



# **68-80 Banks Avenue, Pagewood**

Integrated Water Management Plan

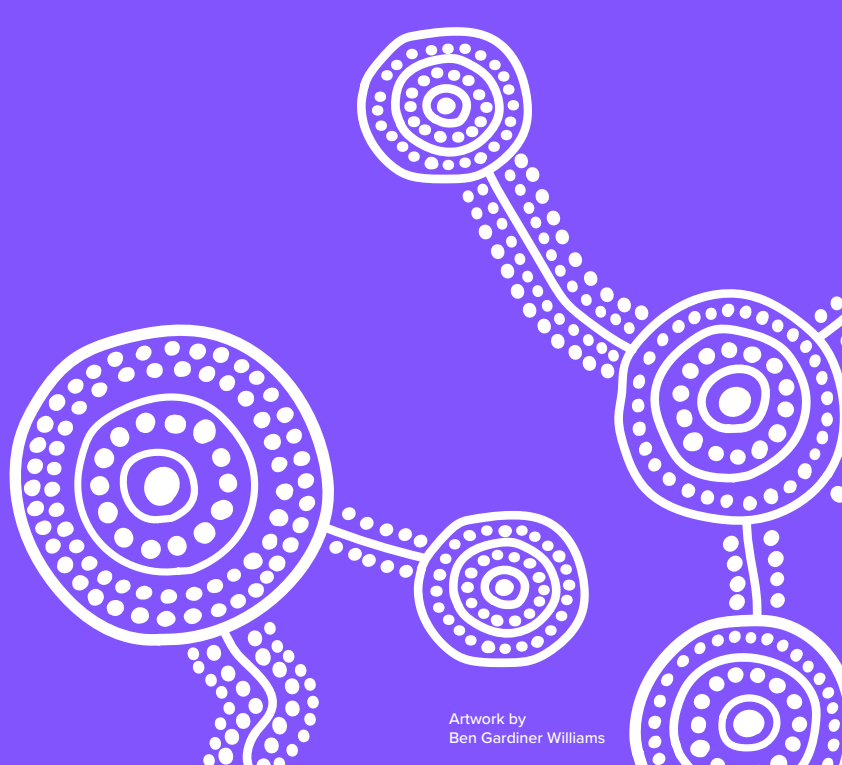
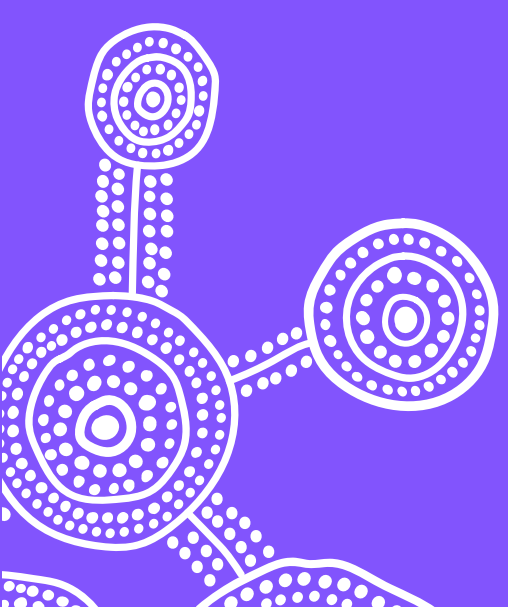
November 2025



# Acknowledgment of Country

On behalf of Mott MacDonald, we would like to begin by acknowledging the Traditional Custodians of the land on which we meet today, and pay our respects to their Elders past and present.

We recognise and respect their cultural heritage, beliefs, continued connection to the land and water and commit to building a brighter future together.



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# Issue and Revision Record

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# Executive summary

This Integrated Water Management Plan has been prepared by Mott Macdonald as part of the Environmental Impact Statement (EIS) for a State Significant Development Application (SSDA) for a residential development at 68-80 Banks Avenue, Pagewood (the site).

The site is located at 68-80 Banks Avenue, Pagewood in the Bayside Local Government Area (LGA) and comprises 18 lots with a combined site area of 9,262sqm. It is currently occupied by 5 2-3 storey walk up buildings containing 82 social housing dwellings.

The SSD application seeks approval for demolition of all existing structures and construction of residential flat buildings comprising a total of 84 social housing dwellings and 140 private market dwellings.

The report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-83256472) on 12 May 2025 as detailed in the table below.

Table 1-1: Relevant SEARs considered

Issue	SEARS requirement	Section reference
Water Management	<ul style="list-style-type: none"><li>• Detail the proposed drainage design and service infrastructure to be incorporated as part of the development (stormwater and wastewater).</li><li>• Demonstrate how the development complies with council's drainage requirements and identify proposed stormwater treatment and water quality management measures to minimise adverse environmental impacts.</li></ul>	<ul style="list-style-type: none"><li>• Water Quantity Management</li><li>• Overland Flow Path</li> <li>• Water Quality Management</li><li>• MUSIC Modelling Results</li></ul>

This report concludes that the proposed residential development appropriately considers Bayside Council Technical Specification, Stormwater Management subject to the implementation of the following mitigation measures:

- Stormwater Management
- Stormwater Quality Design Requirements

# 1 Introduction

## 1.1 Purpose of Report

The purpose of this Integrated Water Management Plan is to outline the proposed site stormwater management strategy for the development and demonstrate compliance with the stormwater management quantity and quality requirements in accordance with the SEARs issued for the project including, but not limited to, Bayside Stormwater Technical Specification Stormwater Management 2023 and relevant Australian and industrial standards.

## 1.2 Scope of Work

This management plan details the stormwater assessment undertaken, including modelling results, and presents the proposed strategy for both stormwater quantity and quality management for the development.

The assessment includes the following components:

- Understanding the existing stormwater conditions for the site including flood risk, overland flow paths, permeability, existing infrastructure and current points of discharge.
- Assessing the post-development flows for the proposed development by DRAINS to determine any increase in runoff and implement mitigation measures as required under the design criteria.
- Assessing the use of various stormwater quality treatment measures, including Water Sensitive Urban Design (WSUD) initiatives, to meet the stormwater quality objectives under the design criteria.
- Designing a stormwater system to convey the minor flows from the development to nominated points of discharge from the site and incorporating quantity and quality measures from the above.
- Considering major flows and overland flow paths through the developed site for safety and conveyance of flows and implementing above-ground drainage measures as required.
- Implementing erosion and sediment control measures to minimise sediment runoff during the construction phase.

## 1.3 Limitation of this Report

The proposed Integrated Water Management Plan to be read in conjunction with relevant consultants including but not limited to, Architectural Plans, Landscape Plans, Geotechnical Report and relevant approval documents.

## 2 Design Guidelines and Methodologies

### 2.1 Consultation

Mott MacDonald is in consultation with the project team throughout the design phase to obtain a feasible design solution for the proposed development site. Iterations of the design were prepared in conjunction with the flood engineers input to flood advice, structure engineers, hydraulic engineers, landscape architects and architects. The proposed stormwater drainage design was conducted in accordance with Bayside Council Development Control Plan 2022 (DCP) and other relevant guidelines.

### 2.2 Codes and Guidelines

The design has been undertaken in compliance with the irrelevant Australian Standards, and local government guidelines. Key documents used as guidance for the design are summarised in Table 2-1.

**Table 2-1: Design Criteria and Guidelines**

Reference	Title	Version or Date	Originator
DRAINS	DRAINS User Manual		DRAINS
eWater	MUSIC User Manual	V5	eWater
Blue Book	Managing Urban Stormwater – Soils and Construction, Volume 1, 4 <sup>th</sup> edition, March 2004, Landcom	March 2004	Landcom
NCC	National Code Australia	2022	Australian Building Codes Board
AS/NZS 3500.3	Plumbing and Drainage – Stormwater Drainage	2021	Standards Australia
Bayside Council	Technical Specification Stormwater Management	10 <sup>th</sup> April 2023	Bayside Council

### 2.3 Other Consultants Inputs

The proposed stormwater design is also based on the following source of information received:

- Architectural design layouts provided by BVN, Job No.2502003, dated 23/10/2025.
- Landscape design layouts provided by Turf, Project no: 2506, dated 24/10/2025.
- Survey undertaken by LTS, Reference no: 52503 001 DT, dated 09/04/2025.
- Arborist assessment undertaken by Birds Tree Consultant, DWG: A01, dated 20/10/2025.
- Geotechnical Investigation undertaken by JBS&G, Reference: PSM5745-009R, dated 15/08/2025

### 2.4 Methodologies

- DRAINS
  - DRAINS software package has been utilised to size the proposed below ground pit and pipe network to convey the major/minor storm events flows.
  - This software has also been used to undertake iterations to determine suitably sized stormwater detention tanks under the stormwater management quantity requirements.

- The DRAINS model has been undertaken the online rainfall data from ARR Data Hub.
- Climate change rainfall modifier has been applied to undertake the hydraulic analysis.
  
- MUSIC
  - Modelling of the proposed development was undertaken using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 6.3 software. The software was utilised to simulate urban stormwater systems operating at a range of temporal and spatial scales. MUSIC models the total amounts of gross pollutants, phosphorus, nitrogen, and total suspended solids produced within various types of catchments. It allows the user to simulate the removal rates expected when implementing water quality treatment devices to reduce the increase gross pollutant and nutrient levels created by the proposed development.
  - The water quality modelling has been undertaken in accordance with the current NSW Music Modelling Guidelines 2015.
- BYDA
  - Before You Dig Australia, due diligence investigations have been carried out with a combined services coordination and verification. The information is a supplementary to existing survey to assist civil/stormwater design and other consultants at approval submission stage.

## 2.5 Stormwater Management Design Criteria

### 2.5.1 Design Storm Events

The design storm events vary from design purposes and have been summarised below, detailed design regulations to be discussed in the following chapters:

- Water Sensitive Urban Design (WSUD) is designed for 1 in 3-month storm events.
- Permissible Site Discharge (PSD) is designed for 20% AEP storm event peak flow under the “state of nature” condition of the Site (i.e., the Site is totally grassed/turfed) for all storm events.
- On-Site Detention (OSD) volume is designed for 1% AEP storm events.

### 2.5.2 Design Requirements

The listed Bayside Technical Specifications in Table 2-1 above provide the synopsis of the design requirements for the subject site. Design criteria have been developed to ensure the proposed design adheres to the requirements denoted in the Bayside Technical Specification. Table 2-2 below summarises the design criteria for hydrology and hydraulics analysis.

