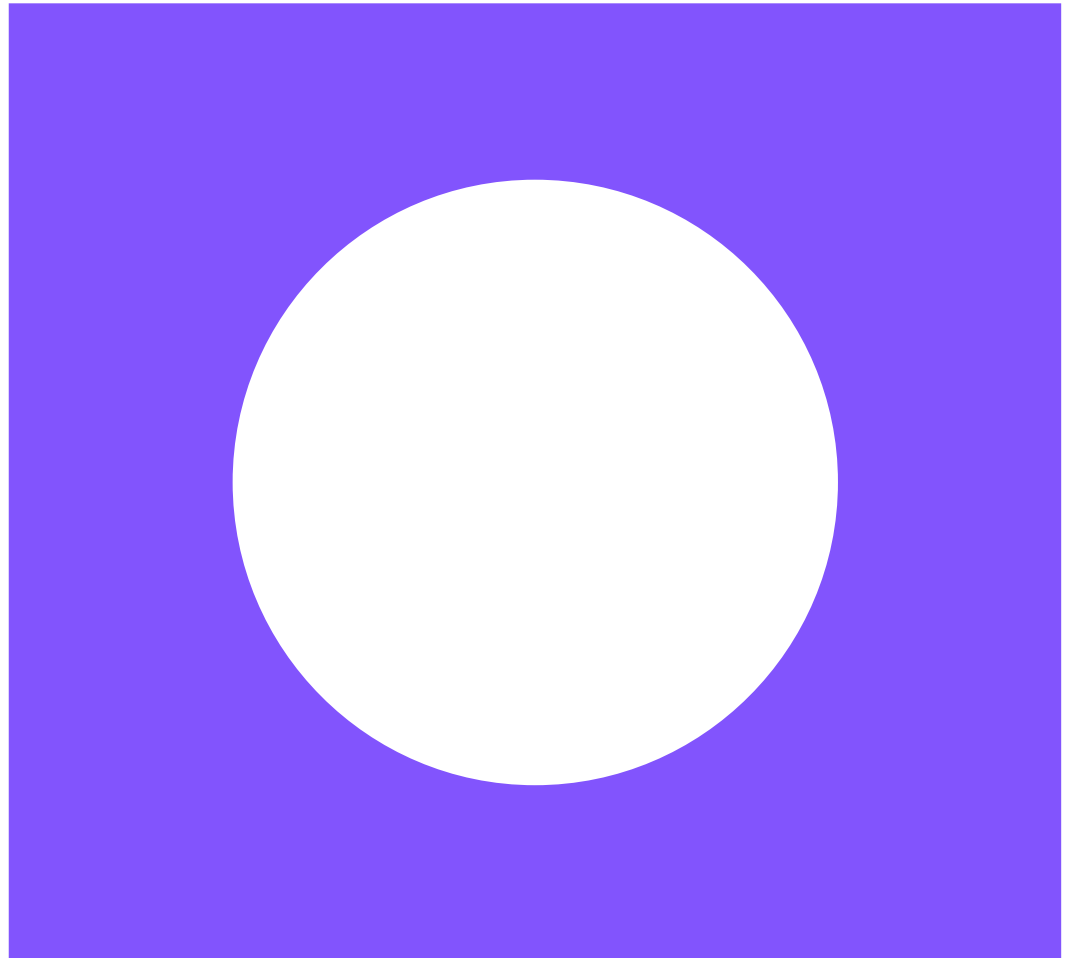




72 and 82-86 Menangle Road, Camden

Integrated Water Management Plan

June 2026



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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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 (SSD) application and concurrent rezoning for a social and affordable housing development at 72 and 82-86 Menangle Road, Camden.

The site is located at 72 and 82-86 Menangle Road, Camden, in the Camden Local Government Area (LGA) and has a combined site area of 7,184sqm.

The SSDA seeks approval for the construction of two residential flat buildings comprising a total of 95 social and affordable housing dwellings.

This report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued for the project (SSD-116982991) on (11th May 2026) as detailed in the table below.

Table 1-1: Relevant SEARs considered

Issue	SEARs requirement	Section reference
11. Water Management	- Detail the proposed drainage design and servicing infrastructure to be incorporated as part of the development (stormwater and wastewater). - 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.	- Stormwater Management - Water Quantity Management - Water Quality Management - MUSIC Modelling Results

This report concludes that the proposed development appropriately considers any opportunities, constraints and risks related to civil design. The scope of this report summaries the existing and proposed stormwater drainage design as well as the design approach, key assumptions, relevant references and standards that will be applied to the development of concept design documentation for the proposed development.

This report is to be read in conjunction with the civil engineering plans in Appendix A.

1 Introduction

1.1 Purpose of the 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, the Camden Council Development Control Plan 2019, Camden Council Engineering Design Specification, 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 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.

This assessment and management plan has been undertaken as a desktop study only. Considerable effort has been undertaken to obtain available site data and project information to understand the site conditions and constraints.

2 Design Guidelines and Methodologies

2.1 Consultation

Mott MacDonald has consulted 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 the Camden Council Development Control Plan (DCP) and other relevant guidelines.

2.2 Codes and Guidelines

The proposed site is located within the Hawkesbury–Nepean Catchment. The design has been undertaken in accordance with relevant Australian Standards, local government guidelines, and the Biodiversity and Conservation State Environmental Planning Policy (SEPP), Chapter 6.

The water quality and quantity control requirements outlined in Section 6.6 of the SEPP have been adopted for the proposed development. Key reference documents used to guide 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 th 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
Camden Council	Engineering Design Specification	10 th February 2009	Camden Council
SEPP	Water Quality and Quantity	6 th March 2026	NSW Legislation

2.3 Other Consultants Input

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

- Survey by Total Surveying Solutions (TSS), Reference No. 251058, dated: 25/11/2025.
- Architectural design by DKO, Project No. 14127, Rev. A, dated 26/06/2026.
- Landscape design by Jane Irwin Landscape Architecture, Project No. 260101, Rev. A dated 25/06/2026.
- Arboriculture Impact Assessment Report, Reference No. AIA-01, dated: 22/05/2026.

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

As per Camden Council's Engineering Design Specification (Section 3.6), the following design storm events have been identified.

- Water Sensitive Urban Design (WSUD) is designed for 1 in 3-month storm events.
- "The maximum discharge from the post-development site shall not exceed the pre-development flows for all storms up to and including the 1% AEP shall not be concentrated."
- The hydraulic assessment incorporated a climate change rainfall modifier of 1.2, ensuring that post-development stormwater flows were effectively detained to match pre-development levels across all specified storm events.

2.5.2 Design Requirements

The listed Camden Council guidelines in Table 2-1 above provides 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 Camden Council guidelines. Table 2-2 below summarises the design criteria for hydrology and hydraulics analysis.

Table 2-2: Hydrology and Hydraulics Design Criteria

Item	Standard				Adopted	
Hydrology & Hydraulics						
Hydrological Model	Camden Council Engineering Design Specification, Table 3.10				DRAINS (ILSAX)	
Design Rainfall Data	Camden Council Engineering Design Specification, Table 3.4.5.1				AR&R Online Data	
Urban Rainfall Losses	Camden Council Engineering Design Specification, Table 3.10				Paved initial depression storage = 1mm Paved continuing storage = 0 mm/hr Grassed initial depression storage = 5 to 10 mm Grassed continuing storage = 2 to 5 mm/hr Soil type = 3 MAC = 3	
Major Design Storm	Camden Council Engineering Design Specification, Section 3.4.2, Table 3.6				100YR Average Recurrence Interval (1% AEP)	
Minor Design Storm	Camden Council Engineering Design Specification, Section 3.4.2, Table 3.6				Land Use	AEP
					Rural and Urban Residential	20% AEP (1 in 5 year)
					Commercial	10% AEP (1 in 10 year)
					Industrial	10% AEP (1 in 10 year)
					Non-Residential	10% AEP (1 in 10 year)
					Inter-allotment drainage	20% AEP (1 in 5 year)
Manning's Roughness Coefficient (Kinematic Wave Equation)	Camden Council Engineering Design Specification, Section 3.4.5.1, Table 3.8				Land Use	Kinematic Wave Equation n*
					Road/Paved Areas Only	0.011
					Normal Residential	0.080
					Medium Density Residential	0.060
					Industrial/Commercial	0.040
					Parkland	0.150
					Open Space (Natural bushland)	0.300
Pipes and Culvert Colebrook-White (n value) formular	Camden Council Engineering Design Specification, Section 3.3.2, Table 3.1				Concrete – 0.013 uPVC Pipe (uPVC) – 0.010	
Pit Losses	-				QUDM	
Pit Blockage Factors	Camden Council Engineering Design Specification, Section 3.4.6				Pipe inlets are to be designed using a blockage factor of 50% for the 1% AEP flow.	
Tailwater level/sea water level	Camden Council Engineering Design Specification, Section 3.4.6, Table 3.11				Outlet Type	Adopted Tailwater Level
					Free outfall	Pipes obvert
					Discharge into receiving waters	Design AEP flood level
					Discharge to an existing system (HGL unknown)	150mm below the natural surface/invert of kerb
					Discharge to a point designed to surcharge	Height of surcharge
The tailwater level shall not be below pipe obvert						
Permissible Discharge	Site Camden Council Engineering Design Specification, Section 3.6				The maximum discharge from the post-development site shall not exceed the pre-development flows for all storms	

Item		Standard		Adopted	
				up to and including the 1% AEP and shall not be concentrated.	
On-Site Detention	Stormwater	Camden Council Engineering Specification, Section 3.6	Design	All aboveground OSD basins and below ground OSD tanks shall be located clear of any overland flow paths. The runoff from the whole development site shall be directed to OSD. Below ground OSD tanks will be approved for commercial and industrial developments only with the minimum orifice diameter in below ground OSD tanks to be 20mm. Discharge from aboveground OSD basins for storms in excess of the adopted pipe system design AEP, shall be via a weir designed to have a maximum depth of flow of 150mm in a 100 – year AEP storm. All aboveground OSD basin outlets and below ground OSD tank orifices shall be protected by a screening device to minimise blockage. Car parking spaces and open spaces can be incorporated as an OSD component. When car parking spaces or open spaces are to be utilised as OSD, the maximum permissible ponding depth in the 1% AEP is 150mm. In other areas where the ponding depth exceeds 300 mm a 1.2-metre-high safety fence shall be provided. The desirable minimum slope on turf storage areas is to be 3% with an absolute maximum of 5%. An emergency overland flow path shall be provided for OSD in case of extremely large flows or improper operation of OSD outlet. Unless otherwise approved by the council engineer, all habitable floor levels shall be a minimum of 300mm above the 1% AEP ponding level. All stormwaters must fall by gravity to an approved drainage system or charged lines is not allowed.	
Pollution targets	reduction	Camden Council Engineering Specification, Section 3.3.9, Table 3.3.9	Design	• 85% reduction in total suspended solids (TSS) • 65% reduction in total phosphorus (TP) • 45% reduction in total nitrogen (TN) • 90% reduction in gross pollutants	

3 Existing Site and Stormwater Conditions

3.1 The Site

The site is located at 72 and 82-86 Menangle Road, Camden in the Camden Local Government Area (LGA). The site comprises 9 lots and has a combined site area of 7,184sqm. The lots are legally described as Lot 73-77 in DP21405, Lot 86 in DP21405, and Lots 1-3 in DP24039.

