Larkin & Pockley – Pockley Avenue Site

Stormwater Management Report

Prepared for: **: Aqualand Prestige 2 Pty Ltd**

Date: **14th February 2025**

Prepared by: **Nathan Oakley**

Ref: **301351698**

Stantec Australia Pty Ltd
Level 9, The Forum, 203 Pacific Highway, St Leonards NSW 2065
Tel: +61 2 8484 7000 Web: www.stantec.com

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Stantec

Revision

Site Address:	2-16 Pockley Avenue, Roseville
Real Property Description:	Lot 11-18/DP8261
Proposed Development:	Residential
Client:	Aqualand Prestige 2 Pty Ltd
Local Authority	Ku-ring-gai Council
Authority Reference #:	N/A
Stantec Reference:	30135169851698-Pockley Avenue Site-SWMP_001

Andy Toh

Project Technical Lead, Civil Engineer

Stantec Australia Pty Ltd

Revision	Date	Comment	Prepared By	Approved By
001	14.02.25	Draft Issue	NO	AT
002	15.04.25	First issue	CG	AT

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SEARs Requirements Declaration: Pockley Island

Declaration		
Name	Charlie Gilbert	
Qualifications	Beng(Hons)	
	The undersigned declares that this "301351698-Pockley Avenue Site-SWMP_002" has been prepared in response to the following SEARs requirements issued for the Project on 15/11/2024 for SSD-77829461:	
SEARs item no.	**SEARs Requirement**	**Relevant Section of this Report**
14	Details the proposed drainage design (stormwater) for the site including any on-site treatment, reuse and detention facilities, water quality management measures and nominated discharge points.	Section 9.2.1 & appendix C
14	Demonstrates compliance with the local council or other drainage or water authority requirements and avoids adverse downstream impacts.	Section 4.4 & 5
14	Where drainage infrastructure works are required that would be handed over to the local council, or other drainage or water authority, provide full hydraulic details and detailed plans and specification of proposed works that have been prepared in consultation with, and comply with the relevant standards of, the local council or other drainage or water authority.	Noted. See full SWMP for infrastructure considerations.
Signed		
Dated	11th April 2025	

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Certified System
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1. Introduction

Stantec have been commissioned by Aqualand Australia to prepare this Stormwater Management Plan (SWMP) in support of the Development Application for the proposed high-density Residential development at 2-16 Pockley Avenue, Roseville

The applicant seeks development consent under Division 4.7 State Significant Development of the Environmental Planning & Assessment Act 1979 (EP&A Act) for a new residential development comprising three residential flat buildings which includes the provision of in-fill affordable housing on the site at 2-16 Pockley Avenue, Roseville.

Specifically, this SSDA seeks approval for:

- Site preparation including demolition, excavation and tree removal of the site;
- Construction of a residential flat building containing 3 building elements of up to 9 storeys including:
    - Part-3, part 4 and part 5-level combined basement parking with the provision of **285** car parking spaces,
    - **178** dwellings including **39** affordable housing dwellings above carpark;

Ground level and on-building landscaping works including communal open spaces in Pavilion A.

This SWMP outlines the stormwater design for the proposed development. This report also aims to illustrate that the proposed development complies with the conditions set out by Ku-ring-gai Council, Australian Rainfall and Runoff, Australian Standards.

The purpose of this SWMP is to evaluate the quantity and quality of stormwater associated with the proposed development plan, with the aim to demonstrate to Council that an appropriate stormwater management strategy has been adopted.

This SWMP specifically addresses the following items for both the construction and operational phases of the development:

- Stormwater runoff volumes;
- Stormwater quality treatment measures;
- Water Sensitive Urban Design (WSUD) measures
- Erosion Sedimentation Control
- Stormwater Network Maintenance during Operation

The following will be achieved with the correct application of this SWMP report:

- Appropriate standards to be maintained on all aspects of stormwater within the site,
- Pollution control to be maintained,
- Establishment of a unified, clear, and concise stormwater management strategy.

2. Abbreviations Definitions

- **AEP** Annual Exceedance Probability
- **AHD** Australian Height Datum
- **ARI** Average Recurrence Interval
- **ARR** Australian Rainfall and Runoff
- **DA** Development Application
- **DCP** Development Control Plan
- **DN** Diameter Nominal (mm)
- **EY** Exceedances per Year
- **GPT** Gross Pollutant Trap
- **IFD** Intensity-Frequency-Duration
- **IL** Invert Level
- **L/s** Litres per second
- **m/s** Metres per second
- **MUSIC** Model for Urban Stormwater Improvement Conceptualisation
- **OSD** On-site Stormwater Detention
- **PSD** Permissible Site Discharge
- **RCP** Reinforced Concrete Pipe
- **RL** Relative Level
- **SID** Safety In Design
- **SQID's** Stormwater Quality Improvement Devices
- **SSR** Site Storage Requirement
- **WQO's** Water Quality Objectives
- **WSC** Water Services Coordinator
- **WSUD** Water Sensitive Urban Design

3. Relevant Policies, Standards and Guidelines

The following listed policies, standards and guidelines were referred to in the preparation of this report:

- The Ku-ring-gai Council DCP (Part 24: Water Management) 2024
- The Ku-ring-gai Council DCP (Part 24R: References - Water Management) 2024
- The Ku-ring-gai Council Technical Guideline for Water Management 2023
- Australian Rainfall & Runoff 2016;
- AS3500 parts 0-5: 2013 Plumbing and Drainage
- Landcom Managing Urban Stormwater: Soils and Construction Volume 1 2004
- NSW Floodplain Development Manual 2005

4. Existing Site Characteristics

4.1 Property Detail

The proposed development forms part of the site with the following property details:

Site Address:	2-16 Pockley Avenue, Roseville
Real Property Description:	Lot 11-18/DP8261
Development Area:	6500m² (0.65Ha)

The existing site is comprised of eight separate lots, each zoned and utilised as low-density residential.

The proposed residential development consists of one level of basement car parking and three nine-level towers. The proposed development can be seen on the Civil Design Documentation shown in Appendix A of this report.

The overall site is bounded by:

- Larkin Street to the North East
- Maclaurin Parade to the South East
- Pockley Avenue to the North West and South West

Figure 1: Site Location Plan (Source: Mecone Mosaic 2025)

4.2 Topography

The pre-development site consists of eight existing low-density residential properties. The local topography around the site shows that the site falls evenly to the West, with a crest running through the site in the East-West direction, splitting part of the catchment north towards Pockley Avenue, and part towards Maclaurin Parade. The high point of the site is located at

the site boundary at the intersection of Larkin Street and Maclaurin Parade at a level of RL 98m AHD. The low point is located at the Western corner at a level of RL 78m AHD this is an average slope of approximately 14%.

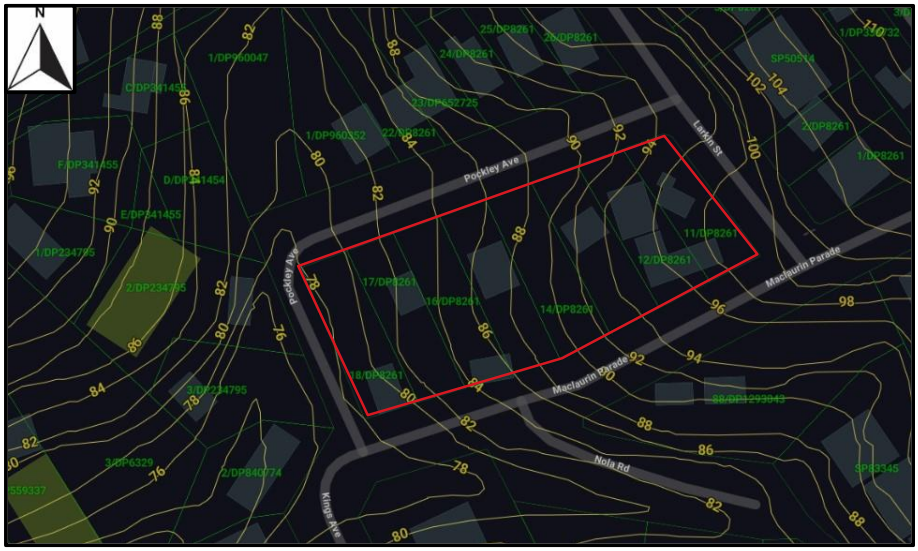

Figure 2: Site Topography (Mecone Mosaic 2025)

4.3 Stormwater Catchments

The proposed development site is located approximately 70m upstream of Blue Gum Creek. The site is currently surrounded by roadways, so it is believed that no external catchments impact the development site.

Under existing conditions, the site drains towards the Northwest and Southwest to the respective drainage systems seen in Figure 3. The stormwater management strategy for the site proposes to include sub-soil drainage and an OSD in conjunction with a network of pits and pipes.

No flood studies have been undertaken on behalf of our client covering the area, however there is an in-progress Lane Cove Southern Catchments Flood Study covering Blue Gum Creek in the Ku-ring-gai LGA.

4.4 Existing Stormwater Infrastructure

Through review of survey information, there is no evidence that the site contains any council authority drainage infrastructure within the site boundary extents. Existing infrastructure maps obtained from DBYD highlights formalised drainage infrastructure surrounding the development identified in Figure 3 below.

Review of the topographical survey plan ref “80598” conducted by Rygate Surveyors identifies existing unspecified pit locations and gutter systems which surround the existing dwellings. It is assumed and expected that stormwater runoff follows the natural topography of the site and utilises both the network spanning Pockley Avenue to the north, and Maclaurin Parade to the South.

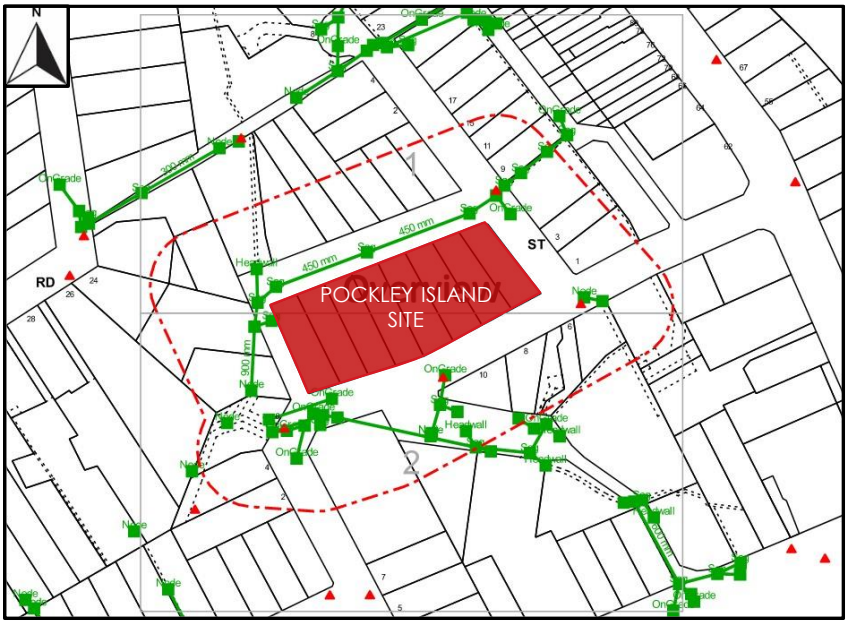

Figure 3: Existing Stormwater Infrastructure (Ku-ring-gai Council)

4.5 Existing Stormwater Discharge

As the overall development site consists of multiple existing lots, it has been determined that not all lot areas discharge in the same manner. An existing stormwater pit has been identified to discharge the proposed site stormwater runoff within Pockley Avenue. The existing pit Is located in the middle of Pockley Avenue, West of the proposed residential development.

Figure 4 – Driveways and Kerb on Maclaurin Parade

The existing residential frontages bordering Pockley Avenue drain via overland flow to pits along the southern side of Pockley Avenue. Whereas the roof areas and driveways along Maclaurin Parade drain to the kerb. It is assumed that all flows upstream of the location shown in Figure 4, are to discharge into this existing stormwater pit. Upstream culverts and overland flow management shown in figure 5 below.

Figure 5 – Driveways and Kerb on Maclaurin Parade

All stormwater runoff to this pit is directed to an open channel reserve located west of Maclaurin Parade identified in figure 5. Further flood study to identify the capacity of potential discharge to existing stormwater pit.

5. Local Authority Requirements

Design requirements for stormwater management on the site have been set out in the Ku-ring-gai Council Development Control Plans (2024). Based on the DCP 2024 Section 24A.1, the site falls under the development categories of Type 5 & Location A, for high and medium density developments and sites draining directly to council drainage systems respectively.

5.1 Stormwater Conveyance Requirements

The Ku-ring-gai Council DCP (2024) Section 24E.1-8: Design Procedures states that the following design storm Average Recurrence Intervals (ARI)'s should be allowed for when designing the Stormwater runoff conveyance systems for the development. The site has been considered as Residential High Density.

Table 1: Stormwater Drainage Serviceability

Design Parameter	Annual Exceedance Probability (AEP)	Conveyance Method
Minor Drainage System	5%	In Ground (Piped)
Major Drainage System	1%	Overland

5.2 On Site Detention Requirements

The development site falls in the Blue Gum Creek BG1 catchment, as per the Ku-ring-gai Technical Guideline for Water Management Section 4.2. The Ku-ring-gai Council DCP 2024 – 24C.5: Controls for On-Site Detention states that On-site detention systems shall be provided for all new developments with limited areas exempt, the site not falling within one of these regions. The DCP states that OSD and OSR systems should be designed to restrict the rate of stormwater discharge to the permissible rate of discharge for the site, for all design storm events up to and including the 1% AEP event, post development discharge shall not exceed predevelopment discharge.

In addition, the OSD system should provide sufficient storage to ensure peak flow rates at any point within the downstream of the system do not increase as a result of the development during the design storm event.

Figure 6 – Ku-ring-gai Catchment Map (Ku-ring-gai Council 2023)

5.3 Rainwater Tank Requirements

The Ku-ring-gai Council DCP 2024 – 24C.4 details that at least one rainwater tank is to be provided to capture the maximum possible roof water runoff from the primary buildings on the property. As a Type 5: High density development, the minimum tank storage requires compliance with the state government BASIX requirements given that the proposed development is a Location A classified site.

5.4 Stormwater Quality

The Ku-ring-gai Council DCP (2024)– 24C.6: Stormwater Quality Control states that all stormwater flows from regular rainfall events up to the 40% AEP storm shall be captured for treatment. Captured stormwater runoff quality shall be improved to achieve the following reduction targets when compared to pre-development levels:

Pollutant	Baseline Annual Pollutant Load (kg/ha/yr)	Standard to be achieved (kg/ha/yr)
Gross Pollutants	500	30% (70% reduction) = 150
Total Suspended Solids	900	15% (85% reduction) = 135
Total Phosphorus	2	35% (65% reduction) = 0.7
Total Nitrogen	15	55% (45% reduction) = 8.25

Figure 7 - Pollution Reduction Targets

6. Flood Impact Assessment

When considering a new development, it is important to assess the impact of existing flooding on the proposed development and also the impact of the proposed development on existing or potential flooding both upstream and downstream of the development. Further flood investigation is recommended to be carried out.

6.1 Existing Flooding

6.1.1 Regional Flooding

The proposed site is in the Blue Gum Creek catchment, an in-progress study (Lane Cove Southern Catchments Flood Study) will cover the site surrounds. Further investigation will confirm the need for capacity considerations to the existing stormwater network.

A flood report conducted by Kozarovski and Partners dated 28th February 2025 illustrates findings of a flood modelling within the existing Roseville catchment. This can be found in Appendix B.

7. Stormwater Conveyance

This section of the report discusses the systems proposed to allow for stormwater to be conveyed across the site. The legal point(s) of discharge are to be confirmed with council. The stormwater drainage for the development site is proposed to be connected into existing stormwater drainage infrastructure and assumed to have adequate capacity. 1% AEP Flood levels generated from the recent Flood Management Report were used to determine tailwater values used in the most recent DRAINS model. Flood level 76.57m AOD was determined at point of the stormwater outfall, located adjacent to the western site boundary at Pockley Avenue.

As discussed in Section 5.1 of this report council have set serviceability requirements for the stormwater conveyance network such that minor flows are conveyed through piped drainage, and major flows are discharged via controlled overland flow.

7.1 Roof Drainage

The drainage system will be designed in accordance with AS3500.3-2003 to convey the minor design storm runoff from the roof to the in-ground drainage system. For storm events exceeding the design storm event, flows will surcharge the roof drainage system and discharge onto the surrounding ground where it will then convey through the inground pits to the stormwater network within the site.

Detailed roof drainage design will be completed during CC documentation by the Hydraulic Engineer consultant.

7.2 Surface Drainage

The surface areas will be drained through a variety of methods, discussed below, in accordance with AS3500.3:2003 and Council's stormwater drainage guidelines.

7.2.1 In Ground Drainage

The in-ground drainage has been designed to meet the following criteria:

- In the minor design storm event (5% AEP) there will be no surcharging of the in-ground drainage system and;
- In the major design storm event (1% AEP) there will be no uncontrolled discharge from the site onto neighbouring properties or the surrounding street

Surface runoff from the hardstand and surrounding landscape areas will be directed to stormwater inlet structures using the design topography of these elements. The inlet structures have been designed to adequately convey the surface runoff into pits. The runoff will then be conveyed underground across the site to the on-site detention basin and then the legal point of discharge using gravity and the geometric falls of the pipe system.

All major overland flow will be conveyed in a controlled manner in the 1% AEP storm events that aligns with council requirements.

7.3 Legal Point of Discharge

The development area is proposed to have a singular discharge located at the Southwest corner of the site, connecting into the existing stormwater network on Maclaurin Parade. This single point of discharge will also encompass discharge from the OSD tank, and major overland flows in the 1% AEP storm events will be conveyed towards the Southwestern corner of the site, towards the Maclaurin Parade/Pockley Avenue. It is assumed the existing downstream stormwater network has adequate capacity to accommodate this flow.

Figure 8: Proposed Stormwater Layout

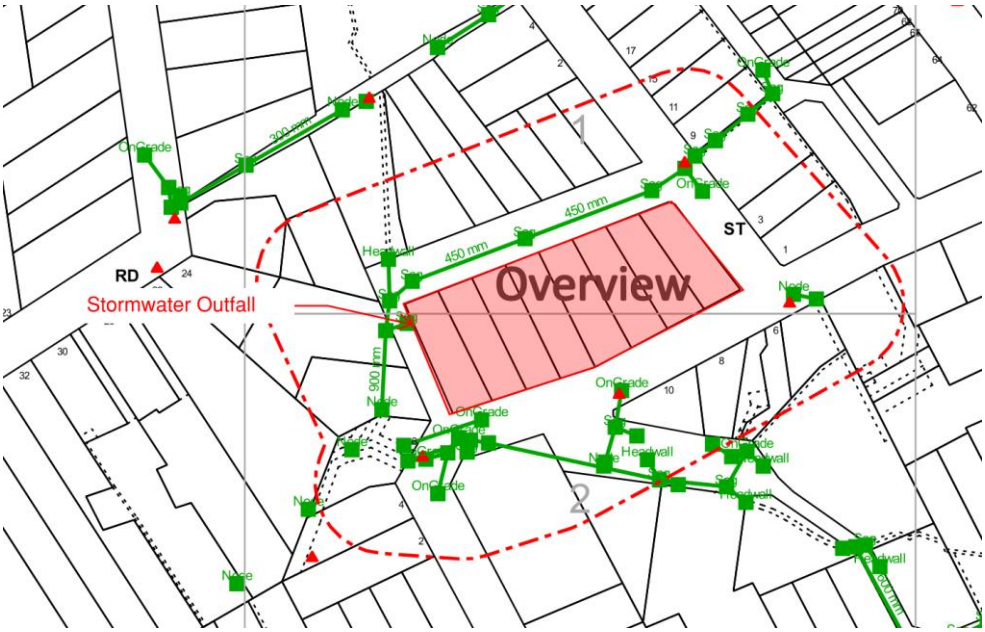

Figure 9: Proposed Legal Point of Discharge on Maclaurin Parade

8. Stormwater Attenuation

As discussed in section 5.2 the attenuation of stormwater discharge from the site will be provided in accordance with The Ku-ring-gai Council Development Control Plan requirements. Hydraulic modelling in DRAINS software has been used to determine the required on-site detention so as to restrict discharge from the development site back to pervious predevelopment discharge rates for all rainfall events of the major (1% AEP) and minor (5% AEP) only.

One OSD tank has been proposed for the site. The tank incorporates an orifice plate leading into a discharge control pit to control the minor rainfall events (5% AEP). Details of tank and orifice sizes can be seen in the table below.

Table 2: On-Site Detention Tank Specifications

	Detention Volume Provided (m^3)	Orifice 1 Plate Diameter (mm)
OSD Tank	126	350

DRAINS modelling results show that the tanks indicated above adequately restrict discharge back to predevelopment fully pervious conditions. Results have been summarised in the table below.

Table 3: DRAINS Results Summary

AEP Rainfall Event	Predevelopment Discharge (m^3/s)	OSD Tank Discharge (m^3/s)	Development Bypass Discharge (m^3/s)	Total Site Peak Discharge (m^3/s)
50%	0.132	0.121	0.003	0.124
20%	0.191	0.159	0.004	0.163
10%	0.254	0.186	0.006	0.192
5%	0.307	0.21	0.007	0.217
1%	0.401	0.349	0.045	0.394

8.1 DRAINS Input Parameters

A DRAINS model has been prepared to verify the site stormwater drainage system. DRAINS is a runoff routing software program which assesses stormwater drainage hydraulics based on catchment hydrology input from various sources including the Bureau of Meteorology (BoM) and the Australian Rainfall and Runoff (ARR) Datahub.

The parameters used in the DRAINS model are as follows:

- Soil Type – Normal 3.0
- Paved (Impervious) Area Depression Storage 1mm
- Supplementary Area Depression Storage 3mm
- Grassed (Pervious) Area Depression Storage 5mm
- Antecedent Moisture Condition 3.0

- Minimum Pit Blockage (Sag Pits) 0.2
- Minimum Pit Blockage (On-Grade Pits) 0.2
- Minimum Pit Freeboard 150mm
- Minimum Fall Across Pits 20mm

The DRAINS model has been prepared to confirm that the proposed stormwater pit and pipe network is adequately sized to capture and convey the 5% AEP storm. Overland flow paths have been adequately sized to convey the 1% AEP storm flows safely across the site.

9. Water Quality Treatment

As discussed in section 5.4 of this report The Ku-ring-gai Council DCP (2024) require stormwater quality treatment on new developments to reduce the pollutant loading of stormwater discharged into the council drainage system.

This section of the report describes the proposed Stormwater Quality Improvement Devices (SQID's) and the effectiveness of the treatment system in achieving the reduction targets set by council for the proposed development.

9.1 Potential Pollutants

There are a wide range of potential stormwater pollutant sources which occur from urbanised catchments, many which can be managed through appropriate stormwater quality treatment. Typical urban pollutants may include:

- Atmospheric deposition
- Erosion (including that from subdivision and building activities)
- Litter and debris
- Traffic emissions and vehicle wear
- Animal droppings
- Pesticides and fertilisers
- Application, storage and wash-off of car oil, detergents and other household and commercial solvents and chemicals
- Solid's accumulation and growth in stormwater systems
- Weathering of buildings

The following specific pollutants in urban stormwater assessed through water quality modelling and management include:

- Suspended Solids
- Litter
- Nutrients such as Nitrogen and Phosphorous
- Biological oxygen demand (BOD) and chemical oxygen demand (COD) materials
- Micro-organisms
- Toxic organics
- Trace metals
- Oils and surfactants

While only the key pollutants underlined above will be examined within the modelling, the Stormwater Quality Improvement Devices implemented are expected to assist in reducing a wide range of pollutants. For example, heavy metals are commonly associated with and bound to fine sediments. This reduces the discharge of fine sediment during the construction and operational phases will also reduce the discharge of heavy metals to existing stormwater systems.

9.2 Pollutant Reduction System

In order to achieve the pollutant reduction targets specified in section 5.4 of this report, a series of treatment devices are proposed within the stormwater network which form a treatment train.

The diagram below shows a typical treatment train:

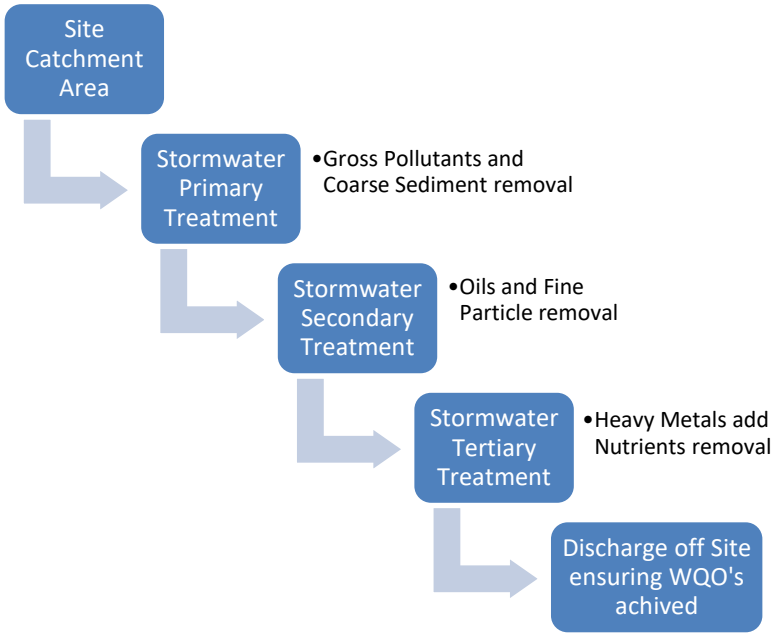

Figure 10: Treatment Train

9.2.1 Water Treatment Modelling

In order to demonstrate that the proposed treatment train meets the required reduction targets, a pollutant reduction model has been generated using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Software program Version 6.4 by eWater CRC. Pollutant export rates are currently only available for Total Suspended Solids (TSS), Total Nitrogen (TN), Total Phosphorus (TP) and Gross Pollutants (GP). Therefore, only quantitative modelling for TSS, TN, TP & GP has been undertaken using MUSIC.

Modelling using the Ku-ring-gai MUSIC-Link has been undertaken on the post-development proposal with SQID's installed so as to demonstrate the percentage reduction for each pollutant type.

Table 3: MUSIC Results vs. Site Targets

Pollutant/Issue	Target	Reduction	Target Achieved
TSS	85%	88.3	YES
Phosphorus	65%	70.2	YES
Nitrogen	45%	46.4	YES
Gross Pollutants	70%	100%	YES

As can be seen in the table above, the MUSIC model shows that the proposed design meets council's reduction target. Refer to Appendix C for Ku-ring-gai Council MUSIC Link report.

9.2.2 Ocean Protect Stormfilter Cartridges

The Ocean Protect StormFilter Cartridges clean stormwater through a patented passive filtration system, effectively removing pollutants to meet regulatory requirements. This treatment system uses rechargeable, self-cleaning, media-filled cartridges to absorb and retain pollutants from stormwater runoff including total suspended solids, hydrocarbons, nutrients, soluble heavy metals and other common pollutants.

- A 126m^3 OSD Tank will contain 4 x 690mm Psorb StormFilter

9.2.3 OceanGuard Pit Baskets

The OceanGuard Basket is a gully pit basket designed to capture pollution that runs into stormwater drains. It can be installed into existing and new stormwater pits. The system includes filtration bag liners, designed to remove gross pollutants, total suspended solids and attached pollutants. The filtration bag, filtration cage and flow diverter work together to maximise the flow treated and pollutants captured. This efficient hydraulic design ultimately results in captured pollutants being retained in a dry state. OceanGuard Baskets are cost-effective, highly efficient, easy to install and simple to maintain. OceanGuard Baskets have been proposed for the site and will be installed into the proposed grated pits within the main courtyard area.

- Have been proposed for the water quality treatment strategy.

9.3 Rainwater Tank

A Rainwater Tank is a water storage system designed to be installed on a residential development to catch rainfall on roof surfaces. These tanks can provide water for non-potable uses such as, toilet flushing, hot water, laundry washing, vehicle washing, irrigation, and industrial wash down.

10. Water Sensitive Urban Design Strategy

10.1 WSUD Background Information

Design guidelines for Water Sensitive Urban Design (WSUD) on the site have been set out in the Ku-ring-gai Council DCP (2024). WSUD integrates land use and water management with the aim of minimising impacts of urban development on the natural water cycle. The WSUD design strategy for the proposed development is as follows. No previous WSUD studies have been done for this site.

10.2 Site Context

Full site context has been provided in Section 4 above.

10.3 Proposed Development

The proposed development has been outlined in Section 7-9 above, as well as in Appendix A with the Civil Design Documentation.

10.4 WSUD Objectives and Targets

The DCP states that WSUD principles through the provision of a range of water quality devices need to be implemented for:

- All stormwater flows from regular rainfall events up to the 40% AEP storm are to be captured for treatment prior to discharge to the stormwater drainage system.

As discussed in Section 9 above, the site will implement a stormwater detention basin, rainwater tank, and OceanGuard inlet filters, cartridge filters in order to minimise the development impact on the natural water cycle.

10.5 Constraints and Opportunities

There are always opportunities to adopt a range of WSUD measures for any development. There were no major constraints within or neighbouring the site such as flood plains, watercourses or sensitive environments that are required to be preserved or remediated as part of the proposed works.

10.6 Water Conservation

The proposed development will include a rainwater storage which will be reused in systems such as toilet flushing and landscape watering.

10.7 Stormwater Management

The proposed stormwater system has been designed as per Ku-ring-gai DCP 2024. The full extent of the stormwater management procedures undertaken in the design has been explored throughout the entirety of this SWMP.

11. Erosion & Sedimentation Control

Landcom have published a design guide entitled “Managing Urban Stormwater - Soils and Construction” which is regarded as the standard to which erosion and sedimentation control should be designed within NSW.

The control of erosion and sedimentation describes the measures incorporated during and following construction of a new development to prevent the pollution and degradation of the downstream watercourse.

A Soil and Water Management Plan has prepared as part of the development application documentation and is included in Appendix A of this report.

11.1 Stormwater Drainage Infrastructure Inlets

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will then be conveyed into the downstream waterbody by stormwater runoff, contaminating the waterbody.
- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- Sediment trap protection will be installed surrounding all existing stormwater drainage infrastructure inlets to prevent sediment entering the system.
- Temporary Stormwater Systems are to be installed where required to capture all site runoff within the zone of excavation. Runoff will be allowed to settle out suspended particles and debris, and an acceptable water of 50mg per litre of Non-Filterable Residues (NFR) is required to be achieved prior to discharge.
- Installation of a fence around the perimeter of the basin is required as well as a rip rap to allow for bobcat access for periodic removal of sediment. Also, a perforated riser outlet pipe needs to be placed for the connection and discharge to an existing pit.

Maintenance:

- Frequent inspection of the sandbags to ensure they are arranged in a manner that prevents sediment from accessing the drainage system. If sediment is building up on the sandbags they should be cleared of sediment and re-established.
- All soil erosion and sediment control structures including temporary sediment basins and sediment traps shall be inspected following each storm event and any necessary maintenance work shall be undertaken to ensure their continued proper operation.

11.2 Construction Exit Protection

Risk:

- Spoil such as soil being conveyed from the site on the wheels of vehicles.

Consequence:

- Spoil being tracked onto the public road corridors where it is then washed into the existing stormwater drainage infrastructure and is then washed downstream polluting the downstream waterbody.

- Spoil being tracked onto the public road creating dangerous driving conditions for other road users.

Mitigation:

- A shaker grid and wash-down facility will be installed at all exits from the construction site. All vehicles leaving the site will have their wheels washed down and pass over the shaker grid to remove any spoil collected on their wheels and retaining the spoil on site.
-

Maintenance:

- Frequent inspection of the shaker grid to ensure it is clean and still functioning.

11.3 Downstream Site Boundaries

Risk:

- Rainfall runoff falling on the site collecting sediment from the construction site and conveying it overland onto downstream properties and waterbodies.

Consequence:

- Sediment discharge polluting downstream properties and waterbodies.

Mitigation:

- Installation of sediment fences on all downstream boundaries of the site to collect sediment and prevent it discharging onto downstream properties or waterbodies.

Maintenance:

- Regular inspection of the sediment fences to ensure they are functioning correctly and are intact.
- If sediment buildup is present it should be removed to ensure correct functionality of the fences.

11.4 Sediment Runoff

Risk:

- Sediment from the construction site washing into the existing stormwater drainage inlet infrastructure.

Consequence:

- The sediment will build up blocking the stormwater infrastructure and preventing stormwater conveyance to the downstream waterbody and impacting drainage upstream.

Mitigation:

- One sediment basin will be installed, and all overland flow directed towards it. The basin will attenuate stormwater flows allowing for the settlement of sediment preventing discharge into the downstream infrastructure.

Maintenance:

- Frequent inspection of the basins to ensure there is sufficient volume for the storage of settlement. If there is insufficient storage the basins should be cleared of sediment and re-established.

12. Stormwater Network Maintenance Schedule

In order to ensure the ongoing effective operation of the stormwater network and water quality treatment devices, the devices must be maintained in accordance with manufacturer recommendations/requirements and general best practices. It is noted that all pits are to be inspected in a safe manner that assesses localised risk and in accordance with maintenance contractor safe work method statements (SWMS).

The below summarises the various stormwater network components that will need to be maintained, whilst Schedule 1 below details required maintenance of specific items within the network requiring maintenance.

12.1 Pit and Pipe Network

A general inspection of the stormwater pit network is to be undertaken every six (6) months and after major storm events. The general inspection involves visual inspection inside pits, removal and disposal of larger gross pollutants within pits in accordance with waste disposal regulations to prevent blockages, and minimal rectification works as required. Inspection of general pits can coincide with inspection and maintenance of water quality pit inlets (if applicable).

12.2 OSD Tanks

A general inspection of the OSD tank is to be undertaken at a minimum every six (6) months and after major storm events. The general inspection involves visual inspection inside the tank, condition of components such as orifice plates and valves, removal and disposal of larger gross pollutants within pits in accordance with waste disposal regulations to prevent blockages, and minimal rectification works as required. Inspection of general pits can coincide with inspection and maintenance of water quality pit inlets (if applicable). It is expected that the tanks are hosed out and cleaned on an annual basis to ensure required performance can be achieved.

12.3 Water Quality Treatment Devices

The filtration inserts, located within the pits, are to undergo minor service every three (3) months and after major storm events or a hazardous material spill. This involves inspection and evaluation of the filter bed and its condition, removal of captured pollutants, and the appropriate disposal of captured material in accordance with waste disposal regulations. The minor service is designed to return the ocean guard back to optimal operating performance. An inspection of the condition is to be particularly undertaken following major storm events to check for damage and higher than normal sediment accumulation. Refer to manufacturer's maintenance procedures for details of safely undertaking hand maintenance or vacuum maintenance of the ocean guards.

A major service of the ocean guards is undertaken on an as-required basis and involves the inspection of ocean guards to determine the need for filter bag replacement and support frame rectification. Replacement is based on the outcomes from the minor service whereby damage is detected. Contact manufacturer for assessment and replacement components and refer to manufacturer's maintenance procedures for safely replacing components.

A general inspection of the filtration cartridges located in a StormFilter chamber within the OSD tank, is to be undertaken every six (6) months and after major storm events or a hazardous material spill. The general inspection involves visual inspection of the StormFilter cartridges and chamber, removal and disposal of larger gross pollutants from the device in accordance with waste disposal regulations to prevent blockages, and minimal rectification works as required. Cartridges are also to be checked to ensure they are all firmly connected to the connectors.

A minor service of the StormFilters, undertaken every twelve (12) months and after major storm events or a hazardous material spill, involves the evaluation of the StormFilter cartridges and media, removal of accumulated sediment and a wash-down of the StormFilter chamber. Refer to Ocean Protect maintenance procedures for details of safely undertaking maintenance of the StormFilter cartridges. During this service, the cartridge media is to be inspected and replaced if it is revealed that the cartridge media is exhausted. If this is the case, a major service is to be undertaken to replace the

StormFilter cartridge media. Contact manufacturer for assessment and replacement components and refer to manufacturer's maintenance procedures for details of safely replacing the media components.

12.4 Civil Structures

A general inspection of civil structures and associated drainage across a site should be undertaken annually. The general inspection involves visual inspection, with identified defects assessed by applicable qualified engineers

12.5 Stormwater and OSD Maintenance Schedule

Maintenance Action	Frequency	Responsibility	Procedure
Pit and Pipe Network			
Blockages of inlet and outlet pipes within pits	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge from within pits.
Condition of inlet grates	Six Monthly	Maintenance Contractor	Clear vegetation and any debris from the pit grate and repair as required.
Condition of pit structures and section of pipes at inlets/ outlets.	Two Years	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required. Notify structural engineer if detrimental features observed.
Overland flow paths and drainage swales	Six Monthly	Maintenance Contractor	Walk along the flow path and swale. Check batters and condition of path extent. Remove any debris/litter/sludge.
Survey pipe condition with CCTV's and repair defects as necessary	Five Years	Maintenance Contractor	Remove grate. Clear blockages for camera access. Operate camera in accordance with manufacturer specifications and operator standard procedures.
OSD and Discharge Control			
Blockage of orifice plate	Six Monthly	Maintenance Contractor	Remove grate and screen to inspect orifice. See attached Site Stormwater plan for location of Discharge Control Pit.
Orifice structure size and connection to wall	Five Years	Maintenance Contractor	Compare orifice diameter to approved design (see Works as Executed Drawing) and ensure edge of orifice is not pitted or damaged.
Trash rack blockage	Six Monthly	Maintenance Contractor	Remove grate and screen if required to clean it.
Trash rack condition and connection to wall.	Annually	Maintenance Contractor	Remove grate and rack screen. Check corrosion in particular corners. Check screen fixings to wall for stability and corrosion. Repair as required.
Condition and performance of flap valves	Annually	Maintenance Contractor	Remove grate. Test valve hinge by moving flap to full extent and allowing it to drop back into normal position. Flap should freely swing at hinge.

Blockage of overflow weirs	Six Monthly	Maintenance Contractor	Remove grate and open cover to ventilate underground storage if present. Ensure weir clear of blockages.
Tank and pit wall defects and structural adequacy.	Two Years	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Tank slab build-up of sediment and sludge.	Six Monthly	Maintenance Contractor	Remove grate and screen. Remove sediment/ sludge buildup, check orifice and flap valves are clear.
Condition and fixing of step irons	Two Years	Maintenance Contractor	Remove grate to inspect step irons and connection into wall. Repair as required. Notify structural engineer if detrimental features observed.
OSD warning signage	Two Years	Maintenance Contractor	Remove grate to inspect signage and connections. Check for fading in signs and any vegetation growth over or near signs impacting visibility. Repair as required.
Water Quality Devices			
Blockages and debris within stormwater pit filtration inserts/ storm sacks	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge from within inserts.
Blockages and debris within filtration tanks and devices	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge. Hose out tank and devices from outside tank.
Blockages and debris within filtration cartridges inside storage tanks.	Six Monthly	Maintenance Contractor	Remove grate. Remove any debris/litter/sludge. Hose out tank and devices from outside tank.
Blockages and water conveyance within filtration stormwater lines	Annual	Maintenance Contractor	Remove grate. Flow water through filtration stormwater line from inspection openings to remove blockages.
Condition of stormwater pit filtration inserts/ storm sacks	Annual	Manufacturer's Contractor	Remove inserts from pit to inspect. Repair as required.
Condition and performance of treatment tank components	Annual	Manufacturer's Contractor	Remove grate and follow SWMS procedures to enter into the tank. View and repair damaged components.
Condition and performance of filtration cartridges	Annual	Manufacturer's Contractor	Remove cartridges from pit to inspect. Repair as required.
Above Ground Storage and Bioretention			
Blockages of inlet and outlet pipes within pits	Six Monthly	Maintenance Contractor	Blast with hose, water into inspection openings and pits to ensure conveyance through lines.

Condition of inlet grates	Six Monthly	Maintenance Contractor	Clear vegetation and any debris from the pit grate condition, inspect and repair as required.
Condition of pit structures and section of pipes at inlets/ outlets.	Two Years	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required. Notify structural engineer if detrimental features observed.
Embankments and storage area condition, in particular scour and vegetation loss in landscaped areas	Six Monthly	Maintenance Contractor	Walk along bottom of embankments where possible. Compare total above ground storage volume and levels to WAE documentation. Check batter stability and vegetation. Notify civil engineer if detrimental features observedq, eg >5% storage lost, embankment destabilisation.
Subsoil line blockages	Annual	Maintenance Contractor	Blast with hose, water into inspection openings and pits to ensure conveyance through lines. Review outlets to ensure flow through line.
Planting condition within bioretention areas, including development of weeds.	Six Monthly	Maintenance Contractor	Physical inspection by qualified contractor to review vegetation growth, removal of weeds, removal of debris and soil arrangement.
Filtration media quality	Two Years	Maintenance Contractor	Inspection by qualified contractor. Samples to be taken of material to confirm requirements are achieved.
Civil Structures			
Check subsoil behind retaining walls drainage capacity via hose flushing	Annual	Maintenance Contractor	Blast with hose, water into inspection openings and pits to ensure conveyance through lines. Review outlets to ensure flow through line.
Condition of retaining walls and other structures, including cracking and stability	Annual	Maintenance Contractor	Walk along and inspect all visible faces of wall structure. Observe for cracking, crack width, any lean in on wall and moisture within structure. Notify structural engineer if detrimental features observed.
Check batters for signs of scour and erosion	Annual	Maintenance Contractor	Walk along bottom of embankments where possible. Check batter stability and vegetation. Notify civil engineer if detrimental features observed.

Appendix A Civil Design Documentation

DRAWING LIST	
NO.	DRAWING NAME
STN-ZZ-000-DR-CI-000001	COVER SHEET, DRAWING REGISTRY AND LOCALITY PLAN
STN-ZZ-000-DR-CI-007001	GENERAL NOTES SHEET - 1
STN-ZZ-000-DR-CI-007002	GENERAL NOTES SHEET - 2
STN-ZZ-000-DR-CI-007003	GENERAL NOTES SHEET - 3
STN-ZZ-000-DR-CI-050001	EXISTING CONDITIONS PLAN
STN-ZZ-000-DR-CI-055001	DEMOLITION PLAN
STN-ZZ-000-DR-CI-070001	EROSION AND SEDIMENT CONTROL PLAN
STN-ZZ-000-DR-CI-076001	EROSION AND SEDIMENT CONTROL DETAILS
STN-ZZ-000-DR-CI-100001	BULK EARTHWORKS PLAN
STN-ZZ-000-DR-CI-103001	BULK EARTHWORKS SECTIONS
STN-ZZ-000-DR-CI-440001	PAVEMENT PLAN
STN-ZZ-000-DR-CI-460001	PAVEMENT DETAILS SHEET 1
STN-ZZ-000-DR-CI-460002	PAVEMENT DETAILS SHEET 2
STN-ZZ-000-DR-CI-460003	PAVEMENT DETAILS SHEET 3
STN-ZZ-000-DR-CI-520001	STORMWATER DRAINAGE PLAN
STN-ZZ-000-DR-CI-522001	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET - 1
STN-ZZ-000-DR-CI-522002	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET - 2
STN-ZZ-000-DR-CI-526001	STORMWATER DRAINAGE DETAILS SHEET 1
STN-ZZ-000-DR-CI-526002	STORMWATER DRAINAGE DETAILS SHEET 2
STN-ZZ-000-DR-CI-526003	STORMWATER DRAINAGE DETAILS SHEET 3
STN-ZZ-000-DR-CI-526004	STORMWATER DRAINAGE DETAILS SHEET 4
STN-ZZ-000-DR-CI-526005	STORMWATER DRAINAGE DETAILS SHEET 5
STN-ZZ-000-DR-CI-526006	STORMWATER DRAINAGE DETAILS SHEET 6

ROSEVILLE, POCKLEY

2-16 POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

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SOURCE: NEARMAPS, SCALE: 1:1000

The professional's seal on the cover sheet represents that the information on the cover sheet is accurate in designer's professional opinion but does not assume professional responsibility for documents sealed by others that are referenced on the cover sheet. All professionals sealing drawings as a part of the design are professionally responsible for their own sealed documents.

Plotted: 4/15/2025 7:45:52 PM By: GILBERT, CHARLIE
ORIGINAL SHEET: ISO A1 \\AUS1214AWS_C3PJ\CORP\ACD\AUS1214AWS_C3PJ_PROJ\WAMEX_PROJECTS\301385\999_PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEETS\301385-STN-ZZ-000-DR-CI-000001.DWG

GENERAL

1. DESIGN HEREIN HAS BEEN PREPARED BY STANTEC AUSTRALIA PTY LTD LEVEL 9, THE FORUM, 203 PACIFIC HIGHWAY, ST LEONDARDS NSW 2065
2. CONTRACTOR TO CHECK WITH ENGINEER IF THESE NOTES ARE TO SUPPLEMENT A CIVIL SPECIFICATION.
3. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
4. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
5. ALL DIMENSIONS ARE IN MILLIMETRES (mm) & ALL LEVELS ARE IN METRES (m), UNO (UNLESS NOTED OTHERWISE).
6. NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
7. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
6. EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ELECTRONIC FILES

1. IF APPLICABLE AND UPON REQUEST, ELECTRONIC FILES CAN BE SUPPLIED IN AUTOCAD FORMAT FOR INFORMATION PURPOSES ONLY. THESE FILES ARE NOT INTENDED FOR SETOUT AND ARE NOT TO BE RELIED UPON FOR CONSTRUCTION PURPOSES. THE FILES MAY FORM JUST PART OF OUR DESIGN PACKAGE / PROCESS AND, AS SUCH, THEIR ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
2. THE FILES ARE CONSIDERED TO BE "UNCONTROLLED" AND, AS STANTEC ARE UNABLE TO CONTROL THE ACCURACY OF THESE EDITABLE FILES, ALL RESPONSIBILITY FOR SUCH ACCURACY AND THE SUITABILITY OF THESE FILES RESTS WITH THE RECIPIENT.
3. REFER TO THE LATEST HARD COPY ENGINEERING DRAWINGS FOR ALL CURRENT INFORMATION. IN THE EVENT OF ANY DISCREPANCY BETWEEN PAPER AND ELECTRONIC VERSIONS, THE PAPER VERSION IS TO TAKE PRECEDENCE.
4. THE ELECTRONIC FILES SHALL BE USED SOLELY BY THE INTENDED RECIPIENT AND SHALL NOT BE DISTRIBUTED TO OTHERS WITHOUT THE EXPRESS CONSENT OF STANTEC. STANTEC ACCEPTS NO LIABILITY FOR USE OF THE INFORMATION BY ANY THIRD PARTIES.

SURVEY

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SHOWN AS PER THE TOPOGRAPHIC SURVEY RECEIVED ON 04/02/2025 PREPARED BY RYGATE SURVEYORS, REFERENCE 80598-A.DWG DATED 03/09/2024.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE SUPERINTENDENT.
3. IF AN EXISTING SERVICES PLAN HAS BEEN SUPPLIED THIS DOES NOT TAKE PRECEDENCE OVER ORIGINAL SURVEY PLAN.
4. CONTRACTOR TO REVIEW ORIGINAL SURVEY PLAN AND NOTES. THIS INCLUDES REVIEW OF SUBSURFACE UTILITY CLASS INFORMATION

SITEWORKS

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO THE SUPERINTENDENT.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH COUNCIL CONSTRUCTION SPECIFICATIONS, THE DETAILS SHOWN ON THE DRAWINGS AND THE SPECIFICATIONS AND THE DIRECTIONS OF THE PRINCIPAL'S REPRESENTATIVE.
4. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH NSW COUNCIL AND OTHER AUTHORITY REQUIREMENTS.
5. ALL CONSTRUCTION UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE CURRENT WORKPLACE HEALTH AND SAFETY ACT.
6. CONTRACTOR TO CONFIRM ALL CBR VALUES PRIOR TO COMMENCEMENT OF WORKS.
7. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES, IS OBTAINED.
8. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
9. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER GAS, COMMUNICATIONS OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.
10. ALL TRENCH BACKFILL MATERIAL NOT IN PAVEMENTS SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
11. UNLESS NOTED OTHERWISE IN CIVIL SPECIFICATION, 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).
12. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS, AND ROAD PAVEMENTS.
13. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO THE FULL DEPTH OF CONCRETE AND MIN. 50mm IN BITUMINOUS PAVING.
14. MAKE SMOOTH TRANSITION TO EXISTING SERVICES AND MAKE GOOD.
15. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH COUNCIL CONSTRUCTION SPECIFICATIONS AND APPROVED LANDSCAPE, ELECTRICAL AND TELECOMMUNICATION DRAWINGS AND SPECIFICATIONS.
16. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.
17. ON COMPLETION OF WORKS, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL INCLUDING, BUT NOT LIMITED TO, KERBS, FOOTPATHS, CONCRETE AREAS, GRASS AND LANDSCAPED AREAS.

COUNCIL REQUIREMENTS

1. ALL WORKS TO BE CONDUCTED IN ACCORDANCE WITH THE NSW COUNCIL REQUIREMENTS.
2. THE CONTRACTOR MUST OBTAIN AND SUBMIT TRAFFIC/PEDESTRIAN MANAGEMENT PLANS TO THE NSW COUNCIL PRIOR TO WORKS.
3. ALL AREAS AFFECTED BY WORKS ARE TO BE MINIMIZED AT ALL TIMES AND BE MADE GOOD AT COMPLETION OF WORKS TO THE SATISFACTION OF THE SUPERINTENDENT AND THE NSW COUNCIL.
4. 1500mm MIN FOOTPATHS ARE TO BE MAINTAINED AT ALL TIMES AND, IF WIDTH NOT AVAILABLE, PROVIDE ADVISORY SIGNS REQUESTING PEDESTRIANS TO USE OPPOSITE FOOTPATH.
5. CONTRACTOR TO MEET ALL ABUTTING PROPERTIES REASONABLE ACCESS REQUIREMENTS THAT THEY MAY HAVE.
6. THE WORKS SHALL NOT IMPACT ON THE OPERATIONS OF BUSINESSES, HOTELS, RESTAURANTS, STREET VENDORS, OFF STREET CAR PARKS ETC. ALL PARKING AND NO STOPPING RESTRICTIONS SHALL BE OBSERVED.
7. THE WORKS/INSTALLATION SHALL NOT INTERFERE WITH COUNCILS AND PRIVATE DRAINAGE INFRASTRUCTURE INCLUDING SURFACE DRAINS.
8. THE CONTRACTOR SHALL AGREE TO A DEFECTS LIABILITY PERIOD FOR THE BACKFILLING OF ONE (1) YEAR COMMENCING FROM THE DATE OF WORK. ANY DEFECTS FOUND BY COUNCIL WITHIN THE ONE YEAR PERIOD SHALL BE RECTIFIED BY THE APPLICANT/CONTRACTOR TO COUNCILS SATISFACTION WITHIN TWO WEEKS OF NOTIFICATION IN WRITING.
9. IF COUNCIL'S INFRASTRUCTURE SUCH AS PARKING SIGNS, ROAD OR LINE MARKINGS, PARKING METERS TICKET MACHINES OR SUPPORTING CABLES/CONDUITS, IRRIGATION PIPES OR STREET FURNITURE ARE REMOVED OR DAMAGED AS A RESULT OF THE WORKS THE CONTRACTOR SHALL, AT COMPLETION OR WORKS, ARRANGE AND PAY FOR THEIR REINSTATEMENT.
10. ALL DRAWINGS TO BE READ IN CONJUCTION WITH LATEST COUNCIL STANDARD DRAWINGS. ANY DESCREPANCY TO BE RAISED WITH STANTEC

DEMOLITION

1. ALL DEMOLISHED SWALES AND OPEN DRAINS TO BE STRIPPED AND INFILLED WITH SELECT FILL COMPACTED IN 300mm THICK LAYERS.
2. ALL DEMOLISHED PAVEMENTS TO BE REMOVED DOWN TO SUBGRADE LEVEL. BUILD BACK UP TO FINISHED SURFACE WITH SELECT FILL COMPACTED IN 200mm THICK LAYERS TO CIVIL SPECIFICATION.
3. ALL DISTURBED AREAS SHALL BE FINISHED WITH TOPSOIL AND DURABLE DRYLAND GRASS IN ACCORDANCE WITH LANDSCAPE ARCHITECTS SPECIFICATION.
4. ALL BUILDING DEMOLITION WORKS SHALL INCLUDE SEQUENCING, DISCONNECTION AND DEMOLITION OF ALL ASSOCIATED BUILDING SERVICES.
5. PRIOR TO REMOVAL OF TREES AND VEGETATION, TRADE CONTRACTOR SHALL SEEK ALL RELEVANT APPROVALS FROM THE MANAGING CONTRACTOR.
6. ALL DEMOLISHED MATERIALS TO BE DISPOSED OFF SITE AT AN APPROVED WASTE COLLECTION AND PROCESSING FACILITY (UNLESS OTHERWISE DIRECTED IN WRITING BY THE MANAGING CONTRACTOR).
7. REFER TO THE RELEVANT ENGINEERING DRAWINGS FOR TREATMENT, DIVERSION AND DEMOLITION OF EXISTING SERVICES AFFECTED BY THE WORKS, INCLUDING BUT NOT LIMITED TO ELECTRICAL, COMMUNICATIONS, HYDRAULIC SERVICES
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY PRIOR APPROVAL REQUIRED FROM COUNCIL WITH RESPECT TO POTENTIAL IMPACT ON TREES FOR ANY WORKS SHOWN ON THE DRAWINGS PRIOR TO THE COMMENCEMENT OF THOSE WORKS.

PROTECTION OF FLORA

1. ANY TRENCHES WITHIN 3m OF TREES SHALL BE DUG BY NON-DESTRUCTIVE MEANS TO AVOID DAMAGE TO THE TREE ROOTS, OR AS DIRECTED BY THE PROJECT ARBORIST.
2. THE STORMWATER WORKS HAVE BEEN LOCATED TO MINIMISE CLEARING AND DAMAGE TO THE EXISTING FLORA ENVIRONMENT TO BE RETAINED. NO TREES ARE PERMITTED TO BE REMOVED OR DAMAGES UNO. CONSTRUCTION OF THE STORMWATER IN THE VICINITY OF EXISTING TREES SHALL BE DUG BY NON-DESTRUCTIVE MEANS, OR AS DIRECTED BY THE PROJECT ARBORIST, ENSURING IRREVERSIBLE DAMAGE OF THE ROOT SYSTEM DOES NOT OCCUR.
3. ANY WORK ON TREES, INCLUDING TRIMMING, LOPPING, ROOT CUTTING, REPAIR AND REMOVAL, IS TO BE TO THE PROJECT ARBORIST'S REQUIREMENTS.
4. NO MATURE TREES OR SHRUBS ARE TO BE REMOVED FOR THE PURPOSES OF THE WORKS WITHOUT PRIOR APPROVAL FROM NSW COUNCIL.

ALTERNATIVE PRODUCTS

1. ALTERNATIVE PRODUCTS SUCH AS ALTERNATIVE STORMWATER PIPE MATERIALS OR WATER QUALITY TREATMENT DEVICES MAY ONLY BE USED WITH WRITTEN APPROVAL OF STANTEC. ALL TESTING AND MATERIAL DATA SPECIFICATIONS TO BE SUPPLIED TO STANTEC FOR REVIEW.

EXISTING SERVICES

1. EXISTING SERVICES, WHERE SHOWN, HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
2. EXISTING SERVICES SHOWN ON THE PLANS ARE LOCATED APPROXIMATELY BASED ON INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND/OR SURVEY RECEIVED. STANTEC DOES NOT TAKE RESPONSIBILITY FOR THE SUITABILITY OR LOCATION/DEPTH OF THE EXISTING SERVICES.
3. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ANY POSSIBLE DESIGN ADJUSTMENT OF ANY ADDITIONAL EXISTING SERVICES OR THE ASSOCIATED AUTHORITY NEGOTIATIONS AS A RESULT OF THE PROPOSED WORKS.
4. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
5. EXISTING BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE FEATURES EXISTING PRIOR TO ANY DEMOLITION WORKS.
6. THE CONTRACTOR SHALL UNDERTAKE POTHOLING AND/OR INVESTIGATION WORKS TO LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCING WORKS. THIS INCLUDES CONFIRMING THE LOCATION AND DETAILS OF THE EXISTING SITE STORMWATER DISCHARGE.
7. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION.
8. WHIST REASONABLE EFFORT HAS BEEN MADE TO AVOID CLASHES WITH EXISTING SERVICES, EXTENT AND QUALITY OF SUPPLIED DATA IS INSUFFICIENT FOR COMPLETE CLASH DETECTION ACCURACY. CONTRACTOR TO TAKE CARE WORKING AROUND EXISTING UTILITIES AND REPORT ANY POSSIBLE CLASHES BACK TO THE ENGINEER.
9. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, REMOVAL AND DISPOSAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
10. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
11. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SERVICE AUTHORITY. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITY.
12. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN WRITTEN APPROVAL OF THEIR PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
13. CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.

PROPOSED SERVICES

1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH RELEVANT SERVICE AUTHORITY DOCUMENTATION AND CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE.
2. THE CONTRACTOR SHALL ATTEND, MANAGE & SUPERVISE THE PROVISION OF PUBLIC UTILITY SERVICES TO THE WORKS GENERALLY AS INDICATED ON THE SERVICES PLANS, NOTING THAT PRIOR & DURING CONSTRUCTION THE PUBLIC UTILITY AUTHORITIES WILL FINALISE THEIR DOCUMENTATION TO CONSTRUCTION ISSUE STANDARD.
3. THE CIVIL CONTRACTOR (TRENCH PROVIDER) IS TO ARRANGE ON SITE MEETING WITH ALL SERVICE AUTHORITIES PRIOR TO THE INSTALLATION OF CONDUITS.
4. THE CIVIL CONTRACTOR TO CO-ORDINATE INSTALLATION OF ELECTRICITY, GAS,TELECOMMUNICATION, WATER AND SEWER SERVICES.
5. IT IS EXPECTED THAT ELECTRICITY, GAS AND TELECOMMUNICATION SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES AND KERB AND GUTTER.
6. ALL UTILITY AUTHORITY REPRESENTATIVES TO INSPECT ROAD CROSSINGS PRIOR TO SEALING.
7. ALL ELECTRICAL ROAD CROSSINGS TO BE CLASS 6 (ORANGE) uPVC CONDUITS.
8. ALL GAS ROAD CROSSINGS TO BE uPVC GREY SEWER GRADE CONDUITS.
9. FOR ALL STREET POLES, REFER TO THE ELECTRICAL ENGINEER'S DOCUMENTATION. STREET POLES TO BE POSITIONED THE APPROPRIATE DISTANCE FROM FACE OF KERB TO FACE OF POLE ACCORDING TO THE CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE. CONTRACTOR TO ALLOW TO EXCAVATE AND BACKFILL TRENCH GENERALLY IN ACCORDANCE WITH NOTE 2.
10. ALL SERVICE PIT COVERS AND MARKERS ARE TO BE LAID WHOLLY WITHIN THE CONCRETE FOOTPATH. CONTACT SUPERINTENDANT SHOULD DIFFICULTIES ARISE.
11. 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 AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
12. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

TELSTRA - DUTY OF CARE

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 AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

EROSION AND SEDIMENT CONTROL

GENERAL INSTRUCTIONS

1. THIS SPECIFICATION IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT AT THE SUBJECT SITE.
2. THE CONTRACTOR WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE GUIDELINES OF "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", DEPT OF HOUSING, 2004 (BLUE BOOK).
3. REQUIRED SITE SPECIFIC ADDITIONS/CHANGES TO THE SOIL AND WATER MANAGEMENT WORKS ARE TO BE MADE AS NECESSARY BY THE SUPERINTENDENT.
4. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   4.1. LOCAL AUTHORITY REQUIREMENTS
   4.2. EPA REQUIREMENTS
   4.3. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
5. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
6. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
7. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
8. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED PRIOR TO ANY GROUND DISTURBANCE.

