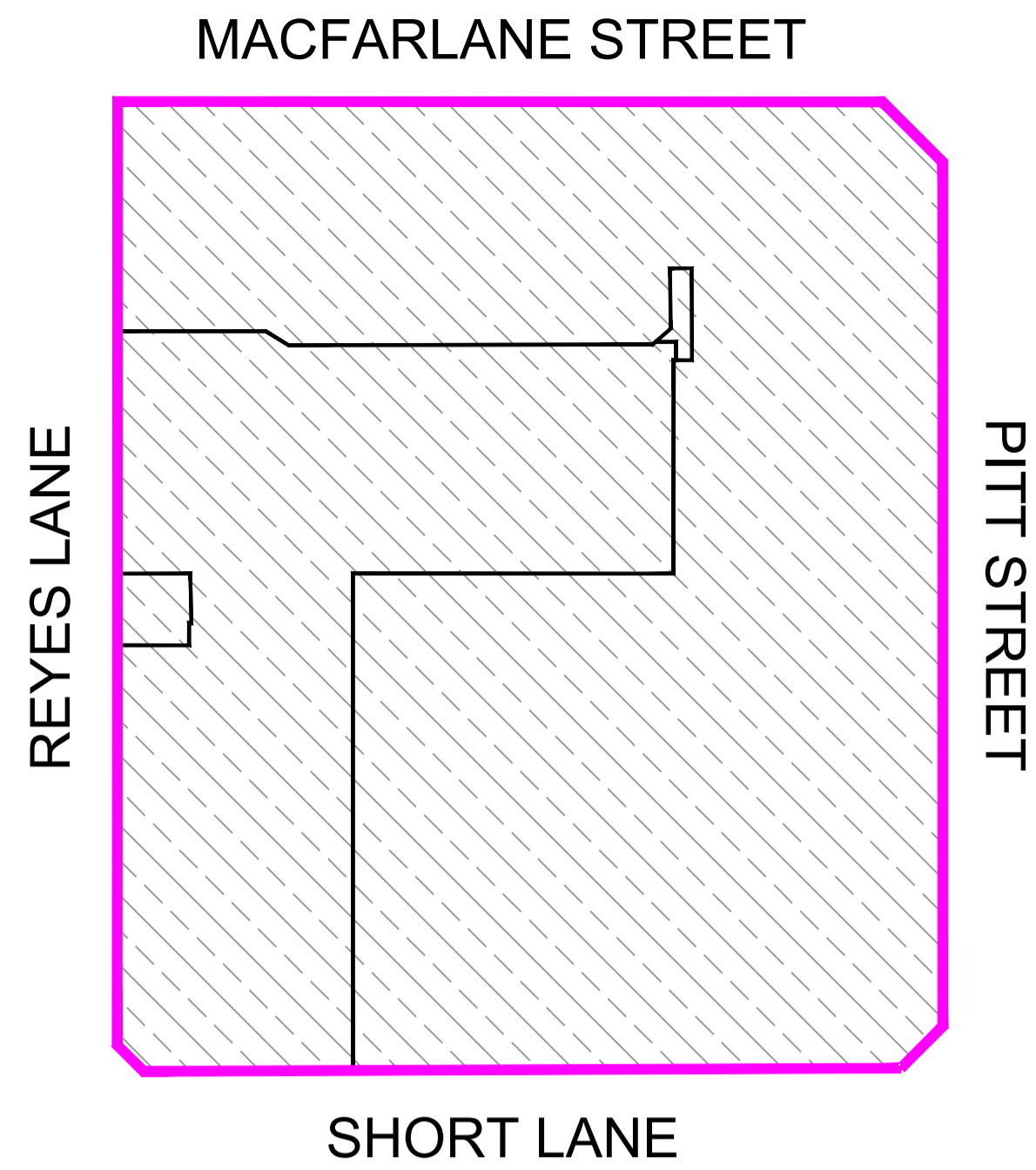
Project  
215, 229-239 PITT STREET MERRYLANDS 2160

Title  
**SEDIMENTATION & EROSION CONTROL DETAILS**

Drawn	Designed	Approved
HMR	SA	HR
Project No. S10518		Scale at A1. N.T.S
Drawing No. C101		Revision 2
Issued By HR	Checked By HR	Date 07.07.25

**FOR APPROVAL**

300mm  
200mm  
100  
50  
0 40mm



**STORMWATER DRAINAGE - EXISTING**

IT IS ANTICIPATED THAT DRAINAGE IN THE PRE-DEVELOPMENT SITE SCENARIO PRIMARILY CONSISTS OF A SMALL PIPE NETWORK CATERING TO THE CURRENT PROPERTY ON SITE. HOWEVER, THE PRE-DEVELOPMENT SITE IS OF MUCH SMALLER SCALE SO THE EXISTING NETWORK WILL NOT ADEQUATELY FUNCTION TO SERVICE THE PROPOSED DEVELOPMENT. THEREFORE, ANY EXISTING DRAINAGE NETWORK ON SITE NEEDS TO BE DISCONNECTED, REMOVED AND REPLACED WITH THE STORMWATER NETWORK AS PROPOSED ON THESE DRAWINGS.

**STORMWATER DRAINAGE - PROPOSED**

DRAINAGE IN THE POST-DEVELOPMENT SITE SCENARIO WILL PRIMARILY CONSIST OF A NEW PIT & PIPE NETWORK WHICH WILL CONVEY RAINFALL RUNOFF VIA GRAVITY TO THE COUNCIL INLET PIT LOCATED ON MACFARLANE STREET IN THE NORTH. FURTHERMORE, THE BUILDING WHICH COMPRISES OF THE MAJORITY OF THE DEVELOPMENT FOOTPRINT IS PROPOSED TO BE DRAINED VIA DOWNPIPES TO THE ON-SITE DETENTION TANK AND RAINWATER TANK (DESIGNED BY HYDRAULIC ENGINEER) FOR TRAFFICABLE AND NON-TRAFFICABLE ROOF AREAS RESPECTIVELY.

**ON-SITE DETENTION DESIGN**

SINCE THE DEVELOPMENT SITE LIES IN THE CUMBERLAND COUNCIL LOCAL GOVERNMENT AREA, THE ON-SITE DETENTION SYSTEM HAS BEEN DESIGNED IN ACCORDANCE WITH THE ON-SITE STORMWATER DETENTION HANDBOOK PREPARED BY UPPER PARRAMATTA CATCHMENT RIVER TRUST.

SINCE DISCHARGE FROM THE SITE DRAINS TO THE COUNCIL SYSTEM, WHICH ULTIMATELY DRAINS TO THE DUCK RIVER CATCHMENT VIA A'BECKETTS CREEK, THEREFORE, THE SITE HAS BEEN DESIGNED WITH A PERMISSIBLE SITE DISCHARGE (PSD) OF 140 l/s/ha AND A SITE STORAGE REQUIREMENT (SSR) OF 300 m<sup>3</sup>/ha.

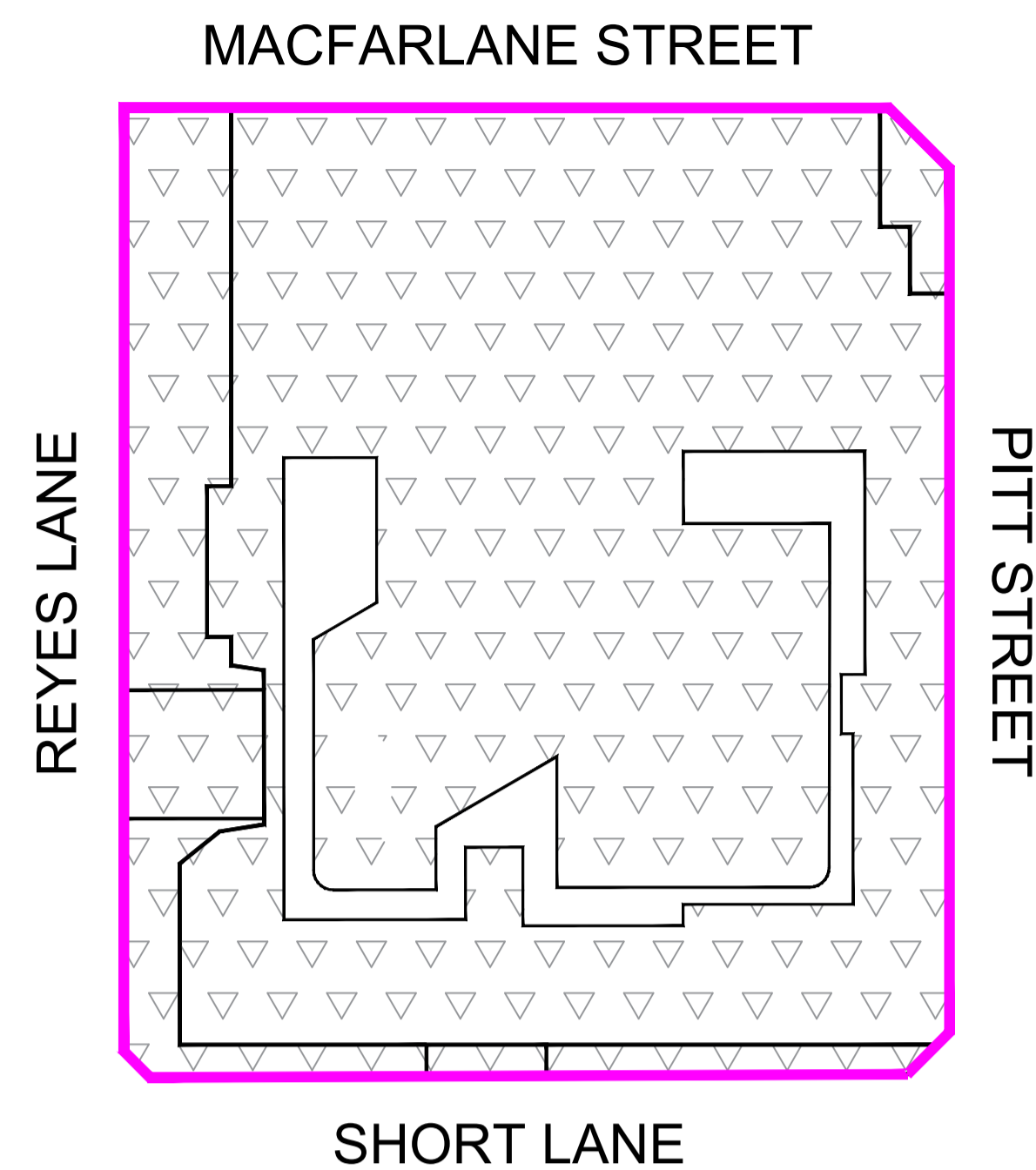
AS SUCH, THE ON-SITE DETENTION TANK FOR THE DEVELOPMENT HAS BEEN DESIGNED WITH A VOLUME OF 122.1 m<sup>3</sup> WITH DISCHARGE FROM SITE CONTROLLED TO 80 l/s/ha TO COMPLY WITH COUNCIL AND UPRCT REQUIREMENTS.

REFER TO THE STORMWATER REPORT PREPARED WITH THESE DRAWINGS FOR DESIGN DETAILS.

**RAINWATER TANK (BASIX)**

A 10KL RAINWATER TANK HAS BEEN PROPOSED FOR THE SITE BY THE SECTION J CONSULTANT IN ACCORDANCE WITH BASIX REQUIREMENTS FOR REUSE. REFER TO HYDRAULIC ENGINEER DRAWINGS FOR ASSOCIATED DETAILS.

ADDITIONALLY, HIGH OVERFLOW DISCHARGE FROM THE RAINWATER TANKS HAS BEEN DESIGNED TO DRAIN TO THE OSD TO ENSURE CONTROLLED DISCHARGE FROM THE SITE IN COMPLIANCE WITH COUNCIL REQUIREMENTS.



SITE AREA	2,031 m <sup>2</sup> (AS PER CAD)
IMPERVIOUS AREA	2,031 m <sup>2</sup> (100%)
PERVIOUS AREA	0 m <sup>2</sup> (0%)



SITE AREA	2,031 m <sup>2</sup> (AS PER CAD)
IMPERVIOUS AREA	1,843 m <sup>2</sup> (90.74%)
PERVIOUS AREA	188 m <sup>2</sup> (9.26%)

**CATCHMENT ANALYSIS**

EVALUATION OF THE CATCHMENTS FOR THE PRE & POST DEVELOPMENT AREAS REVEALS THAT THERE IS A NET DECREASE OF 9.26% (188 m<sup>2</sup>) IN THE IMPERVIOUS AREA DUE TO INTEGRATION OF LANDSCAPE PLANTERS ON THE DEVELOPMENT ROOF AND UPPER FLOORS. AS PER COUNCIL GUIDELINES, THE STORMWATER MANAGEMENT PLANS HAVE BEEN DEVELOPED WITH AN OSD & WSUD SYSTEM WITH CONTROLLED DISCHARGE TO MACFARLANE STREET.

**WATER SENSITIVE URBAN DESIGN (WSUD)**

AS PER COUNCIL GUIDELINES, WE HAVE INITIATED A STORMWATER QUALITY POLLUTANT LOAD MODEL USING MUSIC SOFTWARE (VERSION 6.3), AND PROPOSED TREATMENT CARTRIDGES IN THE OSD TANK AS REQUIRED. THIS HAS BEEN UNDERTAKEN TO ENSURE POLLUTANT REDUCTION AT THE SOURCE PRIOR TO DISCHARGE TO THE DOWNSTREAM WATERWAY. MOREOVER, OCEANGUARDS HAVE BEEN PROPOSED IN PITS TO ENSURE SEDIMENT CONTROL AT THE ENTRY POINT. REFER TO THE MUSIC MODEL NETWORK & OUTCOME IN C207 FOR FURTHER DETAILS.

**EROSION CONTROL MEASURES**

1. ALL EROSION AND SEDIMENT CONTROL MEASURES, (INCLUDING RE-VEGETATION AND STORAGE OF SOIL AND TOPSOIL), SHALL BE IMPLEMENTED TO THE DEPARTMENT OF CONSERVATION OF NEW SOUTH WALES STANDARDS.
2. TOPSOIL FROM ALL AREAS TO BE DISTURBED, SHALL BE STOCK PILED AND LATER RESPREAD TO AID VEGETATION.
3. ALL DRAINAGE WORKS SHALL BE CONSTRUCTED AND STABILISED AS EARLY AS POSSIBLE DURING DEVELOPMENT.
4. SEDIMENT TRAPS SHALL BE CONSTRUCTED AROUND ALL PITS.
5. DISTURBANCE TO VEGETATION SHALL BE LIMITED TO FILL AREAS, ROADWAYS, AND DRAINAGE LINES. AREAS OTHER THAN SPECIFIED SHALL BE DISTURBED ONLY WITH PRIOR APPROVAL FROM THE COUNCIL ENGINEER.
6. ALL DISTURBED AREAS SHALL BE REVEGETATED AS SOON AS THE RELEVANT WORKS ARE COMPLETED.
7. ALL SEDIMENT BASINS AND TRAPS SHALL BE CLEANED WHEN THE STRUCTURES ARE A MAXIMUM OF 60% FULL OF SOLID MATERIALS, INCLUDING DURING THE MAINTENANCE PERIOD.
8. A STRIP OF TURF BEHIND AND FOR THE TOTAL LENGTH OF ALL THE KERBS SHALL BE PROVIDED.
9. PIT GUARDS SHALL BE INSTALLED AROUND DRAINAGE PITS AFTER ROAD WORKS.

**SEDIMENT CONTROL DEVICES**

1. ALL HAY BALES SHALL BE BOUND WITH WIRE. HAY BALES SHALL BE PLACED END TO END IN A SINGLE ROW AND EMBEDDED INTO THE SOIL TO A DEPTH OF 100mm. EACH BALES SHALL BE SECURELY ANCHORED WITH TWO STEEL STAKES DRIVEN 600mm INTO THE GROUND AND LOCATED ON THE BALE CENTERLINE.
2. FILTER FENCE SHALL BE CONSTRUCTED BY STRETCHING A FILTER FABRIC (PROPEX OR SIMILAR) BETWEEN POSTS AT 3m CENTERS MAXIMUM. FABRIC SHALL BE BURIED INTO THE GROUND 200mm ALONG IT'S LOWER EDGE.
3. IF SILT FENCE IS NOT USED HAY BALES CAN BE USED FOR SURFACE INLET PIT PROTECTION.

**PUBLIC DOMAIN WORKS**

ALL OF THE ROAD ADJACENT FOOTPATHS AND ASSOCIATED KERBS ARE PROPOSED TO BE RECONSTRUCTED FOR THE NEW DEVELOPMENT IN ACCORDANCE WITH COUNCIL GUIDELINES. NEW FULL WIDTH FOOTPATHS ARE ALSO PROPOSED ON SHORT LANE AND REYES LANE WITH EXISTING SERVICES AND STREET FURNITURE PROPOSED TO BE RETAINED BY THE ARCHITECT. FURTHERMORE, THE WIDTH OF THE ROAD AREA ON SHORT LANE IS PROPOSED TO BE EXTENDED AS PART OF THE DEVELOPMENT (REFER TO PLANNING REPORT).

Revision	Amendment	Issued By	Revision Date
0	DRAFT	HR	27.06.25
1	ISSUED FOR APPROVAL	HR	07.07.25
2	UPDATED FOR APPROVAL	HR	01.08.25

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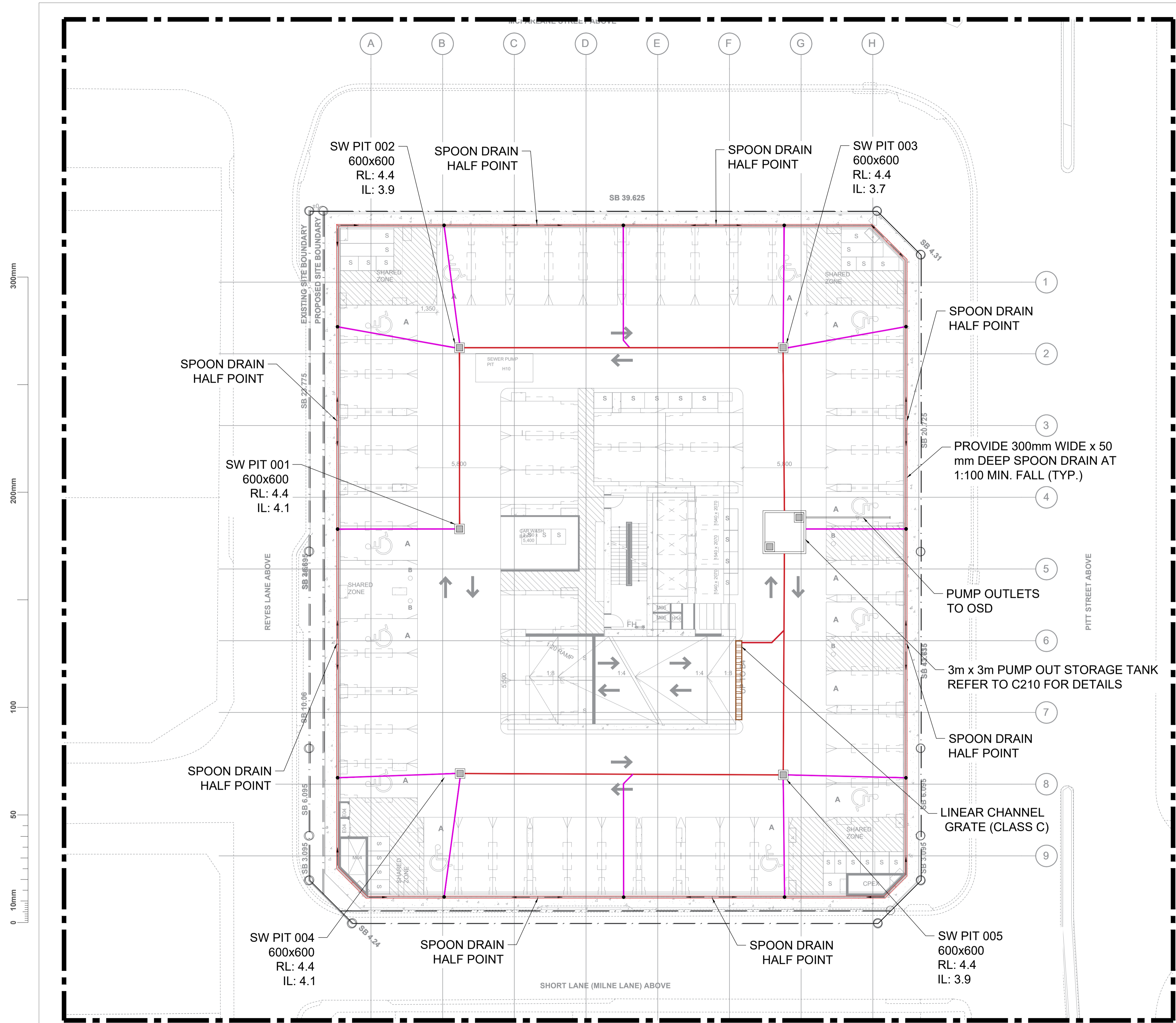
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Project  
215, 229-239 PITT STREET MERRYLANDS 2160

Title  
**AREA ANALYSIS & ENGINEER NOTES**

FOR APPROVAL		
Drawn	Designed	Approved
SA	SA	HR
Project No. S10518		Scale at A1. N.T.S
Drawing No. C102		Revision 2
Issued By HR	Checked By HR	Date 01.08.25



**LEGEND**

- SWD  $\varnothing$ 100 UPVC GRAVITY PIPE @1% MIN.
- SWD  $\varnothing$ 225 UPVC GRAVITY PIPE @1% MIN.
- SWD  $\varnothing$ 150 UPVC GRAVITY PIPE @1% MIN.
- $\varnothing$ 225 DP DOWNPIPE UPVC
- GRATED SW PIT (TYP.)