The site is currently occupied by three 1960s brick cottages, the former Camden Nurses' Quarters, and a former NSW Health car park.

The site has frontage to Menangle Road and Gilbulla Avenue. It is located opposite Camden Hospital and is approximately 600 metres from the Camden Town Centre, which provides a range of essential services, retail, and civic facilities.

A bus stop is located directly in front of the site on Menangle Road and Don Moon Memorial Reserve is located less than 250m from the site.

To the south and east, the site is surrounded by low density residential housing.

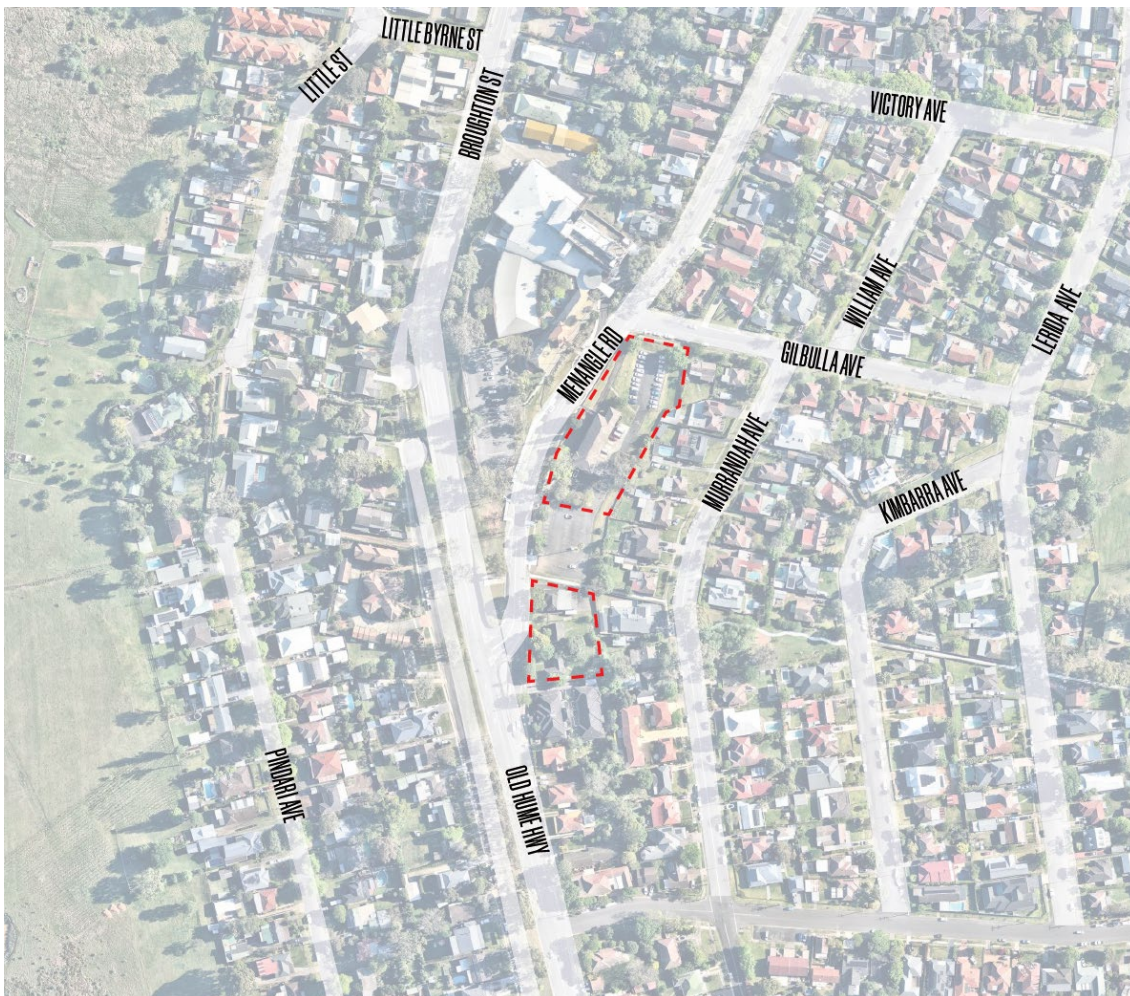


Figure 1: Subject Site (Source DKO)

3.2 Existing Stormwater Drainage Characteristics

The development site is bounded by Gilbulla Avenue to the north and Menangle Road to the west. The existing topography generally slopes from west to east, indicating that surface runoff is likely directed toward the eastern portion of the site. The site is not identified as being prone to flooding.

Figure 2 presents a survey extract illustrating the site conditions, including directional arrows indicating the gradient and direction of slope.

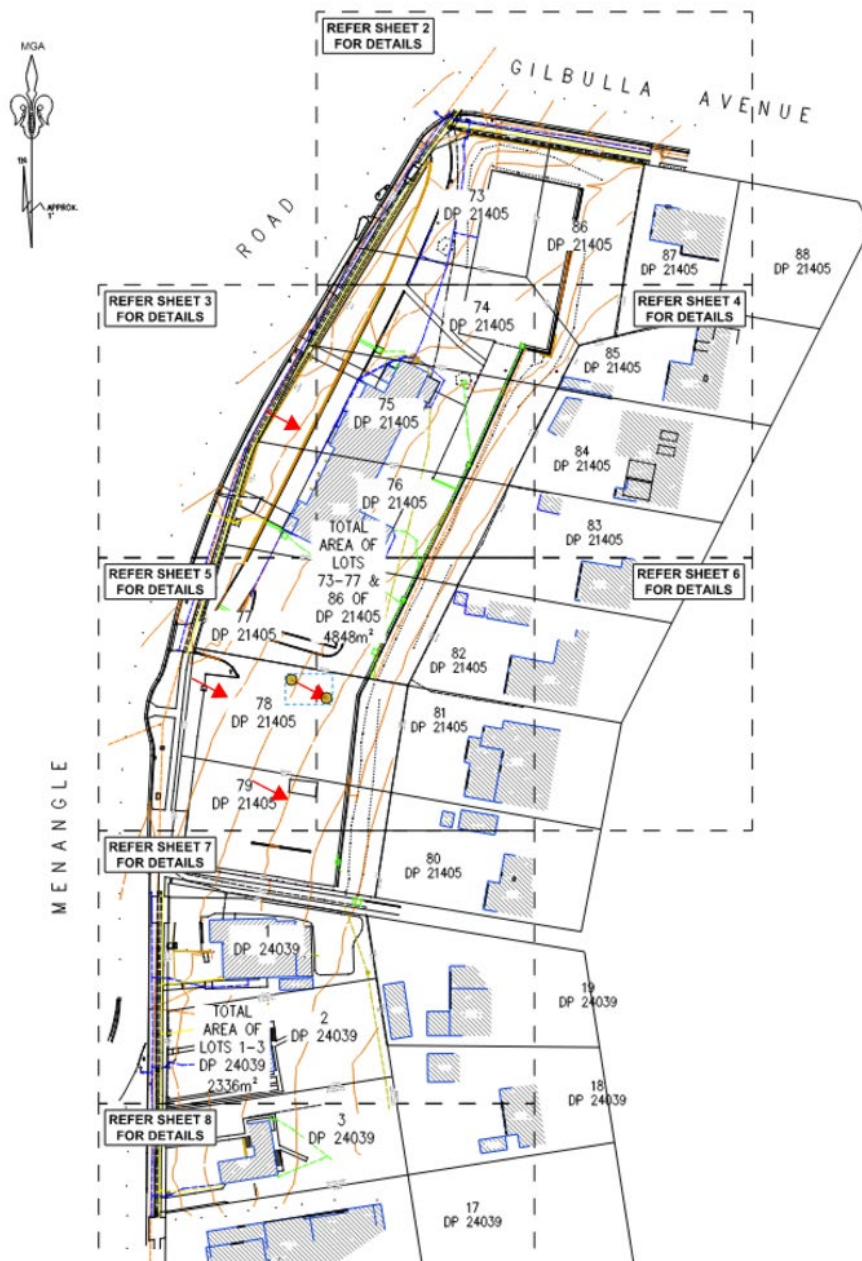


Figure 2: Survey, (Total Surveying Solutions, 25.11.25)

Based on the available survey information, there appear to be a limited number of existing stormwater pits within or adjacent to the site that may serve as potential connection points for the proposed drainage system. However, preliminary assessment indicates that there are constraints associated with the current pit levels. These constraints, along with feasible design solutions to address them, are discussed in further detail in Section 5 of this report.

4 Proposed Development

The proposed development comprises a State Significant Development (SSD) application for the purpose of social and affordable housing (including a component of social housing), and a concurrent rezoning to amend the current planning controls for the site.

The site is currently zoned SP2 Infrastructure (Hospital) and the concurrent rezoning proposal seeks to rezone the land to R3 Medium Density Residential and introduce height and FSR controls to facilitate the proposed development.

The SSD application seeks consent for the following:

- Site preparation works including excavation.
- Construction of two residential flat buildings containing 95 dwellings for the purpose of social and affordable housing.
- Construction of one level of basement parking for each residential flat building.
- Associated landscaping and communal open space.
- Infrastructure servicing.

5 Stormwater Management

5.1 Water Quantity Management

The proposed stormwater drainage design has been prepared in accordance with the Camden Council Engineering Design Specification.

- *The objective stated within the Camden Council Engineering Design Specification is to ensure the maximum discharge shall not exceed the pre-development flows for all storms up to and including the 1% AEP and shall not be concentrated.*
- *The methods to determine required storage volume may be a non-time translation hydrograph method (eg Wollongong method or Swinburne method) if the time of concentration for the catchment is less than 30-minutes, otherwise a time translation hydrograph method (eg Runoff Routing method) shall be used. For both cases, the capacity of the existing drainage system shall be checked to ensure no increase in flows.*

5.1.1 Legal Discharge Point

A site survey undertaken by TSS (Total Surveying Solutions) on 25/11/2026 identified several existing stormwater pits within the development area. As the proposal comprises two separate development sites, each site will utilise an independent point of discharge rather than a shared connection.

The survey indicates that the existing stormwater pits are limited in number and are generally of shallow depth. Consequently, new pits with deeper invert levels have been incorporated into the design to facilitate suitable connection points and ensure adequate drainage performance.

For the northern development site, the proposed stormwater connection is to the existing pit located within the car park area. The southern development site is proposed to connect to an existing stormwater pit situated within the concrete alley between the car park and the southern development parcel.

5.1.2 Tailwater Assumption

The downstream tailwater level is an important parameter in assessing potential backwater impacts at the proposed outlet, particularly in relation to the capacity and hydraulic performance of the existing stormwater drainage system. For the purposes of the hydraulic modelling undertaken using DRAINS, conservative tailwater levels have been adopted to account for uncertainties in the downstream network, including the absence of detailed hydraulic grade line information.