#### Table 2-2: Hydraulics and Hydrology Criteria

Item	Standard	Adopted	
<b>Hydrology &amp; Hydraulics</b>			
Hydrological Model	Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements	DRAINS (ILSAX)	
Design Rainfall Data	Bayside Technical Specification Stormwater Management, Section 8.4	AR&R Online Data	
Urban Rainfall Losses	Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements	Paved (impervious) area depressions storage (mmm)=1 Supplementary area depression storage (mm) = 1 Grassed (previous) area depression storage (mm) = 5	
Soil Type	Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements	AMC = 3	
Major Design Storm	Bayside Technical Specification Stormwater Management, Section 4.3 Private Drainage Easements	100YR Average Recurrence Interval (1% AEP)	
Minor Design Storm	Bayside Technical Specification Stormwater Management, Section 8.4	Drainage lines are generally designed for the 5% AEP (20-year ARI).	
Manning's Roughness Coefficient (Kinematic Wave Equation)	AS/NZS 3500.3:2021, Table 5.4.9	Surface Type	Typical values for n
		Polyethylene (PE)	0.009 to 0.010
		Polyvinylchloride (PVC)	0.009 to 0.010
		Smooth concrete	0.011 to 0.012
		Trowelled concrete	0.012 to 0.015
		Asphalt paving	0.013 to 0.015
		Brickwork	0.014 to 0.016
		Roughly jointed bricks or pitchers	0.016 to 0.020
		Sprayed concrete (gunite)	0.016 to 0.020
		Earth-lined channels	0.018 to 0.025
		Corrugated metal	0.012 to 0.015
		Rock lining or riprap	0.025 to 0.030
		Rock cut	0.035 to 0.040
Grassed or vegetated channels	0.025 to 0.075		
Pipes and Culvert Colebrook-White (n value) formular	ARR, Book 6 – Flood Hydraulics Table 6.2.1	uPVC – 0.009 Spun Precast Concrete – 0.013 Fibre Reinforced Concrete – 0.011	
Pit Losses	-	QUDM	
Pit Blockage Factors	Australian Rainfall & Runoff Blockage of Hydraulic Structures Stage 2 Report, Section 7, Table 7.1	Sag kerb inlet – 80% Sag grated – 50% Continuous Grade (on-grade) Kerb inlet – 80% Longitudinal bar grated – 60% Transverse bar grate or longitudinal bar grate – 50%	
Tail water level/sea water level	Bayside Technical Specification Stormwater Management, Section 6.3.3	1% AEP flood level	

Overland Flow Safety Criteria	ARR, Book 6, Table 6.7.1	DV (m <sup>2</sup> s-1)	Children (H.M = 25 to 50) <sup>1</sup>	Adults (H.M>50)
		0	Safe	Safe
		0-0.4	Low Hazard if depth < 0.5m and velocity < 3m/s otherwise Extreme Hazard	Low Hazard if depth < 1.2m and velocity < 3m/s otherwise Extreme Hazard
		0.4-0.6	Significant Hazard; Dangerous to most if depth < 0.5m and velocity < 3m/s otherwise Extreme Hazard	
		0.6-0.8	Extreme Hazard; Dangerous to all	Moderate Hazard; Dangerous to some if depth < 1.2m and velocity < 3m/s otherwise Extreme Hazard
		0.8-1.2		Significant Hazard; Dangerous to most if depth < 1.2m and velocity < 3m/s otherwise Extreme Hazard
		>1.2		Extreme Hazard; Dangerous to all
Permissible Site Discharge	Bayside Technical Specification Stormwater Management Section 6.1	<p>The Permissible Site Discharge (PSD) from the Site shall be designed to restrict the discharge to the predeveloped runoff in the "state of nature/greenfield" condition (Predeveloped Site must be assumed as 100% pervious (i.e. the Site is totally grassed/turfed) for the 20%, 10%, 5%, 2%, and 1% AEP storm events for all typical durations from 10 minutes to 2 hours. The OSD storage volume (SSR) shall be designed to ensure this achieved.</p>		
		<p>Post developed flow shall be checked for all storm events (20%, 10%, 5%, 2%, and 1%) verifying that the post developed flow from the development Site during each storm event does not exceed the PSD for each storm event, and that this has been achieved in the design of the OSD system.</p>		
On-Site Stormwater Detention	Bayside Technical Specification Stormwater Management Section 6	<p>On-site stormwater detention (OSD) systems shall be provided for all industrial development and development, which infiltration system is not permitted or feasible</p>		
Pollution Reduction Targets	Bayside Technical Specification Stormwater Management Section 7.1.1	<p>Litters 90%                      Total Suspended Solids (TSS) 85%                      Total Phosphorus (TP) 60%                      Total Nitrogen (TN) 45%</p>		

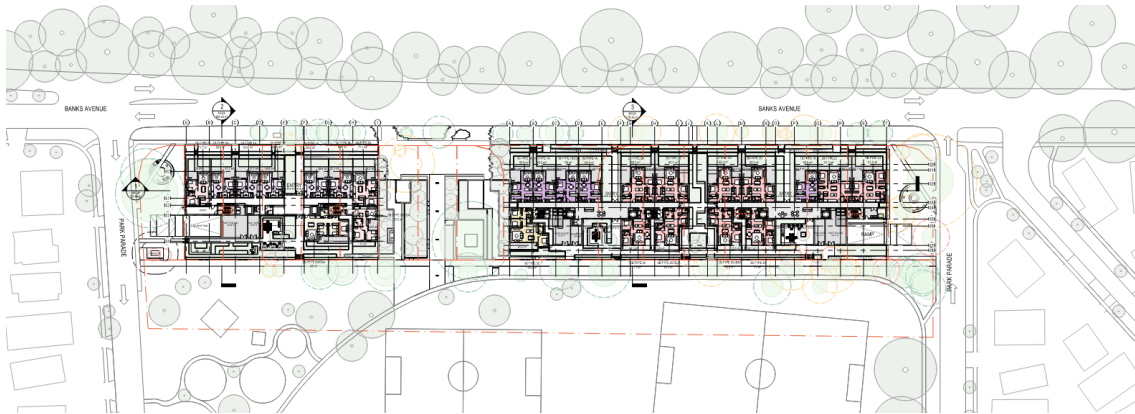
### 3 Subject Site

The site is located at 68-80 Banks Avenue, Pagewood in the Bayside Local Government Area (LGA) and comprises 18 lots with a combined site area of 9,262sqm. It is currently occupied by 5 buildings containing 82 dwellings within 2-3 storey walk-up buildings.

The site is bound by Banks Road to the west, Park Parade to the north and south, and Jellicoe Park to the east. The Bonnie Doon Golf Course is opposite the site on Banks Avenue to the west.

The site is located within the residential suburb of Pagewood which comprises largely low rise residential dwellings zoned R2 Low Density Residential and open space.

Further south is higher density development being undertaken as part of the Pagewood Centro development, with buildings up to 20 storeys. Westfield Eastgardens is approximately 600m to the south of the site providing extensive local services and amenities and is subject of a Planning Proposal to facilitate expanded retail as well as office uses.



**Figure 3-1: Proposed Site Plan (BVN, 23.10.2025)**

## 4 Proposed Development

The SSD application seeks consent for the following:

- Demolition of all existing structures on the site, tree removal, excavation and site preparation works
- Construction of new residential flat buildings comprising:
  - A seven-storey social housing residential flat building with 84 dwellings with a single basement level accessed from Park Avenue to the south
  - Two eight storey private market housing residential flat buildings with 140 dwellings over a consolidated two-level basement accessed from Park Avenue to the north
- Shared servicing access via a lay-by from Banks Avenue
- Associated landscaping and communal open space
- Infrastructure servicing
- Staged delivery to enable relocation of existing tenants and demolition of existing social housing dwellings.

A detailed description of the project is included in the EIS.

## 5 Stormwater Management

### 5.1 Water Quantity Management

It is noted that areas within the Bayside Council Local Government Area (LGA) are predominantly underlain by sandy soils, which exhibit permeability rates conducive to stormwater infiltration. This geological characteristic supports the use of absorption systems for stormwater disposal. In alignment with Council requirements, absorption methods are to be implemented for all developments where practical.

Furthermore, Council stipulates that infiltration shall be considered the primary method of stormwater disposal for all developments, irrespective of whether the site grades towards or away from a public road. On-site stormwater retention systems, which utilize infiltration techniques, are particularly suitable for sites with sandy soils and acceptable permeability rates.

Accordingly, the proposed development will incorporate an infiltration system for stormwater disposal, in compliance with the above controls. A geotechnical investigation will be undertaken at a later stage to determine the site-specific absorption rate, which will inform the sizing and design of the infiltration system.



**Figure 5-1: Water Quantity Catchment Plan**

Refer to civil drawing set prepared by Mott Macdonald, attached to this report in Appendix A.

All stormwater designs will be prepared in accordance with Section 5.0 of the *Bayside Technical Specification – Stormwater Management Guide*.

#### 5.1.1 Overland Flow Path

The proposed development site is relatively flat, exhibiting a gentle slope of approximately 0.5% from east to west. This minimal gradient reflects the existing topographical conditions and is not expected to significantly influence stormwater flow patterns. During major storm events, any overflow will continue to follow the natural fall of the land, consistent with the current drainage scenario.

## 6 Water Quality Management

To ensure that the development improves the quality of stormwater leaving the development Site Mott MacDonald has reviewed the Site, formulated a Water Sensitive Urban Design concept modelled the treatment train effectiveness and summarised the results in this section of the report. MUSIC software was utilised to simulate urban stormwater systems operating at a range of temporal and spatial scales. MUSIC models the total amounts of gross pollutants, phosphorus, nitrogen and total suspended solids produced within various types of catchments. It allows the user to simulate the removal rates expected when implementing water quality treatment devices to reduce the increased gross pollutant and nutrient levels created by the proposed development.

### 6.1.1 MUSIC Modelling Pluviograph Data Input

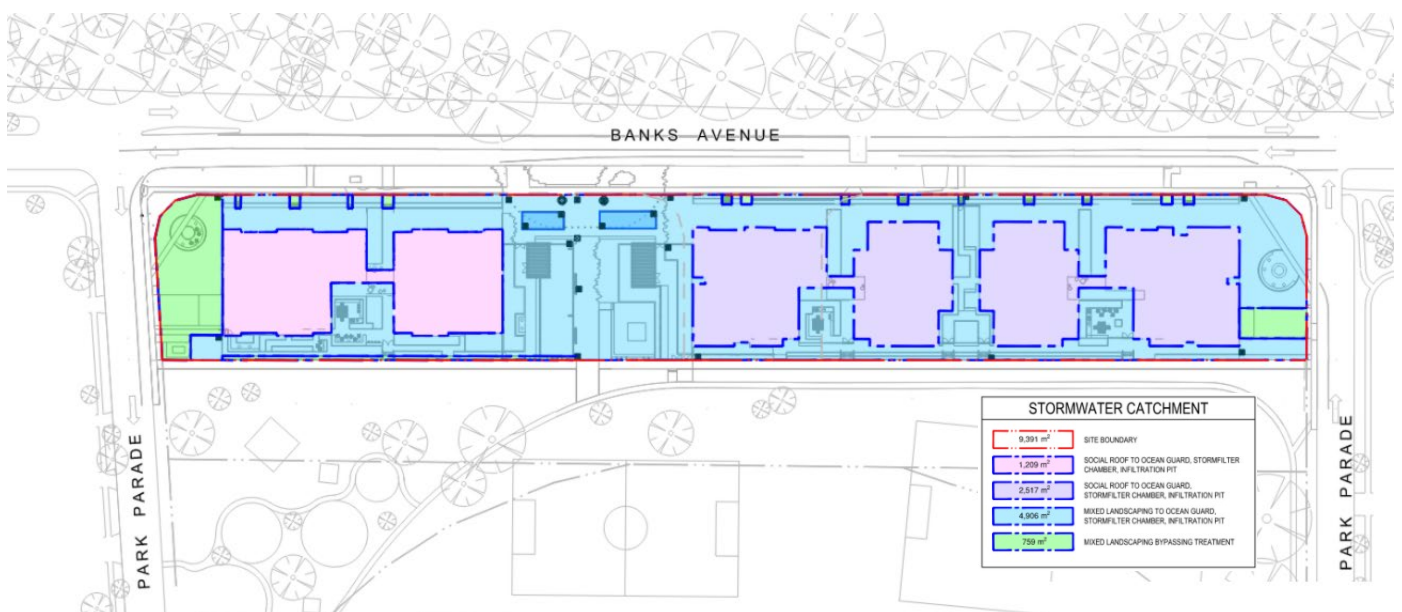
The water quality analysis for the proposed development requires historical rainfall data recorded by a pluviograph station to accurately model stormwater runoff and pollutant loads. To support this, the Bayside Council MUSIC (Model for Urban Stormwater Improvement Conceptualisation) template, containing relevant rainfall and catchment data, was obtained from Ocean Protect. The rainfall data embedded within the model spans the period from 1962 to 1966, providing a representative historical dataset for simulation purposes. The pluviograph data used in the analysis is summarised in Table 6-1.

