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WATER CYCLE MANAGEMENT PLAN

FOR

PROPOSED ALTERATIONS AND

ADDITIONS TO

MACKILLOP CATHOLIC COLLEGE

91 SPARKS ROAD,

WOONGARRAH NSW 2259

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EXECUTIVE SUMMARY

James Taylor & Associates have prepared a Water Cycle Management Plan (WCMP) for proposed alterations and additions to MacKillop Catholic College, located within Lot 71 DP 1258149, 91 Sparks Road, Woongarrah NSW 2259. The preparation of the management plan is to accompany a Development Application required for the proposed development.

The proposed stormwater system, which consists of a network of pits and pipes, will maintain existing stormwater quality and quantity control devices located within the site. The proposed stormwater management system will drain through an existing swale, dam, OSD basin and wetlands prior to runoff leaving the site. The proposed development will decrease the amount of impervious area for the site from 68% to 42%, when considering the development site, and from 65% to 60%, when considering the whole (school) site.

MUSIC modelling has been undertaken to assess the proposed stormwater system against Council's stormwater quality targets. The MUSIC modelling parameters were implemented using the MUSIC-LINK feature to comply with Council's requirements. The treatment train for the proposed development was modelled using the existing stormwater treatment measures. The results from the model comply with Council's pollution reduction targets in Chapter 3.1.11.3 of DCP 2022. This demonstrates that the existing treatment measures have sufficient capacity to treat the proposed development site and that no additional treatment devices are required.

DRAINS modelling has been undertaken for a total catchment analysis to assess the proposed stormwater system against Council's stormwater quantity targets. The DRAINS modelling parameters were implemented using Council's guidelines and current AR&R guidelines. The results from the model show that peak flows for the post development site for the 1% AEP storm event are reduced by 33 L/s in comparison to the pre development peak flows (existing conditions). These results meet the requirements in Chapter 3.1.11.4 of DCP 2022.

The DRAINS model was also used to assess the proposed stormwater system against Council's overland flooding targets as specified in the DCP for the existing swale. The existing overland flow swales have been checked and comply with Council's safety requirements. These results meet the requirements in Chapter 3.1.11.5 and Chapter 3.1.11.6 of DCP 2022. The proposed development includes 2 new pedestrian bridges spanning over the existing swale. The 2 new bridges were assessed to determine if they had sufficient capacity to cater for the 1% AEP storm event with adequate freeboard to the underside of the bridge. The results complied with Section 10.10.2 of Council's Civil Works Specification, demonstrating adequate capacity to allow for the passage of debris without blockage.

The proposed new pedestrian bridges spanning over the existing Council easement will allow for removal for future maintenance requirements. The supporting structures are located outside the zone of influence for the existing Council pipe.

A soil and water management plan has been prepared to comply with the requirements of the Blue Book.

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1. INTRODUCTION

This report has been prepared for the Development Application submission for proposed alterations and additions to the existing school, MacKillop Catholic College. The proposed alterations and additions to the existing school include demolition of 15 buildings and construction of 3 new buildings and new play area. The school is located within Lot 71 DP 1258149, 91 Sparks Road, Woongarrah NSW 2259.

This report describes the water cycle management for the proposed development. This report has been prepared to address the requirements of the Central Coast Council (CCC) Development Control Plan (DCP) 2022 Chapter 3, Central Coast Local Environment Plan (LEP) 2022 and Wyong LEP 2013.

This report describes the assessment methods for determining the quantity of stormwater affected by the development and the quality of the stormwater discharged from the site. This report also describes the strategy for improving the quality of the discharged water in line with the requirements of the pollution reduction targets nominated in the DCP. This report also describes the On Site Detention (OSD) requirements outlined in the DCP in accordance with current CCC requirements.

This report has been prepared for Development Application submission for MacKillop Catholic College. This report and the attached documents may require refinement during detailed design however the basic concept should remain unchanged.

1.1 Reference Documents

The following documents have been referenced in the design of the Stormwater Management for the site:

- Architectural Drawings prepared by Stanton Dahl Architects.
- Survey prepared by DS & P Surveyors.
- Central Coast Council DCP Chapter 3.1.
- Pre DA reference notes from Central Coast Council (Ref: PDA/200/2023).
- Central Coast Council Civil Works Specification - Design Guideline.
- Central Coast Council Civil Works Specification - Standard Drawings.
- Central Coast Council Tuggerah Lakes Floodplain Risk Management Study and Plan
- Civil Works Drawings prepared by Cardno Young.
- Hydraulic Services Drawings prepared by ACOR Consultants.
- Managing Urban Stormwater: Soils and Construction, Landcom, 2004 (Blue Book).

2. SITE DESCRIPTION

2.1 General Site Information

The site is Lot 71 DP 1258149, 91 Sparks Road, Woongarrah (refer Figure 1). The total site is rectangular in shape and has a site area of approximately 7.487 hectares. The site slopes down from the north west corner to the south east corner with a height of approximately 14.5 metres over a distance of approximately 400 metres.

Figure 1: Lot and Site Boundaries
Source: Central Coast Council 2024 Online Mapping

The site is occupied by an existing educational establishment which caters for Kindergarten to Year 12. The site contains 36 existing buildings, sporting fields, sporting courts and 2 car parks. The site adjoins existing residential development, medical centre and land that has been approved for subdivision and is currently under construction, located north west of the site. The site fronts Sparks Road, which is a classified road that is managed by Transport for NSW.

The site is traversed by a Council owned trunk drainage system, which runs from the north west to the south east of the site. The existing stormwater management system for the site consists of a network of pits and pipes which collects stormwater runoff and discharges into the trunk system at multiple locations. This trunk system discharges runoff into an existing dam, located towards the centre of the site, which forms part of the stormwater quality control measures. Downstream of the existing dam, the trunk system discharges runoff into an existing above ground OSD basin (dam), located in the south east corner of the site, which forms part of the stormwater quantity control measures. The existing OSD basin discharges into the existing Council owned trunk drainage system within Sparks Road.

The proposed development includes the following alterations and additions to the existing school in stages:

- Demolition of 7 permanent classroom buildings and ancillary structures.
- Construction of two-storey building comprising 8 new primary GLAs (Block V).
- Construction of two-storey building comprising 8 new primary GLAs (Block W).
- Construction of three-storey building comprising 12 new primary GLAs (Block T).
- Playground redevelopment and pathways.

The proposed development will manage stormwater via a network of pits and pipes which will collect stormwater runoff and discharge into the existing trunk drainage system at existing and new locations. The proposed development will drain into the existing stormwater quality and quantity control measures for the site via the existing trunk system.

2.2 Council DCP Guidelines

The CCC DCP Chapter 3.1 Floodplain Management/Water Cycle Management nominates stormwater management controls for the site.

The site is located adjacent to flood prone land for the Probable Maximum Flood (PMF) level (refer Figure 2). The south east corner of the site is subject to the PMF level with 0.5% of the total site area being included within this flood zone. The development area for the proposed development is located outside the PMF flood zone.

Figure 2: Flood prone land mapping indicating PMF level
Source: Central Coast Council 2024 Online Mapping

In accordance with Chapter 3.1.4 Development Provisions, the site is located within flood planning precinct 1 (FPL to PMF). The site is considered critical or sensitive facilities for the proposed land use as the site contains an educational establishment. The flood related development controls which apply for development of this nature include a report by a professional engineer who specialises in floodplain management and civil engineering to certify that the development meets the requirements (this document).

The following requirements must be met to comply with Chapter 3.1.4:

1. Minimum floor levels = PMF level.
2. Low flood hazard access and egress for pedestrians during a PMF flood event to a refuge location above the PMF.
3. Low flood hazard emergency vehicle road access during a PMF flood event
4. Consideration of the impacts of climate change.

To address Criteria 1, the PMF level within the site has a maximum height of 20.2 AHD, whilst the lowest level within the development area is 25.00 AHD, at a height of 4.8m above and a distance of 185m from the PMF flood zone within the site. All floor levels are located above the PMF level. For Criteria 2, pedestrian access and egress for the site is above the PMF level. For Criteria 3, emergency vehicle road access is maintained during the PMF storm event. During the PMF storm event, Mary MacKillop Drive is inundated with flood waters limiting access. During a PMF storm event, the site can be accessed from the south via a slip lane off Sparks Road with an existing gravel driveway accessing the sporting fields. The site can also be accessed from the north via Wildberry Road to Mataram Road, which allows emergency vehicles to use the existing northern car park driveway for access. For Criteria 4, the impacts of climate change have been considered by reducing the total amount of impervious area for the site. Therefore, all requirements included in Chapter 3.1.4 Development Provisions have been satisfied.

The development site is included within CCC's Tuggerah Lakes Floodplain Risk Management Study and Plan. Refer to Appendix 11 for relevant extracts from the floodplain risk management study and plan. In reference to the Figure 2 of Appendix 11, the site is located outside the floodplain management areas as the site is located over 3km away from the foreshore of Tuggerah Lake. This floodplain risk management study and report does not include any specific development requirements for the site.

In accordance with Chapter 3.1.10 Water Cycle Management Plan, for developments of this nature the DCP nominates that a Water Cycle Management Plan is required (this document).

Council have provided commentary on the stormwater design following a pre DA consultation meeting. Council will require a catchment analysis of the site to determine what impact the development will have on the drainage system for both minor and major storm events. Council will also require an assessment to determine the impact the development will have on overland flows during these storm events and if any additional works are required to the swale system. Refer to Appendix 3 for the pre DA meeting notes.

3. WATER CYCLE MANAGEMENT OBJECTIVES

3.1 General Strategy

The onsite stormwater management system for the site has been designed to replicate the processes which would occur naturally on the site. The proposed development will incorporate a number of devices and measures aimed at providing adequate and responsible management of stormwater runoff for minor and major storm events.

In accordance with the requirements outlined in Chapter 3.1 - Floodplain Management of the Central Coast Council DCP 2013, the conceptual stormwater management strategy has considered the following items which will be discussed in the following sections of this report:

- Site analysis
- Water conservation
- Stormwater retention
- Stormwater quality
- Onsite detention
- Local overland drainage
- Flooding
- Building adjacent to drainage easement

3.2 Site Analysis

The site has been analysed to determine the existing and proposed site conditions for the development. This information will be used for calculations later on in the report to determine stormwater management requirements to comply with the objectives in Chapter 3.1 - Floodplain Management of the Central Coast Council DCP 2013.

Existing Development Conditions

Area Calculations for Whole Site:

Site Area (S)	= 74870 m^2
Roof Area (R)	= 14742 m^2
Paved Area (P)	= 34294 m^2
Pervious Area (PA)	= 25834 m^2
Total Impervious Area (I)	= 49036 m^2 or 65%

Area Calculations for Development Site:

Site Area (S)	= 9883 m^2
Roof Area (R)	= 3190 m^2
Paved Area (P)	= 3561 m^2
Pervious Area (PA)	= 3132 m^2
Total Impervious Area (I)	= 6751 m^2 or 68%

Existing Stormwater Retention (data from survey):

Northern Dam Volume (approx.)	= 25 m * 30 m * 0.48 m = 360 m^3 or 360,000 L
Southern Dam Volume (approx.)	= 22 m * 40 m * 0.8 m = 704 m^3 or 704,000 L
Total Existing Retention Volume	= 1,064,000 L

Existing Stormwater Quality Treatment:

Northern Dam Volume (Bioretention Area)	= 360 m^3 or 360,000 L
Southern Dam (Detention Pond)	= 704 m^3 or 704,000 L
Grass Swale	
Wetlands	

Existing Stormwater Detention (data from civil works drawings):

Southern Dam OSD Volume	= 38 m * 50 m * 1.2 m
	= 1,900 m^3 or 1,900,000 L
Inlet Control	= 900 DIA RCP @ 4% Fall
Outlet Control	= 450 DIA RCP @ 1% Fall
Overflow Weir	= 15 m * 0.3 m (Rectangular)

Proposed Development Conditions

Area Calculations for Whole Site:

Site Area (S)	= 74870 m^2
Roof Area (R)	= 13170 m^2
Paved Area (P)	= 31933 m^2
Pervious Area (PA)	= 29767 m^2
Total Impervious Area (I)	= 45103 m^2 or 60%

Therefore, the proposed development will reduce total impervious area by 5% for the whole site.