LAND DISTURBANCE

1. DISTURBANCE TO BE NO FURTHER THAN 5 (PREFERABLY 2) METRES FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON THE APPROVED PLANS. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
2. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METRES. THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
3. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   3.1. INSTALL A BARRIER AND SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
   3.2. CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS AS AGREED WITH THE CONTRACTOR.
   3.3. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   3.4. CONSTRUCT DIVERSION DRAINS AS REQUIRED.
   3.5. INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS. REFER DETAIL.
   3.6. INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS. REFER DETAIL.
   3.6. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (IF REQUIRED).
   3.7. UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE
   3.8. GRADE AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
   3.9. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
4. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.
5. ON COMPLETION OF MAJOR WORKS, LEAVE DISTURBED LANDS WITH A SCARIFIED SURFACE TO ENCOURAGE WATER INFILTRATION AND ASSIST WITH KEYING TOPSOIL LATER.

SEDIMENT CONTROL

1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
3. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
4. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
5. WHERE AREA PERMITS, STOCKPILES SHALL BE A MAXIMUM OF 2 METRES IN HEIGHT AND WITH SIDE SLOPES OF 1(VER) TO 2(HOR). ADVICE SHOULD BE SOUGHT FROM THE CONTRACTOR FOR TEMPORARY STOCKPILES HIGHER THAN 2 METRES OR WITH SIDE SLOPES STEEPER THAN 1(VER) TO 2 (HOR).
6. TEMPORARY STOCKPILES STORED FOR LESS THAN 20 DAYS WILL BE ESTABLISHED WITH THE FOLLOWING CONTROLS:
   6.1. SEDIMENT FENCE ON DOWNSTREAM SIDE OF STOCKPILE
   6.2. DUST SUPPRESSION MEASURES TO BE PROVIDED SUCH AS COVERING STOCKPILE WITH GEOFABRIC AND/OR REGULAR WATERING
7. TEMPORARY STOCKPILES STORED FOR MORE THAN 20 DAYS WILL BE ESTABLISHED WITH THE FOLLOWING CONTROLS:
   7.1. SEDIMENT FENCE ON DOWNSTREAM SIDE OF STOCKPILE
   7.2. DUST SUPPRESSION MEASURES TO BE PROVIDED SUCH AS COVERING STOCKPILE WITH GEOFABRIC AND/OR REGULAR WATERING
   7.3. STABILISATION OF STOCKPILE SURFACE WITH HYDROMULCH / GEOTEXTILE BLANKET / SOIL GLUE / ROCK MULCH OR OTHER APPROVED EQUIVALENT
   7.4. PROVIDE DIVERSION BANK ON UPSTREAM SIDE TO PROTECT STOCKPILE FROM STORMWATER OVERLAND FLOW
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE AND MEETS THE RELEVANT AUTHORITY REQUIREMENTS PRIOR TO LEAVING THE SITE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
11. ACCESS TO SITES SHOULD BE STABILISED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

EROSION CONTROL

1. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
2. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.
3. EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEPPER, UNLESS NOTED OTHERWISE, THAN:
   3.1. 2(H):1(V) WHERE SLOPE LENGTH IS LESS THAN 12 METRES
   3.2. 2.5(H):1(V) WHERE SLOPE LENGTH IS BETWEEN 12 AND 16 METRES
   3.3. 3(H):1(V) WHERE SLOPE LENGTH IS BETWEEN 16 AND 20 METRES
   3.4. 4(H):1(V) WHERE SLOPE LENGTH IS GREATER THAN 20 METRES
4. ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 5% AEP TIME OF CONCENTRATION STORM EVENT.
5. WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FLOW VELOCITIES ARE TO BE LIMITED TO THOSE SHOWN IN TABLE 5-1 OF "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", DEPT OF HOUSING 2004 (BLUE BOOK). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.
6. STOCKPILES, AFTER CONSTRUCTION, ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.1 (60% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.
7. ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.
8. FOR AREAS OF SHEET FLOW, USE THE FOLLOWING GROUND COVER PLANT SPECIES FOR TEMPORARY COVER: JAPANESE MILLET 20KG/HA AND OATS 20KG/HA.
9. PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.
10. RE-VEGETATION SHOULD BE AIMED AT RE-ESTABLISHING NATURAL SPECIES. NATURAL SURFACE SOILS SHOULD BE REPLACED AND NON-PERSISTANT ANNUAL COVER CROPS SHOULD BE USED.

SITE INSPECTION AND MAINTENANCE

1. THE SITE PRINCIPAL CONTRACTOR WILL INSPECT THE SITE AT LE

EARTHWORKS

1.1. CIVIL BULK EARTHWORKS ARE PROVIDED TO INFORM MASS MOVEMENT OF SOIL TO PROVIDE A SUBGRADE PLATFORM FOR BUILDINGS, ROADS AND OTHER STRUCTURES.

1.2. THE STANDARD FOR THE PROVISION OF EARTHWORKS ARE TO BE IN ACCORDANCE WITH THE CIVIL SPECIFICATION AND AUSTRALIAN STANDARD AS 3798 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS", MODIFIED TO SUIT ALL LOCAL CONDITIONS, PRACTICES AND LOCAL AUTHORITY STANDARDS AS REQUIRED AND AS APPROVED IN WRITING BY THE SUPERINTENDENT.

1.3. ALL WORK SHALL COMPLY WITH THE PROJECT GEOTECHNICAL REPORT RECEIVED ON 24/05/23, PREPARED BY GEOTECHNICAL ENGINEER, REFERENCE 53113/110630 Rev 0, DATED 25/08/17.

1.4. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.

1.5. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EXCAVATION INCLUDING BUT NOT LIMITED TO TANKS, FOOTINGS, RETAINING WALLS, EDGE THICKENINGS, BEAMS, STAIR AND LIFT CORES, PILING PLATFOTINSW, SERVICES TRENCHING AND DEEP SOIL ZONES.

1.6. CIVIL BULK EARTHWORKS DOES NOT CONSIDER LATENT GEOTECHNICAL CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

1.7. BULK EARTHWORKS DOES NOT ALLOW FOR ANY UNSUITABLE MATERIAL FOUND ANYWHERE ON SITE.

1.8. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.

1.9. BULK EARTHWORKS ARE BASED ON THE SETDOWN TO UNDERSIDE OF PAVEMENT BUILDUPS AS SPECIFIED FROM FINISHED SURFACE LEVELS.

1.10. REFER TO THE STRUCTURAL ENGINEERS SPECIFICATION FOR EXCAVATION WORKS IN RELATION TO BUILDINGS / FOOTINGS

1.11. TOPSOIL SHALL BE STRIPPED ACROSS THE ENTIRE LIMIT OF THE EARTHWORKS CUT AND FILL AREAS AND SHALL BE STOCKPILED IN A LOCATION APPROVED BY THE SUPERINTENDENT. THE EXISTING STRATA IS TO BE TREATED IN ACCORDANCE WITH THE SPECIFICATION PRIOR TO PLACING ANY FILL.

1.12. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 150mm HAS BEEN ASSUMED. GROUND SLAB DEPTH OF 150mm HAS BEEN ASSUMED WHERE REQUIRED.

1.13. ALL EARTHWORKS TESTING IS TO BE IN ACCORDANCE WITH LOCAL AUTHORITY AND AUSTRALIAN STANDARDS AS1289 AND AS1726, AS APPLICABLE.

1.14. SUPERVISION, INSPECTION AND TESTING IS TO BE CARRIED OUT IN ACCORDANCE WITH SECTION 8 AND APPENDIX B OF AS 3798. FOR ALL STRUCTURAL FILL, THE SCOPE OF SERVICES TO BE PROVIDED BY THE GEOTECHNICAL TESTING AUTHORITY IS TO BE IN ACCORDANCE WITH LEVEL 1 OR LEVEL 2 AS DETAILED IN APPENDIX B AND IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS. LEVEL 3 SUPERVISION IS NOT PERMITTED FOR STRUCTURAL FILL, BUT IS ACCEPTABLE FOR NON-STRUCTURAL FILL.

1.15. EXCAVATED MATERIAL MAY BE USED AS STRUCTURAL FILL PROVIDED:-

1.15.1. IT COMPLIES WITH THE THE SPECIFICATION REQUIREMENTS FOR FILL MATERIAL.

1.15.2. THE PLACEMENT MOISTURE CONTENT COMPLIES WITH THE GEOTECHNICAL CONSULTANTS REQUIREMENTS, AND ALLOWS FILLING TO BE PLACE AND PROOF ROLLED IN ACCORDANCE WITH THE SPECIFICATION. ALSO REFER TO THE SALINITY MANAGEMENT PLAN AND FILL IMPORT PLAN FOR FURTHER DETAILS.

1.16. EARTHWORK SPOIL, IN EXCESS OF SITE FILL REQUIREMENTS, SHALL BE DISPOSED OFF SITE. CONTRACTOR TO ALLOW FOR ALL ENVIRONMENTAL TESTING ASSOCIATED WITH REMOVAL OF SPOIL FROM SITE.

1.17. CLEARED VEGETATION SHALL BE MULCHED AND DISPOSED OF OFF-SITE. BURNING OFF IS NOT CONSIDERED AN ACCEPTABLE MEANS OF DISPOSAL AND WILL NOT BE APPROVED.

1.18. ALL BATTERS, ALLOTMENT FILL AREAS AND DISTURBED AREAS SHALL BE TOPSOILED FROM ONSITE STOCKPILES. THE TOPSOIL SHALL BE SCREENED PRIOR TO PLACING.

1.19. PRIOR TO EARTH FILLING WORKS ALL VEGETATION AND TOPSOIL SHALL BE STRIPPED. THE EXPOSED EMBANKMENT FOUNDATION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 98% STANDARD COMPACTION PRIOR TO FILLING OR PAVEMENT CONSTRUCTION.

1.20. ANY SOFT OR WEAK AREAS IDENTIFIED DURING THE COMPACTION PROCESS THAT DO NOT RESPOND TO FURTHER COMPACTION, SHOULD BE REMOVED AND REPLACED WITH SELECT FILL IN LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS AND EACH LAYER COMPACTED TO ACHIEVE A DRY DENSITY RATIO OF 98%.

1.21. ALL COMPACTION TO BE CARRIED OUT IN ACCORDANCE WITH THE CIVIL SPECIFICATION AND COMPACTION PROCEDURES AS DEFINED IN AS 1289 5.2.1 TEST PROCEDURE. CERTIFICATION IS TO BE AN INDEPENDENT GEOTECHNICAL ENGINEER (AT CONTRACTORS EXPENSE).

1.22. BENEATH PAVEMENTS A NON-EXPANSIVE APPROVED SELECT FILL SHALL BE PLACED WHERE REQUIRED IN UNIFORM LAYERS NOT TO EXCEEDING 200mm LOOSE THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+0R- 2%) TO ACHIEVE A MINIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.5.1.1-2003 AS FOLLOWS:-

LOCATION	STANDARD DRY DENSITY (MMDD)
UNDER BUILDING SLABS	98%
VEHICULAR PAVED AREAS	100%
NON-VEHICULAR PAVED AREAS	98%
LANDSCAPED AREAS	95%

1.23. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:-

1.23.1. FREE FROM ORGANIC AND PERISHABLE MATTER,

1.23.2. MAXIMUM PARTICLE SIZE 75mm,

1.23.3. PLASTICITY INDEX - BETWEEN 2% AND 15%

STORMWATER DRAINAGE

1. ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.
2. THE CONTRACTOR IS TO EXERCISE DUE CARE AND ATTENTIION DURING PIPE INSTALLATION ENSURING PIPES ARE NOT DAMAGES DURING CONSTRUCTION AND CONSTRUCTION TRAFFIC DOES NOT EXCEED THE LOAD SPECIFIED FOR THE PIPE PROPOSED. IF THE PROPOSED PIPE CLASS WILL NOT WITHSTAND THE CONSTRUCTION LOAD, THE CONTRACTOR IS TO UPGRADE PIPE CLASSES TO SUIT AT NO COST TO THE PRINCIPAL.
3. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '3' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
4. PIPES LESS THAN OR EQUAL TO 225 DIA. SHALL BE uPVC DWV GRADE CLASS SN8 IN ACCORDANCE WITH AS/NZS 1260:2009-PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.
5. EQUIVALENT STRENGTH REINFORCED CONCRETE OR FIBROUS REINFORCED CONCRETE PIPES MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
6. CONTRACTOR IS TO ENSURE THAT ALL DRAINAGE STRUCTURES ARE ADEQUATELY REINFORCED AND SHALL PROVIDE DESIGN CERTIFICATION FOR ALL REINFORCED CONCRETE LIDS.
7. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
8. PIPES TO BE INSTALLED TO TYPE H2 (NOT UNDER ROADWAYS) OR TYPE HS2 (UNDER ROADWAYS) SUPPORT IN ACCORDANCE WITH AS 3725 (2007). IN ALL CASES BACKFILL TRENCH 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% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
9. PIT COVER LEVELS TO MATCH SURROUNDING FINISHED LEVELS. DESIGN FINISHED SURFACE LEVELS OF STRUCTURES ARE FOR THE CONTRACTORS GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET OUT AS DIRECTED ON SITE IN KEEPING WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL AUTHORITY AND ACTUAL FINISHED GROUND LEVELS.
10. STORMWATER PIT COVERS FOR JUNCTION AND GRATED PITS TO COMPLY WITH AS 3996 FOR:

LOAD CLASS	TYPICAL USE
CLASS A	INTERNAL PEDESTRIAN PRECINCTS ONLY. NO VEHICULAR TRAFFIC
CLASS B	EXTERNAL AREAS INCLUDING FOOTPATHS, FOOTWAYS AND LIGHT VEHICULAR TRAFFIC ONLY
CLASS D	CARS, TRUCKS (HIGHWAY TRAFFIC) AND COMMERCIAL VEHICULAR TRAFFIC
CLASS E	HEAVY DUTY FORKLIFTS AND EARTHMOVING EQUIPMENT

11. REFER TO TABLE BELOW FOR MINIMUM PIT DIMENSIONS (AS 3500.3 TABLE 7.5.2.1):

DEPTH TO INVERT	WIDTH	LENGTH
LESS THAN 600mm	450mm	450mm
FROM 600mm TO 900mm	600mm	600mm
FROM 900mm TO 1200mm	600mm	900mm
MORE THAN 1200mm	900mm	900mm

12. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2006) AND AS/NZS 3500 3.2 (2010).
13. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY STANTEC AUSTRALIA.
14. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
15. PIPES FOR SUBSOIL DRAINS SHALL BE SLOTTED 100mm DIA. CLASS 1000 WRAPPED IN GEOFABRIC, UNO, COMPLYING WITH THE REQUIREMENTS OF AS2439. ALL SUBSOIL PIPES SHALL BE FACTORY SLOTTED HDPE, MIN. 100mm DIA. CLASS SN8, SIMILAR OR EQUAL TO VINIDEX DRAINCOIL, CERTIFIED uPVC, IN ACCORDANCE WITH AS1260, AS2032 (PIPE) & AS3789 (JOINTING) INSTALLED ON GEOTEXTILE FABRIC WITH 150mm SURROUND OF 25mm BLUE METAL AGGREGATE, UNO. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND PAVEMENTS, UNSLOTTED uPVC DWV GRADE CLASS SN8 SEWER GRADE PIPE IS TO BE USED.
16. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS. CCTV SHALL BE UNDERTAKEN OF EXISTING PIPES WHERE NECESSARY TO CONFIRM THEIR ADEQUACY PRIOR TO AND FOLLOWING CONSTRUCTION.
19. THE CONTRACTOR IS TO ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE THE EXISTING DRAINAGE IS ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.
20. ANY DAMAGE TO THE WORKS DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD IS AT THE CONTRACTOR'S RISK.
21. SETOUT POINTS FOR STORMWATER STRUCTURES ARE AS INDICATED IN THE DRAWINGS UNLESS OTHERWISE NOTED.
22. ALL PAVED SURFACE LEVELS AND GRADES TO BE COORDINATED WITH GULLY PIT LEVELS TO ENSURE NO UNDRAINED AREAS OCCUR.
23. THE SIDES OF ALL PIPE TRENCH EXCAVATIONS DEEPER THAN 1.0m SHALL BE FULLY SUPPORTED AT ALL TIMES AND HAVE APPROPRIATE EDGE PROTECTION.
24. ALL NEW PIPES TO BE LAID IN AN UPSTREAM DIRECTION. THE LINE, LEVEL AND LOCATION OF EXISTING SERVICES CROSSING THE LINE OF THE PROPOSED STORMWATER PIPE SHALL BE DETERMINED BY EXCAVATION PRIOR TO THE LAYING OF THE PIPE. IF CONFLICT IS APPARENT, THE ENGINEER SHALL BE NOTIFIED AND INSTRUCTIONS AS TO WHETHER THE EXISTING SERVICE IS TO BE ADJUSTED OR THE PROPOSED PIPE INVERT ALTERED WILL BE ISSUED.
25. PIPE BEDDING, HAUNCH AND BACKFILL TO BE AS SHOWN ON THE CIVIL DETAILS DRAWINGS AND THE CIVIL SPECIFICATION. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED OR 75mm THICK BED OF 12mm BLUE METAL UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK.
26. SUBSOIL DRAINAGE PIPES TO BE SLOTTED PIPE AND FILTER SOCK CLASS 1000 TO AS2439 PART 1 LAID AT PREFERABLE MINIMUM GRADE 1 IN 100 OR ABSOLUTE MINIMUM 1 IN 200 WHERE LIMITED BY OUTFALL LEVELS.
27. 100mm DIA. SUBSOIL DRAINAGE SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS AND CONNECTED TO THE SITE STORMWATER DRAINAGE SYSTEM, UNO.:-
    - 27.1. UNDER KERBS AND ADJACENT TO ALL PAVEMENTS (UNLESS IT COINCIDES WITH A STORMWATER PIPE)
    - 27.2. AT THE BASE OF THE HIGH SIDE OF ALL RETAINING WALLS
    - 27.3. AROUND THE BUILDING SLAB FOOTPRINT
    - 27.4. AROUND ALL STORMWATER PITS

STORMWATER DRAINAGE

28. STORMWATER STRUCTURES ARE TO BE CONSTRUCTED PERPENDICULAR TO THE INCOMING PIPEWORK UNLESS OTHERWISE NOTED.
29. PRECAST COMPONENTS SHALL BE CONNECTED BY MEANS OF EPOXY OR CHEMICAL GROUTED BARS OF THE SAME DIAMETER AND SPACING AS THE SMALLER BARS IN THE RESPECTIVE COMPONENTS.
25. PRE-CAST PITS MUST HAVE LIFTING ANCHORS.
26. WORKING LOADS ARE THOSE DUE TO FILL MATERIAL AND STANDARD HIGHWAY VEHICLES AS PER AS3725. CONSTRUCTION LOADS HAVE NOT BEEN ALLOWED FOR.
27. ALL EXPOSED EDGES ON STORMWATER PITS TO BE ROUNDED TO 5mm RAD. UNO.
28. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS1214 OR AS1650, AS APPROPRIATE.
29. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
30. PITS DEEPER THAN 1200mm SHALL HAVE ACCESS LADDERS OR STEP IRONS INSTALLED AND SHALL BE IN ACCORDANCE WITH AS1657 AND HTHE LOCAL OR STATUTORY REQUIREMENTS.
31. WHERE A PIT IS IDENTIFIED AS A CONFINED SPACE, PIT COVERS SHALL BE PROVIDED WITH STANDARD CONFINED SPACE SIGNAGE.
32. CAPPED FLUSHING POINTS MUST BE PROVIDED FOR ALL SUBSOIL AND SEEPAGE DRAINAGE SYSTEMS AT THE END OF EACH PIPE, AT MAX. 30m SPACING AND AT CHANGES IN DIRECTION.
33. THE CONTRACTOR SHALL OBTAIN A ROAD OPENING PERMIT FOR ANY WORKS WITHIN THE PUBLIC ROAD RESERVE AND COMPLY WITH ALL AUTHORITY REQUIREMENTS.
34. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.
35. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS 3500 PART 3 AS FOLLOWS, UNO:-
    - 35.1. 1% FOR 100mm AND 150mm DIA. PIPES
    - 35.2. 0.5% FOR 225mm DIA. PIPES
    - 35.3. 0.4% FOR 300mm DIA. PIPES
    - 35.4. 0.33% FOR 375mm DIA. PIPES
36. MINIMUM DEPTH OF COVER SHALL BE AS FOLLOWS, UNO:-
    - 36.1. 300mm IN PRIVATE PROPERTY (NON-VEHICULAR TRAFFIC)
    - 36.2. 450mm IN PUBLIC AREAS
    - 36.3. 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAYS)
37. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.
38. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION AND
    - AS 3725 BURIED FLEXIBLE PIPELINES
    - AS 2566 LOADS ON BURIED FLEXIBLE PIPELINES
    - AS 1597.2 PRECAST REINFORCED CONCRETE BOX CULVERTS
    - AS 3500 NATIONAL PLUMBING AND DRAINAGE CODE
    - SYDNEY WATER REQUIREMENTS (WHERE APPLICABLE)
39. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.
40. WHERE STORMWATER DRAINAGE IS LAID IN THE VICINITY OF TREES / CANOPIES OF TREES, THE WORKS ARE TO BE COMPLETED TO THE PROJECT ARBORISTS REQUIREMENTS.

ON-SITE DETENTION (OSD) NOTES

1. THIS SPECIFICATION IS TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS, EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
3. ALL WORK SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS AND THE SPECIFICATION.
4. ON COMPLETION OF PROPOSED WORKS, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AND LANDSCAPE AREAS AND ROAD PAVEMENTS, UNO.
5. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS, IF APPLICABLE.
6. MAKE SMOOTH TRANSITION TO EXISTING / PROPOSED SERVICES AND MAKE GOOD.
7. WHERE NEW WORKS ABUT EXISTING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
8. THE BASE OF THE OSD TANK IS TO BE SCREEDED TO ACHIEVE A MINIMUM 1% GRADE, IN ACCORDANCE WITH AUTHORITY REQUIREMENTS AND THE ENGINEERING PLANS, TO PREVENT PONDING OF WATER IN THE TANK AND DIRECT ALL FLOWS TO THE OUTLET.
9. THE CONTRACTOR MUST ENSURE THE LEVELS SPECIFIED ON THE PLANS ARE ACHIEVED TO A 5mm ACCURACY.
10. FOLLOWING CONSTRUCTION, WORK-AS-EXECUTED (WAE) DRAWINGS ARE TO BE PROVIDED TO STANTEC CONFIRMING THE FOLLOWING:
    - 10.1. TANK REDUCED LEVELS (RL)
    - 10.2. SOFFIT LEVEL
    - 10.3. BASE INVERT LEVELS (IL)
    - 10.4. TOTAL EFFECTIVE VOLUME
    - 10.5. INSTALLATION OF THE TRASH RACK
    - 10.6. INSTALLATION OF THE ORIFICE PLATE, IF APPLICABLE, AND DIAMETER
    - 10.7. INSTALLATION OF INTERNAL WEIR WALLS
    - 10.8. INSTALLATION OF SUMP, IF APPLICABLE
    - 10.9. INSTALLATION OF STEP IRONS, IF APPLICABLE. STEP IRONS ARE TO BE INSTALLED IN ALL TANK THAT EXCEED 1200mm DEPTH
    - 10.10. INSTALLATION OF WATER QUALITY IMPROVEMENT DEVICES, IF APPLICABLE WAE PLANS ARE TO BE UNDERTAKEN BY A REGISTERED SURVEYOR.
11. CONTRACTOR IS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
12. A GENERAL INSPECTION OF THE OSD TANK IS TO BE UNDERTAKEN EVERY SIX (6) MONTHS AND AFTER MAJOR STORM EVENTS. THE GENERAL INSPECTION SHALL INVOLVE THE FOLLOWING:
    - 11.1. VISUAL INSPECTION INSIDE THE TANK
    - 11.2. CONDITION INSPECTION OF COMPONENTS SUCH AS ORIFICE PLATES AND VALVES
    - 11.3. REMOVAL AND DISPOSAL OF LARGER GROSS POLLUTANTS TO PREVENT BLOCKAGES
    - 11.4. MINOR RECTIFICATION WORKS AS REQUIRED
13. THE OSD TANK SHALL BE HOSED OUT AND CLEANED ON AN ANNUAL BASIS.

ROOF AND SUSPENDED FLOOR DRAINAGE

1. ROOF AND SURFACE DRAINAGE (WITHIN THE BUILDING FOOTPRINT, INCLUSIVE OF BALCONIES, TERRACES, PODIUMS ETC) IS TO BE DETAILED BY THE HYDRAULIC CONSULTANT.
2. THE CONTRACTOR SHALL COORDINATE THE NECESSARY INTERFACE BETWEEN THE HYDRAULIC AND CIVIL WORKS.

CLOSED CIRCUIT TELEVISION (CCTV)

1. UNDERTAKE A CCTV INSPECTION OF ALL THE COMPLETED DRAINAGE IN ACCORDANCE WITH THE GUIDELINES OF THE AUSTRALIAN CONDUIT CONDITION EVALUATION MANUAL (ACCEM).
2. APPLY THE FOLLOWING REQUIREMENTS TO THE CCTV INSPECTION:-
    - 2.1. USE DATA CAPTURE SOFTWARE APPROVED BY SYDNEY WATER
    - 2.2. USE CERTIFIED CCTV OPERATORS
    - 2.3. THE CCTV VIDEOTAPE SHALL BE OF QUALITY TO ALLOW ACCURATE ASSESSMENT OF THE INTERNAL CONDITION OF THE PIPE
3. FURNISH TO THE DESIGN CONSULTANT THE FOLLOWING:-
    - 3.1. VIDEOS IN MPG FORMAT FOR VIEWING
    - 3.2. CCTV REPORT AND SURVET DATA IN PDF FORMAT

WATER QUALITY TESTING

1. PRIOR TO DISCHARGE OF SITE STORMWATER, GROUNDWATER AND SEEPAGE WATER INTO THE COUNCIL STORMWATER SYSTEM, CONTRACTORS MUST UNDERTAKE WATER QUALITY TESTING IN CONJUNCTION WITH A SUITABLY QUALIFIED ENVIRONMENT CONSULTANT OUTLINING THE FOLLOWING:
    - 1.1. COMPLIANCE WITH THE CRITERIA OF THE AUSTRALIAN AND NEW ZEALAND GUIDELINES FOR FRESH AND MARINE WATER QUALITY (2000)
    - 1.2. IF REQUIRED SUBJECT TO THE ENVIRONMENTAL CONSULTANTS ADVICE, PROVIDE REMEDIAL MEASURES TO IMPROVE THE QUALITY OF WATER THAT IS TO BE DISCHARGED INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. THIS SHOULD INCLUDE COMMENTS FROM A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT CONFIRMING THE SUITABILITY OF THESE REMEDIAL MEASURES TO MANAGE THE WATER DISCHARGED FROM THE SITE INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. OUTLINE THE PROPOSED, ONGOING MONITORING, CONTINGENCY PLANNS AND VALIDATION PROGRAM THAT WILL BE IN PLACE TO CONTINUALLY MONITOR THE QUALITY OF WATER DISCHARGED FROM THE SITE. THIS SHOULD ALSO OUTLINE THE FREQUENCY OF WATER QUALITY TESTING THAT WILL BE UNDERTAKEN BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT.

ROADWORKS NOTES

1. ALL BASECOURSE, SUB-BASECOURSE AND SELECT FILL MATERIALS SHALL CONFORM WITH THE DRAWINGS, COUNCIL CONSTRUCTION SPECIFICATIONS AND AUSTRALIAN STANDARDS.
2. ALL BASECOURSE, SUB-BASECOURSE AND SELECT FILL MATERIALS SHALL BE COMPACTED TO ACHIEVE A MINIMUM OF 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OF +OR-2% IN ACCORDANCE WITH AS 1289 E1.1. UNO.
3. ALL WEARING SURFACES SHALL BE ASPHALTIC CONCRETE LAID TO THE THICKNESS SPECIFIED AND IN ACCORDANCE WITH THE SPECIFICATION.
4. CONCRETE FOR KERB SHALL HAVE A CONCRETE STRENGTH OF 25MPa AT 28 DAYS, MINIMUM SLUMP OF 80mm AND MAXIMUM AGGREGATE SIZE OF 20mm.
5. ALL DISTURBED EXISTING CONCRETE PAVEMENT SHALL BE REINSTATED TO MATCH EXISTING PAVEMENT FINISH INCLUDING PAVEMENT IN FOOTPATH AND DRIVEWAY AREAS.
6. NEW FLEXIBLE PAVEMENT MATCHING TO EXISTING FLEXIBLE PAVEMENT SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE DRAWINGS AND COUNCIL CONSTRUCTION SPECIFICATIONS.
7. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. FORM 3051 (UNBOUND), TfNSW. FORM 3052 (BOUND) 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^3 BASECOURSE MATERIAL PLACED.
8. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
9. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9.2) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH TfNSW. FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF STANTEC.
10. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED. THIS PRODUCT SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.

SUBGRADE PREPARATION

1. REMOVE ALL TOPSOIL, VEGETABLE MATTER AND DELETERIOUS MATERIAL FROM AREA OF PROPOSED BUILDING PLATFORM AND PAVEMENTS.
2. REMOVE ANY ORGANICS AND FOREIGN MATERIALS, SOFT, HEAVING, WET OR UNSTABLE AREAS IDENTIFIED DURING PROOF ROLLING AND REPLACE USING SELECT IMPORTED FILL MATERIAL TO A DEPTH NOMINATED BY A GEOTECHNICAL ENGINEER.
3. SUBGRADE REPLACEMENT MATERIAL IS TO CONSIST OF CLEAN, UNCONTAMINATED, WELL-GRADED, NON-ORGANIC FILL WITH A MAXIMUM PARTICLE SIZE OF 75mm AND COMPACT IN MAX. 200mm THICK LAYERS, UNO.
4. COMPACTION IS TO BE CARRIED OUT BY ROLLING AT OPTIMUM MOISTURE CONTENT TO OBTAIN A DENSITY EQUIVALENT TO 100% SMDD WHEN TESTED BY THE STANDARD COMPACTION TEST (E1.1, AS 1289).
5. COMPACTION SHALL BE CARRIED OUT WITH A VIBRATING ROLLER WITH AT LEAST 10 TONNE STATIC WEIGHT.
6. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY.
7. THE CONTRACTOR IS TO PROVIDE CERTIFICATION TO THE EFFECT THAT EARTHWORKS COMPACTION HAS BEEN ACHIEVED IN ACCORDANCE WITH THE SPECIFICATION, UNLESS OTHERWISE AGREED IN WRITING BY THE SUPERINTENDENT.
8. THE CONTRACTOR IS TO PROVIDE TO THE SITE SUPERINTENDENT A SURVEY CONFIRMATION FROM A REGISTERED SURVEYOR CONFIRMING BULK EARTHWORKS LEVELS AS WITHIN -20mm/+0mm OF THE NOMINATED LEVEL.
9. BACKFILLING FOR SERVICE TRENCHING AND REMOVED SERVICES OR PITS OR FOUNDATIONS IS TO USE APPROVED WELL-GRADED GRANULAR MATERIAL WITH MINIMUM VOIDS (EITHER SELECT INSITU OR IMPORTED FILL) AS SPECIFIED ABOVE.

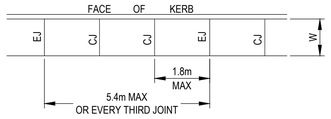
KERBING NOTES

1. THE FOLLOWING NOTES ARE TO BE READ IN CONJUNCTION WITH COUNCIL SPECIFICATIONS AND TYPICAL DRAWINGS. COUNCIL SPECIFICATIONS SHALL TAKE PRECEDENCE OVER THE NOTES PROVIDED IN THIS SPECIFICATION.
2. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O IN REINFORCED CONCRETE NOTES.
3. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 100mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 95% MODIFIED DRY DENSITY (AS 1289 5.2.1).
4. EXPANSION JOINTS (E-J) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
6. BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
7. W

JOINTING NOTES

PEDESTRIAN PAVEMENT JOINTS

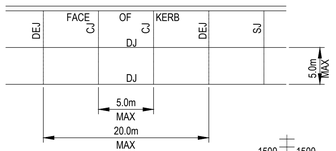
1. ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS. (U.N.O)
2. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 5.4m CENTRES.
3. CONTRACTION JOINTS ARE TO BE LOCATED AT A MAX. SPACING OF 1.8m
4. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
5. PEDESTRIAN PAVEMENT JOINT DETAIL:



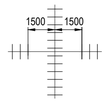
ALL RAMPED CROSSINGS SHALL BE DOWELLED INTO THE AJOINING PATH PAVEMENT

VEHICULAR PAVEMENT JOINTS

6. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS. (U.N.O)
7. CONTRACTION JOINTS SHOULD GENERALLY BE LOCATED AT A MAX OF 5.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX 20.0m CENTRES
8. SAWN JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 5.0m CENTRES OR 1.5 x THE SPACING OF CONTRACTION JOINTS.
9. VEHICULAR PAVEMENT JOINT DETAIL.



10. WHERE DOWELLED JOINTS INTERSECT, REMOVE DOWELS FROM LAST 1.5m FROM JOINT IN DIRECTION OF POUR.



GENERAL JOINTING NOTES

11. PROVIDE 10mm WIDE EXPANDING CORK JOINTS BETWEEN CONCRETE PAVEMENTS AND ALL BUILDINGS, WALLS, FOOTINGS, CONCRETE AREAS, DISH DRAINS, GRATED DRAINS, BOLLARD FOOTINGS ETC.
12. CONCRETE MIX PARAMETERS ARE AS FOLLOWS:
    - 12.1. MAXIMUM AGGREGATE SIZE = 20mm
    - 12.2. FLEXURAL STRENGTH AT 28 DAYS = 3.5MPa
    - 12.3. FLEXURAL STRENGTH AT 90 DAYS = 3.85MPa
    - 12.4. MAXIMUM WATER / CEMENT RATIO = 0.55
    - 12.5. MAXIMUM SHRINKAGE LIMIT = 650 MICRON STRAINS (AS 1012 PT 13)
    - 12.6. MINIMUM CEMENT CONTENT = 300kg/m3
    - 12.7. CEMENT TO BE TYPE "A" (NORMAL CEMENT) TO AS 1315
    - 12.8. SLUMP = 50mm
13. JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING. IF AN UNPLANNED CRACK OCCURS THE CONTRACTOR SHALL REPLACE WHOLE SLABS EITHER SIDE OF THE UNPLANNED CRACK, UNLESS DIRECTED OTHERWISE.
14. CONSTRUCT JOINTS AS DETAILED.
15. CONSTRUCTION JOINTS WHERE REQUIRED, BUT NOT SHOWN, SHALL BE LOCATED AT THE APPROVAL OF THE ENGINEER AND CONSTRUCTED AT THE CONTACTORS EXPENSE.
16. ALL LONGITUDINAL CONSTRUCTION JOINTS SHALL BE FORMED AND INCLUDE DOWEL BARS AS SPECIFIED. ALL TRANSVERSE CONSTRUCTION JOINTS SHALL BE FORMED AND INCLUDE DOWEL BARS AS SPECIFIED.
17. BOND BREAKER TO BE TWO UNIFORM COATS OF BITUMEN EMULSION ALL OVER THE EXPOSED SURFACE AND ON END.
18. DOWELS AND TIE BARD TO MEET STRENGTH REQUIREMENTS OF STRUCTURAL GRADE STEEL IN ACCORDANCE WITH AS 1302. DOWELS AND TIE BARS SHALL BE:
    - 18.1. STRAIGHT
    - 18.2. TO LENGTH SPECIFIED
    - 18.3. CLEAN AND FREE FROM MILL SCALE, RUST AND OIL
    - 18.4. SAWN TO LENGTH, NOT CROPPED
19. DIMENSIONS OF SEALANT RESERVOIR DEPENDANT ON THE SEALANT TYPE ADOPTED. ENGINEERS APPROVAL TO BE OBTAINED FOR SEALANT AND RESERVOIR DIMENSIONS AND DETAIL PROPOSED BY THE CONTRACTOR. REFER DETAIL "B" FOR TYPICAL ARRANGEMENT AND SEALANT.
20. PRIOR TO THE PLACEMENT OF CONCRETE IN THE ADJACENT SLAB, SELF EXPANDING CORK FILLER SHALL BE ADHERED TO THE ALREADY CAST AND CLEANED CONCRETE FACE USING AN APPROVED WATERPROOF ADHESIVE. ADHESIVE SHALL BE LIBERALLY APPLIED TO THE FULL FACE OF THE CONCRETE SLAB TO BE COVERED BY THE FILLER, AND ON THE FULL FACE OF THE FILLER TO BE ADHERED.

ASPHALTIC CONCRETE

1. GENERAL
    - 1.1. MINERAL AGGREGATED SHALL COMPLY WITH AUSTRALIAN STANDARDS
    - 1.2. MINERAL FILLER SHALL COMPLY WITH AS 2357 MINERAL FILLERS OR ASPHALT
    - 1.3. BITUMEN BINDER SHALL COMPLY WITH AS 2008.
2. MIX PROPORTIONS (UNO.)
    - 2.1. JOB MIX - 10mm NOMINAL SIZE AGGREGATE. MINIMUM BITUMEN CONTENT BY MASS OF TOTAL MASS - 5.1%
    - 2.2. MIX STABILITY SHALL BE BETWEEN 16kN AND 36kN AS DETERMINED BY AS 2891
    - 2.3. AIR VOIDS IN COMPACTED MIX SHALL BE BETWEEN 4% AND 7% OF THE TOTAL VOLUME OF THE MIX
    - 2.4. VOIDS FILLED IN BINDER - BETWEEN 65% AND 80% OF AIR VOIDS IN THE TOTAL MINERAL AGGREGATE FILLED BY BINDER IN ACCORDANCE WITH AUSTRALIAN STANDARDS
3. PAVEMENT PREPARATION
    - 3.1. THE EXISTING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL AND FOREIGN MATTER
    - 3.2. ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO THE GENERAL LEVEL OR PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING THE MAIN COURSE
4. TACK COATING
    - 4.1. THE WHOLE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND EVENLY COASTED WITH RAPID SETTING BITUMEN COMPLYING WITH AUSTRALIAN STANDARDS. APPLICATION RATE FOR RESIDUAL BITUMEN SHALL BE 0.15 TO 0.3L/m^2. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH A SPRAY BAR.
5. SPREADING
    - 5.1. ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF-PROPELLING PAVING MACHINE
    - 5.2. THE ASPHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SPECIFIED BELOW:-

ROAD SURFACE TEMPERATURE IN SHADE (°C)	MIX TEMPERATURES (°C)
5 - 10	NOT PERMITTED
10 - 15	150
15 - 25	145
OVER 25	140

    - 5.3 ASPHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN COLD WINDS CHILL THE MIX, ADVERSELY AFFECTING SPREADING AND COMPACTION
    - 5.4 THE MINIMUM COMPACTED THICKNESS IS 30mm OVER EXISTING SEALED PAVEMENTS AND 50mm OVER NEW PAVEMENTS
6. JOINTS
    - 6.1. THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM
    - 6.2. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REST OF THE LAYER
7. COMPACTION
    - 7.1. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF-PROPELLED ROLLERS
    - 7.2. INITIAL ROLLING SHALL BE COMPLETE BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C
    - 7.3. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 60°C
    - 7.4. MINIMUM CHARACTERISTICS VALUE OF RELATIVE COMPACTION OF A LOT WHEN TESTED IN ACCORDANCE WITH AS 2150
8. FINISHED PAVEMENT PROPERTIES
    - 8.1. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE TO SHAPE AND SHALL NOT VARY MORE THAN 10mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT AND SHALL NOT DEVIATE FROM THE BOTTOM OF A 3m STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5mm.
9. OTHER
    - 9.1. ASPHALTIC CONCRETE SHALL CONFORM TO TfNSW. SPECIFICATION R116. UNO.

RETAINING WALL

1. BASE MATERIAL SHALL BE COMPACTED TO MINIMUM 98% SMDD WITHIN 2% OF STANDARD OPTIMUM MOISTURE CONTENT (SMOC) DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARD AS 1289.5.1.1 MINIMUM ALLOWABLE BEARING PRESSURE OF 150kPa. GEOTECHNICAL ENGINEER EMPLOYED BY CONTRACTOR TO INSPECT AND CONFIRM.
2. DRAINAGE MATERIAL WITHIN AND IMMEDIATELY BEHIND THE WALL SHALL BE 12-20mm CLEAN AGGREGATE. DRAINAGE MATERIAL TO EXTEND A MINIMUM OF 300mm BEHIND THE RETAINING WALL. COMPACT THE DRAINAGE MATERIAL. ALTERNATIVELY, USE NO FINES CONCRETE AS FOLLOWS:-
    - 2.1. CONCRETE STRENGTH N15
    - 2.2. 210kg/m^3 PORTLAND CEMENT
    - 2.3. MAXIMUM AGGREGATE SIZE 20mm
    - 2.4. W/C RATIO 0.45 TO 0.55
    - 2.5. DENSITY 1600 TO 2000kg/m^3
3. INFILL SOIL SHALL BE CLASS 1 CONTROLLED FILL TO AS 4678, OR AS SPECIFIED ON THE DRAWINGS. UNSUITABLE SOILS, SUCH AS HEAVY CLAYS OR ORGANIC SOILS WITH HIGH PLASTICITY, SHALL NOT BE USED IN THE REINFORCED SOIL MASS.
4. SPREAD BACKFILL IN UNIFORM LIFTS OF 200mm UNCOMPACTED THICKNESS. COMPACT TO 95% SMDD. COMPACTION WITHIN 1.0m BEHIND THE WALL SHALL BE ACCOMPLISHED USING A HAND-OPERATED PLATE COMPACTOR AND SHALL BEGIN BY RUNNING THE PLATE DIRECTLY ON THE BLOCK, THEN COMPACTING IN PARALLEL PATHS, PROGRESSIVELY AWAY FROM THE WALL FACE.
5. WHERE ROADWAYS OR BUILDING STRUCTURES ARE LOCATED ABOVE THE REINFORCED ZONE, COMPACT TO 98% SMDD WITHIN 2% OF SMOC DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH AS 1289.5.1.1. COMPACTION TESTING SHALL BE TAKEN 1.2m BEHIND THE WALL.

BITUMEN SEALANT NOTES

1. PAVEMENT PREPARATION
    - 1.1. THE SURFACE TO BE SEALED SHALL BE DRY AND BROOMED PRIOR TO THE COMMENCEMENT OF WORKS TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL, FOREIGN AND LOOSE MATTER
    - 1.2. IF APPROVED BY THE SUPERINTENDENT, ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT TO THE GENERAL LEVEL OF THE PAVEMENT WITH ASPHALTIC CONCRETE BEFORE SEALING COMMENCES
2. MATERIALS
    - 2.1. THE BINDER SHALL BE CLASS 170 IN ACCORDANCE WITH AS 2008, OR AN APPROVED PROPRIETARY MATERIAL FOR PRIMING AND PRIME-SEALING
    - 2.2. THE AGGREGATE SHAPE, DURABILITY AND WET TO DRY STRENGTH SHALL COMPLY WITH AS 2758 FOR CLASS "N" AGGREGATES. A 20kg SAMPLE TO BE APPROVED BY THE SUPERINTENDENT PRIOR TO USE
    - 2.3. AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED. EXCESSIVE PRECOATING WILL RESULT IN THE AGGREGATES BEING REJECTED.
    - 2.4. FOR TWO COAT FLUSH SEALS, THE SIZE OF THE AGGREGATE FOR THE SECOND COAT (WHILE NORMALLY HALF THAT OF THE FIRST COAT) SHALL BE DIMENSIONALLY COMPATIBLE WITH THAT OF THE FIRST COAT.
3. DESIGN
    - 3.1. DESIGN OF SPRAYED BITUMINOUS SEALS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AUSTROADS (NAASRA) PUBLICATION "PRINCIPLES AND PRACTICES OF BITUMINOUS SURFACING, VOLUME 1 - SPRAYED WORK"
    - 3.2. WHERE NOT INDICATED ON THE PLANS, PRIMES AND PRIMER-SEALS SHALL BE DESIGNED TO REMAIN INTACT UNTIL FINAL SEALING TAKES PLACE, HAVING REGARD FOR THE TRAFFIC AND CLIMATIC CONDITIONS PERTAINING
    - 3.3. UNLESS OTHERWISE SPECIFIED, BINDER APPLICATION RATES SHALL BE SELECTED TO FILL 85% OF THE THEORETICAL VOIDS OF THE MAT
4. PRIMER-SEALING
    - 4.1. A SINGLE COAT PRIMER-SEAL USING A SUITABLE CUT-BACK OR PROPRIETARY BINDER SHALL BE APPLIED TO THE BASECOURSE MATERIAL FOR PROTECTION OF PAVEMENT DURING CONSTRUCTION
5. BITUMEN FLUSH SEALING
    - 5.1. BITUMEN FLUSH SEALS SHALL BE EITHER SINGLE OR DOUBLE COAT AS SHOWN ON THE DRAWINGS. E.G. 20/10 INDICATES A DOUBLE COAT FLUSH SEAL USING TWO APPLICATIONS OF BITUMEN AND AGGREGATE, THE FIRST AGGREGATE LAYER BEING 20mm NOMINAL SIZE AND THE SECOND LAYER BEING 10mm
    - 5.2. COVER AGGREGATE SHALL BE SPREAD IMMEDIATELY AFTER THE SPRAYING OF BINDER. IN NO CASE SHALL SPREADING BE DELAYED MORE THAN 8 MINUTES
    - 5.3. ALL SPRAY RECORDS AND AGGREGATE SUPPLY TONNAGE AND LOOSE MATTER SHALL BE RETAINED AND PASSED ON TO THE ENGINEER AS PART OF THE QUALITY ASSURANCE PROCEDURES. IF APPROVED BY THE SUPERINTENDENT, ALL DEPRESSIONS RECEIPTS SHALL BE RETAINED AND PASSED ON TO THE SUPERINTENDENT AS PART OF THE QUALITY ASSURANCE PROCEDURES
    - 5.4. AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED. EXCESSIVE PRECOATING WILL RENDER THE AGGREGATES UNSUITABLE AND WILL BE REJECTED. APPLICATION RATES SHALL BE IN THE RANGE OF 3-10 L/m^2 OF AGGREGATE AND THE PRECOATING AGENT SHALL BE COMPATIBLE WITH THE SEALING AGGREGATE TO BE USED.
    - 5.5. SEALING IS TO BE UNDERTAKEN IN THE PRESENCE OF THE ENGINEER
    - 5.6.

APPLICATION RATES	BINDER (L/m^2)	COVER SIZE (mm)	AGGREGATE RATE (m^3/m^3)
FIRST SEAL	1	14	80
SECOND SEAL	0.5	7	160
SINGLE SEAL OR RESEAL	0.75	10	120

    - 5.7 GENERALLY FLUSH SEALING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT TfNSW STANDARD

LINEMARKING NOTES

1. THE WORK SHALL INCLUDE ALL LINE MARKING TO ROADS, HARDSTANDS, PATHS, CARPARKS AND THE TRAFFICABLE AREAS.
2. THE PAVEMENT MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS 1742.2 AND THE RELEVANT LOCAL AND STATE AUTHORITY GUIDELINES.
3. PAINT SHALL BE TYPE 3, CLASS A AND COMPLY WITH AS 4049.2 "THERMOPLASTIC PAVEMENT MARKING MATERIALS - FOR USE WITH SURFACE APPLIED GLASS BEADS". THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMENT FROM ROAD SURFACE. EACH LINE SHALL BE 80mm WIDE, UNO IN LEGEND. ALL PAINT SHALL BE APPLIED BY MECHANICAL SPRAYER. WHERE PAINT IS APPLIED TO CONCRETE, THE SURFACE WILL BE FIRST PRIMED TO ENSURE ADHESION.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.
6. ALL EXISTING PAVEMENT MARKING WHICH IS LOCATED ON EXISTING PAVEMENT TO BE RETAINED SHALL BE REMOVED BY GRINDING WHERE THE EXISTING MARKINGS ARE MADE REDUNDANT BY THE PROPOSED WORKS.
7. ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE REGULATORY SIGNS MANUAL, AS1742.2, AS2890.1:2004 AND THE RELEVANT LOCAL AND STATE AUTHORITY GUIDELINES AND REQUIREMENTS.
8. TRANSITION LINEMARKING TO SUIT EXISTING WHERE REQUIRED
9. RELOCATE / REMOVE EXISTING SIGNS AS REQUIRED.
10. REMOVE ALL REDUNDANT PAVEMENT MARKING AS REQUIRED.
11. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING AND AFTER CONSTRUCTION
12. PROVIDE RETRO-REFLECTIVE PAVEMENT MARKERS TO COUNCIL AND TfNSW REQUIREMENTS.
13. ALL LINEMARKING TO BE WHITE IN COLOUR WITH THE EXCEPTION OF C2 AND C3 LINES AND LINEMARKING ON CONCRETE PAVEMENTS WHICH ARE TO BE YELLOW.

MASONRY NOTES

MASONRY GENERAL

1. MATERIALS, INCLUDING MORTAR, CONCRETE, GROUT, WALL TIES AND REINFORCEMENT, SHALL COMPLY WITH AS 3700 SECTION 10. MASONRY UNITS SHALL COMPLY WITH AS 4455. THE MINIMUM DURABILITY REQUIREMENTS ARE AS FOLLOWS:-

LOCATION	SALT ATTACK RESISTANCE DURABILITY GRADE OF MASONRY UNIT	MORTAR CLASS	DURABILITY CLASS OF WALL TIES AND BUILT-IN COMPONENTS
INTERIOR MASONRY	GENERAL PURPOSE	M3	R3
EXTERIOR MASONRY ABOVE DAMP PROOF COURSE	GENERAL PURPOSE	M3	R3
BELOW DAMP PROOF COURSE OR IN CONTACT WITH GROUND	EXPOSURE	M4	R4

2. MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH AS 3700 SECTION 11 AND THE FOLLOWING:-
    - 2.1. DAMAGED BLOCKWORK UNITS SHALL NOT BE USED
    - 2.2. MOISTURE CONTENT: BLOCKS NOT TO BE WETTED.
    - 2.3. TOLERANCES IN CONFORMITY WITH TABLE 11.1 OF AS 3700
    - 2.4. CUTTING BY MASONRY SAW ONLY
    - 2.5. CHASES - DO NOT CHASE BLOCKWORK OR BRICKWORK WITHOUT THE APPROVAL OF STANTEC. HOLLOW BLOCKS OR BRICKS SHALL NOT BE CHASED UNDER ANY CIRCUMSTANCES. MAXIMUM CHASE DEPTH IN CORE FILLED BLOCKWORK TO BE 20mm.
    - 2.6. JOINT FINISH TO AS 3700 CLAUSES 4.9.2 AND 11.4.15
    - 2.7. BONDING - STRETCHER BOND
    - 2.8. BONDING AT INTERSECTIONS OR ACROSS VERTICAL JOINTS BY EITHER MASONRY BONDING TO AS 3700 CLAUSE 4.11.2 OR TIE BONDING TO AS 3700 CLAUSE 4.11.3
    - 2.9. CLEAN MASONRY PROGRESSIVELY TO REMOVE MORTAR SMEARS, STAINS, DISCOLOURATION.
    - 2.10. KEEP PERPENDS IN ALTERNATE COURSES VERTICALLY ALIGNED
3. MORTAR MATERIALS SHALL CONSIST OF THE FOLLOWING:-
    - 3.1. CEMENT - TYPE GP CEMENT TO AS 3972
    - 3.2. LIME - TO AS 1672.1
    - 3.3. SAND - FINE WITH LOW CLAY CONTENT, FREE FROM EFFLORESCENT SALTS, SELECT FOR COLOUR AND GRADING
4. MORTAR PROPORTIONS SHALL COMPLY WITH AS 3700 AND SHALL MEET THE REQUIREMENTS OF AS 3700 FOR DURABILITY, UNO.
5. ALL CONCRETE BLOCKWORK UNITS SHALL BE GRADE 15, UNO. ON STRUCTURAL PLANS (COMPRESSIVE STRENGTH f'c = 15MPa) CONFORMING TO AS 4455. ALL CLAY BRICK UNITS SHALL BE GRADE 20. SUBMIT CERTIFICATES CONFIRMING CONFORMANCE FOR APPROVAL BEFORE CONSTRUCTION COMMENCES.
6. BED JOINT REINFORCEMENT SHALL BE GALVANISED WOVEN WIRE MESH OR WELDED WIRE TO AS 2975, LAPPED 450 AT SPLICES.
7. HORIZONTAL BED JOINT REINFORCEMENT SHALL BE PERMISSIBLE AS A MEANS OF CRACK CONTROL. THE LONGITUDINAL WIRES OF SUCH REINFORCEMENT SHALL BE A MIN. OF 2 WIRES, EACH 3mm DIA AND CONFORMING TO AS 2875, AND BE CORROSION RESISTANT. JOINT REINFORCEMENT SHOULD BE LOCATED IN THIRD BED JOINT ABOVE BOTTOM OF WALL, IN SECOND BED JOINT BELOW TOP OF WALL, IN FIRST TWO BED JOINTS IMMEDIATELY ABOVE AND BELOW ALL OPENINGS AT FLOOR LEVELS, AT VERTICAL SPACINGS NOT EXCEEDING 500mm. AT OPENINGS, REINFORCEMENT TO EXTEND BEYOND EDGE BY 600mm. REINFORCEMENT NOT TO EXTEND THROUGH CONTROL JOINTS. LAP 450mm AS REQUIRED
8. THE MAXIMUM SPACING FOR VERTICAL CONTROL JOINTS SHALL BE:-
    - 8.1. 5m FOR 190mm BLOCKS
    - 8.2. 3.5m FOR 140mm BLOCKS
    - 8.3. 3m FOR 90mm BLOCKS
9. VERTICAL CONTROL JOINTS SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:-
    - 9.1. AT CHANGES IN WALL THICKNESS EXCEPT FOR PIERS AND BUTTRESSES
    - 9.2. AT CHASES AND RECESSES FOR PIPING COLUMN FIXTURE, ETC.
    - 9.3. AT SIDES OF WALL OPENINGS AND NEAR WALL INTERSECTIONS
    - 9.4. TO MATCH ANY EXPANSION JOINTS IN CONCRETE ABOVE AND BELOW
    - 9.5. AT JOINTS IN FOOTINGS OR AT CHANGES OF THE SUPPORTING STRUCTURE (I.E. FOOTINGS, SUSPENDED SLABS, ETC.)

    VERTICAL CONTROL JOINTS SHALL COMPLY WITH TECHNICAL NOTE PUBLISHED BY THE CEMENT AND CONCRETE ASSOCIATION. CONTROL JOINTS SHALL BE WEATHER-PROTECTED WHERE NECESSARY BY FLEXIBLE CAULKING AND TIED WITH TELESCOPIC TYPE FRAME TIES ACROSS THE JOINT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF ALL MASONRY WALLS DURING CONSTRUCTION.
11. WHERE WALLS ARE NON-LOAD BEARING WALLS, THEY SHALL BE SEPARATED FROM ANY SUSPENDED CONCRETE SLABS BY A 20mm THICK COMPRESSIBLE LAYER.
12. LAY BOTTOM COURSE OF BLOCKS ON FULL MORTAR BED. ALL PERPENDS SHALL BE FILLED WITH MORTAR, EXCEPT WEEPHOLES.
13. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO ALLOW FOR THE INSPECTION OF:-
    - 13.1. ITEMS TO BE BUILT-IN LOCATED IN THEIR CORRECT POSITION, INCLUDING DAMP-PROOF COURSE, FLASHINGS, BOLTS, STRUCTURAL STEELWORK AND THE LIKE
    - 13.2. LINTELS IN POSITION
    - 13.3. REINFORCEMENT IN PLACE IN CORE HOLES BEFORE PLACING CONCRETE
    - 13.4. BOTTOMS OF CAVITIES AFTER CLEANING OUT
    - 13.5. BOTTOMS OF CORE HOLES BEFORE GROUTING
    - 13.6. CONTROL JOINTS READY FOR INSERTION OF JOINT FILLER

REINFORCED MASONRY

14. BLOCKWORK CORES WHERE REQUIRED SHALL BE FILLED WITH GROUT OF CHARACTERISTIC COMPRESSIVE STRENGTH OF 20 MPa, SLUMP 230 +/- 25mm, AND MAXIMUM AGGREGATE SIZE OF 10mm IN ACCORDANCE WITH AS 3600. FOR READY MIXED GROUT SUPPLIED AND CERTIFIED BY CONCRETE SUPPLIER, GROUT SHALL HAVE A CEMENT CONTENT NOT LESS THAN 300kg/cu.m. MORTAR SHALL BE LEFT FOR 3 DAYS MINIMUM BEFORE POURING GROUT.
15. BOND BEAMS SHALL CONFIRM TO AS 4455. BOND BEAMS SHALL BE REINFORCED WITH 2N12 BARDS AND FILLED WITH GROUT TO AS 3700, UNO.
16. GROUT SHALL BE PLACED BY AN APPROVED METHOD AND SHALL BE VIBRATED WITH A NEEDLE VIBRATOR OR RODDED. WALLS TO BE PROGRESSIVELY FILLED WITH MAXIMUM POUR HEIGHT OF 1600mm IN ANY ONE GROUT POUR.
17. REINFORCED BLOCK RETAINING WALLS SHALL HAVE A WATERPROOF MEMBRANE APPLIED TO THE ARCHITECT'S DETAILS BEHIND THE WALL.
18. PROVIDE CLEAROUT OPENINGS AT THE BASE OF ALL REINFORCED CORES AND REMOVE ALL MORTAR PROTRUSIONS BEFORE GROUTING. ADDITIONAL CLEAROUT OPENINGS SHALL BE PROVIDED ABOVE EACH HORIZONTAL POUR BREAK.
19. THE MAXIMUM HEIGHT OF POUR FOR GROUTING SHALL NOT EXCEED 3.6m FOR 190mm BLOCKWORK AND 0.8m FOR 140mm BLOCKWORK. STOP POUR 50mm BELOW TOP OF BLOCK TO PROVIDE KEY FOR SUBSEQUENT POURS.