For the northern development site, which discharges to the existing stormwater pit located within the car park, the adopted tailwater level has been set at 82.40 m. This is based on a surface level of 82.55 m and an invert level of 81.95 m, with the tailwater assumed to be 150 mm below the natural kerb invert.

For the southern development site, which connects to the existing stormwater pit located in the concrete alley between the car park and the southern development parcel, a tailwater level of 81.67 m has been adopted. This value has been derived from a surface level of 81.82 m and an assumed invert level of 80.92 m, based on a 600 mm cover and a 300 mm outlet pipe size.

The adoption of tailwater levels set 150 mm below the kerb invert is consistent with the requirements outlined in Section 3.4.6 of the Camden Council Engineering Design Specification.

Table 3.11 Recommended Tailwater Levels

OUTLET TYPE	ADOPTED TAILWATER LEVEL ⁽¹⁾
1. Free outfall	Pipe obvert
2. Discharge into receiving waters	Design AEP flood level
3. Discharge to an existing system (HGL unknown)	150 mm below the natural surface/invert of kerb
4. Discharge to a point designed to surcharge	Height of surcharge

(1) The tailwater level shall not be below pipe obvert.

Figure 3: Recommended Tailwater Levels, (Camden Council Engineering Design Specification, 2009)

5.1.3 Water Quantity Catchment Analysis

A hydraulic model was developed in DRAINS to simulate both pre-development and post-development conditions for the site. The pre-development catchment layout was established to quantify the existing runoff characteristics and determine the permissible site discharge. This allowable discharge rate forms the basis for sizing the on-site detention system, ensuring that post-development flows are attenuated to pre-development levels for storm events up to and including the 1% Annual Exceedance Probability (AEP) event.

The outcomes of the DRAINS modelling have informed the drainage design strategy, including the required storage volumes and discharge controls to achieve compliance with relevant council requirements. This report should be read in conjunction with the civil engineering drawings prepared by Mott MacDonald, which provide detailed design information supporting the hydraulic analysis presented herein.

Table 5-1: Pre-Development Pervious and Impervious Condition

Development	Percentage Impervious (%)	Percentage Pervious (%)
Northern Site	55%	45%
Southern Site	36%	64%

5.1.3.1 On-site Detention System

In accordance with Camden Council's stormwater drainage design requirements, Mott MacDonald has undertaken a comprehensive review of the existing site conditions in conjunction with the proposed architectural layout to develop an appropriate and effective stormwater management strategy. The primary objective of the design is to manage runoff in a manner that minimises adverse impacts on adjoining properties and does not overload the existing downstream drainage infrastructure.

A hydraulic model was developed using DRAINS to assess site performance and to determine the required on-site detention (OSD) storage. The modelling established the detention volume necessary to limit post-development discharge to pre-development flow rates for storm events up to and including the 1% Annual Exceedance Probability (AEP) event, in accordance with Council requirements.

The proposed OSD system has been designed to capture and attenuate stormwater runoff, ensuring that discharge from the developed site does not exceed permissible levels. The development comprises two distinct areas, referred to as the northern and southern development

sites. Each site is provided with an independent OSD system, designed to suit its specific layout, levels, and drainage constraints.

For the northern development, the OSD tank is proposed at the lower ground floor 01 with a surface level of RL 85.80, located below the carpark within the building footprint. The detained flows from this system will discharge to the existing stormwater pit within the adjacent car park.

For the southern development, the OSD tank is proposed at lower ground floor level at RL 85.50 and is designed to extend below to Lower Ground 02 level.

An emergency overflow chamber is incorporated within both tanks to accommodate overflow conditions in the event of orifice failure.

5.1.3.2 Bypass

While portions of the northern and southern development areas will bypass the on-site detention system due to level constraints and existing tree root zones, the detention system has been sized to accommodate these bypass flows. Accordingly, site discharge is limited to pre-development rates for all storm events up to and including the 1% AEP event.

The results of the DRAINS modelling, including required storage volumes and discharge performance, are summarised in below.

Table 5-2: Northern Development Pre and Post - Development Flow Rate

Catchment	Area (m2)	Storm Events (1% AEP)	Pre-Development Flow Rate (L/s)	Post-Development Flow Rate (L/s)
Northern Catchment	4848	50% AEP	57	52
		20% AEP	90	90
		10% AEP	124	114
		5% AEP	151	138
		2% AEP	177	171
		1% AEP	206	191

Northern catchment on-site detention volume required 40m³.

Table 5-3: Southern Development Pre and Post - Development Flow Rate

Catchment	Area (m2)	Storm Events (1% AEP)	Pre-Development Flow Rate (L/s)	Post-Development Flow Rate (L/s)
Southern Catchment	2336	50% AEP	19	19
		20% AEP	36	36
		10% AEP	48	45
		5% AEP	60	55
		2% AEP	78	68
		1% AEP	92	78

Southern catchment on-site detention volume required 40m³.

5.1.4 Local Overland Flow Path

Northern Development will generally replicate the existing terrain, maintaining a crest at the north-western corner that directs surface flows toward the east and south. Runoff along the Menangle Road frontage will be captured within the proposed landscaped swale, while the eastern swale will collect the remaining runoff generated from the north-eastern portion of the site, preventing discharge to adjoining properties.

The Southern Development will similarly reflect the existing terrain. Overland flow across the eastern portion of the site will be directed from the south-western corner toward the northern boundary, while the western portion will convey flows via swales integrated within the landscaped areas.

All proposed swales have been designed to accommodate stormwater flows up to and including the 1% AEP event.

5.2 Water Quality Management

To ensure that the development improves the quality of stormwater leaving the development site, Mott MacDonald has reviewed the site and formulated a Water Sensitive Urban Design concept model, 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.

5.2.1 MUSIC Modelling Pluviograph Data Input

The water quality assessment for the proposed development has been undertaken using the MUSIC software, incorporating the pre-configured MUSIC-LINK settings provided by the Camden City Council. This configuration includes rainfall data spanning the period from 1985 to 1994, with a temporal resolution of six-minute intervals, ensuring alignment with local climatic conditions and council requirements.

5.2.2 Water Quality Catchment

The MUSIC model was set up to represent the post-development scenario. The site was divided into sub-catchments based on the layout and topography. The proposed MUSIC catchment breakdown is shown on the water quality catchment plan. Details of water quality catchment delineation shall be read in conjunction with the civil engineering plans.

The sub-catchments incorporated within the MUSIC model have been categorised according to the following land use types:

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

MUSIC soil and groundwater parameters are set as per Table 6 and MUSIC node rainfall runoff parameters are set as per Table 7 respectively.

Table 5-4: Soil/groundwater Parameters for MUSIC Modelling

	Units	Mixed	Roof
Impervious area parameters			
Rainfall threshold	mm/day	1	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 5-5: 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 ₁₀ mg/l)												
Mixed	2.20	0.32	-0.45	0.25	0.41	0.19	1.10	0.17	-0.82	0.19	0.32	0.12
Roads	2.43	0.39	-0.30	0.31	0.26	0.23	1.00	0.34	-0.97	0.31	0.200	0.20
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)

5.2.3 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 ocean guard and storm filters from Ocean Protect or equivalent.
- Stormwater runoff not draining to the water quality chamber shall be installed with an ocean guard basket within the pit to treat suspended solids as best practice.
- The treatment train that has been modelled is limited to the new building drainage network that drains into the combined water quality / detention tank.
- Due to site constraints, a portion of the site will bypass the treatment measures. To account for these untreated areas, additional proprietary treatment products have been applied elsewhere on site. Refer to the MUSIC screenshot below for further details.