Area Calculations for Development Site:

Site Area (S)	= 9883 m^2
Roof Area (R)	= 2930 m^2
Paved Area (P)	= 1172 m^2
Pervious Area (PA)	= 5781 m^2
Total Impervious Area (I)	= 4102 m^2 or 42%

Therefore, the proposed development will reduce total impervious area by 26% for the developed site.

Refer to Appendix 2 for the stormwater concept drawings, which includes catchment plans of the existing and proposed development sites.

3.3 Water Conservation

The water conservation targets in Chapter 3.1.11.1 of DCP 2022 include reducing potable water demand by a minimum of 40% using the provisions nominated within the BASIX report.

For detailed assessment of the proposed water conservation initiatives proposed for the development, refer to the project specific BASIX report.

3.4 Stormwater Retention

The intent of the stormwater retention targets in Chapter 3.1.11.2 of DCP 2022 is to mimic the natural catchment hydrology from all development sites, in terms of:

- Quantity - the annual volume of stormwater reaching natural creeks and waterways.
- Rate - the peak flow rates leaving the site.
- Response - the time it takes for rain to runoff the site.

To comply with the water retention targets in Chapter 3.1.11.2 of DCP 2022, the stormwater retention volume for the proposed development can be calculated by using the below formula (refer to Figure 3).

$V = 0.01A(0.02F)^2$

V = Stormwater Retention Volume (m^3)

A = Total Site Area (m^2)

F = Fraction Impervious (%)

Figure 3: Stormwater Retention Volume Formula
Source: Central Coast Council DCP 2022

Retention Calculations for Whole Site

Total Site Area (A)	= 74870 m^2
Fraction Impervious (F)	= 60% (Proposed development)
Retention Volume Required (V)	= 1080 m^3 or 1080,000 L

The existing northern dam, southern dam, grass swale and wetlands act as above ground retention storage, infiltration devices and water quality treatment devices for the whole site.

Northern Dam Volume	= 360,000 L
Southern Dam Volume	= 704,000 L
Wetlands Volume	Not included

Area of Swale	= 2300 m2
Average Ponding Depth of Swale	= 300 mm
Volume of Swale	= 690 m^3 or 690,000 L
Volume of Wetlands	Not included

Total Existing Retention Volume	= 1,754,000 L
Additional Retention Volume Required	= 1080,000 L - 1,754,000 L = - 674,000 L

According to the above calculations, no additional retention volume is required for the proposed development when considering the whole site. These calculations also do not include the existing wetlands, rain water tanks located outside the proposed development or the new play area, which would further reduce retention requirements.

Retention Calculations for Developed Site

Total site area (A)	= 9883 m^2
Fraction impervious (F)	= 42% (Proposed development)
Retention volume required (V)	= 70 m^3 or 70,000 L

The existing northern dam, southern dam, part of the grass swale and the wetlands are located outside the area of the developed site. These existing retention devices will not be included in the calculations for the developed site.

Area of Swale	= 1100 m2
Average Ponding Depth of Swale	= 300 mm
Volume of Swale	= 330 m^3 or 330,000 L
Total Existing Retention Volume	= 330,000 L
Additional Retention Volume Required	= 70,000 L - 330,000 L = - 260,000 L

According to the above calculations, no additional retention volume is required for the proposed development when considering the developed site. The calculations also do not include the proposed rain water tanks located within the proposed development or the phase 3 new play area, which would further reduce retention requirements. Rainwater tank requirements will be determined for the BASIX certificate if applicable.

3.5 Stormwater Quality

The intent of the stormwater quality targets in Chapter 3.1.11.3 of DCP 2022 is to improve the quality of stormwater runoff to minimise impact upon the health of creeks, waterways and urban amenity.

To comply with the stormwater quality targets in Chapter 3.1.11.3 of DCP 2022, the minimum reductions in total pollutant load, compared to untreated runoff from the developed impervious areas of the site must be achieved.

In accordance with Chapter 3.1.11.3 of DCP 2022, to comply with the water quality targets the following must be demonstrated:

- Site Discharge Index (SDI): To reduce the directly connected impervious area to 10% or less.
- Details of appropriately placed and sized landscaping measures to treat the runoff from impervious areas.

SDI Calculations for Existing Development Conditions

Area Calculations for Whole Site:

Site Area (S)	= 74870 m^2
Roof Area (R)	= 14742 m^2
Paved Area (P)	= 34294 m^2
Pervious Area (PA)	= 25834 m^2
Total Impervious Area (I)	= 49036 m^2 or 65%
Managed Impervious Area (M)	= 44000 m^2
DC = I - M	= 5036 m^2
SDI = DC/S	= 6.7%

Area Calculations for Development Site:

Site Area (S)	= 9883 m^2
Roof Area (R)	= 3190 m^2
Paved Area (P)	= 3561 m^2
Pervious Area (PA)	= 3132 m^2
Total Impervious Area (I)	= 6751 m^2 or 68%
Managed Impervious Area (M)	= 2491 m^2
DC = I - M	= 4260 m^2
SDI = DC/S	= 43.1%

SDI Calculations for Proposed Development Conditions

Area Calculations for Whole Site:

Site Area (S)	= 74870 m^2
Roof Area (R)	= 13170 m^2
Paved Area (P)	= 31933 m^2
Pervious Area (PA)	= 29767 m^2
Total Impervious Area (I)	= 45103 m^2 or 60%
Managed Impervious Area (M)	= 41000 m^2
DC = I - M	= 4103 m^2
SDI = DC/S	= 5.5%

Area Calculations for Development Site:

Site Area (S)	= 9883 m^2
Roof Area (R)	= 2930 m^2
Paved Area (P)	= 1172 m^2
Pervious Area (PA)	= 5781 m^2
Total Impervious Area (I)	= 4102 m^2 or 42%
Managed Impervious Area (M)	= 1172 m^2
DC = I - M	= 2930 m^2
SDI = DC/S	= 29.6%

The proposed works are located upstream of majority of the existing stormwater source control systems. Therefore, DC values will not change significantly when considering the whole site. SDI values for the proposed development when considering the whole site are <10%.

As majority of the existing stormwater source control systems for the site are located downstream and outside the area of the proposed development. If these source controls are not considered in the calculation, then all roof stormwater runoff is not considered as managed impervious area. This results in significantly higher SDI values which are >10%.

The performance of the proposed stormwater management strategy has been assessed against the stormwater quality targets using the conceptual design software MUSIC. Refer to Section 4 Stormwater Quality Control for more information.

3.6 Onsite Detention

The intent of the stormwater detention targets in Chapter 3.1.11.4 of DCP 2022 is to protect downstream properties and infrastructure from increase stormwater flows from new development. The objective of these targets are to ensure future development does not increase the impact of rainfall events and that stormwater management design considers the existing capacity of the public drainage system.

In accordance with Chapter 3.1.11.4 of DCP 2022, to comply with the stormwater detention targets the following must be demonstrated:

- Limit post development flow from the proposed development site to less than or equal to predevelopment flows for all storm events up to and including the 1% AEP storm event.
- Overland flows must not intensify, concentrate or inappropriately flow into neighbouring properties.
- OSD is to be integrated into Water Sensitive Urban Design (WSUD) measures, where possible.

In reference to Chapter 3.1.11.4.3 of DCP 2022, OSD is not required where one of the following apply:

- The development is located at a point within the catchment considered by Council not to warrant OSD.
- An OSD system has been previously constructed to accommodate the proposed development.
- The applicant undertakes a detailed total catchment analysis proving that the proposed development has no effect on properties and infrastructure downstream or upstream of the catchment.

The site is located within the PMF level zoning in Council's flood prone land mapping. As the site is flood prone, it may be considered that the development is located at a point within the catchment considered by Council not to warrant OSD.

Existing Stormwater Detention:

Southern Dam OSD Volume	= 1,900,000 L
Inlet Control	= 900 DIA RCP @ 4% Fall
Outlet Control	= 450 DIA RCP @ 1% Fall
Overflow Weir	= 15 m * 0.3 m (Rectangular)

The site has an existing above ground OSD basin with a volume of 1,900,000 L, located in the south eastern corner of the site. This stormwater detention measure was required as part of the previous development of the site. Although the OSD basin is located outside the area of proposed development, all new stormwater infrastructure as part of this development will discharge via the existing OSD basin. All stormwater collected within the proposed development site will be discharged into the existing council owned trunk drainage system, which discharges into the existing OSD basin.

The site analysis determined that the proposed development will reduce total impervious area by 5% and 26%, when considering the whole site and the developed site respectively. Therefore, an OSD system has been previously constructed to accommodate the proposed development.

A detailed catchment analysis has been undertaken to assess the impact the proposed development has on the existing drainage system during peak storm events. Refer to Section 6 Stormwater Quantity Control for more information.

3.7 Local Overland Drainage

The intent of the local overland drainage targets in Chapter 3.1.11.5 of DCP 2022 is to manage local overland drainage problems. The objective of these targets is to effectively manage local overland drainage problems which occur in urban areas and are not considered flooding. Flooding, which has specific targets outlined in Chapter 3.1.11.6 of DCP 2022, is defined as overland flows during the 1% AEP storm event which exceed a flow rate of $0.5m^3/s$ or exceed a velocity of 2m/s or are greater than 0.3m deep. Flooding targets are discussed later in this report.

In accordance with Chapter 3.1.11.5 of DCP 2022, to comply with the local overland drainage targets the following must be demonstrated:

- All floor levels complying with the minimum requirements of the Building Code of Australia.
- Adequately sized clear overland flow paths, including special attention where the driveway connects to the public road.
- Details of cut and/or fill.
- Show location of all stormwater discharge points including overland flow paths.

3.8 Flooding

The intent of the flooding targets in Chapter 3.1.11.6 of DCP 2022 is to reduce the impact of flooding on flood prone property. The objective of these targets is to reduce loss from floods, to enable safe access during flooding, maintain existing flood regime and avoid significant adverse effects on the environment.

In accordance with Chapter 3.1.11.6 of DCP 2022, to comply with the flooding targets the requirements linked to the flood control matrix in Table 1 must be met. The development type for this site is 'Group homes, seniors housing, emergency facilities' as the development is an educational establishment.

Development	Development Types					
Control Targets	Pools & Spas	Residential Buildings (Rural)	Residential Buildings (Urban)	Group homes, seniors housing, emergency facilities	Commercial, Industrial	Subdivisions (Urban & Rural)
Floor levels	-	B	B	A	B	-
Flood Impacts	C	C	C	C	C	C
Subdivisions	-	-	-	-	-	D
Access Parking	-	E	-	F	E	E
Fencing	-	G	G	G	G	G

Table 1: Flood Control Target Matrix
Source: Central Coast Council 2024

In accordance with Chapter 3.1.11.6 of DCP 2022, the following flood control targets apply for this development:

- Floor levels are to be at or above the PMF flood level - Satisfied.
- Development must not raise predevelopment flood level by more than 10mm - Satisfied.
- Free standing rainwater tanks are to be elevated above 1% AEP flood level - N/A.
- Overland flow paths during 1% AEP storm event must not exceed velocity of 2 m/s. Drop structures may be used to reduce velocity - Satisfied.
- A minimum 50% blockage factor to be applied to all pipe and pit capacities for hydraulic calculations - Satisfied.
- Overland flow paths must not be obstructed by parked cars, retaining walls and landscaping - Satisfied.
- Where significant overland flow crossed a property boundary (flow rate >0.5m^3/s or depth >0.3m), a 50% blockage factor must be applied to the boundary inlet structure - Satisfied.
- Filling is not permitted within the flood planning area unless approved by council - Satisfied.
- All driveways and parking areas to be allow access during PMF event with 50% blockage in pits and pipes considered - Satisfied.

A detailed catchment analysis has been undertaken to assess the impact the proposed development will have on flooding during peak storm events. Refer to Section 6 Stormwater Quantity Control for more information.

The flood control targets included in Chapter 3.1.11.6 of DCP 2022 have been satisfied.

3.9 Building Adjacent to Drainage Easement

The objective of the building adjacent to drainage easement in Chapter 3.1.14 of DCP 2022, is to ensure the integrity of stormwater drainage systems, natural watercourses and any structures built in the near vicinity is maintained.

In accordance with Chapter 3.1.14 of DCP 2022, to comply with these requirements the following must be demonstrated:

- All piers along the drainage easement boundary must be located below the zone of influence for the stormwater pipe or culvert. Refer to Figure 4 for more information.
- The height of the roof structure over the drainage easement must allow for future maintenance access.
- The surface treatment of the area above the easement must allow for future maintenance access.