**NOTES**

1. FOR GENERAL NOTES & LEGEND REFER TO COVER SHEET.
2. CONTRACTOR TO IDENTIFY, MODIFY AND RELOCATE ANY CLASH WITH OTHER SERVICES AS REQUIRED.
3. THE CONTRACTOR IS RESPONSIBLE TO VERIFY ON-SITE EXACT LOCATION AND SUPPLY POINTS OF ALL THE SERVICES AND DRAINAGE PITS BEFORE PROCEEDING WITH THE WORKS.
4. DRAWINGS ONLY INDICATE APPROXIMATE POSITION OF PROPOSED GRATES, DP & RWO. REFER TO ARCHITECTURAL DETAILS.
5. CONTRACTOR TO CONFIRM LOCATION, SIZES AND INVERT LEVELS OF ALL EXISTING SERVICES PRIOR TO COMMENCEMENT.
6. REFER TO ARCHITECTURAL DRAWINGS FOR SETOUTS.
7. WORKS TO BE PERFORMED IN ACCORDANCE WITH 3500.3.
8. ALL GRATES ARE TO BE HEEL GUARD.

**STORMWATER MANAGEMENT PLAN - BASEMENT 4**  
SCALE = 1:150

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25
3	ISSUED FOR APPROVAL	HR	08.10.25

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Client  
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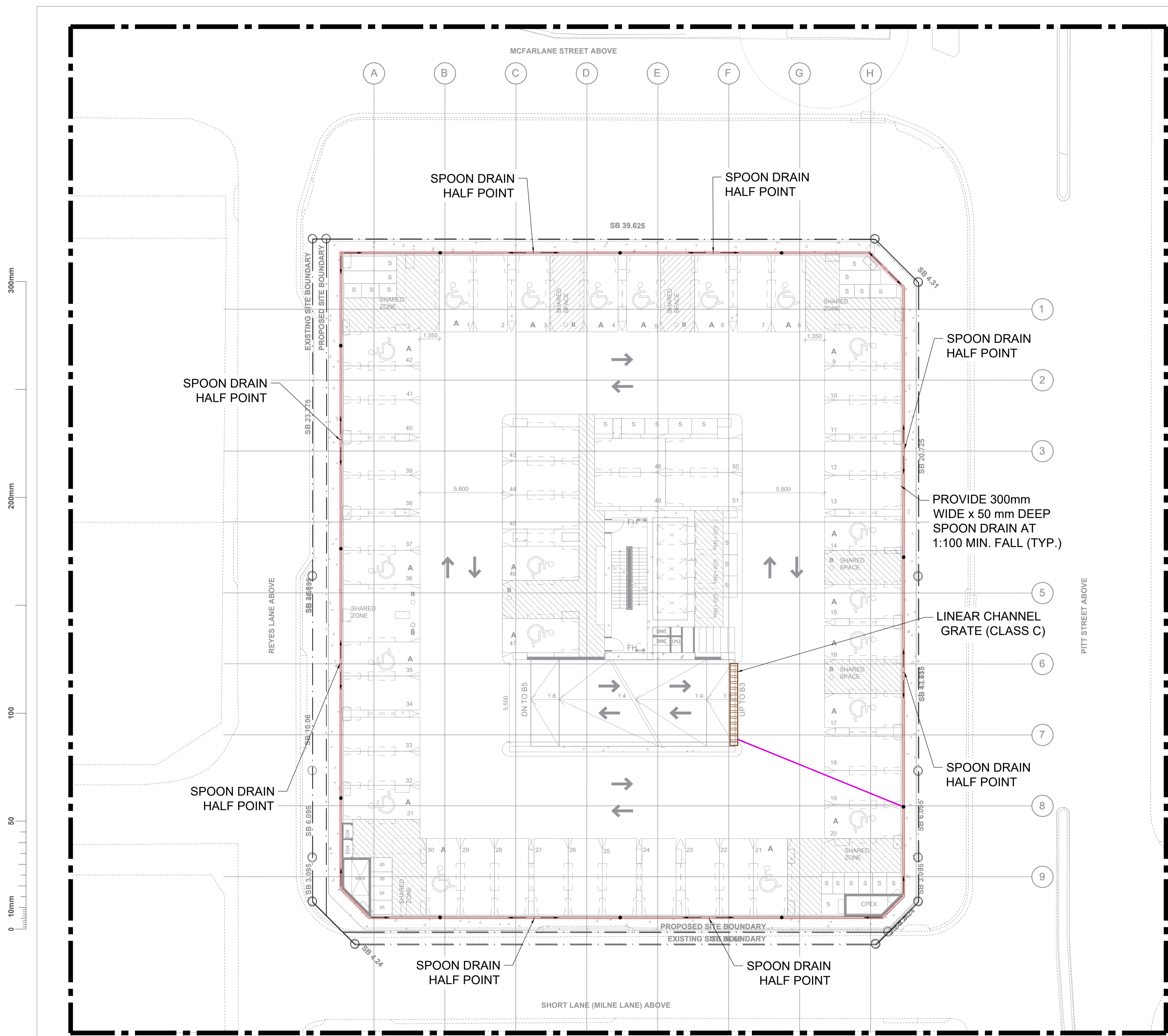
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215, 229-239 PITT STREET MERRYLANDS 2160

Title  
**STORMWATER MANAGEMENT PLAN  
BASEMENT 4**

Drawn	Designed	Approved
HMR	SA	HR
Project No. S10567		Scale at A1. 1:150
Drawing No. C200		Revision 3
Issued By HR	Checked By HR	Date 08.10.25

**FOR APPROVAL**



**LEGEND**

- SWD — Ø100 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø225 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø150 UPVC GRAVITY PIPE @1% MIN.
- Ø225 DP DOWNPIPE UPVC
- GRATED SW PIT (TYP.)

**STORMWATER MANAGEMENT PLAN - BASEMENT 1 - 3**  
SCALE = 1:150

**FOR APPROVAL**

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25
3	ISSUED FOR APPROVAL	HR	08.10.25

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**Architect**  
**FUSE ARCHITECTS**

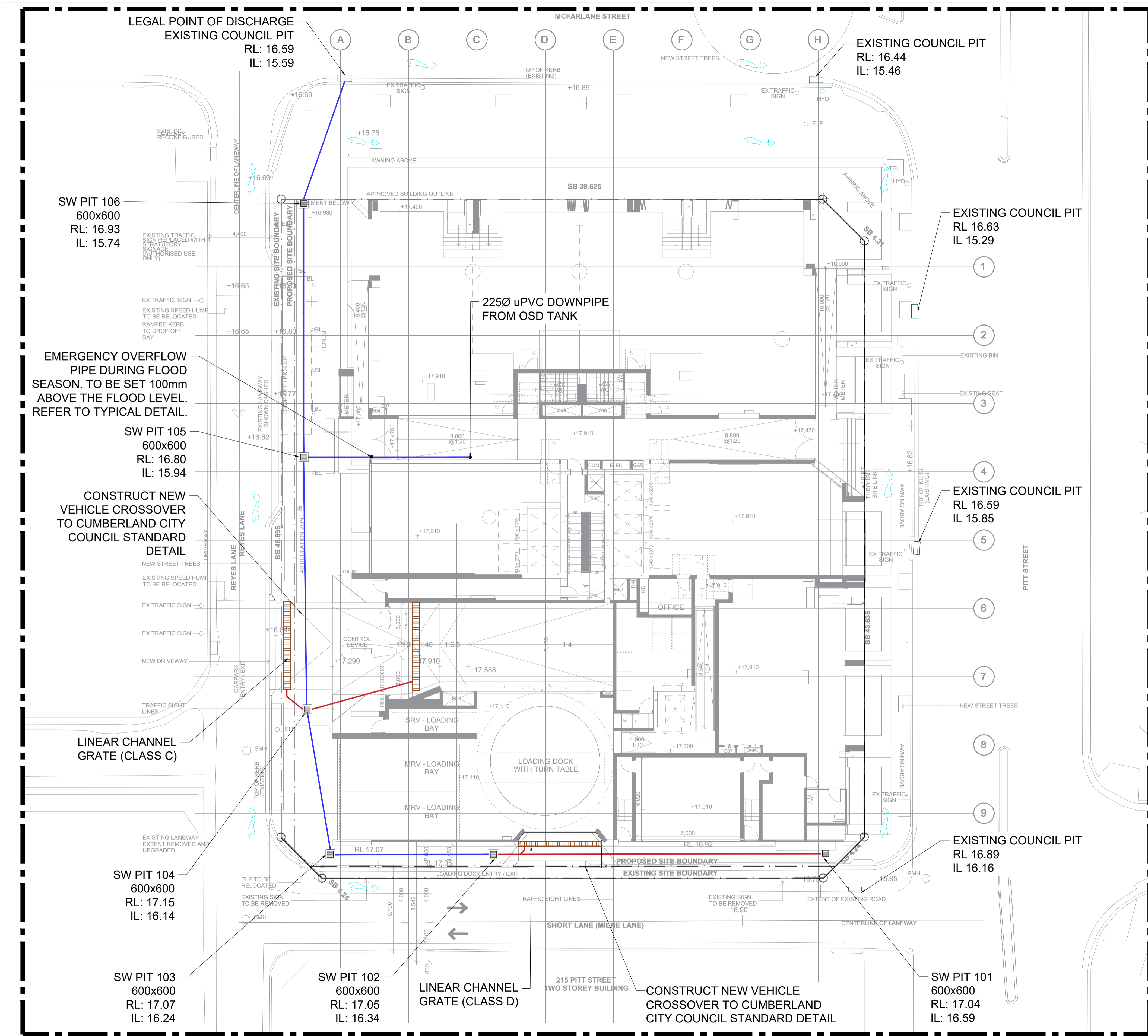
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**Project**  
215, 229-239 PITT STREET MERRYLANDS 2160

**Title**  
STORMWATER MANAGEMENT PLAN  
BASEMENT 1-3

Drawn	Designed	Approved
HMR	SA	HR
<b>Project No.</b> S10567		<b>Scale</b> at A1. 1:150
<b>Drawing No.</b> C201		<b>Revision</b> 3
<b>Issued By</b> HR	<b>Checked By</b> HR	<b>Date</b> 08.10.25



**LEGEND**

- SWD — Ø100 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø225 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø150 UPVC GRAVITY PIPE @1% MIN.
- Ø225 DP DOWNPIPE UPVC
- GRATED SW PIT (TYP.)

**STORMWATER MANAGEMENT PLAN**  
**GROUND FLOOR**  
 SCALE = 1:150

**FOR APPROVAL**

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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**FUSE ARCHITECTS**

**Client**  
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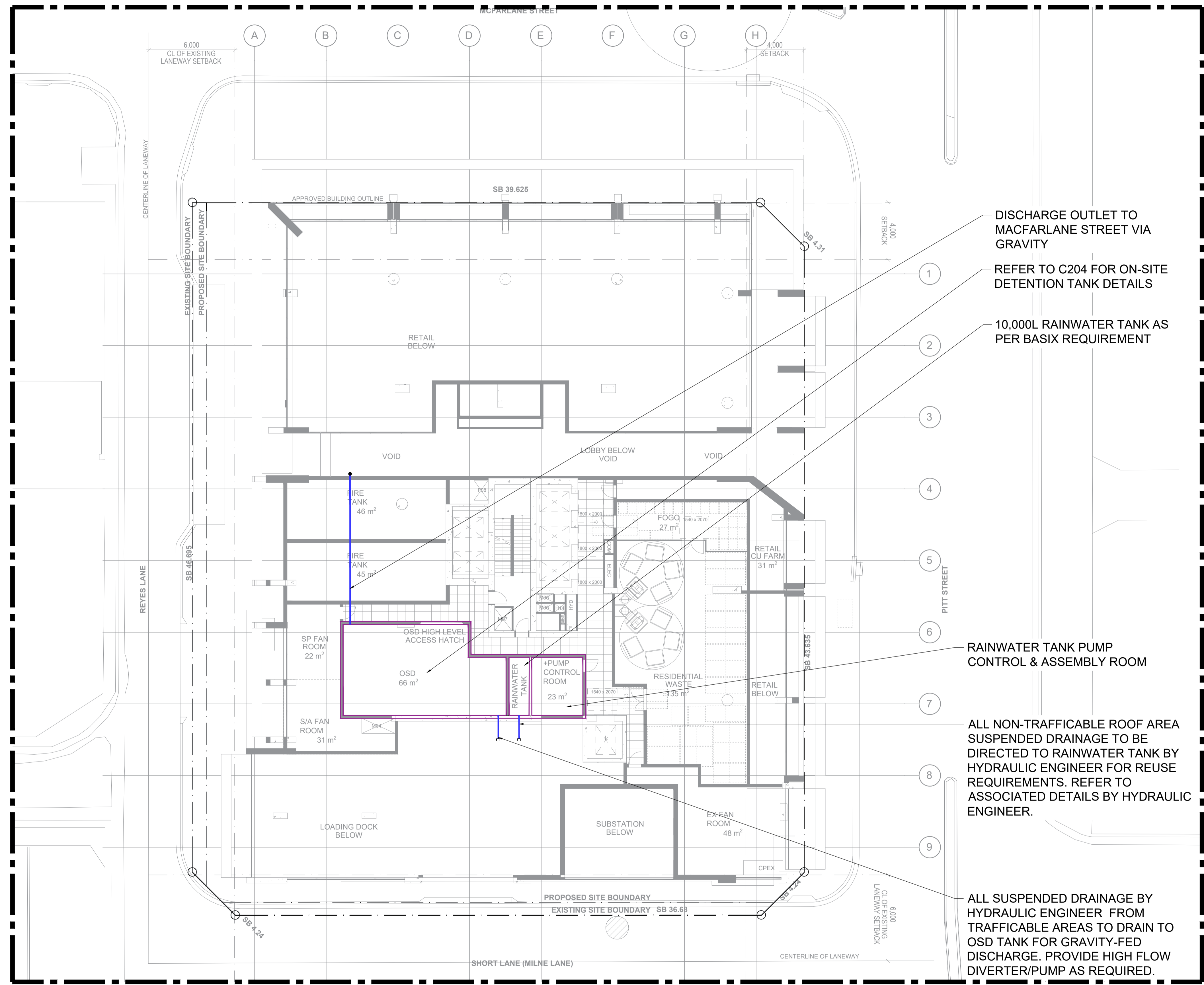
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**Project**  
 215, 229-239 PITT STREET MERRYLANDS 2160

**Title**  
 STORMWATER MANAGEMENT PLAN  
 GROUND FLOOR

Drawn	Designed	Approved
HMR	SA	HR
Project No. S10567		Scale at A1. 1:150
Drawing No. C202		Revision 2
Issued By HR	Checked By HR	Date 07.07.25

300mm  
200mm  
100  
50  
0 10mm



**LEGEND**

- SWD — Ø100 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø225 UPVC GRAVITY PIPE @1% MIN.
- SWD — Ø150 UPVC GRAVITY PIPE @1% MIN.
- Ø225 DP DOWNPIPE UPVC
- GRATED SW PIT (TYP.)

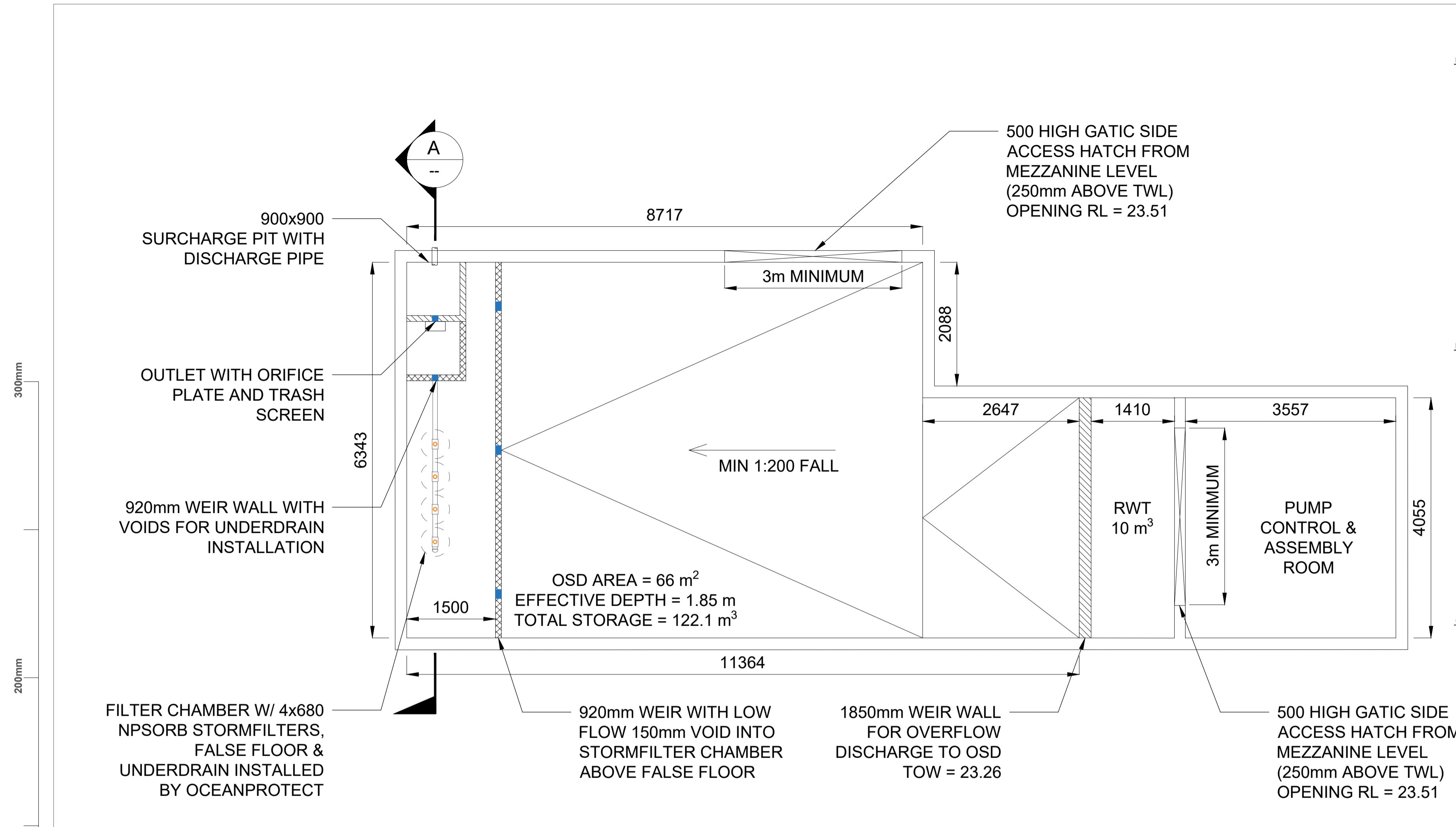
- 1 DISCHARGE OUTLET TO MACFARLANE STREET VIA GRAVITY
- 2 REFER TO C204 FOR ON-SITE DETENTION TANK DETAILS
- 3 10,000L RAINWATER TANK AS PER BASIX REQUIREMENT
- 4
- 5
- 6 RAINWATER TANK PUMP CONTROL & ASSEMBLY ROOM
- 7 ALL NON-TRAFFICABLE ROOF AREA SUSPENDED DRAINAGE TO BE DIRECTED TO RAINWATER TANK BY HYDRAULIC ENGINEER FOR REUSE REQUIREMENTS. REFER TO ASSOCIATED DETAILS BY HYDRAULIC ENGINEER.
- 8
- 9 ALL SUSPENDED DRAINAGE BY HYDRAULIC ENGINEER FROM TRAFFICABLE AREAS TO DRAIN TO OSD TANK FOR GRAVITY-FED DISCHARGE. PROVIDE HIGH FLOW DIVERTER/PUMP AS REQUIRED.