**Table 6-1: Bayside City Pluviograph Data**

Station No.	Location	Records	Data Interval
066037	Bayside	1962-1966	6-minute

### 6.1.2 Water Quality Catchment

The MUSIC model was set up to represent the post-developed scenario. The Site was divided into sub-catchments based on the layout and topography. The proposed MUSIC catchment breakdown is shown in Figure 6-1. Details of water quality catchment delineation shall be read in conjunction with civil drawings set prepared by Mott Macdonald (Ref. 103419-MMD-PAG-XX-DR-C-0011, Revision 01).



### Figure 6-1: Water Quality Catchment Plan

The proposed catchments are separated into the following land use types:

- **Roof** – The roof area of all proposed buildings.
- **Mixed Area** – Both landscape, natural areas and paved areas that are within the development.

MUSIC soil and groundwater parameters are set as per Table 6-2 and MUSIC node rainfall runoff parameters are set as per Table 6-3 respectively.

**Table 6-2: Soil/groundwater parameters for adoption in MUSIC modelling**

	Units	Mixed	Roof
Impervious area parameters			
Rainfall threshold	mm/day	0.3	1
Pervious area parameters			
Soil storage capacity	mm	120	120
Initial storage	% of capacity	25	25
Field capacity	mm	80	80
Infiltration capacity coefficient - a		200	200
Infiltration capacity coefficient - b		1	1
Groundwater properties			
Initial depth	mm	10	10
Daily recharge rate	%	25	25
Daily baseflow rate	%	5	5
Daily deep seepage rate	%	0	0

**Table 6-3: Stormwater Quality Parameters for MUSIC modelling**

Land Use	Storm Flow						Base Flow					
	TSS		TP		TN		TSS		TP		TN	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
(All values expressed as log <sub>10</sub> mg/l)												
Mixed	2.20	0.32	-0.45	0.25	0.42	0.19	1.10	0.17	-0.82	0.19	0.32	0.12
Roofs	1.30	0.32	-0.89	0.25	0.30	0.19	1.10	0.17	-0.82	0.19	0.32	0.12

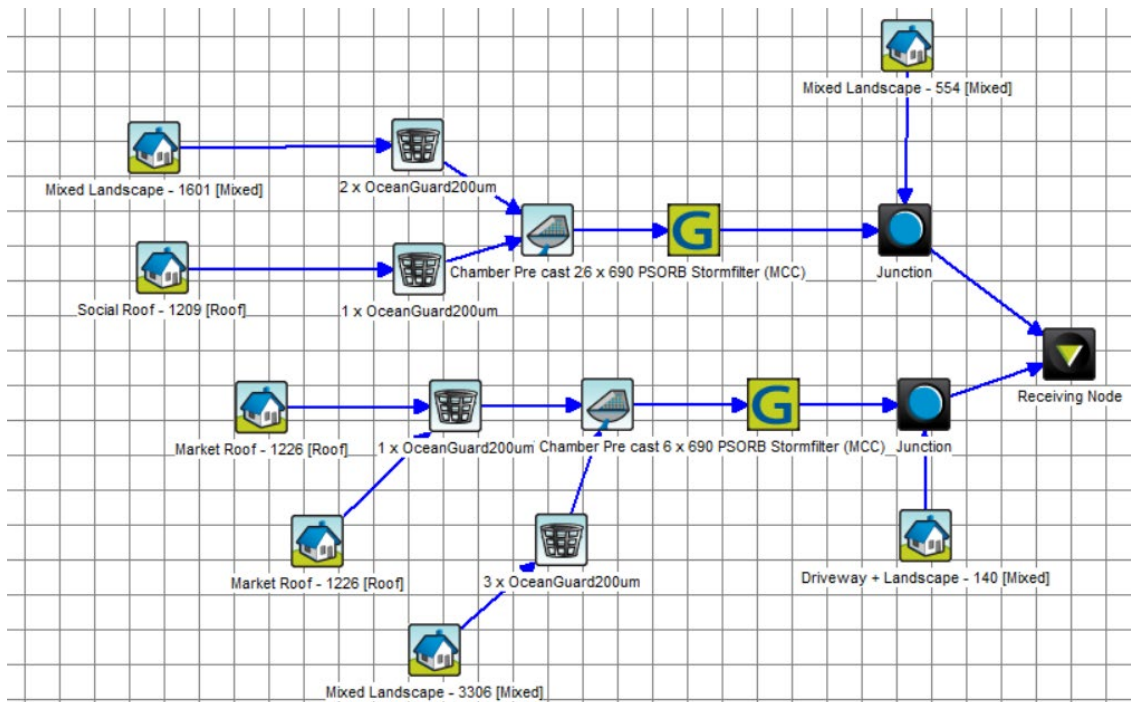
(Note: SD = Standard Deviation, TSS = Total Suspended Solids, TP = Total Phosphorus and TN = Total Nitrogen)

### 6.1.3 Water Quality Treatment Train

The following treatment train has been proposed for the Site:

Stormwater capture within the development area is directed into the civil stormwater network consisting of pit and pipe networks and to be treated by rainwater tank and Stormfilters from Ocean Protect or equivalent prior to discharging to infiltration pit.

The treatment train that has been modelled is limited to the new building drainage network that drains into the combined water quality / detention tank. Figure 6-1 below is the proposed treatment train, as set out in the MUSIC model.



**Figure 6-2: MUSIC Model**

### 6.1.4 Rainwater Re-use

Rainwater tank has been introduced as part of the treatment train and to satisfy BASIX requirement as per sustainability engineer's and council's specifications. The proposed 10kL rainwater tank is designed for all ground floor toilets, all ground floor clothes washing machines, car wash bays and the landscape irrigation with 0.4kL/m<sup>2</sup>/year as demanded rate in the MUSIC modelling.

Downpipes with first flush devices to be installed before roof stormwater entering into rainwater tank to avoid any debris blockage, overflow from rainwater tank shall be directly into StormFilter chamber for further treatment.

### 6.1.5 MUSIC Modelling Results

Based on the results of this assessment, the proposed water quality treatment train will provide adequate improvements in Total Suspended Solids, Total Phosphorus, Total Nitrogen and Gross Pollutants for the proposed development. Similarly, Table 6-4 below indicate the minimum works required to meet the water quality targets. Further options could be explored during the detailed design phase of the project to further refine the stormwater network and treatment train and/or achieve higher standards where feasible.

**Table 6-4: MUSIC Modelling Assessment Results**

Pollutants	Bayside Technical Specification Stormwater Management 7.1.1	Reduction %	Results
Gross Pollutants (GP)	90%	95.3	Satisfy
Total Suspended Solids (TSS)	85%	85.1	Satisfy
Total Phosphorus (TP)	60%	65.4	Satisfy
Total Nitrogen (TN)	45%	47.5	Satisfy

## 7 Maintenance, Access and Safety

### 7.1 Maintenance Requirement

Throughout the operational life of the development, the stormwater system will require regular simple maintenance to ensure effective functionality, minimise lifecycle costs and maintain safety.

It is proposed maintenance activities are the responsibility of the strata facilities department and should generally include:

- Removal of gross pollutants such as litter and debris from open areas to prevent from entering the stormwater network.
- Periodic inspection of the stormwater network including pit/pipe network, StormFilters, detention tanks and outlets at street pits.
- Periodic inspection of rainwater tanks (requirements to be set out by building hydraulic design).
- Unblocking of inlets and outlets (system flushing) as required, including flushing of subsoil drainage systems.
- Removal of sediment build-up as required.
- Landscaping maintenance to grass swales and bio-retention basins.
- Regular inspection of safety elements (such as proposed fencing/gates around bio-retention basins).

### 7.2 Access and Safety

The following items for access and safety should be considered by the project architect and civil engineering team for the detailed design stage of the project:

- Covers and grates to stormwater network to be lockable to prevent unauthorised access or displacement.
- Appropriate fencings / barriers with lockable gates to detention tanks and pipe headwall outlets to prevent access from children.

## 8 Erosion and Sediment Control

The erosion and sediment control measures will be undertaken for each lot with reference to Landcom Blue Book; Managing Urban Stormwater Soil for best practice through the construction phase to limit any sediments generated from the Site from entering the external stormwater network and creek. As such the following measures are to be undertaken as part of the proposed construction works:

- Sediment fence to be installed around the Site perimeter to trap any sediment.
- Shaker grid/wash down facility to be installed at the Site egress to limit any sediments from being carried outside of the constructions Site.
- Stockpile location to be confirmed by contractor on-Site during the construction phase, preferably to be located at the highest point of the Site.

### 8.1 Construction Phase Pollutants of Concern

Pollutants that are typically generated during the construction phase of a development have been identified by reviewing the Managing Urban Stormwater: Soils and construction by Landcom. The various pollutants and their priority ratings are listed in Table 7-1 below.

**Table 8-1: Construction Phase Pollutant Loads**

Pollutant	Source	Priority
Litter	Paper, construction packaging, food packaging, cement bags, off-cuts	High
Sediment	Unprotected exposed soils and stockpiles during earthworks and building	High
Hydrocarbons	Fuel and oil spill, leaks from construction equipment and temporary carpark areas	High
Toxic materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash waters (e.g., from tile works)	High
pH altering substances	Acid sulfate soils, cement slurry and wash waters	High

### 8.2 Construction phase performance criteria

The construction phase performance criteria are limited to those parameters that are directly linked to construction Site management practices are listed in Table 7-2.

**Table 8-2: Construction Phase Performance Criteria**

Issue		Construction Phase Stormwater Design Objectives
Erosion Control	Erosion Control Measures	<ul style="list-style-type: none"> <li>• Minimise exposure of disturbed soils at any time</li> <li>• Divert water run-off from undisturbed areas around disturbed areas.</li> <li>• Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods.</li> <li>• Implement erosion control methods corresponding to identified erosion risk rating</li> </ul>
Sediment Control	Sediment control measures  Design storm for sediment control basins  Sediment basin dewatering	Determine appropriate sediment control measures using: <ul style="list-style-type: none"> <li>• Potential soil loss rate, or</li> <li>• Monthly erosivity, or</li> <li>• Average monthly rainfall</li> </ul> Collect and drain stormwater from disturbed soils to sediment basin for design storm event: <ul style="list-style-type: none"> <li>• Design storm for sediment basin sizing is 80<sup>th</sup> % five-day event or similar.</li> </ul> Site discharge during sediment basin dewatering: <ul style="list-style-type: none"> <li>• TSS &lt; 50mg/l TSS, and</li> <li>• Turbidity not &gt; 10% receiving water turbidity, and</li> </ul>
Water Quality	Litter and other waste, hydrocarbons and other contaminants	Avoid wind-blown litter; remove gross pollutants.  Ensure there is no visible oil or grease sheen on released waters.  Dispose of waste containing contaminants at authorised facilities
Water stability and flood flow Management	Changes to the natural waterway hydraulics and hydrology	For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the Site

## 9 Conclusion

The objective of this stormwater management report is to provide a comprehensive and detailed overview of the proposed stormwater drainage system for each building within the development Site. It also outlines the approach taken to ensure compliance with various regulations and guidelines, including those set forth by the Bayside Council DCP 2022 and relevant Council guidelines.