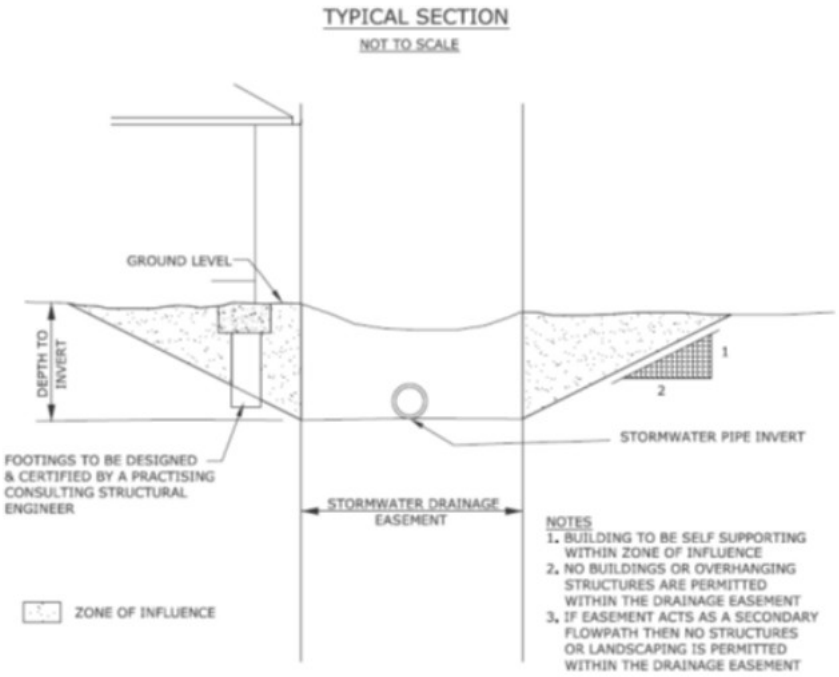

Figure 4: Zone of Influence for Drainage Easement
Source: Central Coast Council 2024

4. CONCEPT STORMWATER DESIGN

4.1 General

Concept stormwater management plans have been prepared for the proposed development and are included in the Appendix 2 of this report. The methods of stormwater capture and disposal are outlined below and have been designed in accordance with AS3500.3 and CCC Civil Works Specification - Design Guideline.

The proposed drainage system is designed to collect and convey water from the new development works through piped drainage to the council owned trunk drainage system. The capacity of the trunk drainage system has been checked during peak storm events to ensure the system has sufficient capacity for the connections from the new development works.

Overland flow from upstream catchments located north of the site is directed to the existing sag pit in Mataram Road due to the existing Council stormwater network and existing surface contours. This pit then discharges into an existing council owned trunk drainage system that runs through the site. If this pit blocks then overland flow is directed into an existing swale and is conveyed by the swale until it reaches the downstream infrastructure. The proposed development includes 2 new pedestrian bridges spanning over the existing swale. The capacity of the swale has been checked during peak storm events to ensure the new bridges do not impact overland flow.

The section of the 2 new pedestrian bridges spanning over the existing Council easement allows for removal for future maintenance requirements. The supporting structures are located outside the zone of influence for the existing Council pipe.

Runoff from the roofs of Block T, Block V and Block W is captured via a conventional roof drainage system. Once the roof runoff is captured, it is then conveyed via downpipes to the new stormwater system, where it is later discharged into the existing trunk drainage.

Overland flow from the ground surfaces of Block T, Block V, Block W and the New Play Area is captured and conveyed via a network of stormwater pits and pipes. The layout of the network of pits and pipes is to ensure the pits have sufficient capacity to collect overland flow and to ensure no ponding points are created. Once this runoff is collected it is discharged into the existing trunk drainage via 2 existing connections and 1 new connection. Overland flow that is not captured by the network of pits and pipes is conveyed to the existing swale which directs overland flow into the existing trunk drainage.

The existing trunk drainage drains into an existing dam, OSD basin and wetlands, which discharges into the existing stormwater network in Sparks Road. The existing dam, OSD basin and wetlands are located outside the development area for the site. The dam, OSD basin and wetlands form part of the stormwater quality and quantity control for the site and will be maintained. Prior to discharge into Sparks Road drainage pipe work, the collected water is filtered to achieve water pollution reduction targets and is retained for a throttled release to achieve water quantity control targets. The catchment area for these systems will not be increased and the only change is the decrease in impervious area draining to the dam, OSD basin and wetlands.

5. STORMWATER QUALITY CONTROL

5.1 General

To comply with the stormwater quality targets in Chapter 3.1.11.3 of DCP 2022, the minimum reductions in total pollutant load, compared to untreated runoff from the developed impervious areas of the site must be achieved. These reductions are summarised in the table below (refer Figure 5).

Pollutant	Performance Requirements (Targets)
Total Suspended Solids (TSS)	80% reduction in the post-development mean annual load
Total Nitrogen (TN)	45% reduction in the post-development mean annual load
Total Phosphorous (TP)	45% reduction in the post-development mean annual load
Gross Pollutants	90% reduction in the post-development mean annual load (for pollutants greater than 5mm in diameter
Hydrology	The post-development peak discharge must not exceed the pre-development peak discharge for flows for the 5, 20 and 100% AEP event

Figure 5: Minimum Pollutant Removal Performance Targets
Source: CCC Civil Works Specification 2020

The proposed stormwater system as discussed in Section 4 Concept Stormwater Design, will maintain the existing stormwater quality devices contained within the site. These devices include an existing swale, dam, OSD basin and wetlands. These devices are located downstream of the proposed development works. These water sensitive urban design elements remove nutrients and sediments from the stormwater system prior to runoff leaving the site

For pollution protection during construction, a silt and sedimentation plan is provided to isolate the excavated works that are prone to silt laden runoff.

5.2 Modelling

The treatment train for the proposed development was modelled using MUSIC software version 6.3 (Model for Urban Stormwater Conceptualisation) provided by ewater.

The MUSIC modelling parameters were implemented using the MUSIC-LINK feature for a lowland site (slopes <5%). The treatment node parameters outlined in CCC's Design Guideline were adopted and tailored to the specific site conditions.

Refer to Appendix 6 for the MUSIC-LINK report.

5.2.1 Catchment Data

Catchment data for the proposed development site was determined based on information provided in the architectural drawings and detailed survey. Refer to Appendix 4 for the site catchment boundaries.

Table 2 shows a summary of the post development catchments and sub catchment parameters.

Post Development Catchments and Sub Catchments					
Catchment	Sub Catchment	Total Area (ha)	Impervious (%)	Impervious Area (ha)	Pervious Area (ha)
Site Catchment 1 (SC1)	Mixed 1	0.1478	24%	0.0350	0.1128
Site Catchment 2 (SC2)	Roof 1	0.1430	100%	0.1430	0.0000
	Mixed 2	0.2064	16%	0.0325	0.1739
Site Catchment 3 (SC3)	Roof 1	0.1500	100%	0.1500	0.0000
	Mixed 3	0.3411	15%	0.0497	0.2913

Table 2: Post Development Catchment and Sub Catchment Parameters

Table 3 shows a summary of the source node parameters which were adopted for the MUSIC model for the proposed development site.

Source Node	Total Area (ha)	Impervious (%)	Pervious (%)
Roof 1	0.2930	100%	0%
Mixed 1	0.1478	24%	76%
Mixed 2	0.2064	16%	84%
Mixed 3	0.3411	15%	85%

Table 3: Source Node Parameters

5.3 Results

In accordance with Council requirements, MUSIC modelling has been undertaken to demonstrate compliance with the stormwater quality targets in Chapter 3.1.11.3 of DCP 2022. Table 4 shows the treatment train effectiveness for the proposed development site.

Treatment Type	Sources	Residual Load	Modelled Reduction (%)	Target Reduction (%)
Flow (ML/yr)	6.9	4.25	38.4	-
Total Suspended Solids (kg/yr)	488	27.2	94.4	80
Total Phosphorus (kg/yr)	1.35	0.264	80.4	45
Total Nitrogen (kg/yr)	13.9	4.47	67.9	45
Gross Pollutants (kg/yr)	148	0	100	90

Table 4: Treatment Train Effectiveness for Post Development Node

As can be seen from the table the pollutant reduction targets have been met. These results confirm that the existing treatment measures have sufficient capacity to treat the proposed development site and that no additional treatment devices are required.

A total catchment analysis was also undertaken for the whole site including the upstream catchments to determine the impact the proposed development has for water quality treatment. The variation in modelled pollutant reductions when considering the existing and proposed conditions was negligible (<1%) as the proposed site area is only a fraction of the total catchment area.

6. STORMWATER QUANTITY CONTROL

6.1 General

To comply with the requirements in Chapter 3.1.11.4 of DCP 2022, the proposed development is required to limit post-development critical peak flows to less than or equal to pre-development flows for all storm events up to and including the 1% AEP.

6.2 Modelling

The stormwater quantity control requirements to reduce post-development peak flows from the site to be less than or equal to pre-development flows for a range of storm events was analysed using computer modelling software. The software used for this analysis was DRAINS Version 2023, which uses the runoff routing method.

6.2.1 Catchment Data

Catchment data for the existing site was determined based on information provided in the detailed survey and aerial imagery. The catchment data for the proposed development was determined based on information provided in the architectural drawings.

Refer to Appendix 4 for the site catchment boundaries.

Table 5 shows the upstream catchment parameters for the development site with considerations for the current and future development of those catchments.

Pre Development Catchments							
Catchment	**Total Area (ha)**	**Impervious (%)**	**Impervious Area (ha)**	**Time of Concentration (mins)**	**Pervious (%)**	**Pervious Area (ha)**	**Time of Concentration (mins)**
Upstream Catchment 1 (UC1)	2.3	80%	1.84	3	20%	0.46	30
Upstream Catchment 2 (UC2)	2.2	80%	1.76	3	20%	0.44	30
Total	4.5	80%	3.6	N/A	20%	0.9	N/A

Table 5: Upstream Catchments Parameters

Table 6 shows the pre development catchment parameters for the development site.

Pre Development Catchments							
Catchment	**Total Area (ha)**	**Impervious (%)**	**Impervious Area (ha)**	**Time of Concentration (mins)**	**Pervious (%)**	**Pervious Area (ha)**	**Time of Concentration (mins)**
Site Catchment 1 (SC1)	0.1478	62%	0.0913	2	38%	0.0565	15
Site Catchment 2 (SC2)	0.3494	75%	0.2608	2	25%	0.0886	15.5
Site Catchment 3 (SC3)	0.4911	66%	0.3230	3	34%	0.1681	30
Total	0.9883	68%	0.6751	N/A	32%	0.3132	N/A

Table 6: Pre Development Catchments Parameters

Table 7 shows the post development catchment parameters for the development site.

Post Development Catchments							
Catchment	**Total Area (ha)**	**Impervious (%)**	**Impervious Area (ha)**	**Time of Concentration (mins)**	**Pervious (%)**	**Pervious Area (ha)**	**Time of Concentration (mins)**
Site Catchment 1 (SC1)	0.1478	24%	0.0350	2	76%	0.1128	15
Site Catchment 2 (SC2)	0.3494	51%	0.1755	2	49%	0.1739	15.5
Site Catchment 3 (SC3)	0.4911	41%	0.1997	3	59%	0.2913	30
Total	0.9883	42%	0.4102	N/A	58%	0.5781	N/A

Table 7: Post Development Catchments Parameters

6.2.2 Model Parameters and Rainfall Data

The hydrological model used for the analysis was the Horton/ILSAX rainfall-runoff model. In accordance with the CCC Civil Works Design Guideline and current AR&R guidelines, the following parameters were utilised for the DRAINS model:

Impervious Depression Storage = 1 mm
Supplementary Depression Storage = 1 mm
Pervious Depression Storage = 5 mm
Soil Type = 3

Rainfall data for the model was sourced via the AR&R Data Hub from the Bureau of Meteorology. The time of concentration for each catchment was determined using the kinematic wave equation.

Refer to Appendix 7 and Appendix 8 for screenshots of the DRAINS models for the pre development and post development site.

6.3 Results

To comply with the requirements in Chapter 3.1.11.4 of DCP 2022 and CCC Civil works Design Guidelines, modelling was performed to demonstrate compliance of the post development peak flows from the site being less than or equal to the pre development flows.

Table 8 shows the results of the DRAINS model, when considering catchment areas.