**STORMWATER MANAGEMENT PLAN - GROUND FLOOR - MEZZANINE**

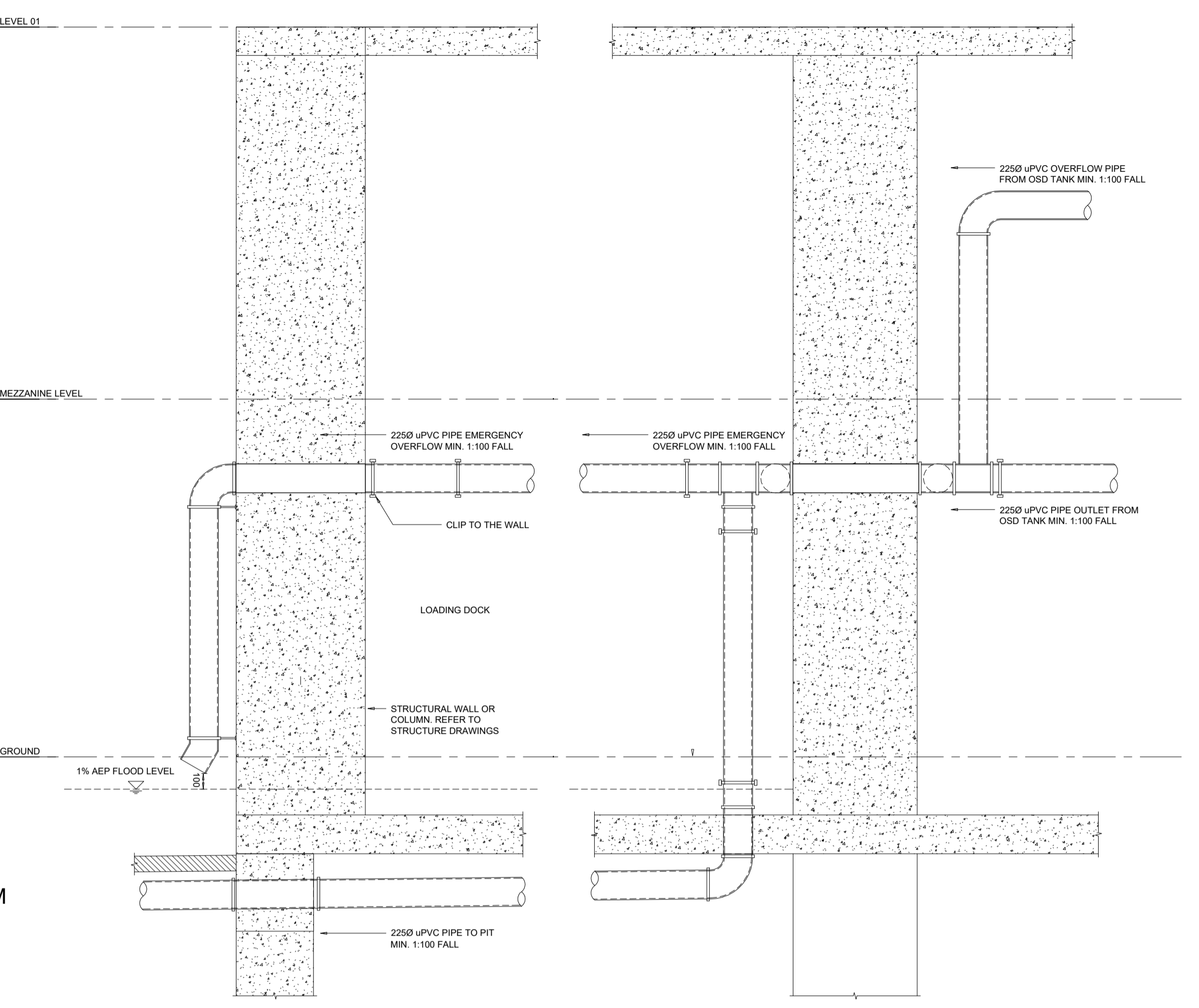
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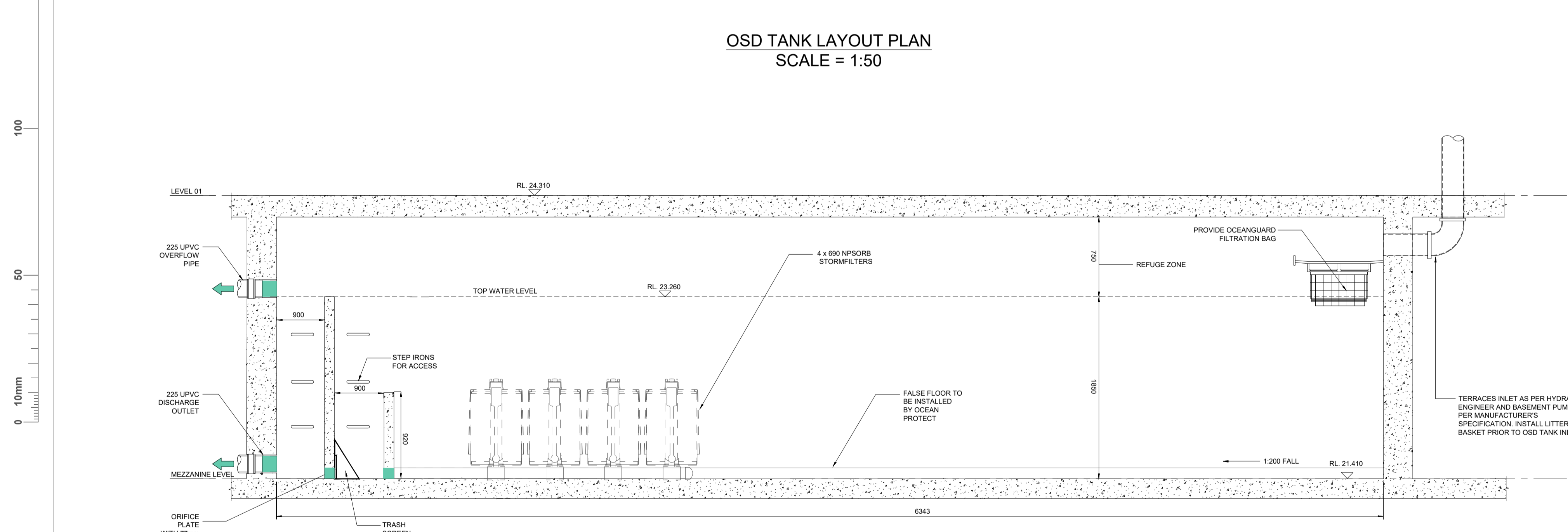
Revision	Amendment	Issued By	Revision Date	Architect	Client	Engineer	Project	Drawn	Designed	Approved	
0	ISSUED FOR COORDINATION	HR	19.06.25	<b>FUSE ARCHITECTS</b>	<b>Anglicare</b>	EIA Australia Suite 6.01 55 Miller Street Pyrmont, NSW 2009 T 02 9516 0722	215, 229-239 PITT STREET MERRYLANDS 2160	HMR	SA	HR	
1	DRAFT	HR	27.06.25					Project No.	S10567	Scale	at A1. 1:150
2	ISSUED FOR APPROVAL	HR	07.07.25					Drawing No.	C203	Revision	3
3	UPDATED FOR APPROVAL	HR	01.08.25					Issued By	HR	Checked By	HR
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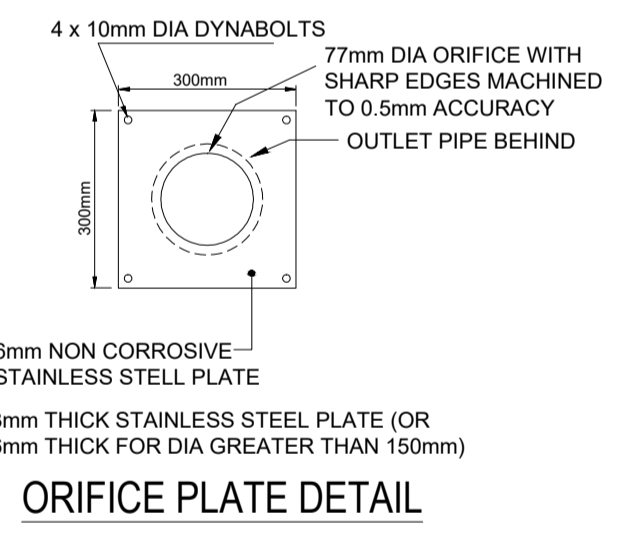
OSD TANK LAYOUT PLAN  
SCALE = 1:50



TYP. BUILDING DRAINAGE SECTION  
N.T.S



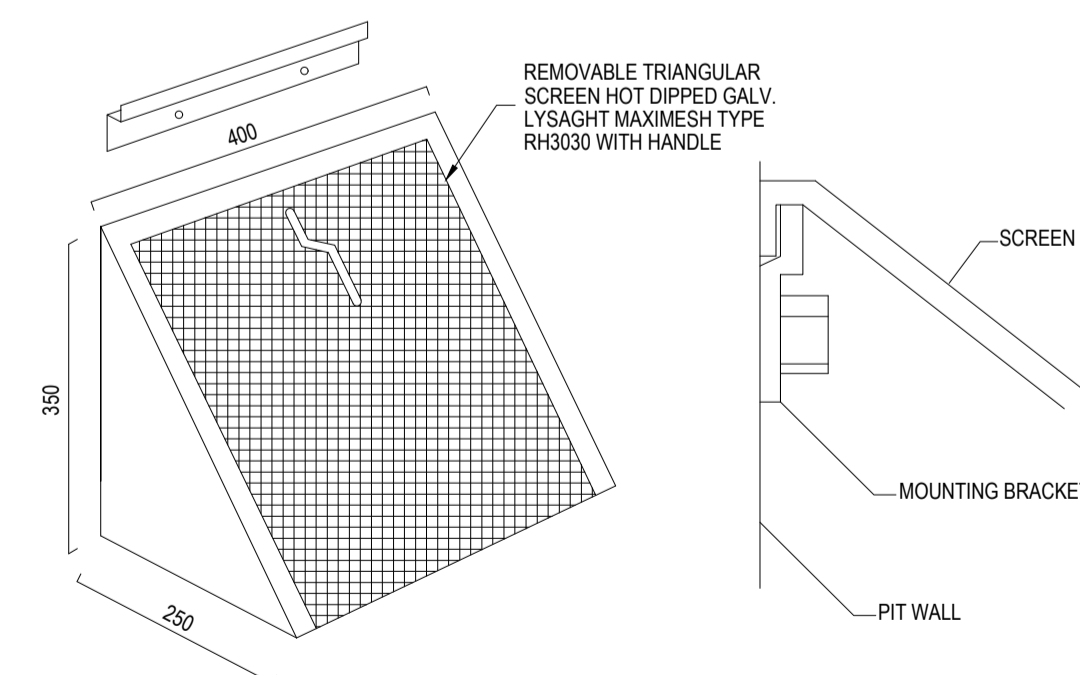
OSD SECTION A-A  
N.T.S



ORIFICE PLATE DETAIL



CONFINED SPACE WARNING SIGN



MULTI PURPOSE FILTER SCREEN (INDICATIVE)  
PRODUCT CODE: MMPPS (MASCOT ENGINEERING)  
FITTED TO CONTROL PIT PRIOR TO OUTLET



ON SITE DETENTION WARNING SIGN  
TO BE PROVIDED IN A VISIBLE  
LOCATION NEAR OR IN BASIN AREA

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25
3	UPDATED FOR APPROVAL	HR	01.08.25

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Client  
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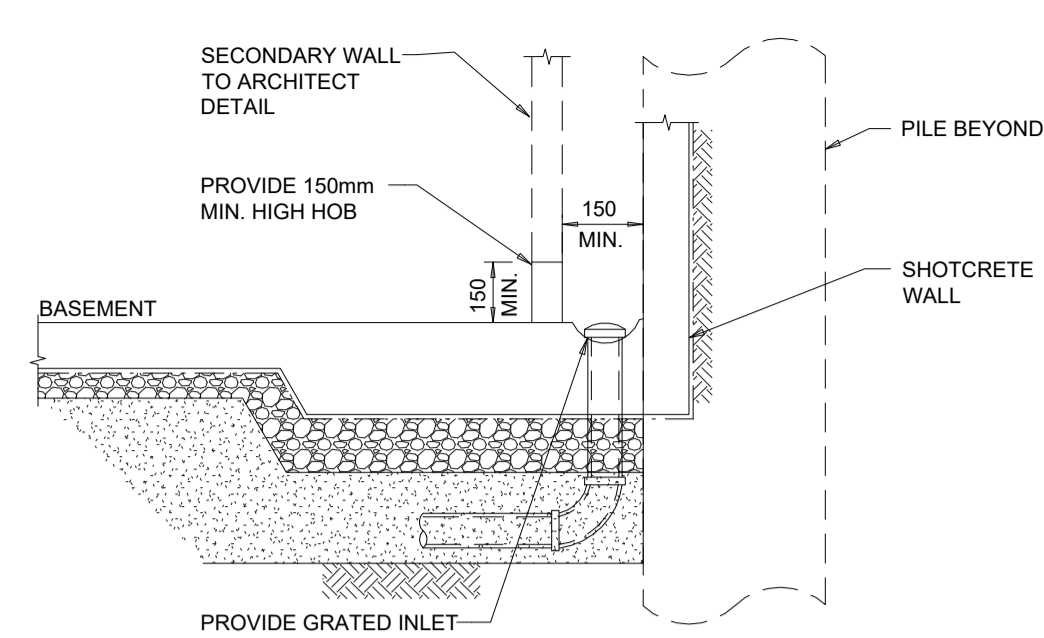
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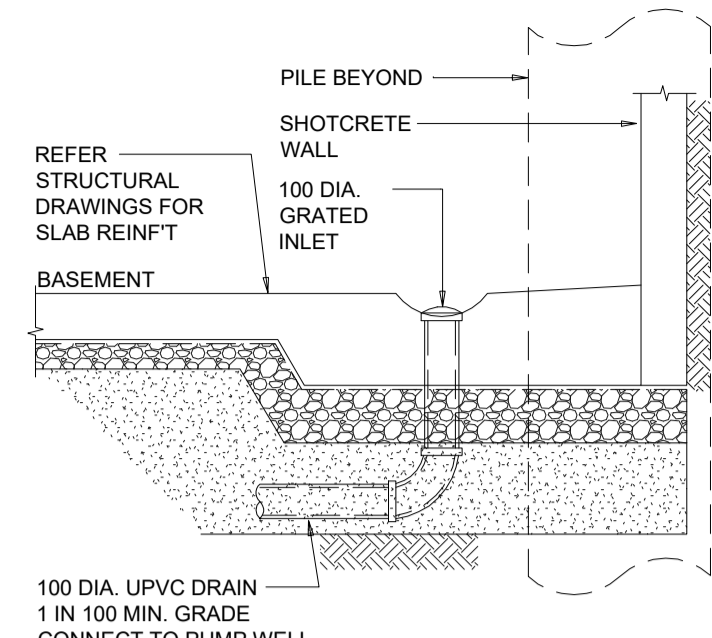
Title  
**OSD LAYOUT PLAN & SECTION**

Drawn	Designed	Approved
HMR	SA	HR
Project No.	Scale	
S10567	at A1. NTS	
Drawing No.	Revision	
C204	3	
Issued By	Checked By	Date
HR	HR	01.08.25

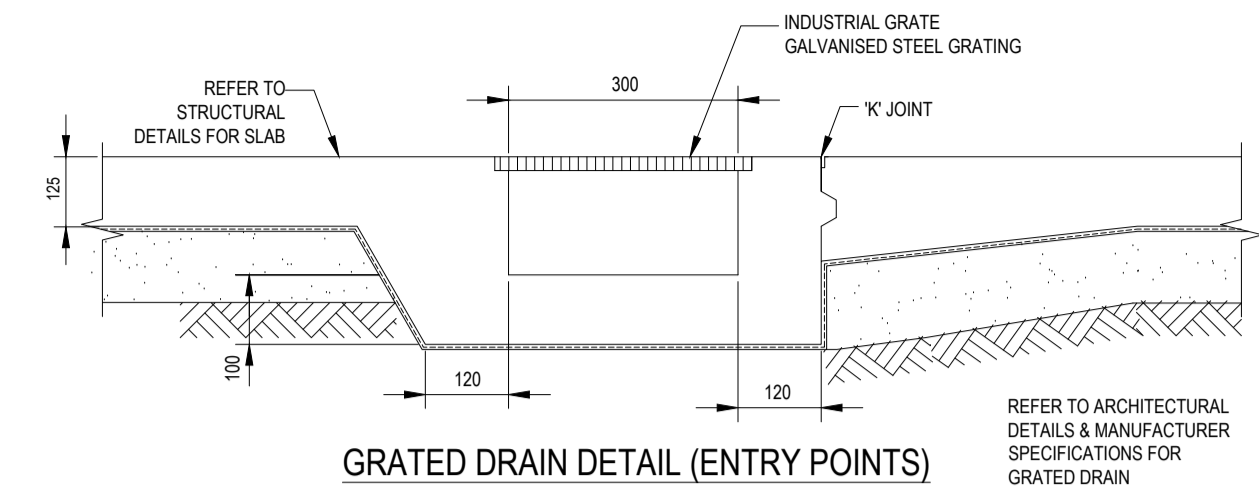
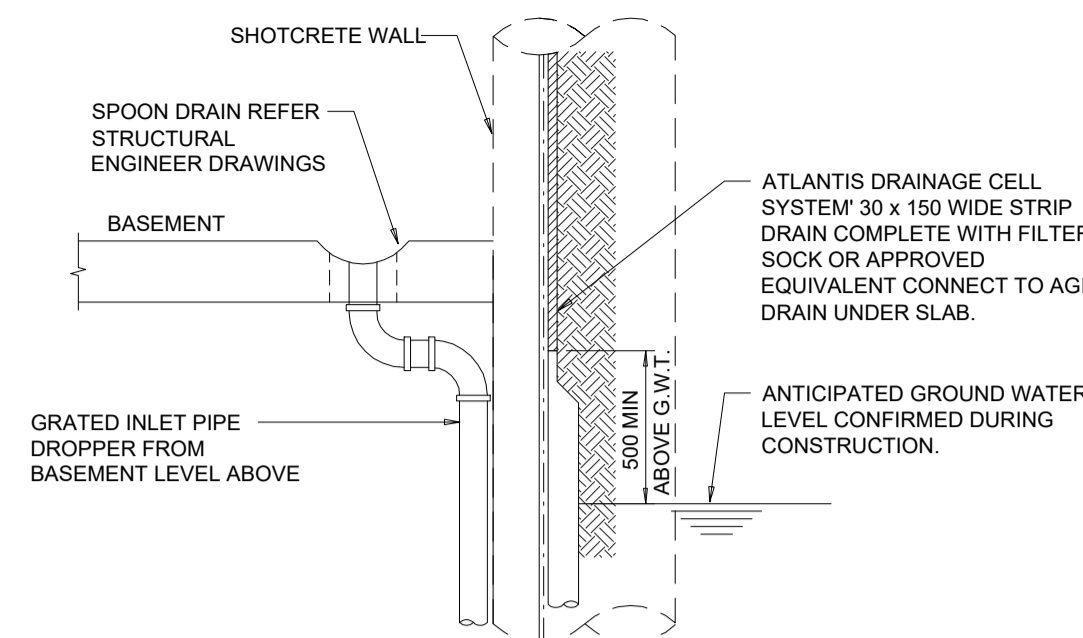
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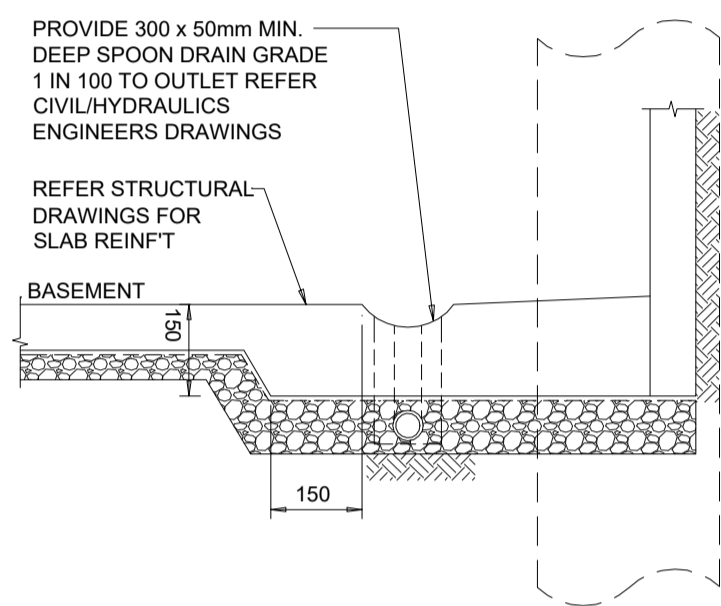
**TYPICAL RETENTION DETAIL ADJACENT HABITABLE SPACE**  
NTS



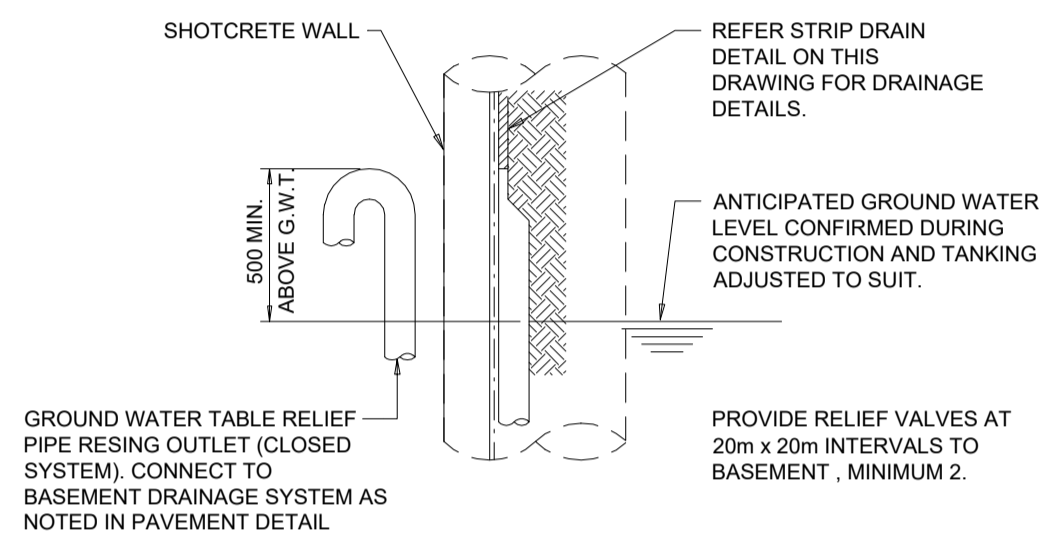
**GRADED INLET (G.I.) DETAIL**  
NTS



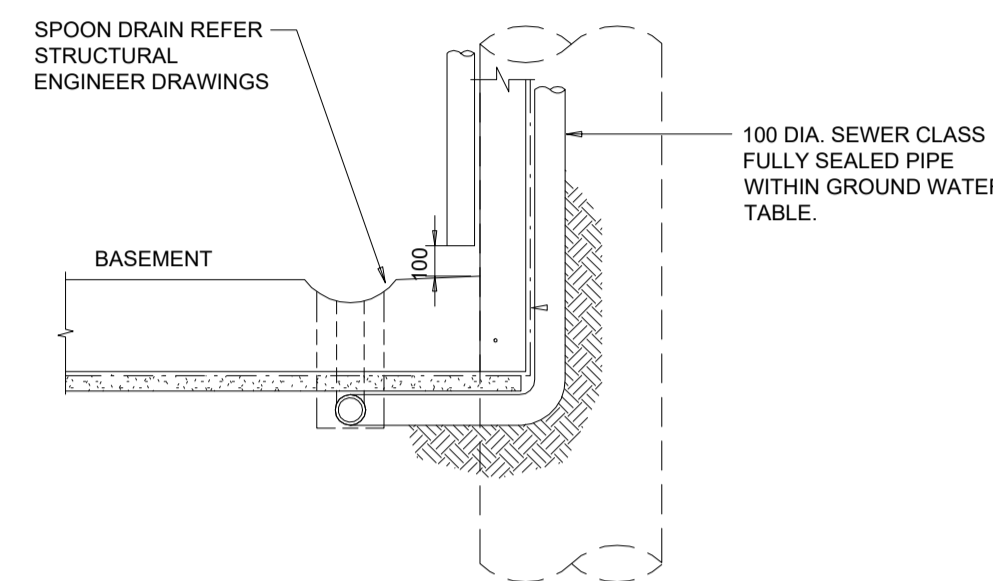
**GRADED DRAIN DETAIL (ENTRY POINTS)**  
NTS