For a comprehensive understanding of the Integrated Water Management Plan, this report should be read in conjunction with the civil drawing sets prepared by Mott MacDonald in Appendix A.

This Water Management Plan has been developed in accordance with the guidelines and standards listed outlined below:

- Bayside Council Technical Specification Stormwater Management
- Australian Standards 3500.3 Plumbing and Drainage – Stormwater Drainage
- DRAINS User Manual
- MUSIC User Manual
- Managing Urban Stormwater – Soils and Construction, Volume 1, 4th edition, March 2004, Landcom
- National Code Australia

To manage the impacts of the proposed development on the existing Site and downstream stormwater conditions. The plan has the following components:

- Stormwater quantity management includes implementing detention tanks to mitigate the peak flows from the Site to retain existing conditions.
- Stormwater quality management implementing treatment trains with StormFilter cartridges, OceanGuard baskets and rainwater tank to achieve the water quality objectives.
- Recommended maintenance and safety and access considerations.
- Construction phase erosion and sediment control measures to minimise soil erosion and control sediment discharge from Site.

The implementation of the measures outlined in this plan in the development of this Site will result in no worsening stormwater and environmental conditions and will provide improvement to quality of the runoff discharged from the Site.

For a comprehensive understanding of the stormwater management plan, this report should be read in conjunction with the civil drawing sets prepared by Mott MacDonald, located in Appendix A.

## A.1 APPENDIX A: CIVIL PLANS

## HOMES NSW AFFORDABLE HOUSING

68-60 BANKS AVENUE,  
PAGEWOOD, NSW 2035

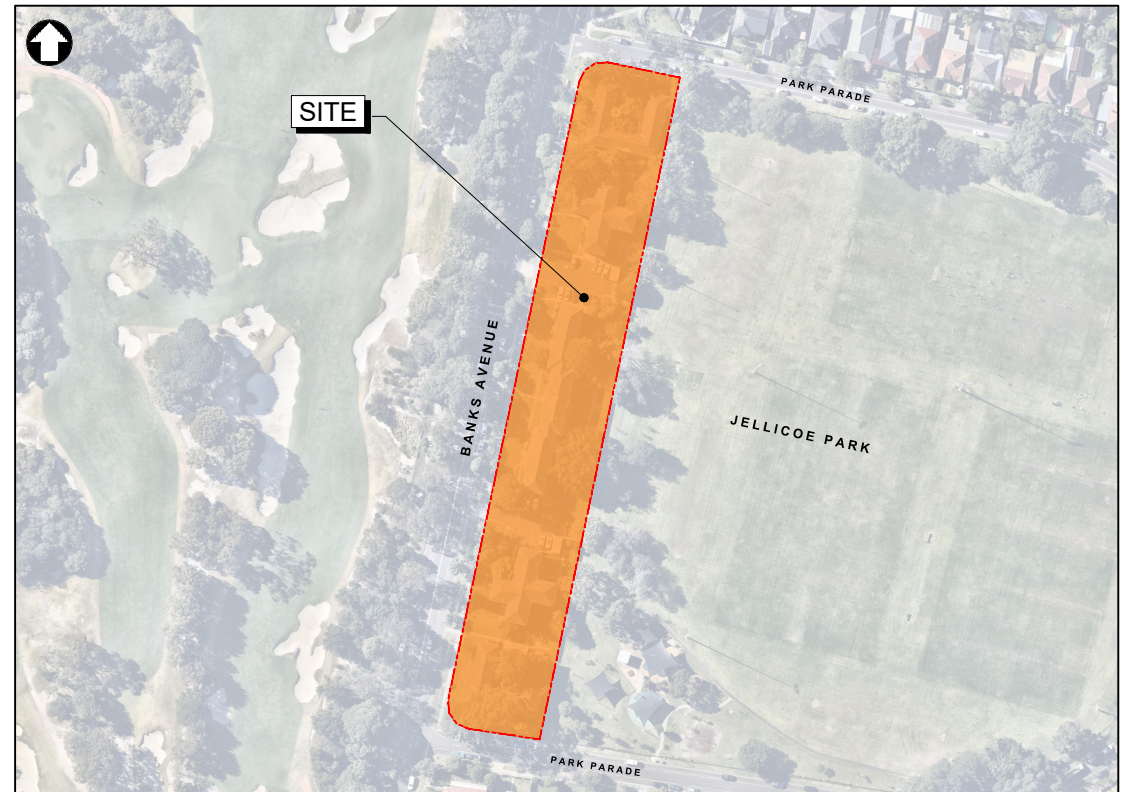
COVER SHEET, DRAWING LIST AND LOCALITY PLAN

### DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
103419-MMD-PAG-XX-DR-C-0001	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
103419-MMD-PAG-XX-DR-C-0002	GENERAL NOTES
103419-MMD-PAG-XX-DR-C-0011	EROSION AND SEDIMENT CONTROL PLAN
103419-MMD-PAG-XX-DR-C-0015	EROSION AND SEDIMENT CONTROL DETAILS
103419-MMD-PAG-XX-DR-C-0051	GROUND FLOOR DRAINAGE PLAN
103419-MMD-PAG-XX-DR-C-0341	STORMWATER DRAINAGE DETAILS
103419-MMD-PAG-XX-DR-C-0511	WATER QUANTITY CATCHMENT PLAN
103419-MMD-PAG-XX-DR-C-0512	WATER QUALITY CATCHMENT PLAN

### BAYSIDE COUNCIL STANDARD DRAWINGS

DRAWING NUMBER	DRAWING TITLE
SK004	MAINTAINABLE TRENCH TYPE ABSORPTION PIT
SK005	MAINTAINABLE TRENCH TYPE ABSORPTION PIT - SECTION A



LOCALITY PLAN

SCALE 1:1000

SOURCE: NEARMAP (2025)

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<p>Level 10, 383 Kent Street Sydney, NSW 2000 Australia NSW 1230, Australia P/O Box Q1678, QVB Sydney T +61 (0)2 9098 6900 W www.mottmac.com</p>	<p>P1 07.11.25 ISSUED FOR INFORMATION</p>	<p>AS AT</p>	<p>SCALE</p> <p>1:1000</p>	<p>CLIENT</p>	<p>TITLE</p> <p>68 - 80 BANKS AVENUE, PAGEWOOD, NSW 2035 COVER SHEET, DRAWING LIST AND LOCALITY PLAN</p>	DRAWING INFORMATION	
						<p>Drawn: J.O Designed: S. SAIARA Checked: A. SINGH Approved: -</p>	<p>Revision: P1 Status: PRE Security: STD</p>
<p>Rev Date Description Chk'd App'd</p>						<p>DRAWING NUMBER</p> <p>103419-MMD-PAG-XX-DR-C-0001</p>	

FILE LOCATION: C:\Users\mottmac\OneDrive - Mott MacDonald\Documents\103419-MMD-PAG-XX-DR-C-0001.dwg Plot Date: 12/04/2025

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## GENERAL NOTES

- GN1 ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA AND THE RELEVANT CURRENT AUSTRALIAN STANDARDS.
- GN2 ANY DISCREPANCIES, OMISSIONS OR ERRORS SHALL BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- GN3 DO NOT SCALE MEASUREMENTS FROM THE DRAWINGS.

## SITeworks NOTES

- SN1 DATUM - Australian Height Datum (AHD)  
ORIGIN OF LEVELS - SSM126983, RL21.54 (AHD) SCIMS  
ORIGIN OF CO-ORDINATES - Mapping Grid of Australia (MGA)  
SURVEY PREPARED BY - LTB Surveyors  
T: 1300 587 100  
W: www.ltb.com.au
- SN2 THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK, AND REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
- SN3 ALL EXISTING SERVICES (INCLUDING ANY NOT SHOWN ON THE PLANS) MUST BE ACCURATELY LOCATED IN POSITION AND LEVEL PRIOR TO ANY EXCAVATION. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. MINIMUM SERVICE CLEARANCES SHALL BE MAINTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- SN4 THE CONTRACTOR SHALL ARRANGE FOR ALL SETTING OUT BY A REGISTERED SURVEYOR.
- SN5 IT IS THE CONTRACTORS RESPONSIBILITY TO NOTIFY THE DEPARTMENT OF LAND AND PROPERTY INFORMATION NSW, OF ANY SURVEY MARKS THAT WILL BE DESTROYED IN THE CONSTRUCTION OF WORKS.  
CONTACT HEAD OFFICE ON 1300 052 837 www.lpi.nsw.gov.au AND http://scims.lpi.nsw.gov.au/status\_report\_frames.html
- SN6 THE CONTRACTOR SHALL OBTAIN ALL REGULATORY AUTHORITY APPROVALS AT THEIR OWN EXPENSE.
- SN7 WHERE NEW WORKS ABUT EXISTING, THE CONTRACTOR MUST ENSURE THAT A SMOOTH AND EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
- SN8 ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, UNLESS SPECIFIED OTHERWISE.
- SN9 EXCAVATED TRENCHES SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT NATURAL MATERIAL, ANY SUBSIDENCES DURING THE PERIOD TO BE RECTIFIED AS DIRECTED BY THE SUPERINTENDENT.
- SN10 ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE LANDSCAPE ARCHITECTS DETAILS AND / OR BY -  
  
PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE, ENSURING THAT NOTHING IS NAILED TO THEM.  
PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS -  
ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5m OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER.  
A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (eg A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300mm CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.
- SN11 RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT OR AS SPECIFIED IN THE WORKS CONTRACT.

## SOIL AND WATER MANAGEMENT NOTES

### GENERAL INSTRUCTIONS

- SWM01 THESE PLANS PRESENT A CONCEPTUAL SOIL AND WATER MANAGEMENT PLAN (SWMP) ONLY AND SHOWS A POSSIBLE WAY OF MANAGING SOIL AND EROSION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MANAGEMENT OF THE SITE AND PREPARING A DETAILED PLAN AND OBTAINING APPROVAL FROM THE RELEVANT AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORKS.
- SWM02 THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND ANY OTHER WRITTEN INSTRUCTIONS, SPECIFICATION OR DOCUMENTATION THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT OF THE SUBJECT SITE.
- SWM03 THE CONTRACTOR WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE CONSISTENT WITH MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION - ALSO KNOWN AS THE BLUEBOOK.
- SWM04 ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.