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
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Title

GENERAL NOTES
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-007003

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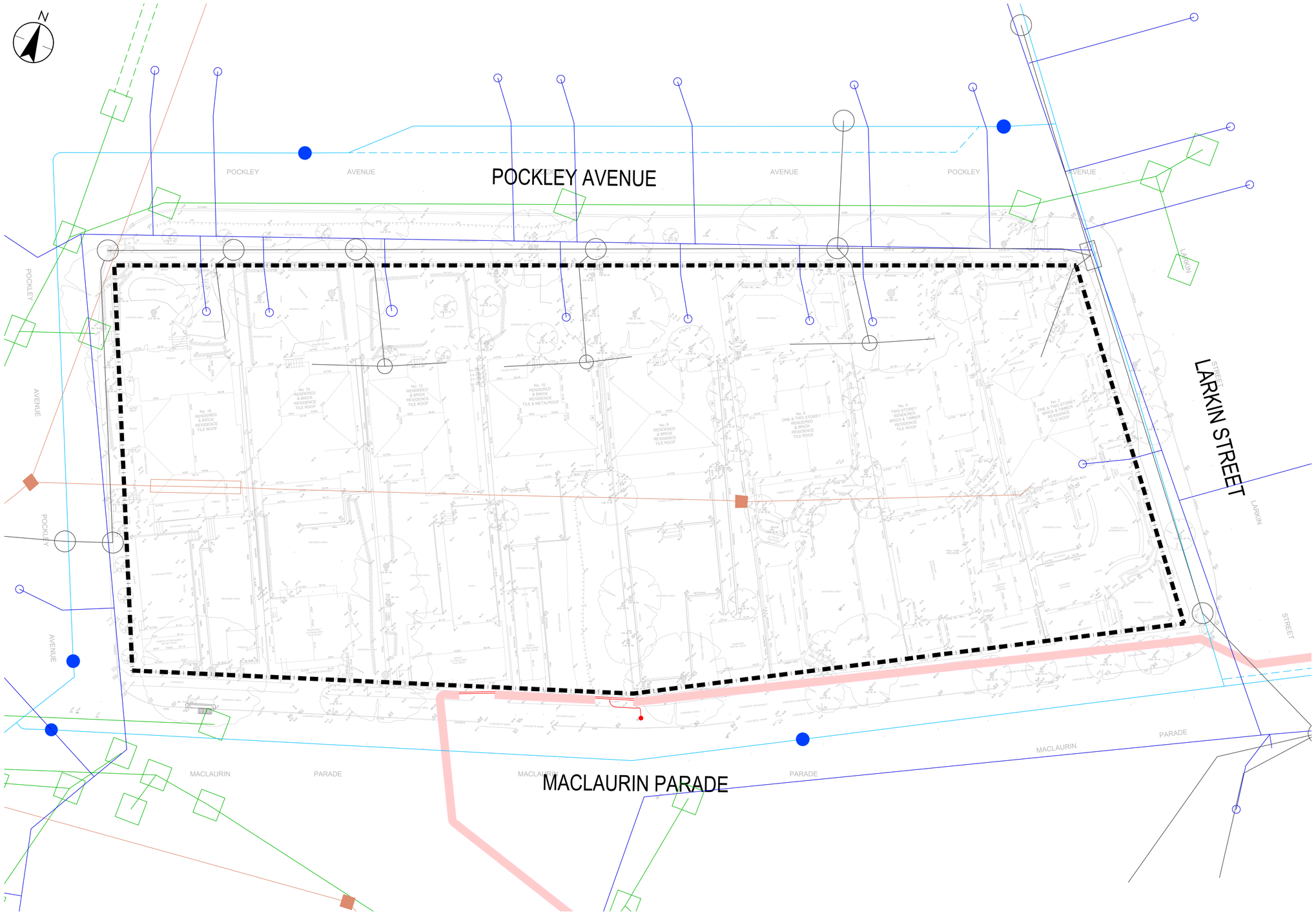

LEGEND

- SITE BOUNDARY
- EXISTING CONTOURS
- EXISTING STORMWATER MAIN
- EXISTING STORMWATER PIT
- EXISTING STORMWATER EASEMENT
- EXISTING SEWER MAINTENANCE HOLE
- EXISTING SEWER MAIN
- EXISTING UNKNOWN PRESSURE GAS MAIN
- EXISTING 210kPa MEDIUM PRESSURE GAS MAIN
- EXISTING POTABLE WATER MAIN
- EXISTING DISCONNECTED POTABLE MAIN
- EXISTING HIGH VOLTAGE AUSGRID CABLE
- EXISTING AUSGRID CONDUIT
- EXISTING TELSTRA CONDUIT
- EXISTING TELSTRA PIT
- EXISTING TREE

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	Appd YYYY.MM.DD

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Title

EXISTING CONDITIONS PLAN

Project No. 301351698

Scale 1:250

Revision B

Drawing No. **STN-ZZ-000-DR-CI-050001**

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LEGEND

- SITE BOUNDARY
- EXISTING FEATURE TO BE DEMOLISHED
- EXISTING SERVICE TO BE DEMOLISHED
- EXISTING BUILDING TO BE DEMOLISHED
- EXISTING CAR PARK OR HARDSTAND TO BE DEMOLISHED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TREE PROTECTION ZONE

NOTES:

1. THIS PLAN TO BE READ IN CONJUNCTION WITH LANDSCAPE ARCHITECT AND ARBORIST REQUIREMENTS.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
3. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION. UTILITY PROVIDER TO BE CONTACTED REGARDING DISCONNECTION PRIOR TO THE DEMOLITION OF EXISTING BROWNFIELD SITE.
4. NO WORK TO COMMENCE UNTIL ARBORIST INSPECTS AND APPROVES.

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	AT	2025.04.15
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Title

DEMOLITION PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-055001

Plotted: 14/04/2025 5:23:19 PM, By: OAKLEY, NATHAN
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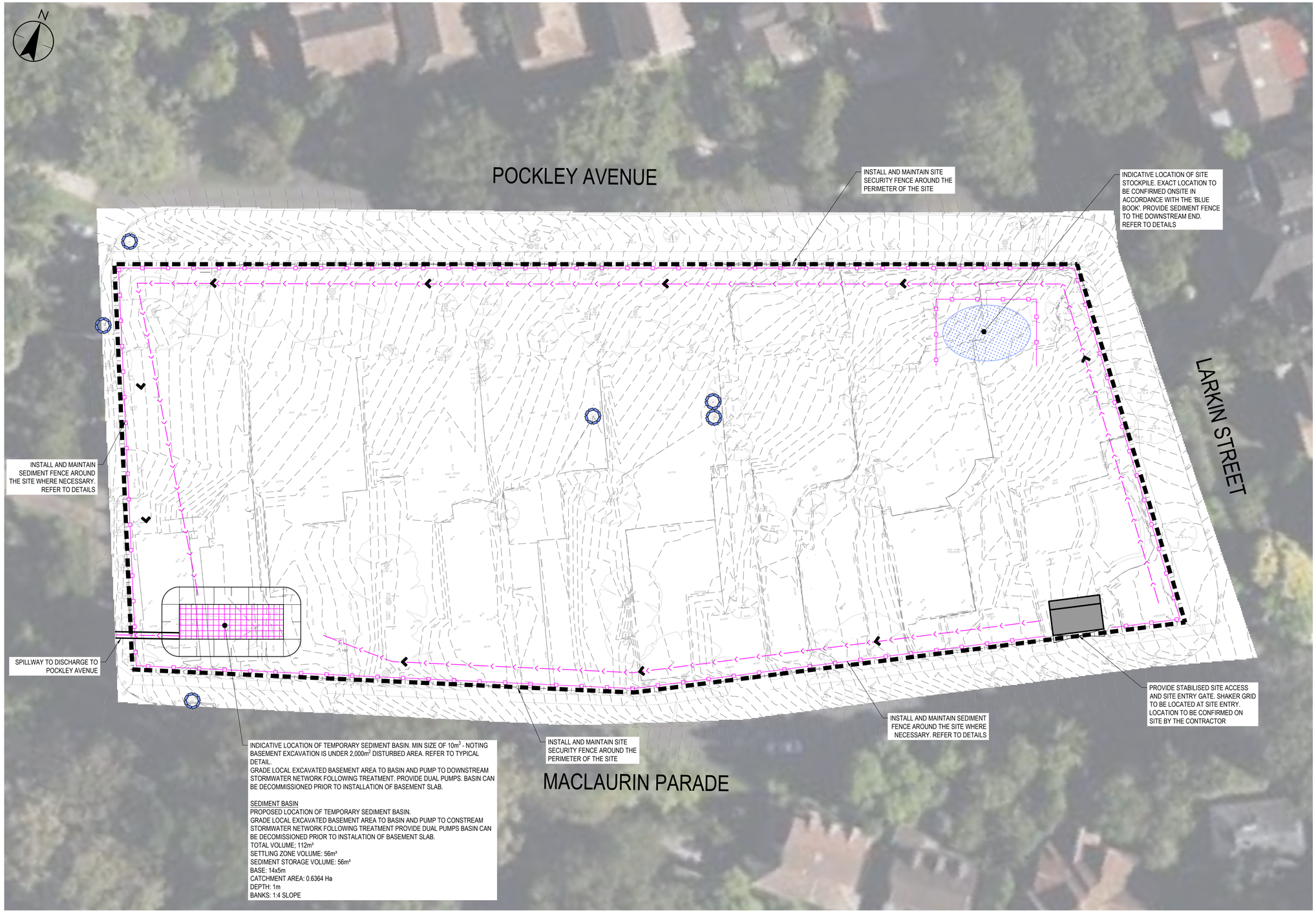

LEGEND

- SITE BOUNDARY
- PROPOSED SILT FENCE
- PROPOSED FENCE
- PROPOSED ENTRY GATE
- SANDBAG PIT PROTECTION
- VEHICLE SHAKEDOWN DEVICE
- STRAW BALE
- PROPOSED SWALE
- PROPOSED SEDIMENT BASIN
- EXISTING TREE TO REMAIN

NOTES:

1. FOR EROSION AND SEDIMENT CONTROL NOTES REFER CI-007 SERIES
2. FOR EROSION AND SEDIMENT CONTROL DETAILS REFER DRAWING CI-076001

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	AT	2025.04.15
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Title

EROSION AND SEDIMENT CONTROL PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-070001

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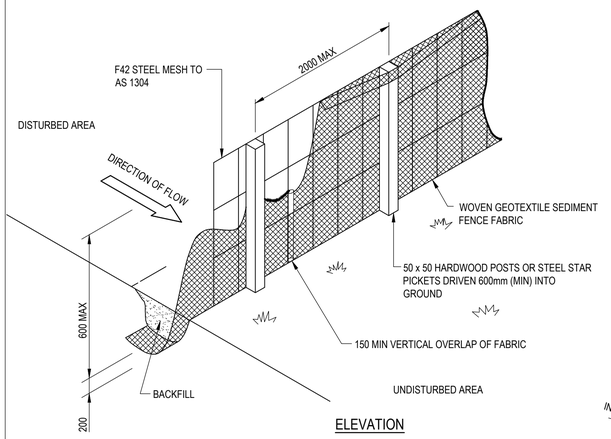
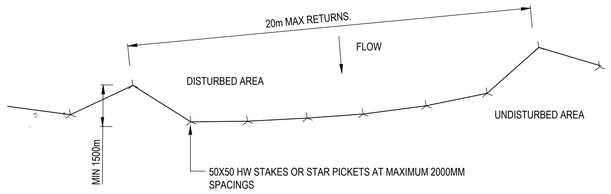
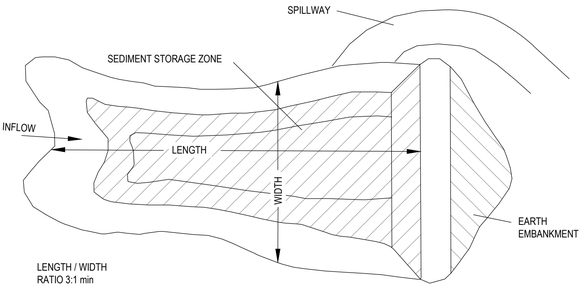


ELEVATION

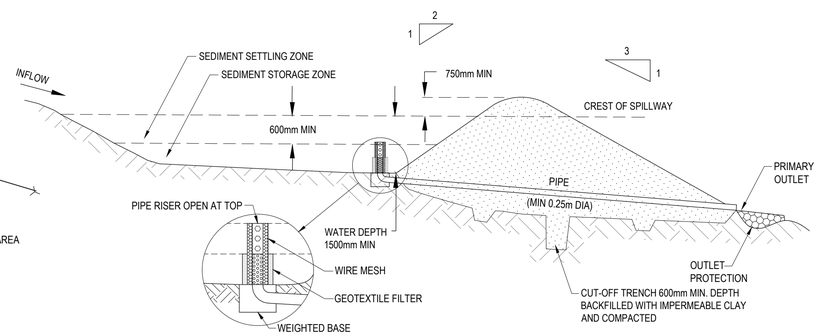


PLAN

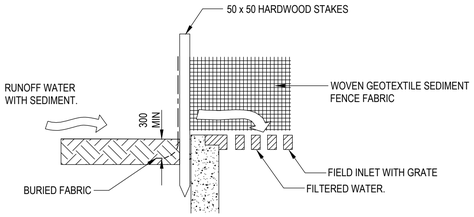


PLAN VIEW

NOTES:
1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AD 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BONG COMPACTED FILL TO THE EXISTING SUBSTRATE
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP
7. CONSTRUCT THE EMERGENCY SPILLWAY
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP



CROSS-SECTION
SEDIMENT BASIN DETAIL
SCALE N.T.S



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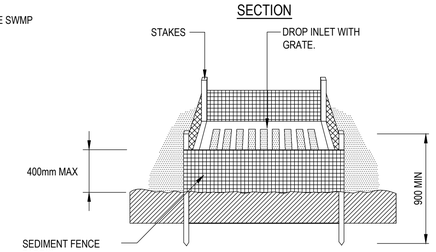

ELEVATION

GEOTEXTILE FILTER FABRIC
DROP INLET SEDIMENT TRAP
SCALE N.T.S.

NOTES

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE RELATED CATCHMENT AREA AND TO THE STANDARD OF 'MANAGING URBAN STORMWATER, SOIL & CONSTRUCTION' & COUNCIL SPECIFICATIONS.
3. ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.
4. LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LAND NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCE. 'SILT' FENCE FOR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS.
5. THE LOCATION OF 'SILT' FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN
7. NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAS BEEN COMPLETED AND THE SITE FULLY ESTABLISHED.
8. WHERE THE AREA TO BE DISTURB CONTAINS TREES TO REMAIN, AN ARBORIST CONSULTANT SHOULD PROVIDE ADVICE ON PROCEDURES AND MEASURES TO BE PLACED.
9. TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.
10. ALL OF THE SOIL STORAGE, REVEGETATION AND SEDIMENT AND EROSION CONTROL MANAGEMENT DEVICES/MEASURES SHALL BE IMPLEMENTED TO NSW ENVIRONMENT PROTECTION AUTHORITY (EPA) AND DEPARTMENT OF LAND AND WATER REQUIREMENTS.
11. ALL SEDIMENT AND EROSION CONTROL MANAGEMENT MEASURES/DEVICES SHOWN ON THE PLANS SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION, AND MAINTAINED DURING AND AFTER.

SECTION DETAIL

SEDIMENT FENCE DETAIL
SCALE N.T.S.

SANDBAG KERB INLET SEDIMENT TRAP
SCALE N.T.S.

TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
SCALE N.T.S.

SHAKER PAD
SCALE N.T.S

TYPICAL STOCKPILE CONFIGURATION
SCALE N.T.S.

NOTE:
1. LOCATE STOCKPILES AT TOP OF CATCHMENT ON FLAT GROUND AND NOT WITHIN 5m OF CONCENTRATED FLOW PATHS.

CATCH DRAIN / EARTH BANK DETAIL
SCALE N.T.S.

NOTES:
1. ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
2. BUILD DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS RATHER THAN V SHAPED

DIVERSION CHANNEL/ BANK DETAIL
SCALE: NTS

LEVEL SPREADER (OR SILL)
SCALE N.T.S

Key Plan

B SSDA ISSUE	NO	AT	2025.04.15
A PRELIMINARY ISSUE	MK	AT	2025.02.14
Issued/Revision	By	Appd	YYYY.MM.DD

Issue Status

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Client/Project Logo

AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-076001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
EROSION AND SEDIMENT CONTROL DETAILS

Project No.
301351698

Scale
AS SHOWN

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-076001

Plotted: 14/04/2025 5:23:27 PM By: OAKLEY, NATHAN
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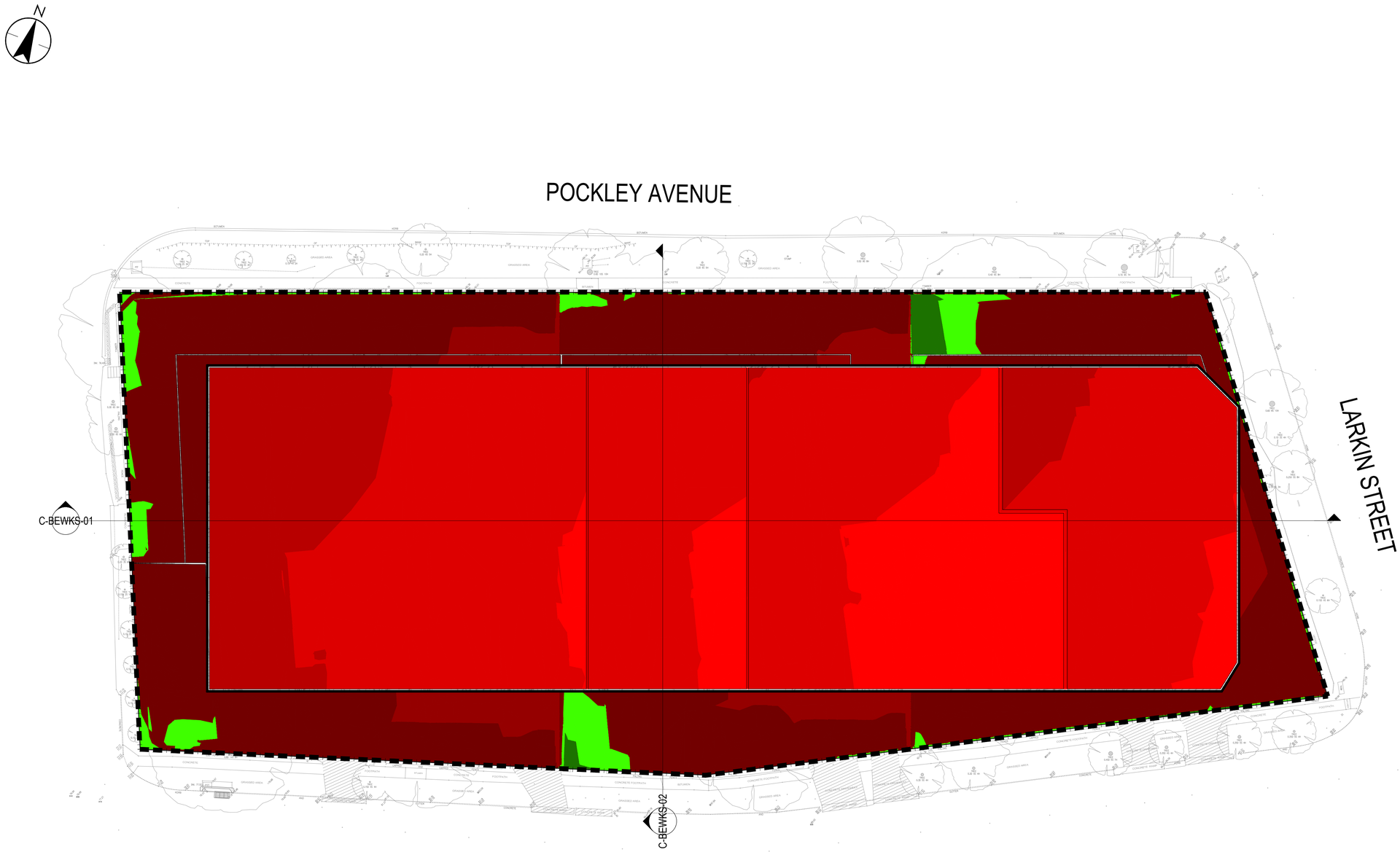

LEGEND

- SITE BOUNDARY
- BUILDING BASEMENT EXTENT

CUT AND FILL VOLUME:
CUT: 67,608 m^3
FILL: 81 m^3
NET: 67,527 m^3 (CUT)

NOTES:

1. FOR COMPLETE NOTES REFER CI-007 DRAWING SERIES
2. VOLUMES ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE STRIPPED SURFACE.
3. NO BULKING FACTORS HAVE BEEN APPLIED.
4. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ACCURACY OF EXISTING SURVEY.
7. BULK EARTHWORKS DOES NOT TAKE INTO CONSIDERATION ANY CONTAMINATED MATERIAL AND ANY REMEDIATION STRATEGY WORKS
8. BULK EARTHWORKS ARE BASED ON THE FOLLOWING NOMINAL DEPTHS FROM FINISHED SURFACE LEVELS;
   - 8.1. GENERAL LANDSCAPE 200mm
   - 8.2. BUILDING PADS 200mm
   - 8.3. HARDSTAND OR FOOTPATH 200mm
   - 8.4. ROAD PAVEMENT 450mm
9. NOMINAL STRIPPING EXPECTED
   - 9.1. EXISTING SITE STRIP VOLUME: XX,XXXm^3
   - 9.2. EXISTING SURFACE STRIP DEPTH: 150mm

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

A SSDA ISSUE	NO	AT	2025.04.15
Issued/Revision	By	Appd	YYYY.MM.DD

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AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-100001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS PLAN

Project No.
301351698

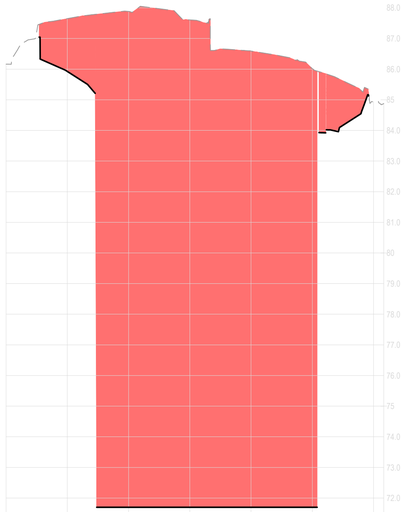
Scale
1:250

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-100001

Plotted: 14/04/2025 5:23:39 PM By: OAKLEY, NATHAN
U:\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

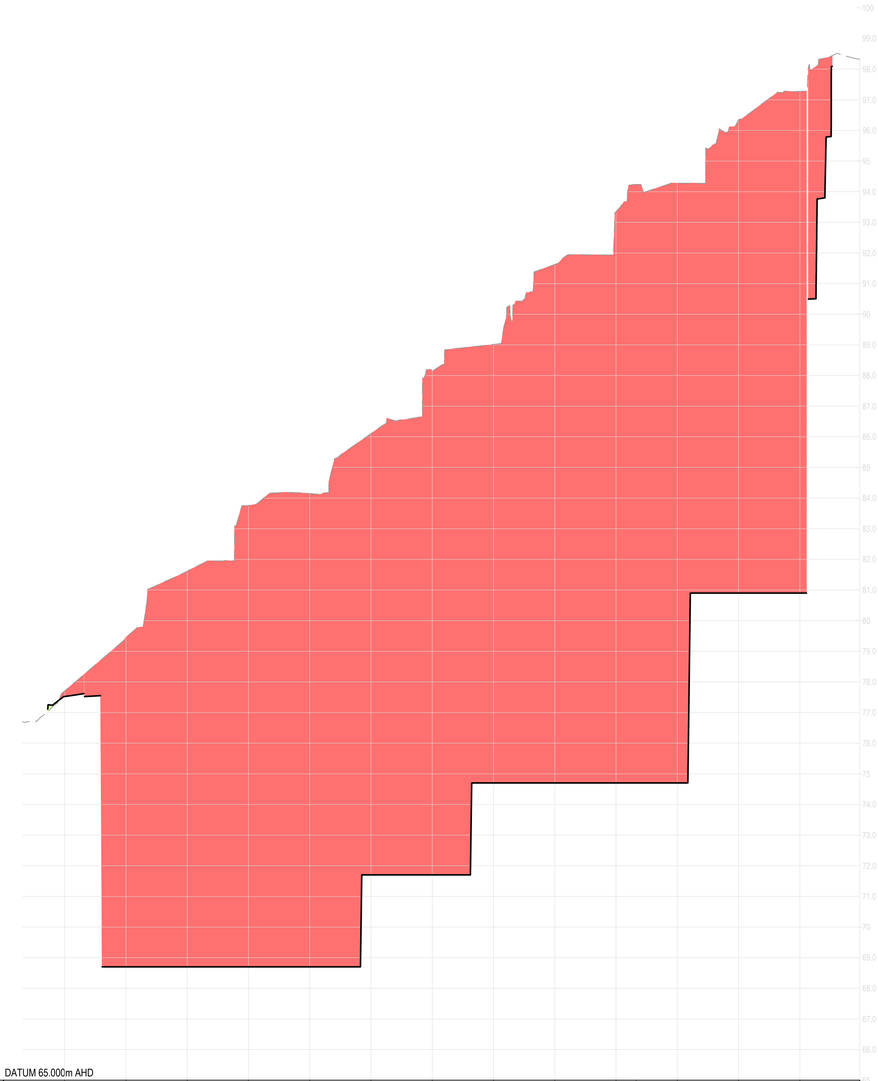


DATUM 70.000m AHD

DESIGN LEVELS		86.93	87.70	87.70	87.70	87.70		
EXISTING LEVELS	86.16	87.65	87.89	87.86	86.59	86.01	84.93	84.87
CUT (-) / FILL (+)		-1.72	-16.19	-15.91	-14.89	-14.31		
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	61.67

SECTION C-BEWKS-02C-BEWKS-02
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

C-BEWKS-02 - LONGITUDINAL SECTION



DATUM 65.000m AHD

DESIGN LEVELS		77.52	68.70	68.70	68.70	68.70	68.70	68.70	68.70	74.70	74.70	74.70	80.90	80.90	
EXISTING LEVELS		77.71	79.46	81.62	83.76	84.15	86.11	88.74	89.02	91.63	93.35	94.23	94.28	96.34	97.27	98.32
CUT (-) / FILL (+)		-0.18	-10.76	-12.92	-15.06	-15.45	-14.41	-16.44	-14.32	-16.93	-18.65	-19.53	-19.58	-15.44	-16.37	
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	103.26	110.00	120.00	130.00	139.78

SECTION C-BEWKS-01C-BEWKS-01
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

C-BEWKS-01 - LONGITUDINAL SECTION

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			2025.04.15

Issue Status

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AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-100001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS SECTIONS

Project No.
301351698

Scale
1:500

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-103001

Plotted: 14/04/2025 5:23:45 PM By: OAKLEY, NATHAN
\\r301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- CONCRETE FOOTPATH
- PAVED FOOTPATH
- MULCH/GRAVEL FOOTPATH TO LANDSCAPE ARCHITECTS DETAILS
- PROPOSED COMMERCIAL VEHICLE CROSSING
- COURTYARD - PROPOSED HARDSCAPE (REFER LANDSCAPE ARCHITECT DRAWING)
- PROPOSED LANDSCAPING
- BASEMENT EXTENTS
- POTENTIAL PUBLIC DOMAIN WORKS

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	Appd YYYY.MM.DD

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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-440001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

PAVEMENT PLAN

Project No. 301351698

Scale 250

Revision **B**

Drawing No. **STN-ZZ-000-DR-CI-440001**

Plotted: 4/5/2025 5:27:35 PM By: GILBERT, CHARLIE
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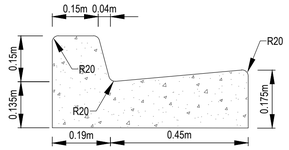
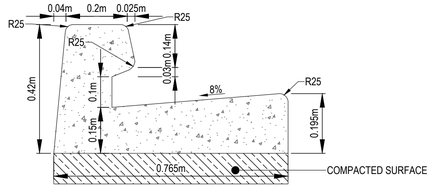
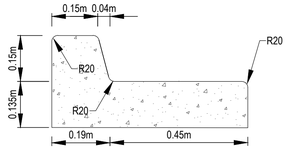


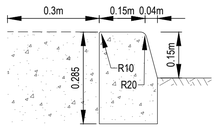
KERB AND GUTTER
(K&G)
(SCALE 1:10)



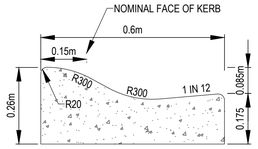
ELSHOLZ KERB AND GUTTER
(EKG)
(SCALE 1:10)



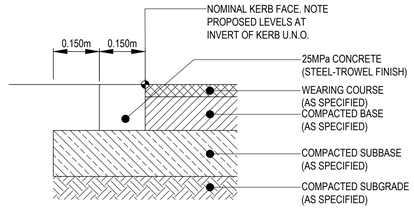
KERB AND GUTTER - NO GUTTER SLOPE
(K&G NGS)
(SCALE 1:10)



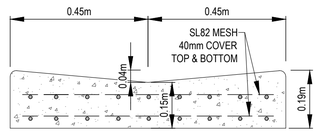
KERB ONLY
(KO)
(SCALE 1:10)



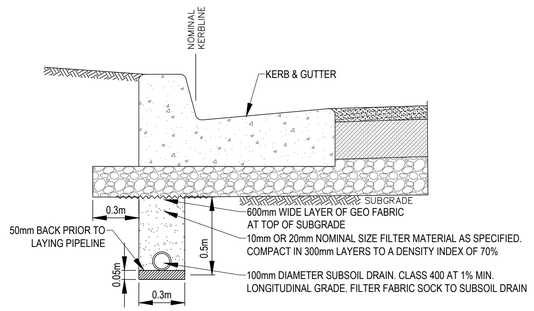
ROLL KERB
(RK)
(SCALE 1:10)



FLUSH KERB
(FK)
(SCALE 1:10)



DISH DRAIN
(DD)
(SCALE 1:10)



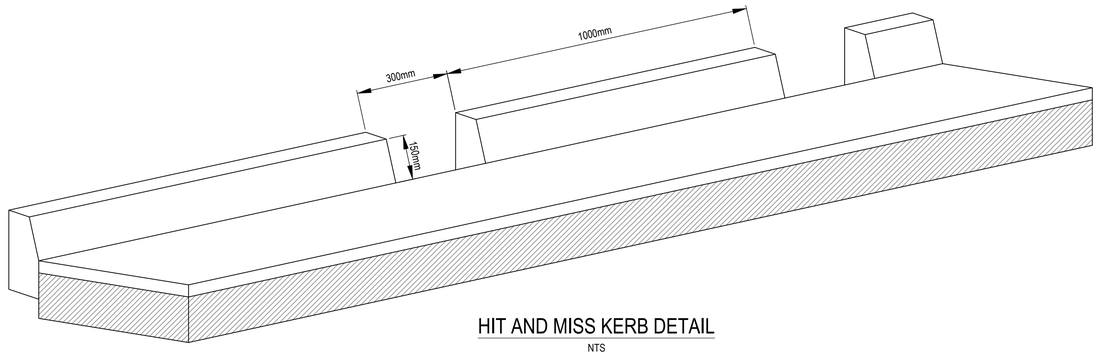
NOTE:
- SUBSOIL DRAINAGE IS REQUIRED BELOW ALL KERBS IF NO STORMWATER DRAINAGE LINE DIRECTLY BELOW
- SUBBASE & STABILISED LAYER TO EXTEND 300mm BEHIND BACK OF KERB

SUBSOIL DRAIN
TYPICAL SECTION
NTS

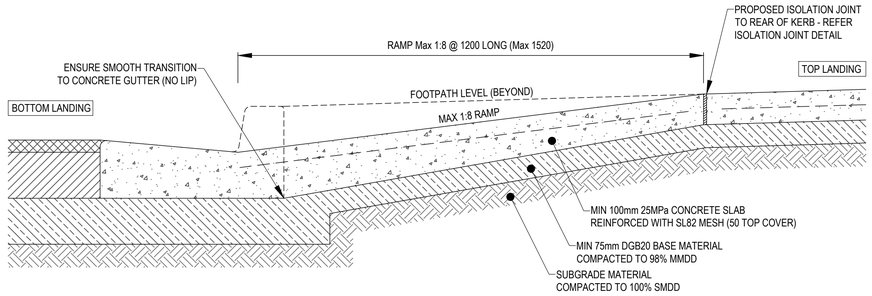
NOTES:
1. CONCRETE COMPRESSIVE STRENGTH (F'c) AT 28 DAYS, TO BE 25MPa FOR KERB & GUTTER AND DISH CROSSINGS
2. ROAD SUBBASE SHALL BE EXTENDED 300mm BEHIND BACK OF KERB WITH THE THICKNESS TO BE NOT LESS THAN THE ROAD PAVEMENT SUBBASE THICKNESS.
3. DIMENSIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
4. ALL EXPOSED EDGES TO BE ROUNDED TO 20mm RADIUS UNLESS NOTED OTHERWISE
5. SERVICE CONDUIT LOCATIONS SHALL BE MARKED ON KERB FACE WITH AN APPROVED TOOL OR AS OTHERWISE DIRECTED.

THESE DETAILS ARE TYPICAL ONLY - COUNCIL STANDARD DRAWINGS AND NOTES ARE TO TAKE PRECEDENCE

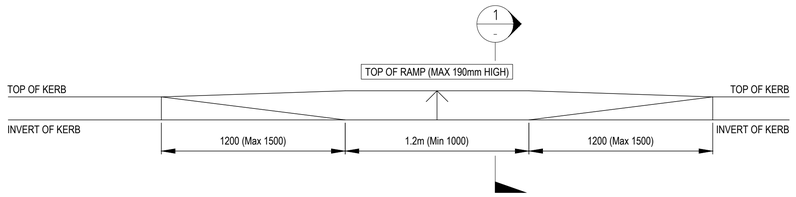
1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3



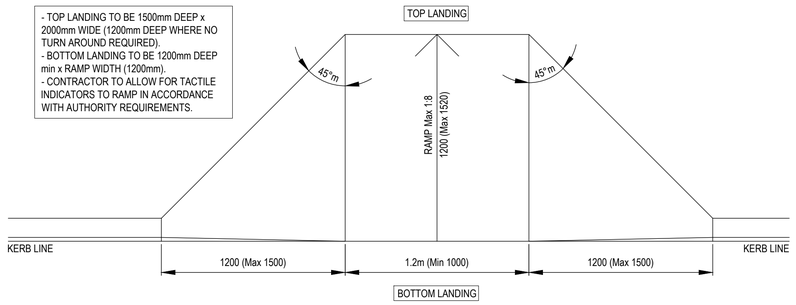
HIT AND MISS KERB DETAIL
NTS



SECTION 1
SCALE 1:20



ELEVATION



KERB RAMP PLAN
SCALE 1:20

Key Plan

A SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision	By	Appd	YYYY.MM.DD

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Client/Project Logo

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Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE,
NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 1

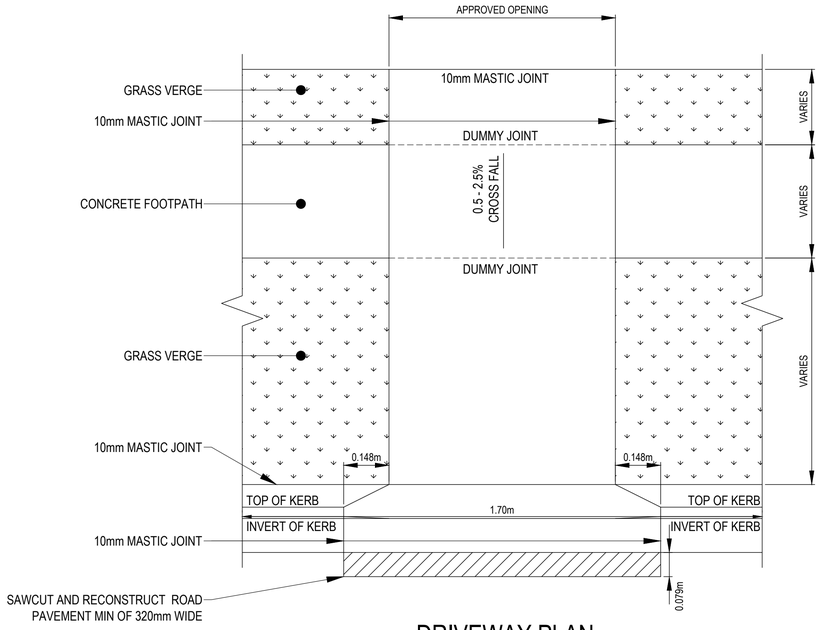
Project No.
301351698

Scale
AS SHOWN

Revision
A

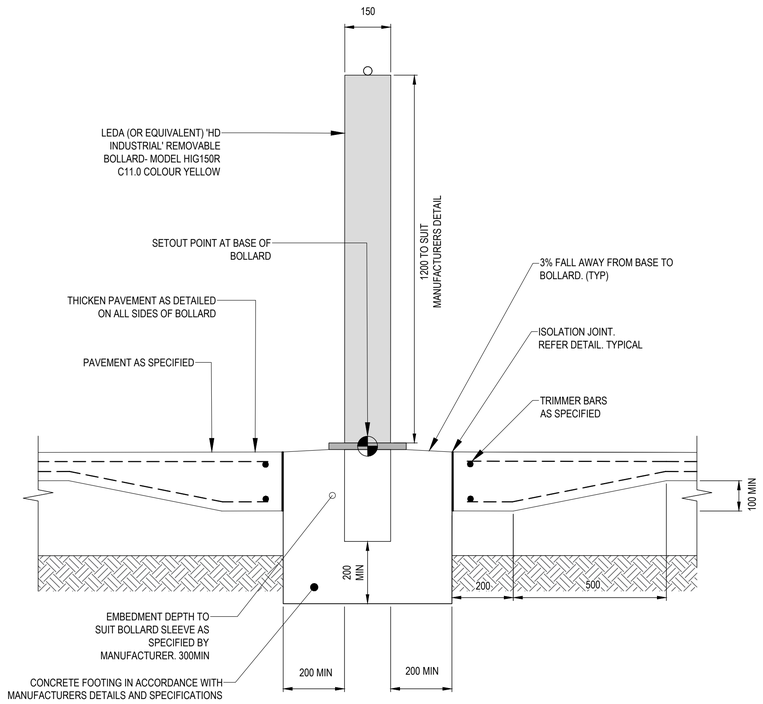
Drawing No.
STN-ZZ-000-DR-CI-446001

Plotted: 4/15/2025 3:00:37 PM By: GILBERT, CHARLIE
\\AU2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET
ORIGINAL SHEET - ANSI A1 CONFIG: GDA2020(MGA56) DATUM: AHD



DRIVEWAY PLAN

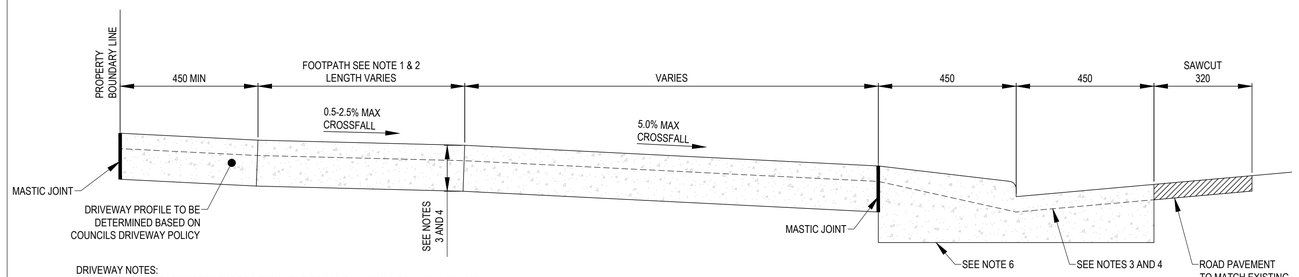
N.T.S



REMOVABLE STEEL BOLLARD 'TYPE B1' CONCRETE PAVEMENT

NTS

NOTE:
1. ALL ELEMENTS TO BE GALVANISED
2. CONTRACTOR TO CONFIRM SERVICES LOCATIONS ON SITE AND ENSURE BOLLARDS DO NOT CONFLICT WITH PROPOSED OR EXISTING SERVICES.
3. BOLLARD TO BE STRICTLY INSTALLED TO MANUFACTURERS DETAILS AND SPECIFICATIONS

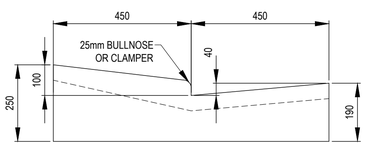


SECTION

SCALE 1:10

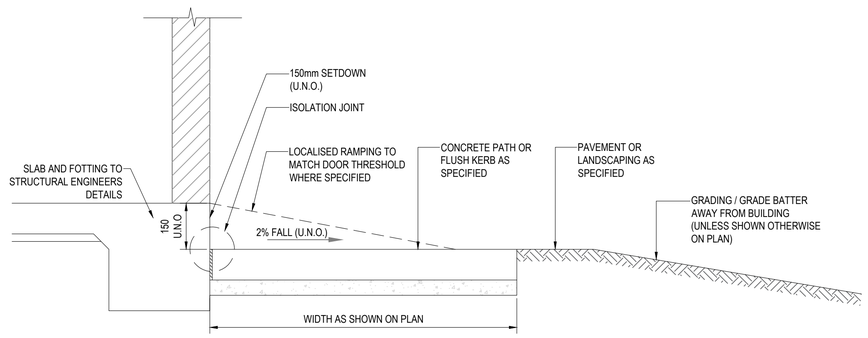
1

DRIVEWAY NOTES:
1. WHERE FOOTPATH MEETS THE DRIVEWAY, THE CROSS-FALL SHALL BE A MIN 0.5% AND MAX 2.5%, GRADED TOWARDS THE ROAD.
2. WHERE THE FOOTPATH MEETS THE DRIVEWAY, DUMMY JOINTS ARE TO BE PROVIDED. SAW CUT JOINTS WILL NOT BE ACCEPTABLE.
3. REDISDENTIAL DRIVEWAY - 110mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL62 MESH PLACED CENTRALLY AS PER SPECIFICATION.
4. INDUSTRIAL DRIVEWAY - 150mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL82 MESH PLACED CENTRALLY AS PER SPECIFICATION.
5. MATERIAL - DRIVEWAYS SHALL BE ALL CONSTRUCTED IN PLAIN CONCRETE. NO STENCILED, STAMPED, PATTERNED, COLOURED CONCRETE OR ANY OTHER TYPE OF COSMETIC FINISH IS PERMITTED.
6. EXISTING SUBBASE TO BE PROOF ROLLED WITH A SUITABLE ROLLER. AREAS WHICH SHOW VISIBLE HEAVE UNDER COMPACTION SHOULD BE OVER EXCAVATED FURTHER 300mm AND REPLACED WITH COMPACTED AND APPROVED FILL. BEDDING MATERIAL SHALL BE DGB20 (DENSELY GRADED BASE) 100mm LAYER COMPACTED TO 98%.
7. A MINIMUM 320mm WIDTH OF ASPHALT IN FRONT OF GUTTER IS TO BE REMOVED AND REPLACED WITH HOT MIX. APPLICANT CAN OBTAIN QUOTATION FROM COUNCIL.
8. ALL EXPOSED EDGES TO BE ROUNDED TO 10mm AND SURFACES BE BROOM FINISHED.
9. LAYBACK, GUTTER AND KERB SHALL BE STEEL TROWLED FINISHED.
10. IT IS THE RESPONSIBILITY OF THE OWNER TO ENGAGE THE SERVICES OF A QULAIFIED PROFESSIONAL TO DESIGN ALL DRIVEWAYS (INTERNAL AND EXTERNAL) IN ACCORDANCE WITH AS/NZS 2890.1 2004 OFF STREET CAR PARK STANDARDS.



LAYBACK DETAIL

SCALE 1:10



TYPICAL BUILDING PERIMETER/ SET DOWN

N.T.S

THESE DETAILS ARE TYPICAL ONLY - COUNCIL STANDARD DRAWINGS AND NOTES ARE TO TAKE PRECEDENCE

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			2025.04.11

Issue Status

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Client/Project
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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	2025.04.11 YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 2

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-446002

Plotted: 4/15/2025 3:01:18 PM By: GILBERT, CHARLIE
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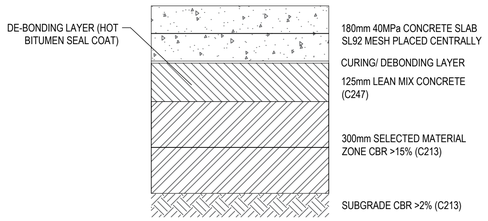
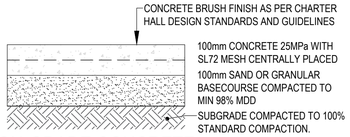
ORIGINAL SHEET - ISO A1 CONFIG - GDA2020JWGA56 DATUM - GDA2020

\\Au2012-ntap01_cifs.corp.ads\au2012_ntap01_cifs_proj\Shared_Projects\301351698\Project Documentation\Civil\Drawings & Design\Sheet Set\301351698-STN-ZZ-000-DR-CI-446001.dwg, 4/15/2025 3:00:58 PM, AutoCAD PDF (General Documentation).pc3



CONCRETE PAVEMENT HEAVY DUTY

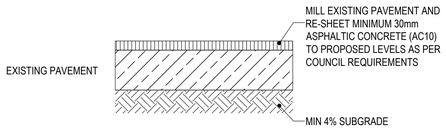
(SCALE 1:10)



ON-GRADE CONCRETE FOOTPATH DETAIL

(SCALE 1:10)

NOT FOR SUSPENDED SLABS OR STAIRS



MILL AND RE-SHEET ASPHALT DETAIL

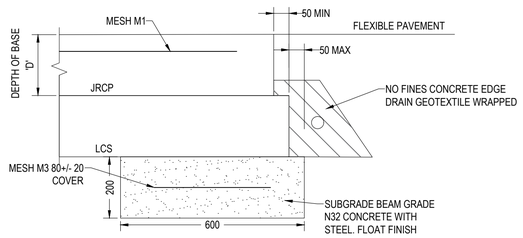
(SCALE 1:10)

MATERIAL	RELATIVE DENSITY	COMPACTIVE EFFORT
BASE COURSE	100%	MODIFIED
SUB-BASE COURSE	98%	MODIFIED
SUBGRADE	98%	STANDARD

THE PAVEMENT DESIGN ASSUMES THE SUBGRADE AND PAVEMENT MATERIALS TO BE COMPACTED TO THE FOLLOWING MINIMUM DRY DENSITY RATIO (AS1289 5.1.1, 5.2.1) ;

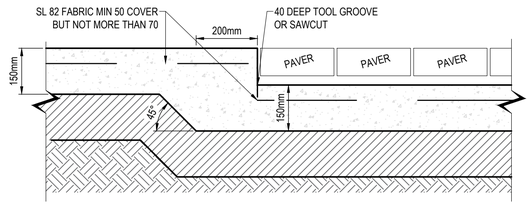
NOTES:

1. APPLY CONTROLLED TRAFFIC ON PRIMERSEAL FOR 2-4 WEEKS BEFORE PLACEMENT OF AC10 SURFACING COURSE.
2. PLACE FILLING APPROVED BY THE GEOTECHNICAL CONSULTANT (WHERE REQUIRED TO ACHIEVE DESIGN SUBGRADE LEVEL) IN MAXIMUM 250 mm THICK COMPACTED LAYERS TO AT LEAST 98% OF STANDARD MAXIMUM DRY DENSITY (SMDD) AND TO AT LEAST 100% SMDD IN PAVEMENT AREAS, WITH MOISTURE CONTENTS MAINTAINED WITHIN 2% OF STANDARD OPTIMUM MOISTURE CONTENT AS MEASURED IN THE STANDARD COMPACTION TEST.
3. REFER TO THE REPORTS PREPARED BY GEOTECHNICAL ENGINEER FOR FURTHER GEOTECHNICAL AND CONTAMINATION INFORMATION.



INTERFACE DETAIL: CONCRETE TO FLEXIBLE PAVEMENT

(SCALE 1:10)



PAVER STEP DETAIL

(SCALE 1:10)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision		By	Appd	YYYY.MM.DD

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AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-446003

Plotted: 4/15/2025 5:37:08 PM By: GILBERT, CHARLIE
I:\AU\2012\NEAP_CPS.COMP.ADS\AU2012_NEAP01_CPS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

STORMWATER OUTFALL
PROPOSED CONNECTION TO DISCHARGE TO EXISTING STORMWATER PIT. EXISTING INVERT LEVELS AND EXACT LOCATION TO BE CONFIRMED BY FURTHER SURVEY

ON-SITE DETENTION BASIN
PROPOSED CELLULAR DETENTION TANK TO PROVIDE TEMPORARY STORAGE TO RESTRICTED DISCHARGE OF STORMWATER RUNOFF.
VOLUME: 126m³
DEPTH: 1.8m
STORMFILTER CARTRIDGES: 4.NO 690mm PSORB STORMFILTER

INDICATIVE RAINWATER TANK TO HYDRAULICS ENGINEERS DESIGN

POCKLEY AVENUE

MACLAURIN PARADE

LARKIN STREET

EXISTING FOOTPATH

LEVEL 06 LIFT LOBBY RL 97200

LEVEL 04 LIFT LOBBY RL 97200

LEVEL 02 LIFT LOBBY RL 97200

EXISTING DRIVEWAY

PROPOSED DRIVEWAY

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

LEGEND

- SITE BOUNDARY
- BUILDING BASEMENT EXTENT
- BUILDING ROOF EXTENT
- PROPOSED BUILDING
- RW — PROPOSED RETAINING WALL
- DN375 / DP — PROPOSED STORMWATER PIPE
- SSD — PROPOSED SUBSOIL DRAINAGE
- PROPOSED GRATED DRAIN
- ON SITE DETENTION (OSD) TANK
- RAINWATER TANK (SIZE AND QUANTITY TO BE CONFIRMED BY HYDRAULIC ENGINEER)
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- B.2 — PIT TAG
- FLOW — OVERLAND FLOW PATH
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

Key Plan

B SSDA ISSUE	NO	AT	2025.04.15
A PRELIMINARY ISSUE	MK	AT	2025.02.14
Issued/Revision	By	Appd	YYYY.MM.DD

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File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-520001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-520001

Plotted: 4/15/2025 3:55:39 PM By: GILBERT, CHARLIE
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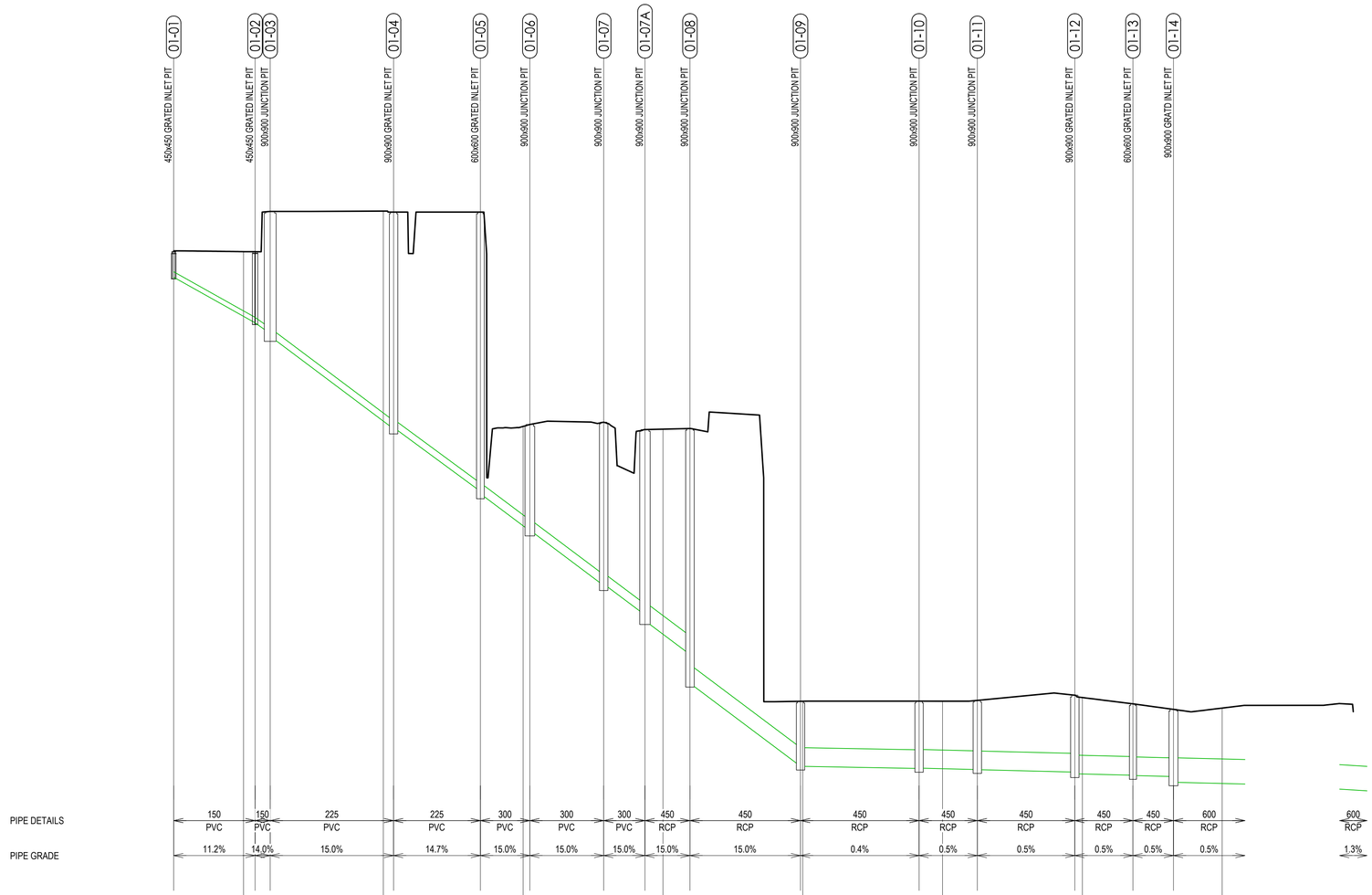
01-01
450x450 GRATED INLET PIT
01-02
450x450 GRATED INLET PIT
01-03
900x600 JUNCTION PIT
01-04
900x900 GRATED INLET PIT
01-05
600x600 GRATED INLET PIT
01-06
900x600 JUNCTION PIT
01-07
900x900 JUNCTION PIT
01-07A
900x600 JUNCTION PIT
01-08
900x600 JUNCTION PIT
01-09
900x600 JUNCTION PIT
01-10
900x600 JUNCTION PIT
01-11
900x600 JUNCTION PIT
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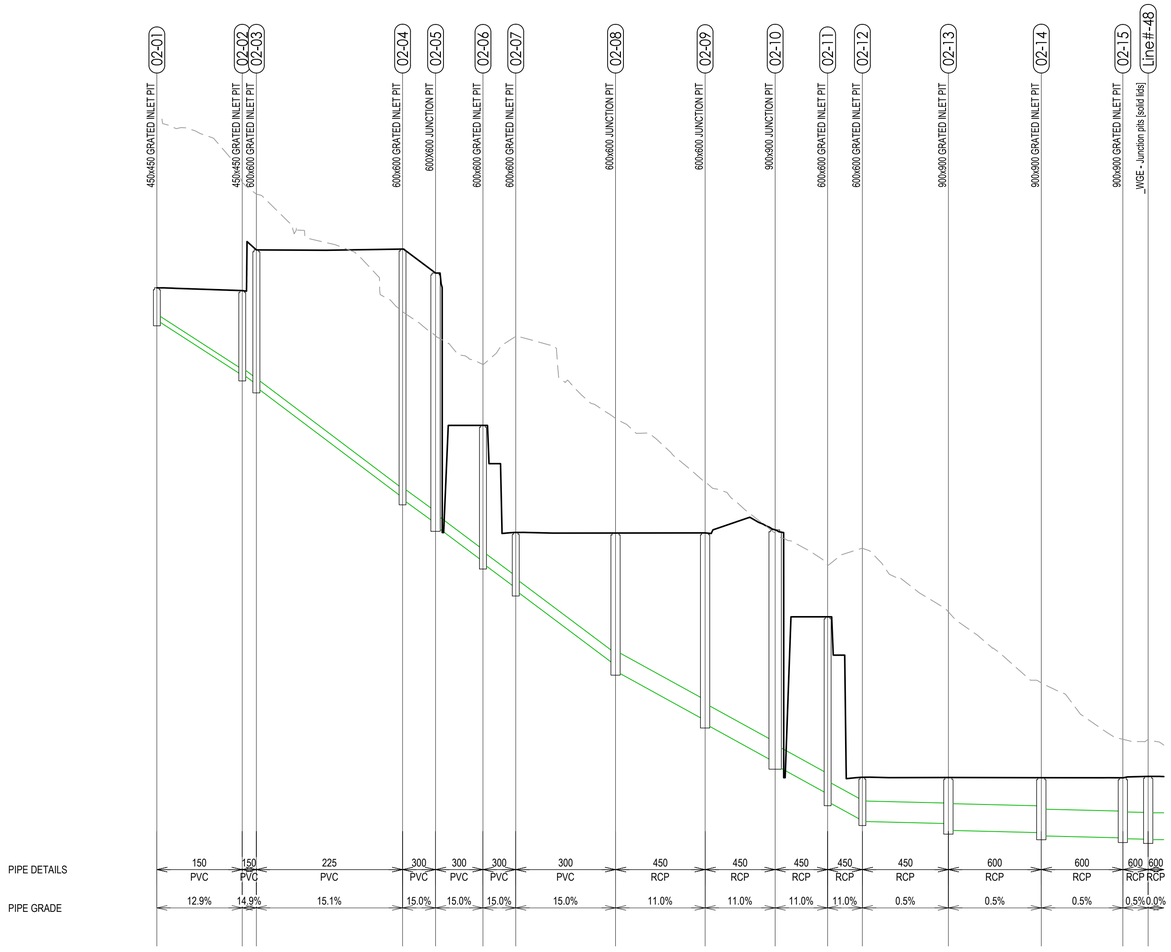
01-13
600x600 GRATED INLET PIT
01-14
900x900 GRATD INLET PIT

| | | |



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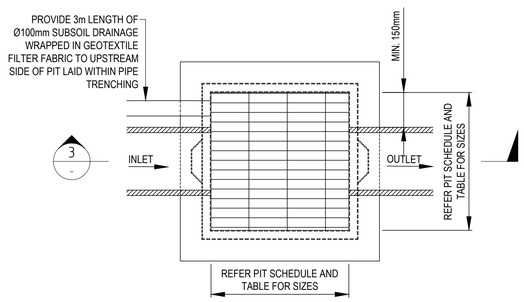
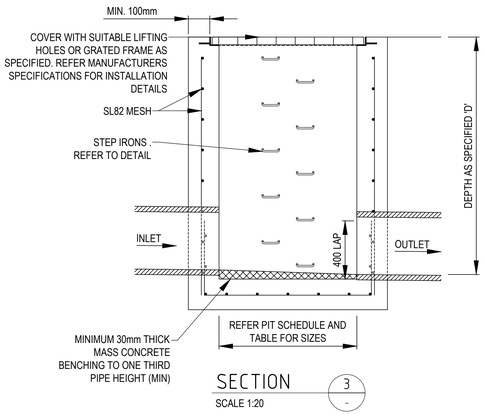




SECTION 3
SCALE 1:20

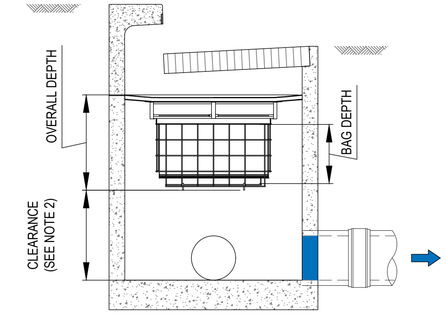
INTERNAL PIT DIMENSIONS (MIN.)		
'D'	'X'	'Y'
D < 600	450	450*
600 < D < 900	600	600*
900 < D < 1200	600	900
D > 1200	900	900

NOTE: PITS DENOTED *SHALL BE USED ONLY WHERE SPECIFIED IN DRAINAGE SCHEDULE OR ON PLAN

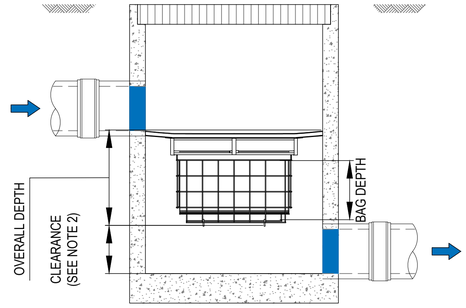
PITS TO BE:
- MIN 150mm THICK WALLS AND BASE U.N.O
- f'c = 32MPa
- MIN 45mm COVER
- FOUNDED ON STIFF NATURAL MATERIAL ON MIN 100kPa
- HAVE SUBSOIL DRAINAGE LINE
- INLET AND OUTLET LINES TO HAVE MIN 2N12 TRIMMER BARS CROSSING OVER AT EACH OPENING

PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

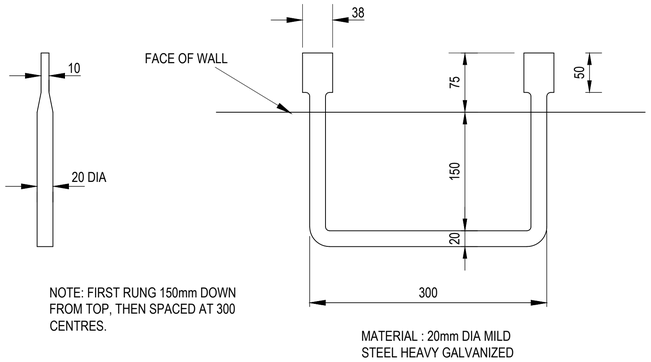
SURFACE INLET/JUNCTION PIT PLAN
SCALE 1:20



PIT FILTER BASKET
SURFACE FLOW CONFIGURATION
SCALE 1:20



PIT FILTER BASKET
PIPE FLOW CONFIGURATION
SCALE 1:20



NOTE: FIRST RUNG 150mm DOWN FROM TOP, THEN SPACED AT 300 CENTRES.