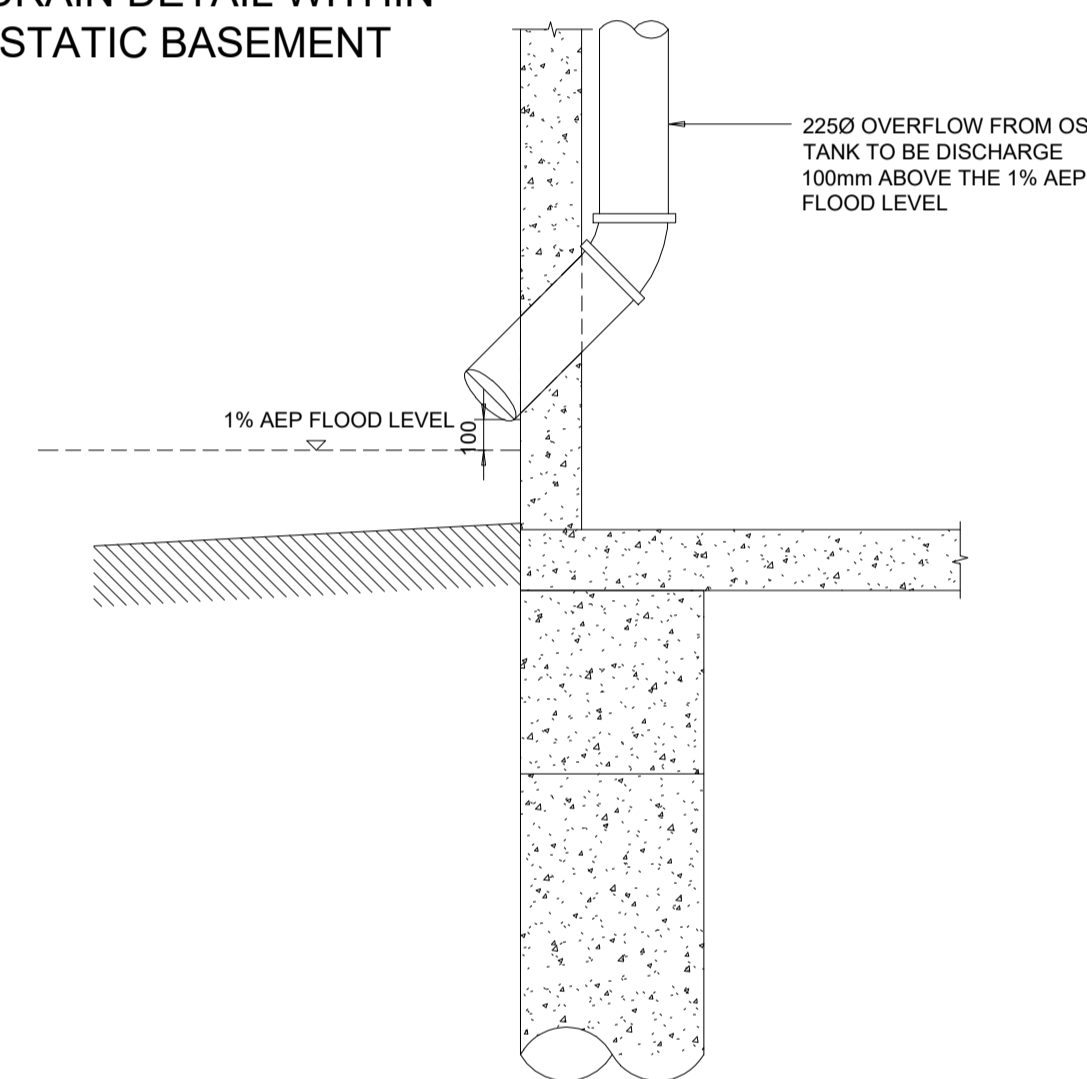
**SPOON DRAIN DETAIL**  
NTS



**TYPICAL RELIEF VALVE FOR HYDROSTATIC SLABS**  
NTS

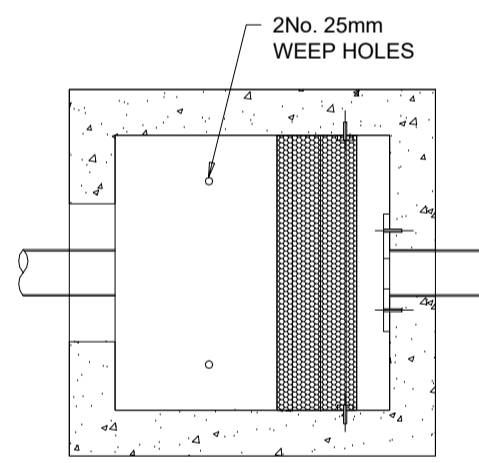


**STRIP DRAIN DETAIL WITHIN HYDROSTATIC BASEMENT**  
NTS

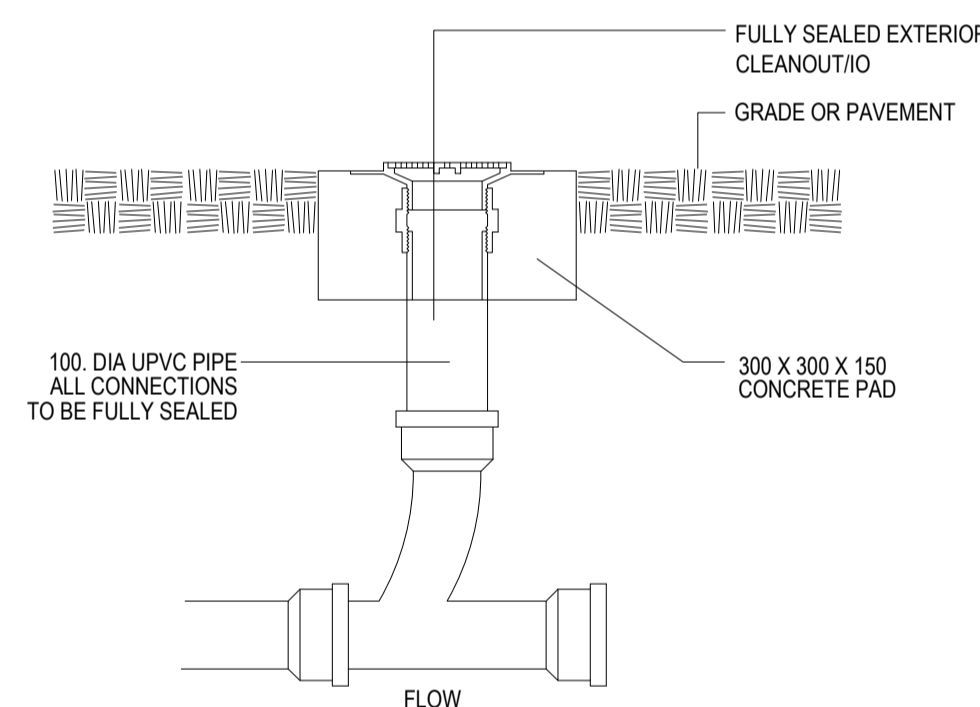


**TYPICAL DOWNPIPE OSD TANK OVERFLOW**  
N.T.S.

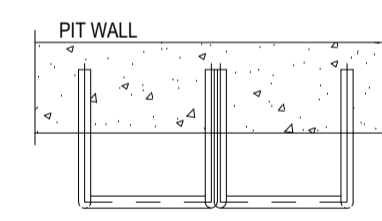
- ORIFICE PLATE**
1. PLATE SIZE TO BE GREATER OF 300 x 300mm
  2. PLATE THICKNESS TO BE MINIMUM 6mm, STAINLESS STEEL, GALV. OR ZINC COATED STEEL.
  3. PLATE FIXING BY CONSTRUCTION ADHESIVE TO PIT WALL IN ADDITION TO 4 x Ø 10mm STAINLESS STEEL OF EITHER VANDAL PROOF SHEAR-HEAD TYPE MASONRY ANCHORS OR ALTERNATIVELY CUP-HEAD BOLTS PERMANENTLY FIXED WITH THE USE OF 'CHEMSET' (OR EQUIVALENT) BONDING AGENT. HEXAGONAL-HEAD NUT/BOLT HARDWARE NOT ACCEPTED.
- MESH**
1. MESH TO BE MAXIMESH "RH3030" OR EQUIVALENT STEEL MESH, GALV./ZINC COATED.
  2. MESH TO BE AFFIXED TO 40 x 40 x 5mm EQUAL ANGLE SECTION BY MIN. 2 x 10mm GALV./ZINC/S.S. NUT AND BOLT. BOLTS TO BE WELDED IN PLACE SO AS TO BE RETAINED ON ANGLE SECTION.
  3. EQUAL ANGLE SECTIONS TO BE MINIMUM LENGTH 300mm, FIXED TO PIT WALLS.
  4. MESH LENGTH (FOR ORIFICE SIZE EXCEEDING 105mm) DERIVED FROM MINIMUM 50 x ORIFICE AREA CALCULATION.
  5. PIT COVER TO BE HEAVY DUTY GRATED TYPE IF IN COMMON OR TRAFFICABLE AREA.
  6. PIT WALLS AND BASE TO BE MINIMUM 125mm THICK Fc=25MPa CONCRETE.
  7. WHERE PIT IS WIDER THAN 600mm; 40 x 40 x 5 EQUAL ANGLES TO BE WELDED ACROSS FULL WIDTH OF MESH.
  8. MESH PERFORATIONS TO BE ORIENTED WITH LONG DIMENSION TO THE HORIZONTAL AND IN DIRECTION OF STORMWATER FLOW.



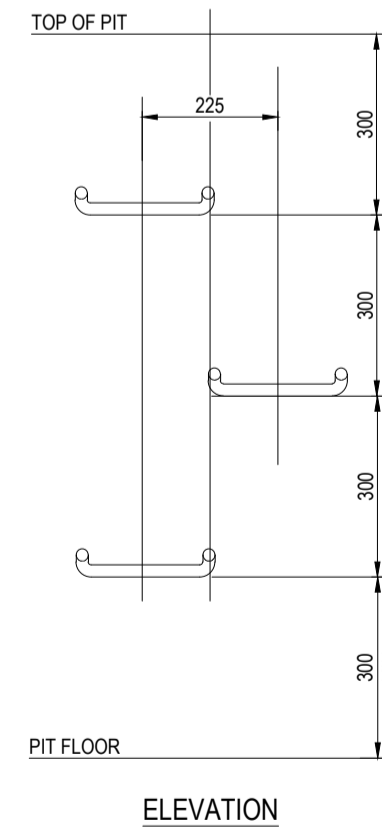
**ORIFICE PIT PLAN**  
SCALE 1:20



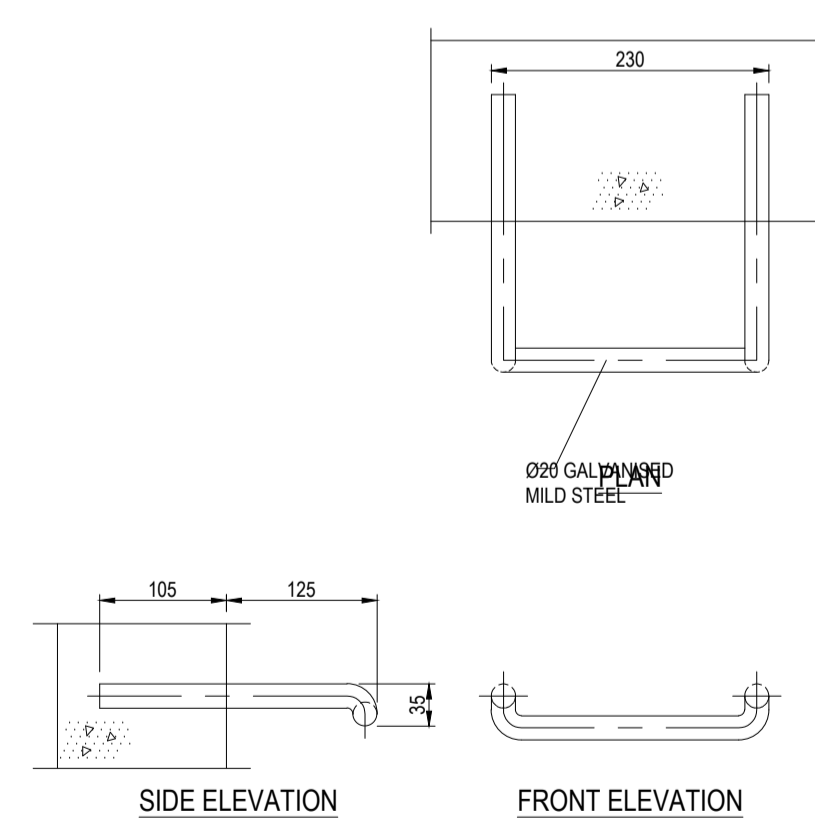
**TYPICAL INSPECTION I/O**



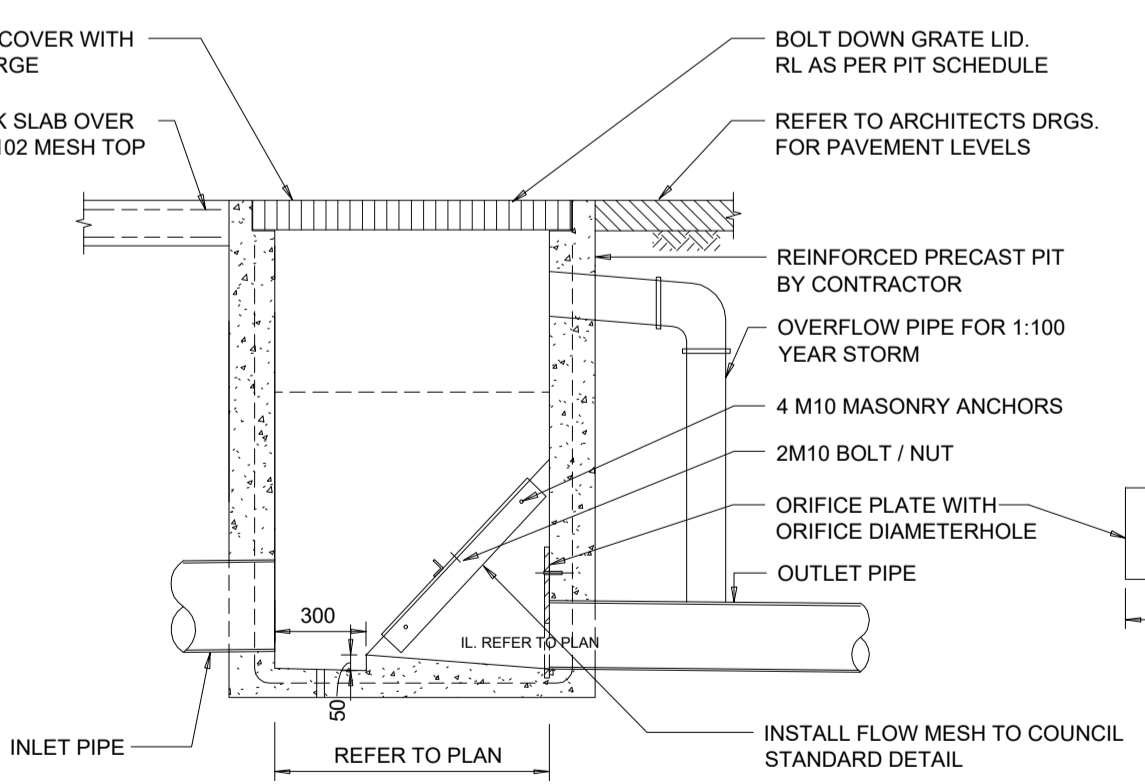
**PLAN**



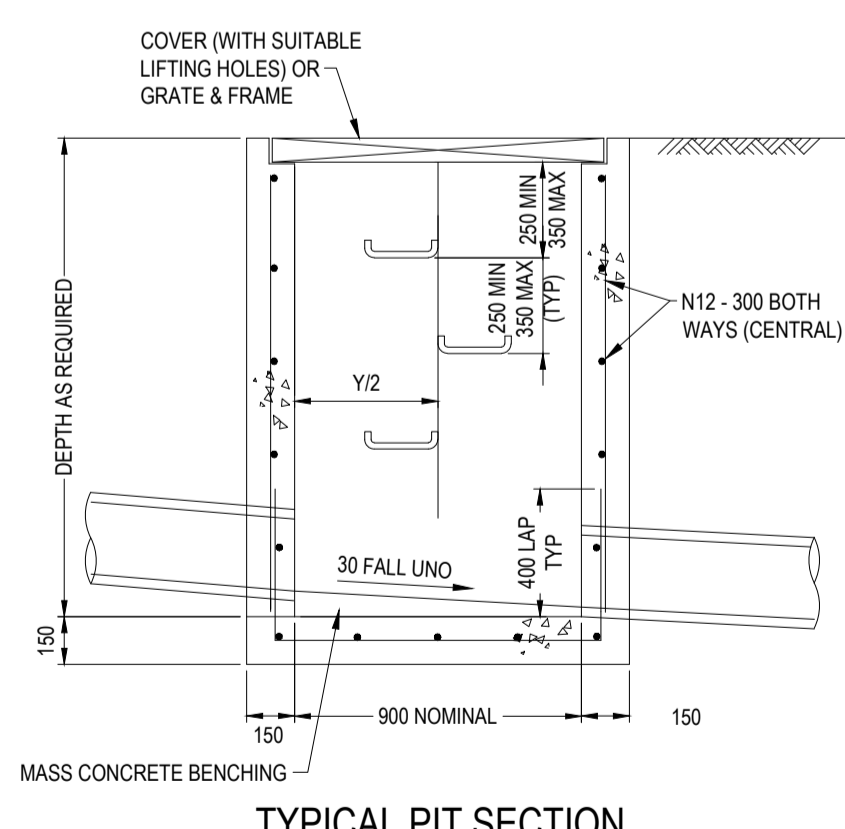
**ELEVATION**



**SIDE ELEVATION FRONT ELEVATION**



**DISCHARGE CONTROL PIT**



**TYPICAL PIT SECTION**



**STEP IRON PLACEMENT TO PIT WALL**  
NTS



**STEP IRON DETAIL**  
NTS

This page last updated June 2004 B.1-1 On-site Stormwater Detention Handbook

**Form B1<sup>1</sup> DRAINAGE DESIGN SUMMARY SUB/DA**

No. \_\_\_\_\_

Project: S10518 Location: 215, 229-239 PITT STREET, MERRYLANDS NSW

Designed by: Hasan Javied Rana Company: EI Consulting Engineers Phone: 0469319995

SITE AREA	<u>0.203</u>	ha	*See Section 3.4.3 for dual occupancy	[A]
Upstream catchment draining through site	<u>0.203</u>	ha		[AA]
See Section 4.1.3 for assessment of external flows.				
Basic storage volume	<u>300</u>	<u>470</u>	x [A] <u>0.203</u>	[B]
Basic discharge	<u>0.14</u>		= <u>0.08</u> x [A] <u>0.203</u>	[C]
Area of site drained to storage	<u>0.203</u>	ha	(Must be as much as possible and not be less than 85% of the total site without written Council approval).	[D]
[D] / [A] + [ <u>0.203</u> ] / [ <u>0.203</u> ] x 100	<u>100</u>	%		[E]
Storage per ha. of contributing area = [B] / [D]	<u>295</u>			[F]
Enter volume/PSD adjustment chart (Fig 5.1) using [F], and Read new PSD in litres/second/ha (l/s/ha).	<u>80</u>	l/s/ha		[G]
Determine PSD = [G] x [D] <u>80</u> x <u>0.203</u>	<u>16.24</u>	l/s		[H]
Maximum head to orifice centre	<u>1.794</u>	m		[K]
Weir flow to storage $Q^{Weir} = CL(H^{Weir})^{1.5}$ ∴ $H^{Weir} = 1.794$	<u>1.794</u>	m		[I]
Selected orifice diameter: $d = (0.464 \times Q / \sqrt{h})^{0.5} = (0.464 \times [H] / \sqrt{[K]})^{0.5}$	<u>0.077</u>	m		[J]
Maximum discharge	<u>16.24</u>	l/s		[L]
Head for high early discharge	<u>0.92</u>	m		[M]
High early discharge $\{([L] \times \sqrt{[M]}) / [K]\}$ (min 75% of [L])		l/s		[N]
Approximate mean discharge = $([L] + [N]) / 2$		l/s		[P]
Average discharge/ha = [P] / [D] = _____ / _____		l/s/ha		[Q]
Enter volume/P.S.D. adjustment chart (Fig 5.1) using [Q] And read off final storage volume per hectare	<u>580</u>	m <sup>3</sup> /ha		[R]
Determine final SSR = [R] x [D] = <u>580</u> x <u>0.203</u>	<u>117</u>	m <sup>3</sup>		[S]
Primary storage proportion = [S] x <u>100</u> %		m <sup>3</sup>		[T]
Secondary storage proportion = [S] x _____ %		m <sup>3</sup>		[U]
Tertiary storage proportion [S] x _____ %		m <sup>3</sup>		[V]
Check [T] + [U] + [V] = [S]		m <sup>3</sup>		

<sup>1</sup> Revised for third edition to include flow from upstream and revised by pass flows

Upper Parramatta River Catchment Trust

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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Architect