Site Catchment 1 (SC1)			
AEP Event (%)	**Pre Development Flow (m^3/s)**	**Post Development Flow (m^3/s)**	**Difference in Flow (m^3/s)**
20%	0.063	0.044	-0.019
1%	0.093	0.072	-0.021
Site Catchment 2 (SC2)			
AEP Event (%)	**Pre Development Flow (m^3/s)**	**Post Development Flow (m^3/s)**	**Difference in Flow (m^3/s)**
20%	0.170	0.135	-0.035
1%	0.249	0.192	-0.057
Site Catchment 3 (SC3)			
AEP Event (%)	**Pre Development Flow (m^3/s)**	**Post Development Flow (m^3/s)**	**Difference in Flow (m^3/s)**
20%	0.364	0.245	-0.119
1%	0.532	0.365	-0.167
Total Site Catchment			
AEP Event (%)	**Pre Development Flow (m^3/s)**	**Post Development Flow (m^3/s)**	**Difference in Flow (m^3/s)**
20%	0.597	0.424	-0.173
1%	0.874	0.629	-0.245

Table 8: DRAINS Results for Catchment Areas

As per the results shown in Table 8, the post development peak flows for the 1% AEP storm event have been reduced by 245 L/s, in comparison to the pre development flows, when considering the catchment areas. The post development peak flows for the 20% AEP storm event have been reduced by 173 L/s, in comparison to pre development flows. Therefore, the requirements outlined in Chapter 3.1.11.4 of DCP 2022 have been met.

Refer to Appendix 9 and Appendix 10 for the DRAINS model data for the pre development and post development site.

Table 9 shows the results of the DRAINS model, when considering the upstream catchments and total site discharge.

Total Site Discharge with Upstream Catchments			
AEP Event (%)	Pre Development Flow (m^3/s)	Post Development Flow (m^3/s)	Difference in Flow (m^3/s)
20%	0.357	0.351	-0.006
1%	1.423	1.390	-0.033

Table 9: DRAINS Results for Total Site Discharge with Upstream Catchments

As per the results shown in Table 9, the post development peak flows for the 1% AEP storm event have been reduced by 33 L/s in comparison to the pre development flows, when considering the upstream catchment and total site discharge. The post development peak flows for the 5% AEP storm event have been reduced by 6 L/s in comparison to the pre development flows. Therefore, the requirements outlined in Chapter 3.1.11.4 of DCP 2022 have been met.

7. OVERLAND FLOW CONTROL

7.1 General

To comply with the requirements in Chapter 3.1.11.5 and Chapter 3.1.11.6 of DCP 2022, the proposed development is required to comply with overland drainage targets and flood control targets. To comply with these requirements the proposed development must ensure overland flow paths during the 1% AEP storm event must not exceed a velocity of 2 m/s, a depth of 0.3m or a flow rate of $0.5m^3/s$.

The proposed development includes 2 new pedestrian bridges spanning over the existing swale. To comply with the requirements in Section 10.10.2 Major System Requirements for CCC's Civil Works Specification - Design Guideline, bridges require a minimum freeboard of 500mm between the 1% AEP flood level and the underside of any bridge to allow for passage of debris without blockage.

A detailed catchment analysis has been undertaken for peak storm events to determine if the proposed development works impact overland flow through the existing swale.

7.2 Modelling

The overland flow control requirements to ensure overland flow paths remain safe during a range of storm events was analysed using computer modelling software. The software used for this analysis was DRAINS Version 2023, which uses the runoff routing method.

Refer to Section 6.2 Modelling for the catchment data, modelling parameters and rainfall data utilised for this model.

To comply with Council's requirements, the overland flow paths were assessed using the following parameters:

Maximum Velocity = 2 m/s
Maximum Depth = 0.3m

Maximum Velocity x Depth (VxD) = 0.6 m^2/s

Therefore, a safe overland flow path has a maximum VxD of 0.6 m^2/s.

The model was also used to assess the impact the 2 new pedestrian bridges would have on overland flow for the existing swale. To comply with Council's requirements, bridges require a minimum freeboard of 500mm between the 1% AEP flood level and the underside of any bridge to allow for passage of debris without blockage.

Refer to Appendix 7 and Appendix 8 for screenshots of the DRAINS models for the pre development and post development site, which confirms compliance with Council's requirements.

7.3 Results

To comply with the requirements in Chapter 3.1.11.5, Chapter 3.1.11.6 of DCP 2022 and CCC Civil works Design Guidelines, modelling was performed to demonstrate compliance of the overland flow paths within the site. The results from the DRAINS model shows that all overland flow paths within the site are safe and comply with Council's requirements. Therefore, no additional works are required to the existing swale system through the site.

To comply with the requirements in Section 10.10.2 of Council's Civil Works Specification, the 2 new pedestrian bridges must have a minimum of 500mm freeboard from the underside of the bridge to the 1% AEP flood level at that location. Table 10 shows the results from the DRAINS model for the minimum bridge levels to comply with Council's requirements.

Pedestrian Bridge No.	RL of 1% AEP Flood Level (m)	RL of 1% AEP Flood Level + Freeboard (m)	Proposed RL of Bridge Underside (m)	Difference in Height (m)
Bridge 1	28.363	28.863	29.050	0.187
Bridge 2	26.884	27.384	27.930	0.546

Table 10: DRAINS Results for Minimum Bridge Levels

As per the results shown in Table 10, the 2 new pedestrian bridges are above the 1% AEP flood level with a minimum 500mm freeboard. Therefore, the requirements outlined in Section 10.10.2 of Council's Civil Works Specification have been met.

Refer to Appendix 9 and Appendix 10 for the DRAINS model data for the pre development and post development site.

8. SOIL AND WATER MANAGEMENT

Soil and water management measures have been designed to comply with the requirements of the Blue Book. Soil and water management requirements vary depending on the construction stage and have been designed accordingly.

As per the site specific geotechnical investigation, the site consists of primarily sandy clay and clay soils, classifying the site as Soil Type F. The site has a hydraulic conductivity of approximately 1mm/hr, classifying the site as Hydraulic Group C.

The Revised Universal Soil Loss Equation (RUSLE) has been used to predict the long term, average, annual soil loss for the site. Table 11 shows the calculations for each construction stage.

RUSLE	**Construction Stage**		
Site Parameters	**Stage 1**	**Stage 2**	**Stage 3**
R (Rainfall Erosivity Factor)	3425	3425	3425
K (Soil Erodibility Factor)	0.035	0.035	0.035
LS (Slope Length)	1.03 (100m @ 4% Grade)	0.91 (50m @ 5% Grade)	0.57 (60m @ 3% Grade)
P (Erosion Control)	1.3	1.3	1.3
C (Ground Cover)	1.0	1.0	1.0
Soil Loss (tonnes/ha/yr)	161	142	89
Erosion Hazard (Soil Loss Class)	Low (Class 2)	Very Low (Class 1)	Very Low (Class 1)
Disturbed Site Area	0.3400 ha	0.2200 ha	0.2500 ha
Annual Soil Loss (tonnes/yr)	54.74	31.24	22.25

Table 11: RUSLE Calculations for Stages

As per the results shown in Table 11, all construction stages have annual soil losses of less than 150m^3. Therefore, sediment basins are not required for any of the construction stages according to the Blue Book.

Whilst no sediment basins are required for any of the construction stages, Stage 1 is located directly upstream of existing classrooms that are remaining operational during construction. To alleviate future maintenance concerns regarding sediment laden stormwater, a sediment basin will be implemented during Stage 1. Sediment basins will not be implemented during Stage 2 or Stage 3 as vegetation buffers and an existing sediment basin will manage sediment laden stormwater.

The minimum volume for the sediment basin is determined from calculating the settling zone and the sediment storage zone for Type F soils. Table 12 shows the calculations for the sediment basin volume for Stage 1.

Site Parameter	Value
Cv (Volumetric Runoff Coefficient)	0.42
Disturbed Site Area	0.3400 ha
R (5 Day 75th Percentile Rainfall Depth)	26.8mm
Settling Zone	38.5m^3
50% Settling Zone	19.25m^3
2 Month Soil Loss	9.3m^3
Sediment Storage Zone	19.25m^3
Min Sediment Basin Volume	57.75m^3

Table 12: Sediment Basin Volume for Stage 1

As per the results shown in Table 12, the minimum sediment basin volume for Stage 1 is 57.75m^3. Therefore, to provide a greater level of sediment and erosion control a sediment basin volume of 58m^3 will be implemented. Details of the sediment basin have been developed in accordance with Council's Civil Works Specification and the Blue Book.

Refer to Appendix 12 for the soil and water management plan.

9. CONCLUSION

To comply with CCC DCP Chapter 3.1 and the Civil Works Design Guideline, the stormwater management system for the proposed development has been assessed against the relevant controls.

The stormwater system, which consists of a network of pits and pipes, will maintain existing stormwater quality and quantity control devices located within the site. The stormwater management system will drain through an existing swale, dam, OSD basin and wetlands prior to runoff leaving the site. The proposed development will decrease the amount of impervious area for the site from 68% to 42%, when considering the development site, and 65% to 60%, when considering the whole site. This will further reduce flows leaving the site due to infiltration.

DRAINS modelling has been undertaken to assess the proposed stormwater system against Council's overland flooding targets as specified in Chapter 3.1.11.5 and Chapter 3.1.11.6 of DCP 2022. The existing overland flow swales have been checked and comply with Council's safety requirements. The 2 new pedestrian bridges were assessed and have sufficient capacity to cater for the 1% AEP storm event with adequate freeboard to allow for the passage of debris without blockage.

The proposed new pedestrian bridges spanning over the existing Council easement will allow for removal for future maintenance requirements. The supporting structures are located outside the zone of influence for the existing Council pipe.

MUSIC modelling has been undertaken to assess the stormwater system against Council's stormwater quality targets. The treatment train for the proposed development was modelled using the existing stormwater treatment measures. The results from the model complied with Council's pollution reduction targets in Chapter 3.1.11.3 of DCP 2022.

DRAINS modelling has been undertaken for a total catchment analysis to assess the stormwater system against Council's stormwater quantity targets. The results from the model show that peak flows for the post development site for the 1% AEP storm event are reduced by 33 L/s in comparison to the pre development peak flows. These results meet the requirements in Chapter 3.1.11.4 of DCP 2022.

Soil and water management measures have been designed to meet Councils requirements in regards to pollution protection during construction. A soil and water management plan has been prepared to comply with the requirements of the Blue Book.

The stormwater management system for the proposed development meets Council's requirements and guidelines.

APPENDIX

1. SURVEY
2. STORMWATER CONCEPT DRAWINGS
3. COUNCIL PRE DA NOTES
4. CATCHMENT BOUNDARIES
5. MUSIC MODEL
6. MUSIC-LINK REPORT
7. DRAINS MODEL - PRE DEVELOPMENT
8. DRAINS MODEL - POST DEVELOPMENT
9. DRAINS DATA - PRE DEVELOPMENT 1% AEP
10. DRAINS DATA - POST DEVELOPMENT 1% AEP
11. EXTRACTS FROM CCC TUGGERAH LAKES FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN
12. SOIL AND WATER MANAGEMENT PLAN

APPENDIX 1

SURVEY

NOTE:
PLEASE REFER TO SHEETS 3 OR 5 FOR THE SURVEY PLAN LEGEND, TREE INFORMATION TABLE IS ON SHEET 3.

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99° 10' 15"
231.355

LOT 1
D. P. 1 2 7 5 5 0

9° 06' 20"
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LOT 71
D. P. 1 2 5 8 1 4 9

AREA
7.487 ha

EASEMENT NOTES

[A]	EASEMENT TO DRAIN WATER 3.5 WIDE
[B]	EASEMENT TO DRAIN WATER VARIABLE WIDTH
[C]	RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES 4.5 WIDE (AJ574973 & DP1057484)
[D]	EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
[E]	EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE (AJ574973 & DP1057484)
[P]	SUBSTATION PREMISES No.18182 "SPARKS WARN CATH COMM" (AJ574973 & DP1057478)
[S]	EASEMENT FOR SIGNAGE 4 WIDE (DP1155796)
[W]	EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
[DX]	EASEMENT FOR DRAINAGE OF WATER 9.7 WIDE (DP1155796)
[ES]	EASEMENT FOR SERVICES VARIABLE WIDTH (DP1155796)
[ET]	EASEMENT FOR SERVICES 9.7 WIDE (DP1155796)
[RA]	RIGHT OF ACCESS VARIABLE WIDTH (DP1155796)
[RB]	RIGHT OF ACCESS 9.7 WIDE (DP1155796)
[RC]	RIGHT OF ACCESS 8.57 WIDE & VARIABLE (DP1155796)
[RD]	RIGHT OF ACCESS 9.7 WIDE (DP1155796) AND RIGHT OF CARRIAGEWAY 9.7 WIDE (AJ574974)
[SA]	EASEMENT FOR SERVICES AND DRAINAGE OF WATER 9.7 WIDE (DP1155796)
[SB]	EASEMENT FOR SERVICES AND DRAINAGE OF WATER 8.57 WIDE & VARIABLE (DP1155796)

ADJOINS SHEET 2

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REV.	AMENDMENTS	DATE
D	DRAINAGE PIPE SIZES AMENDED	14/02/24
C	BOUNDARY INFO AMENDMENTS	17/11/22
B	FINAL ISSUE	17/11/22
A	DRAFT COPY	11/11/22

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.2020
MARKS ADOPTED:
S.S.M.67826 E 357118.473 N 6320695.084
S.S.M.65900 E 356496.986 N 6320806.566

VERTICAL DATUM:
DATUM: A.H.D.
B.M. ADOPTED: S.S.M.67826
R.L. 26.578
SOURCE: S.C.I.M.S.