MATERIAL : 20mm DIA MILD STEEL HEAVY GALVANIZED

STEP IRONS DETAIL
N.T.S.

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan

A SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision	By	Appd	YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET - 1

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526001

Plotted: 4/15/2025 10:48:12 AM By: GILBERT, CHARLIE
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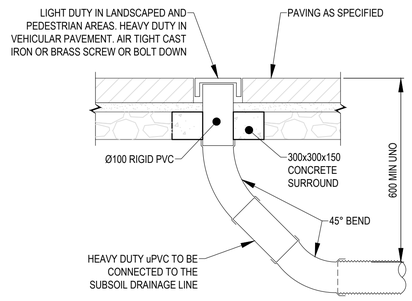
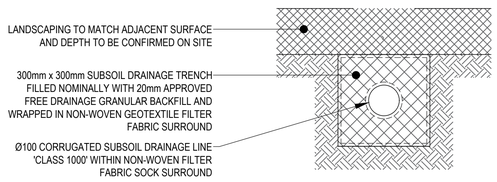


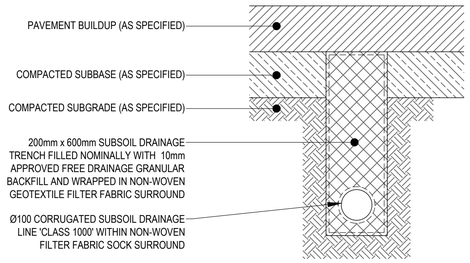
FLUSH OUT RISER IN PAVED AREAS

(SCALE 1:10)



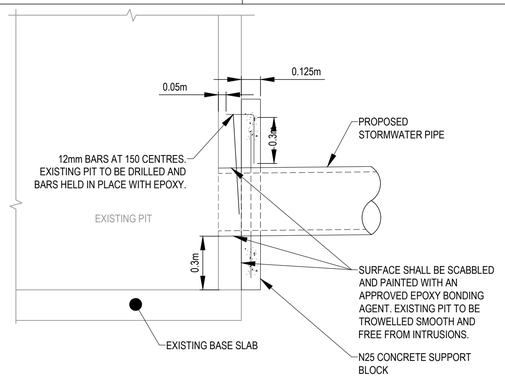
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER LANDSCAPE AREAS

(SCALE 1:10)



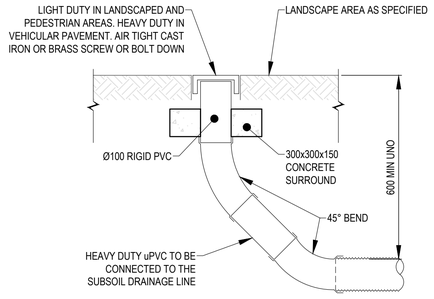
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER PAVEMENT BUILTUP

(SCALE 1:10)



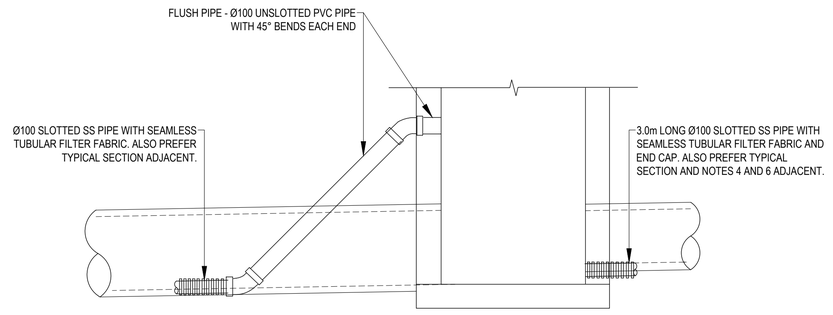
SECTION 1

SCALE 1:20



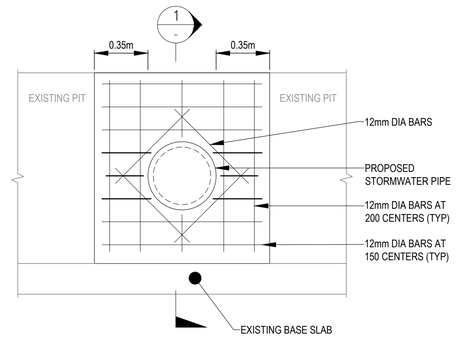
FLUSH OUT RISER IN LANDSCAPED AREAS

(SCALE 1:10)



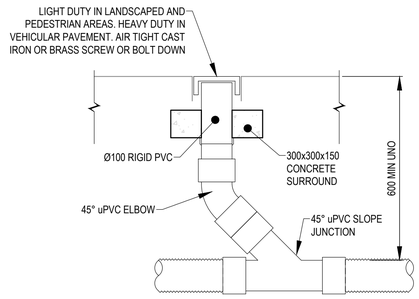
SUBSOIL DRAINAGE CONNECTION INTO STORMWATER PIT

NTS



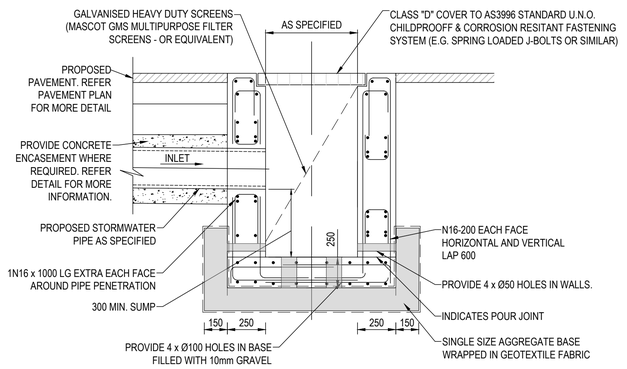
STORMWATER PIPE CONNECTION INTO EXISTING PIT

SCALE 1:20



INTERMEDIATE FLUSH OUT RISER

(SCALE 1:10)



SILT ARRESTOR PIT DETAIL

(NOT TO SCALE)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1

1:40 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	2025.04.11 YYYY.MM.DD

Issued/Revision

Issue Status

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CH-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS
SHEET - 2

Project No. 301351698

Scale AS SHOWN

Revision A

Drawing No. **STN-ZZ-000-DR-CI-526002**

Plotted: 4/15/2025 10:48:55 AM By: GILBERT, CHARLIE
\\AU2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - AHD

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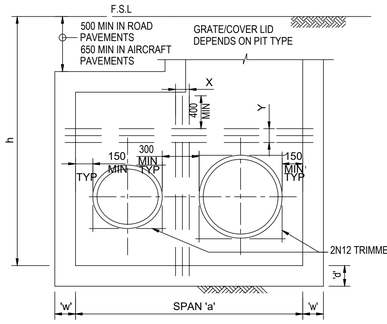
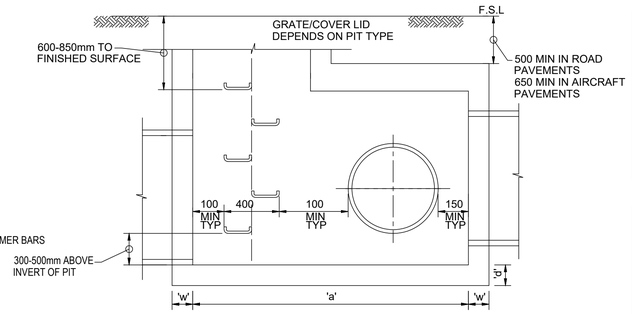


GENERAL ARRANGEMENT WHERE MULTIPLE PIPES PENETRATE PIT WALL

N.T.S

X = ADD HORIZONTAL BARS

Y = ADD VERTICAL BARS



GENERAL STEP IRON LOCATION SECTION

2 – N.T.S

PIT DIMENSION AND REINFORCEMENT TABLE (MULTIPLE PIPE PENETRATIONS)

SPAN 'a'(m)	'h' (m)	'w' (mm)	X	Y	'd' (mm)	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
< 1.5	2.0	150	2N16	2N16	150	N12@200	N12@200	N12@200
1.5-2	2.0	200	2N16	3N16	200	N12@200	N12@200	N12@200
2-2.5	2.5	230	3N20	3N20	230	N16@200	N16@200	N12@200
2.5-3	2.5	230	3N20	3N20	230	N16@200	N16@200	N16@200
3-3.5	3.5	250	4N20	4N20	250	N16@200	N16@200	N16@200

PIT DIMENSION AND REINFORCEMENT TABLE (SINGLE PIPE PENETRATIONS)

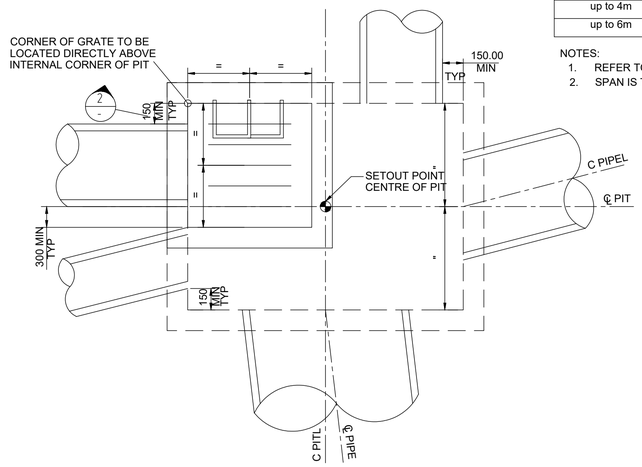
FOR SPAN 'a' <= 1.5m

DEPTH 'h'	BASE THICKNESS 'd'	WALL THICKNESS 'w'	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
up to 2m	150	150	N12@200	N12@200	N12@200
up to 4m	200	175	N12@200	N12@200	N12@200
up to 6m	200	200	N12@200	N12@200	N12@200

FOR SPAN 'a' 1.5 TO 2.5m

DEPTH 'h'	BASE THICKNESS 'd'	WALL THICKNESS 'w'	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
up to 2m	150	200	N12@200	N12@200	N12@200
up to 4m	200	200	N16@200	N16@200	N16@200
up to 6m	230	230	N16@200	N16@200	N16@200

NOTES:
1. REFER TO SITEWORKS AND GRADING PLANS
2. SPAN IS THE GREATER OF THE SPANS BETWEEN INTERNAL FACES OF PIT WALLS FOR BOTH SPAN DIRECTIONS



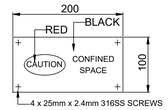
SURFACE INLET/JUNCTION PIT AND PIPE ARRANGEMENT

N.T.S

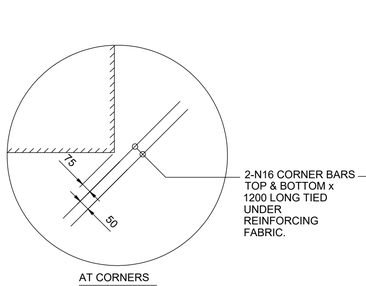
SPAN 'a' DRAINAGE CONDUIT PROJECTION IS DEPENDENT UPON INCOMING PIPE ANGLE AND ORIENTATION

MINIMUM INTERNAL PIT DIMENSIONS		
'd'	"X"	"Y"
D⩽600	450	450*
D⩽900	600	600*
D⩽1200	600	900
D⩾1200	900	900

NOTE:
1. BACKFILL TO ALL DRAINAGE STRUCTURES SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.
2. ALL GRATES IN PATHWAYS AND COURTYARDS SHALL BE HEELGUARD ANTISLIP OR APPROVED EQUIVALENT (TYPICAL) U.N.O.
3. THE CIVIL TRADE SUB CONTRACTOR SHALL CO-ORDINATE THE FINISHED LEVEL AND MATCH PAVEMENT GRADE AND CROSS FALLS OF ALL SERVICE PITS, MANHOLES, VALVES, ETC WITH THE LANDSCAPE DRAWINGS TO CONFIRM EXACT LEVEL OF ALL SERVICE FEATURES.



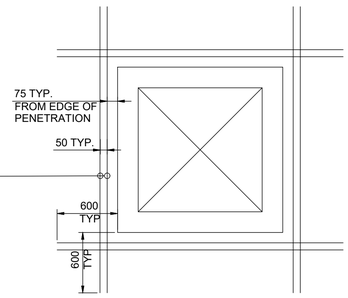
CONFINED SPACES SIGN



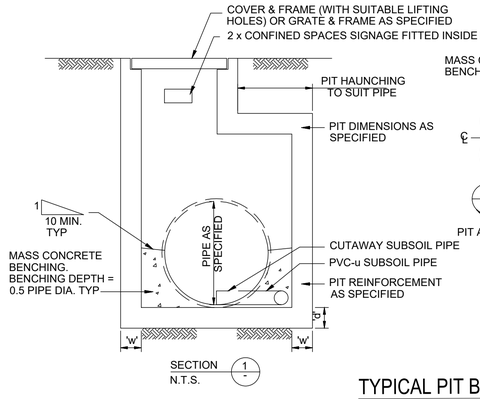
TYPICAL TRIMMER BAR DETAIL

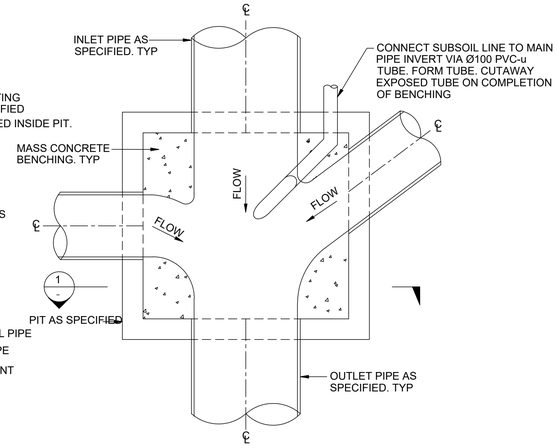
N.T.S

1. TRIMMER BARS TO BE CONSTRUCTED AT ALL PENETRATIONS IN VEHICULAR CONCRETE PAVEMENTS INCLUDING BUT NOT LIMITED TO:
   1.1. ALL SERVICE PITS, DRAINAGE STRUCTURES, VALVE BOXES, BOLLARDS, PROTRUDING CORNERS OF STRUCTURES OR SLABS, AND COLUMNS PENETRATING CONCRETE PAVEMENT
2. CONSTRUCT 2-N16 TRIMMER BARS (1200LONG, TOP AND BOTTOM) AT ALL MISMATCHED OR DISCONTINUOUS JOINTS.



AT PITS, BOXES AND OTHER PENETRATIONS





TYPICAL PIT BENCHING DETAIL

N.T.S

NOTE: BENCHING CONCRETE CLASS D AS PER CIVIL SPECIFICATION

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1

1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision		By	Appd	YYYY.MM.DD

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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS SHEET - 3

Project No. 301351698

Scale AS SHOWN

Revision A

Drawing No. **STN-ZZ-000-DR-CI-526003**

Plotted: 4/15/2025 10:48:47 AM, By: GILBERT, CHARLIE
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ORIGINAL SHEET - ISO A1 COLOUR - CGA2200VMGA56 DATUM - MAHD

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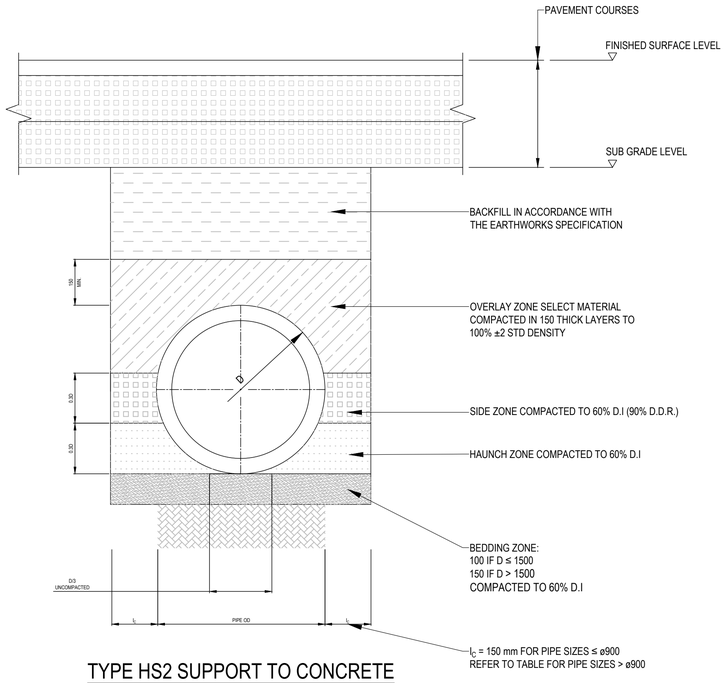
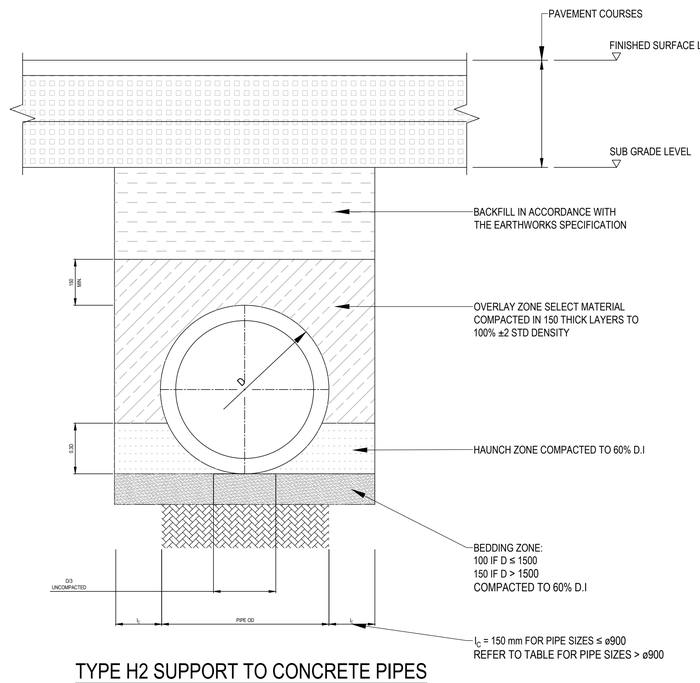


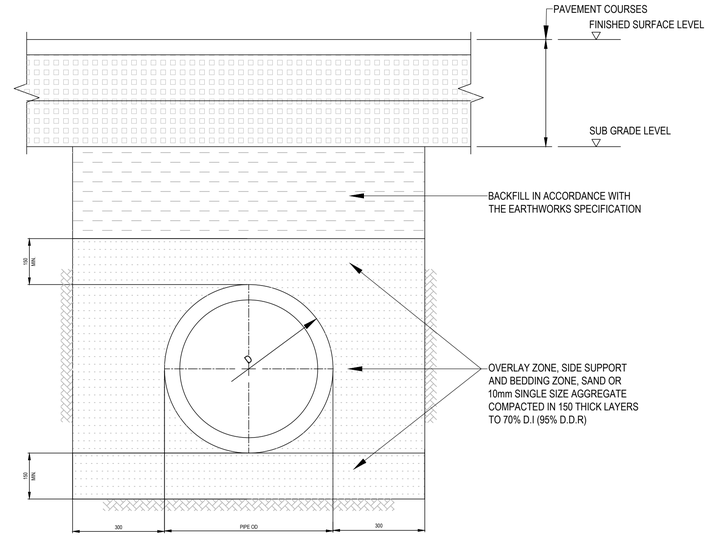
TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (VEHICULAR)

SCALE 1:10



TYPE H2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (NON-VEHICULAR)

SCALE 1:10



FLEXIBLE PIPES UNDER PAVEMENTS

SCALE 1:20

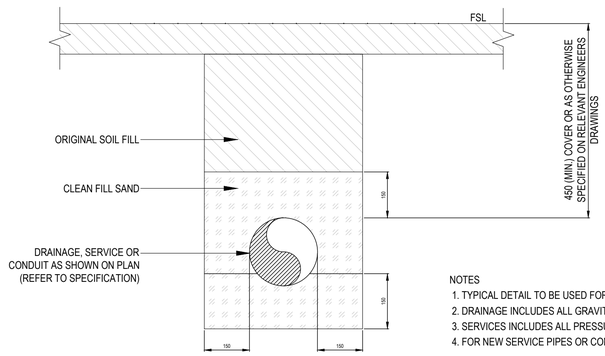
BEDDING & HAUNCH MATERIAL GRADING (TABLE 6 AS/NZS 3725)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SAND GRADING (TABLE G3 AS 2566.2)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
4.75	100 TO 90
2.36	90 TO 100
1.18	85 TO 100
0.60	70 TO 100
0.30	50 TO 100
0.15	0 TO 40
0.075	0 TO 5

SIDE ZONE WIDTH	
PIPE SIZE (mm)	l_C (mm)
≤ ø900	150
ø1050	175
ø1200	200
ø1350	225
ø1500	250
ø1650	275
ø1800	300

10mm SINGLE-SIZE AGGREGATE GRADING (TABLE G2 AS 2566.2)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
13.20	100
9.50	85 TO 100
4.75	0 TO 20
2.36	0 TO 5
0.075	0 TO 2

SIDE ZONE MATERIAL GRADING (TABLE 7 AS/NZS 3725)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
9.50	100 TO 50
2.60	100 TO 30
0.60	50 TO 15
0.075	25 TO 0



NOTES
1. TYPICAL DETAIL TO BE USED FOR ALL DRAINAGE SERVICES RUNNING UNDER LANDSCAPE
2. DRAINAGE INCLUDES ALL GRAVITY SERVICES (INCLUDES CONCRETE AND PLASTIC PIPES)
3. SERVICES INCLUDES ALL PRESSURE PIPES
4. FOR NEW SERVICE PIPES OR CONDUITS, REFER TO PLANS FOR SIZES AND LOCATIONS

BACKFILL TO DRAINAGE, SERVICES AND CONDUITS IN LANDSCAPE AREAS (TYP.)

SCALE: NTS

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
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File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526003

Plotted: 4/15/2025 10:47:09 AM By: GILBERT, CHARLIE
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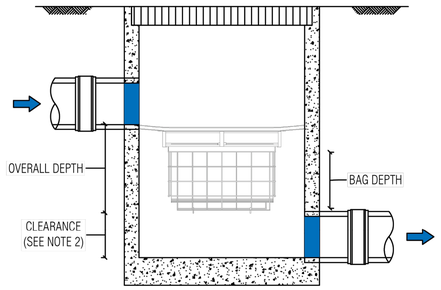
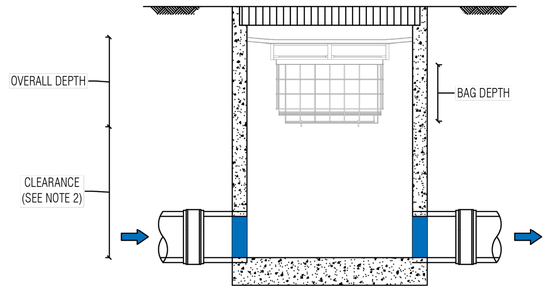
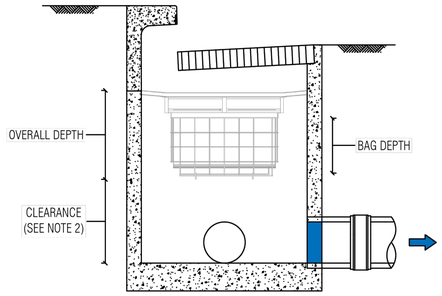


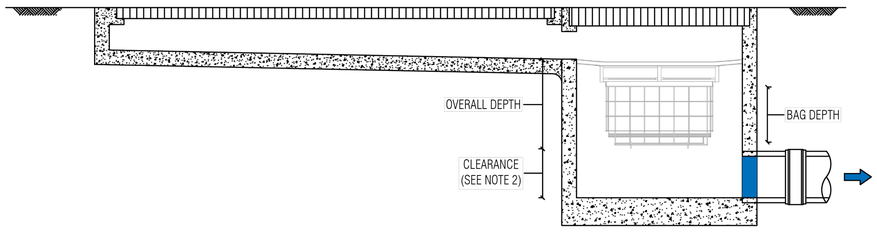
PIPE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



GRATED STRIP DRAIN CONFIGURATION

LAST MODIFIED: 15-10-19

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

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

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

GENERAL NOTES

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

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OCEAN PROTECT
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TYPCIAL ARRANGEMENTS
SPECIFICATION DRAWING

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			2025.04.15

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POCKLEY AVENUE, ROSEVILLE,
NSW, AUSTRALIA 2069

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301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
				2025.04.15

Title
STORMWATER DRAINAGE DETAILS
SHEET 5

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526005

Plotted: 4/15/2025 5:00:44 PM By: GILBERT, CHARLIE
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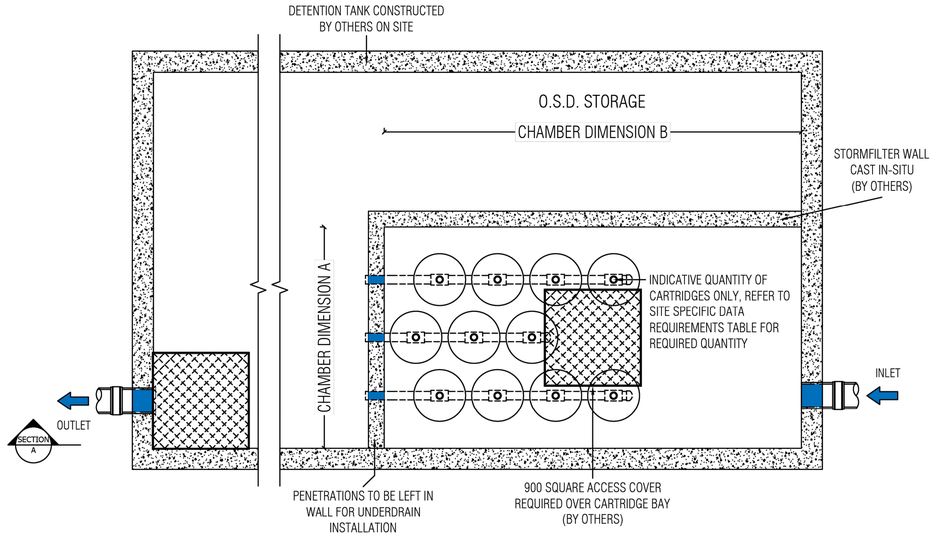
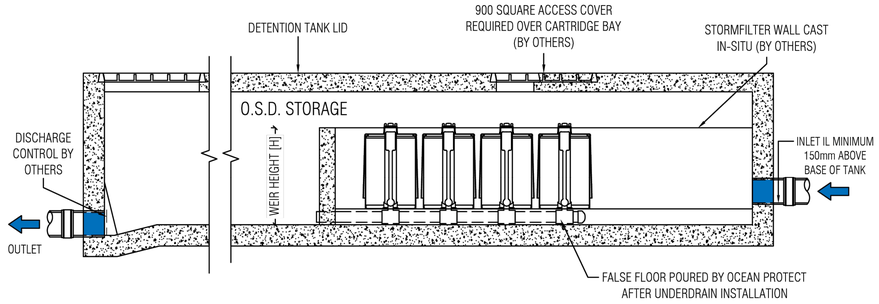
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

CONSTRUCTION



PLAN LAYOUT

NOT FOR



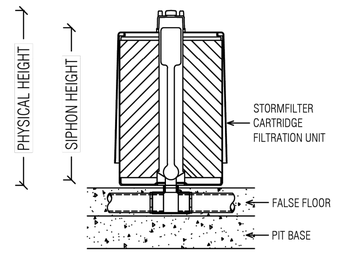
SECTION A

LAST MODIFIED: 07-03-19

STORMFILTER DESIGN TABLE

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

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [**H**] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39



STORMFILTER CARTRIDGE DETAIL

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	[ ]
NUMBER OF CARTRIDGES REQ'D	[ ]
SIPHON HEIGHT (310 / 460 / 690)	[ ]
MEDIA TYPE (ZPG / PSORB)	[ ]
WATER QUALITY FLOW RATE (L/S)	[ ]
DIMENSION A	[ ]
DIMENSION B	[ ]

TOTAL CARTRIDGE BAY AREA (A x B) TO MATCH AREA REQUIRED BY MUSIC MODELLING OR COUNCIL SPECIFIC REQUIREMENTS

GENERAL NOTES

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

INSTALLATION NOTES

1. UNDERDRAIN AND FALSE FLOOR INSTALLED BY OCEAN PROTECT.

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

OCEAN PROTECT
STORMFILTER SYSTEM
DETENTION TANK ARRANGEMENT
SPECIFICATION DRAWING

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	2025.04.15
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			

Issue Status

PRELIMINARY

NOT FOR CONSTRUCTION

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Notes

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Stantec Australia Pty. Ltd.
Level 9, The Forum
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St Leonards, NSW 2065
Tel: +61 2 9496 7700

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Client/Project Logo

AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET 6

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526006

Plotted: 4/5/2025 9:13:35 PM By: GILBERT, CAMILLE
\\AU021Z-FAVP01_CIFS_COMP.ADS\AU021Z_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & ISSUES\SHEET SET
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

Appendix B Flood Risk Management Report

Kozarovski and Partners
14/52-54 Kingsway
Cronulla 2230
0412 997767
pavelk@optusnet.com.au
Date: 28 February 2025

Flood Risk Management Report for proposed development at No. 2 to 16 Pockley Avenue Roseville

Summary

The location of the site is shown on Figure 1. It is proposed to develop the site and construct a multi-level apartment complex with basement parking. The layout of the proposed Level 4 floor plan is shown on Figure 2 and a section through the development is shown on Figure 3.

It is necessary to conduct a flood study to determine the flood behavior for existing conditions and its impact on the proposed development and vice versa, the impact of the proposed development on flood behavior.

A detailed hydraulic model was established for the entire catchment and the resulting 1% AEP flood and Probable Maximum Flood maps are shown on Figures 4 and 5 respectively.

The development site is slightly affected by the 1% AEP flood at the North-Western corner, however the footprint of the development is not affected at all. It would be necessary to physically protect the North-Western corner of the site from the PMF plus say 200 mm freeboard to eliminate any risk of flooding during the maximum possible flood.

The driveway hump at the entrance to the basement carpark would has to be also raised to RL 85.2m AHD to eliminate any risk of basement inundation.

The Probable Maximum Precipitation is much larger than the anticipated increase in rainfall intensity of 19% due to climate change. The flood resulting from PMP was adopted to determine the flood protection for the site to remain on a conservative side.

Figure 1 Site location

The details of the hydraulic modelling and the applicable flood controls are described in the following text, the emergency flood response plan is given in Appendix A and the relevant flood maps are presented in Appendix B.

Figure 2, Proposed Level 4, Note: Floor Level 1 at RL 81.2m, L2 @ RL 84.4m, L3 @RL 87.6m, L4 @ RL 90.8m, driveway hump level at RL 84.255m AHD

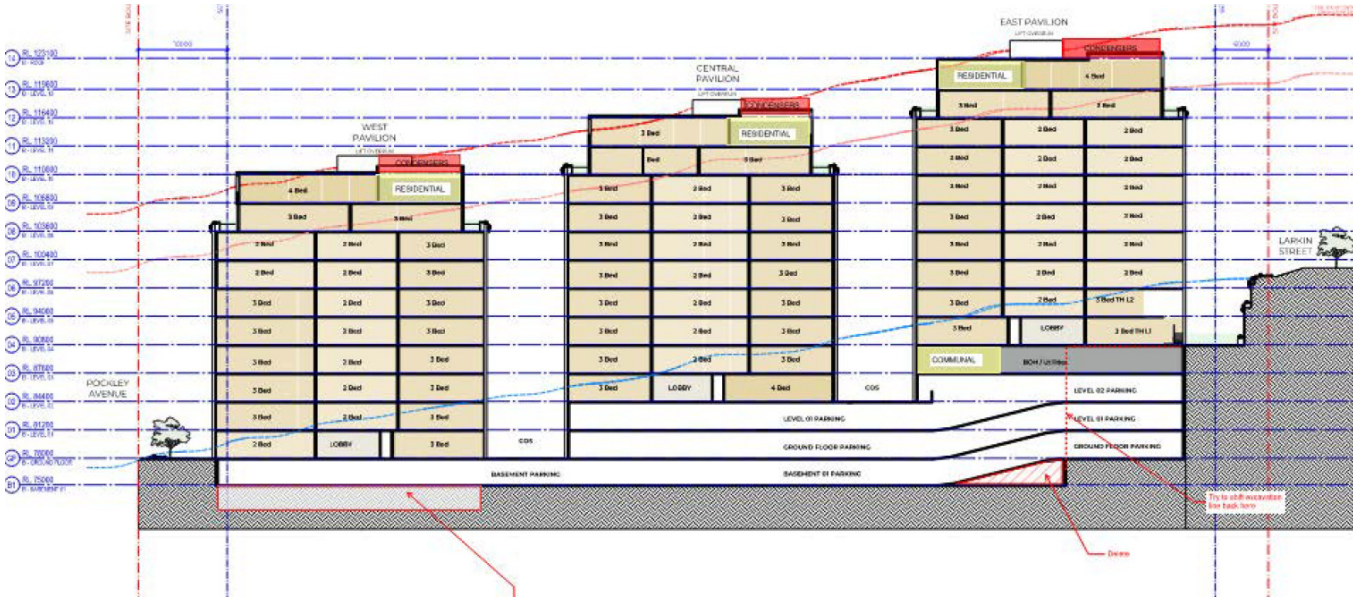


Figure 3, Section

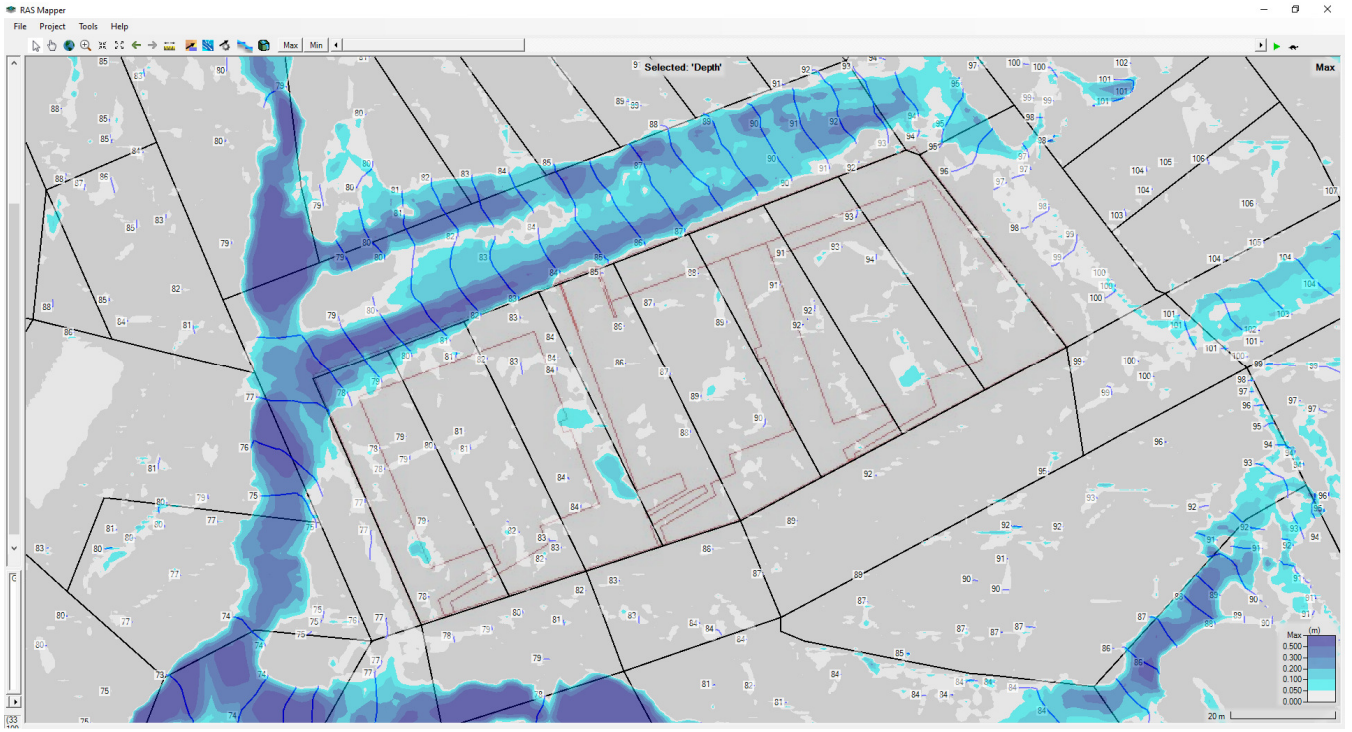


Figure 4, 1%AEP Flood Map

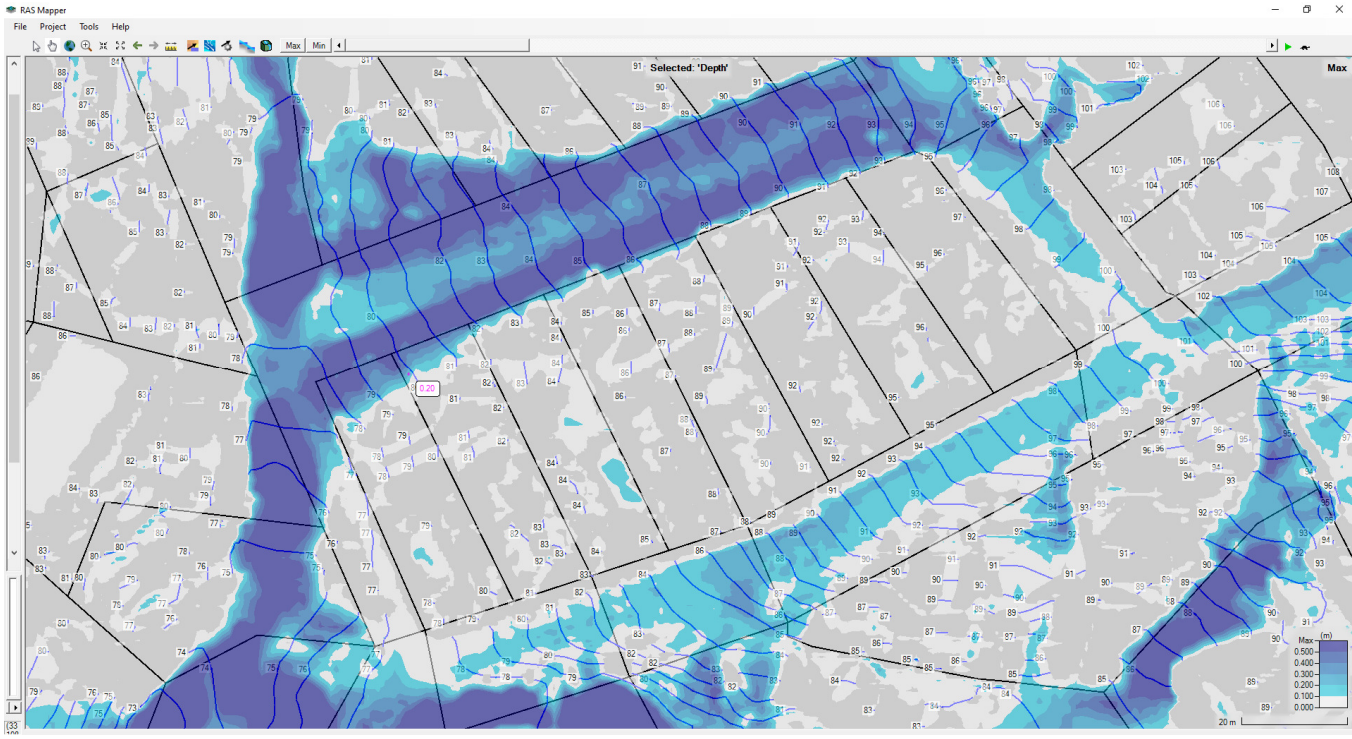


Figure 5, Probable Maximum Flood Map

Hydraulic Modelling

A flood study was prepared using a rainfall on grid approach. The design rainfall is directly applied to the entire catchment area and the flood behavior is modelled using a detailed hydraulic model based on HEC-RAS software. The design rainfall was determined in accordance with the recommendations in ARR 2019 assuming no rainfall losses to remain on a conservative side.

The hydraulic model was configured from the downloaded LIDAR data using 1x1m cells. Manning's n value of 0.05 was applied to the residential lots and 0.025 to the land dedicated to roads (cadastral

information). The catchment domain is shown on Figure 6, while the resulting Probable Maximum Food map for the entire catchment is shown on Figure 7.

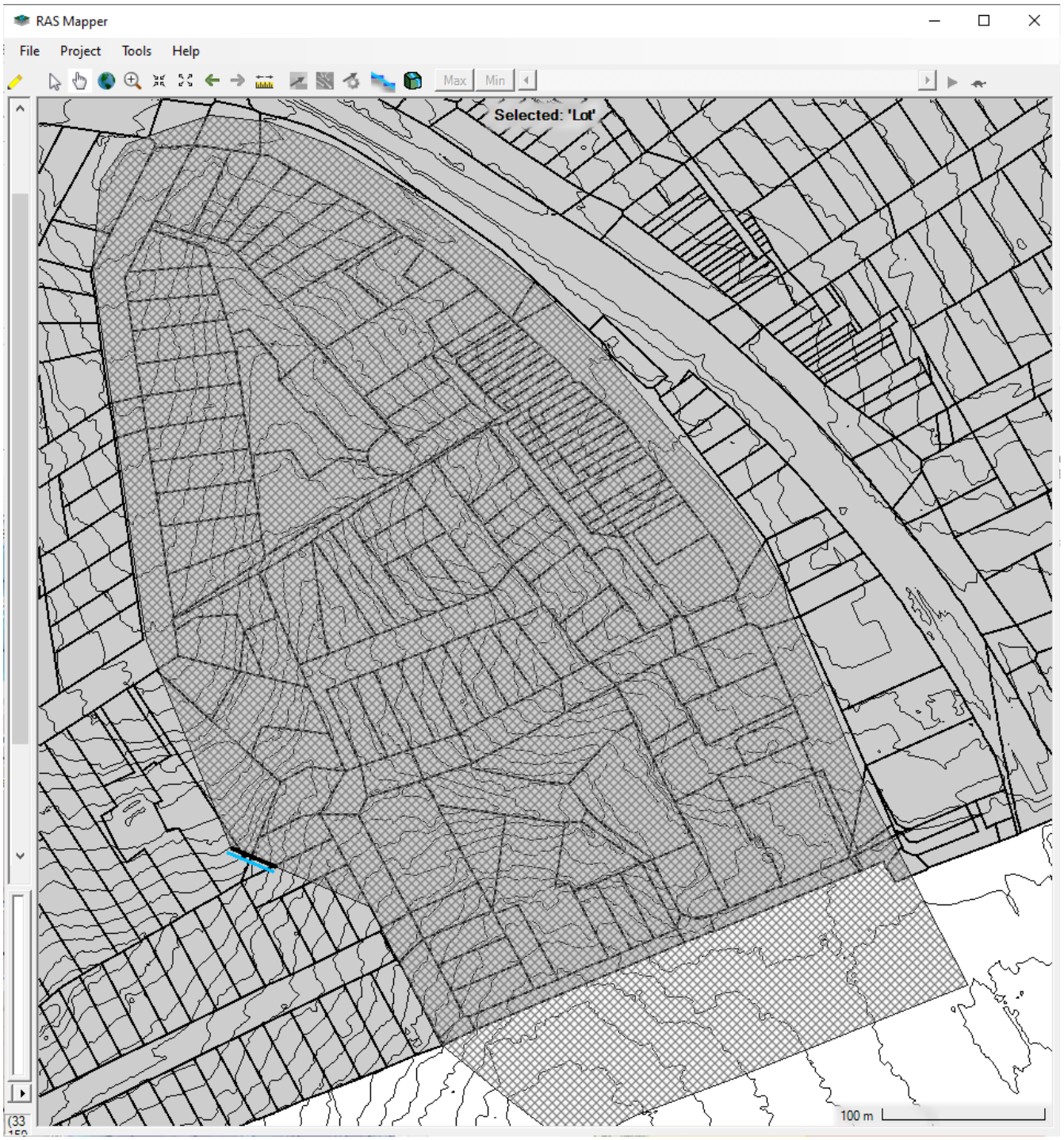


Figure 6, 2D domain

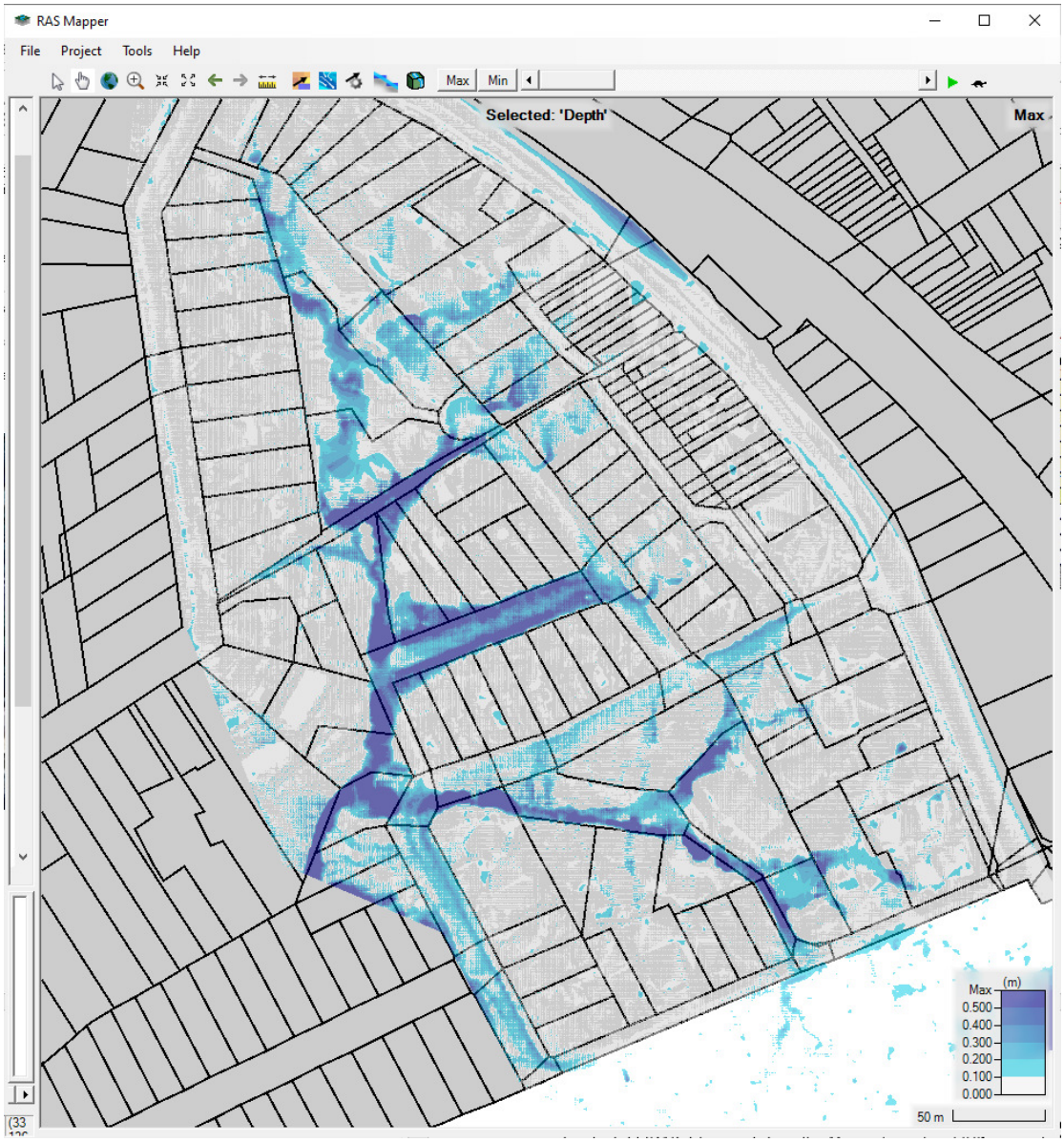


Figure 7, PMF, rainfall on grid

The various flood maps are shown in Appendix B. The flood hazard categories were determined in accordance with the diagram shown on Figure 8.

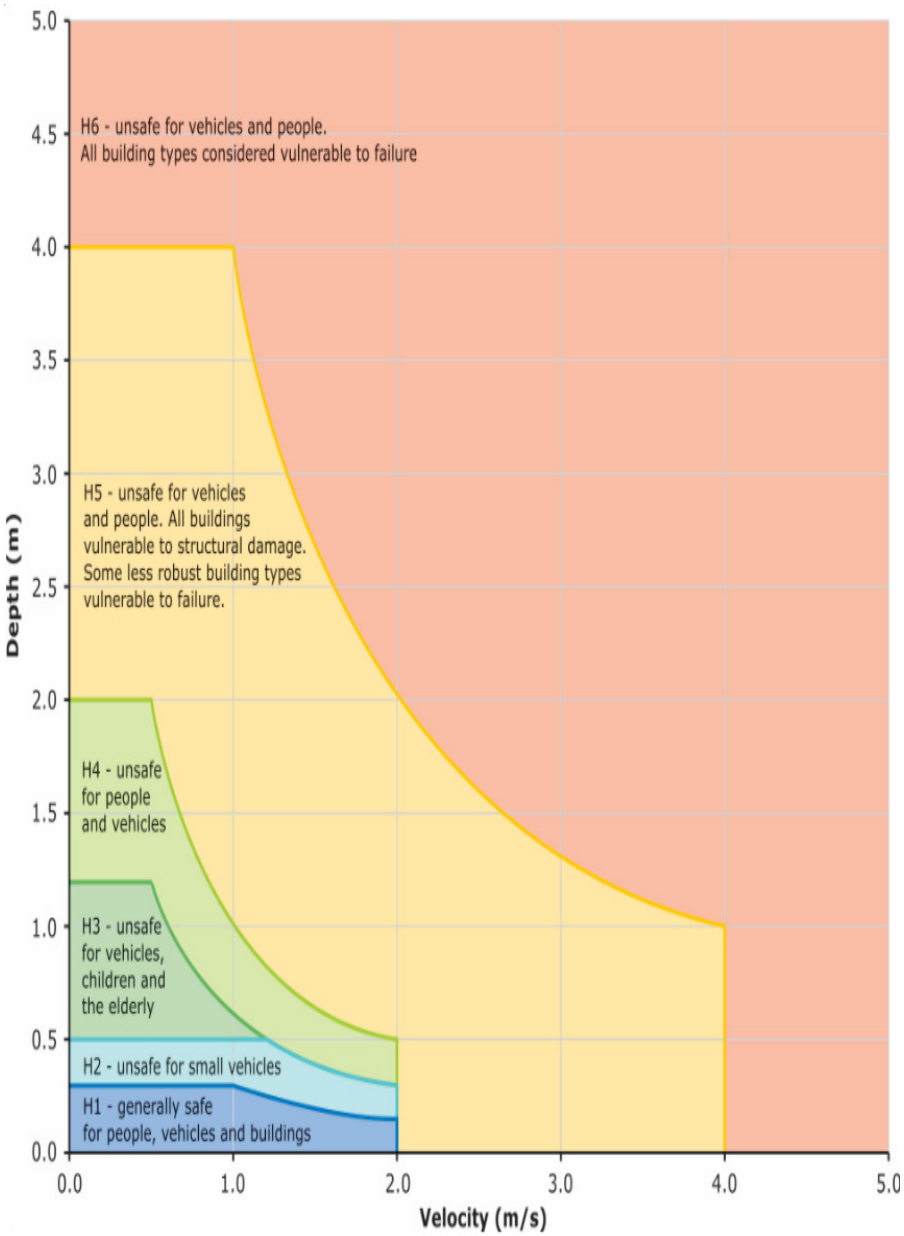


Figure 8, Flood Hazard Classification

Applicable Controls
The land use of the proposed development is residential. Most of the development is not affected by flood with some minor areas at the North-Western corner located in a Medium Flood Risk Precinct. The following controls are applicable to the site:

Floor Level
The lower ground floor and the basements' floor levels are lower than the 1%AEP flood levels in the streets, however, they are protected by the existing ground levels. The existing ground levels and all accesses to the building must be checked to be 500 mm above the 1% AEP levels. It is recommended to apply the PMF levels with say 200 mm freeboard instead of the 1% AEP flood to eliminate any risk of inundation.

Building Components
The proposed development must be constructed from flood compatible materials for the components exposed to flood waters. All electrical connections must be physically protected 500 mm above the 1% AEP flood levels.

Structural Soundness
The building structure is not exposed to floods, however any flood protection walls must be designed to withstand the forces of buoyancy, flowing water and debris during the PMF plus say 200 mm freeboard. The depth and the velocity of flow during the PMF event in contact with the flood protection wall are low and will be able to withstand the forces of water flow, debris and buoyancy, subject to a structural engineer's design and report at the CC stage.

Flood Affectation
The proposed development would not result in an increase in 1% AEP flood levels anywhere in the catchment (Flood Map 9 in Appendix B). The increase in the site's runoff due to the development is offset by the compulsory Stormwater management measures such as OSD.

Evacuation
The proposed development is protected from flooding and it can be considered as safe during all possible floods. Evacuation from the building is not required. The streets around the site are affected by flooding with relatively high velocities and depths. The floods in this area of would be of a short nature and it is recommended that the occupants remain within the site during the periods of extremely heavy rain.

Management and design
Site emergency response plan is given in Appendix A.