**FUSE ARCHITECTS**

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**Anglicare**

Engineer

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Project

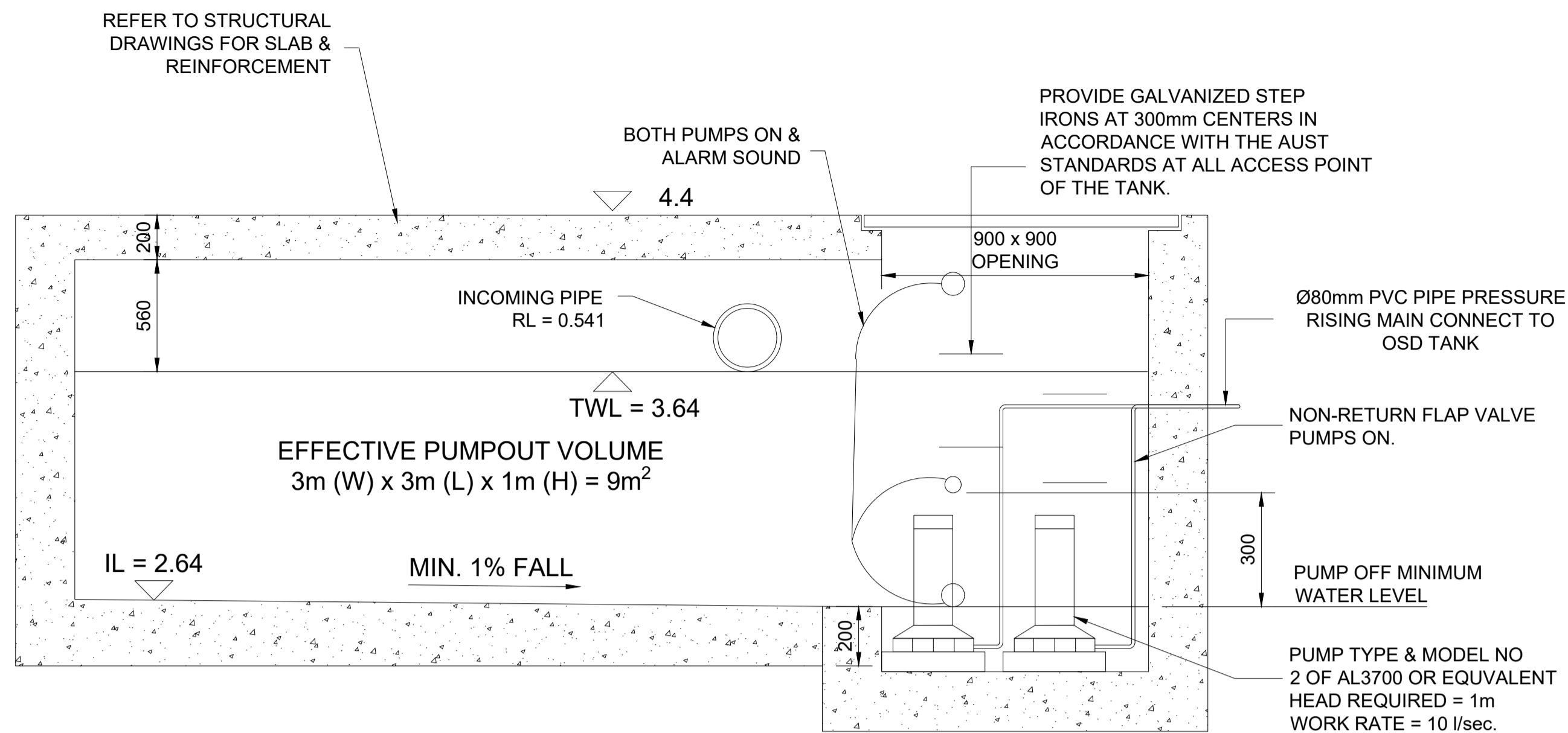
215, 229-239 PITT STREET MERRYLANDS 2160

Title

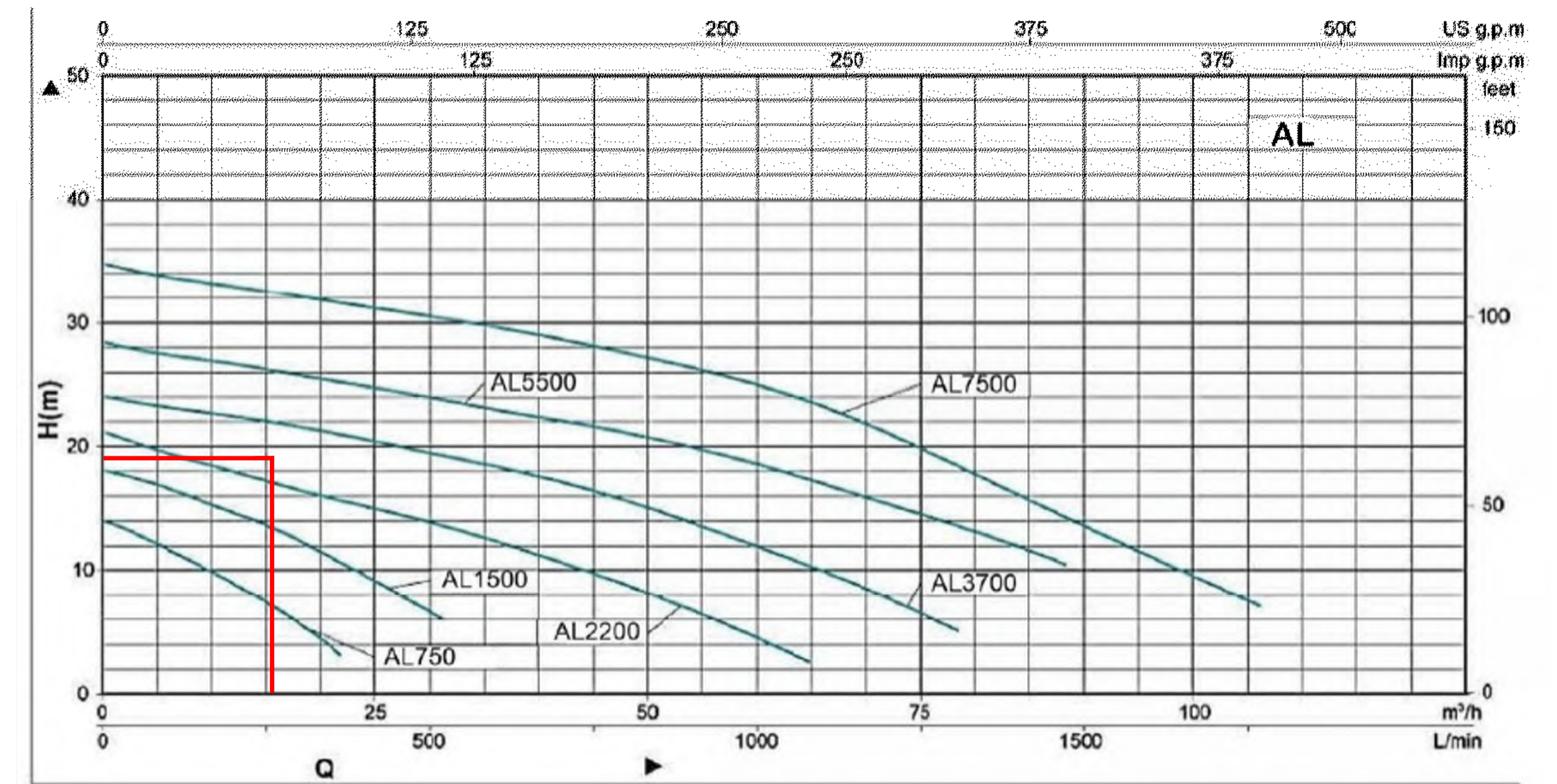
**MISCELLANEOUS DETAILS**

Drawn	Designed	Approved
HMR	SA	HR
Project No.	Scale	
S10567	at A1. N.T.S	
Drawing No.	Revision	
C205	2	
Issued By	Checked By	Date
HR	HR	07.07.25

**FOR APPROVAL**



**PUMP STORAGE TANK DETAIL**



**HYDRAULIC PERFORMANCE CURVE**

Model	Power		Outlet (inch)	Max. Flow (m <sup>3</sup> /h)	Max head (m)	The max flow particle (mm)	Dim. (mm)	Weight (kg)		20 (Loading Qty) (pcs)
	kW	HP						G.W	N.W	
AL750	0.75	1	2	22	14	20	525x250x280	31	27	680
AL1500	1.5	2	2	31	18	20	585x245x300	40	36	570
AL2200	2.2	3	3	65	21	20	585x260x330	45	40	500
AL3700	3.7	5	3	78	24	30	370x325x680	71	65	250
AL5500	5.5	7.5	4	90	28.5	30	400x340x770	85	78	210
AL7500	7.5	10	4	108	35	30	400x340x770	91	84	190

**STANDARD PUMP OUT DESIGN NOTES**

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

- THE PUMP SHALL BE PROGRAMMED TO WORK ALTERNATIVELY SO AS TO ALLOW BOTH PUMPS TO HAVE AN EQUAL OPERATION LOAD AND PUMP LIFE.
- 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 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. IT WILL BE 100mm ABOVE THE INLET PIPE.
- 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.

**PUMPOUT DESIGN SUMMARY AREA OF DISCHARGE SUMMARY**

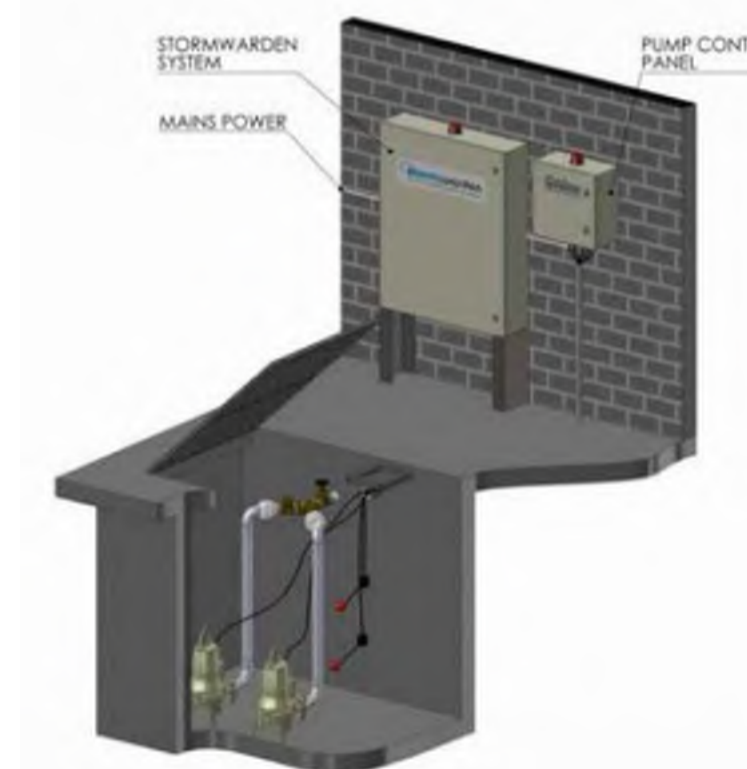
- PUMP OUT (A) = 100 m<sup>2</sup>
- COEFFICIENT OF DISCHARGE (C) = 0.95
- RAINFALL INTENSITY (I) = 47.1 mm/h (100 YR ARI, 2 HR)
- PEAK DISCHARGE (Q) = C\*I = 44.75 L/h/m<sup>2</sup>
- VOLUME REQUIRED = (Q\*A\*2) / 1000 = 8.95 m<sup>3</sup>

- PEAK DISCHARGE (Q) = 44.75 L/h/m<sup>2</sup>
- DISCHARGE RATE = Q\*A / 3600 = 4.475 L/s (4.475 m<sup>3</sup>/h)

**PUMP SELECTION**

- MINIMUM HEAD REQUIRED = 18.79m
- PUMP OUT RATE REQUIRED = 16.11 m<sup>3</sup>/h
- PROVIDE 2 SUBMERSIBLE AL-3700 AUTO PUMPS
- OPERATE ALTERNATING

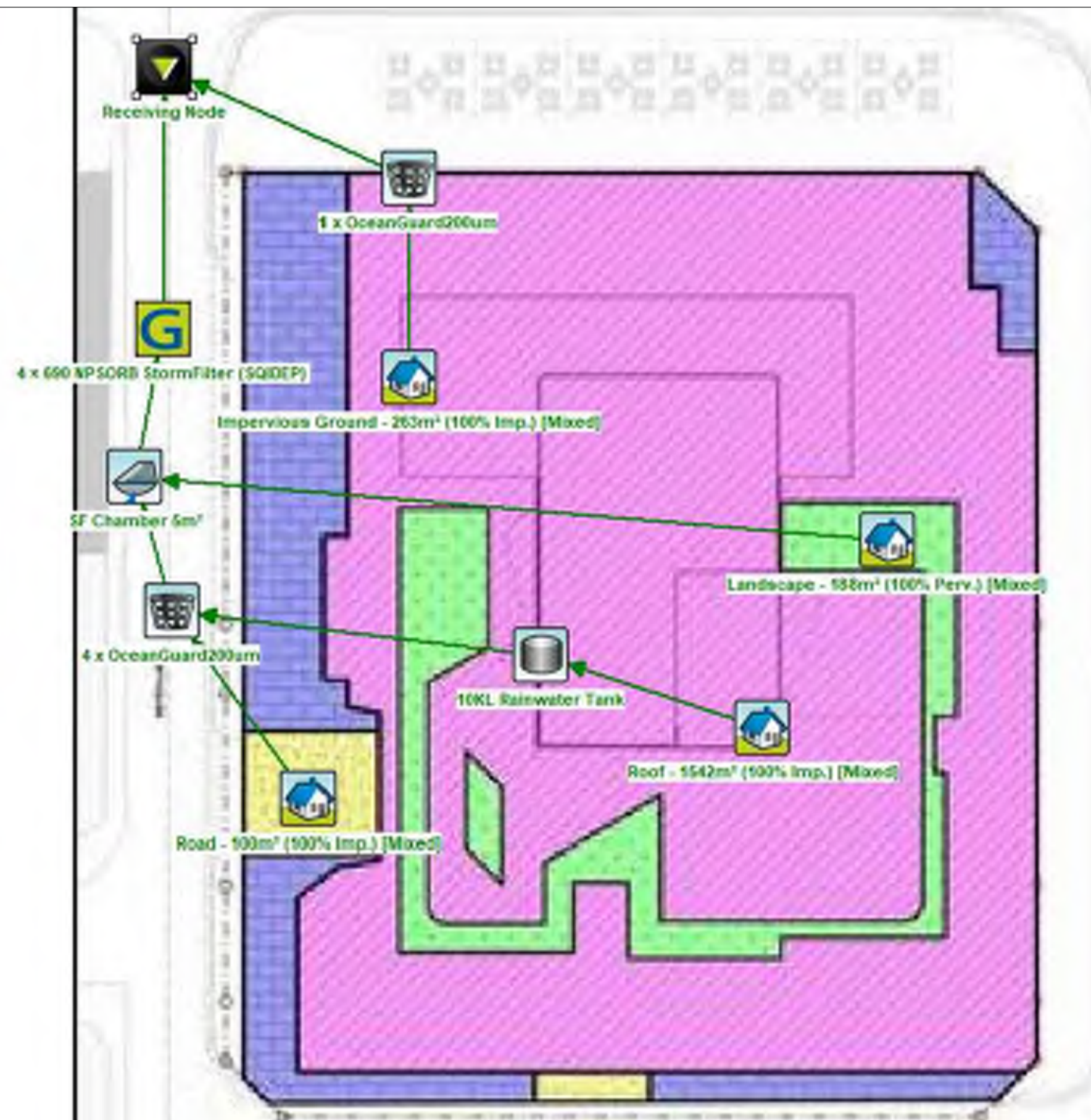
**PUMP CAPACITY**



**PUMP & CONTROL LAYOUT SKEMATIC**

Revision				Architect	Client	Engineer	Project	Drawn	Designed	Approved	
0	ISSUED FOR COORDINATION	HR	19.06.25	FUSE ARCHITECTS	Anglicare	 El Australia Suite 6.01 55 Miller Street Pyrmont, NSW 2009 T 02 9516 0722	215, 229-239 PITT STREET MERRYLANDS 2160	HMR	SA	HR	
1	DRAFT	HR	27.06.25					Project No.	S10567	Scale	at A1. NTS
2	ISSUED FOR APPROVAL	HR	07.07.25					Drawing No.	C206	Revision	3
3	ISSUED FOR APPROVAL	HR	08.10.25					Issued By	HR	Checked By	HR
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	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.47	1.47	0
Total Suspended Solids (kg/yr)	96.6	12.8	86.7
Total Phosphorus (kg/yr)	0.288	0.0982	65.9
Total Nitrogen (kg/yr)	3.2	1.23	61.6
Gross Pollutants (kg/yr)	36.9	0	100



### MUSIC MODEL & TREATMENT TRAIN OUTCOME

#### Water quality

##### Objective

O1. Ensure implementation of appropriate water quality treatment for stormwater run off

##### Control

C1. All development shall seek to achieve the stormwater quality targets set out in Table 5.

Table 5: Stormwater quality targets

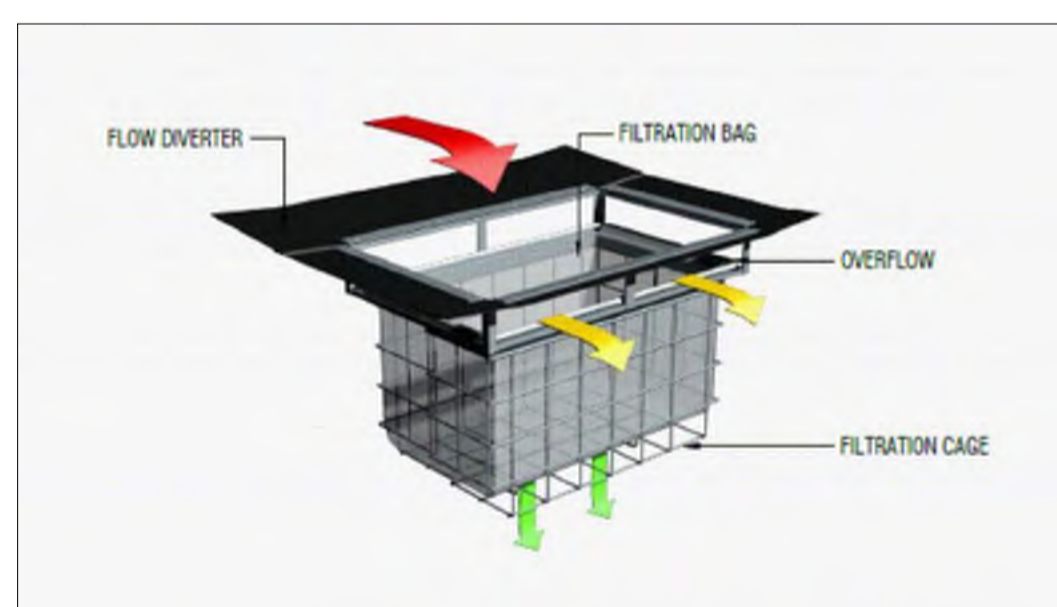
Stormwater quality targets		
Pollutant	Description	Reduction in Load
Litter e.g. cans, bottles, wrapping materials, food scraps	All anthropogenic materials with a minimum dimension >5mm	90%
Coarse sediment	Coarse sand and soil particles (<0.5mm diameter)	85%
Nutrients	Total phosphorous nitrogen	60%
Fine particles	Coarse sand and soil particles (<0.05mm diameter)	85%
Cooking oil and grease	Free floating oils that do not emulsify aqueous solutions	90%
Hydrocarbons inc. motor fuels, oils and greases	Anthropogenic hydrocarbons that can be emulsified	90%

#### Inter-allocation drainage easements

##### Objective

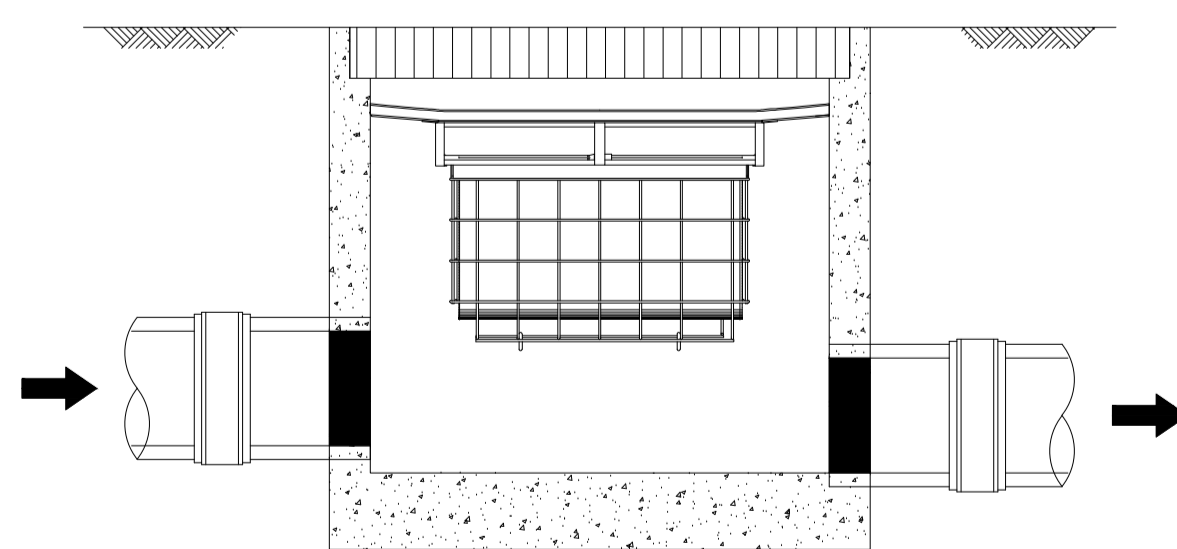
### CUMBERLAND COUNCIL WATER QUALITY TARGETS

(SOURCE: CUMBERLAND DCP 2021)