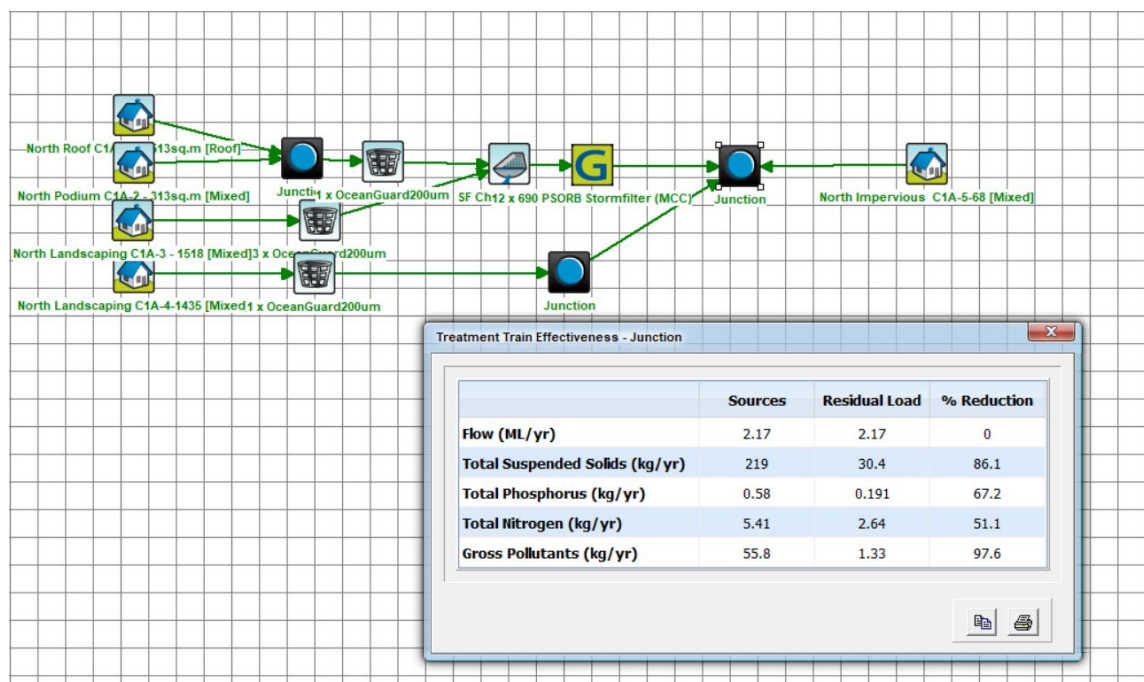


Figure 4: Northern Development MUSIC Modelling Result Extract

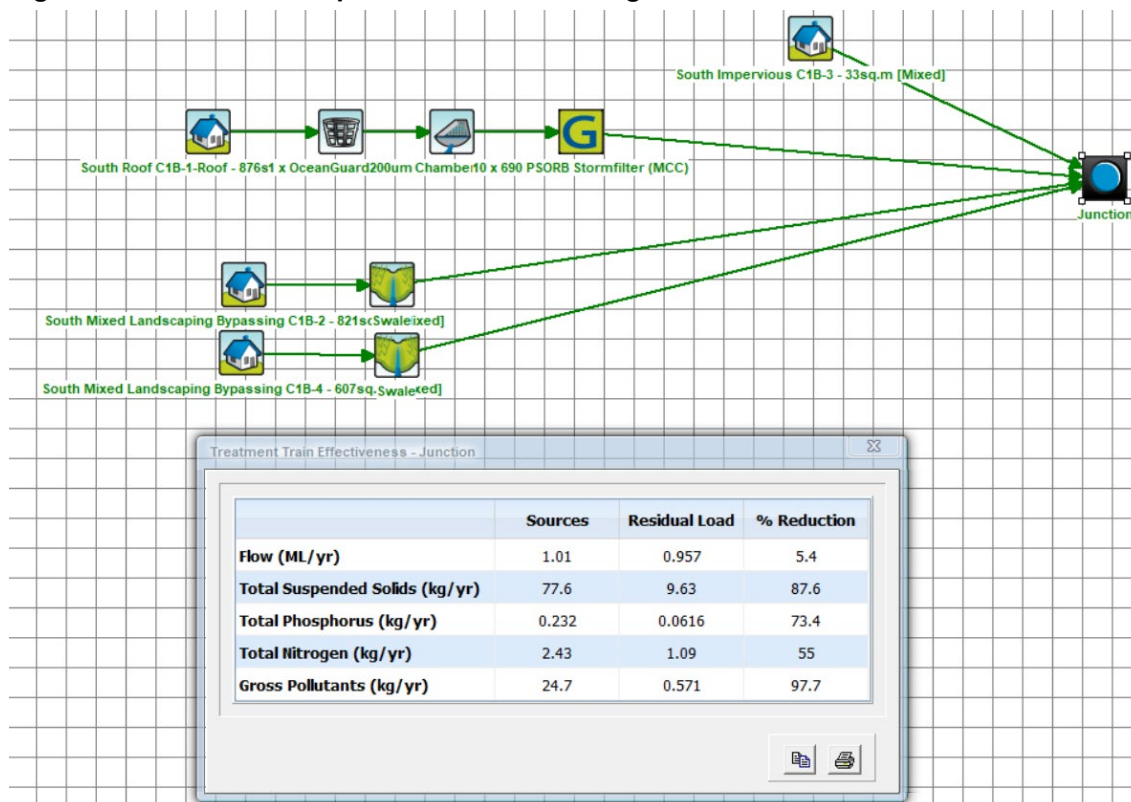


Figure 5: Southern Development MUSIC Modelling Result Extract

5.3 MUSIC Modelling Results

Based on the outcomes of the assessment, the proposed water quality treatment train is expected to achieve adequate reductions in Total Suspended Solids (TSS), Total Phosphorus (TP), Total Nitrogen (TN), and Gross Pollutants (GP) for the proposed development. These results indicate compliance with the applicable water quality objectives. Table 8 below presents a comparison between the modelled treatment performance and the reduction targets stipulated by Council.

Table 5-6: MUSIC Assessment Results

Pollutants	Camden Council Requirement	Northern Development Reduction %	Southern Development Reduction %	Results
Gross Pollutants (GP)	90%	97%	97%	Satisfy
Total Suspended Solids (TSS)	85%	86%	87%	Satisfy
Total Phosphorus (TP)	65%	67%	73%	Satisfy
Total Nitrogen (TN)	45%	51%	55%	Satisfy

5.4 Maintenance and Access and Safety

5.4.1 Maintenance Requirements

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).

5.4.2 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 unauthorized access or displacement.
- Appropriate fencing / barriers with lockable gates to detention tanks and pipe headwall outlets to prevent access from children.

6 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.

6.1 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 the Table 7-1 below.

Table 6-1: 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

6.2 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 8.

Table 6-2: Construction Phase Performance Criteria

Issue		Construction Phase Stormwater Design Objectives
Erosion Control	Erosion Control Measures	• Minimise exposure of disturbed soils at any time • Divert water run-off from undisturbed areas around disturbed areas. • Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods. • Implement erosion control methods corresponding to identified erosion risk rating

Issue		Construction Phase Stormwater Design Objectives
Sediment Control	Sediment control measures	Determine appropriate sediment control measures using: • Potential soil loss rate, or • Monthly erosivity, or • Average monthly rainfall
	Design storm for sediment control basins.	Collect and drain stormwater from disturbed soils to sediment basin for design storm event:
	Sediment basin dewatering	• Design storm for sediment basin sizing is 80th % five-day event or similar. Site discharge during sediment basin dewatering: • TSS < 50mg/l TSS, and • Turbidity not > 10% receiving water turbidity, and
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

7 Flooding

7.1 Available Flood Studies

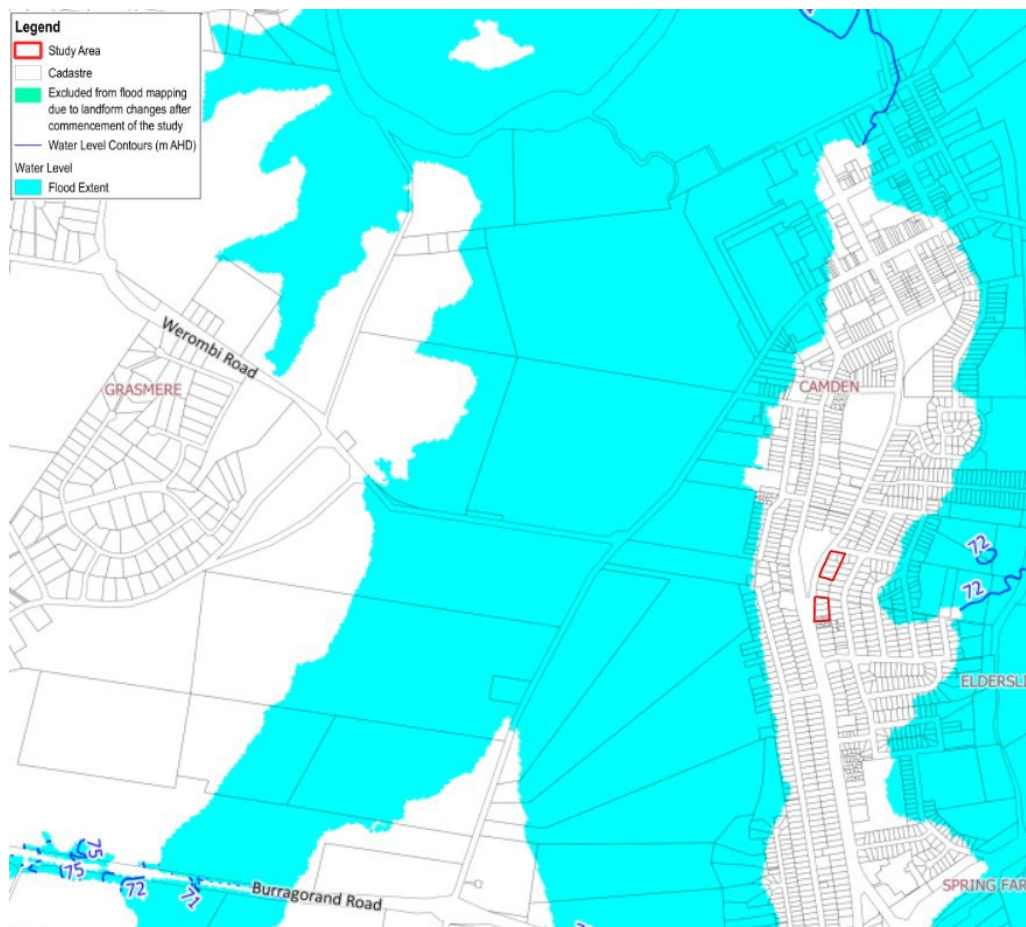
The subject site is encompassed within the Nepean River catchment and therefore has been included in the Nepean Floodplain Risk Management Study and Plan. Cardno had been commissioned by Camden Council to undertake the Floodplain Risk Management Draft Plan (FRMP) for the Nepean River Catchment. The FRMS looks to define the existing flooding behaviour and associated hazards to investigate possible mitigation to reduce flood damages and risks.

7.2 Key Findings

7.2.1 Council Flood Prone Land

An assessment of the Appendix B – flood maps relating to the FRMP suggests the site is not affected by flooding in the 1% AEP, with the highest water level adjacent being 72m AHD, which is approximately 30m east of the subject site.

Figure 7-1: 1% AEP Flood Extents



Source: Nepean River Floodplain Risk Management Study and Plan – flood maps

Additionally, an assessment of the higher magnitude storms shows a similar flooding extents with the PMF encroaching closer to the lots south of the subject site however still does not impede. The figure outlines that for all storms up to and including the PMF that the site has flood immunity. See Figure 7-2 below for details.

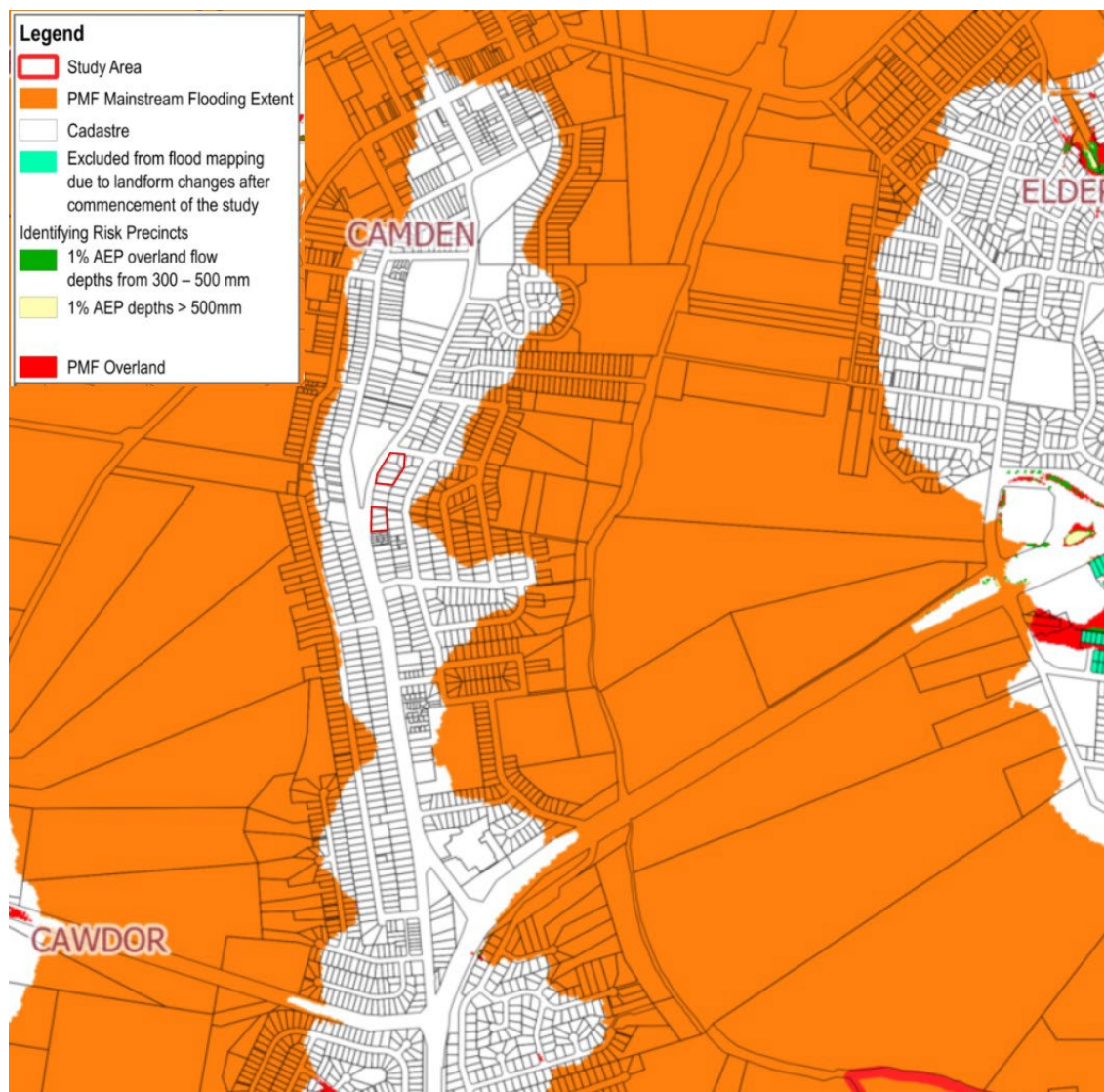
Figure 7-2: Flood Extents all storms



Source: Nepean River Floodplain Risk Management Study and Plan – flood maps

The overland flow mapping was assessed to ensure no additional PMF overland flows were impacting the site to confirm the flooding controls. As outlined in Figure 7-3 the site remains outside the overland flooding extents.