Pavel Kozarovski, MIEAust, CPEng, NER

Appendix A
Flood Emergency Response Plan

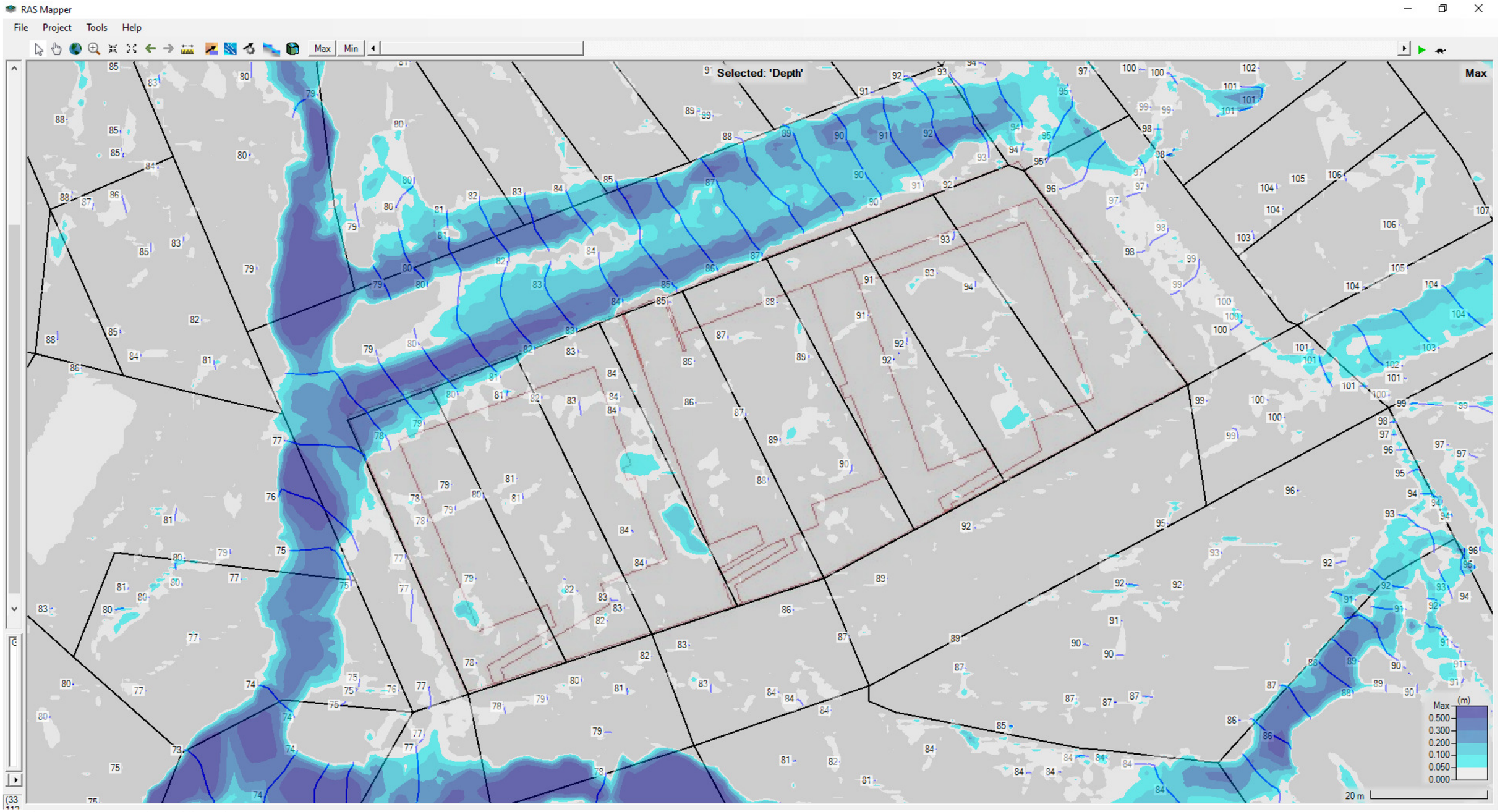
1. Floods in Roseville are considered as “flash floods” and no warning system for this catchment is available. Storms leading to major flooding are typically 2 hours long, however shorter storms as little as a 10 minutes long can produce significant flooding. Once the storm passes floodwaters usually disappear rapidly.
2. Extremely heavy rainfall should be used as an indicator of a possible flood in the street. The flood flow in the street will not last longer than say 15 to 20 minutes and it is advised not to leave the building during these events.
3. During floods many local and major streets and roads will be cut by floodwaters. Travelling through floodwaters on foot, or in a vehicle can be very dangerous as the water may be polluted, obstructions can be hidden under the floodwaters, or you could be wept away. It is recommended to remain within the nursing home as this is the safest option. If you need to leave the nursing home do so early in the flood event, before the flood level reaches the road level in front of the dwelling.
4. Do not evacuate from the building unless instructed to do so by the SES or the Police. Remember floodwaters are much deeper and flow much faster outside.
5. In the case of a medical emergency ring 000 as normal, but explain about the flooding.
6. A laminated copy of this plan should be permanently attached (glued) on an inside cupboard door in the kitchen.
7. This flood management plan should be reviewed every 5 years, particularly with the potential effects of Climate Change.

_____

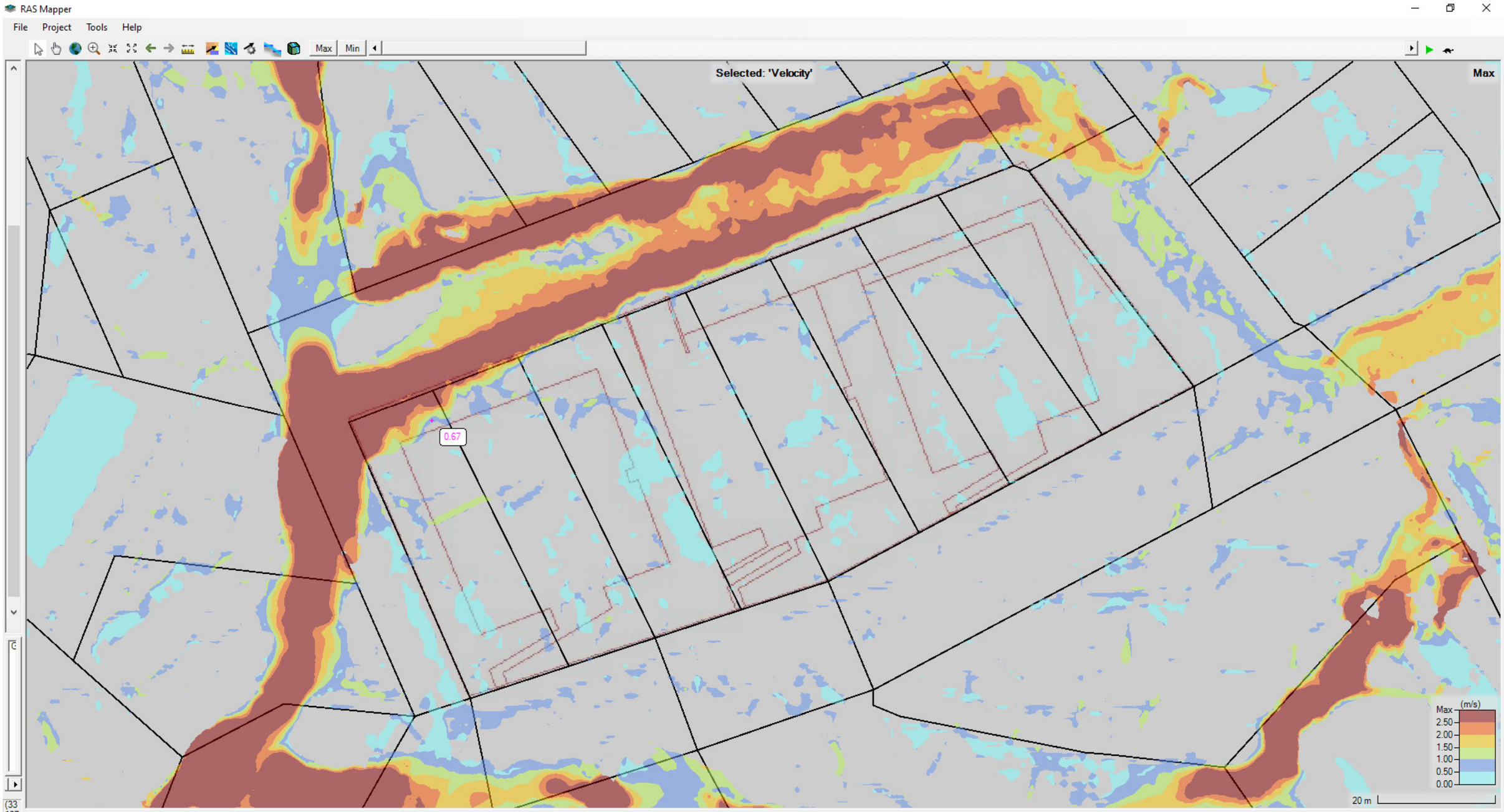
Pavel Kozarovski, MIEAust, CPEng, NER

Appendix B
Flood Maps

Map 1, Flood Levels and Depth, 1% AEP, Existing Conditions
Map 2, Velocity, 1% AEP, Existing Conditions
Map 3, Flood Hazard, 1% AEP, Existing Conditions, 1-H1, 2-H2, 3-H3, 4-H4, 5-H5, 6-H6
Map 4, Hydraulic Categories, 1% AEP, Exis. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway
Map 5, Flood Levels and Depth, 1% AEP, Existing Conditions
Map 6, Velocity, 1% AEP, Existing Conditions
Map 7, Flood Hazard, 1% AEP, Existing Conditions, 1-H1, 2-H2, 3-H3, 4-H4, 5-H5, 6-H6
Map 8, Hydraulic Categories, 1% AEP, Ex. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway
Map 9, Differences 1% AEP (Proposed-Existing)
Map 10, Flood Levels and Depth, PMF, Existing Conditions
Map 11, Velocity, PMF, Existing Conditions
Map 12, Flood Hazard, PMF, Existing Conditions, 1-H1, 2-H2, 3-H3, 4-H4, 5-H5, 6-H6
Map 13, Hydraulic Categories, PMF, Exis. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway

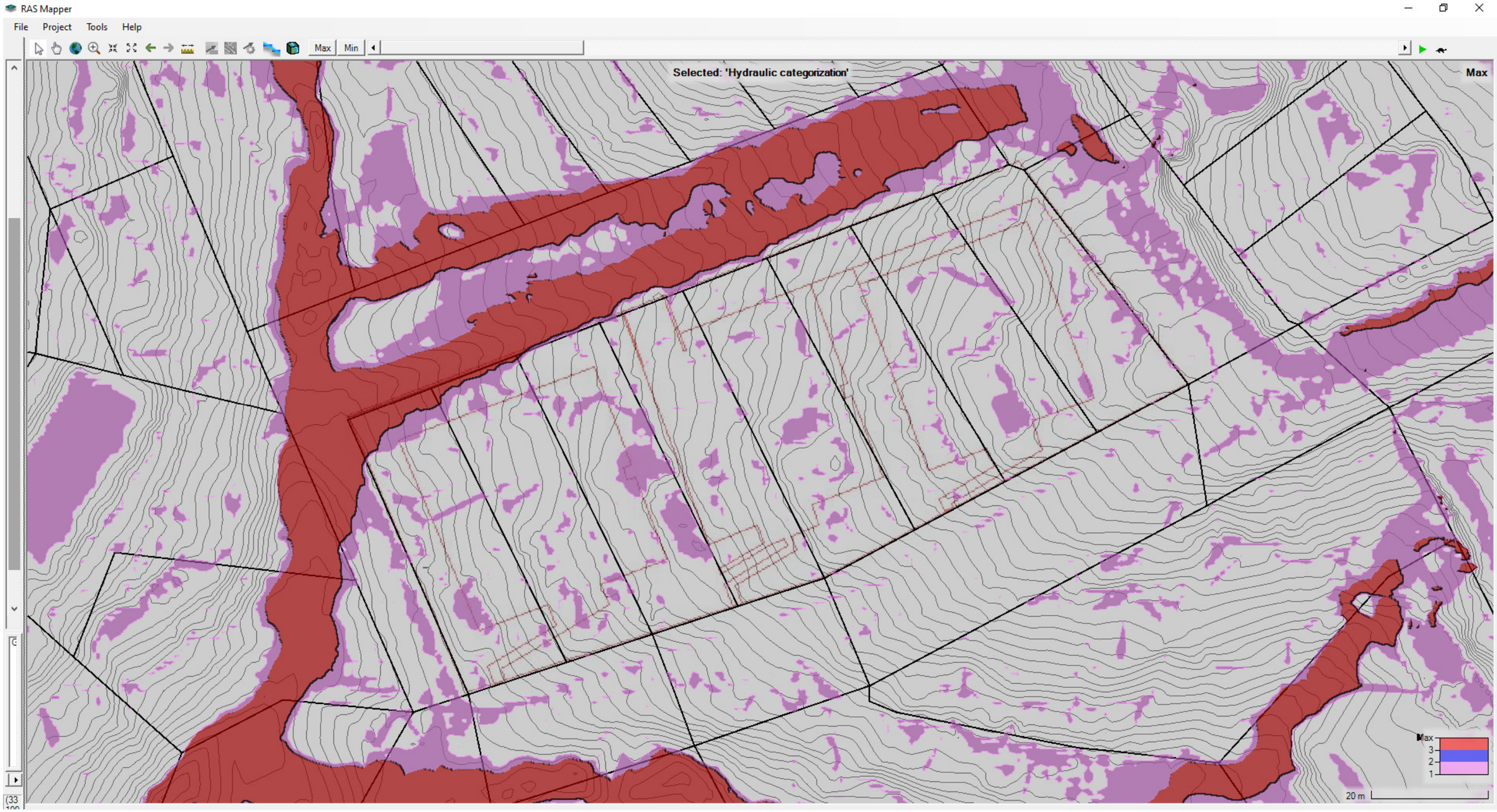


Map 1, Flood Levels and Depth, 1% AEP, Existing Conditions

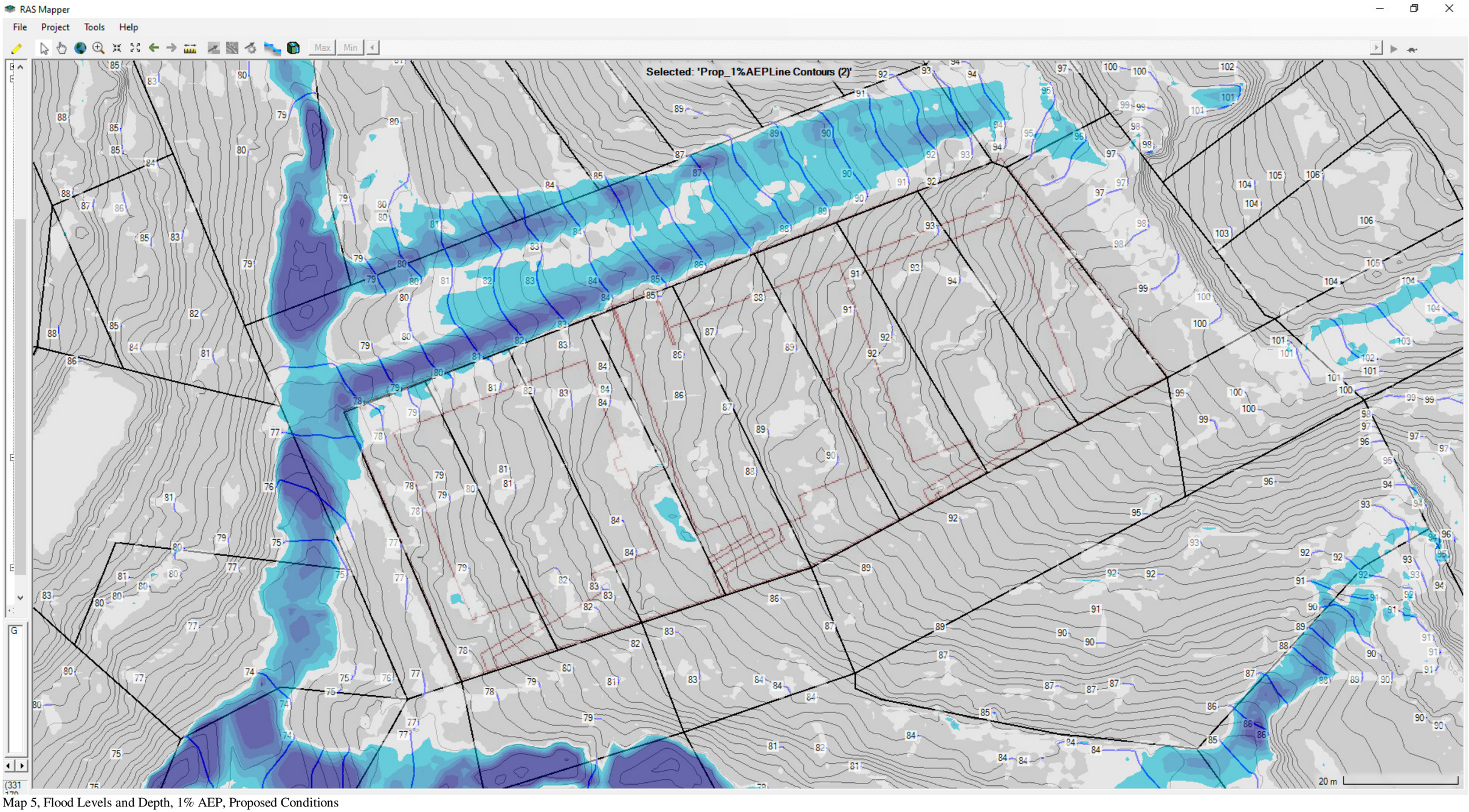


Map 2, Velocity, 1% AEP, Existing Conditions

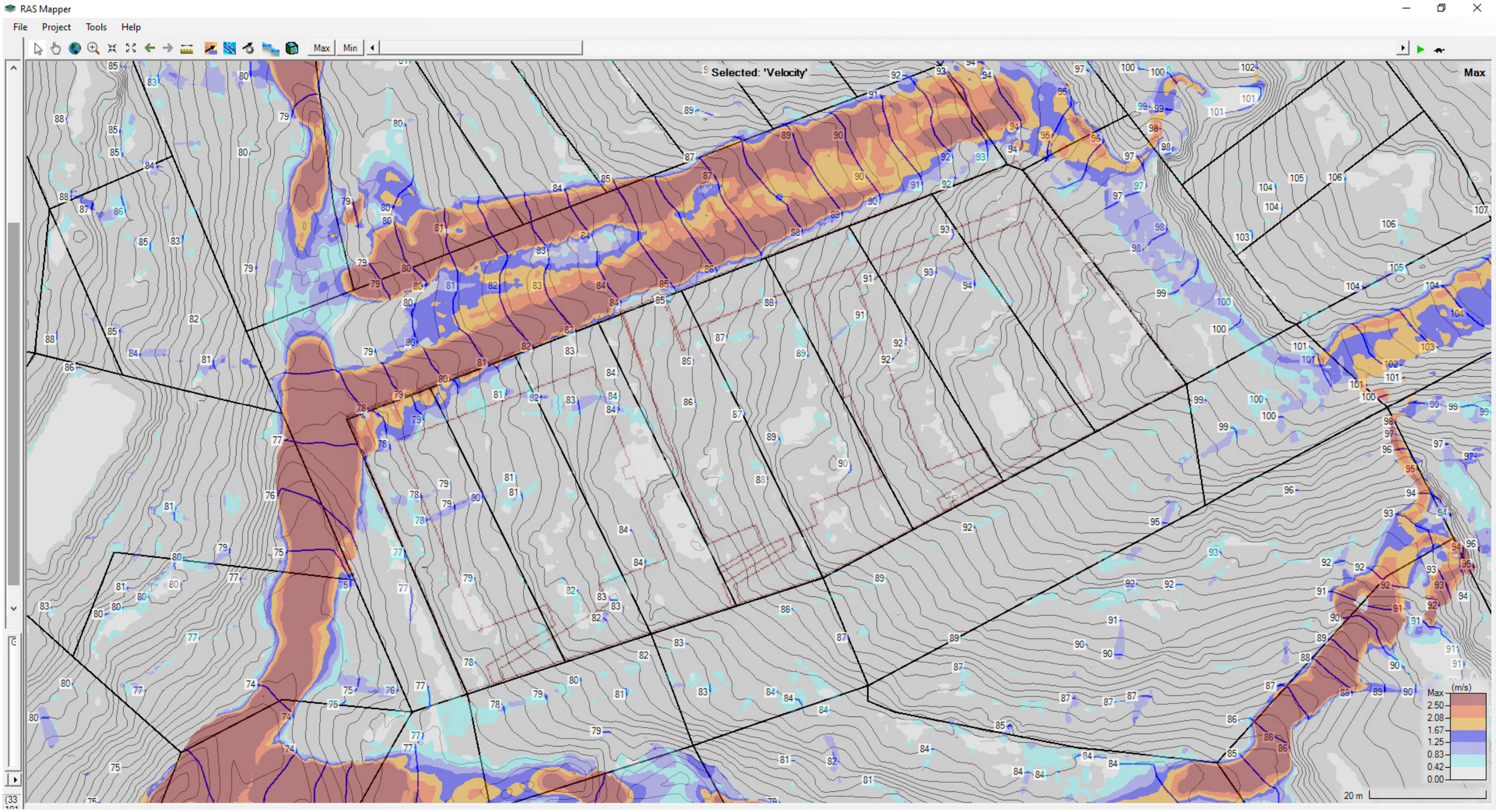
Map 3, Flood Hazard, 1% AEP, Existing Conditions, 1-H1, 2-H2, 3-H3, 4-H4, 5-H5, 6-H6



Map 4, Hydraulic Categories, 1% AEP, Exis. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway

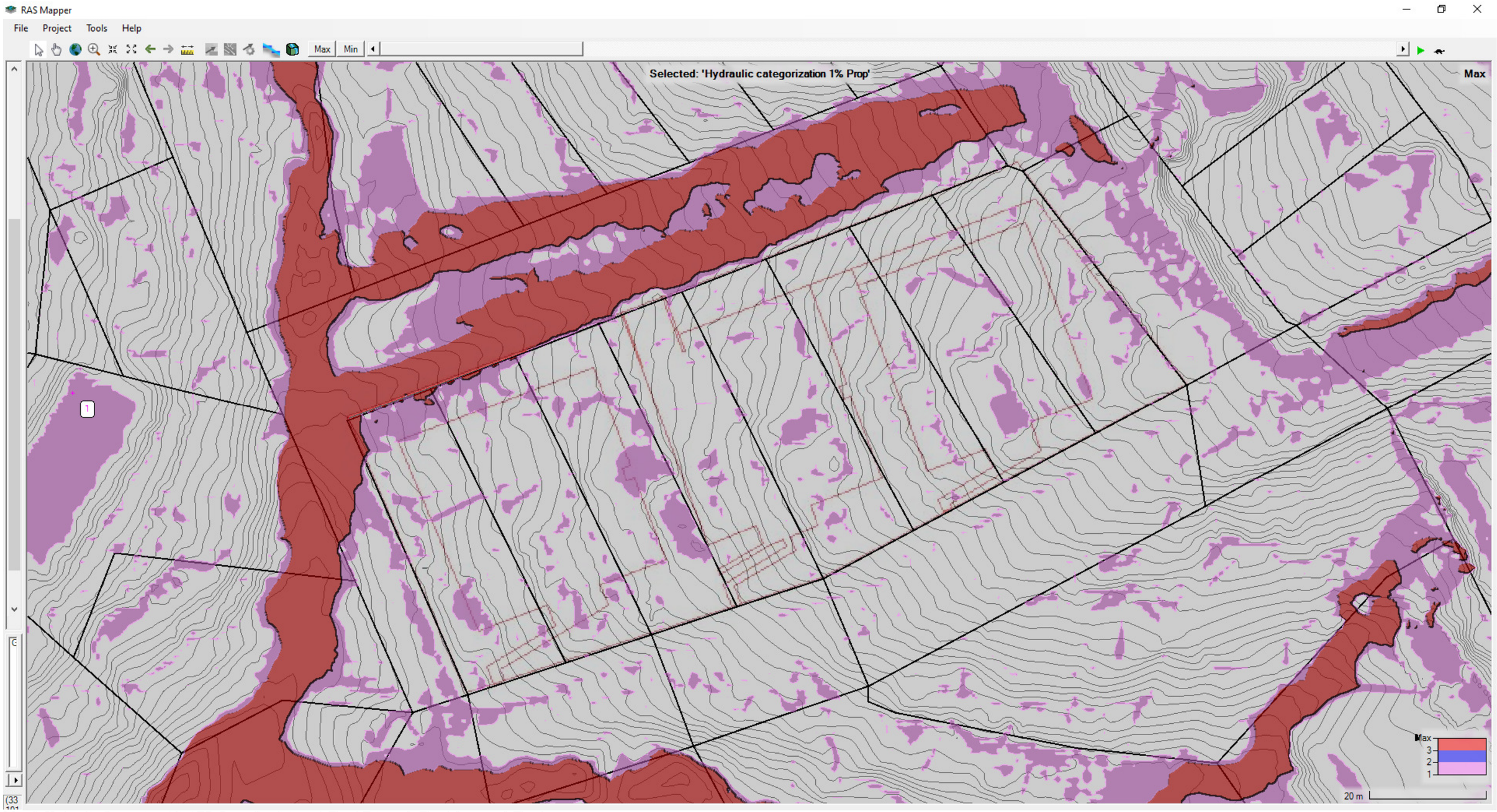


Map 5, Flood Levels and Depth, 1% AEP, Proposed Conditions



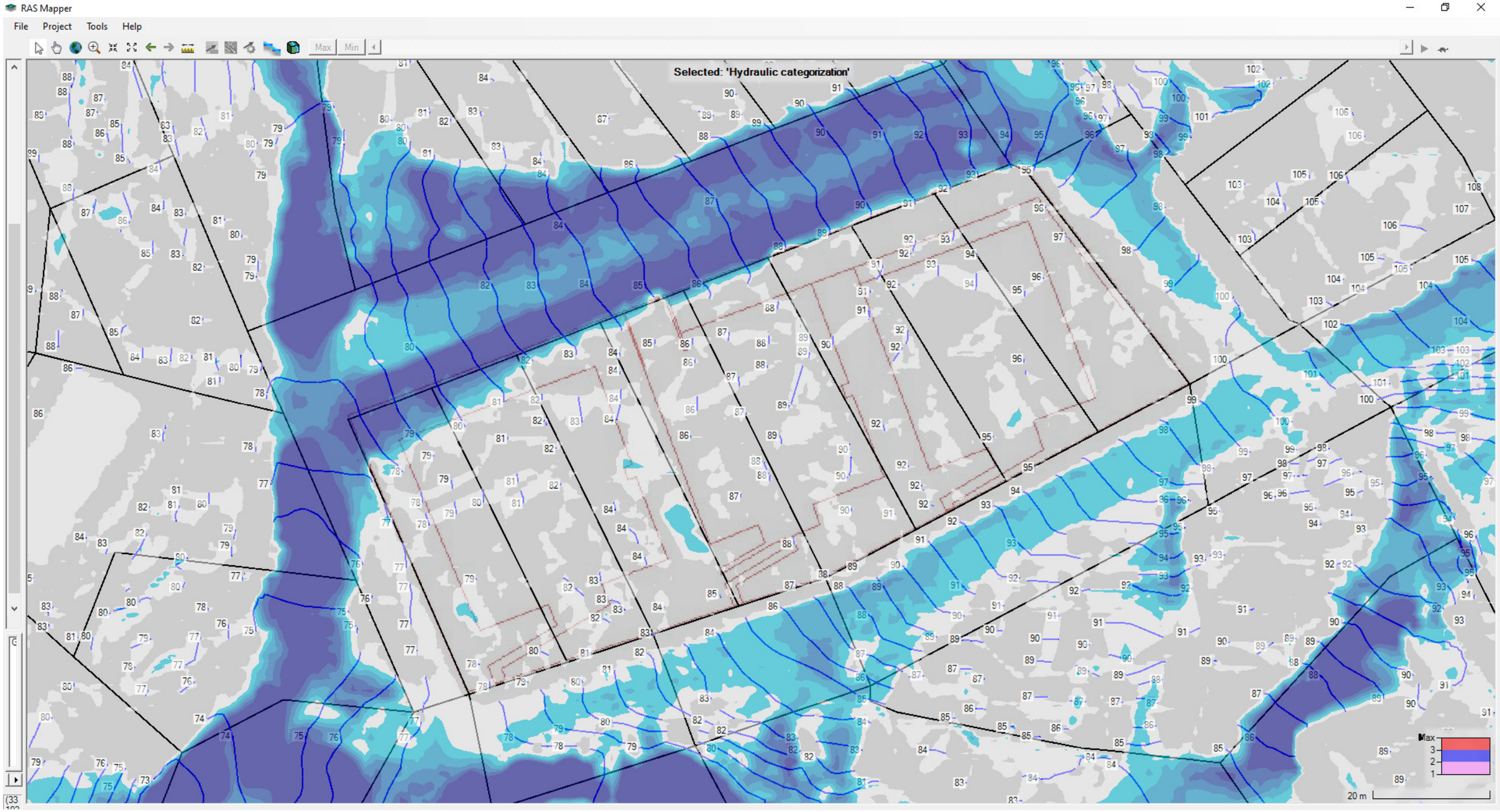
Map 5, Velocity, 1% AEP, Proposed Conditions

Map 7, Flood Hazard, 1% AEP, Proposed Conditions, 1-H1, 2-H2, 3-H3, 4-H4, 5-H5, 6-H6

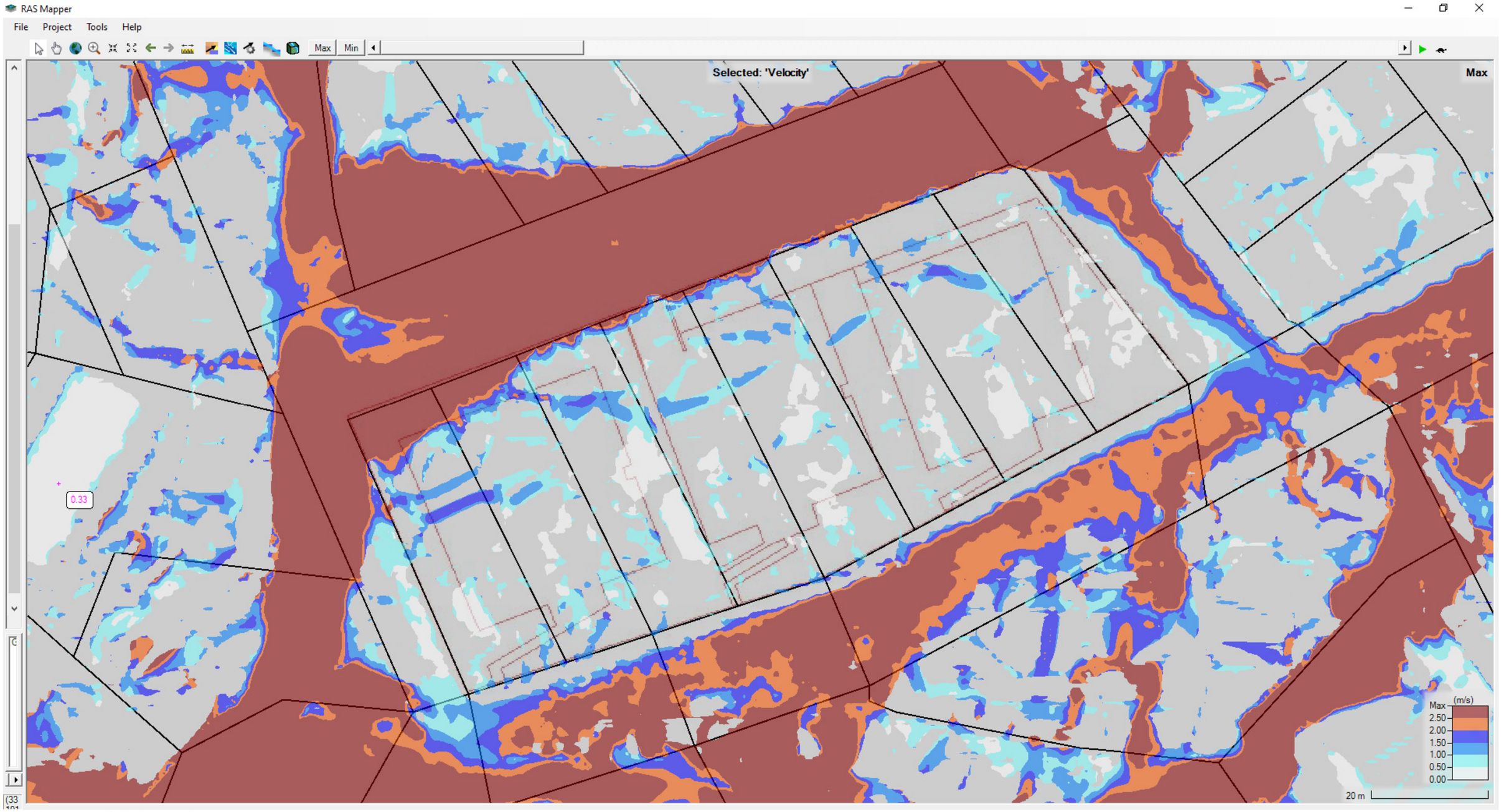


Map 8, Hydraulic Categories, 1% AEP, Prop. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway

Map 9, Differences, 1%AEP, Proposed-Existing

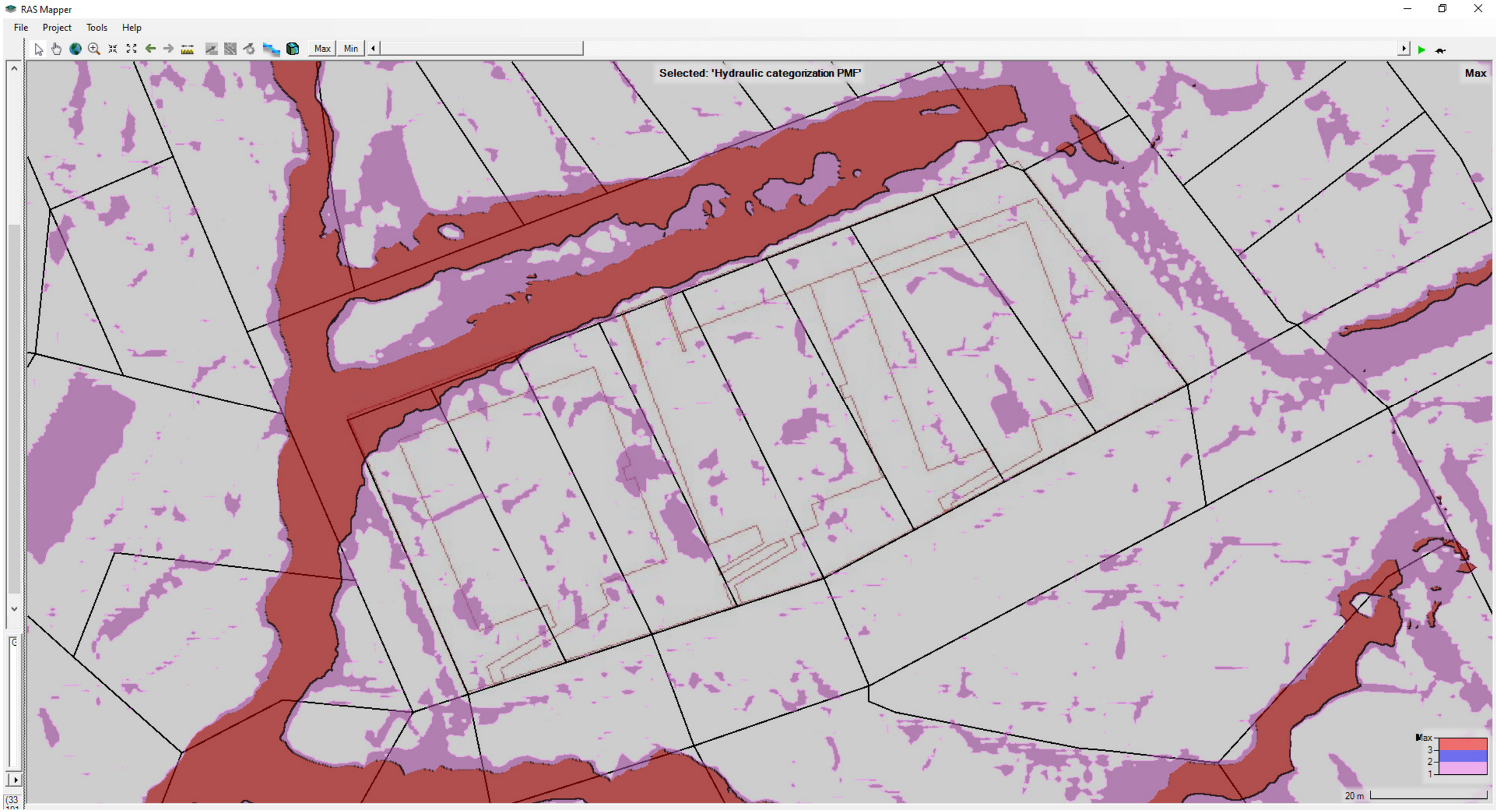


Map 10, Flood Levels and Depth, PMF, Existing Conditions



Map 11, Velocity, PMF, Existing Conditions

Map 12, Flood Hazard, PMF, Existing Conditions



Map 13, Hydraulic Categories, PMF, Exis. Conditions, 1-Flood Fringe, 2- Flood Storage, 3-Floodway

Appendix C MUSIC LINK REPORT

KU-RING-GAI COUNCIL

MUSIC-*link* Report

Project Details		Company Details	
Project:	Roseville, Pockley Avenue	**Company:**	Stantec
Report Export Date:	4/15/2025	**Contact:**	Charlie Gilbert
Catchment Name:	301351698 - Pockley Island Site_Draft_01	**Address:**	Stantec Level 9, The Forum, 203 Pacific Highway St Leonards NSW 2065 AUSTRALIA
Catchment Area:	0.809ha	**Phone:**	
Impervious Area*:	78.24%	**Email:**	charlie.gilbert@stantec.com
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/1/1963 - 12/31/1993 11:54:00 PM		
Mean Annual Rainfall:	1275mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.4.0		
MUSIC-link data Version:	6.40		
Study Area:	Ku-ring-gai Council		
Scenario:	Ku-ring-gai		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness

Node: Recieving Node - GP-70% TSS=85%TP=65%TN=45%	Reduction
Flow	-0.00322%
TSS	88.3%
TP	70.2%
TN	46.4%
GP	100%

Treatment Nodes

Node Type	Number
Sedimentation Basin Node	1
GPT Node	2
Generic Node	1

Source Nodes

Node Type	Number
Urban Source Node	8

Comments

The MUSIC model flagged issues can be clarified based on the following details. The parameters that appear with errors in the RWT, such as Nitrogen C** value, Phosphorus C** value and Suspended Solids C**value, have been adopted from Atlan's design values.

As can be seen from the results, the proposal achieves minimum 80% water effieciency, and meets the required pollutant reduction targets.

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	None	0.02
GPT	2 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	None	0.04
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	% Load Reduction	None	None	-0.00322
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	GP % Load Reduction	70	None	100
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TN % Load Reduction	45	None	46.4
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TP % Load Reduction	65	None	70.2
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TSS % Load Reduction	85	None	88.3
Sedimentation	SF Chamber 100SQM	% Reuse Demand Met	None	None	0
Sedimentation	SF Chamber 100SQM	High Flow Bypass Out (ML/yr)	None	None	0
Urban	Building Shadow 0.13Ha	Area Impervious (ha)	None	None	0.13
Urban	Building Shadow 0.13Ha	Area Pervious (ha)	None	None	0
Urban	Building Shadow 0.13Ha	Total Area (ha)	None	None	0.13
Urban	Driveway 0.0165Ha	Area Impervious (ha)	None	None	0.017
Urban	Driveway 0.0165Ha	Area Pervious (ha)	None	None	0
Urban	Driveway 0.0165Ha	Total Area (ha)	None	None	0.017
Urban	Pav1 0.098Ha	Area Impervious (ha)	None	None	0.098
Urban	Pav1 0.098Ha	Area Pervious (ha)	None	None	0
Urban	Pav1 0.098Ha	Total Area (ha)	None	None	0.098
Urban	Pav2 0.0975Ha	Area Impervious (ha)	None	None	0.098
Urban	Pav2 0.0975Ha	Area Pervious (ha)	None	None	0
Urban	Pav2 0.0975Ha	Total Area (ha)	None	None	0.098
Urban	Pav3 0.0985Ha	Area Impervious (ha)	None	None	0.099
Urban	Pav3 0.0985Ha	Area Pervious (ha)	None	None	0
Urban	Pav3 0.0985Ha	Total Area (ha)	None	None	0.099
Urban	Pav3 Walkway 0.183Ha	Area Impervious (ha)	None	None	0.183
Urban	Pav3 Walkway 0.183Ha	Area Pervious (ha)	None	None	0
Urban	Pav3 Walkway 0.183Ha	Total Area (ha)	None	None	0.183
Urban	Walkway and courtyards 0.Ha	Area Impervious (ha)	None	None	0.008
Urban	Walkway and courtyards 0.Ha	Area Pervious (ha)	None	None	0
Urban	Walkway and courtyards 0.Ha	Total Area (ha)	None	None	0.008

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF Chamber 100SQM	Notional Detention Time (hrs)	8	12	4.7
Sedimentation	SF Chamber 100SQM	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber 100SQM	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber 100SQM	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation

Design with
community in mind

Level 9, The Forum
203 Pacific Highway
St Leonards NSW 2065
Tel +61 2 8484 7000

For more information please visit
www.stantec.com

Stantec

DRAWING LIST	
NO.	DRAWING NAME
STN-ZZ-000-DR-CI-000001	COVER SHEET, DRAWING REGISTRY AND LOCALITY PLAN
STN-ZZ-000-DR-CI-007001	GENERAL NOTES SHEET - 1
STN-ZZ-000-DR-CI-007002	GENERAL NOTES SHEET - 2
STN-ZZ-000-DR-CI-007003	GENERAL NOTES SHEET - 3
STN-ZZ-000-DR-CI-050001	EXISTING CONDITIONS PLAN
STN-ZZ-000-DR-CI-055001	DEMOLITION PLAN
STN-ZZ-000-DR-CI-070001	EROSION AND SEDIMENT CONTROL PLAN
STN-ZZ-000-DR-CI-076001	EROSION AND SEDIMENT CONTROL DETAILS
STN-ZZ-000-DR-CI-100001	BULK EARTHWORKS PLAN
STN-ZZ-000-DR-CI-103001	BULK EARTHWORKS SECTIONS
STN-ZZ-000-DR-CI-440001	PAVEMENT PLAN
STN-ZZ-000-DR-CI-460001	PAVEMENT DETAILS SHEET 1
STN-ZZ-000-DR-CI-460002	PAVEMENT DETAILS SHEET 2
STN-ZZ-000-DR-CI-460003	PAVEMENT DETAILS SHEET 3
STN-ZZ-000-DR-CI-520001	STORMWATER DRAINAGE PLAN
STN-ZZ-000-DR-CI-522001	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET - 1
STN-ZZ-000-DR-CI-522002	STORMWATER DRAINAGE LONGITUDINAL SECTIONS SHEET - 2
STN-ZZ-000-DR-CI-526001	STORMWATER DRAINAGE DETAILS SHEET 1
STN-ZZ-000-DR-CI-526002	STORMWATER DRAINAGE DETAILS SHEET 2
STN-ZZ-000-DR-CI-526003	STORMWATER DRAINAGE DETAILS SHEET 3
STN-ZZ-000-DR-CI-526004	STORMWATER DRAINAGE DETAILS SHEET 4
STN-ZZ-000-DR-CI-526005	STORMWATER DRAINAGE DETAILS SHEET 5
STN-ZZ-000-DR-CI-526006	STORMWATER DRAINAGE DETAILS SHEET 6

ROSEVILLE, POCKLEY

2-16 POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

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Plotted: 4/15/2025 7:45:52 PM By: GILBERT, CHARLIE
ORIGINAL SHEET: ISO A1 \\AUS1214AWS_C3PJ\CORP\ACD\AUS1214AWS_C3PJ_PROJ\WAMEX_PROJECTS\301385\999_PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEETS\301385-STN-ZZ-000-DR-CI-000001.DWG

GENERAL

1. DESIGN HEREIN HAS BEEN PREPARED BY STANTEC AUSTRALIA PTY LTD LEVEL 9, THE FORUM, 203 PACIFIC HIGHWAY, ST LEONDARDS NSW 2065
2. CONTRACTOR TO CHECK WITH ENGINEER IF THESE NOTES ARE TO SUPPLEMENT A CIVIL SPECIFICATION.
3. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
4. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
5. ALL DIMENSIONS ARE IN MILLIMETRES (mm) & ALL LEVELS ARE IN METRES (m), UNO (UNLESS NOTED OTHERWISE).
6. NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.
7. ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
6. EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ELECTRONIC FILES

1. IF APPLICABLE AND UPON REQUEST, ELECTRONIC FILES CAN BE SUPPLIED IN AUTOCAD FORMAT FOR INFORMATION PURPOSES ONLY. THESE FILES ARE NOT INTENDED FOR SETOUT AND ARE NOT TO BE RELIED UPON FOR CONSTRUCTION PURPOSES. THE FILES MAY FORM JUST PART OF OUR DESIGN PACKAGE / PROCESS AND, AS SUCH, THEIR ACCURACY AND COMPLETENESS CANNOT BE GUARANTEED.
2. THE FILES ARE CONSIDERED TO BE "UNCONTROLLED" AND, AS STANTEC ARE UNABLE TO CONTROL THE ACCURACY OF THESE EDITABLE FILES, ALL RESPONSIBILITY FOR SUCH ACCURACY AND THE SUITABILITY OF THESE FILES RESTS WITH THE RECIPIENT.
3. REFER TO THE LATEST HARD COPY ENGINEERING DRAWINGS FOR ALL CURRENT INFORMATION. IN THE EVENT OF ANY DISCREPANCY BETWEEN PAPER AND ELECTRONIC VERSIONS, THE PAPER VERSION IS TO TAKE PRECEDENCE.
4. THE ELECTRONIC FILES SHALL BE USED SOLELY BY THE INTENDED RECIPIENT AND SHALL NOT BE DISTRIBUTED TO OTHERS WITHOUT THE EXPRESS CONSENT OF STANTEC. STANTEC ACCEPTS NO LIABILITY FOR USE OF THE INFORMATION BY ANY THIRD PARTIES.

SURVEY

1. THE EXISTING SITE CONDITIONS SHOWN ON THE FOLLOWING DRAWINGS HAVE BEEN SHOWN AS PER THE TOPOGRAPHIC SURVEY RECEIVED ON 04/02/2025 PREPARED BY RYGATE SURVEYORS, REFERENCE 80598-A.DWG DATED 03/09/2024.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS. SHOULD DISCREPANCIES BE ENCOUNTERED DURING CONSTRUCTION BETWEEN THE SURVEY DATA AND ACTUAL FIELD DATA, CONTACT THE SUPERINTENDENT.
3. IF AN EXISTING SERVICES PLAN HAS BEEN SUPPLIED THIS DOES NOT TAKE PRECEDENCE OVER ORIGINAL SURVEY PLAN.
4. CONTRACTOR TO REVIEW ORIGINAL SURVEY PLAN AND NOTES. THIS INCLUDES REVIEW OF SUBSURFACE UTILITY CLASS INFORMATION

SITEWORKS

1. ORIGIN OF LEVELS:- REFER SURVEY NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES TO BE REPORTED TO THE SUPERINTENDENT.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH COUNCIL CONSTRUCTION SPECIFICATIONS, THE DETAILS SHOWN ON THE DRAWINGS AND THE SPECIFICATIONS AND THE DIRECTIONS OF THE PRINCIPAL'S REPRESENTATIVE.
4. ALL WORKS TO BE COMPLETED IN ACCORDANCE WITH NSW COUNCIL AND OTHER AUTHORITY REQUIREMENTS.
5. ALL CONSTRUCTION UNDERTAKEN BY THE CONTRACTOR IS TO COMPLY WITH THE REQUIREMENTS OF THE CURRENT WORKPLACE HEALTH AND SAFETY ACT.
6. CONTRACTOR TO CONFIRM ALL CBR VALUES PRIOR TO COMMENCEMENT OF WORKS.
7. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES, IS OBTAINED.
8. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
9. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER GAS, COMMUNICATIONS OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.
10. ALL TRENCH BACKFILL MATERIAL NOT IN PAVEMENTS SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
11. UNLESS NOTED OTHERWISE IN CIVIL SPECIFICATION, 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).
12. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS, AND ROAD PAVEMENTS.
13. TRENCHES THROUGH EXISTING ROAD AND CONCRETE PAVEMENTS SHALL BE SAWCUT TO THE FULL DEPTH OF CONCRETE AND MIN. 50mm IN BITUMINOUS PAVING.
14. MAKE SMOOTH TRANSITION TO EXISTING SERVICES AND MAKE GOOD.
15. THESE PLANS ARE TO BE READ IN CONJUNCTION WITH COUNCIL CONSTRUCTION SPECIFICATIONS AND APPROVED LANDSCAPE, ELECTRICAL AND TELECOMMUNICATION DRAWINGS AND SPECIFICATIONS.
16. WHERE NOTED ON THE DRAWINGS THAT WORKS ARE TO BE CARRIED BY OTHERS, (eg. ADJUSTMENT OF SERVICES), THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CO-ORDINATION OF THESE WORKS.
17. ON COMPLETION OF WORKS, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL INCLUDING, BUT NOT LIMITED TO, KERBS, FOOTPATHS, CONCRETE AREAS, GRASS AND LANDSCAPED AREAS.

COUNCIL REQUIREMENTS

1. ALL WORKS TO BE CONDUCTED IN ACCORDANCE WITH THE NSW COUNCIL REQUIREMENTS.
2. THE CONTRACTOR MUST OBTAIN AND SUBMIT TRAFFIC/PEDESTRIAN MANAGEMENT PLANS TO THE NSW COUNCIL PRIOR TO WORKS.
3. ALL AREAS AFFECTED BY WORKS ARE TO BE MINIMIZED AT ALL TIMES AND BE MADE GOOD AT COMPLETION OF WORKS TO THE SATISFACTION OF THE SUPERINTENDENT AND THE NSW COUNCIL.
4. 1500mm MIN FOOTPATHS ARE TO BE MAINTAINED AT ALL TIMES AND, IF WIDTH NOT AVAILABLE, PROVIDE ADVISORY SIGNS REQUESTING PEDESTRIANS TO USE OPPOSITE FOOTPATH.
5. CONTRACTOR TO MEET ALL ABUTTING PROPERTIES REASONABLE ACCESS REQUIREMENTS THAT THEY MAY HAVE.
6. THE WORKS SHALL NOT IMPACT ON THE OPERATIONS OF BUSINESSES, HOTELS, RESTAURANTS, STREET VENDORS, OFF STREET CAR PARKS ETC. ALL PARKING AND NO STOPPING RESTRICTIONS SHALL BE OBSERVED.
7. THE WORKS/INSTALLATION SHALL NOT INTERFERE WITH COUNCILS AND PRIVATE DRAINAGE INFRASTRUCTURE INCLUDING SURFACE DRAINS.
8. THE CONTRACTOR SHALL AGREE TO A DEFECTS LIABILITY PERIOD FOR THE BACKFILLING OF ONE (1) YEAR COMMENCING FROM THE DATE OF WORK. ANY DEFECTS FOUND BY COUNCIL WITHIN THE ONE YEAR PERIOD SHALL BE RECTIFIED BY THE APPLICANT/CONTRACTOR TO COUNCILS SATISFACTION WITHIN TWO WEEKS OF NOTIFICATION IN WRITING.
9. IF COUNCIL'S INFRASTRUCTURE SUCH AS PARKING SIGNS, ROAD OR LINE MARKINGS, PARKING METERS TICKET MACHINES OR SUPPORTING CABLES/CONDUITS, IRRIGATION PIPES OR STREET FURNITURE ARE REMOVED OR DAMAGED AS A RESULT OF THE WORKS THE CONTRACTOR SHALL, AT COMPLETION OR WORKS, ARRANGE AND PAY FOR THEIR REINSTATEMENT.
10. ALL DRAWINGS TO BE READ IN CONJUCTION WITH LATEST COUNCIL STANDARD DRAWINGS. ANY DESCREPANCY TO BE RAISED WITH STANTEC

DEMOLITION

1. ALL DEMOLISHED SWALES AND OPEN DRAINS TO BE STRIPPED AND INFILLED WITH SELECT FILL COMPACTED IN 300mm THICK LAYERS.
2. ALL DEMOLISHED PAVEMENTS TO BE REMOVED DOWN TO SUBGRADE LEVEL. BUILD BACK UP TO FINISHED SURFACE WITH SELECT FILL COMPACTED IN 200mm THICK LAYERS TO CIVIL SPECIFICATION.
3. ALL DISTURBED AREAS SHALL BE FINISHED WITH TOPSOIL AND DURABLE DRYLAND GRASS IN ACCORDANCE WITH LANDSCAPE ARCHITECTS SPECIFICATION.
4. ALL BUILDING DEMOLITION WORKS SHALL INCLUDE SEQUENCING, DISCONNECTION AND DEMOLITION OF ALL ASSOCIATED BUILDING SERVICES.
5. PRIOR TO REMOVAL OF TREES AND VEGETATION, TRADE CONTRACTOR SHALL SEEK ALL RELEVANT APPROVALS FROM THE MANAGING CONTRACTOR.
6. ALL DEMOLISHED MATERIALS TO BE DISPOSED OFF SITE AT AN APPROVED WASTE COLLECTION AND PROCESSING FACILITY (UNLESS OTHERWISE DIRECTED IN WRITING BY THE MANAGING CONTRACTOR).
7. REFER TO THE RELEVANT ENGINEERING DRAWINGS FOR TREATMENT, DIVERSION AND DEMOLITION OF EXISTING SERVICES AFFECTED BY THE WORKS, INCLUDING BUT NOT LIMITED TO ELECTRICAL, COMMUNICATIONS, HYDRAULIC SERVICES
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY PRIOR APPROVAL REQUIRED FROM COUNCIL WITH RESPECT TO POTENTIAL IMPACT ON TREES FOR ANY WORKS SHOWN ON THE DRAWINGS PRIOR TO THE COMMENCEMENT OF THOSE WORKS.

PROTECTION OF FLORA

1. ANY TRENCHES WITHIN 3m OF TREES SHALL BE DUG BY NON-DESTRUCTIVE MEANS TO AVOID DAMAGE TO THE TREE ROOTS, OR AS DIRECTED BY THE PROJECT ARBORIST.
2. THE STORMWATER WORKS HAVE BEEN LOCATED TO MINIMISE CLEARING AND DAMAGE TO THE EXISTING FLORA ENVIRONMENT TO BE RETAINED. NO TREES ARE PERMITTED TO BE REMOVED OR DAMAGES UNO. CONSTRUCTION OF THE STORMWATER IN THE VICINITY OF EXISTING TREES SHALL BE DUG BY NON-DESTRUCTIVE MEANS, OR AS DIRECTED BY THE PROJECT ARBORIST, ENSURING IRREVERSIBLE DAMAGE OF THE ROOT SYSTEM DOES NOT OCCUR.
3. ANY WORK ON TREES, INCLUDING TRIMMING, LOPPING, ROOT CUTTING, REPAIR AND REMOVAL, IS TO BE TO THE PROJECT ARBORIST'S REQUIREMENTS.
4. NO MATURE TREES OR SHRUBS ARE TO BE REMOVED FOR THE PURPOSES OF THE WORKS WITHOUT PRIOR APPROVAL FROM NSW COUNCIL.

ALTERNATIVE PRODUCTS

1. ALTERNATIVE PRODUCTS SUCH AS ALTERNATIVE STORMWATER PIPE MATERIALS OR WATER QUALITY TREATMENT DEVICES MAY ONLY BE USED WITH WRITTEN APPROVAL OF STANTEC. ALL TESTING AND MATERIAL DATA SPECIFICATIONS TO BE SUPPLIED TO STANTEC FOR REVIEW.

EXISTING SERVICES

1. EXISTING SERVICES, WHERE SHOWN, HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.
2. EXISTING SERVICES SHOWN ON THE PLANS ARE LOCATED APPROXIMATELY BASED ON INFORMATION SUPPLIED BY THE RELEVANT AUTHORITIES AND/OR SURVEY RECEIVED. STANTEC DOES NOT TAKE RESPONSIBILITY FOR THE SUITABILITY OR LOCATION/DEPTH OF THE EXISTING SERVICES.
3. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ANY POSSIBLE DESIGN ADJUSTMENT OF ANY ADDITIONAL EXISTING SERVICES OR THE ASSOCIATED AUTHORITY NEGOTIATIONS AS A RESULT OF THE PROPOSED WORKS.
4. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
5. EXISTING BUILDINGS, EXTERNAL STRUCTURES AND TREES SHOWN ON THESE DRAWINGS ARE FEATURES EXISTING PRIOR TO ANY DEMOLITION WORKS.
6. THE CONTRACTOR SHALL UNDERTAKE POTHOLING AND/OR INVESTIGATION WORKS TO LOCATE ALL EXISTING SERVICES PRIOR TO COMMENCING WORKS. THIS INCLUDES CONFIRMING THE LOCATION AND DETAILS OF THE EXISTING SITE STORMWATER DISCHARGE.
7. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION.
8. WHIST REASONABLE EFFORT HAS BEEN MADE TO AVOID CLASHES WITH EXISTING SERVICES, EXTENT AND QUALITY OF SUPPLIED DATA IS INSUFFICIENT FOR COMPLETE CLASH DETECTION ACCURACY. CONTRACTOR TO TAKE CARE WORKING AROUND EXISTING UTILITIES AND REPORT ANY POSSIBLE CLASHES BACK TO THE ENGINEER.
9. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION, REMOVAL AND DISPOSAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
10. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
11. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SERVICE AUTHORITY. ONCE DIVERSION IS COMPLETE AND COMMISSIONED, THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE RELEVANT SERVICE AUTHORITY.
12. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN WRITTEN APPROVAL OF THEIR PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
13. CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.

PROPOSED SERVICES

1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH RELEVANT SERVICE AUTHORITY DOCUMENTATION AND CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE.
2. THE CONTRACTOR SHALL ATTEND, MANAGE & SUPERVISE THE PROVISION OF PUBLIC UTILITY SERVICES TO THE WORKS GENERALLY AS INDICATED ON THE SERVICES PLANS, NOTING THAT PRIOR & DURING CONSTRUCTION THE PUBLIC UTILITY AUTHORITIES WILL FINALISE THEIR DOCUMENTATION TO CONSTRUCTION ISSUE STANDARD.
3. THE CIVIL CONTRACTOR (TRENCH PROVIDER) IS TO ARRANGE ON SITE MEETING WITH ALL SERVICE AUTHORITIES PRIOR TO THE INSTALLATION OF CONDUITS.
4. THE CIVIL CONTRACTOR TO CO-ORDINATE INSTALLATION OF ELECTRICITY, GAS,TELECOMMUNICATION, WATER AND SEWER SERVICES.
5. IT IS EXPECTED THAT ELECTRICITY, GAS AND TELECOMMUNICATION SERVICES ARE TO BE LAID FOLLOWING THE INSTALLATION OF STORMWATER, SEWER AND WATER SERVICES AND KERB AND GUTTER.
6. ALL UTILITY AUTHORITY REPRESENTATIVES TO INSPECT ROAD CROSSINGS PRIOR TO SEALING.
7. ALL ELECTRICAL ROAD CROSSINGS TO BE CLASS 6 (ORANGE) uPVC CONDUITS.
8. ALL GAS ROAD CROSSINGS TO BE uPVC GREY SEWER GRADE CONDUITS.
9. FOR ALL STREET POLES, REFER TO THE ELECTRICAL ENGINEER'S DOCUMENTATION. STREET POLES TO BE POSITIONED THE APPROPRIATE DISTANCE FROM FACE OF KERB TO FACE OF POLE ACCORDING TO THE CURRENT NSW STREETS OPENING CONFERENCE GUIDE TO CODES AND PRACTICES FOR STREETS OPENING LITERATURE. CONTRACTOR TO ALLOW TO EXCAVATE AND BACKFILL TRENCH GENERALLY IN ACCORDANCE WITH NOTE 2.
10. ALL SERVICE PIT COVERS AND MARKERS ARE TO BE LAID WHOLLY WITHIN THE CONCRETE FOOTPATH. CONTACT SUPERINTENDANT SHOULD DIFFICULTIES ARISE.
11. 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 AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
12. THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

TELSTRA - DUTY OF CARE

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 AND TELSTRA DOES NOT WARRANT OR HOLD OUT THAT SUCH PLANS ARE ACCURATE THEREAFTER DUE TO CHANGES THAT MAY OCCUR OVER TIME. DO NOT ASSUME DEPTH OR ALIGNMENT OF CABLES OR PLANT AS THESE VARY SIGNIFICANTLY.
THE CONTRACTOR HAS A DUTY OF CARE WHEN EXCAVATING NEAR TELSTRA CABLES AND PLANT. BEFORE USING MACHINE EXCAVATORS TELSTRA PLANT MUST FIRST BE PHYSICALLY EXPOSED BY SOFT DIG POTHOLING TO IDENTIFY IT'S LOCATION TELSTRA WILL SEEK COMPENSATION FOR DAMAGES CAUSED TO IT'S PROPERTY AND LOSSES CAUSED TO TELSTRA AND IT'S CUSTOMERS.