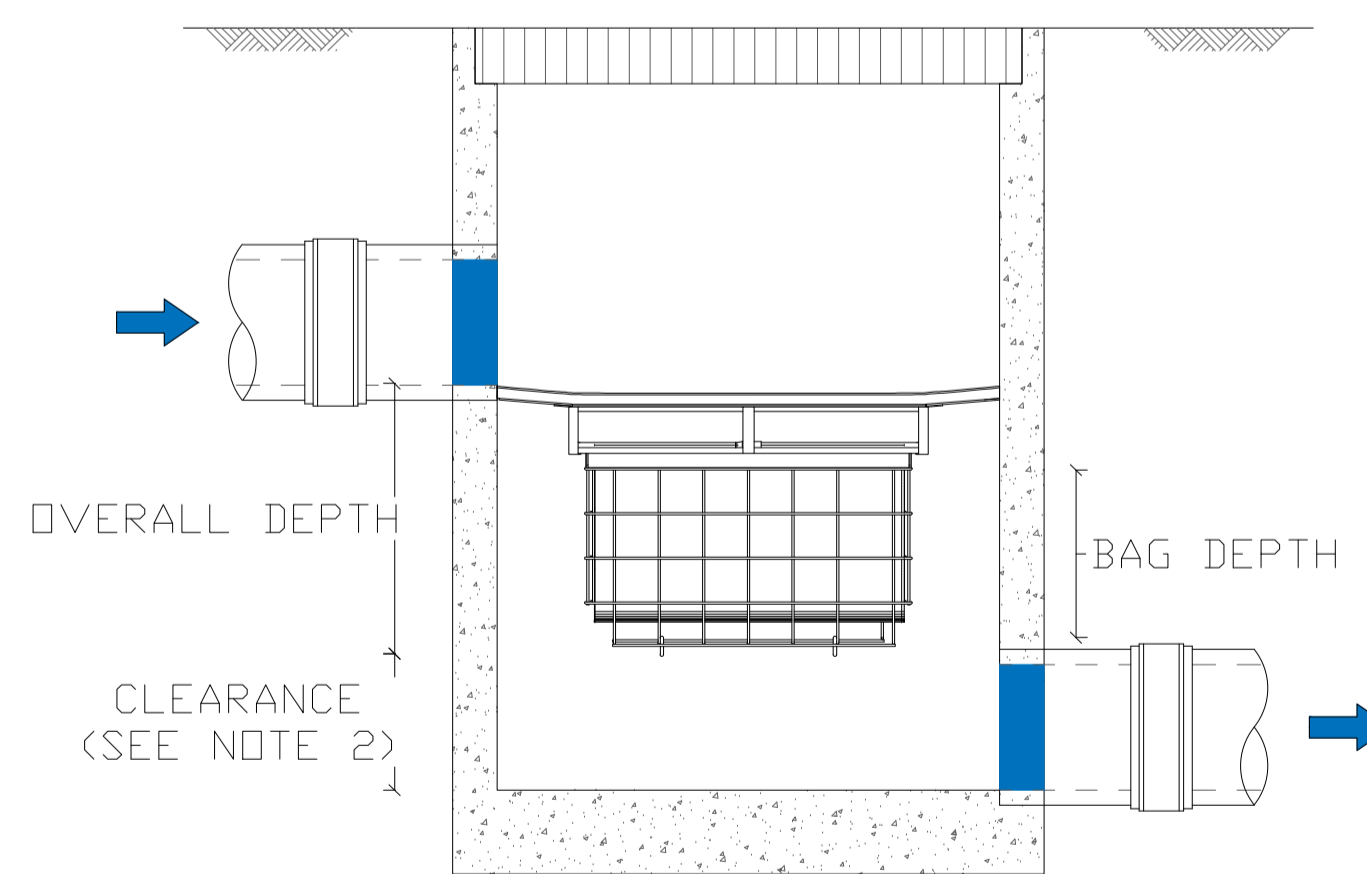
#### TYPICAL OCEAN GUARD

(TO BE INSTALLED IN ALL EXISTING PIT TAKING STORMWATER FROM GRATE)



#### PIPE FLOW CONFIGURATION

FOR BASEMENT PITS



#### PIPE FLOW CONFIGURATION

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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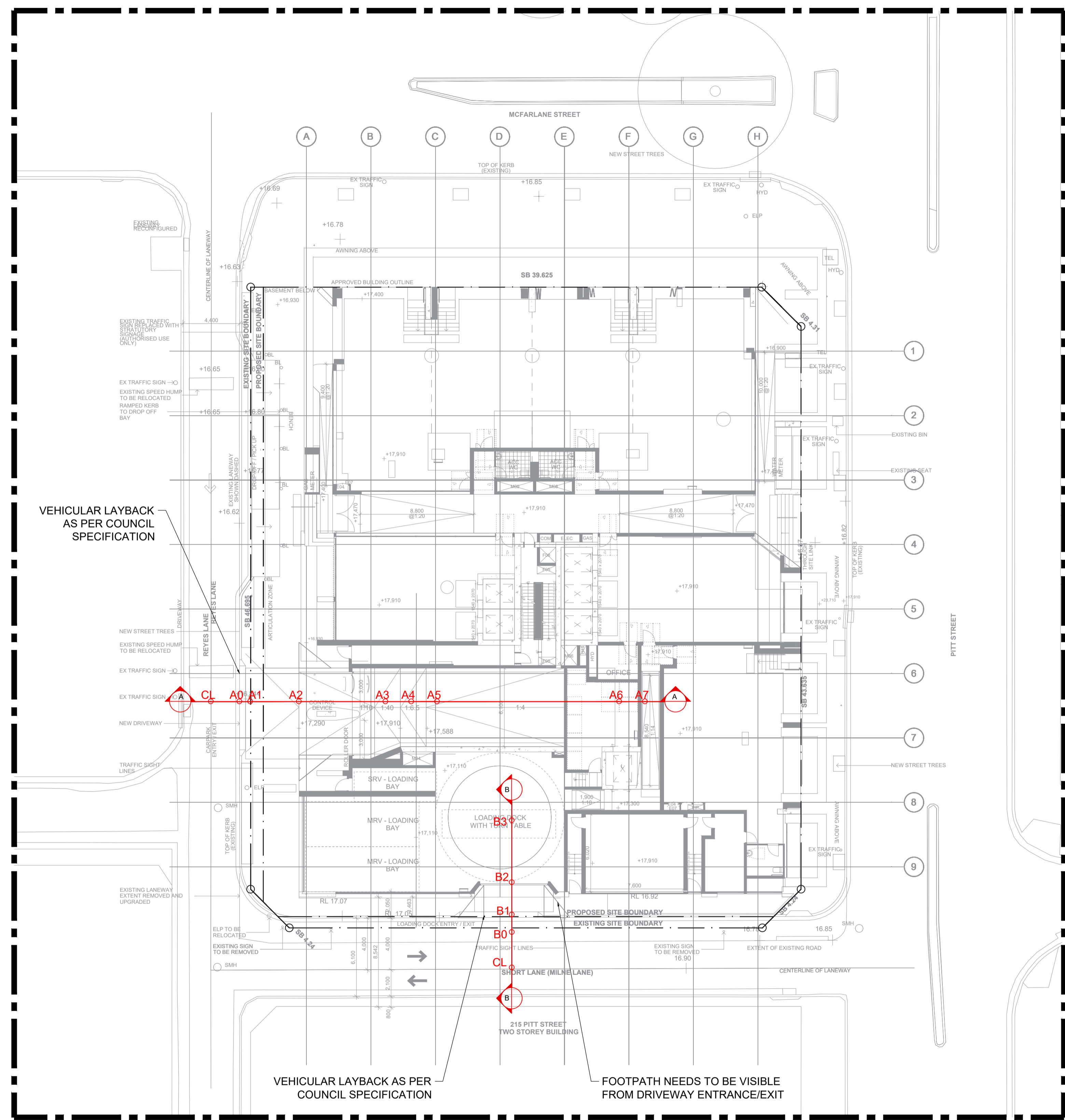
Project  
215, 229-239 PITT STREET MERRYLANDS 2160

Title  
**POLLUTANT MODEL & TREATMENT OUTCOME**

Drawn	Designed	Approved
HMR	SA	HR
Project No. S10567		Scale at A1. N.T.S
Drawing No. C207		Revision 2
Issued By HR	Checked By HR	Date 07.07.25

FOR APPROVAL

300mm  
200mm  
100  
50  
0 10mm

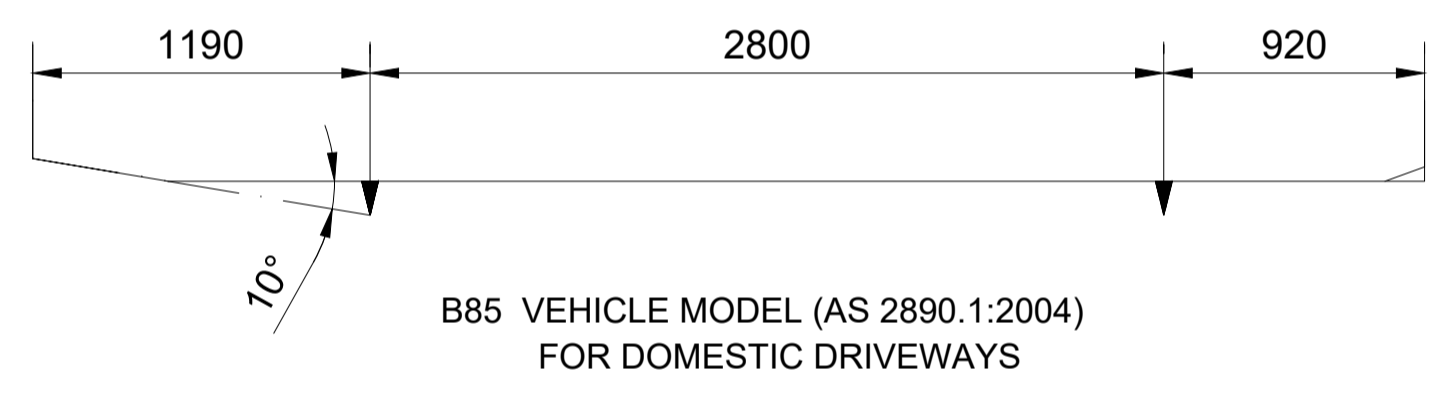


**DRIVEWAY PLAN**  
SCALE = 1:200

**AS 2890.1:2004 OFF STREET CAR PARKING STANDARDS:**

1. AS PER B5 GROUND CLEARANCE, THE CHANGE IN GRADE IS NOT MORE THAN 8 DEGREES (OR 14%) SO ONE STAGE DRIVEWAY IS ACCEPTABLE.
2. AS PER B6 HEADROOM, THE MINIMUM HEADROOM SHALL BE 2.2 M.
3. AS PER C1 THE DRIVEWAY IS REVIEWED FOR THE B85 CAR AS IT IS AN ACCESS DRIVEWAY (STANDARD B85 TEMPLATE IS USED).
4. TO COMPLY WITH THE STANDARDS A LONGITUDINAL TEMPLATES IS DRAWN AND B85 CAR IS MANEUVERED BACK AND FORTH.
5. CRITICAL AREAS (CLOSE TO THE BASE OF THE B85 CAR MODEL) ARE PRESENTED IN DETAILS.

**B85 TEMPLATE AS PER AS 2890.1:2004 (APPENDIX C)**



Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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Project  
215, 229-239 PITT STREET MERRYLANDS 2160

Title  
**DRIVEWAY PLAN**

Drawn	Designed	Approved
HMR	HMR	HR
Project No. S10518		Scale at A1. 1:200
Drawing No. C300		Revision 2
Issued By HR	Checked By HR	Date 07.07.25

**FOR APPROVAL**

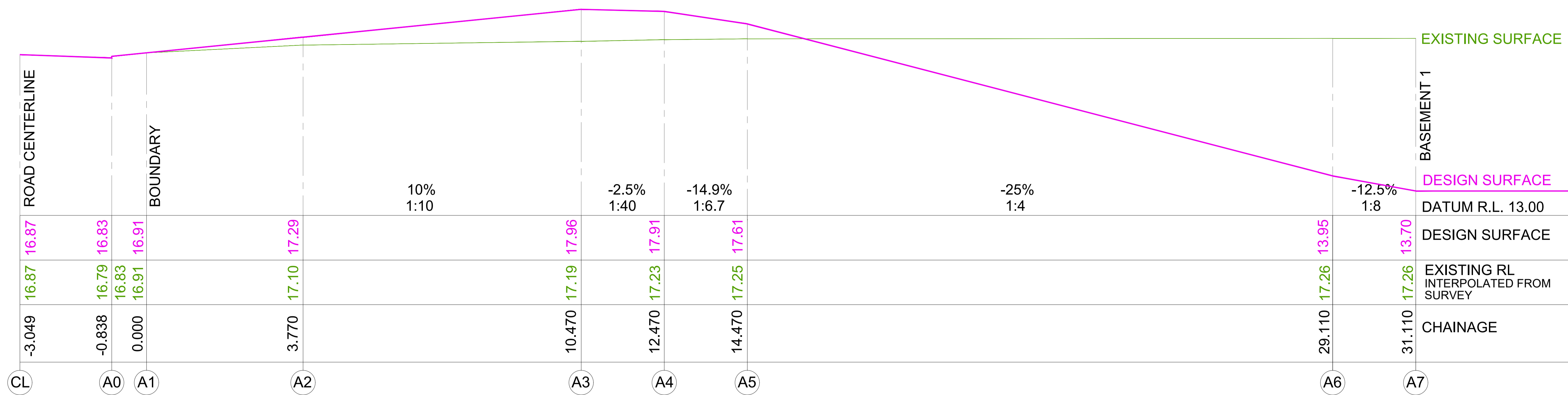
300mm

200mm

100

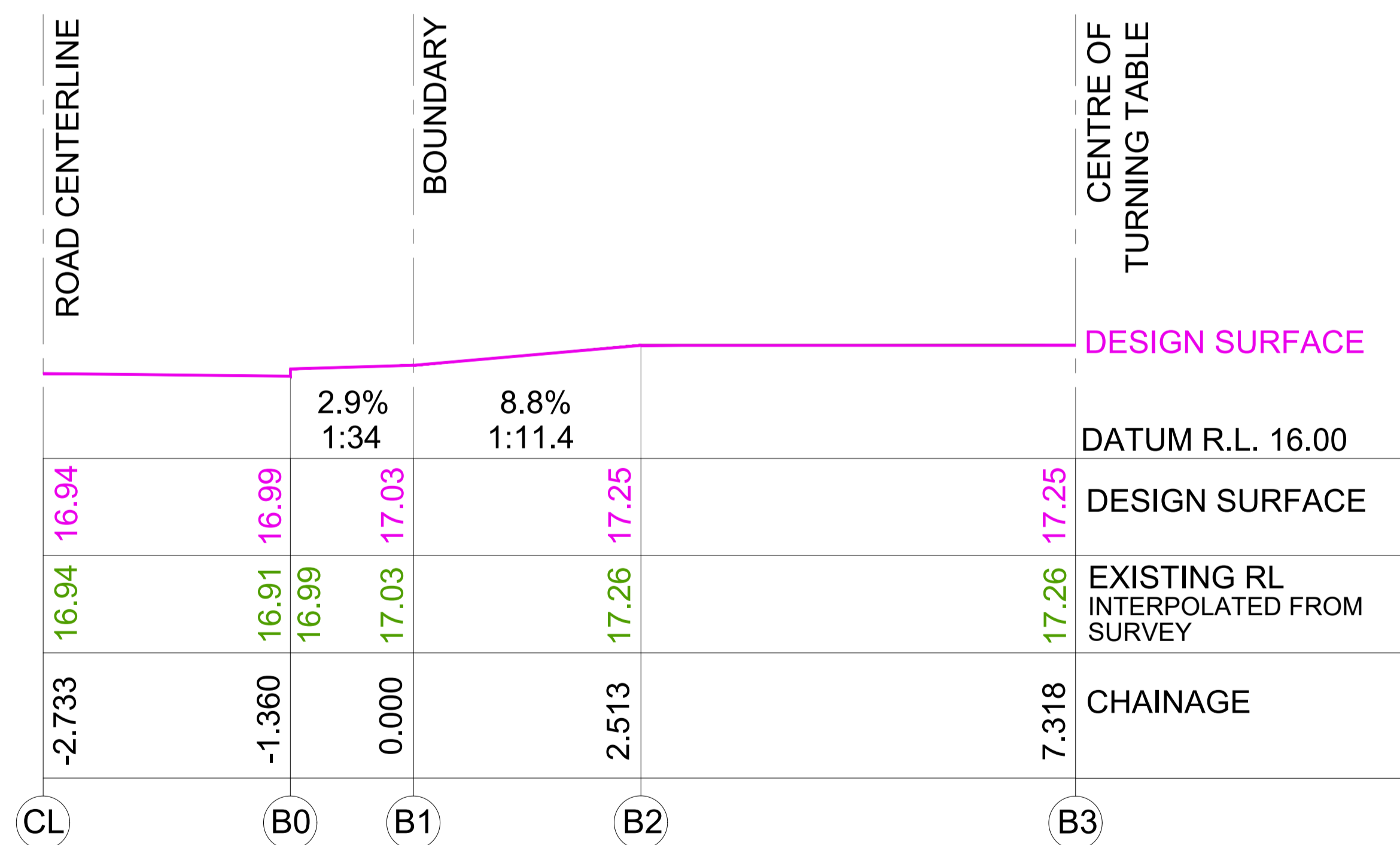
50

0 10mm



### EXISTING & PROPOSED DRIVEWAY SECTION A-A

Scale 1:50




### EXISTING & PROPOSED DRIVEWAY SECTION B-B

Scale 1:50

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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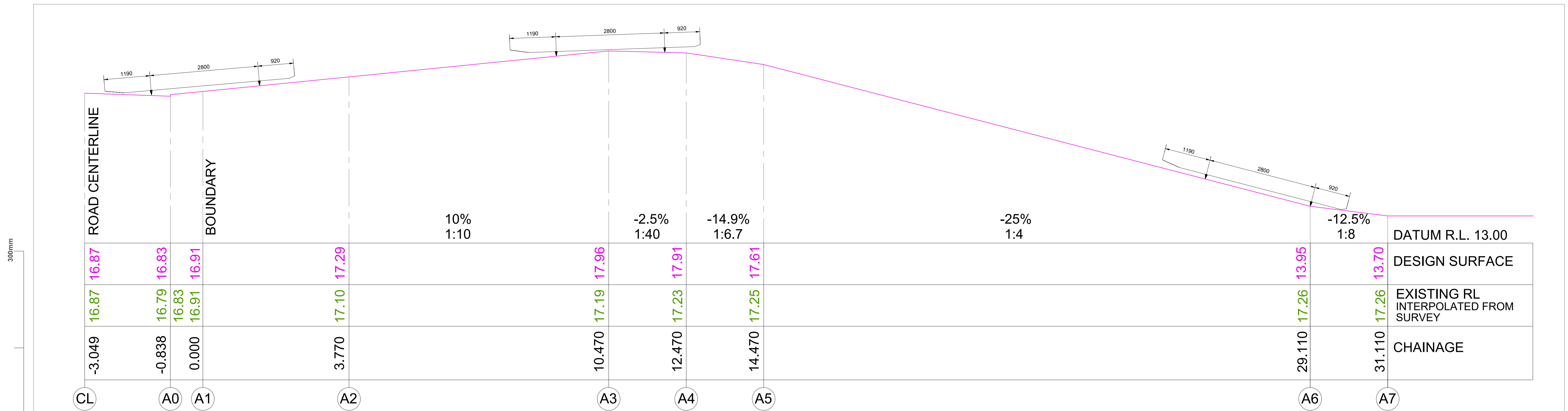
Architect	Client
<b>FUSE ARCHITECTS</b>	<b>Anglicare</b>

Engineer	
	EI Australia Suite 6.01 55 Miller Street Pyrmont, NSW 2009 T 02 9516 0722

Project	215, 229-239 PITT STREET MERRYLANDS 2160
Title	EXISTING & PROPOSED DRIVEWAY SECTION

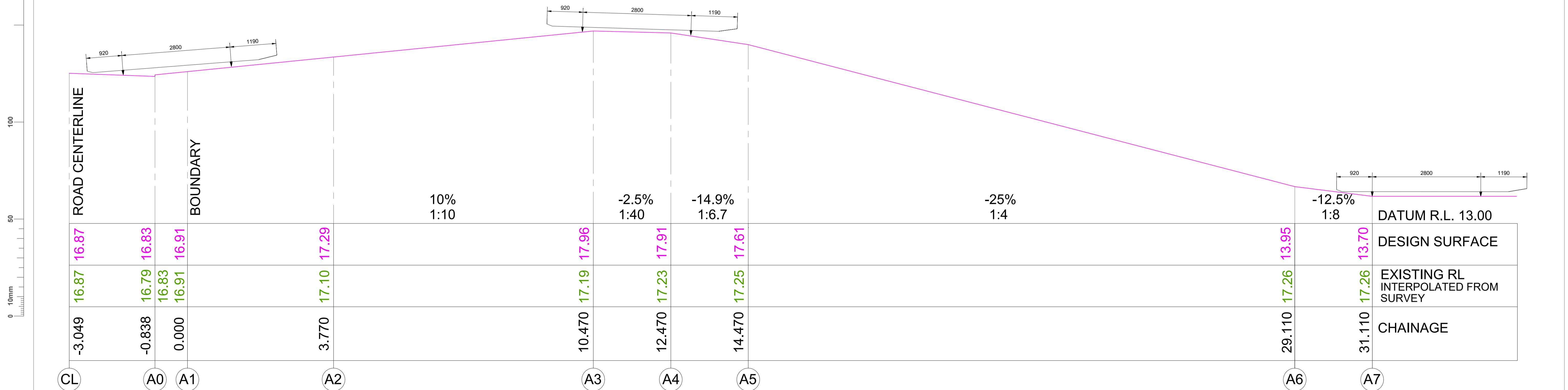
Drawn	Designed	Approved
HMR	HMR	HR
Project No.	Scale	
S10518	at A1. 1:50	
Drawing No.	Revision	
C301	2	
Issued By	Checked By	Date
HR	HR	07.07.25

<b>FOR APPROVAL</b>		
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### PROPOSED DRIVEWAY WITH B-85 VEHICLE MANEUVERING (VEHICLE IN)

Scale 1:50



### PROPOSED DRIVEWAY WITH B-85 VEHICLE MANEUVERING (VEHICLE OUT)

Scale 1:50

<b>Revision</b> 0 ISSUED FOR COORDINATION 1 DRAFT 2 ISSUED FOR APPROVAL		<b>Issued By/Revision Date</b> HR 19.06.25 HR 27.06.25 HR 07.07.25		<small>COPYRIGHT - ALL RIGHTS RESERVED          Copying or reproducing the whole or part of this document in any form without the written permission of EIAustralia constitutes an infringement of copyright.          DISCLAIMER          EIAustralia accepts no responsibility for the accuracy or for any consequence resulting from the use or alteration of this drawing in electronic form. Drawings in electronic form should be checked for accuracy against the equivalent hard copy issued by EIAustralia.          DIMENSIONS          Prior to commencing construction verify all dimensions against Architect's, other Consultant's and Sub-Contractor's drawings.          For building work, dimensions are not to be scaled or read electronically from this drawing. Setout dimensions, unless specifically shown, are to be obtained from the Architect's or other Consultant's drawings.          For civil engineering work, dimensions are not to be manually scaled from drawing. Setout dimensions, unless specifically shown, are to be read electronically from this drawing.</small>		<b>Architect</b> <b>FUSE ARCHITECTS</b>		<b>Client</b> <b>Anglicare</b>		<b>Engineer</b>  EIAustralia Suite 6.01 55 Miller Street Pyrmont, NSW 2009 T 02 9516 0722		<b>Project</b> 215, 229-239 PITT STREET MERRYLANDS 2160		<b>Drawn</b> HMR		<b>Designed</b> HMR		<b>Approved</b> HR	
										<b>Project No.</b> S10518		<b>Scale</b> at A1. 1:50							
										<b>Title</b> B85 VEHICLE IN & OUT PROFILE SECTION A		<b>Drawing No.</b> C302		<b>Revision</b> 2					
										<b>Issued By</b> HR		<b>Checked By</b> HR		<b>Date</b> 07.07.25					