### EROSION CONTROL

- SWM05 WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNTIL SEDIMENT CONCENTRATION IS LESS THEN OR EQUAL TO 20mg/L. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND / OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
- SWM06 ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE LOCATED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
- SWM07 ACCEPTANCE RECEPTORS WILL BE CONSTRUCTED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
- SWM08 SEDIMENT FENCING WILL BE INSTALLED AS INDICATED ON THE PLANS AND AT THE DIRECTION OF THE SUPERINTENDENT TO ENSURE CONTAINMENT OF SEDIMENT. THE SEDIMENT FENCING WILL OULTEF OR OVERFLOW UNDER STABILISED CONDITIONS INTO THE SEDIMENT BASIN, TO SAFELY CONVEY WATER INTO A SUITABLE FILTERING SYSTEM SHOULD THE PORES IN THE FABRIC BLOCK.
- SWM09 THE SEDIMENT BASINS WILL BE CONSTRUCTED WITH THE MINIMUM WET SEDIMENT CAPACITY OF 1NA, CUBIC METRES AND DESIGNED TO REMAIN STABLE IN AT LEAST THE 1 IN 1NA YEAR CRITICAL DURATION STORM EVENT. ARTIFICIAL FLOCCULATION OF THE FINER PARTICLES MAY NOT BE NECESSARY IN THIS INSTANCE.

- SWM10 STOCKPILES SHOULD NOT BE LOCATED WITHIN 5m OF TREES AND HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, DRAINAGE LINES, PAVED AREAS AND DRIVEWAYS, WHERE THEY ARE WITHIN 5M FROM SUCH AREAS. SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERWAYS. MEASURES SHOULD ALSO BE APPLIED TO PREVENT THE EROSION OF THE STOCKPILE.

- SWM11 ALL CUT AND FILL BATTERS ARE TO BE SEEDED AND MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION.

- SWM12 ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY -

- PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE,
- ENSURING THAT NOTHING IS NAILED TO THEM,
- PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS.
  - ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER.

- A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
- CARE IS TAKEN.

- SWM13 DURING WINDY WEATHER, LARGE DISTURBED UNPROTECTED AREAS SHOULD BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

- SWM14 TEMPORARY PROTECTION FROM EROSION FORCES WILL BE UNDERTAKEN ON LANDS WHERE FINAL SHAPING HAS NOT BEEN COMPLETED BUT WORKS ARE UNLIKELY TO PROCEED FOR PERIODS OF TWO MONTHS OR MORE (E.G. ON TOPSOIL STOCKPILES). THIS MAY BE ACHIEVED WITH A VEGETATIVE COVER. A RECOMMENDED LISTING OF PLANT SPECIES FOR TEMPORARY COVER IS -

- AUTUMN / WINTER SOWING
  - OATS / RYE/CORN AT 20 kg/ha
  - JAPANESE MILLET AT 10 kg/ha
- ii) SPRING / SUMMER SOWING
  - JAPANESE MILLET AT 20 kg/ha
  - OATS / RYE/CORN AT 10 kg/ha

- SWM15 DIVERSION BANKS / CHANNELS WILL BE REHABILITATED AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM THEIR FINAL SHAPING. OTHER THAN IN THE WINTER MONTHS, SUITABLE MATERIALS INCLUDE TURF GRASSES SUCH AS COUCH OR KIKUYU, DURING WINTER, OR AT OTHER TIMES WHEN TEMPORARY REHABILITATION (MORE THAN 1 MONTHS) IS REQUIRED, IT IS SUGGESTED THAT HESSIAN CLOTH IS USED BUT ONLY IF TACKED WITH APPROPRIATE PEGS AND AN ANIONIC BITUMEN EMULSION. FOOT AND VEHICULAR TRAFFIC SHOULD BE KEPT AWAY FROM THESE AREAS.

- SWM16 UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS, WHERE POSSIBLE. PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

### CONSTRUCTION SEQUENCE

- SWM17 WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHOULD BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE -

- INSTALL INLET SEDIMENT TRAPS TO ALL GULLY PITS FRONTING THE SITE,
- INSTALL A 1.8m CHAIN WIRE FENCE AROUND THE BOUNDARIES AND ATTACH HESSIAN CLOTH OR SIMILAR TO IT ON THE WINDWARD SIDE (TIES AT THE TOP, CENTRE AND BOTTOM AND AT 1M INTERVALS OR AS INSTRUCTED BY THE SUPERINTENDENT),
- INSTALL GEO-FABRIC SEDIMENT FENCE AND SEDIMENT TRAPS AROUND ALL PERMANENT STORMWATER RETICULATION STRUCTURES AS SHOWN ON THE PLAN,

- CONSTRUCT STABILISED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN OR TO LOCATION AS DETERMINED BY SUPERINTENDENT,
- INSTALL DIVERSION BANKS ALONG THE BOUNDARY WHERE REQUIRED, REHABILITATE DISTURBED LANDS DOWNSLOPE FROM THE BASINS WITHIN 20 WORKING DAYS,

- ENSURE THAT THE SEDIMENT BASIN IS DIRECTED ONTO A TURFED AREA AND DRAINS TO A SUITABLE LOCATION. A TEMPORARY STORMWATER LINE MAY BE NECESSARY TO CONVEY THE FLOWS TO THIS LOCATION, CONSTRUCT DIVERSION CHANNELS AT THE BOUNDARY TO DRAIN INTO THE SEDIMENT BASIN AS SHOWN ON PLANS,
- AT COMPLETION STABILISE SITE AND DECOMMISSION SEDIMENT BASIN AND ALL EROSION CONTROL DEVICES.

- SWM18 TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

- SWM19 FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

- SWM20 AT LEAST WEEKLY AND AFTER EVERY RAIN FALL EVENT, THE CONTRACTOR WILL INSPECT THE SITE AND ENSURE THAT -

- DRAINS AND ALL SEDIMENT CONTROL DEVICES OPERATE EFFECTIVELY AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED,
- RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT,

- SPILLED SAND (OR OTHER MATERIALS) IS REMOVED FROM HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, GUTTERS, PAVED AREAS AND DRIVEWAYS,
- SEDIMENT IS REMOVED FROM BASINS AND / OR TRAPS WHEN LESS THAN 20mm OF TRAPPING CAPACITY REMAIN PER 1000m<sup>2</sup> OF DISTURBED LANDS, AND / OR LESS THAN 500mm DEPTH REMAINS IN THE SETTLING ZONE. ANY COLLECTED SEDIMENT WILL BE DISPOSED IN AREAS WHERE FURTHER POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS IS UNLIKELY,

- REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIR AS APPROPRIATE.

- SWM21 THE CONTRACTOR SHALL PROVIDE ALL MONITORING CONTROL AND TESTING.

## STORMWATER NOTES

- SW1 FOR RESIDENTIAL SUBDIVISIONS AND PUBLIC ROADS -  
  
ALL Ø375mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPOOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPOOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).  
  
ALL PVC-U DRAINAGE PIPES IN FOOTWAYS OR ACCESS WAYS SHALL BE DWV GRADE CLASS 5NE IN ACCORDANCE WITH AS/NZS 1260:2009 - PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION. HEAVY DUTY PVC-U PIPES TO BE IN ACCORDANCE WITH AS/NZS 1254 :2010 - PVC PIPES AND FITTINGS FOR STORM AND SURFACE WATER APPLICATIONS MAY BE USED WITHIN ALLOTMENTS.

- SW2 FOR COMMERCIAL OR INDUSTRIAL SITES -  
  
ALL Ø300mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPOOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPOOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).  
  
ALL DRAINAGE PIPES LESS THAN OR EQUAL TO Ø225mm SHALL BE PVC-U DWV GRADE CLASS 5NE IN ACCORDANCE WITH AS/NZS 1260: 2009 - PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.

- SW3 EQUIVALENT STRENGTH FIBROUS REINFORCED CONCRETE (F.R.C.) AND / OR HIGH DENSITY POLYETHYLENE (H.D.P.E.) MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.

- SW4 ALL PIPE JUNCTIONS UP TO AND INCLUDING Ø450mm AND TAPERS, SHALL BE VIA PURPOSE MADE FITTINGS (UNO).

- SW5 MINIMUM GRADE TO STORMWATER LINES TO BE 1% (UNO).

- SW6 CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.

- SW7 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 WITH NO PROTRUSIONS.

- SW8 ALL IN-SITU CONCRETE PITS TO BE 320mm MINIMUM AT 28 DAYS.

- SW9 PITS AND PIPES IN AREAS OF SALINITY HAZARD SHALL HAVE INCREASED COVER TO ANY REINFORCEMENT.

- SW10 PRECAST CONCRETE PITS MAY BE INSTALLED IN LIEU OF CAST IN-SITU PITS, WHEN PIPE JUNCTIONS ARE ACCOMMODATED WITHIN THE OVERALL DIMENSIONS OF THE PIT, AND APPROVED BY THE SUPERINTENDENT.

- SW11 PITS DEEPER THAN 1000mm SHALL HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH THE LOCAL OR STATUTORY AUTHORITY REQUIREMENTS.

- SW12 BEDDING SHALL BE TYPE H2 (UNO) FOR PIPES NOT UNDER PAVEMENTS, AND TYPE H2 FOR PIPES UNDER PAVEMENTS IN ACCORDANCE WITH AS/NZS 3725 :2007 - DESIGN FOR INSTALLATION OF BURIED CONCRETE PIPES.

- SW13 BACKFILL TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL TO 300mm (MIN) ABOVE THE PIPE, WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINDER OF TRENCH TO PAVEMENT SUBGRADE WITH SAND OR APPROVED GRAVEL. SUB-BASE COMPACTED IN 150mm LAYERS TO 98% STANDARD MAXIMUM DRY DENSITY. THE CONTRACTOR IS TO ENSURE COMPACTION EQUIPMENT IS APPROPRIATE FOR THE PIPE CLASS USED.

- SW14 WHERE STORMWATER LINES PASS UNDER FLOOR SLABS DWV GRADE PVC-U RUBBER RING JOINTS ARE TO BE USED (UNO).

- SW15 WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED PVC-U DWV GRADE CLASS 5NE PIPE SHALL BE USED.

- SW16 PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE LINE OR 200 W/VEY STRIP DRAIN SURROUNDED WITH 150mm OF 20mm BLUE METAL OR GRAVEL, AND WRAPPED IN BIDIM A24 GEOTEXTILE FILTER FABRIC OR APPROVED EQUIVALENT, AT INVERT OF INCOMING UPSTREAM PIPE ON EACH PIT.

## EXISTING SERVICES NOTES

- ES1 EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT.

- ES2 THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL IF REQUIRED OF ALL REDUNDANT EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.

- ES3 THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.

- ES4 IF REQUIRED, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY.




- ES5 INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. THE CONTRACTOR IS TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR TIME OF INTERRUPTION - THE CONTRACTOR IS RESPONSIBLE FOR ALL LIASON.

- ES6 ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø600mm PVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND THE EDGE OF PAVING.