CLIENT:
STANTON DAHL ARCHITECTS
P.O. BOX 833 EPPING NSW 1710

PLAN: A1
SHOWING DETAIL & LEVEL SURVEY OF MARY MACKILLOP COLLEGE SPARKS ROAD WARNERVALE NSW 2259

LGA: CENTRAL COAST | SHEET 1 OF 5

SURVEYED	DRAWN	CHECKED	APPROVED
B.T.	K.S.	S.N.	S.N.

SURVEY REFERENCE	SCALE	DATE
36174	1:200	14/02/2024

DRAWING NUMBER: 36174A01.DWG
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NOTE:
PLEASE REFER TO SHEETS 3 OR 5 FOR THE SURVEY PLAN LEGEND, TREE INFORMATION TABLE IS ON SHEET 3.

LOT 71

D. P. 1258149

AREA
7.487 ha

EASEMENT NOTES

[A]	EASEMENT TO DRAIN WATER 3.5 WIDE
[B]	EASEMENT TO DRAIN WATER VARIABLE WIDTH
[C]	RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES 4.5 WIDE (AJ574973 & DP1057484)
[D]	EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
[E]	EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE (AJ574973 & DP1057484)
[P]	SUBSTATION PREMISES No.18182 "SPARKS WARN CATH COMM" (AJ574973 & DP1057478)
[S]	EASEMENT FOR SIGNAGE 4 WIDE (DP1155796)
[DW]	EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
[DX]	EASEMENT FOR DRAINAGE OF WATER 9.7 WIDE (DP1155796)
[ES]	EASEMENT FOR SERVICES VARIABLE WIDTH (DP1155796)
[ET]	EASEMENT FOR SERVICES 9.7 WIDE (DP1155796)
[RA]	RIGHT OF ACCESS VARIABLE WIDTH (DP1155796)
[RB]	RIGHT OF ACCESS 9.7 WIDE (DP1155796)
[RC]	RIGHT OF ACCESS 8.57 WIDE & VARIABLE (DP1155796)
[RD]	RIGHT OF ACCESS 9.7 WIDE (DP1155796) AND RIGHT OF CARRIAGEWAY 9.7 WIDE (AJ574974)
[SA]	EASEMENT FOR SERVICES AND DRAINAGE OF WATER 9.7 WIDE (DP1155796)
[SB]	EASEMENT FOR SERVICES AND DRAINAGE OF WATER 8.57 WIDE & VARIABLE (DP1155796)

ADJOINS SHEET 3

0m 2.5 5.0 7.5 10m
SCALE 1:100

D S & P
Degotardi Smith & Partners
CONSULTING SURVEYORS ESTABLISHED 1957

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e. surveys@degotardi.com.au
w. www.degotardi.com.au

Quality Management - ISO 9001 Global-Mark.com.au®

REV.	AMENDMENTS	DATE
D	DRAINAGE PIPE SIZES AMENDED	14/02/24
C	BOUNDARY INFO AMENDMENTS	17/11/22
B	FINAL ISSUE	17/11/22
A	DRAFT COPY	11/11/22

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.2020
MARKS ADOPTED:

S.S.M.67826	S.S.M.65900
E 357118.473	E 356496.986
N 6320695.084	N 6320806.566

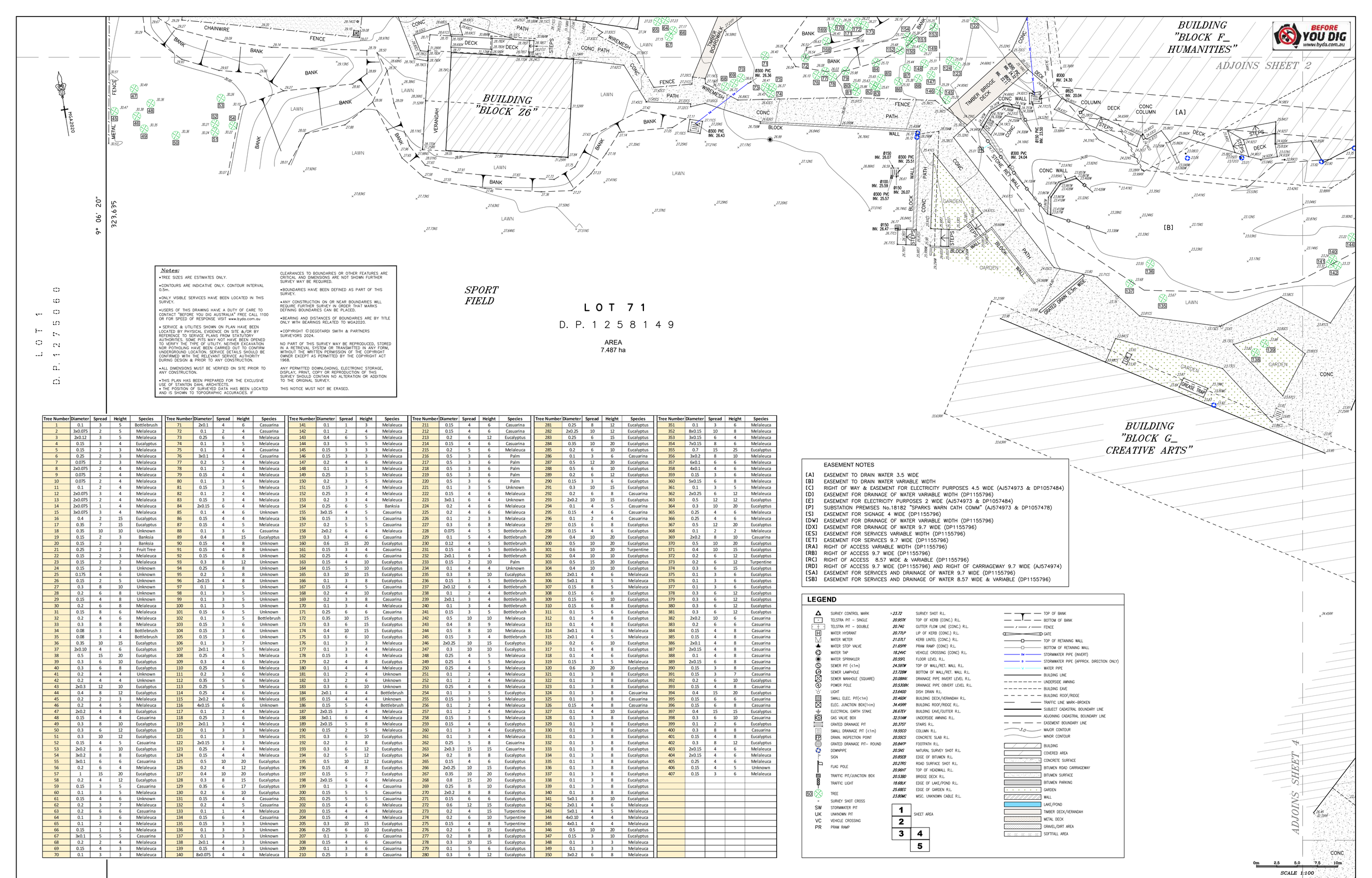
VERTICAL DATUM:

DATUM:	A.H.D.
B.M. ADOPTED:	S.S.M.67826
R.L.	26.578
SOURCE:	S.C.I.M.S.

CLIENT:
STANTON DAHL ARCHITECTS
P.O. BOX 833 EPPING NSW 1710

PLAN: A1
SHOWING DETAIL & LEVEL SURVEY OF MARY MACKILLOP COLLEGE SPARKS ROAD WARNERVALE NSW 2259

LGA: CENTRAL COAST			SHEET 2 OF 5
SURVEYED B.T.	DRAWN K.S.	CHECKED S.N.	APPROVED S.N.
SURVEY REFERENCE 36174		SCALE 1:200	DATE 14/02/2024
DRAWING NUMBER 36174A01.DWG			REV. D



Notes:

- TREE SIZES ARE ESTIMATES ONLY.
- CONTOURS ARE INDICATIVE ONLY. CONTOUR INTERVAL 0.5m.
- ONLY VISIBLE SERVICES HAVE BEEN LOCATED IN THIS SURVEY.
- USERS OF THIS DRAWING HAVE A DUTY OF CARE TO CONTACT "BEFORE YOU DIG AUSTRALIA" FREE CALL 1100 OR FOR SPEED OF RESPONSE VISIT www.byda.com.au
- SERVICE & UTILITIES SHOWN ON PLAN HAVE BEEN LOCATED BY PHYSICAL EVIDENCE ON SITE &/OR BY REFERENCE TO SERVICE PLANS FROM STATUTORY AUTHORITIES. SOME PITS MAY NOT HAVE BEEN OPENED TO VERIFY THE TYPE OF UTILITY. NEITHER EXCAVATION NOR POTHOLING HAVE BEEN CARRIED OUT TO CONFIRM UNDERGROUND LOCATION. SERVICE DETAILS SHOULD BE CONFIRMED WITH THE RELEVANT SERVICE AUTHORITY DURING DESIGN & PRIOR TO ANY CONSTRUCTION.
- ALL DIMENSIONS MUST BE VERIFIED ON SITE PRIOR TO ANY CONSTRUCTION.
- THIS PLAN HAS BEEN PREPARED FOR THE EXCLUSIVE USE OF STANTON DAHL ARCHITECTS.
- THE POSITION OF SURVEYED DATA HAS BEEN LOCATED AND IS SHOWN TO TOPOGRAPHIC ACCURACIES. IF CLEARANCES TO BOUNDARIES OR OTHER FEATURES ARE CRITICAL AND DIMENSIONS ARE NOT SHOWN FURTHER SURVEY MAY BE REQUIRED.
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LOT 71