FOR APPROVAL

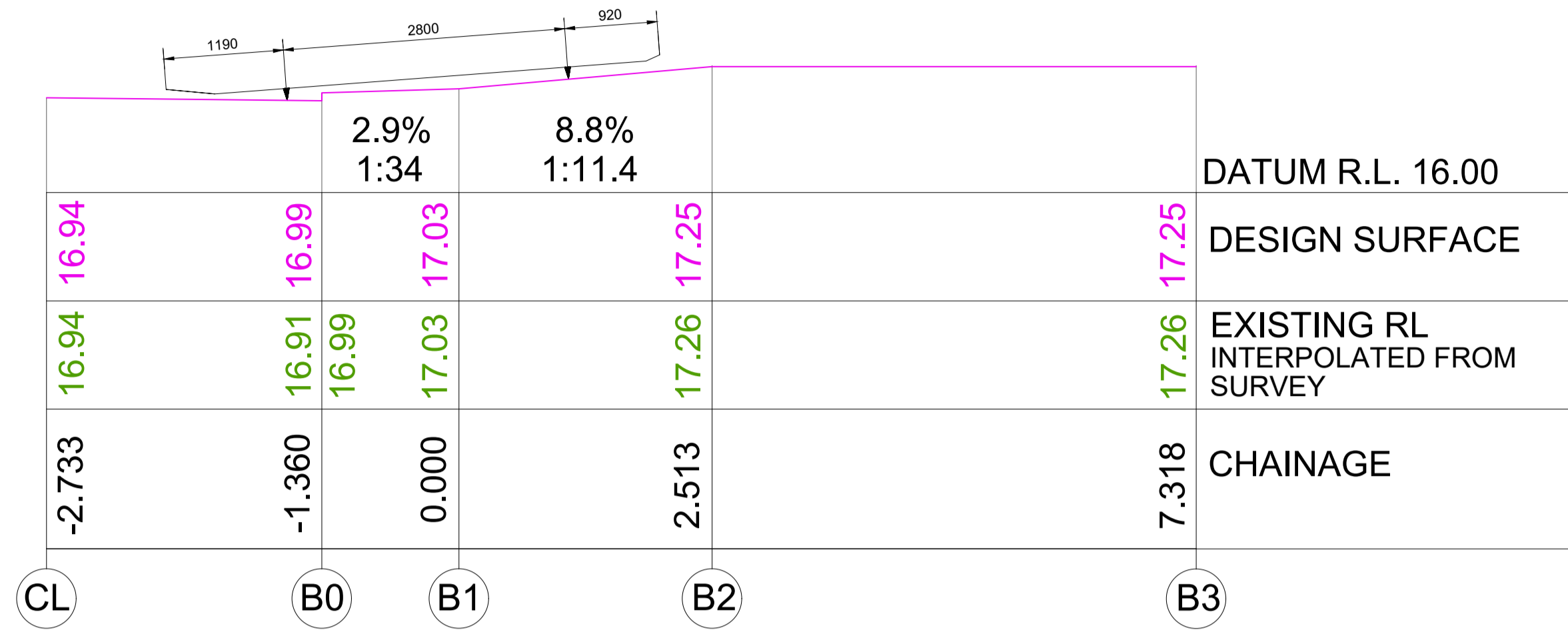
300mm

200mm

100

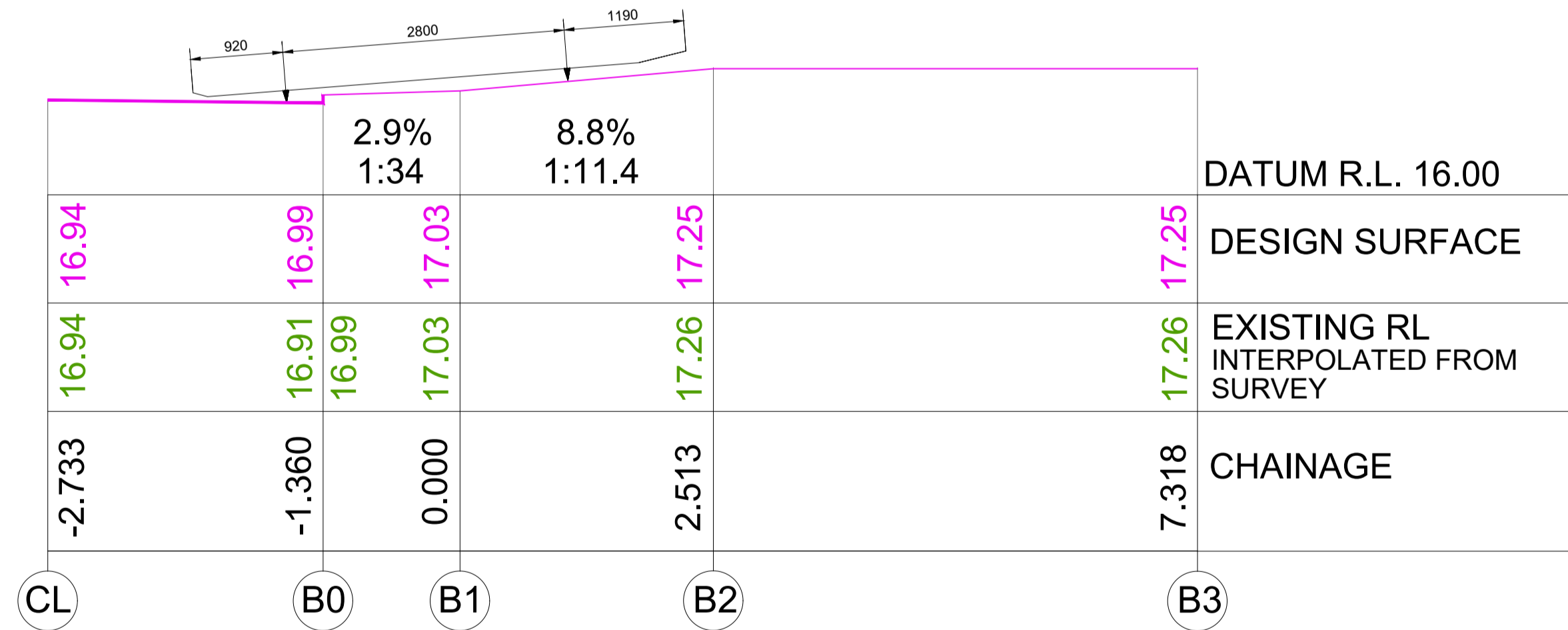
50

0 10mm



### PROPOSED DRIVEWAY WITH B-85 VEHICLE MANEUVERING (VEHICLE IN)

Scale 1:50



### PROPOSED DRIVEWAY WITH B-85 VEHICLE MANEUVERING (VEHICLE OUT)

Scale 1:50

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25

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**FUSE ARCHITECTS**

**Client**

**Anglicare**

**Engineer**

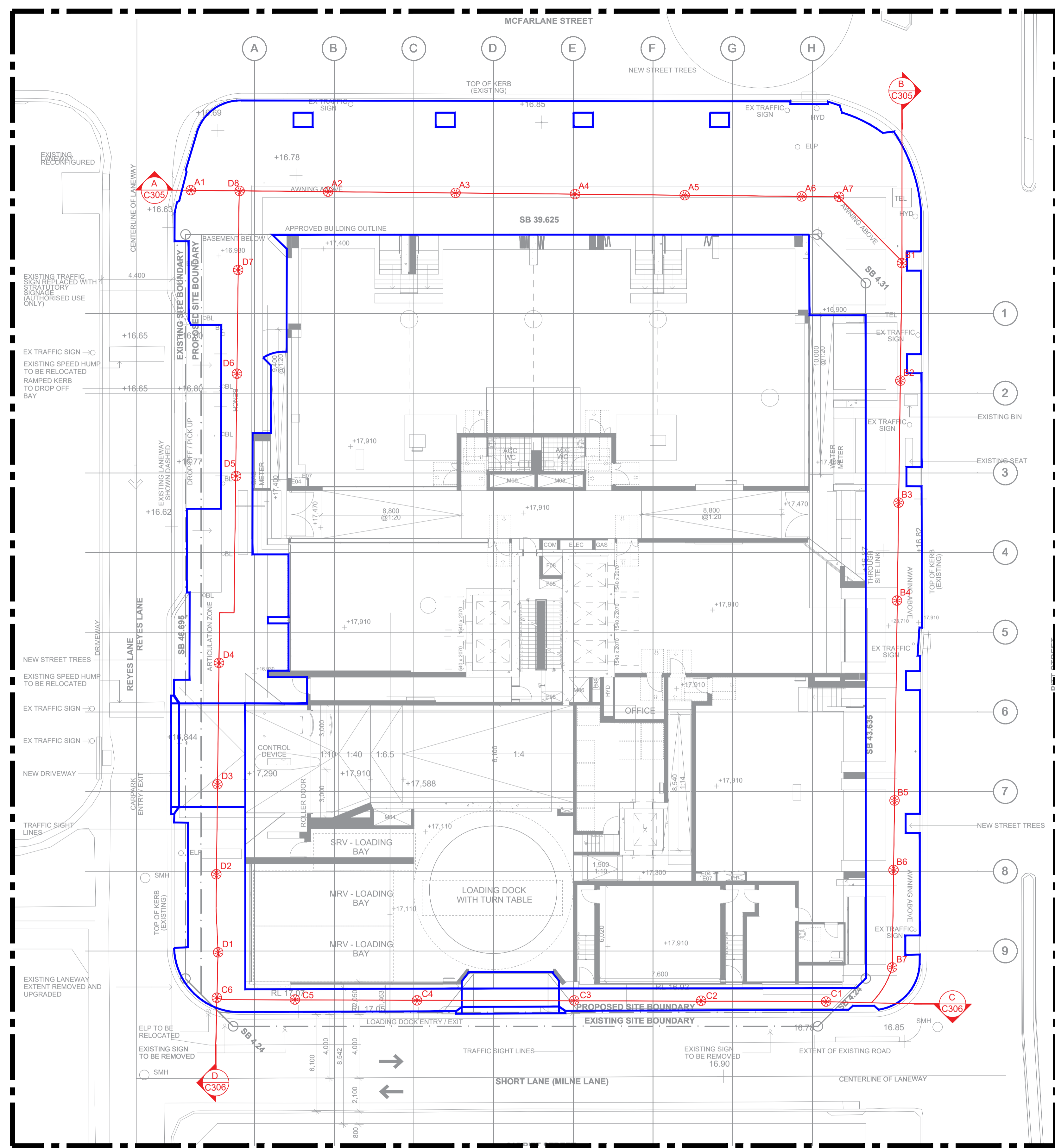
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**Project**  
 215, 229-239 PITT STREET MERRYLANDS 2160

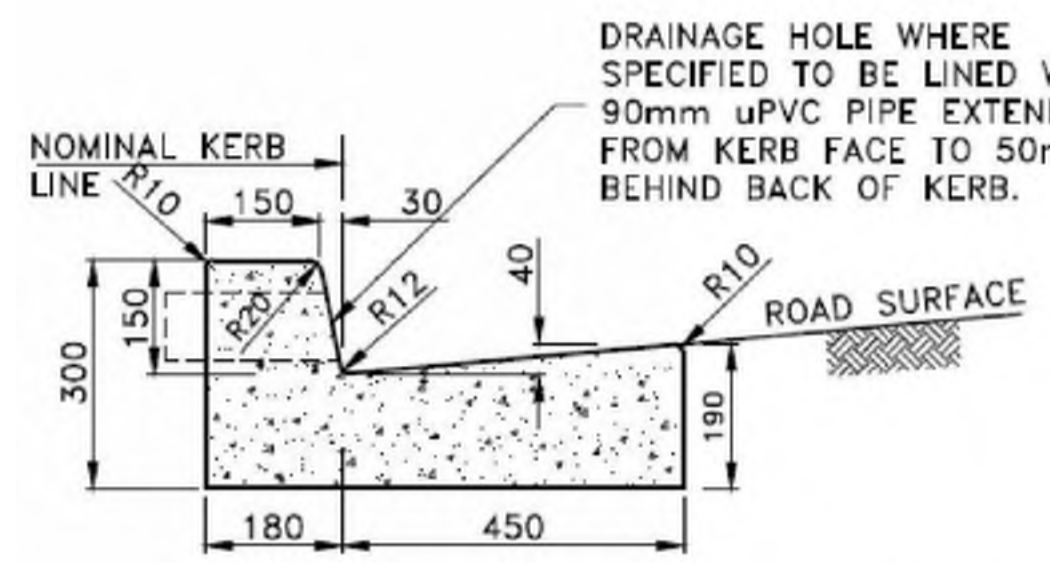
**Title**  
 B85 VEHICLE IN & OUT PROFILE  
 SECTION B

Drawn	Designed	Approved
HMR	HMR	HR
Project No. S10518		Scale at A1. 1:50
Drawing No. C303		Revision 2
Issued By HR	Checked By HR	Date 07.07.25

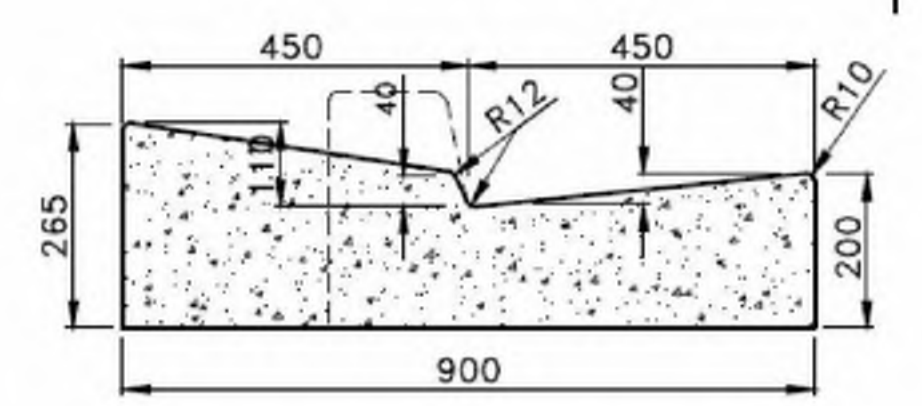
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**FOOTPATH LAYOUT PLAN**  
SCALE = 1:150



**01 TYPICAL INTEGRAL KERB & GUTTER**  
Scale 1:20



**03 TYPICAL DRIVEWAY LAYBACK**  
Scale 1:20

**NOTES:**

1. THESE PROFILES ARE DRAWN FOR COUNCIL COMMENTS AND SUBJECT TO COUNCIL APPROVAL.
2. ALL EXISTING SERVICES ARE TO BE PRESERVED AND ADJUSTED TO SUIT THE NEW FOOTPATH AND ENTRY ROAD.
3. WE ANTICIPATE THAT THE EXISTING ROAD LEVELS ARE ADEQUATE. SO ASSOCIATED BM AND RLS, ADVISED IN THE SURVEY, ARE UTILISED TO DRAW THIS PROFILE.
4. THE NEW FOOTPATH IS TO BE CONSTRUCTED IN ACCORDANCE WITH COUNCIL GUIDELINES.
5. THE WORKS ARE TO BE CONSTRUCTED BY A LICENSED BUILDER AND THE ROAD OPENING PERMIT SHOULD BE TAKEN PRIOR TO ANY PUBLIC DOMAIN WORKS.
6. OTHER THAN THE PROVIDED INFORMATION, COUNCIL STANDARD DETAILS SHALL BE REVIEWED AND EVALUATED DURING CONSTRUCTION.
7. COUNCIL IS REQUESTED TO REVIEW AND ADVISE, IN CONDITION OF CONSENT, IF ANY ADDITIONAL SURVEY OF SERVICES, POT HOLING AND SPECIFIC LEVEL COMPLIANCE IS TO BE DONE FOR THE PROPOSED FOOTPATH WHICH SHOULD BE UNDERTAKEN PRIOR TO CONSTRUCTION ON SITE.
8. THE FOOTPATH IS PROPOSED TO BE CONSTRUCTED ON THE SAME PARAMETERS OF THE PREVIOUS FOOTPATH ALONG THE SIDES OF THE PROPERTY. HOWEVER, MILNE LANE IS PROPOSED TO BE WIDENED AS PART OF THE DEVELOPMENT.
9. ALL KERBS & GUTTERS ALONG THE NEW PROPOSED FOOTPATH ARE TO BE RECONSTRUCTED.
10. THE FINISHING OF THE EXTERNAL PUBLIC DOMAIN AREAS TO BE PROVIDED IN ACCORDANCE WITH COUNCIL STANDARDS & GUIDELINES.

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
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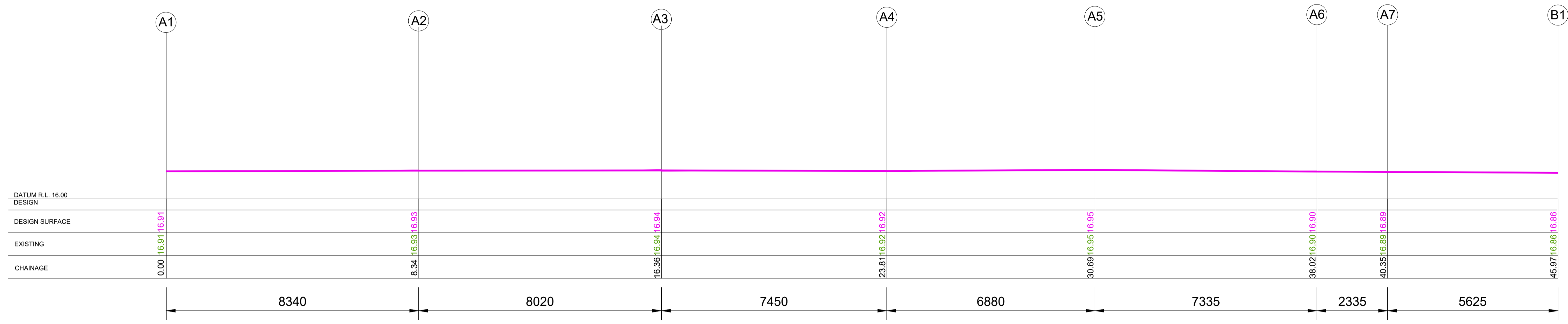
**Project**  
215, 229-239 PITT STREET MERRYLANDS 2160

**Title**  
PUBLIC DOMAIN WORK - FOOTPATH

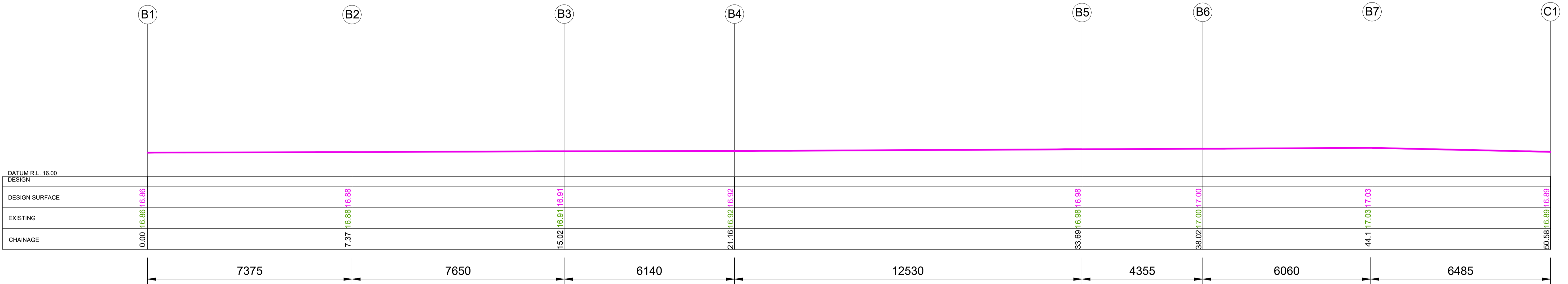
Drawn	Designed	Approved
HMR	SA	HR
<b>Project No.</b> S10518		<b>Scale</b> at A1. 1:150
<b>Drawing No.</b> C304		<b>Revision</b> 2
<b>Issued By</b> HR	<b>Checked By</b> SA	<b>Date</b> 07.07.25

**FOR APPROVAL**

300mm  
200mm  
100  
50  
0 10mm



EXISTING & PROPOSED FOOTPATH SECTION A-A  
SCALE = 1:80



EXISTING & PROPOSED FOOTPATH SECTION B-B  
SCALE = 1:80

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
2	ISSUED FOR APPROVAL	HR	07.07.25


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**Project**  
215, 229-239 PITT STREET MERRYLANDS 2160

**Title**  
FOOTPATH SECTION AA & BB

Drawn	Designed	Approved
HMR	SA	HR
Project No. S10518		Scale at A1. 1:80
Drawing No. C305		Revision 2
Issued By HR	Checked By SA	Date 07.07.25

**FOR APPROVAL**

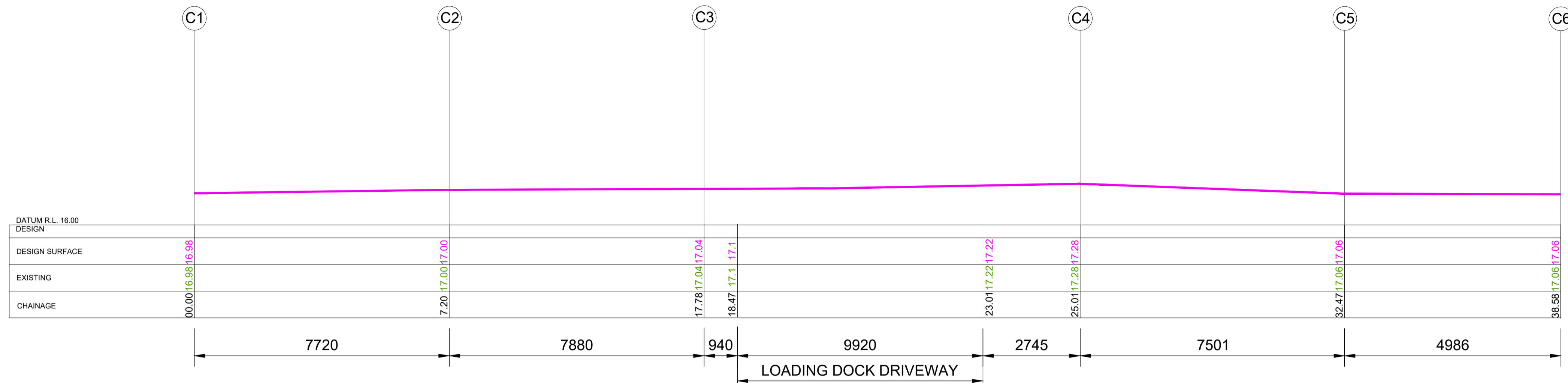
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200mm