Figure 7-3: Overland Flow Mapping



Source: Nepean River Floodplain Risk Management Study and Plan – flood maps

7.3 Flood Planning Requirements

Camden City Council has a comprehensive framework for flood planning controls, which includes policies, studies and development regulations aimed at managing flood risk and ensuring safe development in flood-prone areas.

Redevelopment of sites within flood prone area will require compliance with Council's flood planning controls including:

- Camden Local Environmental Plan (2010)
- Camden Development Control Plan (2019)
- Camden Council Flood Risk Management Policy
- NSW Flood Risk Management Manual (2023); and
- NSW State Government Flood Prone Land Policy

Flood Planning controls for flood prone sites are outlined in the Flood Risk Management Policy P1.0046.2 in the control matrix which provides a correlation between land use, applicable controls and risk management measures to be followed in the preparation and assessment of development in the Nepean River catchment and its tributaries.

As the site is outside the flooding extents in both the 1% AEP and PMF for both mainstream and overland flooding the subject site will not be subjected to the above planning controls. Refer to Section 7.4 for FIRA Requirements.

7.4 FIRA Requirements

The *Flood Impact and Risk Assessment Flood Risk Management Guideline (2023)* (LU01) outlines the circumstances in which a Flood Impact Risk Assessment (FIRA) is required in section 2.1 titled “Need for a Flood Impact Risk Assessment”. The guidance states that “a FIRA is likely to be required where it is anticipated a proposed development could change flood behaviour, affect flood risk to the existing community or expose its users to flood risks that require management.”

A detailed desktop assessment of the impact of flooding to the proposed development and surrounding community has been conducted and found that the site is low risk as it does not appear to be inundated in storms up to and including the PMF.

Changes to the site, including the building footprint, minor topographical changes and the proportion of impervious and pervious surfaces, are expected to have a negligible impact on the minor ponding observed within the site and surrounding areas.

Therefore, a FIRA is not required as it is not anticipated that the proposed development will significantly alter flood behaviour and affect flood risk to users or the existing community.

8 Conclusion

The objective of this Integrated Water Management Plan is to provide a comprehensive and detailed overview of the proposed stormwater drainage system for the proposed development site. It also outlines the approach taken to ensure compliance with various regulations and guidelines, including those set forth by the Camden Council DCP and relevant council guidelines.

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

- State Environmental Planning Policy (Biodiversity and Conservation) 2021, Chapter 6 applies as the site is within a regulated catchment.
- Camden Council Engineering Design Specification
- 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 Water Management Plan addressed 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 storm filter cartridges, ocean guard baskets 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.

This report outlines the drainage strategy and water quality measures implemented for the proposed development, demonstrating that these provisions will prevent any adverse impacts on the environmental conditions.

For a comprehensive understanding of the water management plan, this report should be read in conjunction with the civil drawing plans in Appendix A.

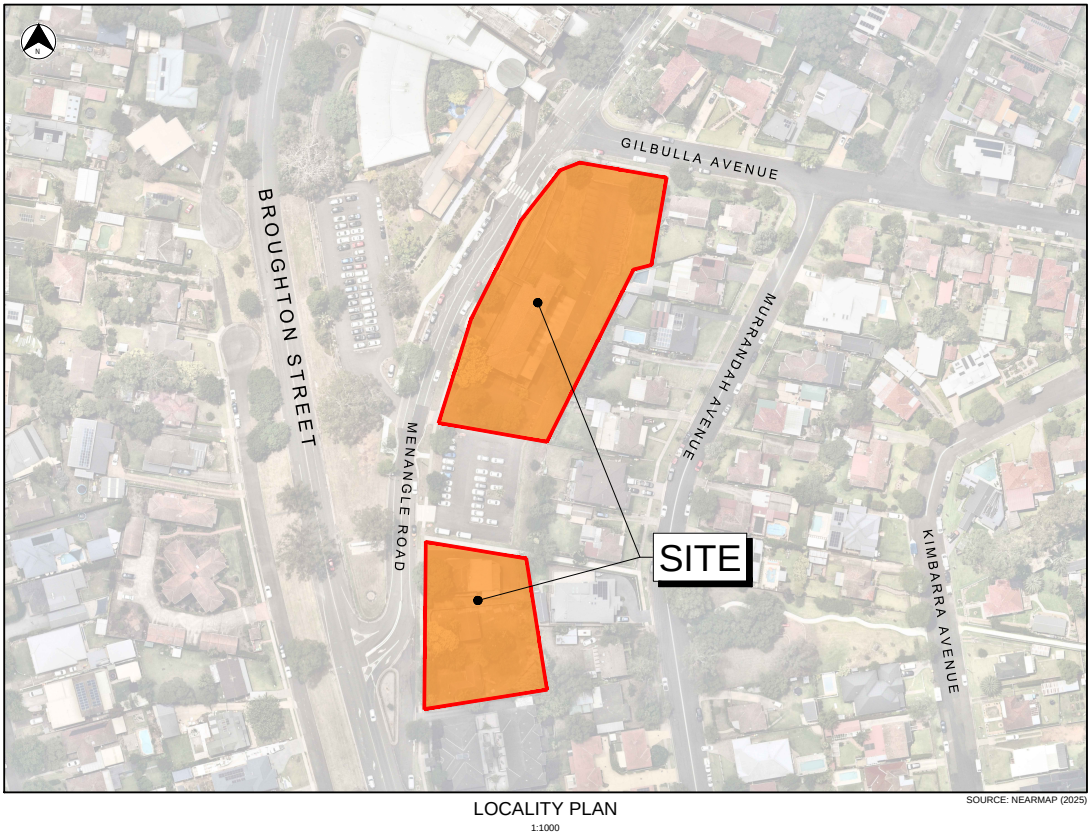
As the proposed development is located within a regulated catchment, the design strategy has been carefully developed to ensure no adverse impacts on the existing stormwater system or surrounding environmental conditions. This is achieved through the implementation of an on-site detention (OSD) system to regulate post-development runoff, together with water quality treatment measures incorporating proprietary devices to meet the required pollutant reduction targets prior to discharge to the existing stormwater network.

As outlined in Section 7 of this report and in accordance with the *Nepean River FRMSP* the site is not flood affected by mainstream and overland flooding in events up to including the PMF, as such the site is not subjected to the flood planning controls of Camden City Council, in addition to this a FIRA is not required.

A.1 APPENDIX A: CIVIL DRAWINGS

DRAWING LIST

DRAWING NUMBER	DRAWING TITLE
103419-MMD-CAM-XX-DR-C-0000	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
103419-MMD-CAM-XX-DR-C-0001	GENERAL NOTES
103419-MMD-CAM-XX-DR-C-0011	EROSION AND SEDIMENT CONTROL PLAN
103419-MMD-CAM-XX-DR-C-0015	EROSION AND SEDIMENT CONTROL DETAILS
103419-MMD-CAM-XX-DR-C-0051	SITEWORKS AND DRAINAGE PLAN
103419-MMD-CAM-XX-DR-C-0052	SITEWORKS AND DRAINAGE NORTHERN PORTION
103419-MMD-CAM-XX-DR-C-0053	SITEWORKS AND DRAINAGE SOUTHERN PORTION
103419-MMD-CAM-XX-DR-C-0054	ON-SITE DETENTION LAYOUT LOWER GROUND 01
103419-MMD-CAM-XX-DR-C-0331	ON-SITE DETENTION - NORTHERN SITE SECTION AND DETAILS
103419-MMD-CAM-XX-DR-C-0332	ON-SITE DETENTION - SOUTHERN SITE SECTION AND DETAILS
103419-MMD-CAM-XX-DR-C-0341	STORMWATER DRAINAGE DETAILS
103419-MMD-CAM-XX-DR-C-0511	PRE-DEVELOPMENT CATCHEMENT PLAN
103419-MMD-CAM-XX-DR-C-0512	POST-DEVELOPMENT CATCHEMENT PLAN
103419-MMD-CAM-XX-DR-C-0513	WATER QUALITY CATCHMENT PLAN



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NOT FOR CONSTRUCTION

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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.

STORMWATER NOTES	
SW1	FOR RESIDENTIAL SUBDIVISIONS AND PUBLIC ROADS - ALL Ø375mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT 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 S18 IN ACCORDANCE WITH AS/NZS 1280:2009 - 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 SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø675mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT 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 S18 IN ACCORDANCE WITH AS/NZS 1280 : 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.) 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 H2S 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 S18 PIPE SHALL BE USED.
SW16	PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE LINE OR 200 "NYLEX" STRIP DRAIN SURROUNDED WITH 150mm OF 25mm BLUE METAL OR GRAVEL, AND WRAPPED IN 300M ² 420 GEOTEXTILE FILTER FABRIC OR APPROVED EQUIVALENT, AT INVERT OF INCOMING UPSTREAM PIPE ON EACH PIT.

SITEWORKS NOTES	
SN1	DATUM : Australian Height Datum (AHD) : PM 12040, RL 10762 ORIGIN OF LEVELS : PM 12040 - E: 511685.132, N:6647781.527 ORIGIN OF CO-ORDINATES : Mapping Grid Of Australia (MGA2020) SURVEY PREPARED BY : LTS LOCKLEY E: www.ltsl.com.au P: 1300 587 000
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 WATER AND LANDS 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://scsrm.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 SUBSIDENCE'S 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, WHICHEVER 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.

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 CARPING 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 LIAISON.
ES6	ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø800mm uPVC 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.