EROSION AND SEDIMENT CONTROL

GENERAL INSTRUCTIONS

1. THIS SPECIFICATION IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, AND ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT AT THE SUBJECT SITE.
2. THE CONTRACTOR WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE UNDERTAKEN AS INSTRUCTED IN THIS SPECIFICATION AND CONSTRUCTED FOLLOWING THE GUIDELINES OF "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", DEPT OF HOUSING, 2004 (BLUE BOOK).
3. REQUIRED SITE SPECIFIC ADDITIONS/CHANGES TO THE SOIL AND WATER MANAGEMENT WORKS ARE TO BE MADE AS NECESSARY BY THE SUPERINTENDENT.
4. ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
   4.1. LOCAL AUTHORITY REQUIREMENTS
   4.2. EPA REQUIREMENTS
   4.3. NSW DEPARTMENT OF HOUSING MANUAL "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
5. MAINTAIN THE EROSION CONTROL DEVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE LOCAL AUTHORITY.
6. WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
7. CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.
8. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED PRIOR TO ANY GROUND DISTURBANCE.

LAND DISTURBANCE

1. DISTURBANCE TO BE NO FURTHER THAN 5 (PREFERABLY 2) METRES FROM THE EDGE OF ANY ESSENTIAL ENGINEERING ACTIVITY AS SHOWN ON THE APPROVED PLANS. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE ZONES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
2. ACCESS AREAS ARE TO BE LIMITED TO A MAXIMUM WIDTH OF 10 METRES. THE SITE MANAGER WILL DETERMINE AND MARK THE LOCATION OF THESE ZONES ON-SITE. ALL SITE WORKERS WILL CLEARLY RECOGNISE THESE BOUNDARIES THAT, WHERE APPROPRIATE, ARE IDENTIFIED WITH BARRIER FENCING (UPSLOPE) AND SEDIMENT FENCING (DOWNSLOPE) OR SIMILAR MATERIALS.
3. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
   3.1. INSTALL A BARRIER AND SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
   3.2. CLEAR SITE AND STRIP AND STOCKPILE TOPSOIL IN LOCATIONS AS AGREED WITH THE CONTRACTOR.
   3.3. CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
   3.4. CONSTRUCT DIVERSION DRAINS AS REQUIRED.
   3.5. INSTALL MESH AND GRAVEL INLETS FOR ANY ADJACENT KERB INLETS. REFER DETAIL.
   3.6. INSTALL GEOTEXTILE INLET FILTERS AROUND ANY ON-SITE DROP INLET PITS. REFER DETAIL.
   3.6. INSTALL SEDIMENT BASIN AS SHOWN ON PLAN (IF REQUIRED).
   3.7. UNDERTAKE ALL ESSENTIAL CONSTRUCTION WORKS ENSURING THAT ROOF AND/OR PAVED AREA STORMWATER SYSTEMS ARE CONNECTED TO PERMANENT DRAINAGE AS SOON AS PRACTICABLE
   3.8. GRADE AREAS TO FINAL GRADES AND APPLY PERMANENT STABILISATION (LANDSCAPING) WITHIN 20 DAYS OF COMPLETION OF CONSTRUCTION WORKS.
   3.9. REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES AFTER THE PERMANENT LANDSCAPING HAS BEEN COMPLETED.
4. ENSURE THAT SLOPE LENGTHS DO NOT EXCEED 80 METRES WHERE PRACTICABLE. SLOPE LENGTHS ARE DETERMINED BY SILTATION FENCING AND CATCH DRAIN SPACING.
5. ON COMPLETION OF MAJOR WORKS, LEAVE DISTURBED LANDS WITH A SCARIFIED SURFACE TO ENCOURAGE WATER INFILTRATION AND ASSIST WITH KEYING TOPSOIL LATER.

SEDIMENT CONTROL

1. SEDIMENT FENCES WILL BE INSTALLED AS SHOWN ON THE PLAN AND ELSEWHERE AT THE DISCRETION OF THE SITE SUPERINTENDENT TO CONTAIN SOIL AS NEAR AS POSSIBLE TO THEIR SOURCE.
2. SEDIMENT FENCES WILL NOT HAVE CATCHMENT AREAS EXCEEDING 900 SQUARE METRES AND HAVE A STORAGE DEPTH OF AT LEAST 0.6 METRES.
3. SEDIMENT REMOVED FROM ANY TRAPPING DEVICES WILL BE RELOCATED WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS CANNOT OCCUR.
4. STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, PAVED AREAS AND DRIVEWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
5. WHERE AREA PERMITS, STOCKPILES SHALL BE A MAXIMUM OF 2 METRES IN HEIGHT AND WITH SIDE SLOPES OF 1(VER) TO 2(HOR). ADVICE SHOULD BE SOUGHT FROM THE CONTRACTOR FOR TEMPORARY STOCKPILES HIGHER THAN 2 METRES OR WITH SIDE SLOPES STEEPER THAN 1(VER) TO 2 (HOR).
6. TEMPORARY STOCKPILES STORED FOR LESS THAN 20 DAYS WILL BE ESTABLISHED WITH THE FOLLOWING CONTROLS:
   6.1. SEDIMENT FENCE ON DOWNSTREAM SIDE OF STOCKPILE
   6.2. DUST SUPPRESSION MEASURES TO BE PROVIDED SUCH AS COVERING STOCKPILE WITH GEOFABRIC AND/OR REGULAR WATERING
7. TEMPORARY STOCKPILES STORED FOR MORE THAN 20 DAYS WILL BE ESTABLISHED WITH THE FOLLOWING CONTROLS:
   7.1. SEDIMENT FENCE ON DOWNSTREAM SIDE OF STOCKPILE
   7.2. DUST SUPPRESSION MEASURES TO BE PROVIDED SUCH AS COVERING STOCKPILE WITH GEOFABRIC AND/OR REGULAR WATERING
   7.3. STABILISATION OF STOCKPILE SURFACE WITH HYDROMULCH / GEOTEXTILE BLANKET / SOIL GLUE / ROCK MULCH OR OTHER APPROVED EQUIVALENT
   7.4. PROVIDE DIVERSION BANK ON UPSTREAM SIDE TO PROTECT STOCKPILE FROM STORMWATER OVERLAND FLOW
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE AND MEETS THE RELEVANT AUTHORITY REQUIREMENTS PRIOR TO LEAVING THE SITE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.
11. ACCESS TO SITES SHOULD BE STABILISED TO REDUCE THE LIKELIHOOD OF VEHICLES TRACKING SOIL MATERIALS ONTO PUBLIC ROADS AND ENSURE ALL-WEATHER ENTRY/EXIT.

EROSION CONTROL

1. DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
2. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.
3. EARTH BATTERS WILL BE CONSTRUCTED WITH AS LOW A GRADIENT AS PRACTICABLE BUT NO STEPPER, UNLESS NOTED OTHERWISE, THAN:
   3.1. 2(H):1(V) WHERE SLOPE LENGTH IS LESS THAN 12 METRES
   3.2. 2.5(H):1(V) WHERE SLOPE LENGTH IS BETWEEN 12 AND 16 METRES
   3.3. 3(H):1(V) WHERE SLOPE LENGTH IS BETWEEN 16 AND 20 METRES
   3.4. 4(H):1(V) WHERE SLOPE LENGTH IS GREATER THAN 20 METRES
4. ALL WATERWAYS, DRAINS, SPILLWAYS AND THEIR OUTLETS WILL BE CONSTRUCTED TO BE STABLE IN AT LEAST THE 5% AEP TIME OF CONCENTRATION STORM EVENT.
5. WATERWAYS AND OTHER AREAS SUBJECT TO CONCENTRATED FLOWS AFTER CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.05 (70% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION. FLOW VELOCITIES ARE TO BE LIMITED TO THOSE SHOWN IN TABLE 5-1 OF "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", DEPT OF HOUSING 2004 (BLUE BOOK). FOOT AND VEHICULAR TRAFFIC WILL BE PROHIBITED IN THESE AREAS.
6. STOCKPILES, AFTER CONSTRUCTION, ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.1 (60% GROUND COVER) WITHIN 10 WORKING DAYS FROM COMPLETION OF FORMATION.
7. ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION ARE TO HAVE A MAXIMUM GROUND COVER C-FACTOR OF 0.15 (50% GROUND COVER) WITHIN 20 WORKING DAYS FROM INACTIVITY EVEN THOUGH WORKS MAY CONTINUE LATER.
8. FOR AREAS OF SHEET FLOW, USE THE FOLLOWING GROUND COVER PLANT SPECIES FOR TEMPORARY COVER: JAPANESE MILLET 20KG/HA AND OATS 20KG/HA.
9. PERMANENT REHABILITATION OF LANDS AFTER CONSTRUCTION WILL ACHIEVE A GROUND COVER C-FACTOR OF LESS THAN 0.1 AND LESS THAN 0.05 WITHIN 60 DAYS. NEWLY PLANTED LANDS WILL BE WATERED REGULARLY UNTIL AN EFFECTIVE COVER IS ESTABLISHED AND PLANTS ARE GROWING VIGOROUSLY. FOLLOW-UP SEED AND FERTILISER WILL BE APPLIED AS NECESSARY.
10. RE-VEGETATION SHOULD BE AIMED AT RE-ESTABLISHING NATURAL SPECIES. NATURAL SURFACE SOILS SHOULD BE REPLACED AND NON-PERSISTANT ANNUAL COVER CROPS SHOULD BE USED.

SITE INSPECTION AND MAINTENANCE

1. THE SITE PRINCIPAL CONTRACTOR WILL INSPECT THE SITE AT LE

EARTHWORKS

1.1. CIVIL BULK EARTHWORKS ARE PROVIDED TO INFORM MASS MOVEMENT OF SOIL TO PROVIDE A SUBGRADE PLATFORM FOR BUILDINGS, ROADS AND OTHER STRUCTURES.

1.2. THE STANDARD FOR THE PROVISION OF EARTHWORKS ARE TO BE IN ACCORDANCE WITH THE CIVIL SPECIFICATION AND AUSTRALIAN STANDARD AS 3798 "GUIDELINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS", MODIFIED TO SUIT ALL LOCAL CONDITIONS, PRACTICES AND LOCAL AUTHORITY STANDARDS AS REQUIRED AND AS APPROVED IN WRITING BY THE SUPERINTENDENT.

1.3. ALL WORK SHALL COMPLY WITH THE PROJECT GEOTECHNICAL REPORT RECEIVED ON 24/05/23, PREPARED BY GEOTECHNICAL ENGINEER, REFERENCE 53113/110630 Rev 0, DATED 25/08/17.

1.4. NO ALLOWANCE HAS BEEN MADE FOR BULKING FACTORS. NOTE ALL VOLUMES DEPICTED ARE SOLID VOLUMES ONLY AND MAY NOT REFLECT DETAILED EARTHWORKS.

1.5. NO ALLOWANCE HAS BEEN MADE FOR DETAILED EXCAVATION INCLUDING BUT NOT LIMITED TO TANKS, FOOTINGS, RETAINING WALLS, EDGE THICKENINGS, BEAMS, STAIR AND LIFT CORES, PILING PLATFOTINSW, SERVICES TRENCHING AND DEEP SOIL ZONES.

1.6. CIVIL BULK EARTHWORKS DOES NOT CONSIDER LATENT GEOTECHNICAL CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

1.7. BULK EARTHWORKS DOES NOT ALLOW FOR ANY UNSUITABLE MATERIAL FOUND ANYWHERE ON SITE.

1.8. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.

1.9. BULK EARTHWORKS ARE BASED ON THE SETDOWN TO UNDERSIDE OF PAVEMENT BUILDUPS AS SPECIFIED FROM FINISHED SURFACE LEVELS.

1.10. REFER TO THE STRUCTURAL ENGINEERS SPECIFICATION FOR EXCAVATION WORKS IN RELATION TO BUILDINGS / FOOTINGS

1.11. TOPSOIL SHALL BE STRIPPED ACROSS THE ENTIRE LIMIT OF THE EARTHWORKS CUT AND FILL AREAS AND SHALL BE STOCKPILED IN A LOCATION APPROVED BY THE SUPERINTENDENT. THE EXISTING STRATA IS TO BE TREATED IN ACCORDANCE WITH THE SPECIFICATION PRIOR TO PLACING ANY FILL.

1.12. STRIP EXISTING TOPSOIL IN CONSULTATION WITH THE GEOTECHNICAL ENGINEER / REPORT. FOR THE PURPOSES OF EARTHWORKS CALCULATIONS A TOPSOIL STRIPPING DEPTH OF 150mm HAS BEEN ASSUMED. GROUND SLAB DEPTH OF 150mm HAS BEEN ASSUMED WHERE REQUIRED.

1.13. ALL EARTHWORKS TESTING IS TO BE IN ACCORDANCE WITH LOCAL AUTHORITY AND AUSTRALIAN STANDARDS AS1289 AND AS1726, AS APPLICABLE.

1.14. SUPERVISION, INSPECTION AND TESTING IS TO BE CARRIED OUT IN ACCORDANCE WITH SECTION 8 AND APPENDIX B OF AS 3798. FOR ALL STRUCTURAL FILL, THE SCOPE OF SERVICES TO BE PROVIDED BY THE GEOTECHNICAL TESTING AUTHORITY IS TO BE IN ACCORDANCE WITH LEVEL 1 OR LEVEL 2 AS DETAILED IN APPENDIX B AND IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS. LEVEL 3 SUPERVISION IS NOT PERMITTED FOR STRUCTURAL FILL, BUT IS ACCEPTABLE FOR NON-STRUCTURAL FILL.

1.15. EXCAVATED MATERIAL MAY BE USED AS STRUCTURAL FILL PROVIDED:-

1.15.1. IT COMPLIES WITH THE THE SPECIFICATION REQUIREMENTS FOR FILL MATERIAL.

1.15.2. THE PLACEMENT MOISTURE CONTENT COMPLIES WITH THE GEOTECHNICAL CONSULTANTS REQUIREMENTS, AND ALLOWS FILLING TO BE PLACE AND PROOF ROLLED IN ACCORDANCE WITH THE SPECIFICATION. ALSO REFER TO THE SALINITY MANAGEMENT PLAN AND FILL IMPORT PLAN FOR FURTHER DETAILS.

1.16. EARTHWORK SPOIL, IN EXCESS OF SITE FILL REQUIREMENTS, SHALL BE DISPOSED OFF SITE. CONTRACTOR TO ALLOW FOR ALL ENVIRONMENTAL TESTING ASSOCIATED WITH REMOVAL OF SPOIL FROM SITE.

1.17. CLEARED VEGETATION SHALL BE MULCHED AND DISPOSED OF OFF-SITE. BURNING OFF IS NOT CONSIDERED AN ACCEPTABLE MEANS OF DISPOSAL AND WILL NOT BE APPROVED.

1.18. ALL BATTERS, ALLOTMENT FILL AREAS AND DISTURBED AREAS SHALL BE TOPSOILED FROM ONSITE STOCKPILES. THE TOPSOIL SHALL BE SCREENED PRIOR TO PLACING.

1.19. PRIOR TO EARTH FILLING WORKS ALL VEGETATION AND TOPSOIL SHALL BE STRIPPED. THE EXPOSED EMBANKMENT FOUNDATION SHALL BE MOISTURE CONDITIONED AND COMPACTED TO A MINIMUM OF 98% STANDARD COMPACTION PRIOR TO FILLING OR PAVEMENT CONSTRUCTION.

1.20. ANY SOFT OR WEAK AREAS IDENTIFIED DURING THE COMPACTION PROCESS THAT DO NOT RESPOND TO FURTHER COMPACTION, SHOULD BE REMOVED AND REPLACED WITH SELECT FILL IN LAYERS NOT EXCEEDING 200mm LOOSE THICKNESS AND EACH LAYER COMPACTED TO ACHIEVE A DRY DENSITY RATIO OF 98%.

1.21. ALL COMPACTION TO BE CARRIED OUT IN ACCORDANCE WITH THE CIVIL SPECIFICATION AND COMPACTION PROCEDURES AS DEFINED IN AS 1289 5.2.1 TEST PROCEDURE. CERTIFICATION IS TO BE AN INDEPENDENT GEOTECHNICAL ENGINEER (AT CONTRACTORS EXPENSE).

1.22. BENEATH PAVEMENTS A NON-EXPANSIVE APPROVED SELECT FILL SHALL BE PLACED WHERE REQUIRED IN UNIFORM LAYERS NOT TO EXCEEDING 200mm LOOSE THICKNESS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+0R- 2%) TO ACHIEVE A MINIMUM DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289.5.1.1-2003 AS FOLLOWS:-

LOCATION	STANDARD DRY DENSITY (MMDD)
UNDER BUILDING SLABS	98%
VEHICULAR PAVED AREAS	100%
NON-VEHICULAR PAVED AREAS	98%
LANDSCAPED AREAS	95%

1.23. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:-

1.23.1. FREE FROM ORGANIC AND PERISHABLE MATTER,

1.23.2. MAXIMUM PARTICLE SIZE 75mm,

1.23.3. PLASTICITY INDEX - BETWEEN 2% AND 15%

STORMWATER DRAINAGE

1. ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.
2. THE CONTRACTOR IS TO EXERCISE DUE CARE AND ATTENTIION DURING PIPE INSTALLATION ENSURING PIPES ARE NOT DAMAGES DURING CONSTRUCTION AND CONSTRUCTION TRAFFIC DOES NOT EXCEED THE LOAD SPECIFIED FOR THE PIPE PROPOSED. IF THE PROPOSED PIPE CLASS WILL NOT WITHSTAND THE CONSTRUCTION LOAD, THE CONTRACTOR IS TO UPGRADE PIPE CLASSES TO SUIT AT NO COST TO THE PRINCIPAL.
3. PIPES 300 DIA. AND LARGER TO BE REINFORCED CONCRETE CLASS '3' APPROVED SPIGOT AND SOCKET WITH RUBBER RING JOINTS. U.N.O.
4. PIPES LESS THAN OR EQUAL TO 225 DIA. SHALL BE uPVC DWV GRADE CLASS SN8 IN ACCORDANCE WITH AS/NZS 1260:2009-PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.
5. EQUIVALENT STRENGTH REINFORCED CONCRETE OR FIBROUS REINFORCED CONCRETE PIPES MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
6. CONTRACTOR IS TO ENSURE THAT ALL DRAINAGE STRUCTURES ARE ADEQUATELY REINFORCED AND SHALL PROVIDE DESIGN CERTIFICATION FOR ALL REINFORCED CONCRETE LIDS.
7. ALL STORMWATER DRAINAGE LINES UNDER PROPOSED BUILDING SLABS TO BE uPVC PRESSURE PIPE GRADE 6. ENSURE ALL VERTICALS AND DOWNPIPES ARE uPVC PRESSURE PIPE, GRADE 6 FOR A MIN OF 3.0m IN HEIGHT.
8. PIPES TO BE INSTALLED TO TYPE H2 (NOT UNDER ROADWAYS) OR TYPE HS2 (UNDER ROADWAYS) SUPPORT IN ACCORDANCE WITH AS 3725 (2007). IN ALL CASES BACKFILL TRENCH 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% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS 1289 5.2.1. (OR A DENSITY INDEX OF NOT LESS THAN 75)
9. PIT COVER LEVELS TO MATCH SURROUNDING FINISHED LEVELS. DESIGN FINISHED SURFACE LEVELS OF STRUCTURES ARE FOR THE CONTRACTORS GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET OUT AS DIRECTED ON SITE IN KEEPING WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE LOCAL AUTHORITY AND ACTUAL FINISHED GROUND LEVELS.
10. STORMWATER PIT COVERS FOR JUNCTION AND GRATED PITS TO COMPLY WITH AS 3996 FOR:

LOAD CLASS	TYPICAL USE
CLASS A	INTERNAL PEDESTRIAN PRECINCTS ONLY. NO VEHICULAR TRAFFIC
CLASS B	EXTERNAL AREAS INCLUDING FOOTPATHS, FOOTWAYS AND LIGHT VEHICULAR TRAFFIC ONLY
CLASS D	CARS, TRUCKS (HIGHWAY TRAFFIC) AND COMMERCIAL VEHICULAR TRAFFIC
CLASS E	HEAVY DUTY FORKLIFTS AND EARTHMOVING EQUIPMENT

11. REFER TO TABLE BELOW FOR MINIMUM PIT DIMENSIONS (AS 3500.3 TABLE 7.5.2.1):

DEPTH TO INVERT	WIDTH	LENGTH
LESS THAN 600mm	450mm	450mm
FROM 600mm TO 900mm	600mm	600mm
FROM 900mm TO 1200mm	600mm	900mm
MORE THAN 1200mm	900mm	900mm

12. ALL INTERNAL WORKS WITHIN PROPERTY BOUNDARIES ARE TO COMPLY WITH THE REQUIREMENTS OF AS 3500 3.1 (2006) AND AS/NZS 3500 3.2 (2010).
13. PRECAST PITS MAY BE USED EXTERNAL TO THE BUILDING SUBJECT TO APPROVAL BY STANTEC AUSTRALIA.
14. ENLARGERS, CONNECTIONS AND JUNCTIONS TO BE PREFABRICATED FITTINGS WHERE PIPES ARE LESS THAN 300 DIA.
15. PIPES FOR SUBSOIL DRAINS SHALL BE SLOTTED 100mm DIA. CLASS 1000 WRAPPED IN GEOFABRIC, UNO, COMPLYING WITH THE REQUIREMENTS OF AS2439. ALL SUBSOIL PIPES SHALL BE FACTORY SLOTTED HDPE, MIN. 100mm DIA. CLASS SN8, SIMILAR OR EQUAL TO VINIDEX DRAINCOIL, CERTIFIED uPVC, IN ACCORDANCE WITH AS1260, AS2032 (PIPE) & AS3789 (JOINTING) INSTALLED ON GEOTEXTILE FABRIC WITH 150mm SURROUND OF 25mm BLUE METAL AGGREGATE, UNO. WHERE SUBSOIL DRAINS PASS UNDER FLOOR SLABS AND PAVEMENTS, UNSLOTTED uPVC DWV GRADE CLASS SN8 SEWER GRADE PIPE IS TO BE USED.
16. CARE IS TO BE TAKEN WITH LEVELS OF STORMWATER LINES. GRADES SHOWN ARE NOT TO BE REDUCED WITHOUT APPROVAL.
17. AT ALL TIMES DURING CONSTRUCTION OF STORMWATER PITS, ADEQUATE SAFETY PROCEDURES SHALL BE TAKEN TO ENSURE AGAINST THE POSSIBILITY OF PERSONNEL FALLING DOWN PITS.
18. ALL EXISTING STORMWATER DRAINAGE LINES AND PITS THAT ARE TO REMAIN ARE TO BE INSPECTED AND CLEANED. DURING THIS PROCESS ANY PART OF THE STORMWATER DRAINAGE SYSTEM THAT WARRANTS REPAIR SHALL BE REPORTED TO THE SUPERINTENDENT/ENGINEER FOR FURTHER DIRECTIONS. CCTV SHALL BE UNDERTAKEN OF EXISTING PIPES WHERE NECESSARY TO CONFIRM THEIR ADEQUACY PRIOR TO AND FOLLOWING CONSTRUCTION.
19. THE CONTRACTOR IS TO ORGANISE AND STAGE CONSTRUCTION WORK AND UNDERTAKE ANY DIVERSION WORKS TO ENSURE THE EXISTING DRAINAGE IS ABLE TO CONVEY ALL STORMWATER FLOWS THAT MAY OCCUR DURING THE PERIOD OF THE CONSTRUCTION WORKS.
20. ANY DAMAGE TO THE WORKS DUE TO STORMWATER FLOWS OR FLOODING DURING THE CONSTRUCTION PERIOD IS AT THE CONTRACTOR'S RISK.
21. SETOUT POINTS FOR STORMWATER STRUCTURES ARE AS INDICATED IN THE DRAWINGS UNLESS OTHERWISE NOTED.
22. ALL PAVED SURFACE LEVELS AND GRADES TO BE COORDINATED WITH GULLY PIT LEVELS TO ENSURE NO UNDRAINED AREAS OCCUR.
23. THE SIDES OF ALL PIPE TRENCH EXCAVATIONS DEEPER THAN 1.0m SHALL BE FULLY SUPPORTED AT ALL TIMES AND HAVE APPROPRIATE EDGE PROTECTION.
24. ALL NEW PIPES TO BE LAID IN AN UPSTREAM DIRECTION. THE LINE, LEVEL AND LOCATION OF EXISTING SERVICES CROSSING THE LINE OF THE PROPOSED STORMWATER PIPE SHALL BE DETERMINED BY EXCAVATION PRIOR TO THE LAYING OF THE PIPE. IF CONFLICT IS APPARENT, THE ENGINEER SHALL BE NOTIFIED AND INSTRUCTIONS AS TO WHETHER THE EXISTING SERVICE IS TO BE ADJUSTED OR THE PROPOSED PIPE INVERT ALTERED WILL BE ISSUED.
25. PIPE BEDDING, HAUNCH AND BACKFILL TO BE AS SHOWN ON THE CIVIL DETAILS DRAWINGS AND THE CIVIL SPECIFICATION. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED OR 75mm THICK BED OF 12mm BLUE METAL UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK.
26. SUBSOIL DRAINAGE PIPES TO BE SLOTTED PIPE AND FILTER SOCK CLASS 1000 TO AS2439 PART 1 LAID AT PREFERABLE MINIMUM GRADE 1 IN 100 OR ABSOLUTE MINIMUM 1 IN 200 WHERE LIMITED BY OUTFALL LEVELS.
27. 100mm DIA. SUBSOIL DRAINAGE SHALL BE PROVIDED IN THE FOLLOWING LOCATIONS AND CONNECTED TO THE SITE STORMWATER DRAINAGE SYSTEM, UNO.:-
    - 27.1. UNDER KERBS AND ADJACENT TO ALL PAVEMENTS (UNLESS IT COINCIDES WITH A STORMWATER PIPE)
    - 27.2. AT THE BASE OF THE HIGH SIDE OF ALL RETAINING WALLS
    - 27.3. AROUND THE BUILDING SLAB FOOTPRINT
    - 27.4. AROUND ALL STORMWATER PITS

STORMWATER DRAINAGE

28. STORMWATER STRUCTURES ARE TO BE CONSTRUCTED PERPENDICULAR TO THE INCOMING PIPEWORK UNLESS OTHERWISE NOTED.
29. PRECAST COMPONENTS SHALL BE CONNECTED BY MEANS OF EPOXY OR CHEMICAL GROUTED BARS OF THE SAME DIAMETER AND SPACING AS THE SMALLER BARS IN THE RESPECTIVE COMPONENTS.
25. PRE-CAST PITS MUST HAVE LIFTING ANCHORS.
26. WORKING LOADS ARE THOSE DUE TO FILL MATERIAL AND STANDARD HIGHWAY VEHICLES AS PER AS3725. CONSTRUCTION LOADS HAVE NOT BEEN ALLOWED FOR.
27. ALL EXPOSED EDGES ON STORMWATER PITS TO BE ROUNDED TO 5mm RAD. UNO.
28. ALL MILD STEEL FIXTURES INCLUDING GRATES, FRAMES, STEP IRONS, LADDERS, ETC., SHALL BE HOT DIP GALVANISED. GALVANISING SHALL COMPLY WITH THE REQUIREMENTS OF AS1214 OR AS1650, AS APPROPRIATE.
29. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
30. PITS DEEPER THAN 1200mm SHALL HAVE ACCESS LADDERS OR STEP IRONS INSTALLED AND SHALL BE IN ACCORDANCE WITH AS1657 AND HTHE LOCAL OR STATUTORY REQUIREMENTS.
31. WHERE A PIT IS IDENTIFIED AS A CONFINED SPACE, PIT COVERS SHALL BE PROVIDED WITH STANDARD CONFINED SPACE SIGNAGE.
32. CAPPED FLUSHING POINTS MUST BE PROVIDED FOR ALL SUBSOIL AND SEEPAGE DRAINAGE SYSTEMS AT THE END OF EACH PIPE, AT MAX. 30m SPACING AND AT CHANGES IN DIRECTION.
33. THE CONTRACTOR SHALL OBTAIN A ROAD OPENING PERMIT FOR ANY WORKS WITHIN THE PUBLIC ROAD RESERVE AND COMPLY WITH ALL AUTHORITY REQUIREMENTS.
34. PIPES SHALL BE TRUE TO GRADES SHOWN AND ALIGNED SO THAT THE CENTRES OF THE INLET PIPES INTERSECT WITH THE CENTRE OF THE OUTLET PIPE AT THE DOWNSTREAM FACE OF THE PIT.
35. MINIMUM GRADES FOR GRAVITY STORMWATER DRAINAGE SHALL CONFORM TO AS 3500 PART 3 AS FOLLOWS, UNO:-
    - 35.1. 1% FOR 100mm AND 150mm DIA. PIPES
    - 35.2. 0.5% FOR 225mm DIA. PIPES
    - 35.3. 0.4% FOR 300mm DIA. PIPES
    - 35.4. 0.33% FOR 375mm DIA. PIPES
36. MINIMUM DEPTH OF COVER SHALL BE AS FOLLOWS, UNO:-
    - 36.1. 300mm IN PRIVATE PROPERTY (NON-VEHICULAR TRAFFIC)
    - 36.2. 450mm IN PUBLIC AREAS
    - 36.3. 600mm IN VEHICULAR TRAFFICABLE AREAS (FOOTWAY/ROADWAYS)
37. BED ALL PIPES FIRMLY AND EVENLY ONTO IMPORTED BEDDING FILL MATERIAL.
38. LAY AND JOINT ALL PIPES IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION AND
    - AS 3725 BURIED FLEXIBLE PIPELINES
    - AS 2566 LOADS ON BURIED FLEXIBLE PIPELINES
    - AS 1597.2 PRECAST REINFORCED CONCRETE BOX CULVERTS
    - AS 3500 NATIONAL PLUMBING AND DRAINAGE CODE
    - SYDNEY WATER REQUIREMENTS (WHERE APPLICABLE)
39. ALLOW TO TEST ALL PIPES AND PITS TO MANUFACTURERS REQUIREMENTS.
40. WHERE STORMWATER DRAINAGE IS LAID IN THE VICINITY OF TREES / CANOPIES OF TREES, THE WORKS ARE TO BE COMPLETED TO THE PROJECT ARBORISTS REQUIREMENTS.

ON-SITE DETENTION (OSD) NOTES

1. THIS SPECIFICATION IS TO BE READ IN CONJUNCTION WITH THE STORMWATER DRAINAGE NOTES.
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS, EXISTING LEVELS, SERVICES AND STRUCTURES ON SITE PRIOR TO THE COMMENCEMENT OF WORK.
3. ALL WORK SHALL BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS AND THE SPECIFICATION.
4. ON COMPLETION OF PROPOSED WORKS, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL, GRASSED AND LANDSCAPE AREAS AND ROAD PAVEMENTS, UNO.
5. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS, IF APPLICABLE.
6. MAKE SMOOTH TRANSITION TO EXISTING / PROPOSED SERVICES AND MAKE GOOD.
7. WHERE NEW WORKS ABUT EXISTING, THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
8. THE BASE OF THE OSD TANK IS TO BE SCREEDED TO ACHIEVE A MINIMUM 1% GRADE, IN ACCORDANCE WITH AUTHORITY REQUIREMENTS AND THE ENGINEERING PLANS, TO PREVENT PONDING OF WATER IN THE TANK AND DIRECT ALL FLOWS TO THE OUTLET.
9. THE CONTRACTOR MUST ENSURE THE LEVELS SPECIFIED ON THE PLANS ARE ACHIEVED TO A 5mm ACCURACY.
10. FOLLOWING CONSTRUCTION, WORK-AS-EXECUTED (WAE) DRAWINGS ARE TO BE PROVIDED TO STANTEC CONFIRMING THE FOLLOWING:
    - 10.1. TANK REDUCED LEVELS (RL)
    - 10.2. SOFFIT LEVEL
    - 10.3. BASE INVERT LEVELS (IL)
    - 10.4. TOTAL EFFECTIVE VOLUME
    - 10.5. INSTALLATION OF THE TRASH RACK
    - 10.6. INSTALLATION OF THE ORIFICE PLATE, IF APPLICABLE, AND DIAMETER
    - 10.7. INSTALLATION OF INTERNAL WEIR WALLS
    - 10.8. INSTALLATION OF SUMP, IF APPLICABLE
    - 10.9. INSTALLATION OF STEP IRONS, IF APPLICABLE. STEP IRONS ARE TO BE INSTALLED IN ALL TANK THAT EXCEED 1200mm DEPTH
    - 10.10. INSTALLATION OF WATER QUALITY IMPROVEMENT DEVICES, IF APPLICABLE WAE PLANS ARE TO BE UNDERTAKEN BY A REGISTERED SURVEYOR.
11. CONTRACTOR IS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
12. A GENERAL INSPECTION OF THE OSD TANK IS TO BE UNDERTAKEN EVERY SIX (6) MONTHS AND AFTER MAJOR STORM EVENTS. THE GENERAL INSPECTION SHALL INVOLVE THE FOLLOWING:
    - 11.1. VISUAL INSPECTION INSIDE THE TANK
    - 11.2. CONDITION INSPECTION OF COMPONENTS SUCH AS ORIFICE PLATES AND VALVES
    - 11.3. REMOVAL AND DISPOSAL OF LARGER GROSS POLLUTANTS TO PREVENT BLOCKAGES
    - 11.4. MINOR RECTIFICATION WORKS AS REQUIRED
13. THE OSD TANK SHALL BE HOSED OUT AND CLEANED ON AN ANNUAL BASIS.

ROOF AND SUSPENDED FLOOR DRAINAGE

1. ROOF AND SURFACE DRAINAGE (WITHIN THE BUILDING FOOTPRINT, INCLUSIVE OF BALCONIES, TERRACES, PODIUMS ETC) IS TO BE DETAILED BY THE HYDRAULIC CONSULTANT.
2. THE CONTRACTOR SHALL COORDINATE THE NECESSARY INTERFACE BETWEEN THE HYDRAULIC AND CIVIL WORKS.

CLOSED CIRCUIT TELEVISION (CCTV)

1. UNDERTAKE A CCTV INSPECTION OF ALL THE COMPLETED DRAINAGE IN ACCORDANCE WITH THE GUIDELINES OF THE AUSTRALIAN CONDUIT CONDITION EVALUATION MANUAL (ACCEM).
2. APPLY THE FOLLOWING REQUIREMENTS TO THE CCTV INSPECTION:-
    - 2.1. USE DATA CAPTURE SOFTWARE APPROVED BY SYDNEY WATER
    - 2.2. USE CERTIFIED CCTV OPERATORS
    - 2.3. THE CCTV VIDEOTAPE SHALL BE OF QUALITY TO ALLOW ACCURATE ASSESSMENT OF THE INTERNAL CONDITION OF THE PIPE
3. FURNISH TO THE DESIGN CONSULTANT THE FOLLOWING:-
    - 3.1. VIDEOS IN MPG FORMAT FOR VIEWING
    - 3.2. CCTV REPORT AND SURVET DATA IN PDF FORMAT

WATER QUALITY TESTING

1. PRIOR TO DISCHARGE OF SITE STORMWATER, GROUNDWATER AND SEEPAGE WATER INTO THE COUNCIL STORMWATER SYSTEM, CONTRACTORS MUST UNDERTAKE WATER QUALITY TESTING IN CONJUNCTION WITH A SUITABLY QUALIFIED ENVIRONMENT CONSULTANT OUTLINING THE FOLLOWING:
    - 1.1. COMPLIANCE WITH THE CRITERIA OF THE AUSTRALIAN AND NEW ZEALAND GUIDELINES FOR FRESH AND MARINE WATER QUALITY (2000)
    - 1.2. IF REQUIRED SUBJECT TO THE ENVIRONMENTAL CONSULTANTS ADVICE, PROVIDE REMEDIAL MEASURES TO IMPROVE THE QUALITY OF WATER THAT IS TO BE DISCHARGED INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. THIS SHOULD INCLUDE COMMENTS FROM A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT CONFIRMING THE SUITABILITY OF THESE REMEDIAL MEASURES TO MANAGE THE WATER DISCHARGED FROM THE SITE INTO COUNCIL'S STORMWATER DRAINAGE SYSTEM. OUTLINE THE PROPOSED, ONGOING MONITORING, CONTINGENCY PLANNS AND VALIDATION PROGRAM THAT WILL BE IN PLACE TO CONTINUALLY MONITOR THE QUALITY OF WATER DISCHARGED FROM THE SITE. THIS SHOULD ALSO OUTLINE THE FREQUENCY OF WATER QUALITY TESTING THAT WILL BE UNDERTAKEN BY A SUITABLY QUALIFIED ENVIRONMENTAL CONSULTANT.

ROADWORKS NOTES

1. ALL BASECOURSE, SUB-BASECOURSE AND SELECT FILL MATERIALS SHALL CONFORM WITH THE DRAWINGS, COUNCIL CONSTRUCTION SPECIFICATIONS AND AUSTRALIAN STANDARDS.
2. ALL BASECOURSE, SUB-BASECOURSE AND SELECT FILL MATERIALS SHALL BE COMPACTED TO ACHIEVE A MINIMUM OF 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OF +OR-2% IN ACCORDANCE WITH AS 1289 E1.1. UNO.
3. ALL WEARING SURFACES SHALL BE ASPHALTIC CONCRETE LAID TO THE THICKNESS SPECIFIED AND IN ACCORDANCE WITH THE SPECIFICATION.
4. CONCRETE FOR KERB SHALL HAVE A CONCRETE STRENGTH OF 25MPa AT 28 DAYS, MINIMUM SLUMP OF 80mm AND MAXIMUM AGGREGATE SIZE OF 20mm.
5. ALL DISTURBED EXISTING CONCRETE PAVEMENT SHALL BE REINSTATED TO MATCH EXISTING PAVEMENT FINISH INCLUDING PAVEMENT IN FOOTPATH AND DRIVEWAY AREAS.
6. NEW FLEXIBLE PAVEMENT MATCHING TO EXISTING FLEXIBLE PAVEMENT SHALL BE COMPLETED IN STRICT ACCORDANCE WITH THE DRAWINGS AND COUNCIL CONSTRUCTION SPECIFICATIONS.
7. ALL BASECOURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. FORM 3051 (UNBOUND), TfNSW. FORM 3052 (BOUND) 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^3 BASECOURSE MATERIAL PLACED.
8. ALL SUB-BASE COURSE MATERIAL SHALL BE IGNEOUS ROCK QUARRIED MATERIAL TO COMPLY WITH TfNSW. FORM 3051, 3051.1 AND COMPACTED TO MINIMUM 98% MODIFIED DENSITY IN ACCORDANCE WITH A.S 1289 5.2.1. FREQUENCY OF COMPACTION TESTING SHALL NOT BE LESS THAN 1 TEST PER 50m^3 OF SUB-BASE COURSE MATERIAL PLACED.
9. AS AN ALTERNATIVE TO THE USE OF IGNEOUS ROCK AS A SUB-BASE MATERIAL IN (9.2) A CERTIFIED RECYCLED CONCRETE MATERIAL COMPLYING WITH TfNSW. FORM 3051 AND 3051.1 WILL BE CONSIDERED. SUBJECT TO MATERIAL SAMPLES AND APPROPRIATE CERTIFICATIONS BEING PROVIDED TO THE SATISFACTION OF STANTEC.
10. SHOULD THE CONTRACTOR WISH TO USE A RECYCLED PRODUCT THIS SHALL BE CLEARLY INDICATED IN THEIR TENDER AND THE PRICE DIFFERENCE BETWEEN AN IGNEOUS PRODUCT AND A RECYCLED PRODUCT SHALL BE CLEARLY INDICATED. THIS PRODUCT SHALL BE REVIEWED AND APPROVED BY THE ENGINEER.

SUBGRADE PREPARATION

1. REMOVE ALL TOPSOIL, VEGETABLE MATTER AND DELETERIOUS MATERIAL FROM AREA OF PROPOSED BUILDING PLATFORM AND PAVEMENTS.
2. REMOVE ANY ORGANICS AND FOREIGN MATERIALS, SOFT, HEAVING, WET OR UNSTABLE AREAS IDENTIFIED DURING PROOF ROLLING AND REPLACE USING SELECT IMPORTED FILL MATERIAL TO A DEPTH NOMINATED BY A GEOTECHNICAL ENGINEER.
3. SUBGRADE REPLACEMENT MATERIAL IS TO CONSIST OF CLEAN, UNCONTAMINATED, WELL-GRADED, NON-ORGANIC FILL WITH A MAXIMUM PARTICLE SIZE OF 75mm AND COMPACT IN MAX. 200mm THICK LAYERS, UNO.
4. COMPACTION IS TO BE CARRIED OUT BY ROLLING AT OPTIMUM MOISTURE CONTENT TO OBTAIN A DENSITY EQUIVALENT TO 100% SMDD WHEN TESTED BY THE STANDARD COMPACTION TEST (E1.1, AS 1289).
5. COMPACTION SHALL BE CARRIED OUT WITH A VIBRATING ROLLER WITH AT LEAST 10 TONNE STATIC WEIGHT.
6. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY.
7. THE CONTRACTOR IS TO PROVIDE CERTIFICATION TO THE EFFECT THAT EARTHWORKS COMPACTION HAS BEEN ACHIEVED IN ACCORDANCE WITH THE SPECIFICATION, UNLESS OTHERWISE AGREED IN WRITING BY THE SUPERINTENDENT.
8. THE CONTRACTOR IS TO PROVIDE TO THE SITE SUPERINTENDENT A SURVEY CONFIRMATION FROM A REGISTERED SURVEYOR CONFIRMING BULK EARTHWORKS LEVELS AS WITHIN -20mm/+0mm OF THE NOMINATED LEVEL.
9. BACKFILLING FOR SERVICE TRENCHING AND REMOVED SERVICES OR PITS OR FOUNDATIONS IS TO USE APPROVED WELL-GRADED GRANULAR MATERIAL WITH MINIMUM VOIDS (EITHER SELECT INSITU OR IMPORTED FILL) AS SPECIFIED ABOVE.

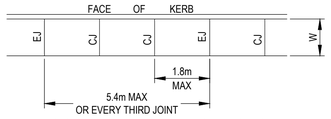
KERBING NOTES

1. THE FOLLOWING NOTES ARE TO BE READ IN CONJUNCTION WITH COUNCIL SPECIFICATIONS AND TYPICAL DRAWINGS. COUNCIL SPECIFICATIONS SHALL TAKE PRECEDENCE OVER THE NOTES PROVIDED IN THIS SPECIFICATION.
2. ALL CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 25 MPa U.N.O IN REINFORCED CONCRETE NOTES.
3. ALL KERBS, GUTTERS, DISH DRAINS AND CROSSINGS TO BE CONSTRUCTED ON 100mm GRANULAR BASECOURSE COMPACTED TO MINIMUM 95% MODIFIED DRY DENSITY (AS 1289 5.2.1).
4. EXPANSION JOINTS (E-J) TO BE FORMED FROM 10mm COMPRESSIBLE CORK FILLER BOARD FOR THE FULL DEPTH OF THE SECTION AND CUT TO PROFILE. EXPANSION JOINTS TO BE LOCATED AT DRAINAGE PITS, ON TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX 12m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE EXPANSION JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
5. WEAKENED PLANE JOINTS TO BE MIN 3mm WIDE AND LOCATED AT 3m CENTRES EXCEPT FOR INTEGRAL KERBS WHERE THE WEAKENED PLANE JOINTS ARE TO MATCH THE JOINT LOCATIONS IN THE SLABS.
6. BROOMED FINISH TO ALL RAMPED AND VEHICULAR CROSSINGS. ALL OTHER KERBING OR DISH DRAINS TO BE STEEL FLOAT FINISHED.
7. W

JOINTING NOTES

PEDESTRIAN PAVEMENT JOINTS

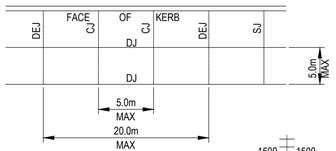
1. ALL PEDESTRIAN PAVEMENTS ARE TO BE JOINTED AS FOLLOWS. (U.N.O)
2. EXPANSION JOINTS ARE TO BE LOCATED WHERE POSSIBLE AT TANGENT POINTS OF CURVES AND ELSEWHERE AT MAX. 5.4m CENTRES.
3. CONTRACTION JOINTS ARE TO BE LOCATED AT A MAX. SPACING OF 1.8m
4. WHERE POSSIBLE JOINTS SHOULD BE LOCATED TO MATCH KERBING AND OR ADJACENT PAVEMENT JOINTS.
5. PEDESTRIAN PAVEMENT JOINT DETAIL:



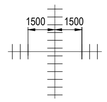
ALL RAMPED CROSSINGS SHALL BE DOWELLED INTO THE AJOINING PATH PAVEMENT

VEHICULAR PAVEMENT JOINTS

6. ALL VEHICULAR PAVEMENTS TO BE JOINTED AS FOLLOWS. (U.N.O)
7. CONTRACTION JOINTS SHOULD GENERALLY BE LOCATED AT A MAX OF 5.0m CENTRES WITH DOWELED EXPANSION JOINTS AT MAX 20.0m CENTRES
8. SAWN JOINTS SHOULD GENERALLY BE LOCATED AT A MAXIMUM OF 5.0m CENTRES OR 1.5 x THE SPACING OF CONTRACTION JOINTS.
9. VEHICULAR PAVEMENT JOINT DETAIL.



10. WHERE DOWELLED JOINTS INTERSECT, REMOVE DOWELS FROM LAST 1.5m FROM JOINT IN DIRECTION OF POUR.



GENERAL JOINTING NOTES

11. PROVIDE 10mm WIDE EXPANDING CORK JOINTS BETWEEN CONCRETE PAVEMENTS AND ALL BUILDINGS, WALLS, FOOTINGS, CONCRETE AREAS, DISH DRAINS, GRATED DRAINS, BOLLARD FOOTINGS ETC.
12. CONCRETE MIX PARAMETERS ARE AS FOLLOWS:
    - 12.1. MAXIMUM AGGREGATE SIZE = 20mm
    - 12.2. FLEXURAL STRENGTH AT 28 DAYS = 3.5MPa
    - 12.3. FLEXURAL STRENGTH AT 90 DAYS = 3.85MPa
    - 12.4. MAXIMUM WATER / CEMENT RATIO = 0.55
    - 12.5. MAXIMUM SHRINKAGE LIMIT = 650 MICRON STRAINS (AS 1012 PT 13)
    - 12.6. MINIMUM CEMENT CONTENT = 300kg/m3
    - 12.7. CEMENT TO BE TYPE "A" (NORMAL CEMENT) TO AS 1315
    - 12.8. SLUMP = 50mm
13. JOINT TO BE SAWN AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY THAT IT WILL NOT BE DAMAGED BY SAWING. IF AN UNPLANNED CRACK OCCURS THE CONTRACTOR SHALL REPLACE WHOLE SLABS EITHER SIDE OF THE UNPLANNED CRACK, UNLESS DIRECTED OTHERWISE.
14. CONSTRUCT JOINTS AS DETAILED.
15. CONSTRUCTION JOINTS WHERE REQUIRED, BUT NOT SHOWN, SHALL BE LOCATED AT THE APPROVAL OF THE ENGINEER AND CONSTRUCTED AT THE CONTACTORS EXPENSE.
16. ALL LONGITUDINAL CONSTRUCTION JOINTS SHALL BE FORMED AND INCLUDE DOWEL BARS AS SPECIFIED. ALL TRANSVERSE CONSTRUCTION JOINTS SHALL BE FORMED AND INCLUDE DOWEL BARS AS SPECIFIED.
17. BOND BREAKER TO BE TWO UNIFORM COATS OF BITUMEN EMULSION ALL OVER THE EXPOSED SURFACE AND ON END.
18. DOWELS AND TIE BARD TO MEET STRENGTH REQUIREMENTS OF STRUCTURAL GRADE STEEL IN ACCORDANCE WITH AS 1302. DOWELS AND TIE BARS SHALL BE:
    - 18.1. STRAIGHT
    - 18.2. TO LENGTH SPECIFIED
    - 18.3. CLEAN AND FREE FROM MILL SCALE, RUST AND OIL
    - 18.4. SAWN TO LENGTH, NOT CROPPED
19. DIMENSIONS OF SEALANT RESERVOIR DEPENDANT ON THE SEALANT TYPE ADOPTED. ENGINEERS APPROVAL TO BE OBTAINED FOR SEALANT AND RESERVOIR DIMENSIONS AND DETAIL PROPOSED BY THE CONTRACTOR. REFER DETAIL "B" FOR TYPICAL ARRANGEMENT AND SEALANT.
20. PRIOR TO THE PLACEMENT OF CONCRETE IN THE ADJACENT SLAB, SELF EXPANDING CORK FILLER SHALL BE ADHERED TO THE ALREADY CAST AND CLEANED CONCRETE FACE USING AN APPROVED WATERPROOF ADHESIVE. ADHESIVE SHALL BE LIBERALLY APPLIED TO THE FULL FACE OF THE CONCRETE SLAB TO BE COVERED BY THE FILLER, AND ON THE FULL FACE OF THE FILLER TO BE ADHERED.

ASPHALTIC CONCRETE

1. GENERAL
    - 1.1. MINERAL AGGREGATED SHALL COMPLY WITH AUSTRALIAN STANDARDS
    - 1.2. MINERAL FILLER SHALL COMPLY WITH AS 2357 MINERAL FILLERS OR ASPHALT
    - 1.3. BITUMEN BINDER SHALL COMPLY WITH AS 2008.
2. MIX PROPORTIONS (UNO.)
    - 2.1. JOB MIX - 10mm NOMINAL SIZE AGGREGATE. MINIMUM BITUMEN CONTENT BY MASS OF TOTAL MASS - 5.1%
    - 2.2. MIX STABILITY SHALL BE BETWEEN 16kN AND 36kN AS DETERMINED BY AS 2891
    - 2.3. AIR VOIDS IN COMPACTED MIX SHALL BE BETWEEN 4% AND 7% OF THE TOTAL VOLUME OF THE MIX
    - 2.4. VOIDS FILLED IN BINDER - BETWEEN 65% AND 80% OF AIR VOIDS IN THE TOTAL MINERAL AGGREGATE FILLED BY BINDER IN ACCORDANCE WITH AUSTRALIAN STANDARDS
3. PAVEMENT PREPARATION
    - 3.1. THE EXISTING SURFACE TO BE SEALED SHALL BE DRY AND BROOMED BEFORE COMMENCEMENT OF WORK TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL AND FOREIGN MATTER
    - 3.2. ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT UP TO THE GENERAL LEVEL OR PAVEMENT WITH ASPHALTIC CONCRETE BEFORE LAYING THE MAIN COURSE
4. TACK COATING
    - 4.1. THE WHOLE AREA TO BE SHEETED WITH ASPHALTIC CONCRETE SHALL BE LIGHTLY AND EVENLY COASTED WITH RAPID SETTING BITUMEN COMPLYING WITH AUSTRALIAN STANDARDS. APPLICATION RATE FOR RESIDUAL BITUMEN SHALL BE 0.15 TO 0.3L/m^2. APPLICATION SHALL BE BY MEANS OF A MECHANICAL SPRAYER WITH A SPRAY BAR.
5. SPREADING
    - 5.1. ALL ASPHALTIC CONCRETE SHALL BE SPREAD WITH A SELF-PROPELLING PAVING MACHINE
    - 5.2. THE ASPHALTIC CONCRETE SHALL BE LAID AT A MIX TEMPERATURE AS SPECIFIED BELOW:-

ROAD SURFACE TEMPERATURE IN SHADE (°C)	MIX TEMPERATURES (°C)
5 - 10	NOT PERMITTED
10 - 15	150
15 - 25	145
OVER 25	140

    - 5.3 ASPHALTIC CONCRETE SHALL NOT BE LAID WHEN THE ROAD SURFACE IS WET OR WHEN COLD WINDS CHILL THE MIX, ADVERSELY AFFECTING SPREADING AND COMPACTION
    - 5.4 THE MINIMUM COMPACTED THICKNESS IS 30mm OVER EXISTING SEALED PAVEMENTS AND 50mm OVER NEW PAVEMENTS
6. JOINTS
    - 6.1. THE NUMBER OF JOINTS BOTH LONGITUDINAL AND TRANSVERSE SHALL BE KEPT TO A MINIMUM
    - 6.2. THE DENSITY AND SURFACE FINISH AT JOINTS SHALL BE SIMILAR TO THOSE OF THE REST OF THE LAYER
7. COMPACTION
    - 7.1. ALL COMPACTION SHALL BE UNDERTAKEN USING SELF-PROPELLED ROLLERS
    - 7.2. INITIAL ROLLING SHALL BE COMPLETE BEFORE THE MIX TEMPERATURE FALLS BELOW 105°C
    - 7.3. SECONDARY ROLLING SHALL BE COMPLETED BEFORE THE MIX TEMPERATURE FALLS BELOW 60°C
    - 7.4. MINIMUM CHARACTERISTICS VALUE OF RELATIVE COMPACTION OF A LOT WHEN TESTED IN ACCORDANCE WITH AS 2150
8. FINISHED PAVEMENT PROPERTIES
    - 8.1. FINISHED SURFACES SHALL BE SMOOTH, DENSE AND TRUE TO SHAPE AND SHALL NOT VARY MORE THAN 10mm FROM THE SPECIFIED PLAN LEVEL AT ANY POINT AND SHALL NOT DEVIATE FROM THE BOTTOM OF A 3m STRAIGHT EDGE LAID IN ANY DIRECTION BY MORE THAN 5mm.
9. OTHER
    - 9.1. ASPHALTIC CONCRETE SHALL CONFORM TO TfNSW. SPECIFICATION R116. UNO.

RETAINING WALL

1. BASE MATERIAL SHALL BE COMPACTED TO MINIMUM 98% SMDD WITHIN 2% OF STANDARD OPTIMUM MOISTURE CONTENT (SMOC) DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARD AS 1289.5.1.1 MINIMUM ALLOWABLE BEARING PRESSURE OF 150kPa. GEOTECHNICAL ENGINEER EMPLOYED BY CONTRACTOR TO INSPECT AND CONFIRM.
2. DRAINAGE MATERIAL WITHIN AND IMMEDIATELY BEHIND THE WALL SHALL BE 12-20mm CLEAN AGGREGATE. DRAINAGE MATERIAL TO EXTEND A MINIMUM OF 300mm BEHIND THE RETAINING WALL. COMPACT THE DRAINAGE MATERIAL. ALTERNATIVELY, USE NO FINES CONCRETE AS FOLLOWS:-
    - 2.1. CONCRETE STRENGTH N15
    - 2.2. 210kg/m^3 PORTLAND CEMENT
    - 2.3. MAXIMUM AGGREGATE SIZE 20mm
    - 2.4. W/C RATIO 0.45 TO 0.55
    - 2.5. DENSITY 1600 TO 2000kg/m^3
3. INFILL SOIL SHALL BE CLASS 1 CONTROLLED FILL TO AS 4678, OR AS SPECIFIED ON THE DRAWINGS. UNSUITABLE SOILS, SUCH AS HEAVY CLAYS OR ORGANIC SOILS WITH HIGH PLASTICITY, SHALL NOT BE USED IN THE REINFORCED SOIL MASS.
4. SPREAD BACKFILL IN UNIFORM LIFTS OF 200mm UNCOMPACTED THICKNESS. COMPACT TO 95% SMDD. COMPACTION WITHIN 1.0m BEHIND THE WALL SHALL BE ACCOMPLISHED USING A HAND-OPERATED PLATE COMPACTOR AND SHALL BEGIN BY RUNNING THE PLATE DIRECTLY ON THE BLOCK, THEN COMPACTING IN PARALLEL PATHS, PROGRESSIVELY AWAY FROM THE WALL FACE.
5. WHERE ROADWAYS OR BUILDING STRUCTURES ARE LOCATED ABOVE THE REINFORCED ZONE, COMPACT TO 98% SMDD WITHIN 2% OF SMOC DETERMINED BY THE STANDARD COMPACTION TEST IN ACCORDANCE WITH AS 1289.5.1.1. COMPACTION TESTING SHALL BE TAKEN 1.2m BEHIND THE WALL.