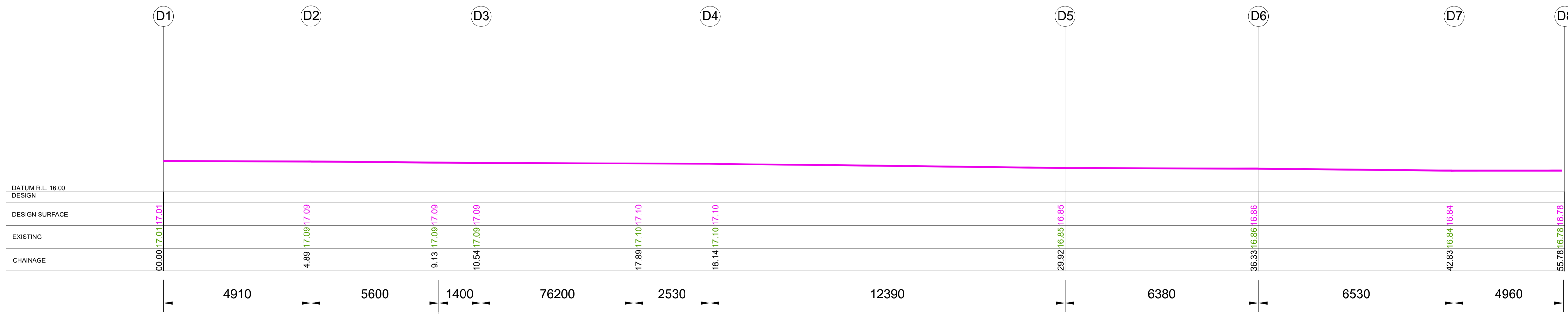
100

50

0 10mm



EXISTING & PROPOSED FOOTPATH SECTION C-C  
SCALE = 1:80



EXISTING & PROPOSED FOOTPATH SECTION D-D  
SCALE = 1:80

Revision	Amendment	Issued By	Revision Date
0	ISSUED FOR COORDINATION	HR	19.06.25
1	DRAFT	HR	27.06.25
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**Client**  
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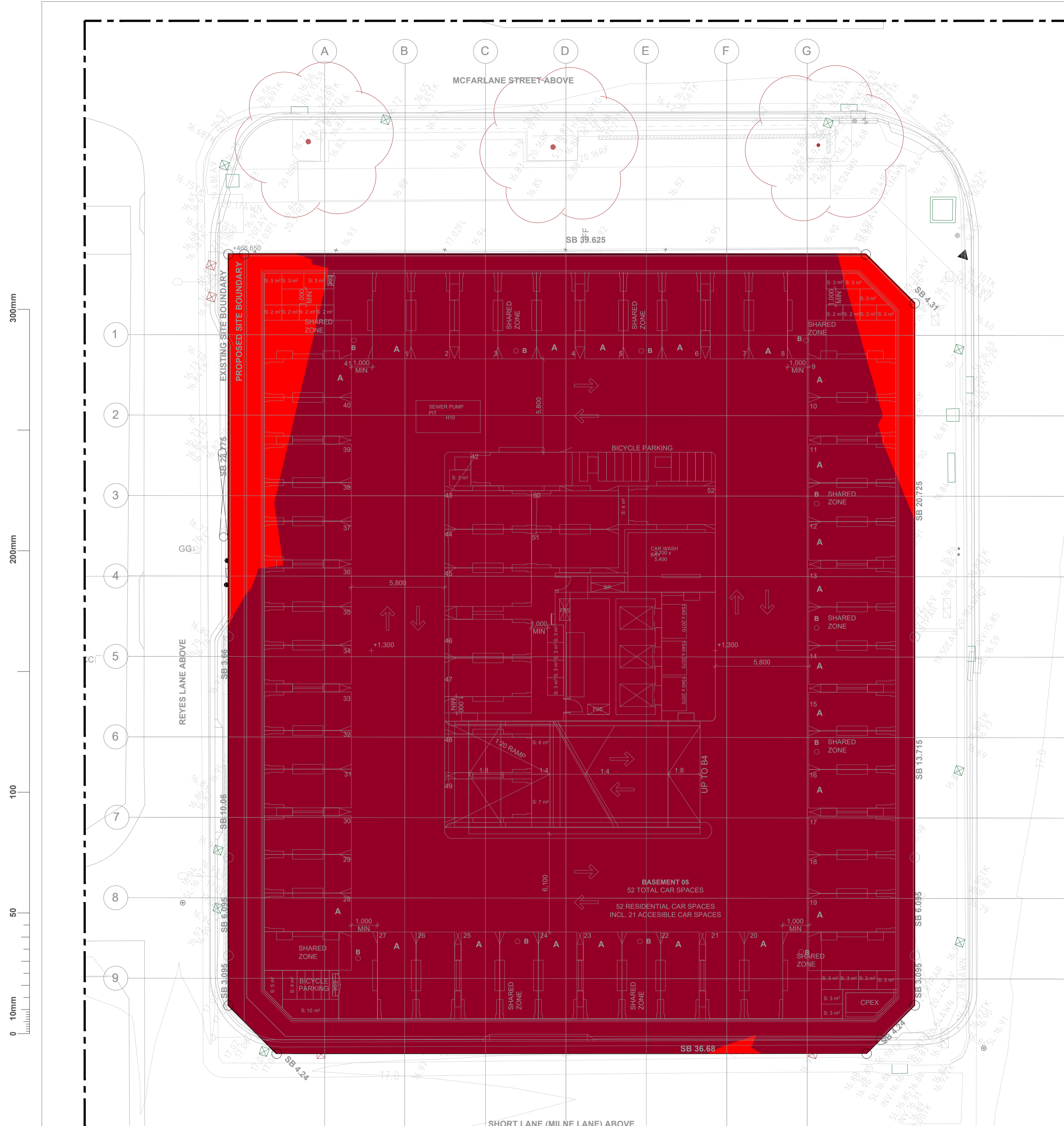
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**Project**  
215, 229-239 PITT STREET MERRYLANDS 2160

**Title**  
FOOTPATH SECTION CC & DD

Drawn	Designed	Approved
HMR	SA	HR
<b>Project No.</b> S10518		<b>Scale</b> at A1. 1:150
<b>Drawing No.</b> C306		<b>Revision</b> 2
<b>Issued By</b> HR	<b>Checked By</b> SA	<b>Date</b> 07.07.25

**FOR APPROVAL**



ELEVATIONS TABLE			
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
1	-13.000	-12.500	
2	-12.500	-12.000	

EARTHWORK SUMMARY			
AREA (sq.m)	CUT(cu.m)	FILL(cu.m)	NET(cu.m)
2106.93	26604.21	0.000	26604.21 (CUT)

**NOTES:**  
 THESE PLANS MUST BE READ IN CONJUNCTION WITH OTHER ARCHITECT SET OUTS, OTHER CONSULTANT PLANS, SPECIFICATIONS, COUNCIL CONSENT AND REQUIREMENTS.

VOLUMES HAVE BEEN ASSESSED BETWEEN THE EXISTING SURFACE FROM SITE SURVEY AND FINISHED SURFACE OF BASEMENT 4 AS PER ARCHITECT.

VOLUMES DO NOT MAKE ALLOWANCE FOR TOPSOIL STRIPPING OR RESPREAD. DETAILED EARTHWORKS SUCH AS SERVICES TRENCHING, FOOTINGS, RETAINING WALLS, ETC. HAVE NOT BEEN CONSIDERED.

CONTACT THE ENGINEER FOR ANY DISCREPANCIES.



FOR APPROVAL

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0	ISSUED FOR APPROVAL	HR	10.07.25	Copying or reproducing the whole or part of this document in any form without the written permission of EI Australia constitutes an infringement of copyright.	FUSE ARCHITECTS	Anglicare	EI Australia Suite 6.01 55 Miller Street Pyrmont, NSW 2009 T 02 9516 0722	215, 229-239 PITT STREET MERRYLANDS 2160	HM	HM	HR
1	ISSUED FOR APPROVAL	HR	08.10.25	DISCLAIMER EI Australia accepts no responsibility for the accuracy or for any consequence resulting from the use or alteration of this drawing in electronic form. Drawings in electronic form should be checked for accuracy against the equivalent hard copy issued by EI. DIMENSIONS Prior to commencing construction verify all dimensions against Architect's, other Consultant's and Sub-Contractor's drawings. For building work, dimensions are not to be scaled or read electronically from this drawing. Setout dimensions, unless specifically shown, are to be obtained from the Architect's or other Consultant's drawings. For civil engineering work, dimensions are not to be manually scaled from drawing. Setout dimensions, unless specifically shown, are to be read electronically from this drawing.							
								Title	Scale		
								BULK EARTHWORKS PLAN (BASEMENT 4)	at A1. 1:150		
								C400	Revision		1
								Issued By	Checked By	Date	
								HR	HR	08.10.25	

### BULK EARTHWORK NOTES

- EARTHWORKS PROCEDURES:
  - GENERAL SITE CONDITIONS, REFER TO GEOTECH REPORT
  - COMPACTION CRITERIA
    - COHESION-LESS SANDS (LESS THAN 5% FINES):
      - RELATIVE COMPACTION SHALL BE MEASURED USING DENSITY INDEX (AS1289.5.5.1 AND 5.6.1)
    - COHESIVE SANDS (FINES OVER 10%)
      - RELATIVE COMPACTION SHALL BE MEASURED BY DENSITY RATIO (AS 1289.5.4.1)
    - INTERMEDIATE SANDS (FINES FROM 5% TO 10%):
      - MAY BEHAVE AS EITHER COHESIVE OR COHESION-LESS SOILS COMPACTION OF COHESION-LESS SOILS (GUIDE ONLY)
      - OFTEN EFFECTIVELY COMPACTED USING SMOOTH DRUM VIBRATORY ROLLERS AND SIGNIFICANT VOLUMES OF WATER;
      - BECAUSE OF SURFACE LOOSENING AFTER COMPACTION DENSITY TESTING IS USUALLY CARRIED OUT ON A LAYER AFTER PLACING AND COMPACTING THE COVERING LAYER;
      - A STATIC ROLLER IS USUALLY REQUIRED TO PROVIDE THE SURFACE FINISH;
      - WHERE THE WATER TABLE IS AT A SHALLOW DEPTH, IT MAY BE NECESSARY TO USE NON-VIBRATORY ROLLERS TO AVOID COMPACTION DIFFICULTIES DUE TO GROUNDWATER RISE.
    - COMPACTION OF COHESIVE SOILS:
      - COHESIVE SOILS REQUIRE STRICT MOISTURE CONTROL AND COMPACTION IS USUALLY IN THINNER LAYERS (200MM MAXIMUM) AND MAY REQUIRE DIFFERENT PLANTS FOR EFFICIENT COMPACTION.
    - SUITABILITY OF SITE BORROW OR SPOIL :
      - SITE MATERIAL (IF SURPLUS EXISTS) MAY BE USED AS FILL MATERIAL PROVIDED IT MEETS THE SPECIFICATION MATERIAL REQUIREMENTS AND CAN BE PLACED TO MEET COMPACTION REQUIREMENTS;
      - AS A GUIDE MATERIALS WITH GREATER THAN 5% INCLUSIONS (BY VOLUME) OF UNSUITABLE MATERIALS (SUCH AS PEAT, ASH, CHARCOAL, WOOD, METAL, OR CERAMIC) SHALL NOT BE USED WITHOUT THE REMOVAL OF THE DELETERIOUS MATERIALS. INCLUSIONS OVER 100MM SHALL BE REMOVED;
      - SAND FILLING FOR GENERAL FILL SHALL BE PERMITTED PROVIDED THE SPECIFIED SUB-GRADE AND FILLING COMPACTION CAN BE ACHIEVED;

### BULK EARTHWORK NOTES CON.

- ALL SURPLUS EXCAVATION MATERIAL NOT REQUIRED FOR OR NOT SUITABLE FOR FILLING SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED DUMP SITE;
  - NO CONTAMINATED SOILS SHALL BE RE-USED ON SITE;
  - TOPSOIL IN CUT / FILL AND BORROW AREAS SHALL BE STRIPPED PRIOR TO EARTHWORKS COMMENCEMENT. TOPSOIL SUITABLE FOR LANDSCAPE SHALL BE STOCKPILED AT AN APPROVED LOCATION FOR RE-USE. ALL OTHER TOPSOIL SHALL BE DISPOSED OF OFFSITE AT AN APPROVED TIP.
  - ALL PEAT ENCOUNTERED SHALL BE REMOVED AND DISPOSED OF OFFSITE AT AN APPROVED TIP.
- PERFORMANCE-BASED SPECIFICATION:
    - THIS IS A PERFORMANCE-BASED SPECIFICATION FOR THE EARTHWORKS. THE CONTRACTOR IS RESPONSIBLE FOR ACHIEVING THE SPECIFIED COMPACTION REQUIREMENTS.
    - SUB-GRADE PREPARATION: RAKE/TYNE THE SURFACE TO A MINIMUM DEPTH OF 100MM. REMOVE ALL TOPSOIL, RESIDUAL BUILDING MATERIAL, AND VEGETATION FROM THIS ZONE TO BE DISPOSED OF AT AN APPROVED TIP.
      - PROOF ROLL EXPOSED SURFACE WITH AN APPROPRIATE ROLLER IN THE PRESENCE OF AN EXPERIENCED GEOTECHNICAL ENGINEER);
      - IDENTIFY AND REMOVE ANY SOFT AREAS AS DIRECTED. REPLACE THESE AREAS WITH APPROVED FILLING AND RECOMPACT;
      - COMPACT THE SUB-GRADE IN ALL AREAS TO THE FOLLOWING REQUIREMENTS.

SOIL TYPE	DEPTH BELOW FINAL SURFACE	SUBGRADE COMPACTION CRITERIA
COHESIVE	Top 300mm	DENSITY RATIO >98% std.
	300 - 600mm	DENSITY RATIO >95% std.
COHESIONLESS	Top 300mm	DENSITY INDEX >80%
	300 - 600mm	DENSITY INDEX >70%

NOTE: WHERE THE SUBGRADE MATERIAL COMPRISES FILL MATERIALS COMPACTION MAY REQUIRE OVER EXCAVATION AND RECOMPACTION. IMPACT COMPACTION MAY ASSIST.

- FILLING
  - GENERAL FILLING:
    - FILLING USING SAND FROM BORROW ON THE SITE IS PERMISSIBLE SUBJECT TO THE AVAILABILITY OF MATERIAL FROM EXCAVATION AND ITS SUITABILITY (NOTE THAT EARTHWORKS ARE PREDOMINANTLY IN FILL AND LITTLE EXCAVATION IS PROPOSED);
    - COHESIONLESS FILL SHALL BE PLACED TO SUIT THE COMPACTION EQUIPMENT BEING EMPLOYED;
    - GENERAL FILL > 5% FINES TO BE USED AT OPTIMUM M/C 600MM BELOW FINISHED SURFACE.

COMPACTION REQUIREMENTS	
FILL TYPE	COMPACTION CRITERIA
COHESIONLESS	DENSITY INDEX 80%
GENERAL FILL ≥5% CBR	DENSITY RATIO 95% STD.
SELECT FILL ≥8% CBR	DENSITY RATIO 98% STD.

### BULK EARTHWORK NOTES CON.

- SELECT FILLING
  - SELECT FILLING SHALL BE GRANULAR MATERIAL WITH CBR ≥ 8% AND SHALL BE PLACED WITHIN 600MM OF THE FINISHED SURFACE;
  - SELECT FILL SHALL BE CERTIFIED;
  - SELECT FILLING SHALL BE PLACED IN 200MM MAXIMUM LAYERS AND COMPACTED TO 98% MODIFIED COMPACTION.
- THE CONTRACTOR SHALL SUPPLY A SAMPLE OF THE PROPOSED FILL MATERIALS AND RELEVANT TEST RESULTS CERTIFIED FOR APPROVAL BY THE SUPERINTENDENT PRIOR TO AND AT DELIVERY.
- THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS, AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR EXPENSE.
- TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA-REGISTERED LABORATORY AT THE CONTRACTOR'S EXPENSE. RESULTS SHALL BE SUBMITTED TO THE SUPERINTENDENT WITHIN 2 DAYS AFTER SUPPLY BY THE LABORATORY.
- A 75MM (COMPACTED THICKNESS) CAPPING LAYER OF CRUSHED SANDSTONE SHALL BE SUPPLIED, PLACED AND COMPACTED TO 100% S.D.D. TO THE WHOLE OF THE BULK EARTHWORKS PLATFORM. THE TOP OF THE BULK EARTHWORKS SHALL BE FINISHED TO THE LEVELS SHOWN ON THE PLANS. THESE SHALL BE RECONFIRMED PRIOR TO COMMENCING.

### EARTHWORKS NOTES

- ALL WORK SHALL COMPLY WITH AS3798 (1996) - GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
- ALL WORK SHALL COMPLY WITH THE PROJECT GEOTECHNICAL REPORT.
- STRIP TOPSOIL TO EXPOSE NATURALLY OCCURRING ENGINEERING MATERIAL AND STOCKPILE ON SITE FOR REUSE AS DIRECTED BY THE SUPERINTENDENT.
- ALL SOFT, WET, OR UNSUITABLE MATERIAL TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED FILL MATERIAL.
- ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING -
  - FREE FROM ORGANIC AND PERISHABLE MATTER,
  - MAXIMUM PARTICLE SIZE 75mm,
  - PLASTICITY INDEX - BETWEEN 2% AND 15%.
- ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.5.1.1-2003-METHODS OF TESTING SOILS FOR ENGINEERING PURPOSES OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITY -
 

LOCATION	STANDARD DRY DENSITY
UNDER BUILDING SLABS	98%
VEHICULAR PAVED AREAS	100%
NON-VEHICULAR PAVED AREAS	98%
LANDSCAPED AREAS	95%
- THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS, AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR OWN EXPENSE.
- TESTING OF THE FILL MATERIAL SHALL BE CARRIED OUT BY AN APPROVED NATA-REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.



FOR APPROVAL

Revision	Amendment	Issued By	Revision Date	Architect	Client	Engineer	Project	Drawn	Designed	Approved
0	ISSUED FOR APPROVAL	HR	01.08.25	FUSE ARCHITECTS	Anglicare	eiaustralia	215, 229-239 PITT STREET MERRYLANDS 2160	HR	HM	HR
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				<small>Issued By HR</small>		<small>Checked By HR</small>		<small>Date 01.08.25</small>		

**Form B1<sup>i</sup> DRAINAGE DESIGN SUMMARY SUB/DA**  
**No. \_\_\_\_\_**

Project: S10518 Location: 215-229 PITT STREET, MERRYLANDS

Designed by: Hasan Javied Rana Company: EI Consulting Engineers Phone: 0469319995

SITE AREA	<u>0.203</u>	ha	*See Section 3.4.3 for dual occupancy	[A]
Upstream catchment draining through site	=	<u>0.203</u>	ha	[AA]
See Section 4.1.3 for assessment of external flows.				
Basic storage volume	<u>300</u> <del>470</del> x [A]	<u>0.203</u>	=	<u>60</u> m <sup>3</sup> [B]
Basic discharge	= <del>0.08</del> <sup>0.14</sup> x [A]	<u>0.203</u>	=	<u>0.0284</u> m <sup>3</sup> /s [C]
Area of site drained to storage (Must be as much as possible and not be less than 85% of the total site without written Council approval).			=	<u>0.203</u> ha [D]
[D/ [A] + [ <u>0.203</u> ]/[ <u>0.203</u> ] x 100			=	<u>100</u> % [E]
Storage per ha. of contributing area = [B]/[D]			=	<u>295</u> [F]
Enter <i>volume/PSD adjustment chart</i> (Fig 5.1) using [F], and Read new PSD in litres/second/ha (l/s/ha).			=	<u>80</u> l/s/ha [G]
Determine PSD = [G] x [D]	<u>80</u> x <u>0.203</u>		=	<u>16.24</u> l/s [H]
Maximum head to orifice centre			=	<u>1.794</u> m [K]
Weir flow to storage $Q^{Weir} = CL(H^{Weir})^{1.5} \therefore H^{Weir}$			=	<u>1.794</u> m [I]
Selected orifice diameter: $d = (0.464 \times Q / \sqrt{h})^{0.5} = (0.464 \times [H] / \sqrt{[K]})^{0.5}$			=	<u>0.077</u> m [J]
Maximum discharge			=	<u>16.24</u> l/s [L]
Head for high early discharge			=	<u>0.92</u> m [M]
High early discharge $\{ [L] \times \sqrt{[M] / [K]} \}$ (min 75% of [L])			=	_____ l/s [N]
Approximate mean discharge = ([L]) + [N] / 2			=	_____ l/s [P]
Average discharge/ha = [P] / [D] = _____ / _____			=	_____ l/s/ha [Q]
Enter <i>volume/P.S.D. adjustment chart</i> (Fig 5.1) using [Q] And read off final storage volume per hectare			=	<u>580</u> m <sup>3</sup> /ha [R]
Determine final SSR = [R] x [D] = <u>580</u> x <u>0.203</u>			=	<u>117</u> m <sup>3</sup> [S]
Primary storage proportion = [S] x <u>100</u> %			=	_____ m <sup>3</sup> [T]
Secondary storage proportion = [S] x _____ %			=	_____ m <sup>3</sup> [U]
Tertiary storage proportion [S] x _____ %			=	_____ m <sup>3</sup> [V]
Check [T] + [U] + [V] = [S]			=	_____ m <sup>3</sup>

<sup>i</sup> Revised for third edition to include flow from upstream and revised by pass flows