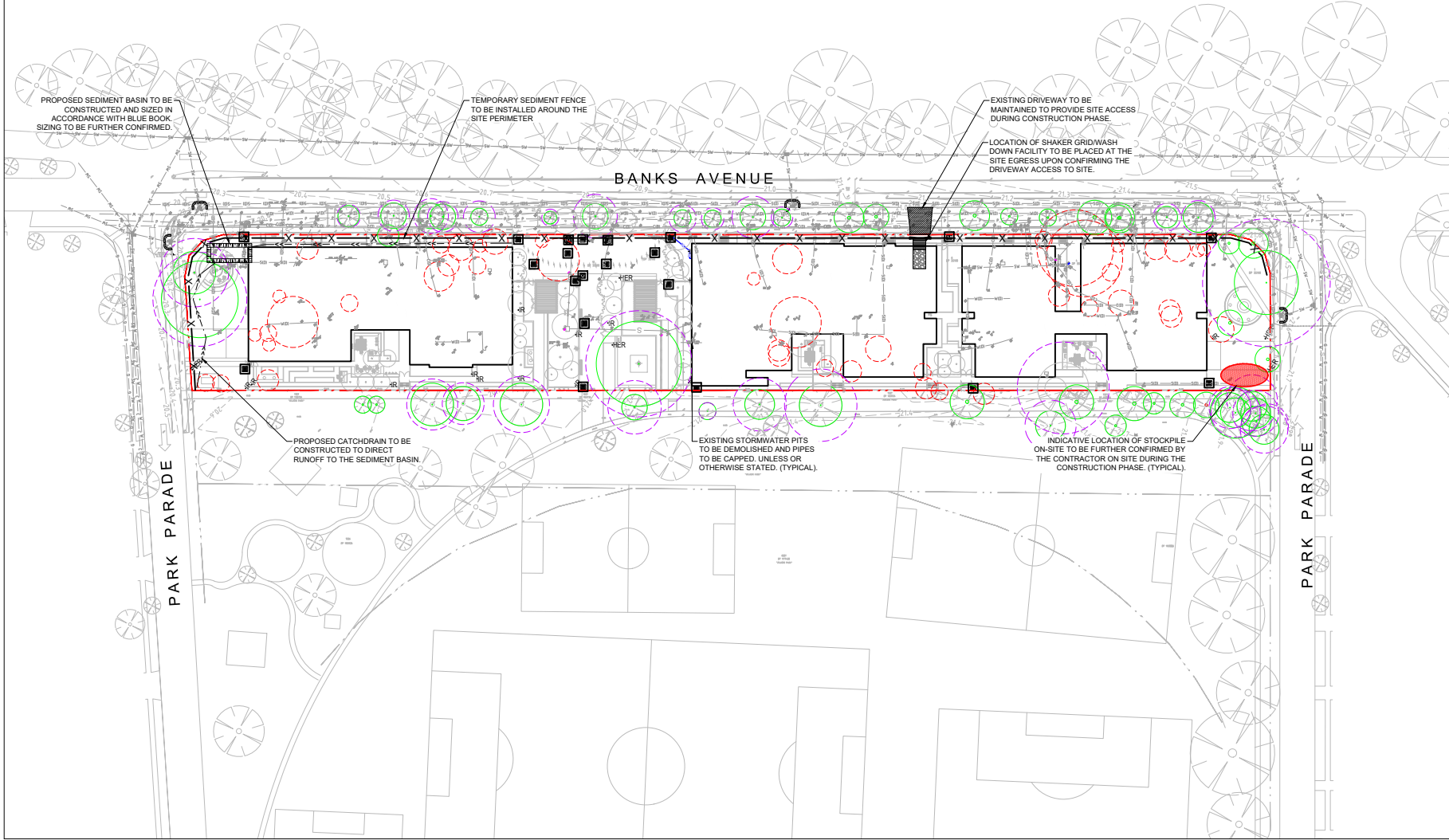
- ES7 CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.

- ES8 CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.

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	Level 10, 383 Kent Street Sydney, NSW 2000 Australia NSW 1230, Australia PO Box Q1678, QVB Sydney T +61 (0)2 9396 6800 W www.motmac.com	SCALE	CLIENT  	TITLE 68 - 80 BANKS AVENUE, PAGEWOOD, NSW 2035 GENERAL NOTES	DRAWING INFORMATION Drawn: J.O Designed: S. SAIARA Checked: A. SINGH Approved: -	Revision: P1 Status: PRE Security: STD
	P1 07.11.25 ISSUED FOR INFORMATION	AS AT	DRAWING NUMBER 103419-MMD-PAG-XX-DR-C-0002			

DRAFT



### LEGEND

--- SITE BOUNDARY  
 --- ADJACENT SITE BOUNDARY LINE

#### EXISTING

--- EXISTING UTILITY (TYPICAL)  
 ■ EXISTING STORMWATER PITS  
 ○ EXISTING TREES TO BE REMOVED  
REFER TO DEMOLITION PLAN DRAWING AR-DA-10A-XX-03 FOR DETAILS  
 ○ EXISTING TREES TO BE RETAINED  
REFER TO DEMOLITION PLAN DRAWING AR-DA-10A-XX-03 FOR DETAILS

#### PROPOSED

■ TEMPORARY CONSTRUCTION SITE ACCESS WITH SHAKE GRID  
 ■ SEDIMENT TRAP - SAND BAGS  
 ■ SEDIMENT TRAP - DROP INLET  
 --- SEDIMENT FENCE  
 --- TEMPORARY DIVERSION / CATCH DRAIN  
 ○ INDICATIVE LOCATION OF STOCKPILE  
 ■ TEMPORARY SEDIMENT BASIN  
 ○ TREE PROTECTION ZONE  
REFER TO DEMOLITION PLAN DRAWING AR-DA-10A-XX-03 FOR DETAILS

- ### GENERAL NOTES
- CONTRACTORS TO CONFIRM PUMP-OUT FROM DEEP BASEMENT EXCAVATION.
  - UPON INSTALLATION OF NEW STORMWATER PITS, SANDBAGS ARE TO BE PLACED AROUND PROPOSED PITS TO PREVENT AND SEDIMENT RUNOFF TO THE PITS.
  - EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE PUBLICATION URBAN STORMWATER SOILS AND CONSTRUCTION THE BLUE BOOK (4TH EDITION) PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION, EXCAVATION OR CONSTRUCTION WORKS UPON THE SITE.
  - BUILDERS SHALL PROVIDE SLOTTED FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE BOUNDARIES. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (eg PROFAB SILT FENCE OR SIMILAR) STANDING MINIMUM 500mm ABOVE GROUND AND EXTENDING 200mm BELOW GROUND.
  - GRASS VERGES AND VEGETATION SHALL BE MAINTAINED AS MUCH AS PRACTICAL AND SHALL NOT BE CLEARED FROM NEIGHBORING SITE TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
  - NO PARKING OR STOCK PILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF SEDIMENT FENCE.
  - VEHICLE ACCESS SHALL BE RESTRICTED TO ONE DESIGNATED POINT AS SHOWN AND VEHICLE CROSSINGS ARE TO BE ADEQUATELY COVERED AT ALL TIMES WITH BLUE METAL OR THE LIKE.
  - TEMPORARY CONSTRUCTION ENTR/EXIT SHALL BE AS PER DRAWING 015. BUILDER TO ENSURE ALL DROPPABLE SOIL AND SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE USING VEHICLE WHEEL WASH, CATTLE GRID, WHEEL SHAKER OR OTHER APPROPRIATE DEVICE. BUILDER SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE, DO SO IN A FORWARD DIRECTION.
  - ALL STORMWATER INCIDENT ON THE CONSTRUCTION SITE MUST BE COLLECTED AND APPROPRIATELY DISPOSED OF IN A MANNER THAT DOES NOT INCREASE THE FLOOD RISK FOR THE CATCHMENT AREA OR DEGRADE THE QUALITY OF WATER BEING DISPOSED OF TO COUNCIL STORMWATER INFRASTRUCTURE.
  - MEASURES OUTLINED IN THE EROSION AND SEDIMENT CONTROL PLAN MUST BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS.
  - ALL DISTURBED AREAS AND STOCKPILES TO BE STABILISED WITH 5 DAYS.
  - TOPSOIL TO BE STRIPPED, STOCKPILED AND RE-SPREAD ON COMPLETION OF EARTHWORKS. NONE TO BE REMOVED.
  - NO DISTURBANCE OF THE SITE OTHER THAN IMMEDIATE AREA OF WORKS.
  - SEDIMENT BASIN TO BE SIZED IN ACCORDANCE WITH 'SOILS AND CONSTRUCTION, VOLUME 1, MANAGING URBAN STORMWATER GUIDE'.

**THIS PLAN IS A CONCEPT ONLY. IT IS CREATED TO HIGHLIGHT SOME OF THE SEDIMENT AND EROSION CONTROL MEASURES WHICH MAY APPEAR. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN AND ENSURING ALL MEASURES ARE TAKEN TO PROTECT THE ENVIRONMENT.**

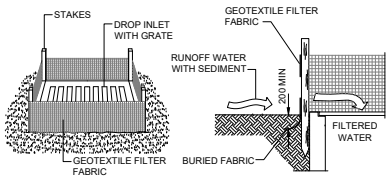
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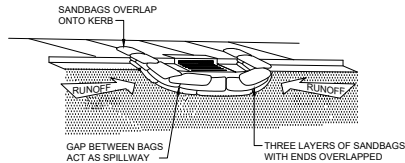
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	P1 07.11.25 ISSUED FOR INFORMATION Rev Date Description Chk'd App'd	AS AT				

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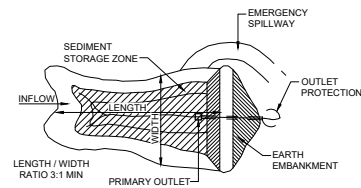
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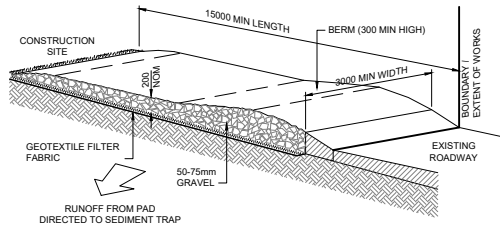
**SEDIMENT TRAP FOR DROP INLET  
(GEOTEXTILE FILTER FABRIC)**  
NTS



**SEDIMENT TRAP FOR KERB INLET  
(AT LOW POINT - SANDBAG)**  
NTS



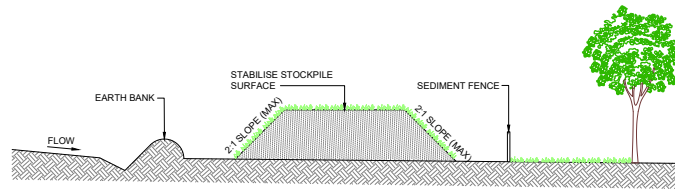
**SEDIMENT BASIN (TYPICAL) PLAN - TYPE C SOILS**  
NTS



**TEMPORARY SITE ENTRANCE**  
NTS

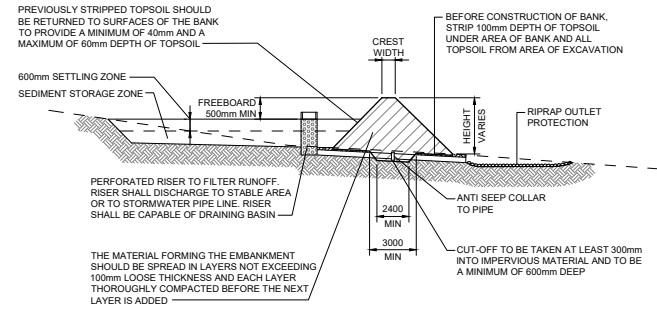
**MAINTENANCE**

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY.
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.