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 PLANS, 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 BLUE BOOK.
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 50mg/L. IF 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 REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
SWM07	ACCEPTABLE 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 SITE SUPERINTENDENT TO ENSURE CONTAINMENT OF SEDIMENT. SEDIMENTING WILL OUTLET 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 .XX. CUBIC METRES AND DESIGNED TO REMAIN STABLE IN AT LEAST THE 1 IN .XX. 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 DOWNSTREAM WATERS. 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 - a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE, b. ENSURING THAT NOTHING IS NAILED TO THEM, c. PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS - (i) 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, WHICHEVER IS THE GREATER. (ii) 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 (iii) 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 - i) AUTUMN / WINTER SOWING - OATS / RYE/CORN AT 20 kg/ha - JAPANESE MILLET AT 30 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 5 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 3 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 - (i) INSTALL INLET SEDIMENT TRAPS TO ALL GULLY PITS FRONTING THE SITE. (ii) 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 3M INTERVALS OR AS INSTRUCTED BY THE SUPERINTENDENT). (iii) INSTALL GEOFABRIC SEDIMENT FENCE AND SEDIMENT TRAPS AROUND ALL PERMANENT STORMWATER RETICULATION STRUCTURES AS SHOWN ON THE PLAN. (iv) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN OR TO LOCATION AS DETERMINED BY SUPERINTENDENT. (v) INSTALL DIVERSION BANKS ALONG THE BOUNDARY WHERE REQUIRED, REHABILITATE DISTURBED LANDS DOWNSLOPE FROM THE BASINS WITHIN 20 WORKING DAYS. (vi) ENSURE THAT THE SEDIMENT BASIN IS DIRECTED ONTO A TURRED 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. (vi) 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.
SITE INSPECTION AND MAINTENANCE	
SWM20	AT LEAST WEEKLY AND AFTER EVERY RAIN FALL EVENT, THE CONTRACTOR WILL INSPECT THE SITE AND ENSURE THAT - (i) DRAINS AND ALL SEDIMENT CONTROL DEVICES OPERATE EFFECTIVELY AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED. (ii) 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. (iii) 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. (iv) SEDIMENT IS REMOVED FROM BASINS AND / OR TRAPS WHEN LESS THAN 20mm OF TRAPPING CAPACITY REMAINS PER 100mm 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 DOWN SLOPE LANDS AND WATERWAYS IS UNLIKELY. (v) 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.

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	02	18.06.26	ISSUE FOR SSDA	AT	-	 NSW GOVERNMENT  Homes NSW	72 & 82-86 MENANGLE ROAD, CAMDEN, NSW 2570 GENERAL NOTES	Drawn: J.GARBO		Revision: 02					
	01	11.02.26	ISSUE FOR INFORMATION	AT	-			Designed: S. SAJARA		Status: PRE					
	Rev Date Description Chk'd App'd							Checked: A TARSHAN		Security: STD					
								Approved: -							
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LEGEND	
	SITE BOUNDARY
	ADJACENT SITE BOUNDARY LINE
	EXISTING BOUNDARY LINE TO BE REMOVED
	TEMPORARY CONSTRUCTION SITE ACCESS WITH SHAKE GRID
	SEDIMENT TRAP - SAND BAGS
	SEDIMENT TRAP FOR DROP INLET (GEOTEXTILE FILTER FABRIC)
	SEDIMENT FENCE
	SITE FENCE
	TEMPORARY CATCH DRAIN
	INDICATIVE LOCATION OF STOCKPILE
	EXISTING TREES TO BE REMOVED - REFER TO SITE ARBORIST REPORT FOR DETAILS
	EXISTING TREES TO BE RETAINED - REFER TO SITE ARBORIST REPORT FOR DETAILS
	TREE PROTECTION ZONE - REFER TO SITE ARBORIST REPORT FOR DETAILS
	TREE PROTECTION AREA - REFER TO SITE ARBORIST REPORT FOR DETAILS
	TEMPORARY SEDIMENT BASIN
	EXISTING DRAINAGE LINE
	EXISTING DRAINAGE PIT
	PROPOSED DRAINAGE PIT
	STORMWATER PROPOSED

- ### 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" 2014 (4TH EDITION) PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION, EXCAVATION OR CONSTRUCTION WORKS UPON THE SITE.
 - BUILDERS SHALL PROVIDE SEDIMENT 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 ENTRY/EXIT SHALL BE AS PER DRAWING 0015. 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.
 - TOPSOL 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 WILL BE SIZED IN ACCORDANCE WITH SOILS AND CONSTRUCTION, VOLUME 1, MANAGING URBAN STORMWATER GUIDE.

NOTE:
THIS PLAN IS 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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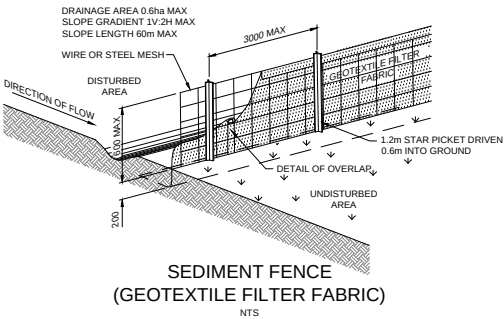
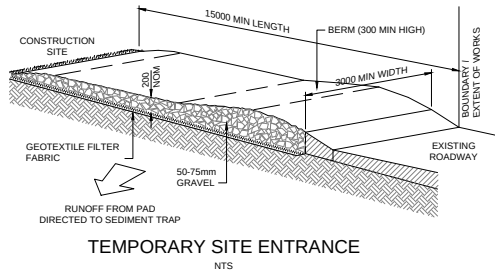
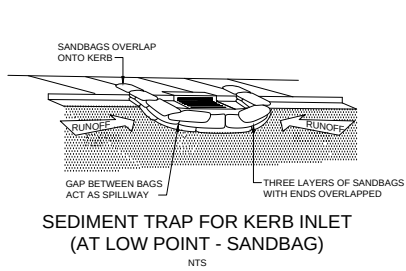
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TITLE
72 & 82-86 MENANGLE ROAD,
CAMDEN, NSW 2570
EROSION AND SEDIMENT CONTROL
PLAN

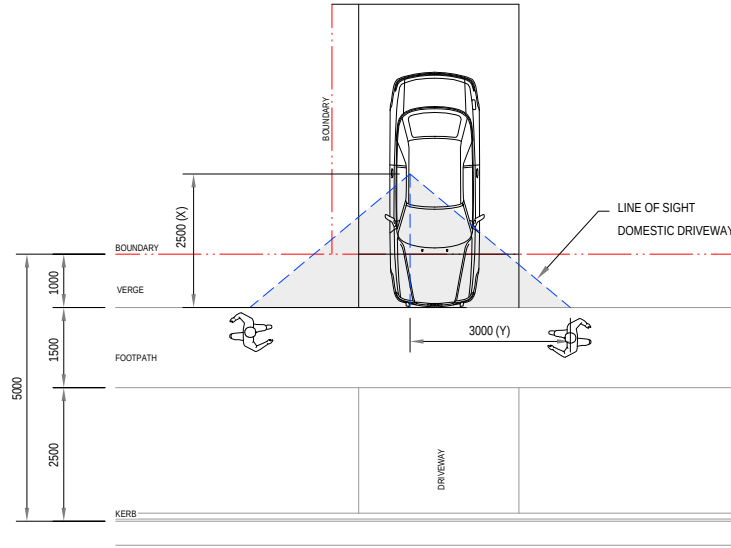
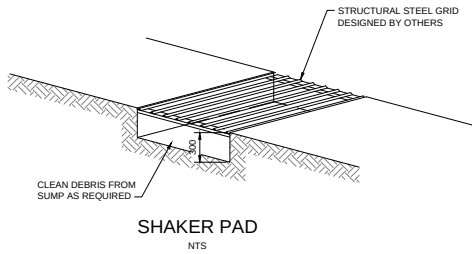
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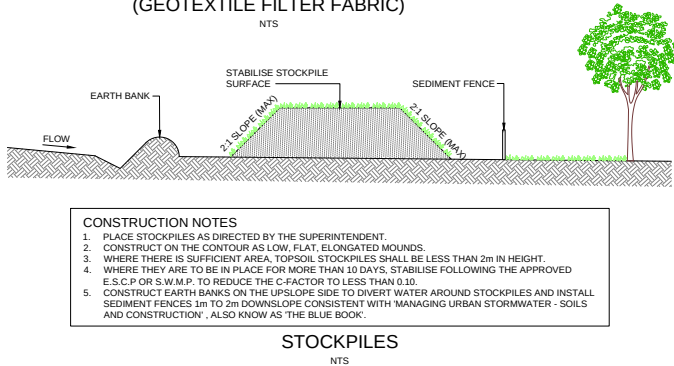
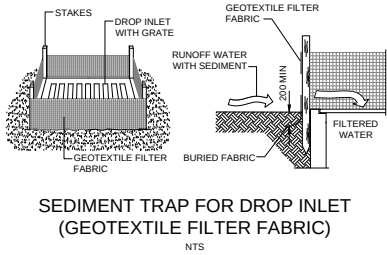
- TEMPORARY SITE ENTRANCE**
- NTS
- MAINTENANCE**
- THE TEMPORARY ACCESS SHALL COMPLY WITH THE CITY OF COFFS HARBOUR COUNCIL STANDARD DRAWING: R-230-03.
 - ALL CLEARANCES TO EXISTING SERVICES TO BE MAINTAINED. LAYBACK PROFILE AND VEHICULAR CROSSING GRADES TO COMPLY WITH COUNCIL STANDARD DRAWING R-230-03
 - 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.



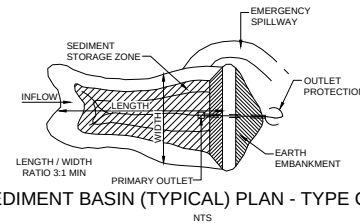
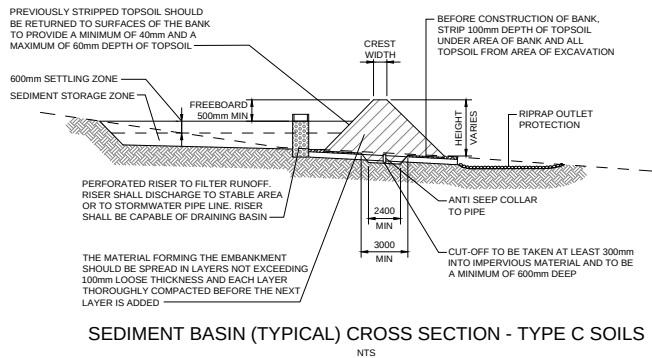
TEMPORARY ENTRY/EXIT VISIBILITY TRIANGLE

FIGURE 3.2 - ILLUSTRATION OF SIGHT DISTANCES TO PATH
(REFERENCE DRAFT AS2890.1 FIGURE 3.2)

NTS



- CONSTRUCTION NOTES**
- PLACE STOCKPILES AS DIRECTED BY THE SUPERINTENDENT.
 - CONSTRUCT ON THE CONTOUR OR LOW, FLAT, ELONGATED MOUNDS.
 - WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
 - 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.
 - 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'.



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103419-MMD-CAM-XX-DR-C-0015



LEGEND

SITE BOUNDARY

ADJACENT BOUNDARY

SURVEY

EXISTING CONTOUR

EXISTING TREES TO BE REMOVED

- REFER TO SITE ARBORIST REPORT FOR DETAILS

EXISTING TREES TO BE RETAINED

- REFER TO SITE ARBORIST REPORT FOR DETAILS

TREE PROTECTION ZONE

- REFER TO SITE ARBORIST REPORT FOR DETAILS

TREE PROTECTION AREA

- REFER TO SITE ARBORIST REPORT FOR DETAILS

NORTHERN BUILDING - BASEMENT 01 OUTLINE

NORTHERN BUILDING - LEVEL 01 OUTLINE

SOUTHERN BUILDING - GROUND FLOOR OUTLINE

SOUTHERN BUILDING - BASEMENT 02 OUTLINE

EXISTING UTILITY (TYP.)