D. P. 1258149

AREA
7.487 ha

Tree Number	Diameter	Spread	Height	Species
1	0.1	3	5	Bottlebrush
2	3x0.075	2	5	Melaleuca
3	2x0.12	3	5	Melaleuca
4	0.15	3	4	Eucalyptus
5	0.15	2	3	Melaleuca
6	0.25	2	3	Melaleuca
7	0.075	2	3	Melaleuca
8	2x0.075	2	4	Melaleuca
9	0.075	2	4	Melaleuca
10	0.075	2	4	Melaleuca
11	0.1	2	4	Melaleuca
12	2x0.075	3	4	Melaleuca
13	2x0.075	2	4	Melaleuca
14	2x0.075	1	4	Melaleuca
15	3x0.075	3	4	Melaleuca
16	0.4	2	15	Eucalyptus
17	0.35	7	15	Eucalyptus
18	0.35	10	10	Unknown
19	0.15	2	3	Banksia
20	0.15	2	3	Banksia
21	0.25	2	2	Fruit Tree
22	0.15	2	3	Melaleuca
23	0.15	2	2	Melaleuca
24	0.15	2	3	Unknown
25	0.175	4	6	Unknown
26	0.15	2	5	Unknown
27	0.3	8	10	Unknown
28	0.2	6	8	Unknown
29	0.15	4	8	Unknown
30	0.2	6	8	Melaleuca
31	0.15	8	6	Melaleuca
32	0.2	4	6	Melaleuca
33	0.3	8	8	Melaleuca
34	0.08	3	4	Bottlebrush
35	0.08	3	4	Bottlebrush
36	0.35	10	15	Eucalyptus
37	2x0.10	4	6	Eucalyptus
38	0.5	15	20	Eucalyptus
39	0.3	6	10	Eucalyptus
40	0.3	6	8	Eucalyptus
41	0.2	4	4	Unknown
42	0.2	4	4	Unknown
43	2x0.3	12	10	Eucalyptus
44	0.4	8	12	Eucalyptus
45	0.2	2	3	Melaleuca
46	0.2	4	5	Melaleuca
47	2x0.2	4	8	Eucalyptus
48	0.15	4	4	Casuarina
49	0.3	8	10	Eucalyptus
50	0.3	6	12	Eucalyptus
51	0.3	10	12	Eucalyptus
52	0.15	4	5	Casuarina
53	2x0.2	6	10	Eucalyptus
54	3x0.2	8	8	Eucalyptus
55	3x0.1	6	6	Casuarina
56	0.2	6	4	Melaleuca
57	1	15	20	Eucalyptus
58	0.2	4	12	Eucalyptus
59	0.15	3	5	Casuarina
60	0.1	3	5	Melaleuca
61	0.15	4	6	Unknown
62	0.2	3	7	Melaleuca
63	0.2	6	6	Casuarina
64	0.1	3	6	Melaleuca
65	0.1	2	4	Melaleuca
66	0.15	1	5	Melaleuca
67	3x0.1	5	5	Casuarina
68	0.2	2	4	Melaleuca
69	0.15	4	3	Melaleuca
70	0.1	3	3	Melaleuca
71	2x0.1	4	6	Casuarina
72	0.1	2	4	Casuarina
73	0.25	6	4	Melaleuca
74	0.1	3	5	Melaleuca
75	0.1	3	4	Casuarina
76	3x0.1	4	4	Casuarina
77	0.2	5	4	Melaleuca
78	0.1	2	4	Melaleuca
79	0.15	4	4	Melaleuca
80	0.1	3	4	Melaleuca
81	0.15	3	5	Melaleuca
82	0.1	2	4	Melaleuca
83	0.15	3	4	Melaleuca
84	2x0.15	6	4	Melaleuca
85	0.1	4	6	Unknown
86	0.15	4	4	Melaleuca
87	0.15	4	5	Melaleuca
88	0.1	3	6	Casuarina
89	0.4	8	15	Eucalyptus
90	0.15	4	8	Unknown
91	0.15	4	8	Unknown
92	0.15	6	8	Unknown
93	0.3	8	12	Unknown
94	0.25	6	8	Unknown
95	0.2	3	8	Unknown
96	2x0.15	4	8	Unknown
97	0.1	3	5	Unknown
98	0.1	3	5	Unknown
99	0.1	3	5	Unknown
100	0.1	3	4	Melaleuca
101	0.15	6	5	Unknown
102	0.1	3	5	Bottlebrush
103	0.15	3	6	Unknown
104	0.15	3	6	Unknown
105	0.15	3	6	Unknown
106	0.1	3	7	Unknown
107	2x0.1	3	5	Melaleuca
108	0.25	4	5	Melaleuca
109	0.3	4	6	Melaleuca
110	0.25	4	6	Melaleuca
111	0.2	3	6	Melaleuca
112	0.35	5	6	Melaleuca
113	0.25	5	5	Melaleuca
114	0.25	4	6	Melaleuca
115	2x0.2	4	6	Melaleuca
116	4x0.15	6	6	Unknown
117	0.1	2	4	Melaleuca
118	0.25	3	6	Melaleuca
119	2x0.1	3	4	Melaleuca
120	0.1	3	3	Melaleuca
121	0.1	3	3	Melaleuca
122	2x0.15	3	3	Melaleuca
123	0.25	4	4	Melaleuca
124	0.15	4	4	Melaleuca
125	0.5	10	20	Eucalyptus
126	0.2	4	12	Eucalyptus
127	0.4	10	20	Eucalyptus
128	0.3	8	15	Eucalyptus
129	0.35	6	17	Eucalyptus
130	0.2	6	10	Eucalyptus
131	0.15	4	4	Casuarina
132	0.2	4	5	Casuarina
133	0.1	1	4	Melaleuca
134	0.15	6	4	Casuarina
135	0.15	3	3	Unknown
136	0.1	3	3	Unknown
137	0.1	3	3	Unknown
138	2x0.1	4	3	Unknown
139	0.15	4	3	Unknown
140	8x0.075	4	4	Melaleuca
141	0.1	1	3	Melaleuca
142	0.1	2	4	Melaleuca
143	0.4	6	5	Melaleuca
144	0.3	5	5	Melaleuca
145	0.15	3	3	Melaleuca
146	0.15	3	3	Melaleuca
147	0.2	4	6	Melaleuca
148	0.1	3	3	Melaleuca
149	0.25	3	5	Melaleuca
150	0.2	3	5	Melaleuca
151	0.15	3	4	Melaleuca
152	0.25	3	4	Melaleuca
153	0.2	3	4	Melaleuca
154	0.25	6	5	Banksia
155	3x0.15	4	5	Casuarina
156	0.15	3	5	Casuarina
157	0.2	5	5	Casuarina
158	2x0.2	6	4	Melaleuca
159	0.3	4	6	Casuarina
160	0.6	15	20	Eucalyptus
161	0.15	3	4	Casuarina
162	0.25	4	6	Casuarina
163	0.15	4	10	Eucalyptus
164	0.15	5	10	Eucalyptus
165	0.3	10	15	Eucalyptus
166	0.1	3	8	Eucalyptus
167	0.15	4	5	Casuarina
168	0.2	4	10	Eucalyptus
169	0.2	3	8	Casuarina
170	0.1	3	4	Melaleuca
171	0.25	6	6	Casuarina
172	0.35	10	15	Eucalyptus
173	0.3	6	15	Eucalyptus
174	0.4	10	15	Eucalyptus
175	0.3	6	10	Eucalyptus
176	0.1	3	3	Melaleuca
177	0.1	3	4	Melaleuca
178	0.15	3	4	Melaleuca
179	0.2	4	8	Eucalyptus
180	0.1	4	4	Melaleuca
181	0.1	2	4	Unknown
182	0.3	2	6	Unknown
183	0.3	6	10	Unknown
184	2x0.1	4	4	Bottlebrush
185	0.15	4	4	Unknown
186	0.15	5	4	Bottlebrush
187	2x0.15	3	4	Melaleuca
188	3x0.1	6	4	Melaleuca
189	2x0.15	5	8	Melaleuca
190	0.15	2	5	Melaleuca
191	0.3	6	10	Eucalyptus
192	0.2	3	8	Eucalyptus
193	0.3	6	12	Eucalyptus
194	0.2	5	12	Eucalyptus
195	0.5	10	12	Eucalyptus
196	0.15	4	8	Eucalyptus
197	0.15	5	7	Eucalyptus
198	2x0.15	6	6	Melaleuca
199	0.1	3	4	Casuarina
200	0.15	5	5	Casuarina
201	0.25	5	5	Casuarina
202	0.15	4	6	Melaleuca
203	0.15	4	4	Melaleuca
204	0.15	4	4	Melaleuca
205	0.3	10	15	Eucalyptus
206	0.25	6	10	Eucalyptus
207	0.1	3	6	Casuarina
208	0.15	4	6	Casuarina
209	0.1	3	6	Casuarina
210	0.25	3	8	Casuarina
211	0.15	4	6	Casuarina
212	0.15	4	6	Casuarina
213	0.2	6	12	Eucalyptus
214	0.15	4	6	Casuarina
215	0.2	5	6	Melaleuca
216	0.5	3	6	Palm
217	0.5	3	6	Palm
218	0.5	3	6	Palm
219	0.5	3	6	Palm
220	0.5	3	6	Palm
221	0.1	3	5	Unknown
222	0.15	4	6	Melaleuca
223	3x0.1	6	4	Unknown
224	0.2	4	6	Melaleuca
225	0.2	4	6	Melaleuca
226	0.1	2	3	Melaleuca
227	0.3	6	8	Melaleuca
228	0.075	4	5	Bottlebrush
229	0.1	5	4	Bottlebrush
230	0.12	4	5	Bottlebrush
231	0.15	4	5	Bottlebrush
232	2x0.1	6	4	Bottlebrush
233	0.15	2	10	Palm
234	0.1	4	4	Unknown
235	0.3	8	10	Eucalyptus
236	0.15	3	5	Bottlebrush
237	2x0.12	6	4	Bottlebrush
238	0.1	2	4	Bottlebrush
239	2x0.1	3	4	Bottlebrush
240	0.1	3	4	Bottlebrush
241	0.15	3	5	Bottlebrush
242	0.5	10	10	Melaleuca
243	0.4	8	9	Melaleuca
244	0.5	8	10	Melaleuca
245	0.15	3	4	Bottlebrush
246	2x0.25	10	15	Eucalyptus
247	0.3	10	10	Eucalyptus
248	0.25	4	5	Melaleuca
249	0.25	4	5	Melaleuca
250	0.25	4	5	Melaleuca
251	0.1	2	4	Melaleuca
252	0.1	2	4	Melaleuca
253	0.25	4	6	Melaleuca
254	0.1	3	5	Eucalyptus
255	0.15	3	5	Melaleuca
256	0.1	2	4	Melaleuca
257	0.1	2	4	Melaleuca
258	0.15	3	5	Melaleuca
259	0.15	4	6	Eucalyptus
260	0.1	3	4	Eucalyptus
261	0.1	3	4	Melaleuca
262	0.25	5	8	Casuarina
263	2x0.3	15	15	Casuarina
264	0.2	8	8	Eucalyptus
265	0.15	4	6	Eucalyptus
266	2x0.25	10	15	Eucalyptus
267	0.35	10	20	Eucalyptus
268	0.8	15	20	Eucalyptus
269	0.25	8	10	Eucalyptus
270	2x0.2	8	8	Eucalyptus
271	0.15	6	6	Eucalyptus
272	0.6	12	15	Eucalyptus
273	0.2	4	15	Turpentine
274	0.2	6	10	Turpentine
275	0.15	4	8	Turpentine
276	0.2	6	15	Eucalyptus
277	0.2	8	8	Eucalyptus
278	0.3	10	15	Eucalyptus
279	0.1	5	6	Eucalyptus
280	0.3	6	12	Eucalyptus
281	0.25	8	12	Eucalyptus
282	2x0.25	10	12	Eucalyptus
283	0.25	6	15	Eucalyptus
284	0.35	10	20	Eucalyptus
285	0.2	6	10	Eucalyptus
286	0.1	3	6	Casuarina
287	0.5	12	20	Eucalyptus
288	0.5	6	10	Eucalyptus
289	0.2	6	12	Eucalyptus
290	0.15	3	6	Eucalyptus
291	0.3	10	15	Eucalyptus
292	0.2	6	8	Casuarina
293	2x0.2	10	15	Eucalyptus
294	0.1	4	5	Casuarina
295	0.15	4	6	Casuarina
296	0.1	2	4	Casuarina
297	0.15	6	8	Eucalyptus
298	0.15	4	6	Eucalyptus
299	0.4	10	20	Eucalyptus
300	0.5	10	20	Eucalyptus
301	0.6	10	20	Turpentine
302	0.4	10	10	Eucalyptus
303	0.5	15	20	Eucalyptus
304	0.4	10	10	Eucalyptus
305	2x0.1	4	6	Melaleuca
306	5x0.1	8	5	Melaleuca
307	0.15	8	5	Melaleuca
308	0.15	6	8	Eucalyptus
309	0.15	6	10	Eucalyptus
310	0.15	6	8	Eucalyptus
311	0.1	5	6	Eucalyptus
312	0.1	4	8	Eucalyptus
313	0.1	4	8	Eucalyptus
314	3x0.1	6	6	Melaleuca
315	2x0.1	4	5	Melaleuca
316	0.2	6	10	Eucalyptus
317	0.1	4	8	Eucalyptus
318	0.1	4	6	Eucalyptus
319	0.15	3	5	Melaleuca
320	0.6	20	20	Eucalyptus
321	0.1	3	8	Eucalyptus
322	0.1	3	8	Eucalyptus
323	0.1	3	8	Eucalyptus
324	0.1	3	8	Eucalyptus
325	0.1	3	8	Casuarina
326	0.15	4	8	Casuarina
327	0.1	4	10	Eucalyptus
328	0.1	3	8	Eucalyptus
329	0.1	3	8	Eucalyptus
330	0.1	3	8	Eucalyptus
331	0.1	3	8	Eucalyptus
332	0.1	3	8	Eucalyptus
333	0.1	3	8	Eucalyptus
334	0.1	3	8	Eucalyptus
335	0.1	3	8	Eucalyptus
336	0.1	3	8	Eucalyptus
337	0.1	3	8	Eucalyptus
338	0.1	3	8	Eucalyptus
339	0.1	3	8	Eucalyptus
340	0.1	3	8	Eucalyptus
341	5x0.1	8	10	Eucalyptus
342	2x0.1	4	6	Melaleuca
343	5x0.1	4	5	Melaleuca
344	4x0.10	4	4	Melaleuca
345	4x0.1	4	4	Melaleuca
346	0.5	10	20	Eucalyptus
347	0.15	3	10	Eucalyptus
348	0.1	3	3	Melaleuca
349	0.1	3	3	Melaleuca
350	3x0.2	6	8	Melaleuca
351	0.1	3	6	Melaleuca
352	8x0.15	10	8	Melaleuca
353	3x0.15	6	4	Melaleuca
354	7x0.15	8	6	Melaleuca
355	0.7	15	25	Eucalyptus
356	3x0.2	8	10	Melaleuca
357	6x0.1	6	6	Melaleuca
358	4x0.1	4	6	Melaleuca
359	0.15	3	6	Melaleuca
360	5x0.15	6	8	Melaleuca
361	0.1	3	5	Melaleuca
362	2x0.25	6	12	Melaleuca
363	0.5	12	12	Eucalyptus
364	0.3	10	20	Eucalyptus
365	0.25	4	6	Melaleuca
366	0.25	4	6	Melaleuca
367	0.5	12	20	Eucalyptus
368	0.1	2	2	Melaleuca
369	2x0.2	8	10	Casuarina
370	0.5	10	20	Eucalyptus
371	0.4	10	15	Eucalyptus
372	0.2	6	12	Eucalyptus
373	0.2	6	12	Turpentine
374	0.3	6	15	Eucalyptus
375	0.1	3	6	Eucalyptus
376	0.1	3	8	Eucalyptus
377	0.1	3	6	Eucalyptus
378	0.3	6	12	Eucalyptus
379	0.3	6	12	Eucalyptus
380	0.3	6	12	Eucalyptus
381	0.3	6	12	Eucalyptus
382	2x0.2	10	6	Casuarina
383	0.2	6	6	Casuarina
384	0.15	4	8	Casuarina
385	0.15	4	8	Casuarina
386	2x0.1	4	8	Casuarina
387	2x0.15	4	8	Casuarina
388	0.1	4	8	Casuarina
389	2x0.15	6	8	Casuarina
390	0.15	3	8	Casuarina
391	0.15	3	7	Casuarina
392	0.2	6	10	Eucalyptus
393	0.15	4	8	Casuarina
394	0.4	15	20	Eucalyptus
395	0.15	6	6	Casuarina
396	0.15	6	8	Casuarina
397	0.4	15	15	Eucalyptus
398	0.3	6	10	Casuarina
399	0.1	2	6	Eucalyptus
400	0.3	8	8	Casuarina
401	0.15	4	8	Eucalyptus
402	0.3	8	12	Eucalyptus
403	2x0.15	4	6	Melaleuca
404	2x0.15	4	6	Melaleuca
405	0.25	4	6	Melaleuca
406	0.15	4	5	Unknown
407	0.15	3	6	Melaleuca