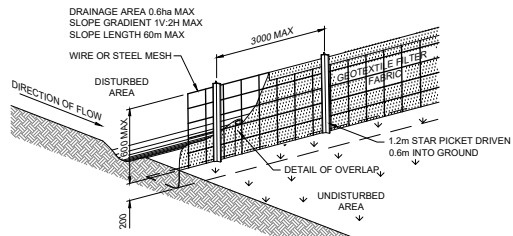


- CONSTRUCTION NOTES**
1. PLACE STOCKPILES AS DIRECTED BY THE SUPERINTENDENT.
  2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
  3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
  4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
  5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND INSTALL SEDIMENT FENCES 1m TO 2m DOWNSLOPE CONSISTENT WITH 'MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION', ALSO KNOWN AS 'THE BLUE BOOK'.

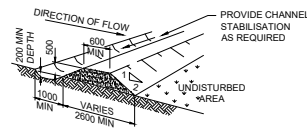
**STOCKPILES**  
NTS



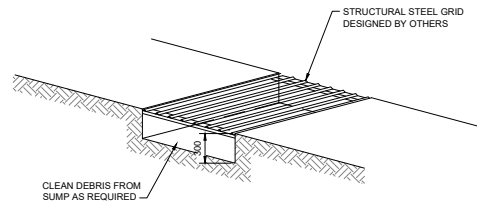
**SEDIMENT BASIN (TYPICAL) CROSS SECTION - TYPE C SOILS**  
NTS



**SEDIMENT FENCE  
(GEOTEXTILE FILTER FABRIC)**  
NTS



(FOR CATCHMENT OF 2ha OR LESS)  
**DIVERSION BANK  
(WITH CHANNEL)**  
NTS



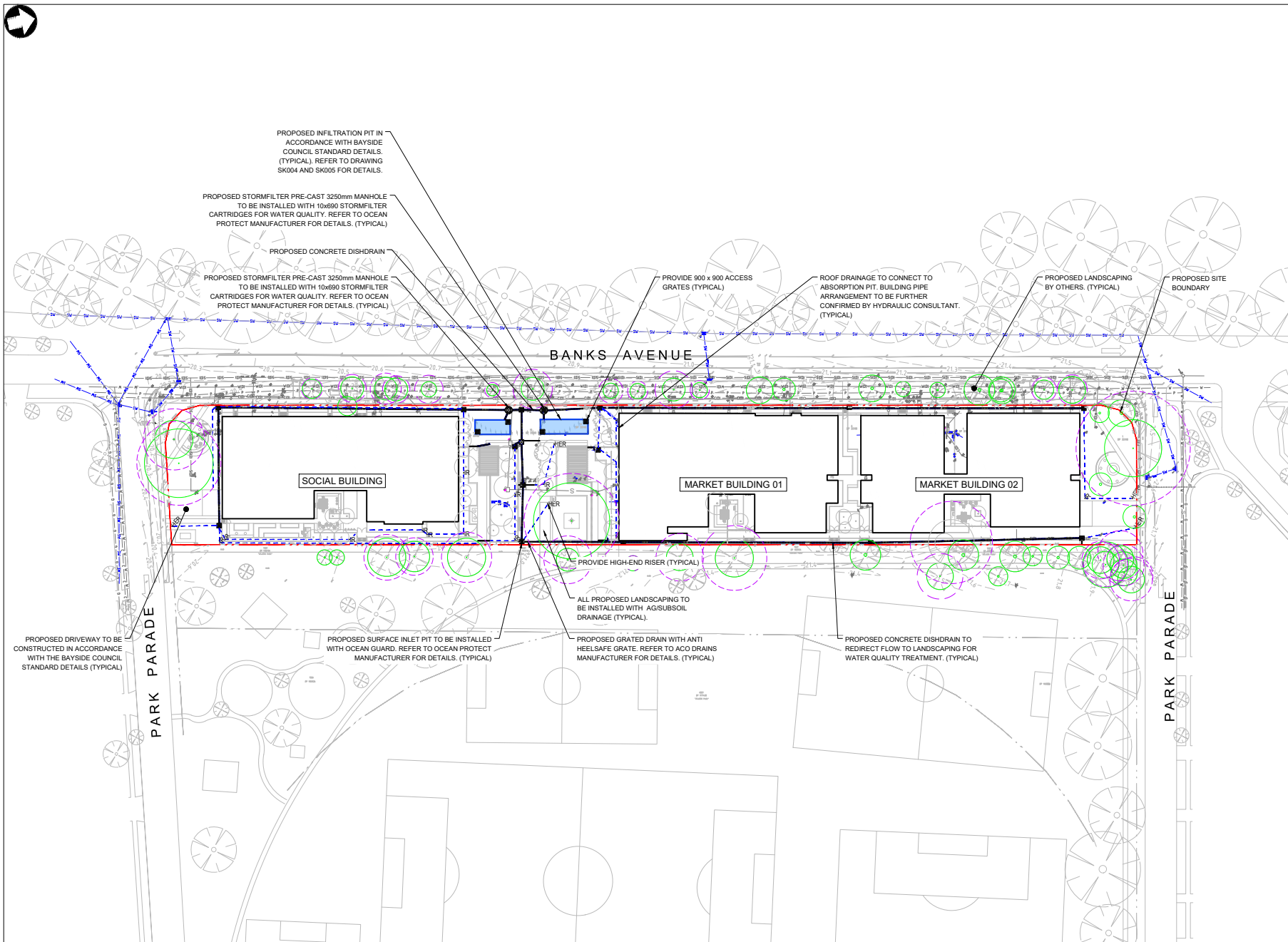
**SHAKER PAD**  
NTS

THIS PLAN IS A CONCEPT ONLY. IT IS CREATED TO HIGHLIGHT SOME OF THE SEDIMENT AND EROSION CONTROL MEASURES WHICH MAY APPEAR. THE CONTRACTOR IS RESPONSIBLE FOR THE FINAL DESIGN AND ENSURING ALL MEASURES ARE TAKEN TO PROTECT THE ENVIRONMENT.

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	P1 107.11.25 ISSUED FOR INFORMATION Rev Date Description Chk'd App'd	AS AT	NSW GOVERNMENT 	



### LEGEND

**--- SITE BOUNDARY**

**EXISTING**

- W-W-W-W- EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIT
- EXISTING TREES TO BE RETAINED - REFER TO BIVN DEMOLITION PLAN DRAWING AR-DA-10A-XX-03 FOR DETAILS

**PROPOSED**

- STORMWATER PIPE
- - - SUBSOIL DRAINAGE LINE
- ↑ HIGH END RISER
- STORMWATER ROOF OUTLET
- SURFACE INLET PIT
- JUNCTION PIT
- GRATED TRENCH DRAIN
- ABSORPTION PIT
- TREE PROTECTION ZONE - REFER TO BIVN DEMOLITION PLAN DRAWING AR-DA-10A-XX-03 FOR DETAILS

- ### GENERAL NOTES:
- TOTAL SITE AREA = 9,391m<sup>2</sup>
  - PROPOSED STORMWATER DRAINAGE IS CONCEPT ONLY FOR DEVELOPMENT APPROVAL AND SUBJECT TO DETAILED DESIGN AT CONSTRUCTION ON CERTIFICATE STAGE.
  - EXISTING SERVICE SHOWN INDICATIVE ONLY. REFER TO SERVICE PLANS APPROVED BY RELEVANT AUTHORITIES FOR FURTHER INFORMATION. EXISTING SERVICES SUBJECT TO FURTHER INVESTIGATION PRIOR TO CONSTRUCTION FOR DETAILED DESIGN PURPOSES.
  - ALL PROPOSED STORMWATER TO BE DESIGNED TO CATER FOR MINOR STORM IN ACCORDANCE WITH BAYSIDE COUNCIL ENGINEERING AND DESIGN STANDARDS.
  - SAFE OVERLAND FLOW PATH TO CATER FOR MAJOR STORM OF 100 YEAR ARI.
  - ALL BUILDING DRAINAGE TO BE CONFIRMED BY HYDRAULIC CONSULTANTS.
  - PROVIDE OCEAN PROTECT STORMFILTER CARTRIDGES OR SIMILAR. DETAILS TO BE PROVIDED BY THE MANUFACTURER.
  - REFER DRAWING 103419-MMD-PAG-XX-DR-C-0341 FOR STORMWATER DRAINAGE DETAILS.
  - INFILTRATION PIT TO BE DESIGNED IN ACCORDANCE WITH BAYSIDE COUNCIL ENGINEERING AND DESIGN STANDARDS.

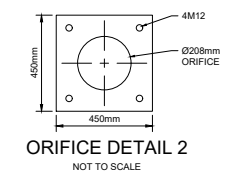
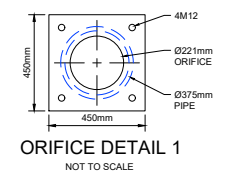
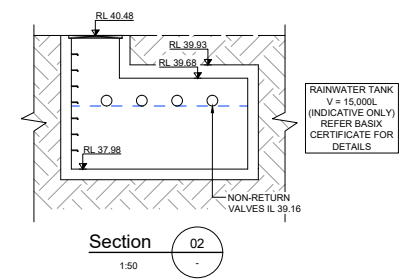
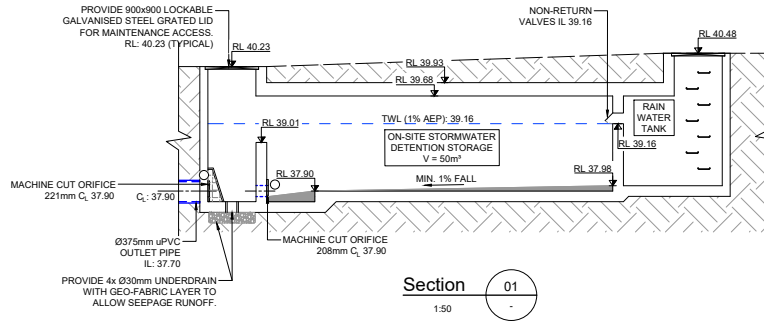
THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE LATEST ARCHITECTURAL PLANS AND DETAILS. PROPOSED LEVELS ARE AS PER ARCHITECTURAL PLANS.