EXISTING DRAINAGE LINE

EXISTING DRAINAGE PIT

STORMWATER PROPOSED

PROPOSED SUBSOIL DRAINAGE LINE

PROPOSED HIGH END RISER

LANDSCAPE DEPRESSION

FUTURE EASEMENT

PROPOSED ROOF DRAINAGE

PROPOSED SURFACE INLET PIT

PROPOSED OSD TANK

PROPOSED GRATED TRENCH DRAIN

DIRECTION OF SURFACE FLOW

DIRECTION OF PIPE FLOW

NOTES

1.

NORTH DEVELOPMENT SITE AREA: 488m²
SOUTH DEVELOPMENT SITE AREA: 2336m²

2.

PROPOSED STORMWATER DRAINAGE IS CONCEPT ONLY FOR DEVELOPMENT APPROVAL AND SUBJECT TO DETAILED DESIGN AT CONSTRUCTION OR CERTIFICATE STAGE

3.

EXISTING SERVICES SHOWN INDICATIVE ONLY. REFER TO SERVICES PLANS APPROVED BY RELEVANT AUTHORITIES FOR FURTHER INFORMATION. EXISTING SERVICES SUBJECT TO FURTHER INVESTIGATION PRIOR TO CONSTRUCTION FOR DETAILED DESIGN PURPOSES.

4.

ALL PROPOSED STORMWATER TO BE DESIGNED TO CATER FOR THE MINOR STORM EVENT OF 30% AEP IN ACCORDANCE WITH THE CAMDEN TECHNICAL SPECIFICATION FOR INFRASTRUCTURE DESIGN, SECTION 3.4.

5.

SAFE OVERLAND FLOW PATH TO CATER FOR MAJOR STORM OF 1% AEP.

6.

ALL BUILDING DRAINAGE TO BE CONFIRMED BY HYDRAULIC CONSULTANTS.

7.

PROVIDE OCEAN PROTECT STORMFILTER CARTRIDGES OR SIMILAR, DETAILS TO BE PROVIDED BY THE MANUFACTURER.

8.

REFER DRAWING 103419-MMD-CAM-XX-DR-C-0331 ON-SITE DETENTION DETAILS.

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CLIENT

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GOVERNMENT

Homes

NSW

TITLE

72 & 82-86 MENANGLE ROAD,
CAMDEN, NSW 2570
SITEWORKS AND DRAINAGE
PLAN

DRAWING INFORMATION

Drawn: J.GARBO

Designed: S. SAIARA

Checked: A. TARSHAN

Approved: -

Revision: 02

Status: PRE

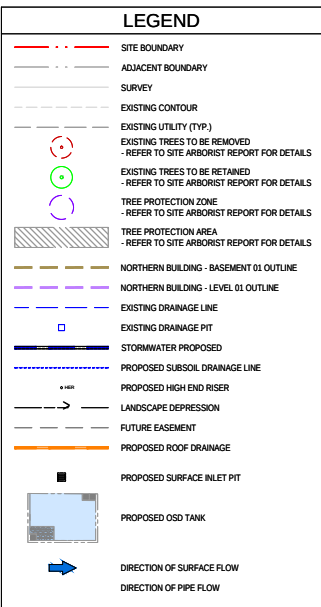
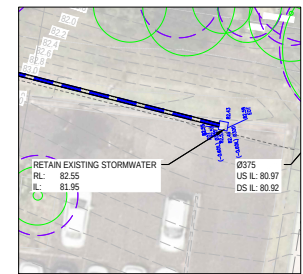
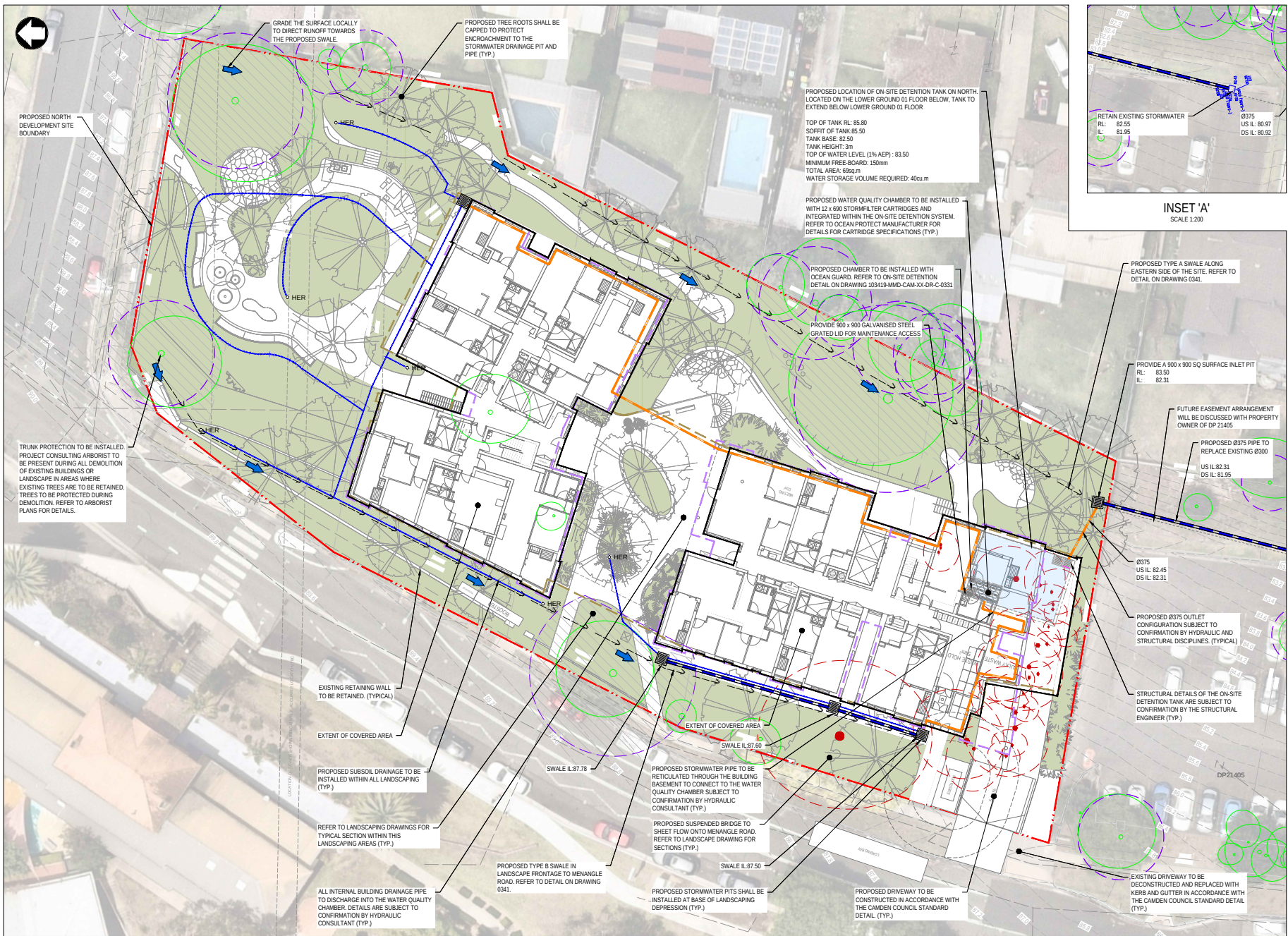
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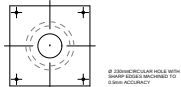
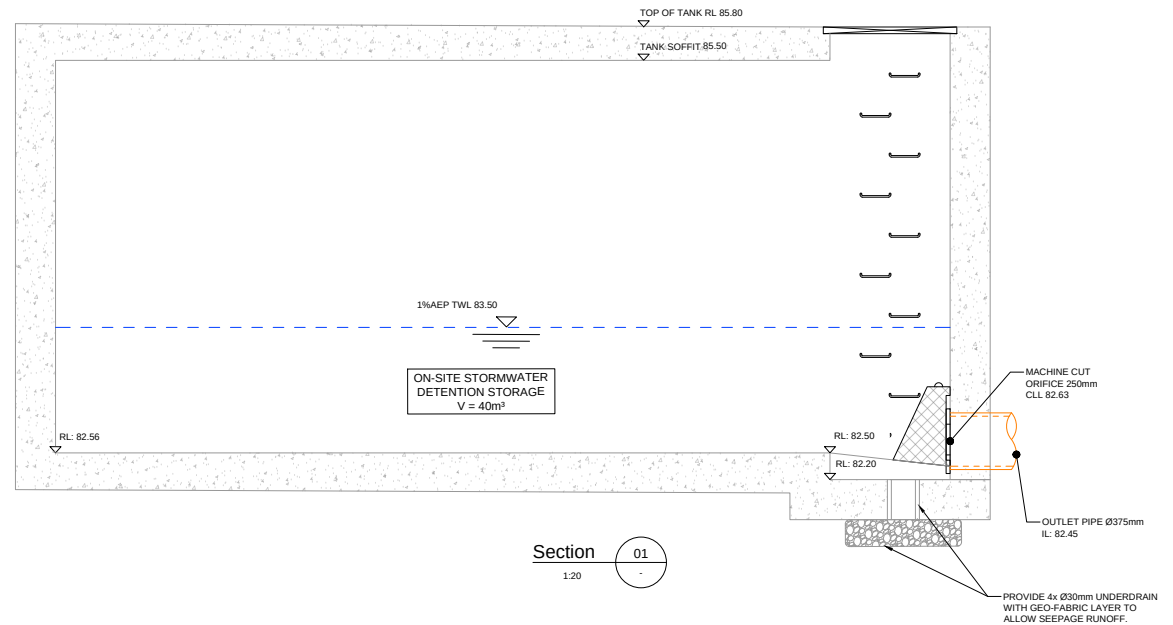
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- ### NOTES
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SOUTH DEVELOPMENT SITE AREA: 2336m²
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 - REFER DRAWING 103419-MMD-CAM-XX-DR-C-0331 ON-SITE DETENTION DETAILS.