EASEMENT NOTES

- [A] EASEMENT TO DRAIN WATER 3.5 WIDE
- [B] EASEMENT TO DRAIN WATER VARIABLE WIDTH
- [C] RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES 4.5 WIDE (AJ574973 & DP1057484)
- [D] EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
- [E] EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE (AJ574973 & DP1057484)
- [P] SUBSTATION PREMISES No.18182 "SPARKS WARN CATH COMM" (AJ574973 & DP1057478)
- [S] EASEMENT FOR SIGNAGE 4 WIDE (DP1155796)
- [DW] EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
- [DX] EASEMENT FOR DRAINAGE OF WATER 9.7 WIDE (DP1155796)
- [ES] EASEMENT FOR SERVICES VARIABLE WIDTH (DP1155796)
- [ET] EASEMENT FOR SERVICES 9.7 WIDE (DP1155796)
- [RA] RIGHT OF ACCESS VARIABLE WIDTH (DP1155796)
- [RB] RIGHT OF ACCESS 9.7 WIDE (DP1155796)
- [RC] RIGHT OF ACCESS 8.57 WIDE & VARIABLE (DP1155796)
- [RD] RIGHT OF ACCESS 9.7 WIDE (DP1155796) AND RIGHT OF CARRIAGEWAY 9.7 WIDE (AJ574974)
- [SA] EASEMENT FOR SERVICES AND DRAINAGE OF WATER 9.7 WIDE (DP1155796)
- [SB] EASEMENT FOR SERVICES AND DRAINAGE OF WATER 8.57 WIDE & VARIABLE (DP1155796)

LEGEND

- SURVEY CONTROL MARK
- TELSTRA PIT – SINGLE
- TELSTRA PIT – DOUBLE
- WATER HYDRANT
- WATER METER
- WATER STOP VALVE
- WATER TAP
- WATER SPRINKLER
- SEWER PIT (<1m)
- SEWER LAMPHOLE
- SEWER MANHOLE (SQUARE)
- POWER POLE
- LIGHT
- SMALL ELEC. PIT(<1m)
- ELEC. JUNCTION BOX(1<m)
- ELECTRICAL EARTH STAKE
- GAS VALVE BOX
- GRATED DRAINAGE PIT
- SMALL DRAINAGE PIT (<1m)
- DRAIN, INSPECTION POINT
- GRATED DRAINAGE PIT– ROUND
- DOWNPIPE
- SIGN
- FLAG POLE
- TRAFFIC PIT/JUNCTION BOX
- TRAFFIC LIGHT
- TREE
- SURVEY SHOT CROSS
- STORMWATER PIT
- UNKNOWN PIT
- VEHICLE CROSSING
- PRAM RAMP
- SURVEY SHOT R.L.
- TOP OF KERB (CONC.) R.L.
- GUTTER FLOW LINE (CONC.) R.L.
- LIP OF KERB (CONC.) R.L.
- KERB LINTEL (CONC.) R.L.
- PRAM RAMP (CONC) R.L.
- VEHICLE CROSSING (CONC) R.L.
- FLOOR LEVEL R.L.
- TOP OF WALL/RET. WALL R.L.
- BOTTOM OF WALL/RET. WALL R.L.
- DRAINAGE PIPE INVERT LEVEL R.L.
- DRAINAGE PIPE OBVERT LEVEL R.L.
- DISH DRAIN R.L.
- BUILDING DECK/VERANDAH R.L.
- BUILDING ROOF/RIDGE R.L.
- BUILDING EAVE/GUTTER R.L.
- UNDERSIDE AWNING R.L.
- STAIRS R.L.
- COLUMN R.L.
- CONCRETE SLAB R.L.
- FOOTPATH R.L.
- NATURAL SURVEY SHOT R.L.
- EDGE OF BITUMEN R.L.
- ROAD SURFACE SHOT R.L.
- TOP OF HEADWALL R.L.
- BRIDGE DECK R.L.
- EDGE OF LAKE/POND R.L.
- EDGE OF GARDEN R.L.
- MISC. UNKNOWN CABLE R.L.
- SHEET AREA (1, 2, 3, 4, 5)
- TOP OF BANK
- BOTTOM OF BANK
- FENCE
- GATE
- TOP OF RETAINING WALL
- BOTTOM OF RETAINING WALL
- STORMWATER PIPE (INVERT)
- STORMWATER PIPE (APPROX. DIRECTION ONLY)
- WATER PIPE
- BUILDING LINE
- UNDERSIDE AWNING
- BUILDING EAVE
- BUILDING ROOF/RIDGE
- TRAFFIC LINE MARK–BROKEN
- SUBJECT CADASTRAL BOUNDARY LINE
- ADJOINING CADASTRAL BOUNDARY LINE
- EASEMENT BOUNDARY LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- BUILDING
- COVERED AREA
- CONCRETE SURFACE
- BITUMEN ROAD CARRIAGEWAY
- BITUMEN SURFACE
- BITUMEN PARKING
- GARDEN
- WALL
- LAKE/POND
- TIMBER DECK/VERANDAH
- METAL DECK
- GRAVEL/DIRT AREA
- SOFTFALL AREA

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REV.	AMENDMENTS	DATE
D	DRAINAGE PIPE SIZES AMENDED	14/02/24
C	BOUNDARY INFO AMENDMENTS	17/11/22
B	FINAL ISSUE	17/11/22
A	DRAFT COPY	11/11/22

HORIZONTAL DATUM:
CO-ORDINATE SYSTEM: M.G.A.2020
MARKS ADOPTED:
S.S.M.67826 E 357118.473 N 6320695.084
S.S.M.65900 E 356496.986 N 6320806.566

VERTICAL DATUM:
DATUM: A.H.D.
B.M. ADOPTED: S.S.M.67826
R.L. 26.578
SOURCE: S.C.I.M.S.

CLIENT:
STANTON DAHL ARCHITECTS
P.O. BOX 833 EPPING NSW 1710

PLAN: A1
SHOWING DETAIL & LEVEL SURVEY OF MARY MACKILLOP COLLEGE SPARKS ROAD WARNERVALE NSW 2259

LGA: CENTRAL COAST | SHEET 3 OF 5

SURVEYED	DRAWN	CHECKED	APPROVED
B.T.	K.S.	S.N.	S.N.

SURVEY REFERENCE	SCALE	DATE
36174	1:200	14/02/2024

DRAWING NUMBER: 36174A01.DWG
REV.: D

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NOTE:
PLEASE REFER TO SHEETS 3 OR 5 FOR THE SURVEY PLAN LEGEND. TREE INFORMATION TABLE IS ON SHEET 3.

MGA2020

BUILDING "BLOCK F_ HUMANITIES"

BUILDING "BLOCK G_ CREATIVE ARTS"

BUILDING "BLOCK X3"

BUILDING "BLOCK X1"

BUILDING "BLOCK X2"

L A K E

LOT 71
D. P. 1258149
AREA 7.487 ha

LOT 72
D. P. 1258149

LOT 3
D. P. 1155796

CARPARK

T E N I S O N

W O O D S

C L O S E

M A R Y M A C K I L L O P D R I V E

ADJOINS SHEET 3

ADJOINS SHEET 5

LAKE INVERT PROVIDED BY MAINTENANCE MAN R.L. 20.09

324° 22' 40" A32.88 CH32.29

309° 33' 45" 14.03

313° 35' 05" 16.95

323° 02' 20" 9.15

58° 32' 50" 22.45

189° 06' 30" 323.625

53°15'45" 5.67

55°24'28" 55.42

A76.95 CH75.065

31° 13' 05"