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	P1 07.11.25 ISSUED FOR INFORMATION Rev Date Description Chk'd App'd	AS AT	DRAWING NUMBER 103419-MMD-PAG-XX-DR-C-0051	FILE LOCATION: C:\Users\saiaars\Documents\103419-MMD-PAG-XX-DR-C-0051.dwg		

103419-MMD-PAG-XX-DR-C-0051



SITE CATCHMENTS	
TOTAL SITE AREA (ha)	0.3890
PROPOSED ROOF TO OSD (ha)	0.1721
PROPOSED LANDSCAPE TO OSD (ha)	0.1469
PROPOSED LANDSCAPE BYPASSING OSD (ha)	0.0540
PROPOSED BYPASSING OSD, PIPED TO KERB AND GUTTER (ha)	0.0160
BELOW GROUND OSD/WSUD TANK CHARACTERISTICS	
APPROX. OSD STORAGE VOLUME PROVIDED	50 m³
APPROX. RAINWATER TANK VOLUME PROVIDED	10,000 L
TOP OF TANK LEVEL (INTERNAL)	RL 39.68
BOTTOM OF TANK LEVEL (INTERNAL SUMP)	RL 37.70
TANK OUTLET PIPE INVERT LEVEL	RL 37.70
DISCHARGE CONTROL PIT SIZE	900 x 900 mm
DISCHARGE CONTROL WEIR LENGTH	900 mm
DISCHARGER CONTROL PIT WEIR LEVEL	RL 39.01
PRIMARY ORIFICE DIAMETER (MINOR STORM)	Ø208 mm
SECONDARY ORIFICE DIAMETER (EXCEEDING MINOR STORM)	Ø221 mm
SECONDARY OUTLET PIPE (EXCEEDING MINOR STORM)	Ø375mm UPVC PIPE

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	01   xx.xx.xx   ISSUE FOR INFORMATION   AT   AT Rev   Date   Description   Chk'd   App'd	DRAWING NUMBER <b>103419-MMD-PAG-XX-DR-C-0331</b>		FILE LOCATION: C:\Users\matt.mackinnon\Documents\Projects\68-80 Banks Avenue\68-80 Banks Avenue.dwg		

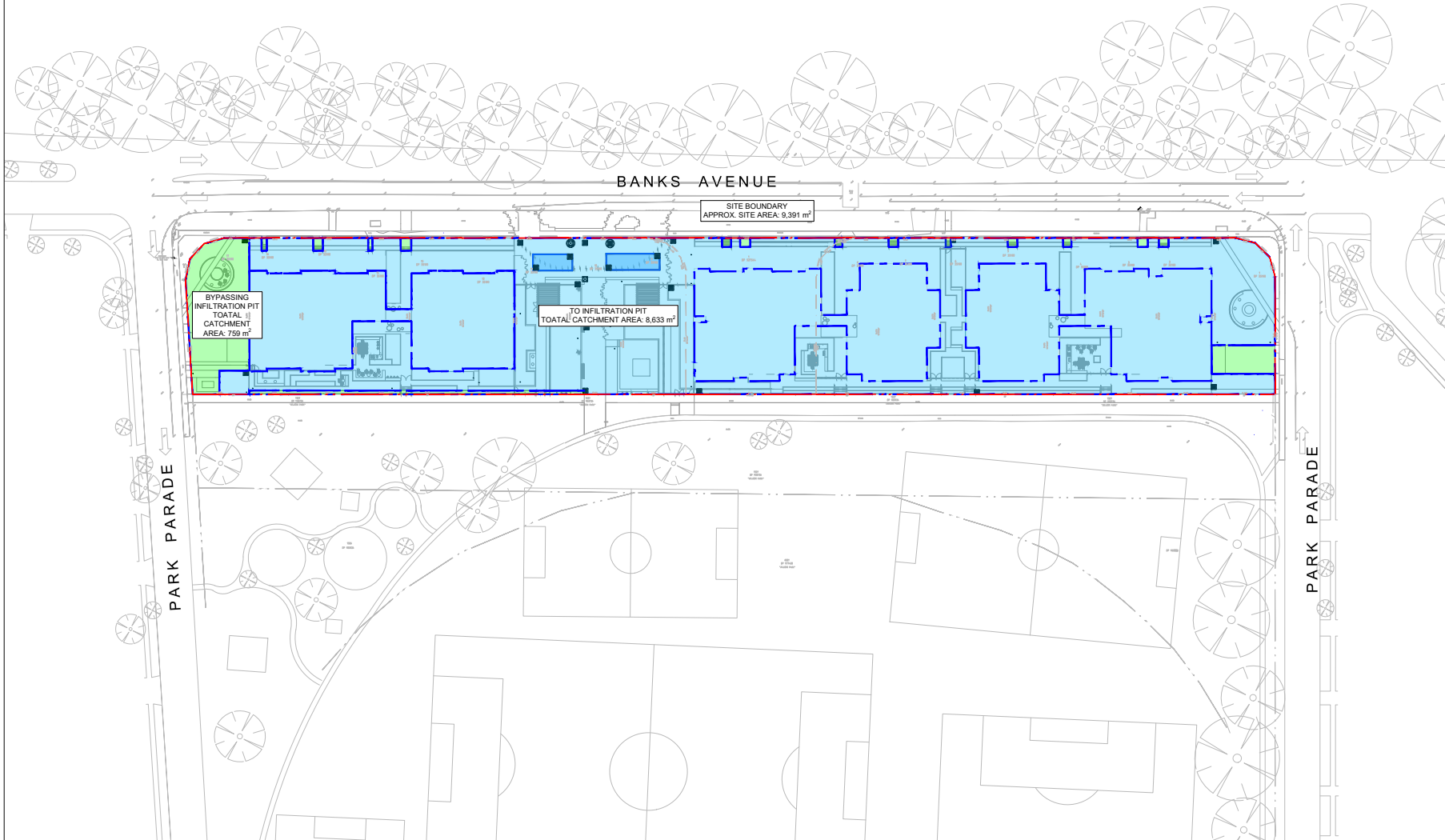
ESD 01 50mm x 60mm





### STORMWATER CATCHMENT

- 9,391 m<sup>2</sup> SITE BOUNDARY
- 8,633 m<sup>2</sup> TO INFILTRATION PIT
- 759 m<sup>2</sup> BYPASSING INFILTRATION PIT



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P1 07.11.25 ISSUED FOR INFORMATION AS AT		Rev Date Description Chk'd App'd				

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103419-MMD-PAG-XX-DR-C-0511



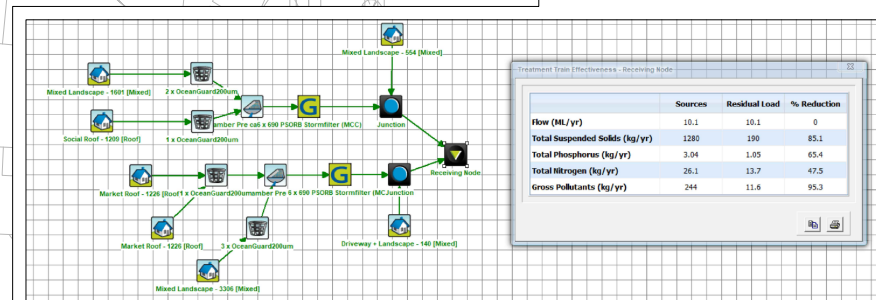
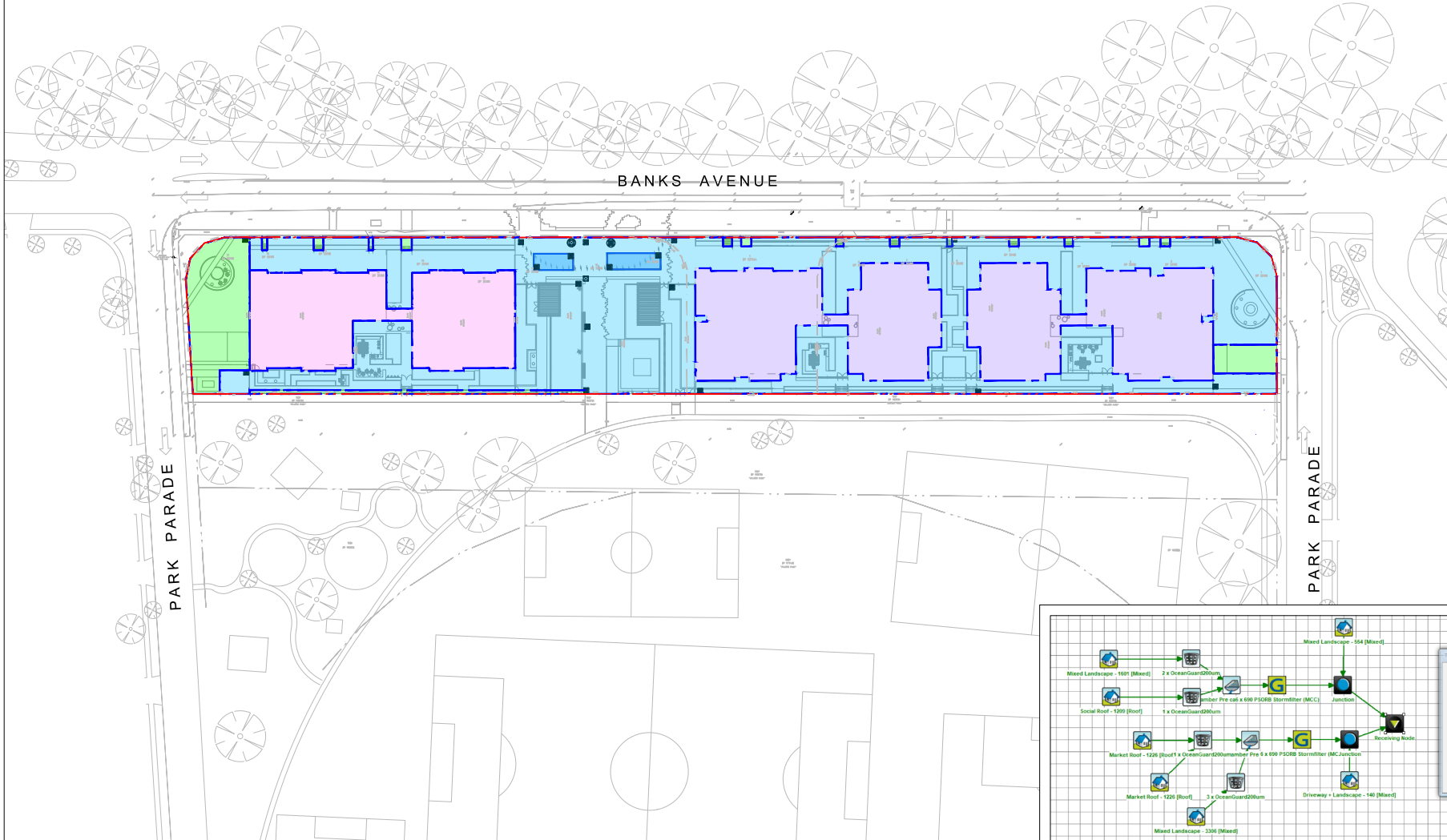
### STORMWATER CATCHMENT

9,391 m <sup>2</sup>	SITE BOUNDARY
1,209 m <sup>2</sup>	SOCIAL ROOF TO OCEAN GUARD, STORMFILTER CHAMBER, INFILTRATION PIT
2,517 m <sup>2</sup>	SOCIAL ROOF TO OCEAN GUARD, STORMFILTER CHAMBER, INFILTRATION PIT
4,906 m <sup>2</sup>	MIXED LANDSCAPING TO OCEAN GUARD, STORMFILTER CHAMBER, INFILTRATION PIT
799 m <sup>2</sup>	MIXED LANDSCAPING BYPASSING TREATMENT

### NOTES:

POLLUTANT REDUCTION TARGETS, HAVE NOT BEEN SPECIFIED IN THE BAYSIDE COUNCIL, AS BEST PRACTICE SYDNEY WATER REDUCTION TARGETS HAVE BEEN USED AS A REFERENCE TO ACHIEVE THE POLLUTANT REDUCTION TARGETS FOR THE PROPOSED DEVELOPMENT SITE.

GROSS POLLUTANT 90%  
 TOTAL SUSPENDED SOLIDS 85%  
 TOTAL PHOSPHORUS 60%  
 TOTAL NITROGEN 45%



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103419-MMD-PAG-XX-DR-C-0512