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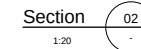
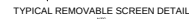
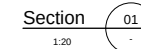
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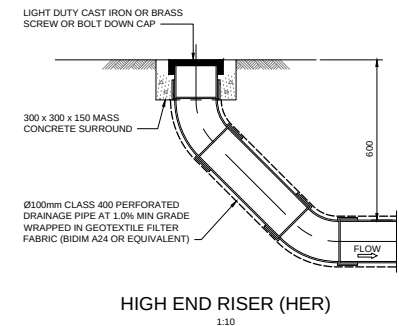
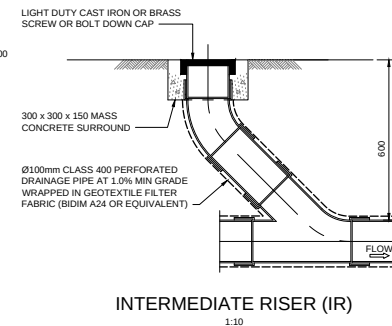
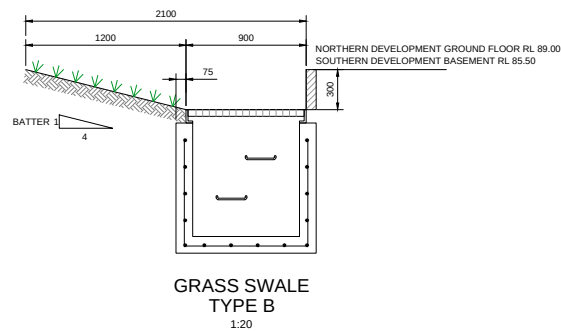
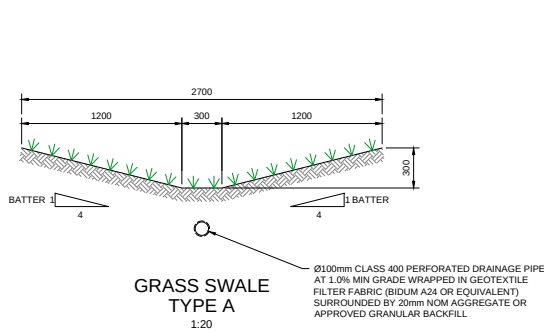
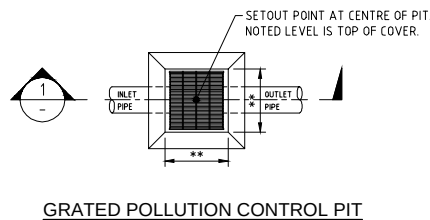
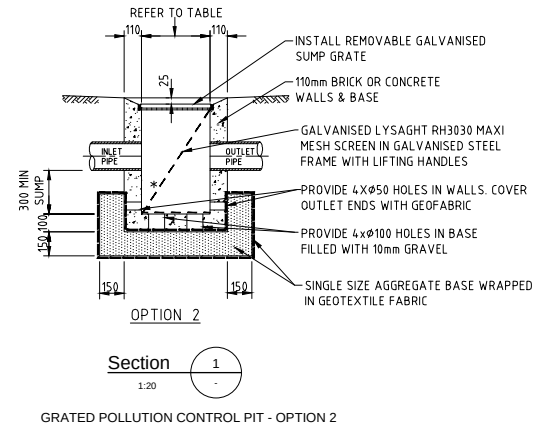
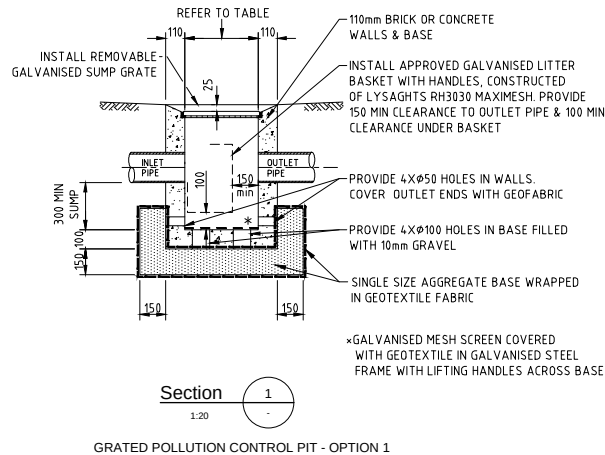
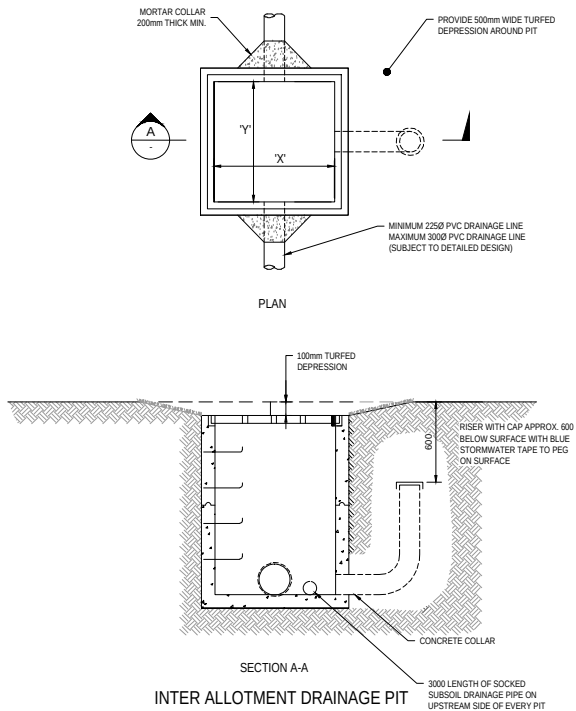
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SO A1 594mm x 841mm



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103419-MMD-CAM-XX-DR-C-0341



LEGEND

IMPERVIOUS AREA

PERVIOUS AREA

NOTE:

NORTHERN DEVELOPMENT TOTAL SITE AREA: 4848m²
IMPERVIOUS AREA: 2658m²
PERVIOUS AREA: 2190m²
SOUTHERN DEVELOPMENT TOTAL SITE AREA: 2336m²
IMPERVIOUS AREA: 848m²
PERVIOUS AREA: 1488m²



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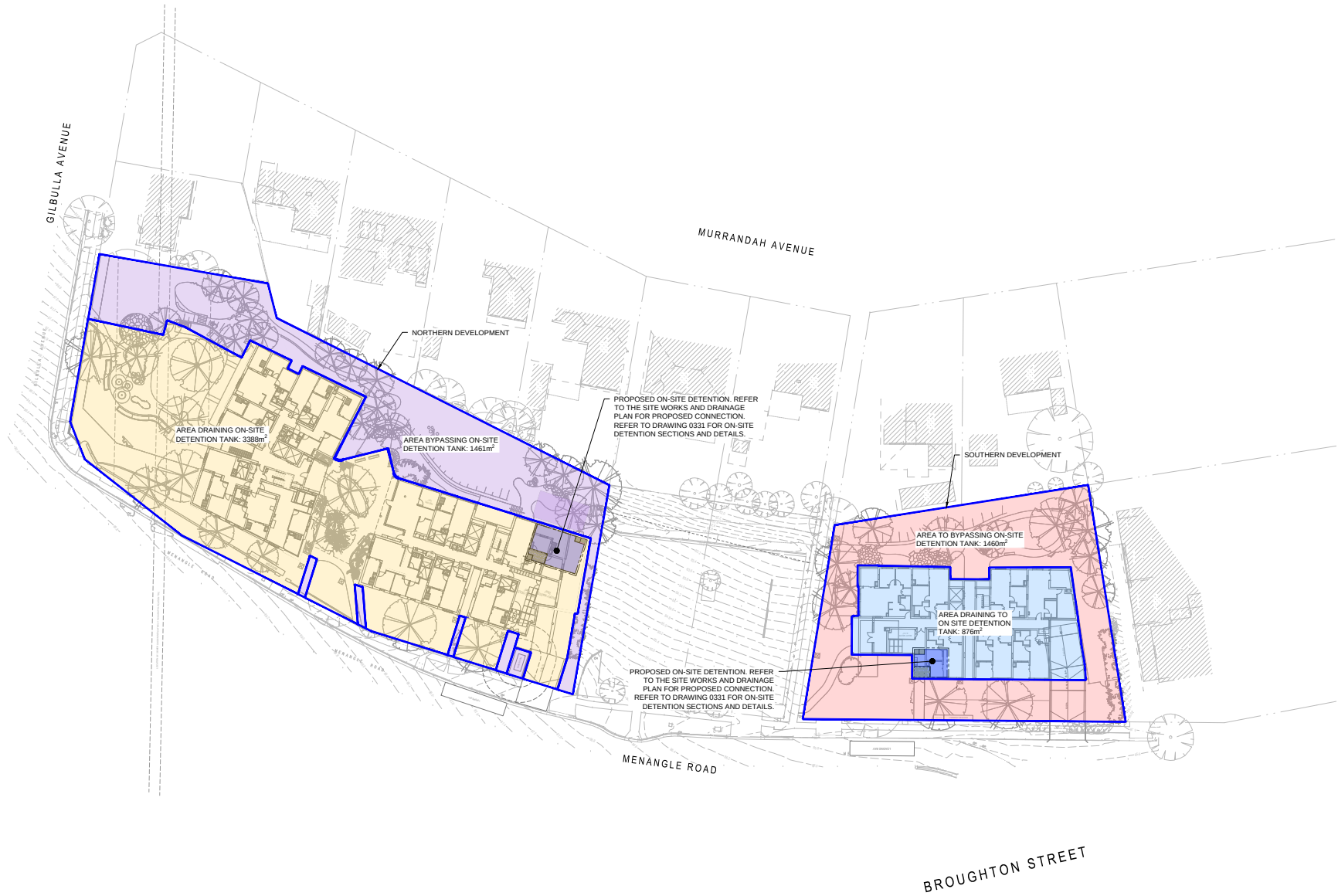
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103419-MMD-CAM-XX-DR-C-0511



LEGEND	
NORTHERN DEVELOPMENT	
	AREA BYPASSING ON-SITE DETENTION (1461m ²)
	AREA DRAINING TO ON-SITE DETENTION (3388m ²)
SOUTHERN DEVELOPMENT	
	AREA DRAINING TO ON-SITE DETENTION (876m ²)
	AREA DRAINING TO ON-SITE DETENTION (1460m ²)



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103419-MMD-CAM-XX-DR-C-0512



LEGEND	
<u>NORTHERN DEVELOPMENT</u>	
	LANDSCAPE TO OCEAN GUARD (1435m ²)
	ROOF TO OCEAN GUARD AND WATER QUALITY CHAMBER (1513m ²)
	LANDSCAPE TO OCEAN GUARD AND WATER QUALITY CHAMBER (1518m ²)
	PODIUM TO OCEAN GUARD AND WATER QUALITY CHAMBER (313m ²)
	AREA BYPASSING TREATMENT (68m ²)
<u>SOUTHERN DEVELOPMENT</u>	
	ROOF TO OCEAN GUARD (876m ²)
	LANDSCAPING SWALE (807m ²)
	LANDSCAPING SWALE (821m ²)
	AREA BYPASSING TREATMENT (33m ²)

NOTES:

NORTHERN DEVELOPMENT SITE AREA: 4848m²
SOUTHERN DEVELOPMENT SITE AREA: 2336m²

POLLUTANT REDUCTION TARGETS, CAMDEN COUNCIL ENGINEERING DESIGN SPECIFICATION, TABLE 3.3.9

MINIMUM REDUCTIONS IN AVERAGE ANNUAL POLLUTANT LOADS FROM A DEVELOPMENT SITE (COMPARING UNTREATED DEVELOPED CASE VERSUS DEVELOPED CASE) ARE:

- 85% REDUCTION IN TOTAL SUSPENDED SOLIDS (TSS)
- 65% REDUCTION IN TOTAL PHOSPHORUS (TP)
- 45% REDUCTION IN TOTAL NITROGEN (TN)
- 90% REDUCTION IN GROSS POLLUTANTS (SIZE > 5mm)