BITUMEN SEALANT NOTES

1. PAVEMENT PREPARATION
    - 1.1. THE SURFACE TO BE SEALED SHALL BE DRY AND BROOMED PRIOR TO THE COMMENCEMENT OF WORKS TO ENSURE COMPLETE REMOVAL OF ALL SUPERFICIAL, FOREIGN AND LOOSE MATTER
    - 1.2. IF APPROVED BY THE SUPERINTENDENT, ALL DEPRESSIONS OR UNEVEN AREAS ARE TO BE TACK-COATED AND BROUGHT TO THE GENERAL LEVEL OF THE PAVEMENT WITH ASPHALTIC CONCRETE BEFORE SEALING COMMENCES
2. MATERIALS
    - 2.1. THE BINDER SHALL BE CLASS 170 IN ACCORDANCE WITH AS 2008, OR AN APPROVED PROPRIETARY MATERIAL FOR PRIMING AND PRIME-SEALING
    - 2.2. THE AGGREGATE SHAPE, DURABILITY AND WET TO DRY STRENGTH SHALL COMPLY WITH AS 2758 FOR CLASS "N" AGGREGATES. A 20kg SAMPLE TO BE APPROVED BY THE SUPERINTENDENT PRIOR TO USE
    - 2.3. AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED. EXCESSIVE PRECOATING WILL RESULT IN THE AGGREGATES BEING REJECTED.
    - 2.4. FOR TWO COAT FLUSH SEALS, THE SIZE OF THE AGGREGATE FOR THE SECOND COAT (WHILE NORMALLY HALF THAT OF THE FIRST COAT) SHALL BE DIMENSIONALLY COMPATIBLE WITH THAT OF THE FIRST COAT.
3. DESIGN
    - 3.1. DESIGN OF SPRAYED BITUMINOUS SEALS SHALL BE CARRIED OUT IN ACCORDANCE WITH THE AUSTROADS (NAASRA) PUBLICATION "PRINCIPLES AND PRACTICES OF BITUMINOUS SURFACING, VOLUME 1 - SPRAYED WORK"
    - 3.2. WHERE NOT INDICATED ON THE PLANS, PRIMES AND PRIMER-SEALS SHALL BE DESIGNED TO REMAIN INTACT UNTIL FINAL SEALING TAKES PLACE, HAVING REGARD FOR THE TRAFFIC AND CLIMATIC CONDITIONS PERTAINING
    - 3.3. UNLESS OTHERWISE SPECIFIED, BINDER APPLICATION RATES SHALL BE SELECTED TO FILL 85% OF THE THEORETICAL VOIDS OF THE MAT
4. PRIMER-SEALING
    - 4.1. A SINGLE COAT PRIMER-SEAL USING A SUITABLE CUT-BACK OR PROPRIETARY BINDER SHALL BE APPLIED TO THE BASECOURSE MATERIAL FOR PROTECTION OF PAVEMENT DURING CONSTRUCTION
5. BITUMEN FLUSH SEALING
    - 5.1. BITUMEN FLUSH SEALS SHALL BE EITHER SINGLE OR DOUBLE COAT AS SHOWN ON THE DRAWINGS. E.G. 20/10 INDICATES A DOUBLE COAT FLUSH SEAL USING TWO APPLICATIONS OF BITUMEN AND AGGREGATE, THE FIRST AGGREGATE LAYER BEING 20mm NOMINAL SIZE AND THE SECOND LAYER BEING 10mm
    - 5.2. COVER AGGREGATE SHALL BE SPREAD IMMEDIATELY AFTER THE SPRAYING OF BINDER. IN NO CASE SHALL SPREADING BE DELAYED MORE THAN 8 MINUTES
    - 5.3. ALL SPRAY RECORDS AND AGGREGATE SUPPLY TONNAGE AND LOOSE MATTER SHALL BE RETAINED AND PASSED ON TO THE ENGINEER AS PART OF THE QUALITY ASSURANCE PROCEDURES. IF APPROVED BY THE SUPERINTENDENT, ALL DEPRESSIONS RECEIPTS SHALL BE RETAINED AND PASSED ON TO THE SUPERINTENDENT AS PART OF THE QUALITY ASSURANCE PROCEDURES
    - 5.4. AGGREGATES SHALL BE DELIVERED UNIFORMLY PRECOATED. EXCESSIVE PRECOATING WILL RENDER THE AGGREGATES UNSUITABLE AND WILL BE REJECTED. APPLICATION RATES SHALL BE IN THE RANGE OF 3-10 L/m^2 OF AGGREGATE AND THE PRECOATING AGENT SHALL BE COMPATIBLE WITH THE SEALING AGGREGATE TO BE USED.
    - 5.5. SEALING IS TO BE UNDERTAKEN IN THE PRESENCE OF THE ENGINEER
    - 5.6.

APPLICATION RATES	BINDER (L/m^2)	COVER SIZE (mm)	AGGREGATE RATE (m^3/m^3)
FIRST SEAL	1	14	80
SECOND SEAL	0.5	7	160
SINGLE SEAL OR RESEAL	0.75	10	120

    - 5.7 GENERALLY FLUSH SEALING SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RELEVANT TfNSW STANDARD

LINEMARKING NOTES

1. THE WORK SHALL INCLUDE ALL LINE MARKING TO ROADS, HARDSTANDS, PATHS, CARPARKS AND THE TRAFFICABLE AREAS.
2. THE PAVEMENT MARKING AND PAINT SHALL BE IN ACCORDANCE WITH AS 1742.2 AND THE RELEVANT LOCAL AND STATE AUTHORITY GUIDELINES.
3. PAINT SHALL BE TYPE 3, CLASS A AND COMPLY WITH AS 4049.2 "THERMOPLASTIC PAVEMENT MARKING MATERIALS - FOR USE WITH SURFACE APPLIED GLASS BEADS". THE COLOUR SHALL BE WHITE AND NOT SUBJECT TO DISCOLOURATION BY BITUMENT FROM ROAD SURFACE. EACH LINE SHALL BE 80mm WIDE, UNO IN LEGEND. ALL PAINT SHALL BE APPLIED BY MECHANICAL SPRAYER. WHERE PAINT IS APPLIED TO CONCRETE, THE SURFACE WILL BE FIRST PRIMED TO ENSURE ADHESION.
4. LINE MARKING SHALL BE SPOTTED OUT AND APPROVED PRIOR TO SPRAYING.
5. PAINT SHALL BE APPLIED AT A WET THICKNESS OF BETWEEN 0.35mm TO 0.40mm.
6. ALL EXISTING PAVEMENT MARKING WHICH IS LOCATED ON EXISTING PAVEMENT TO BE RETAINED SHALL BE REMOVED BY GRINDING WHERE THE EXISTING MARKINGS ARE MADE REDUNDANT BY THE PROPOSED WORKS.
7. ALL PAVEMENT MARKING TO BE IN ACCORDANCE WITH THE CURRENT VERSION OF THE REGULATORY SIGNS MANUAL, AS1742.2, AS2890.1:2004 AND THE RELEVANT LOCAL AND STATE AUTHORITY GUIDELINES AND REQUIREMENTS.
8. TRANSITION LINEMARKING TO SUIT EXISTING WHERE REQUIRED
9. RELOCATE / REMOVE EXISTING SIGNS AS REQUIRED.
10. REMOVE ALL REDUNDANT PAVEMENT MARKING AS REQUIRED.
11. PROVIDE ADEQUATE APPROACH WARNING SIGNS DURING AND AFTER CONSTRUCTION
12. PROVIDE RETRO-REFLECTIVE PAVEMENT MARKERS TO COUNCIL AND TfNSW REQUIREMENTS.
13. ALL LINEMARKING TO BE WHITE IN COLOUR WITH THE EXCEPTION OF C2 AND C3 LINES AND LINEMARKING ON CONCRETE PAVEMENTS WHICH ARE TO BE YELLOW.

MASONRY NOTES

MASONRY GENERAL

1. MATERIALS, INCLUDING MORTAR, CONCRETE, GROUT, WALL TIES AND REINFORCEMENT, SHALL COMPLY WITH AS 3700 SECTION 10. MASONRY UNITS SHALL COMPLY WITH AS 4455. THE MINIMUM DURABILITY REQUIREMENTS ARE AS FOLLOWS:-

LOCATION	SALT ATTACK RESISTANCE DURABILITY GRADE OF MASONRY UNIT	MORTAR CLASS	DURABILITY CLASS OF WALL TIES AND BUILT-IN COMPONENTS
INTERIOR MASONRY	GENERAL PURPOSE	M3	R3
EXTERIOR MASONRY ABOVE DAMP PROOF COURSE	GENERAL PURPOSE	M3	R3
BELOW DAMP PROOF COURSE OR IN CONTACT WITH GROUND	EXPOSURE	M4	R4

2. MASONRY SHALL BE CONSTRUCTED IN ACCORDANCE WITH AS 3700 SECTION 11 AND THE FOLLOWING:-
    - 2.1. DAMAGED BLOCKWORK UNITS SHALL NOT BE USED
    - 2.2. MOISTURE CONTENT: BLOCKS NOT TO BE WETTED.
    - 2.3. TOLERANCES IN CONFORMITY WITH TABLE 11.1 OF AS 3700
    - 2.4. CUTTING BY MASONRY SAW ONLY
    - 2.5. CHASES - DO NOT CHASE BLOCKWORK OR BRICKWORK WITHOUT THE APPROVAL OF STANTEC. HOLLOW BLOCKS OR BRICKS SHALL NOT BE CHASED UNDER ANY CIRCUMSTANCES. MAXIMUM CHASE DEPTH IN CORE FILLED BLOCKWORK TO BE 20mm.
    - 2.6. JOINT FINISH TO AS 3700 CLAUSES 4.9.2 AND 11.4.15
    - 2.7. BONDING - STRETCHER BOND
    - 2.8. BONDING AT INTERSECTIONS OR ACROSS VERTICAL JOINTS BY EITHER MASONRY BONDING TO AS 3700 CLAUSE 4.11.2 OR TIE BONDING TO AS 3700 CLAUSE 4.11.3
    - 2.9. CLEAN MASONRY PROGRESSIVELY TO REMOVE MORTAR SMEARS, STAINS, DISCOLOURATION.
    - 2.10. KEEP PERPENDS IN ALTERNATE COURSES VERTICALLY ALIGNED
3. MORTAR MATERIALS SHALL CONSIST OF THE FOLLOWING:-
    - 3.1. CEMENT - TYPE GP CEMENT TO AS 3972
    - 3.2. LIME - TO AS 1672.1
    - 3.3. SAND - FINE WITH LOW CLAY CONTENT, FREE FROM EFFLORESCENT SALTS, SELECT FOR COLOUR AND GRADING
4. MORTAR PROPORTIONS SHALL COMPLY WITH AS 3700 AND SHALL MEET THE REQUIREMENTS OF AS 3700 FOR DURABILITY, UNO.
5. ALL CONCRETE BLOCKWORK UNITS SHALL BE GRADE 15, UNO. ON STRUCTURAL PLANS (COMPRESSIVE STRENGTH f'c = 15MPa) CONFORMING TO AS 4455. ALL CLAY BRICK UNITS SHALL BE GRADE 20. SUBMIT CERTIFICATES CONFIRMING CONFORMANCE FOR APPROVAL BEFORE CONSTRUCTION COMMENCES.
6. BED JOINT REINFORCEMENT SHALL BE GALVANISED WOVEN WIRE MESH OR WELDED WIRE TO AS 2975, LAPPED 450 AT SPLICES.
7. HORIZONTAL BED JOINT REINFORCEMENT SHALL BE PERMISSIBLE AS A MEANS OF CRACK CONTROL. THE LONGITUDINAL WIRES OF SUCH REINFORCEMENT SHALL BE A MIN. OF 2 WIRES, EACH 3mm DIA AND CONFORMING TO AS 2875, AND BE CORROSION RESISTANT. JOINT REINFORCEMENT SHOULD BE LOCATED IN THIRD BED JOINT ABOVE BOTTOM OF WALL, IN SECOND BED JOINT BELOW TOP OF WALL, IN FIRST TWO BED JOINTS IMMEDIATELY ABOVE AND BELOW ALL OPENINGS AT FLOOR LEVELS, AT VERTICAL SPACINGS NOT EXCEEDING 500mm. AT OPENINGS, REINFORCEMENT TO EXTEND BEYOND EDGE BY 600mm. REINFORCEMENT NOT TO EXTEND THROUGH CONTROL JOINTS. LAP 450mm AS REQUIRED
8. THE MAXIMUM SPACING FOR VERTICAL CONTROL JOINTS SHALL BE:-
    - 8.1. 5m FOR 190mm BLOCKS
    - 8.2. 3.5m FOR 140mm BLOCKS
    - 8.3. 3m FOR 90mm BLOCKS
9. VERTICAL CONTROL JOINTS SHALL BE INSTALLED AT THE FOLLOWING LOCATIONS:-
    - 9.1. AT CHANGES IN WALL THICKNESS EXCEPT FOR PIERS AND BUTTRESSES
    - 9.2. AT CHASES AND RECESSES FOR PIPING COLUMN FIXTURE, ETC.
    - 9.3. AT SIDES OF WALL OPENINGS AND NEAR WALL INTERSECTIONS
    - 9.4. TO MATCH ANY EXPANSION JOINTS IN CONCRETE ABOVE AND BELOW
    - 9.5. AT JOINTS IN FOOTINGS OR AT CHANGES OF THE SUPPORTING STRUCTURE (I.E. FOOTINGS, SUSPENDED SLABS, ETC.)

    VERTICAL CONTROL JOINTS SHALL COMPLY WITH TECHNICAL NOTE PUBLISHED BY THE CEMENT AND CONCRETE ASSOCIATION. CONTROL JOINTS SHALL BE WEATHER-PROTECTED WHERE NECESSARY BY FLEXIBLE CAULKING AND TIED WITH TELESCOPIC TYPE FRAME TIES ACROSS THE JOINT.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STABILITY OF ALL MASONRY WALLS DURING CONSTRUCTION.
11. WHERE WALLS ARE NON-LOAD BEARING WALLS, THEY SHALL BE SEPARATED FROM ANY SUSPENDED CONCRETE SLABS BY A 20mm THICK COMPRESSIBLE LAYER.
12. LAY BOTTOM COURSE OF BLOCKS ON FULL MORTAR BED. ALL PERPENDS SHALL BE FILLED WITH MORTAR, EXCEPT WEEPHOLES.
13. THE CONTRACTOR SHALL PROVIDE 24 HOURS NOTICE TO ALLOW FOR THE INSPECTION OF:-
    - 13.1. ITEMS TO BE BUILT-IN LOCATED IN THEIR CORRECT POSITION, INCLUDING DAMP-PROOF COURSE, FLASHINGS, BOLTS, STRUCTURAL STEELWORK AND THE LIKE
    - 13.2. LINTELS IN POSITION
    - 13.3. REINFORCEMENT IN PLACE IN CORE HOLES BEFORE PLACING CONCRETE
    - 13.4. BOTTOMS OF CAVITIES AFTER CLEANING OUT
    - 13.5. BOTTOMS OF CORE HOLES BEFORE GROUTING
    - 13.6. CONTROL JOINTS READY FOR INSERTION OF JOINT FILLER

REINFORCED MASONRY

14. BLOCKWORK CORES WHERE REQUIRED SHALL BE FILLED WITH GROUT OF CHARACTERISTIC COMPRESSIVE STRENGTH OF 20 MPa, SLUMP 230 +/- 25mm, AND MAXIMUM AGGREGATE SIZE OF 10mm IN ACCORDANCE WITH AS 3600. FOR READY MIXED GROUT SUPPLIED AND CERTIFIED BY CONCRETE SUPPLIER, GROUT SHALL HAVE A CEMENT CONTENT NOT LESS THAN 300kg/cu.m. MORTAR SHALL BE LEFT FOR 3 DAYS MINIMUM BEFORE POURING GROUT.
15. BOND BEAMS SHALL CONFIRM TO AS 4455. BOND BEAMS SHALL BE REINFORCED WITH 2N12 BARDS AND FILLED WITH GROUT TO AS 3700, UNO.
16. GROUT SHALL BE PLACED BY AN APPROVED METHOD AND SHALL BE VIBRATED WITH A NEEDLE VIBRATOR OR RODDED. WALLS TO BE PROGRESSIVELY FILLED WITH MAXIMUM POUR HEIGHT OF 1600mm IN ANY ONE GROUT POUR.
17. REINFORCED BLOCK RETAINING WALLS SHALL HAVE A WATERPROOF MEMBRANE APPLIED TO THE ARCHITECT'S DETAILS BEHIND THE WALL.
18. PROVIDE CLEAROUT OPENINGS AT THE BASE OF ALL REINFORCED CORES AND REMOVE ALL MORTAR PROTRUSIONS BEFORE GROUTING. ADDITIONAL CLEAROUT OPENINGS SHALL BE PROVIDED ABOVE EACH HORIZONTAL POUR BREAK.
19. THE MAXIMUM HEIGHT OF POUR FOR GROUTING SHALL NOT EXCEED 3.6m FOR 190mm BLOCKWORK AND 0.8m FOR 140mm BLOCKWORK. STOP POUR 50mm BELOW TOP OF BLOCK TO PROVIDE KEY FOR SUBSEQUENT POURS.

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	YYYY.MM.DD

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AQUALAND

Client/Project

AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-007001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

GENERAL NOTES
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-007003

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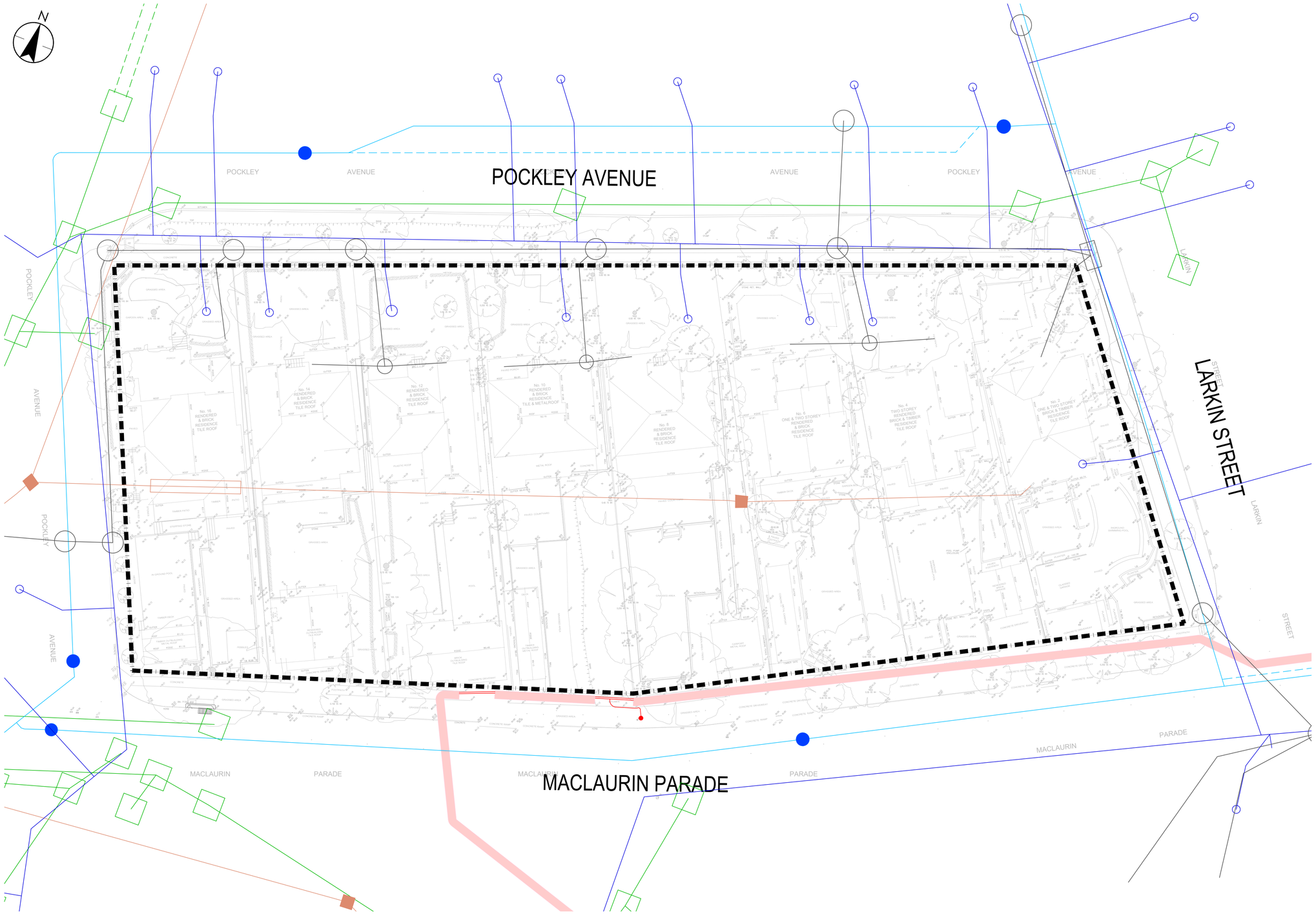

LEGEND

- SITE BOUNDARY
- EXISTING CONTOURS
- EXISTING STORMWATER MAIN
- EXISTING STORMWATER PIT
- EXISTING STORMWATER EASEMENT
- EXISTING SEWER MAINTENANCE HOLE
- EXISTING SEWER MAIN
- EXISTING UNKNOWN PRESSURE GAS MAIN
- EXISTING 210kPa MEDIUM PRESSURE GAS MAIN
- EXISTING POTABLE WATER MAIN
- EXISTING DISCONNECTED POTABLE MAIN
- EXISTING HIGH VOLTAGE AUSGRID CABLE
- EXISTING AUSGRID CONDUIT
- EXISTING TELSTRA CONDUIT
- EXISTING TELSTRA PIT
- EXISTING TREE

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	Appd YYYY.MM.DD

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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-050001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

EXISTING CONDITIONS PLAN

Project No. 301351698

Scale 1:250

Revision B

Drawing No. **STN-ZZ-000-DR-CI-050001**

Plotted: 14/04/2025 3:33:56 PM By: OAKLEY, NATHAN
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ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

LEGEND

- SITE BOUNDARY
- EXISTING FEATURE TO BE DEMOLISHED
- EXISTING SERVICE TO BE DEMOLISHED
- EXISTING BUILDING TO BE DEMOLISHED
- EXISTING CAR PARK OR HARDSTAND TO BE DEMOLISHED
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN
- TREE PROTECTION ZONE

NOTES:

1. THIS PLAN TO BE READ IN CONJUNCTION WITH LANDSCAPE ARCHITECT AND ARBORIST REQUIREMENTS.
2. THE INFORMATION IS SHOWN TO PROVIDE A BASIS FOR DESIGN. STANTEC DOES NOT GUARANTEE THE ACCURACY OR COMPLETENESS OF THE SURVEY BASE OR ITS SUITABILITY AS A BASIS FOR CONSTRUCTION DRAWINGS.
3. ALL AREAS WITHIN THE EXTENT OF WORKS TO BE SCANNED FOR EXISTING UTILITY SERVICES AND LOCATIONS PRIOR TO CONSTRUCTION. UTILITY PROVIDER TO BE CONTACTED REGARDING DISCONNECTION PRIOR TO THE DEMOLITION OF EXISTING BROWNFIELD SITE.
4. NO WORK TO COMMENCE UNTIL ARBORIST INSPECTS AND APPROVES.

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	AT	2025.04.15
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Issued/Revision		By	Appd	YYYY.MM.DD

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File Name:		MK	CG	AT	2025.02.14
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Title

DEMOLITION PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-055001

Plotted: 14/04/2025 5:23:19 PM, By: OAKLEY, NATHAN
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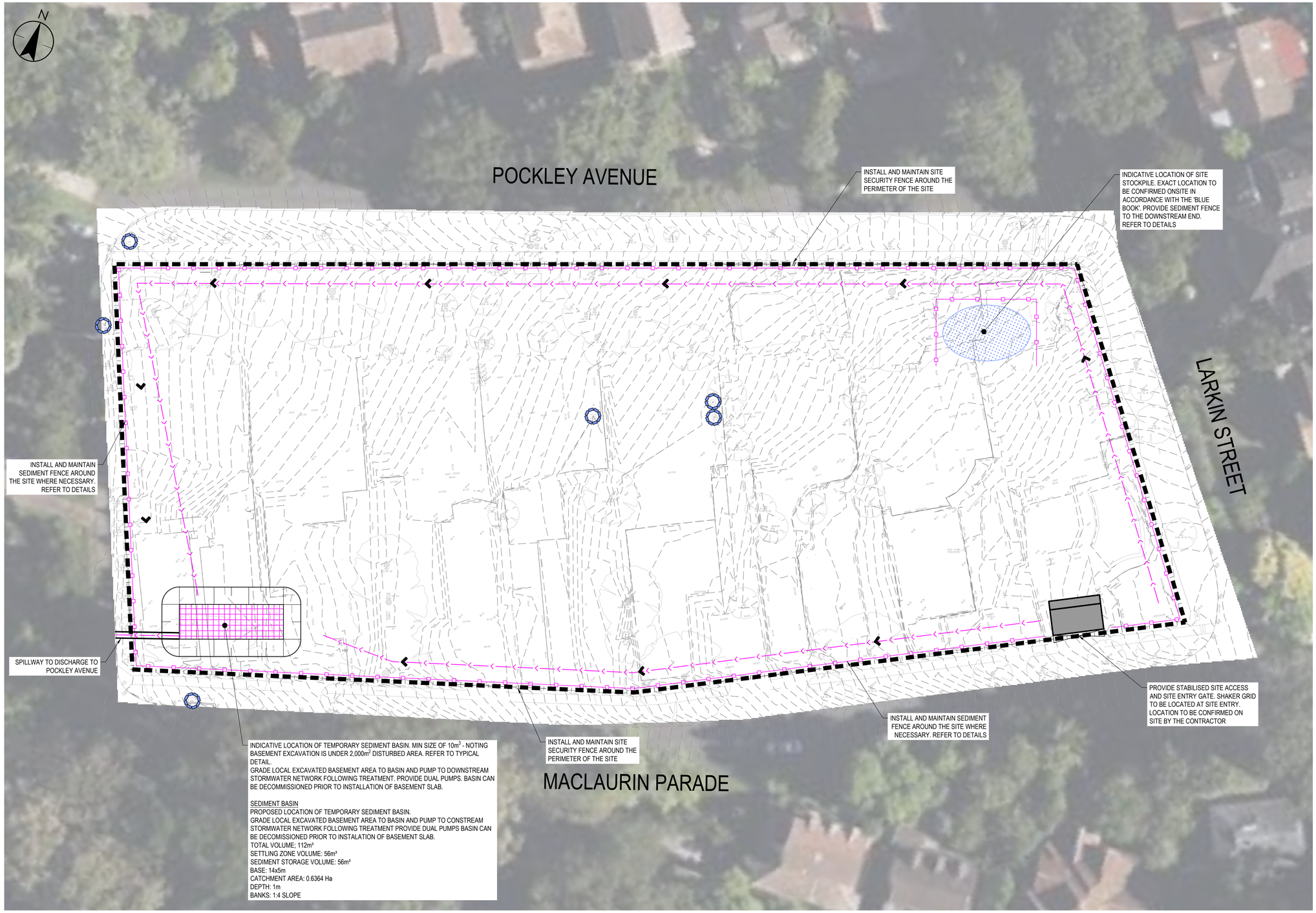

LEGEND

- SITE BOUNDARY
- PROPOSED SILT FENCE
- PROPOSED FENCE
- PROPOSED ENTRY GATE
- SANDBAG PIT PROTECTION
- VEHICLE SHAKEDOWN DEVICE
- STRAW BALE
- PROPOSED SWALE
- PROPOSED SEDIMENT BASIN
- EXISTING TREE TO REMAIN

NOTES:

1. FOR EROSION AND SEDIMENT CONTROL NOTES REFER CI-007 SERIES
2. FOR EROSION AND SEDIMENT CONTROL DETAILS REFER DRAWING CI-076001

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	AT	2025.04.15
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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
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Title

EROSION AND SEDIMENT CONTROL PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-070001

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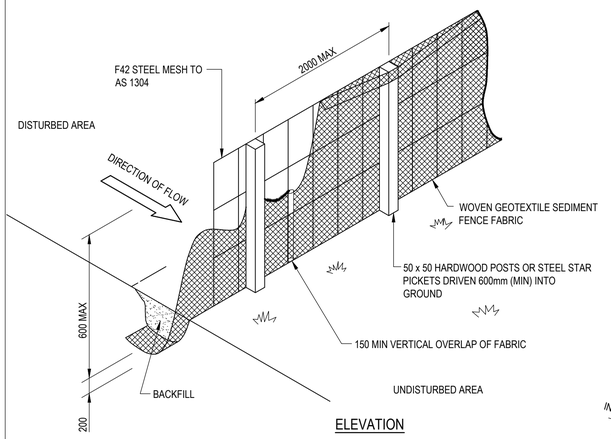
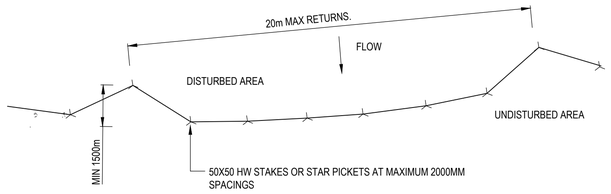
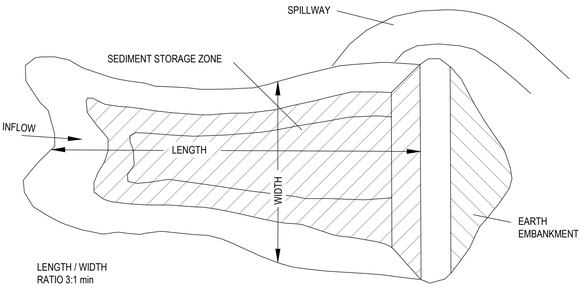


ELEVATION

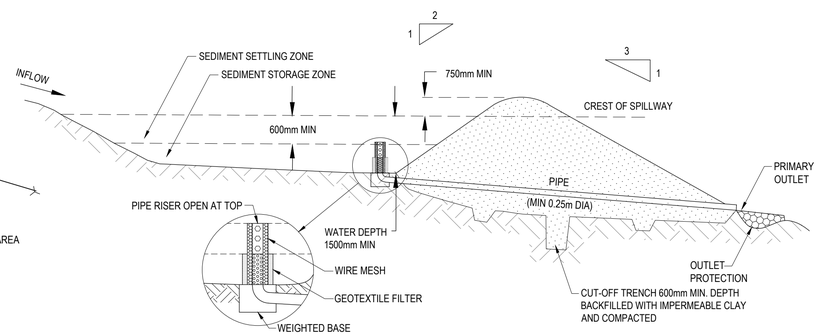


PLAN

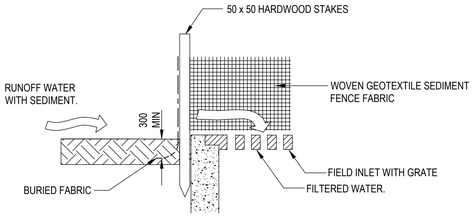


PLAN VIEW

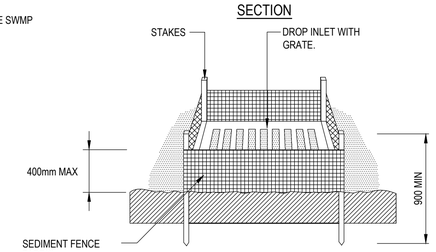
NOTES:
1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AD 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95% STANDARD PROCTOR DENSITY
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BONG COMPACTED FILL TO THE EXISTING SUBSTRATE
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP
7. CONSTRUCT THE EMERGENCY SPILLWAY
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP



CROSS-SECTION
SEDIMENT BASIN DETAIL
SCALE N.T.S



SECTION



ELEVATION

GEOTEXTILE FILTER FABRIC
DROP INLET SEDIMENT TRAP
SCALE N.T.S.

NOTES

1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH OTHER ENGINEERING PLANS AND ANY WRITTEN INSTRUCTIONS THAT MAY BE ISSUED.
2. THE CONTRACTOR SHALL IMPLEMENT ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES PRIOR TO DISTURBANCE OF THE RELATED CATCHMENT AREA AND TO THE STANDARD OF 'MANAGING URBAN STORMWATER, SOIL & CONSTRUCTION' & COUNCIL SPECIFICATIONS.
3. ALL SUBCONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWN SLOPE AREAS.
4. LAND DISTURBANCE SHALL BE LIMITED TO THAT NECESSARY FOR IMPLEMENTATION OF THE PLANS OF WORKS. BUFFER ZONES AND LAND NOT TO BE DISTURBED SHALL BE CLEARLY MARKED WITH BARRIER FENCE. 'SILT' FENCE FOR STRAW BALE SEDIMENT TRAPS SHALL BE PLACED AT REGULAR INTERVALS IMMEDIATELY DOWNSLOPE OF ALL UNPROTECTED DISTURBED LANDS.
5. THE LOCATION OF 'SILT' FENCES, BARRIER FENCES, SEDIMENT TRAPS AND OTHER DEVICES ARE INDICATIVE ONLY AND FINAL LOCATIONS ARE TO BE DECIDED ON SITE. VARIATIONS WILL BE PERMITTED TO BEST SUIT THE CIRCUMSTANCES. CONTRACTOR TO PREPARE DETAILED CONSTRUCTION SEDIMENT AND EROSION CONTROL PLAN.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED FOLLOWING EACH STORM EVENT AND ANY NECESSARY MAINTENANCE WORK SHALL BE UNDERTAKEN TO ENSURE THEIR CONTINUED PROPER OPERATION. SEDIMENT SHALL BE REMOVED FROM THE SOIL EROSION & SEDIMENT CONTROL STRUCTURES WHEN
7. NO MORE THAN 40% CAPACITY HAS BEEN REACHED. THESE STRUCTURES SHALL CONTINUE IN PROPER OPERATION UNTIL ALL DEVELOPMENT ACTIVITIES HAS BEEN COMPLETED AND THE SITE FULLY ESTABLISHED.
8. WHERE THE AREA TO BE DISTURB CONTAINS TREES TO REMAIN, AN ARBORIST CONSULTANT SHOULD PROVIDE ADVICE ON PROCEDURES AND MEASURES TO BE PLACED.
9. TEMPORARY REHABILITATION SHALL BE UNDERTAKEN WITHIN 14 WORKING DAYS BEFORE EITHER WORKS CONTINUE OR PERMANENT REHABILITATION IS UNDERTAKEN.
10. ALL OF THE SOIL STORAGE, REVEGETATION AND SEDIMENT AND EROSION CONTROL MANAGEMENT DEVICES/MEASURES SHALL BE IMPLEMENTED TO NSW ENVIRONMENT PROTECTION AUTHORITY (EPA) AND DEPARTMENT OF LAND AND WATER REQUIREMENTS.
11. ALL SEDIMENT AND EROSION CONTROL MANAGEMENT MEASURES/DEVICES SHOWN ON THE PLANS SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION, AND MAINTAINED DURING AND AFTER.

SECTION DETAIL

SEDIMENT FENCE DETAIL
SCALE N.T.S.

SANDBAG KERB INLET SEDIMENT TRAP
SCALE N.T.S.

TEMPORARY CONSTRUCTION ENTRY/EXIT SEDIMENT TRAP
SCALE N.T.S.

SHAKER PAD
SCALE N.T.S

TYPICAL STOCKPILE CONFIGURATION
SCALE N.T.S.

NOTE:
1. LOCATE STOCKPILES AT TOP OF CATCHMENT ON FLAT GROUND AND NOT WITHIN 5m OF CONCENTRATED FLOW PATHS.

CATCH DRAIN / EARTH BANK DETAIL
SCALE N.T.S.

NOTES:
1. ONLY TO BE USED AS TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.
2. BUILD DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS RATHER THAN V SHAPED

DIVERSION CHANNEL/ BANK DETAIL
SCALE: NTS

LEVEL SPREADER (OR SILL)
SCALE N.T.S

Key Plan

B SSDA ISSUE	NO	AT	2025.04.15
A PRELIMINARY ISSUE	MK	AT	2025.02.14
Issued/Revision	By	Appd	YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-076001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
EROSION AND SEDIMENT CONTROL DETAILS

Project No.
301351698

Scale
AS SHOWN

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-076001

Plotted: 14/04/2025 5:23:27 PM By: OAKLEY, NATHAN
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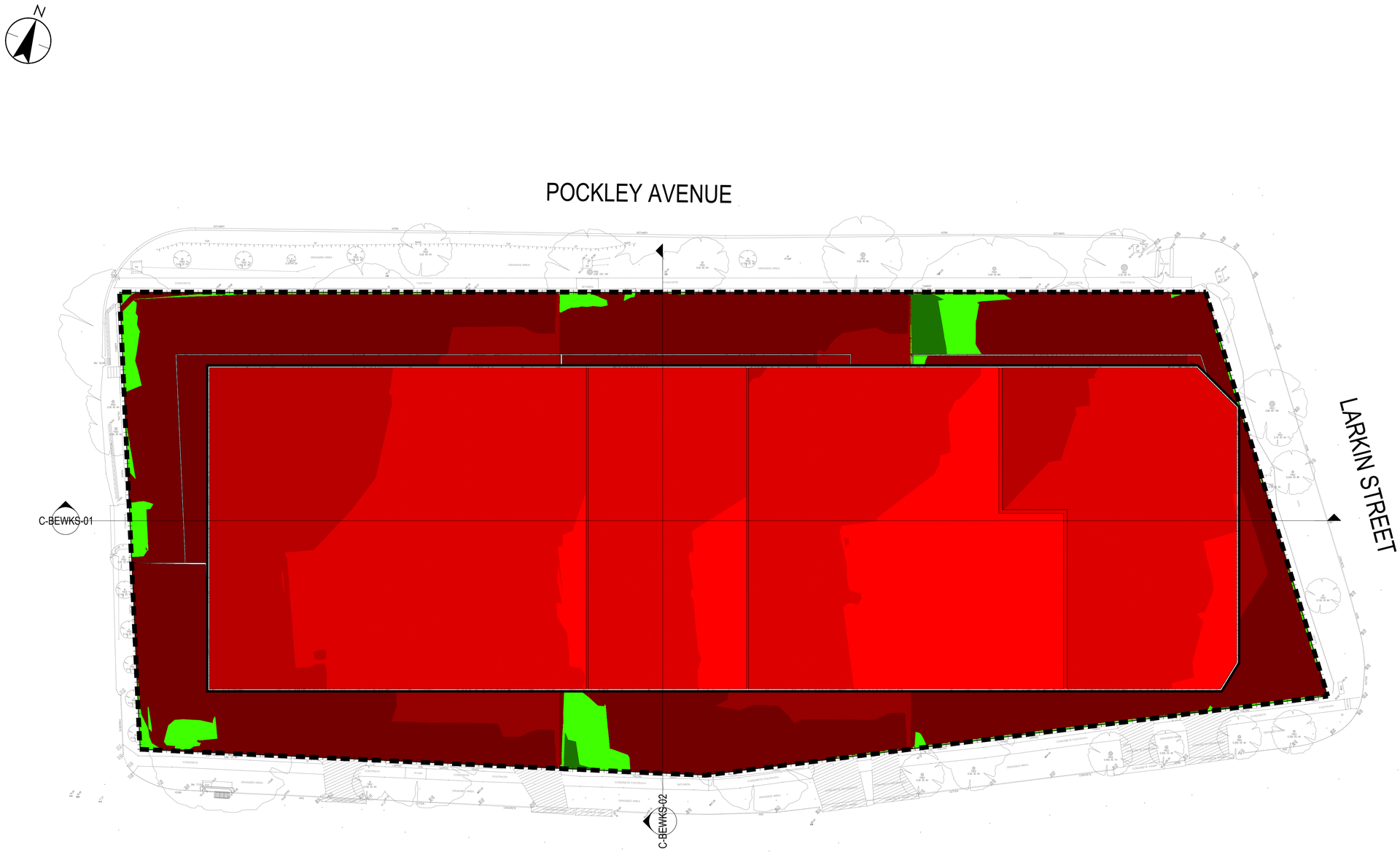

LEGEND

- SITE BOUNDARY
- BUILDING BASEMENT EXTENT

CUT AND FILL VOLUME:
CUT: 67,608 m^3
FILL: 81 m^3
NET: 67,527 m^3 (CUT)

NOTES:

1. FOR COMPLETE NOTES REFER CI-007 DRAWING SERIES
2. VOLUMES ARE BASED ON A COMPARISON BETWEEN THE DESIGN SURFACE AND THE STRIPPED SURFACE.
3. NO BULKING FACTORS HAVE BEEN APPLIED.
4. THE CONTRACTOR SHALL USE FINAL SURFACE LEVELS AND TYPICAL PAVEMENT DETAILS FOR ACTUAL EARTHWORKS LEVELS.
6. STANTEC DOES NOT TAKE RESPONSIBILITY FOR ACCURACY OF EXISTING SURVEY.
7. BULK EARTHWORKS DOES NOT TAKE INTO CONSIDERATION ANY CONTAMINATED MATERIAL AND ANY REMEDIATION STRATEGY WORKS
8. BULK EARTHWORKS ARE BASED ON THE FOLLOWING NOMINAL DEPTHS FROM FINISHED SURFACE LEVELS;
   - 8.1. GENERAL LANDSCAPE 200mm
   - 8.2. BUILDING PADS 200mm
   - 8.3. HARDSTAND OR FOOTPATH 200mm
   - 8.4. ROAD PAVEMENT 450mm
9. NOMINAL STRIPPING EXPECTED
   - 9.1. EXISTING SITE STRIP VOLUME: XX,XXXm^3
   - 9.2. EXISTING SURFACE STRIP DEPTH: 150mm

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

A SSDA ISSUE	NO	AT	2025.04.15
Issued/Revision	By	Appd	YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-100001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS PLAN

Project No.
301351698

Scale
1:250

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-100001

Plotted: 14/04/2025 5:23:39 PM By: OAKLEY, NATHAN
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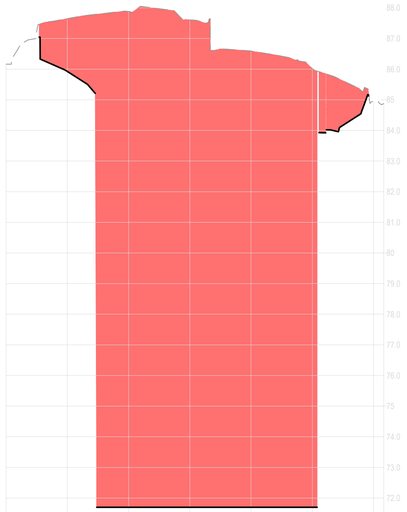
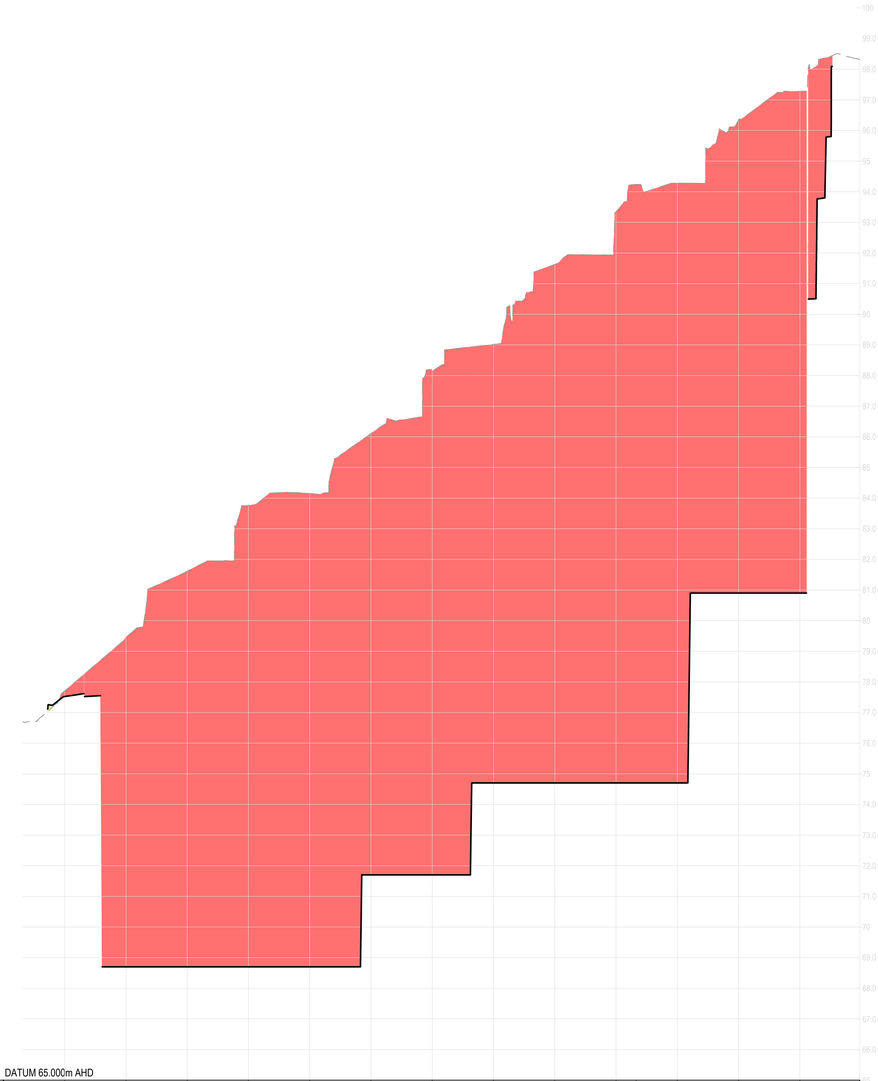


DATUM 70.000m AHD

DESIGN LEVELS		86.93	87.70	87.70	87.70	87.70		
EXISTING LEVELS	86.16	87.65	87.89	87.86	86.59	86.01	84.93	84.87
CUT (-) / FILL (+)		-1.72	-16.19	-15.91	-14.89	-14.31		
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	61.67

SECTION C-BEWKS-02C-BEWKS-02
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

C-BEWKS-02 - LONGITUDINAL SECTION



DATUM 65.000m AHD

DESIGN LEVELS		77.52	68.70	68.70	68.70	68.70	68.70	68.70	68.70	74.70	74.70	74.70	80.90	80.90	
EXISTING LEVELS		77.71	79.46	81.62	83.76	84.15	86.11	88.74	89.02	91.63	93.35	94.23	94.28	96.34	97.27	98.32
CUT (-) / FILL (+)		-0.18	-10.76	-12.92	-15.06	-15.45	-14.41	-16.44	-14.32	-16.93	-18.65	-19.53	-19.58	-15.44	-16.37	
CHAINAGE	0.00	10.00	20.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.00	103.26	110.00	120.00	130.00	139.78

SECTION C-BEWKS-01C-BEWKS-01
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:100

C-BEWKS-01 - LONGITUDINAL SECTION

1:500 5 0 5 10 15 20 25 A1
1:1000 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			2025.04.15

Issue Status

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AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-100001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS SECTIONS

Project No.
301351698

Scale
1:500

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-103001

Plotted: 14/04/2025 5:23:45 PM By: OAKLEY, NATHAN
\\r301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING
- CONCRETE FOOTPATH
- PAVED FOOTPATH
- MULCH/GRAVEL FOOTPATH TO LANDSCAPE ARCHITECTS DETAILS
- PROPOSED COMMERCIAL VEHICLE CROSSING
- COURTYARD - PROPOSED HARDSCAPE (REFER LANDSCAPE ARCHITECT DRAWING)
- PROPOSED LANDSCAPING
- BASEMENT EXTENTS
- POTENTIAL PUBLIC DOMAIN WORKS

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

Key Plan

B	SSDA ISSUE	NO	2025.04.15
A	PRELIMINARY ISSUE	MK	2025.02.14
Issued/Revision		By	Appd YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-440001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

PAVEMENT PLAN

Project No. 301351698

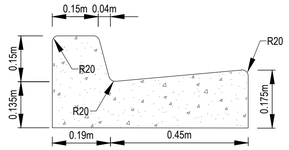
Scale 250

Revision **B**

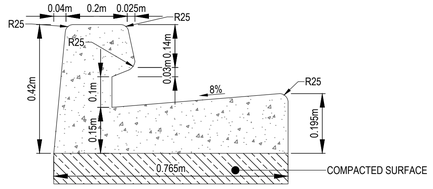
Drawing No. **STN-ZZ-000-DR-CI-440001**

Plotted: 4/5/2025 5:27:35 PM By: GILBERT, CHARLIE
\\AUS01-FAFP01_CIFS.CORP.AD\SYD_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN SHEET SET\

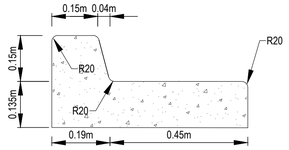
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD



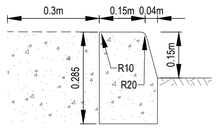
KERB AND GUTTER
(K&G)
(SCALE 1:10)



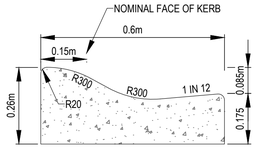
ELSHOLZ KERB AND GUTTER
(EKG)
(SCALE 1:10)



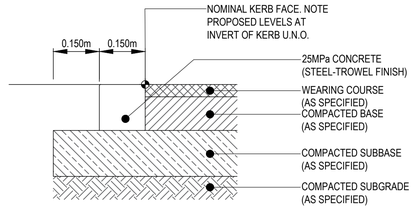
KERB AND GUTTER - NO GUTTER SLOPE
(K&G NGS)
(SCALE 1:10)



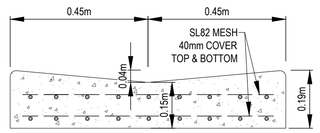
KERB ONLY
(KO)
(SCALE 1:10)



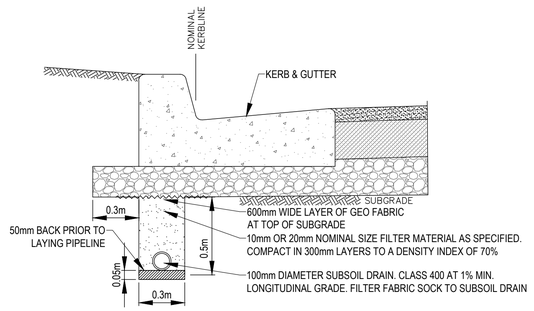
ROLL KERB
(RK)
(SCALE 1:10)



FLUSH KERB
(FK)
(SCALE 1:10)



DISH DRAIN
(DD)
(SCALE 1:10)



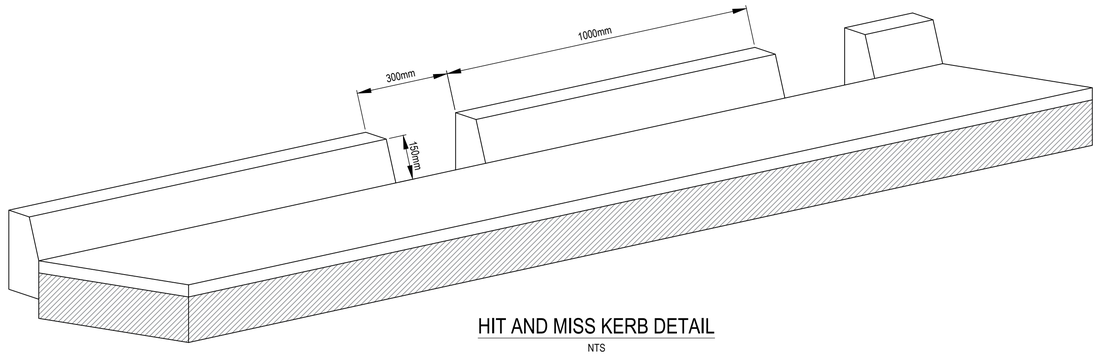
NOTE:
- SUBSOIL DRAINAGE IS REQUIRED BELOW ALL KERBS IF NO STORMWATER DRAINAGE LINE DIRECTLY BELOW
- SUBBASE & STABILISED LAYER TO EXTEND 300mm BEHIND BACK OF KERB

SUBSOIL DRAIN
TYPICAL SECTION
NTS

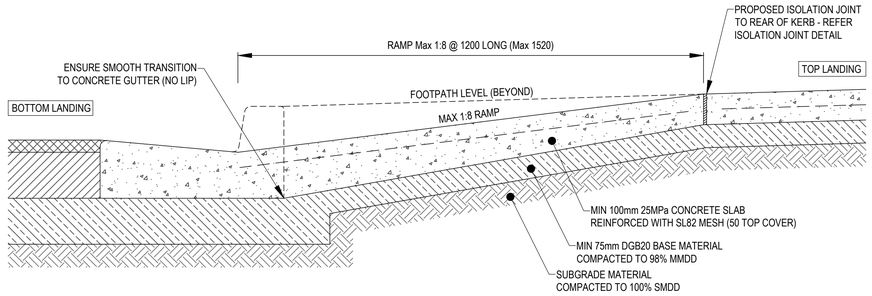
NOTES:
1. CONCRETE COMPRESSIVE STRENGTH (F'c) AT 28 DAYS, TO BE 25MPa FOR KERB & GUTTER AND DISH CROSSINGS
2. ROAD SUBBASE SHALL BE EXTENDED 300mm BEHIND BACK OF KERB WITH THE THICKNESS TO BE NOT LESS THAN THE ROAD PAVEMENT SUBBASE THICKNESS.
3. DIMENSIONS ARE IN METRES, UNLESS NOTED OTHERWISE.
4. ALL EXPOSED EDGES TO BE ROUNDED TO 20mm RADIUS UNLESS NOTED OTHERWISE
5. SERVICE CONDUIT LOCATIONS SHALL BE MARKED ON KERB FACE WITH AN APPROVED TOOL OR AS OTHERWISE DIRECTED.

THESE DETAILS ARE TYPICAL ONLY - COUNCIL STANDARD DRAWINGS AND NOTES ARE TO TAKE PRECEDENCE

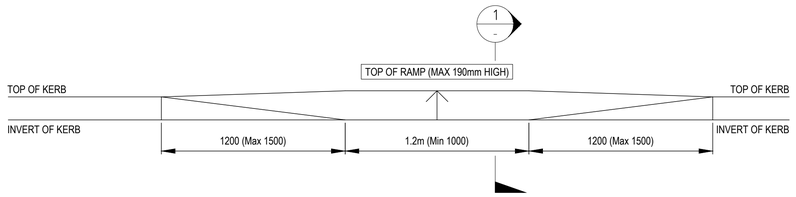
1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3



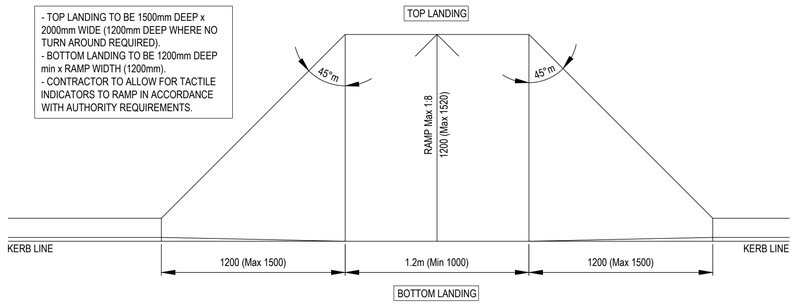
HIT AND MISS KERB DETAIL
NTS



SECTION 1
SCALE 1:20



ELEVATION



KERB RAMP PLAN
SCALE 1:20

Key Plan

A SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision	By	Appd	YYYY.MM.DD

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AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE,
NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 1

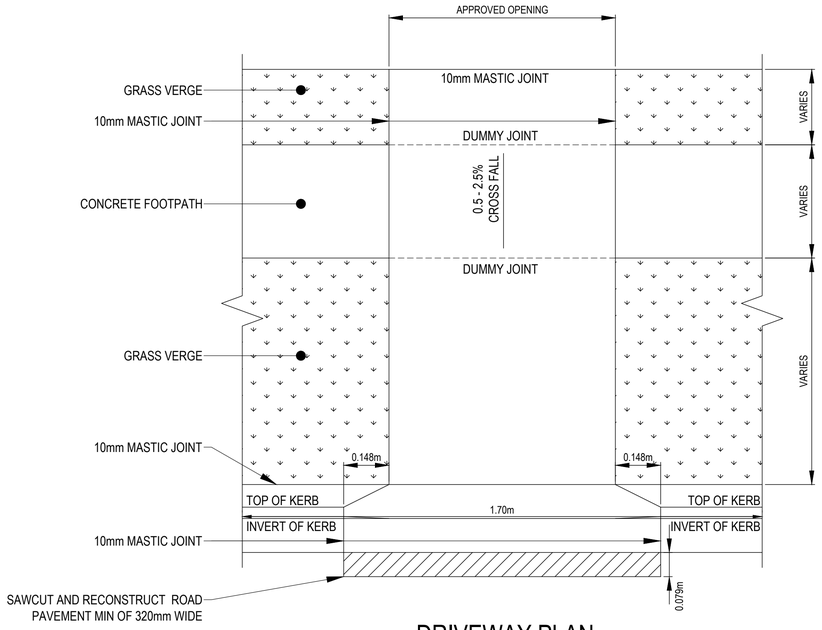
Project No.
301351698

Scale
AS SHOWN

Revision
A

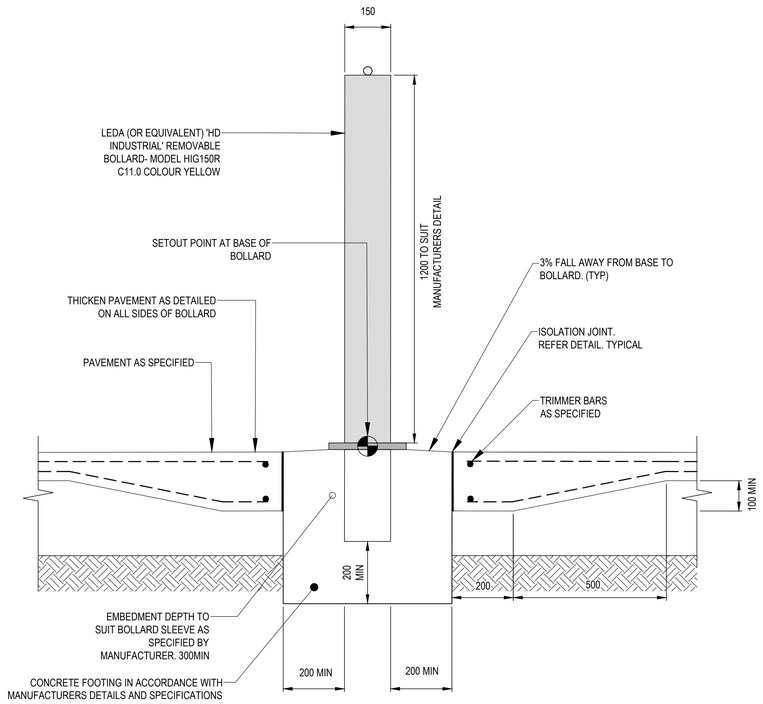
Drawing No.
STN-ZZ-000-DR-CI-446001

Plotted: 4/15/2025 3:00:37 PM By: GILBERT, CHARLIE
\\AU2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET
ORIGINAL SHEET - ANSI A1 CONFIG: GDA2020(MGA56) DATUM: AHD



DRIVEWAY PLAN

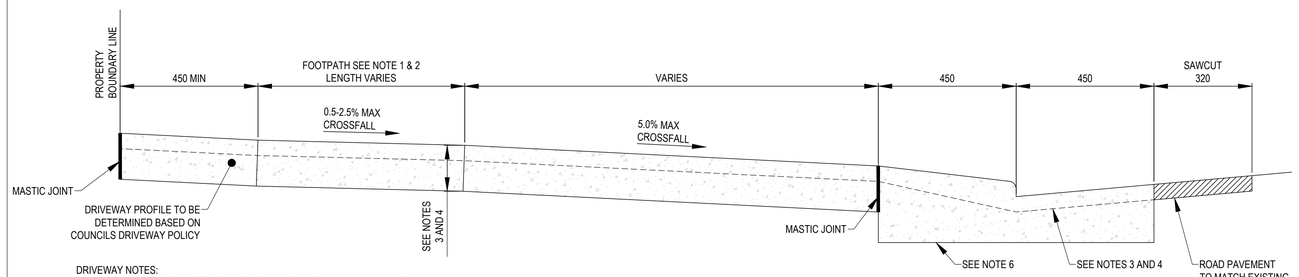
N.T.S



REMOVABLE STEEL BOLLARD 'TYPE B1' CONCRETE PAVEMENT

NTS

NOTE:
1. ALL ELEMENTS TO BE GALVANISED
2. CONTRACTOR TO CONFIRM SERVICES LOCATIONS ON SITE AND ENSURE BOLLARDS DO NOT CONFLICT WITH PROPOSED OR EXISTING SERVICES.
3. BOLLARD TO BE STRICTLY INSTALLED TO MANUFACTURERS DETAILS AND SPECIFICATIONS

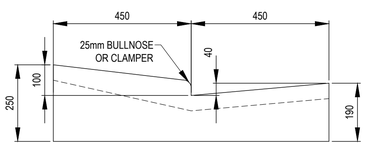


SECTION

SCALE 1:10

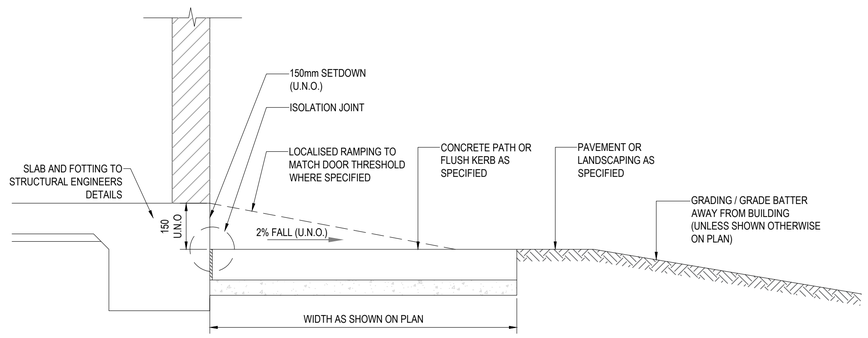
1

DRIVEWAY NOTES:
1. WHERE FOOTPATH MEETS THE DRIVEWAY, THE CROSS-FALL SHALL BE A MIN 0.5% AND MAX 2.5%, GRADED TOWARDS THE ROAD.
2. WHERE THE FOOTPATH MEETS THE DRIVEWAY, DUMMY JOINTS ARE TO BE PROVIDED. SAW CUT JOINTS WILL NOT BE ACCEPTABLE.
3. REDISDENTIAL DRIVEWAY - 110mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL62 MESH PLACED CENTRALLY AS PER SPECIFICATION.
4. INDUSTRIAL DRIVEWAY - 150mm THICKNESS, 25MPa (MINIMUM) COMPRESSIVE STRENGTH AT 28 DAYS WITH SL82 MESH PLACED CENTRALLY AS PER SPECIFICATION.
5. MATERIAL - DRIVEWAYS SHALL BE ALL CONSTRUCTED IN PLAIN CONCRETE. NO STENCILED, STAMPED, PATTERNED, COLOURED CONCRETE OR ANY OTHER TYPE OF COSMETIC FINISH IS PERMITTED.
6. EXISTING SUBBASE TO BE PROOF ROLLED WITH A SUITABLE ROLLER. AREAS WHICH SHOW VISIBLE HEAVE UNDER COMPACTION SHOULD BE OVER EXCAVATED FURTHER 300mm AND REPLACED WITH COMPACTED AND APPROVED FILL. BEDDING MATERIAL SHALL BE DGB20 (DENSELY GRADED BASE) 100mm LAYER COMPACTED TO 98%.
7. A MINIMUM 320mm WIDTH OF ASPHALT IN FRONT OF GUTTER IS TO BE REMOVED AND REPLACED WITH HOT MIX. APPLICANT CAN OBTAIN QUOTATION FROM COUNCIL.
8. ALL EXPOSED EDGES TO BE ROUNDED TO 10mm AND SURFACES BE BROOM FINISHED.
9. LAYBACK, GUTTER AND KERB SHALL BE STEEL TROWLED FINISHED.
10. IT IS THE RESPONSIBILITY OF THE OWNER TO ENGAGE THE SERVICES OF A QULAIFIED PROFESSIONAL TO DESIGN ALL DRIVEWAYS (INTERNAL AND EXTERNAL) IN ACCORDANCE WITH AS/NZS 2890.1 2004 OFF STREET CAR PARK STANDARDS.



LAYBACK DETAIL

SCALE 1:10



TYPICAL BUILDING PERIMETER/ SET DOWN

N.T.S

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1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	YYYY.MM.DD
Issued/Revision			2025.04.11

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	2025.04.11 YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 2

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-446002

Plotted: 4/15/2025 3:01:18 PM By: GILBERT, CHARLIE
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ORIGINAL SHEET - ISO A1 CONFIG - GDA2020JWGA56 DATUM - GDA2020

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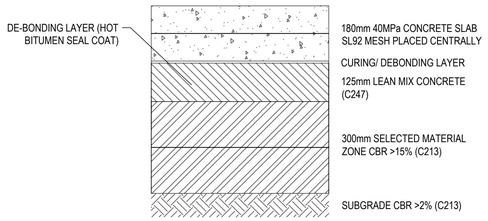
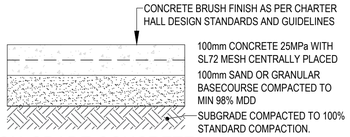


CONCRETE PAVEMENT HEAVY DUTY

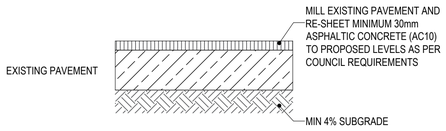
(SCALE 1:10)



ON-GRADE CONCRETE FOOTPATH DETAIL

(SCALE 1:10)

NOT FOR SUSPENDED SLABS OR STAIRS



MILL AND RE-SHEET ASPHALT DETAIL

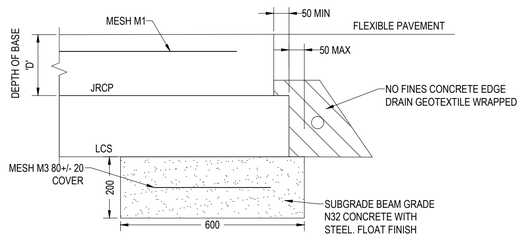
(SCALE 1:10)

MATERIAL	RELATIVE DENSITY	COMPACTIVE EFFORT
BASE COURSE	100%	MODIFIED
SUB-BASE COURSE	98%	MODIFIED
SUBGRADE	98%	STANDARD

THE PAVEMENT DESIGN ASSUMES THE SUBGRADE AND PAVEMENT MATERIALS TO BE COMPACTED TO THE FOLLOWING MINIMUM DRY DENSITY RATIO (AS1289 5.1.1, 5.2.1) ;

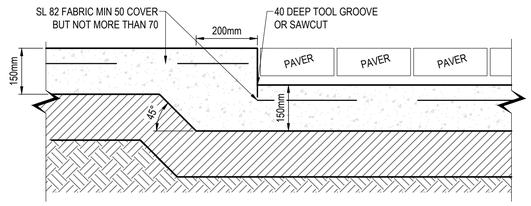
NOTES:

1. APPLY CONTROLLED TRAFFIC ON PRIMERSEAL FOR 2-4 WEEKS BEFORE PLACEMENT OF AC10 SURFACING COURSE.
2. PLACE FILLING APPROVED BY THE GEOTECHNICAL CONSULTANT (WHERE REQUIRED TO ACHIEVE DESIGN SUBGRADE LEVEL) IN MAXIMUM 250 mm THICK COMPACTED LAYERS TO AT LEAST 98% OF STANDARD MAXIMUM DRY DENSITY (SMDD) AND TO AT LEAST 100% SMDD IN PAVEMENT AREAS, WITH MOISTURE CONTENTS MAINTAINED WITHIN 2% OF STANDARD OPTIMUM MOISTURE CONTENT AS MEASURED IN THE STANDARD COMPACTION TEST.
3. REFER TO THE REPORTS PREPARED BY GEOTECHNICAL ENGINEER FOR FURTHER GEOTECHNICAL AND CONTAMINATION INFORMATION.



INTERFACE DETAIL: CONCRETE TO FLEXIBLE PAVEMENT

(SCALE 1:10)



PAVER STEP DETAIL

(SCALE 1:10)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

PRELIMINARY

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Client/Project Logo

AQUALAND

Client/Project
AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-446001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
PAVEMENT DETAILS
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-446003

Plotted: 4/15/2025 5:37:08 PM By: GILBERT, CHARLIE
I:\AU\2012\NEAP_CPS.COMP.ADS\AU2012_NEAP01_CPS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

STORMWATER OUTFALL
PROPOSED CONNECTION TO DISCHARGE TO EXISTING STORMWATER PIT. EXISTING INVERT LEVELS AND EXACT LOCATION TO BE CONFIRMED BY FURTHER SURVEY

ON-SITE DETENTION BASIN
PROPOSED CELLULAR DETENTION TANK TO PROVIDE TEMPORARY STORAGE TO RESTRICTED DISCHARGE OF STORMWATER RUNOFF.
VOLUME: 126m³
DEPTH: 1.8m
STORMFILTER CARTRIDGES: 4.NO 690mm PSORB STORMFILTER

INDICATIVE RAINWATER TANK TO HYDRAULICS ENGINEERS DESIGN

POCKLEY AVENUE

MACLAURIN PARADE

LARKIN STREET

EXISTING FOOTPATH

LEVEL 06 LIFT LOBBY RL 97200

LEVEL 04 LIFT LOBBY RL 97200

LEVEL 02 LIFT LOBBY RL 97200

EXISTING DRIVEWAY

PROPOSED DRIVEWAY

1:250 2.5 0 2.5 5 7.5 10 12.5 A1
1:500 A3

LEGEND

- SITE BOUNDARY
- BUILDING BASEMENT EXTENT
- BUILDING ROOF EXTENT
- PROPOSED BUILDING
- RW — PROPOSED RETAINING WALL
- DN375 / DP — PROPOSED STORMWATER PIPE
- SSD — PROPOSED SUBSOIL DRAINAGE
- PROPOSED GRATED DRAIN
- ON SITE DETENTION (OSD) TANK
- RAINWATER TANK (SIZE AND QUANTITY TO BE CONFIRMED BY HYDRAULIC ENGINEER)
- PROPOSED JUNCTION PIT
- EXISTING JUNCTION PIT
- PROPOSED GRATED PIT
- EXISTING GRATED PIT
- PROPOSED KERB INLET PIT
- EXISTING KERB INLET PIT
- B.2 — PIT TAG
- FLOW — OVERLAND FLOW PATH
- PROPOSED TREE. REFER LANDSCAPE ARCHITECT.
- EXISTING TREE TO REMAIN

Key Plan

B SSDA ISSUE	NO	AT	2025.04.15
A PRELIMINARY ISSUE	MK	AT	2025.02.14
Issued/Revision	By	Appd	YYYY.MM.DD

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AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.02.14
301351698-STN-ZZ-000-DR-CI-520001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE PLAN

Project No.
301351698

Scale
1:250

Revision
B

Drawing No.
STN-ZZ-000-DR-CI-520001

Plotted: 4/15/2025 3:55:39 PM By: GILBERT, CHARLIE
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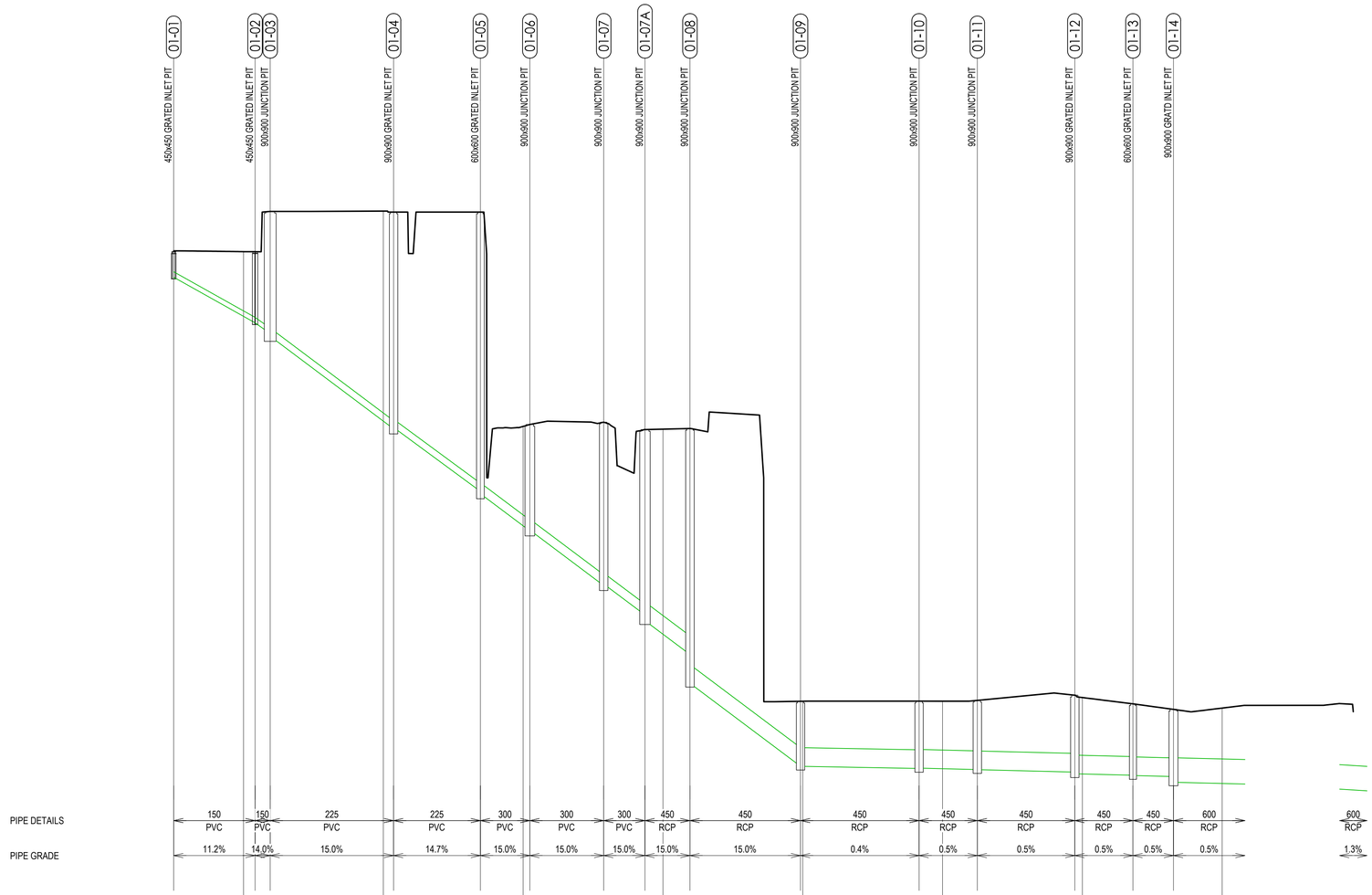
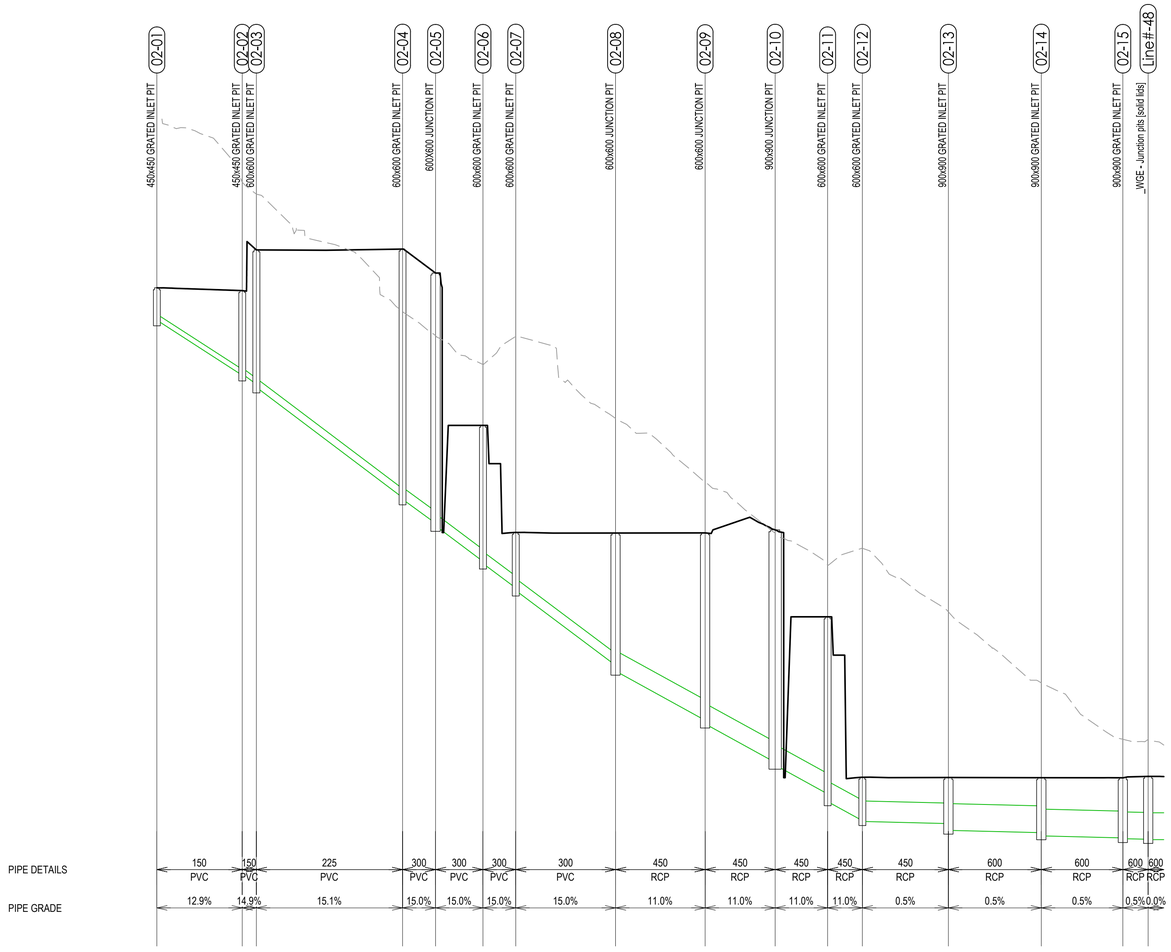
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD


01-01
450x450 GRATED INLET PIT
01-02
450x450 GRATED INLET PIT
01-03
900x600 JUNCTION PIT
01-04
900x900 GRATED INLET PIT
01-05
600x600 GRATED INLET PIT
01-06
900x600 JUNCTION PIT
01-07
900x900 JUNCTION PIT
01-07A
900x600 JUNCTION PIT
01-08
900x600 JUNCTION PIT
01-09
900x600 JUNCTION PIT
01-10
900x600 JUNCTION PIT
01-11
900x600 JUNCTION PIT
01-12
900x900 GRATED INLET PIT
01-13
600x600 GRATED INLET PIT
01-14
900x900 GRATD INLET PIT

| | | |



DATUM 71.000m AHD

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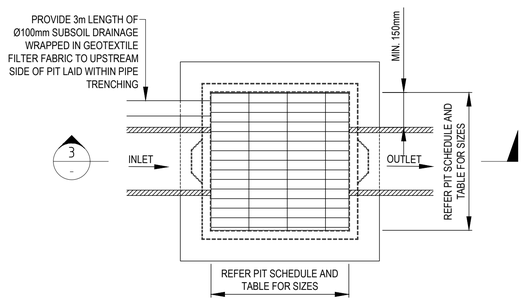
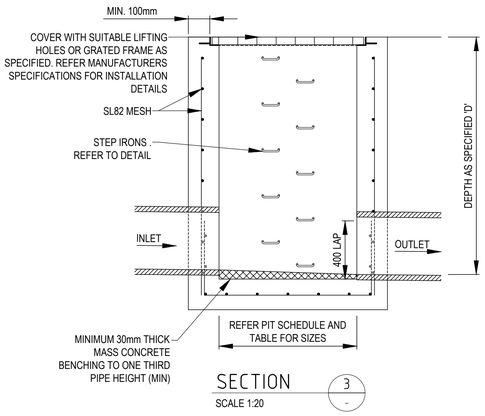




SECTION 3
SCALE 1:20

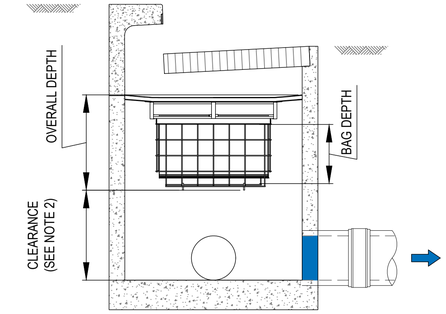
INTERNAL PIT DIMENSIONS (MIN.)		
'D'	'X'	'Y'
D < 600	450	450*
600 < D < 900	600	600*
900 < D < 1200	600	900
D > 1200	900	900

NOTE: PITS DENOTED *SHALL BE USED ONLY WHERE SPECIFIED IN DRAINAGE SCHEDULE OR ON PLAN

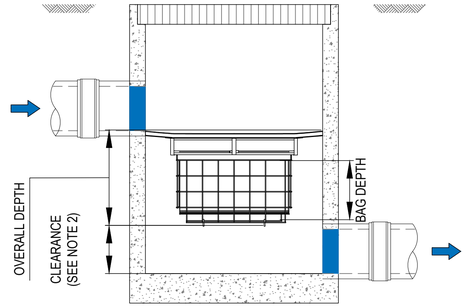
PITS TO BE:
- MIN 150mm THICK WALLS AND BASE U.N.O
- f'c = 32MPa
- MIN 45mm COVER
- FOUNDED ON STIFF NATURAL MATERIAL ON MIN 100kPa
- HAVE SUBSOIL DRAINAGE LINE
- INLET AND OUTLET LINES TO HAVE MIN 2N12 TRIMMER BARS CROSSING OVER AT EACH OPENING

PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE WRAPPED IN GEOTEXTILE FILTER FABRIC TO UPSTREAM SIDE OF PIT LAID WITHIN PIPE TRENCHING

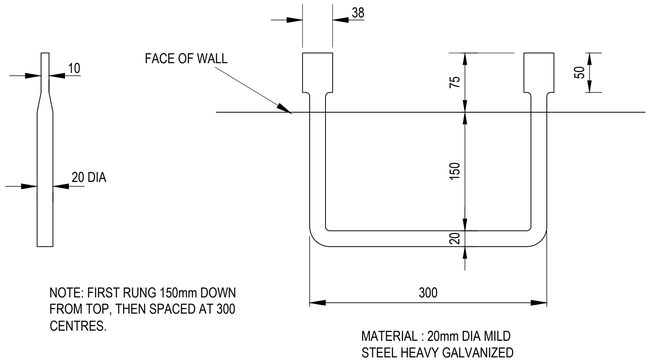
SURFACE INLET/JUNCTION PIT PLAN
SCALE 1:20



PIT FILTER BASKET
SURFACE FLOW CONFIGURATION
SCALE 1:20



PIT FILTER BASKET
PIPE FLOW CONFIGURATION
SCALE 1:20



NOTE: FIRST RUNG 150mm DOWN FROM TOP, THEN SPACED AT 300 CENTRES.

MATERIAL : 20mm DIA MILD STEEL HEAVY GALVANIZED

STEP IRONS DETAIL
N.T.S.

1:10 0.1 0 0.1 0.2 0.3 0.4 0.5 A1
1:20 A3

Key Plan

A SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision	By	Appd	YYYY.MM.DD

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ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET - 1

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526001

Plotted: 4/15/2025 10:48:12 AM By: GILBERT, CHARLIE
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ORIGINAL SHEET SIZE: A1 COPIED: GSVA2050/WGAMA DATED: 14/4/25

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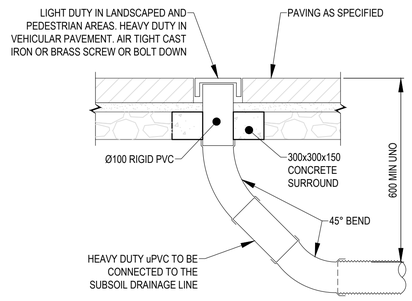
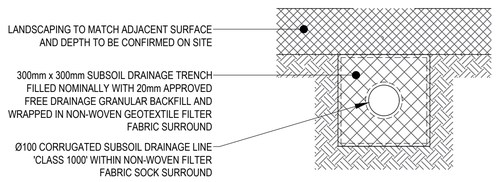


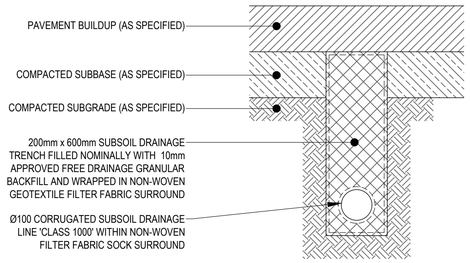
FLUSH OUT RISER IN PAVED AREAS

(SCALE 1:10)



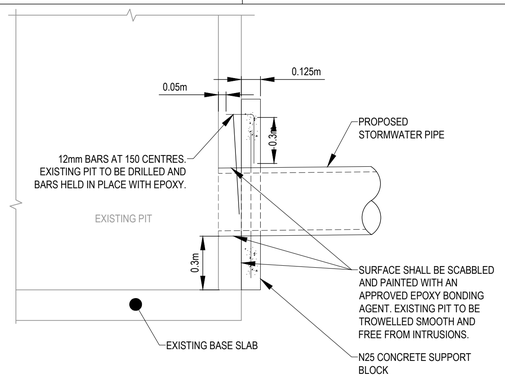
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER LANDSCAPE AREAS

(SCALE 1:10)



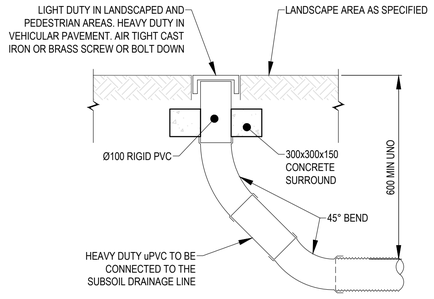
SUBSOIL DRAINAGE TRENCH DETAIL - UNDER PAVEMENT BUILTUP

(SCALE 1:10)



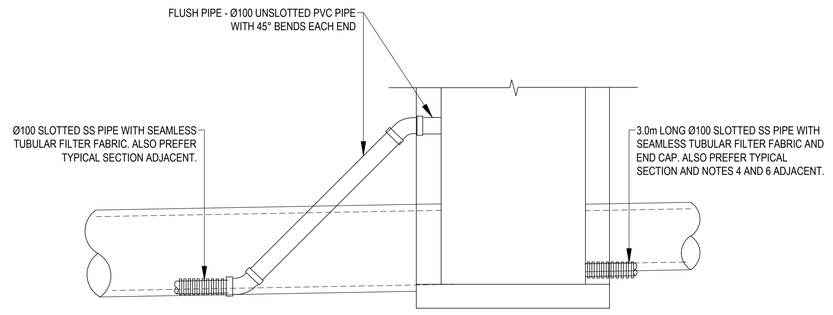
SECTION 1

SCALE 1:20



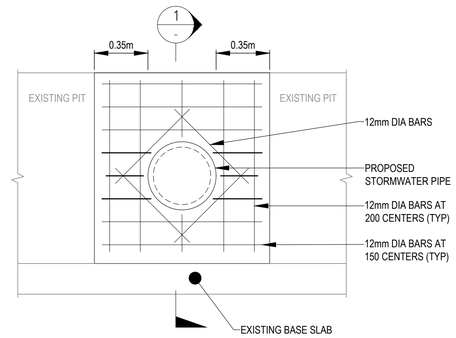
FLUSH OUT RISER IN LANDSCAPED AREAS

(SCALE 1:10)



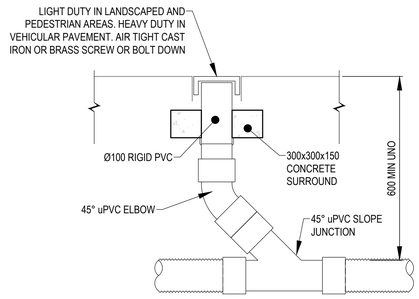
SUBSOIL DRAINAGE CONNECTION INTO STORMWATER PIT

NTS



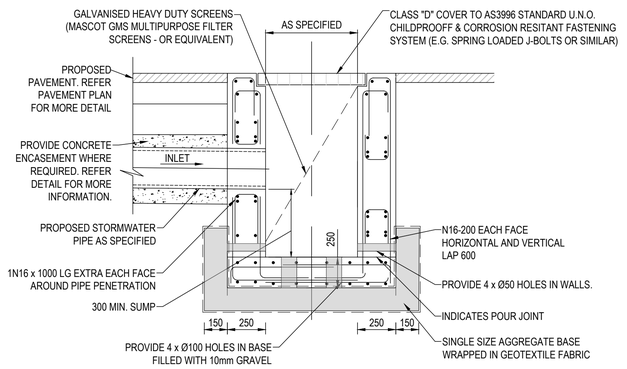
STORMWATER PIPE CONNECTION INTO EXISTING PIT

SCALE 1:20



INTERMEDIATE FLUSH OUT RISER

(SCALE 1:10)



SILT ARRESTOR PIT DETAIL

(NOT TO SCALE)

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1

1:40 A3

Key Plan

	NO	AT	
A SSDA ISSUE	By	Appd	2025.04.11 YYYY.MM.DD

Issued/Revision

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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CH-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS
SHEET - 2

Project No. 301351698

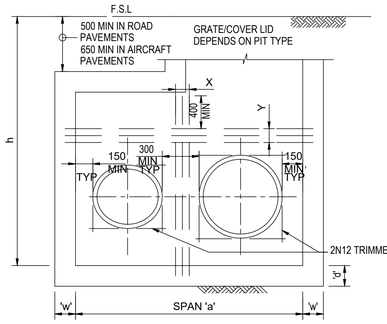
Scale AS SHOWN

Revision A

Drawing No. **STN-ZZ-000-DR-CI-526002**

Plotted: 4/15/2025 10:48:55 AM By: GILBERT, CHARLIE
\\AU2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - AHD

\\Au2012-ntap01_cifs.corp.ads\au2012_ntap01_cifs_proj\Shared_Projects\301351698\Project Documentation\Civil\Drawings & Design\Sheet Set\301351698-STN-ZZ-000-DR-CI-526001.dwg, 4/15/2025 10:48:14 AM, AutoCAD PDF (General Documentation).pc3

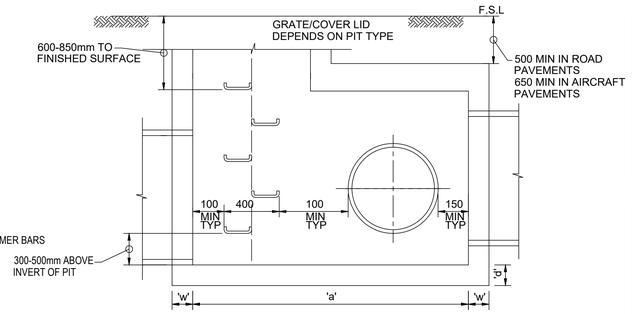


GENERAL ARRANGEMENT WHERE MULTIPLE PIPES PENETRATE PIT WALL

N.T.S

X = ADD HORIZONTAL BARS

Y = ADD VERTICAL BARS



GENERAL STEP IRON LOCATION SECTION

2 – N.T.S

PIT DIMENSION AND REINFORCEMENT TABLE (MULTIPLE PIPE PENETRATIONS)

SPAN 'a'(m)	'h' (m)	'w' (mm)	X	Y	'd' (mm)	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
< 1.5	2.0	150	2N16	2N16	150	N12@200	N12@200	N12@200
1.5-2	2.0	200	2N16	3N16	200	N12@200	N12@200	N12@200
2-2.5	2.5	230	3N20	3N20	230	N16@200	N16@200	N12@200
2.5-3	2.5	230	3N20	3N20	230	N16@200	N16@200	N16@200
3-3.5	3.5	250	4N20	4N20	250	N16@200	N16@200	N16@200

PIT DIMENSION AND REINFORCEMENT TABLE (SINGLE PIPE PENETRATIONS)

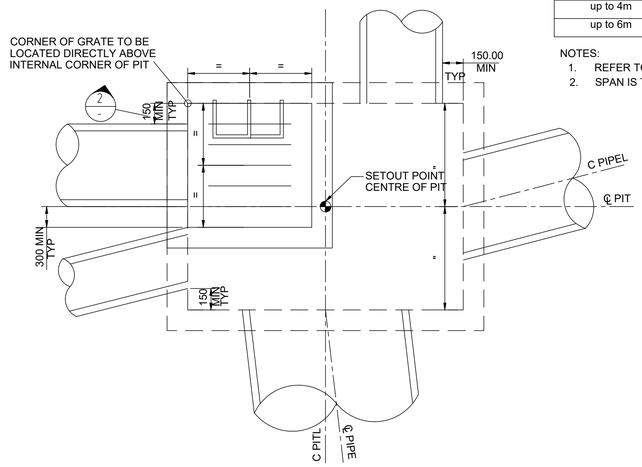
FOR SPAN 'a' <= 1.5m

DEPTH 'h'	BASE THICKNESS 'd'	WALL THICKNESS 'w'	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
up to 2m	150	150	N12@200	N12@200	N12@200
up to 4m	200	175	N12@200	N12@200	N12@200
up to 6m	200	200	N12@200	N12@200	N12@200

FOR SPAN 'a' 1.5 TO 2.5m

DEPTH 'h'	BASE THICKNESS 'd'	WALL THICKNESS 'w'	VERTICAL REINF.	HORIZONTAL REINF.	BASE REINF. BW
up to 2m	150	200	N12@200	N12@200	N12@200
up to 4m	200	200	N16@200	N16@200	N16@200
up to 6m	230	230	N16@200	N16@200	N16@200

NOTES:
1. REFER TO SITEWORKS AND GRADING PLANS
2. SPAN IS THE GREATER OF THE SPANS BETWEEN INTERNAL FACES OF PIT WALLS FOR BOTH SPAN DIRECTIONS



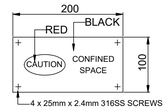
SURFACE INLET/JUNCTION PIT AND PIPE ARRANGEMENT

N.T.S

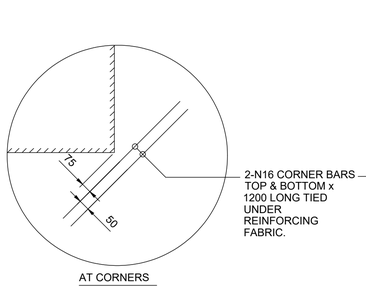
SPAN 'a' DRAINAGE CONDUIT PROJECTION IS DEPENDENT UPON INCOMING PIPE ANGLE AND ORIENTATION

MINIMUM INTERNAL PIT DIMENSIONS		
'd'	"X"	"Y"
D⩽600	450	450*
D⩽900	600	600*
D⩽1200	600	900
D⩾1200	900	900

NOTE:
1. BACKFILL TO ALL DRAINAGE STRUCTURES SHALL BE IN ACCORDANCE WITH THE SPECIFICATION.
2. ALL GRATES IN PATHWAYS AND COURTYARDS SHALL BE HEELGUARD ANTISLIP OR APPROVED EQUIVALENT (TYPICAL) U.N.O.
3. THE CIVIL TRADE SUB CONTRACTOR SHALL CO-ORDINATE THE FINISHED LEVEL AND MATCH PAVEMENT GRADE AND CROSS FALLS OF ALL SERVICE PITS, MANHOLES, VALVES, ETC WITH THE LANDSCAPE DRAWINGS TO CONFIRM EXACT LEVEL OF ALL SERVICE FEATURES.



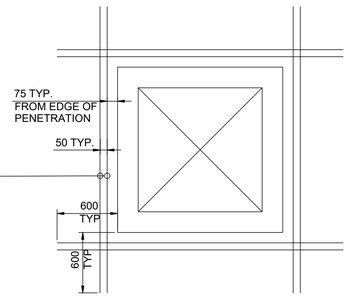
CONFINED SPACES SIGN



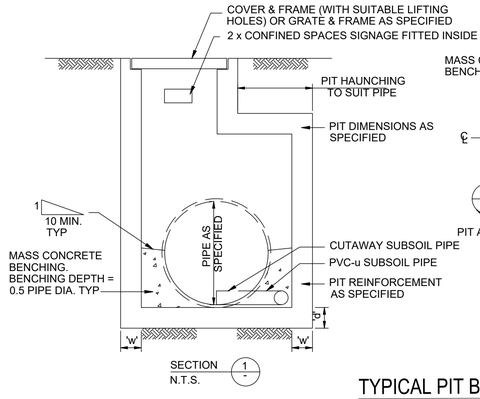
TYPICAL TRIMMER BAR DETAIL

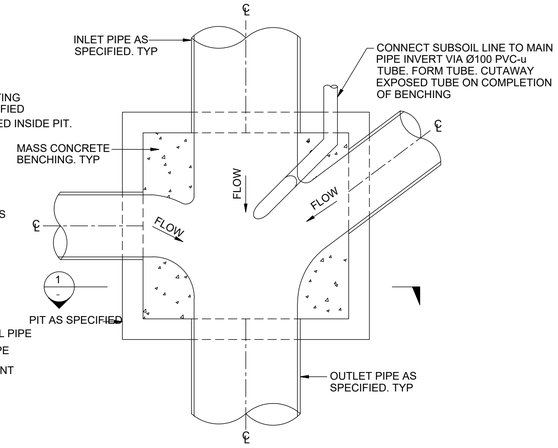
N.T.S

1. TRIMMER BARS TO BE CONSTRUCTED AT ALL PENETRATIONS IN VEHICULAR CONCRETE PAVEMENTS INCLUDING BUT NOT LIMITED TO:
   1.1. ALL SERVICE PITS, DRAINAGE STRUCTURES, VALVE BOXES, BOLLARDS, PROTRUDING CORNERS OF STRUCTURES OR SLABS, AND COLUMNS PENETRATING CONCRETE PAVEMENT
2. CONSTRUCT 2-N16 TRIMMER BARS (1200LONG, TOP AND BOTTOM) AT ALL MISMATCHED OR DISCONTINUOUS JOINTS.



AT PITS, BOXES AND OTHER PENETRATIONS





TYPICAL PIT BENCHING DETAIL

N.T.S

NOTE: BENCHING CONCRETE CLASS D AS PER CIVIL SPECIFICATION

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1

1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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Client/Project

AQUALAND

ROSEVILLE, POCKLEY

POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

STORMWATER DRAINAGE DETAILS SHEET - 3

Project No. 301351698

Scale AS SHOWN

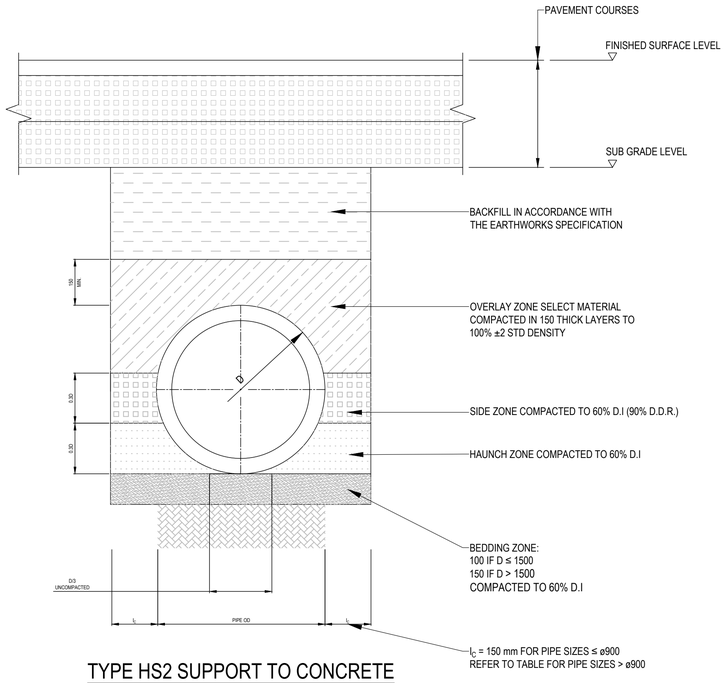
Revision A

Drawing No. **STN-ZZ-000-DR-CI-526003**

Plotted: 4/15/2025 10:48:47 AM, By: GILBERT, CHARLIE
\\AU2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

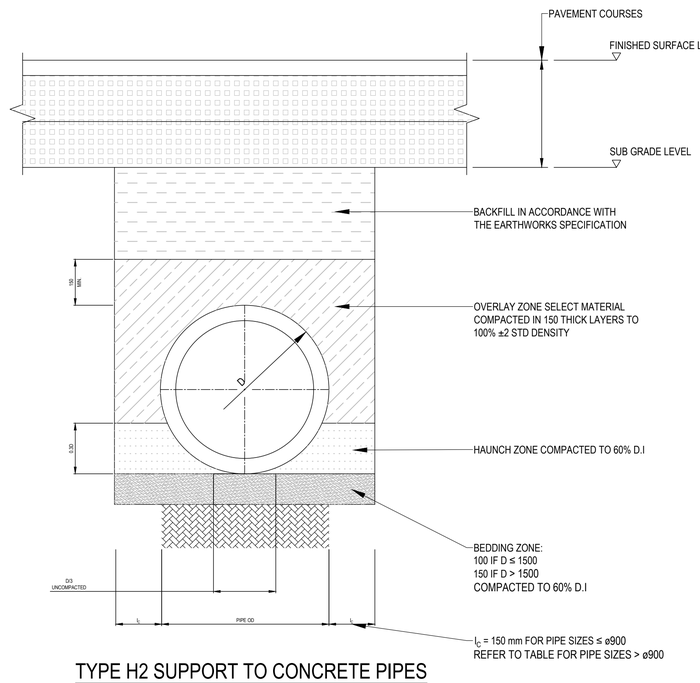
ORIGINAL SHEET - ISO A1 COLOUR - CGA2200VMGA56 DATUM - MAHD

\\Au2012-ntap01_cifs.corp.ads\au2012_ntap01_cifs_proj\Shared_Projects\301351698\Project Documentation\Civil\Drawings & Design\Sheet Set\301351698-STN-ZZ-000-DR-CI-526001.dwg, 4/15/2025 10:48:36 AM, AutoCAD PDF (General Documentation).pc3



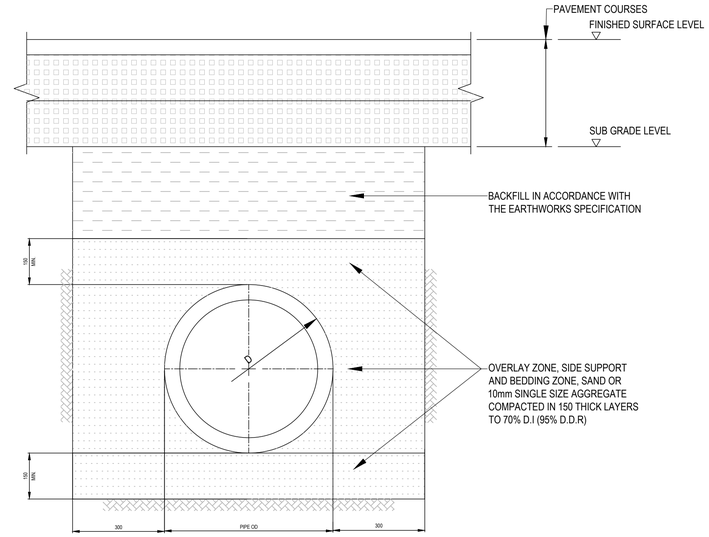
TYPE HS2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (VEHICULAR)

SCALE 1:10



TYPE H2 SUPPORT TO CONCRETE PIPES UNDER PAVEMENT (NON-VEHICULAR)

SCALE 1:10



FLEXIBLE PIPES UNDER PAVEMENTS

SCALE 1:20

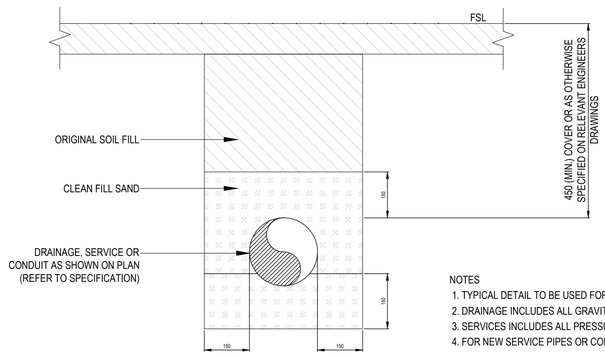
BEDDING & HAUNCH MATERIAL GRADING (TABLE 6 AS/NZS 3725)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
2.36	100 TO 50
0.60	90 TO 20
0.30	60 TO 10
0.15	25 TO 0
0.075	10 TO 0

SAND GRADING (TABLE G3 AS 2566.2)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
4.75	100 TO 90
2.36	90 TO 100
1.18	85 TO 100
0.60	70 TO 100
0.30	50 TO 100
0.15	0 TO 40
0.075	0 TO 5

SIDE ZONE WIDTH	
PIPE SIZE (mm)	l_C (mm)
≤ ø900	150
ø1050	175
ø1200	200
ø1350	225
ø1500	250
ø1650	275
ø1800	300

10mm SINGLE-SIZE AGGREGATE GRADING (TABLE G2 AS 2566.2)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
13.20	100
9.50	85 TO 100
4.75	0 TO 20
2.36	0 TO 5
0.075	0 TO 2

SIDE ZONE MATERIAL GRADING (TABLE 7 AS/NZS 3725)	
SIEVE SIZE (mm)	WEIGHT PASSING (%)
19.00	100
9.50	100 TO 50
2.60	100 TO 30
0.60	50 TO 15
0.075	25 TO 0



NOTES
1. TYPICAL DETAIL TO BE USED FOR ALL DRAINAGE SERVICES RUNNING UNDER LANDSCAPE
2. DRAINAGE INCLUDES ALL GRAVITY SERVICES (INCLUDES CONCRETE AND PLASTIC PIPES)
3. SERVICES INCLUDES ALL PRESSURE PIPES
4. FOR NEW SERVICE PIPES OR CONDUITS, REFER TO PLANS FOR SIZES AND LOCATIONS

BACKFILL TO DRAINAGE, SERVICES AND CONDUITS IN LANDSCAPE AREAS (TYP.)

SCALE: NTS

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

A	SSDA ISSUE	NO	AT	2025.04.11
Issued/Revision		By	Appd	YYYY.MM.DD

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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.11
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET - 3

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526003

Plotted: 4/15/2025 10:47:09 AM By: GILBERT, CHARLIE
\\Au2012-NTAP01_CIFS.CORP.ADS\AU2012_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET
ORIGINAL SHEET SIZE A1 COLOUR: GDA2020/MGA56 DATUM = MHD

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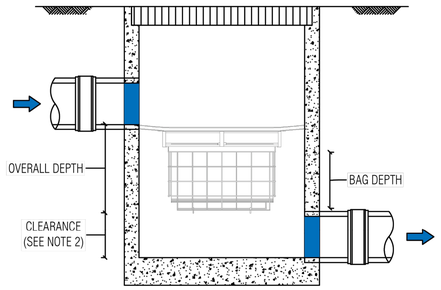
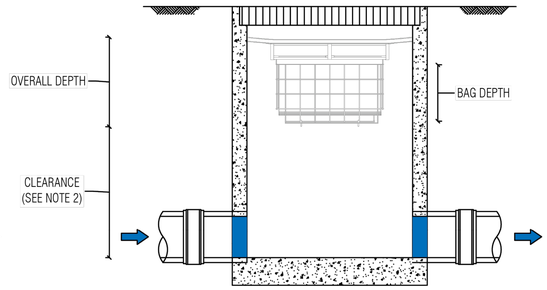
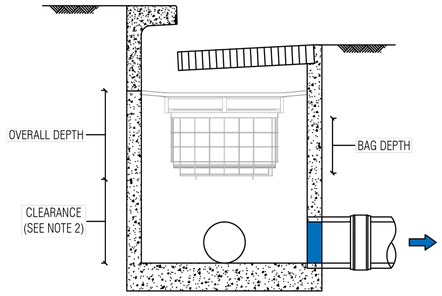


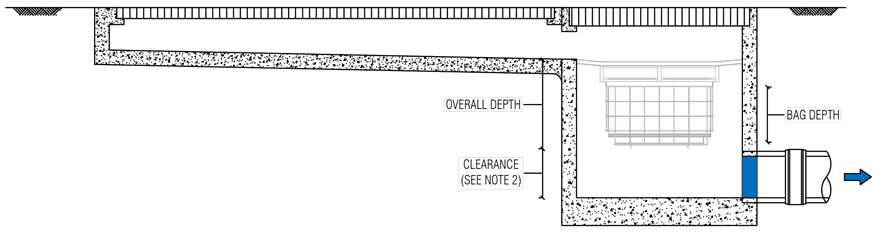
PIPE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



SURFACE FLOW CONFIGURATION



GRATED STRIP DRAIN CONFIGURATION

LAST MODIFIED: 15-10-19

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

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

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

GENERAL NOTES

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

OCEAN PROTECT

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OCEAN PROTECT
OCEANGUARD
TYPCIAL ARRANGEMENTS
SPECIFICATION DRAWING

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	
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Issued/Revision			2025.04.15

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File Name:	MK	CG	AT	
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD
				2025.04.15

Title
STORMWATER DRAINAGE DETAILS
SHEET 5

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526005

Plotted: 4/15/2025 5:00:44 PM By: GILBERT, CHARLIE
\\AUS01214FAP01_CIFS.CORP.AD\SJ0012_NAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & DESIGN\SHEET SET

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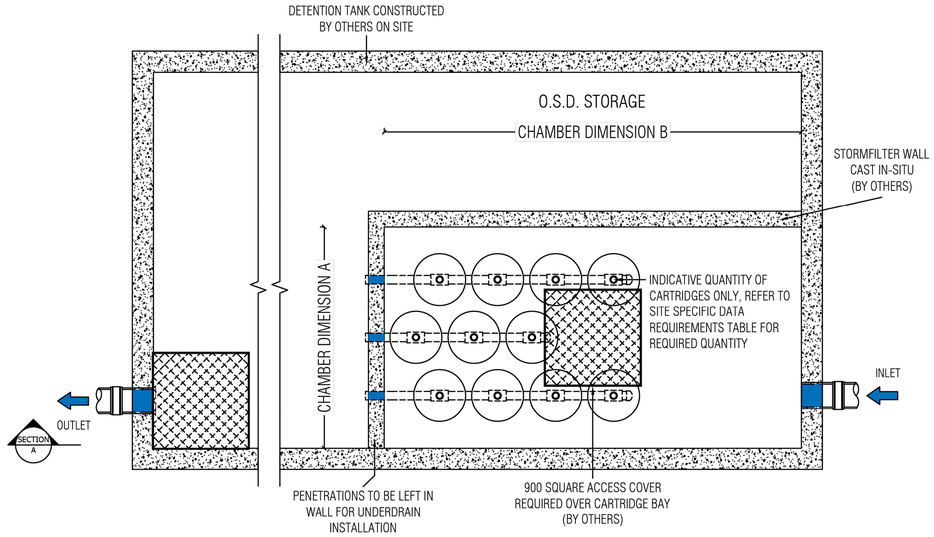
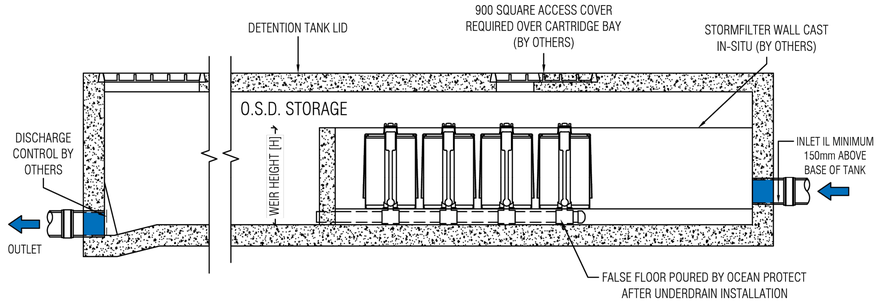
CONSTRUCTION



PLAN LAYOUT

NOT FOR



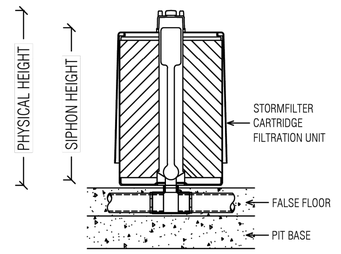
SECTION A

LAST MODIFIED: 07-03-19

STORMFILTER DESIGN TABLE

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

CARTRIDGE NAME / SIPHON HEIGHT (mm)	690	460	310
CARTRIDGE PHYSICAL HEIGHT (mm)	840	600	600
TYPICAL WEIR HEIGHT [**H**] (mm)	920	690	540
CARTRIDGE FLOW RATE FOR ZPG MEDIA (L/s)	1.6	1.1	0.7
CARTRIDGE FLOW RATE FOR PSORB MEDIA (L/s)	0.9	0.46	0.39



STORMFILTER CARTRIDGE DETAIL

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	[ ]
NUMBER OF CARTRIDGES REQ'D	[ ]
SIPHON HEIGHT (310 / 460 / 690)	[ ]
MEDIA TYPE (ZPG / PSORB)	[ ]
WATER QUALITY FLOW RATE (L/S)	[ ]
DIMENSION A	[ ]
DIMENSION B	[ ]

TOTAL CARTRIDGE BAY AREA (A x B) TO MATCH AREA REQUIRED BY MUSIC MODELLING OR COUNCIL SPECIFIC REQUIREMENTS

GENERAL NOTES

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

INSTALLATION NOTES

1. UNDERDRAIN AND FALSE FLOOR INSTALLED BY OCEAN PROTECT.

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

OCEAN PROTECT
STORMFILTER SYSTEM
DETENTION TANK ARRANGEMENT
SPECIFICATION DRAWING

1:20 0.2 0 0.2 0.4 0.6 0.8 1 A1
1:40 A3

Key Plan

	NO	AT	2025.04.15
A SSDA ISSUE	By	Appd	YYYY.MM.DD
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POCKLEY AVENUE, ROSEVILLE, NSW, AUSTRALIA 2069

File Name:	MK	CG	AT	2025.04.15
301351698-STN-ZZ-000-DR-CI-526001.DWG	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS
SHEET 6

Project No.
301351698

Scale
AS SHOWN

Revision
A

Drawing No.
STN-ZZ-000-DR-CI-526006

Plotted: 4/5/2025 9:13:35 PM By: GILBERT, CAMILLE
\\AU021Z-FAVP01_CIFS_COMP.ADS\AU021Z_NTAP01_CIFS_PROJ\SHARED_PROJECTS\301351698\PROJECT DOCUMENTATION\CIVIL\DRAWINGS & ISSUES\SHEET SET
ORIGINAL SHEET - ISO A1 COORD - GDA2020/MGA56 DATUM - mAHD

KU-RING-GAI COUNCIL

MUSIC-*link* Report

Project Details		Company Details	
Project:	Roseville, Pockley Avenue	**Company:**	Stantec
Report Export Date:	4/15/2025	**Contact:**	Charlie Gilbert
Catchment Name:	301351698 - Pockley Island Site_Draft_01	**Address:**	Stantec Level 9, The Forum, 203 Pacific Highway St Leonards NSW 2065 AUSTRALIA
Catchment Area:	0.809ha	**Phone:**	
Impervious Area*:	78.24%	**Email:**	charlie.gilbert@stantec.com
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/1/1963 - 12/31/1993 11:54:00 PM		
Mean Annual Rainfall:	1275mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.4.0		
MUSIC-link data Version:	6.40		
Study Area:	Ku-ring-gai Council		
Scenario:	Ku-ring-gai		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness

Node: Recieving Node - GP-70% TSS=85%TP=65%TN=45%	Reduction
Flow	-0.00322%
TSS	88.3%
TP	70.2%
TN	46.4%
GP	100%

Treatment Nodes

Node Type	Number
Sedimentation Basin Node	1
GPT Node	2
Generic Node	1

Source Nodes

Node Type	Number
Urban Source Node	8

Comments

The MUSIC model flagged issues can be clarified based on the following details. The parameters that appear with errors in the RWT, such as Nitrogen C** value, Phosphorus C** value and Suspended Solids C**value, have been adopted from Atlan's design values.

As can be seen from the results, the proposal achieves minimum 80% water effieciency, and meets the required pollutant reduction targets.

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	1 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	None	0.02
GPT	2 x OceanGuard	Hi-flow bypass rate (cum/sec)	None	None	0.04
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	% Load Reduction	None	None	-0.00322
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	GP % Load Reduction	70	None	100
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TN % Load Reduction	45	None	46.4
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TP % Load Reduction	65	None	70.2
Receiving	Recieving Node - GP-70% TSS=85% TP=65% TN=45%	TSS % Load Reduction	85	None	88.3
Sedimentation	SF Chamber 100SQM	% Reuse Demand Met	None	None	0
Sedimentation	SF Chamber 100SQM	High Flow Bypass Out (ML/yr)	None	None	0
Urban	Building Shadow 0.13Ha	Area Impervious (ha)	None	None	0.13
Urban	Building Shadow 0.13Ha	Area Pervious (ha)	None	None	0
Urban	Building Shadow 0.13Ha	Total Area (ha)	None	None	0.13
Urban	Driveway 0.0165Ha	Area Impervious (ha)	None	None	0.017
Urban	Driveway 0.0165Ha	Area Pervious (ha)	None	None	0
Urban	Driveway 0.0165Ha	Total Area (ha)	None	None	0.017
Urban	Pav1 0.098Ha	Area Impervious (ha)	None	None	0.098
Urban	Pav1 0.098Ha	Area Pervious (ha)	None	None	0
Urban	Pav1 0.098Ha	Total Area (ha)	None	None	0.098
Urban	Pav2 0.0975Ha	Area Impervious (ha)	None	None	0.098
Urban	Pav2 0.0975Ha	Area Pervious (ha)	None	None	0
Urban	Pav2 0.0975Ha	Total Area (ha)	None	None	0.098
Urban	Pav3 0.0985Ha	Area Impervious (ha)	None	None	0.099
Urban	Pav3 0.0985Ha	Area Pervious (ha)	None	None	0
Urban	Pav3 0.0985Ha	Total Area (ha)	None	None	0.099
Urban	Pav3 Walkway 0.183Ha	Area Impervious (ha)	None	None	0.183
Urban	Pav3 Walkway 0.183Ha	Area Pervious (ha)	None	None	0
Urban	Pav3 Walkway 0.183Ha	Total Area (ha)	None	None	0.183
Urban	Walkway and courtyards 0.Ha	Area Impervious (ha)	None	None	0.008
Urban	Walkway and courtyards 0.Ha	Area Pervious (ha)	None	None	0
Urban	Walkway and courtyards 0.Ha	Total Area (ha)	None	None	0.008

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Sedimentation	SF Chamber 100SQM	Notional Detention Time (hrs)	8	12	4.7
Sedimentation	SF Chamber 100SQM	Total Nitrogen - k (m/yr)	500	500	1
Sedimentation	SF Chamber 100SQM	Total Phosphorus - k (m/yr)	6000	6000	1
Sedimentation	SF Chamber 100SQM	Total Suspended Solids - k (m/yr)	8000	8000	1

Only certain parameters are reported when they pass validation