0m 2.5 5.0 7.5 10m
SCALE 1:100

D	DRAINAGE PIPE SIZES AMENDED	14/02/24
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REV.	AMENDMENTS	DATE

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CLIENT:
STANTON DAHL ARCHITECTS
P.O. BOX 833 EPPING NSW 1710

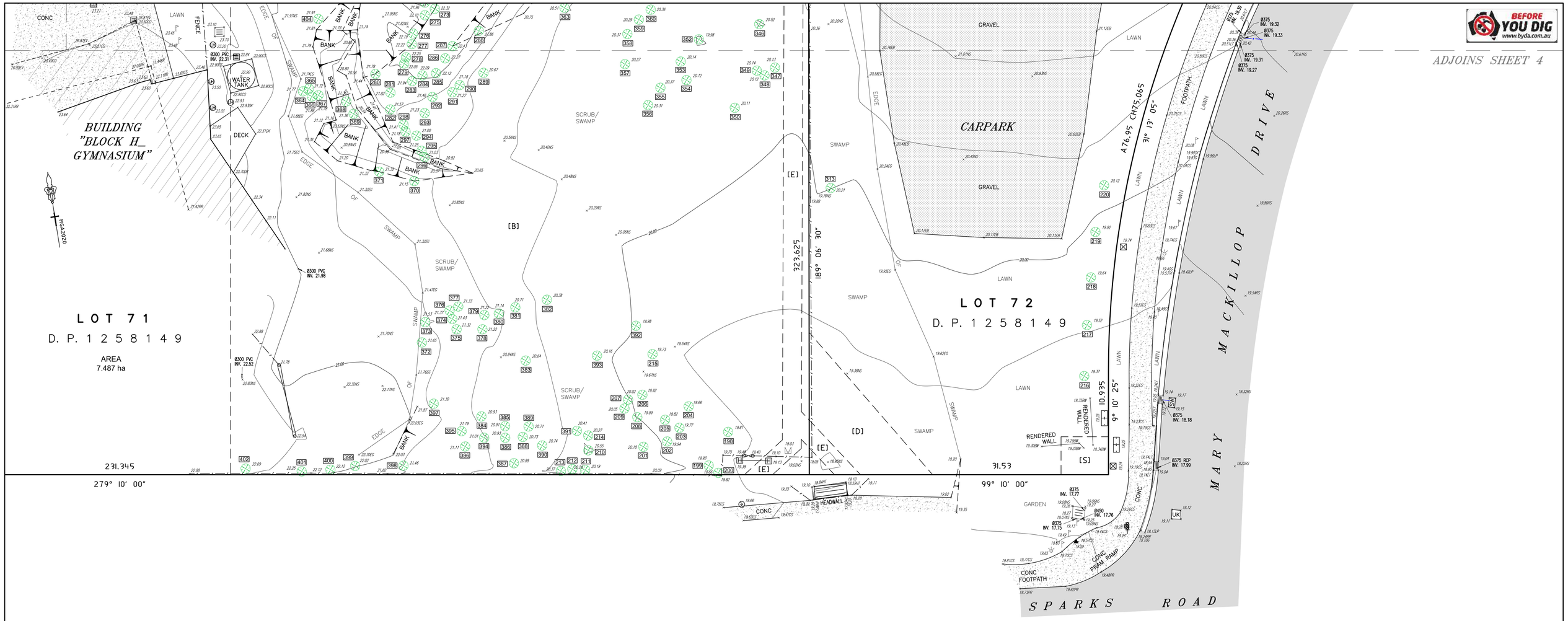
PLAN: A1
SHOWING DETAIL & LEVEL SURVEY OF MARY MACKILLOP COLLEGE SPARKS ROAD WARNERVALE NSW 2259

LGA: CENTRAL COAST | SHEET 4 OF 5

SURVEYED	DRAWN	CHECKED	APPROVED
B.T.	K.S.	S.N.	S.N.

SURVEY REFERENCE	SCALE	DATE
36174	1:200	14/02/2024

DRAWING NUMBER: 36174A01.DWG | REV.: D



ADJOINS SHEET 4

LEGEND

SURVEY CONTROL MARK	×23.72	SURVEY SHOT R.L.	TOP OF BANK
TELSTRA PIT – SINGLE	20.95TK	TOP OF KERB (CONC.) R.L.	BOTTOM OF BANK
TELSTRA PIT – DOUBLE	20.74G	GUTTER FLOW LINE (CONC.) R.L.	FENCE
WATER HYDRANT	20.77LP	LIP OF KERB (CONC.) R.L.	GATE
WATER METER	21.07LT	KERB LINTEL (CONC.) R.L.	TOP OF RETAINING WALL
WATER STOP VALVE	21.65PR	PRAM RAMP (CONC) R.L.	BOTTOM OF RETAINING WALL
WATER TAP	18.24VC	VEHICLE CROSSING (CONC) R.L.	STORMWATER PIPE (INVERT)
WATER SPRINKLER	20.55FL	FLOOR LEVEL R.L.	STORMWATER PIPE (APPROX. DIRECTION ONLY)
SEWER PIT (<1m)	24.59TW	TOP OF WALL/RET. WALL R.L.	WATER PIPE
SEWER LAMPHOLE	23.72BW	BOTTOM OF WALL/RET. WALL R.L.	BUILDING LINE
SEWER MANHOLE (SQUARE)	20.08INV.	DRAINAGE PIPE INVERT LEVEL R.L.	UNDERSIDE AWNING
POWER POLE	20.53OBV.	DRAINAGE PIPE OBVERT LEVEL R.L.	BUILDING EAVE
LIGHT	23.64DI	DISH DRAIN R.L.	BUILDING ROOF/RIDGE
SMALL ELEC. PIT(<1m)	20.46DK	BUILDING DECK/VERANDAH R.L.	TRAFFIC LINE MARK–BROKEN
ELEC. JUNCTION BOX(1<m)	34.45RF	BUILDING ROOF/RIDGE R.L.	SUBJECT CADASTRAL BOUNDARY LINE
ELECTRICAL EARTH STAKE	26.67EK	BUILDING EAVE/GUTTER R.L.	ADJOINING CADASTRAL BOUNDARY LINE
GAS VALVE BOX	32.51AW	UNDERSIDE AWNING R.L.	EASEMENT BOUNDARY LINE
GRATED DRAINAGE PIT	20.37ST	STAIRS R.L.	MAJOR CONTOUR
SMALL DRAINAGE PIT (<1m)	19.55CO	COLUMN R.L.	MINOR CONTOUR
DRAIN. INSPECTION POINT	20.55CS	CONCRETE SLAB R.L.	BUILDING
GRATED DRAINAGE PIT– ROUND	20.84FP	FOOTPATH R.L.	COVERED AREA
DOWNPIPE	20.59DS	NATURAL SURVEY SHOT R.L.	CONCRETE SURFACE
SIGN	20.85SB	EDGE OF BITUMEN R.L.	BITUMEN ROAD CARRIAGEWAY
FLAG POLE	20.27RS	ROAD SURFACE SHOT R.L.	BITUMEN SURFACE
TRAFFIC PIT/JUNCTION BOX	20.53BD	BRIDGE DECK R.L.	BITUMEN PARKING
TRAFFIC LIGHT	18.68LK	EDGE OF LAKE/POND R.L.	GARDEN
TREE	23.80MC	EDGE OF GARDEN R.L.	WALL
SURVEY SHOT CROSS		MISC. UNKNOWN CABLE R.L.	LAKE/POND
SW STORMWATER PIT		1 2 3 4 5 SHEET AREA	TIMBER DECK/VERANDAH
UK UNKNOWN PIT			METAL DECK
VC VEHICLE CROSSING			GRAVEL/DIRT AREA
PR PRAM RAMP			SOFTFALL AREA

EASEMENT NOTES

- [A] EASEMENT TO DRAIN WATER 3.5 WIDE
- [B] EASEMENT TO DRAIN WATER VARIABLE WIDTH
- [C] RIGHT OF WAY & EASEMENT FOR ELECTRICITY PURPOSES 4.5 WIDE (AJ574973 & DP1057484)
- [D] EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
- [E] EASEMENT FOR ELECTRICITY PURPOSES 2 WIDE (AJ574973 & DP1057484)
- [P] SUBSTATION PREMISES No.18182 "SPARKS WARN CATH COMM" (AJ574973 & DP1057478)
- [S] EASEMENT FOR SIGNAGE 4 WIDE (DP1155796)
- [DW] EASEMENT FOR DRAINAGE OF WATER VARIABLE WIDTH (DP1155796)
- [DX] EASEMENT FOR DRAINAGE OF WATER 9.7 WIDE (DP1155796)
- [ES] EASEMENT FOR SERVICES VARIABLE WIDTH (DP1155796)
- [ET] EASEMENT FOR SERVICES 9.7 WIDE (DP1155796)
- [RA] RIGHT OF ACCESS VARIABLE WIDTH (DP1155796)
- [RB] RIGHT OF ACCESS 9.7 WIDE (DP1155796)
- [RC] RIGHT OF ACCESS 8.57 WIDE & VARIABLE (DP1155796)
- [RD] RIGHT OF ACCESS 9.7 WIDE (DP1155796) AND RIGHT OF CARRIAGEWAY 9.7 WIDE (AJ574974)
- [SA] EASEMENT FOR SERVICES AND DRAINAGE OF WATER 9.7 WIDE (DP1155796)
- [SB] EASEMENT FOR SERVICES AND DRAINAGE OF WATER 8.57 WIDE & VARIABLE (DP1155796)

NOTE:
PLEASE REFER TO SHEET3 FOR TREE INFORMATION TABLE.

Notes:

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0m 2.5 5.0 7.5 10m

SCALE 1:100

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REV.	AMENDMENTS	DATE
D	DRAINAGE PIPE SIZES AMENDED	14/02/24
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CLIENT:
STANTON DAHL ARCHITECTS
P.O. BOX 833 EPPING NSW 1710

PLAN: A1
SHOWING DETAIL & LEVEL SURVEY OF MARY MACKILLOP COLLEGE SPARKS ROAD WARNERVALE NSW 2259

LGA: CENTRAL COAST | SHEET 5 OF 5

SURVEYED	DRAWN	CHECKED	APPROVED
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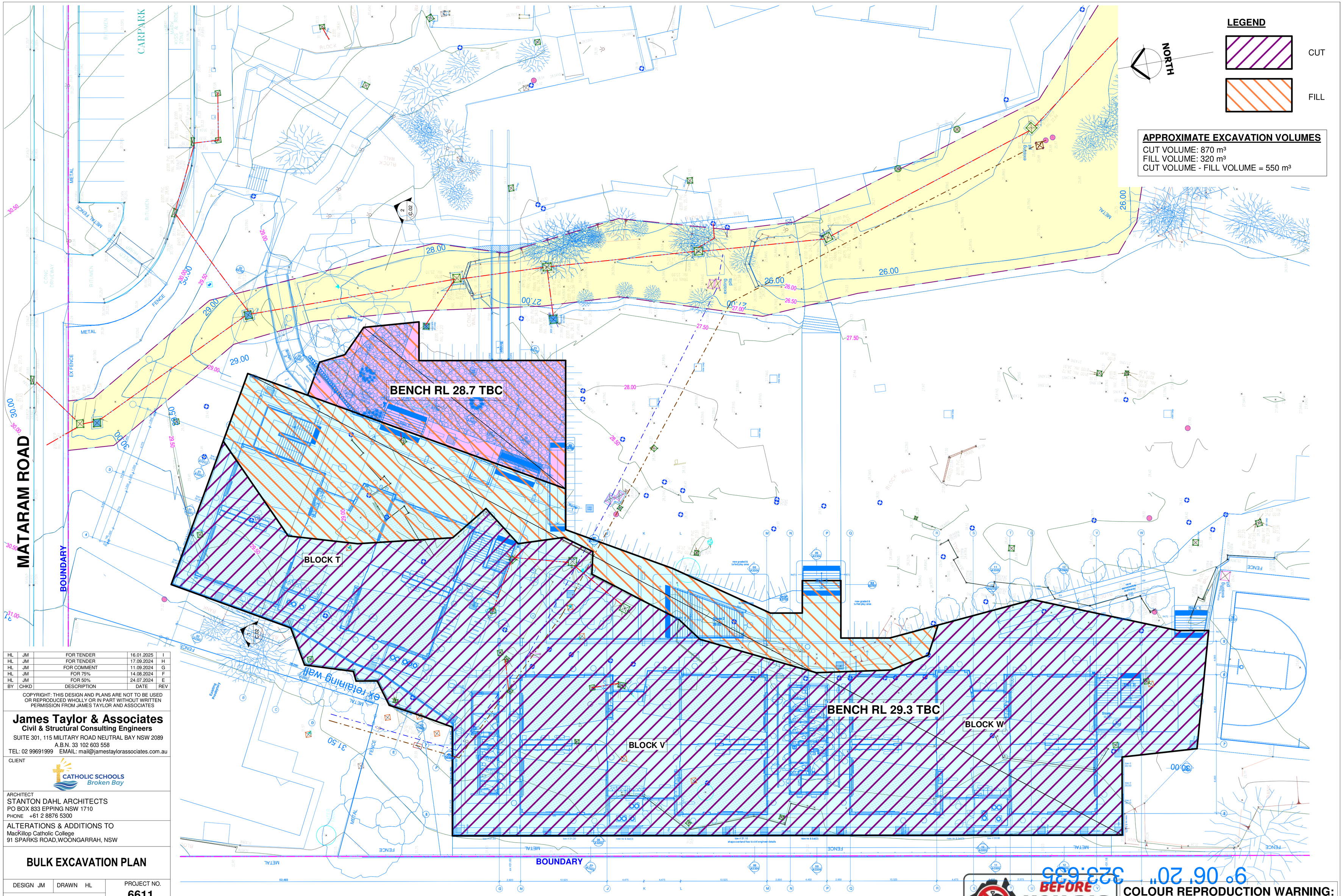
SURVEY REFERENCE	SCALE	DATE
36174	1:200	14/02/2024

DRAWING NUMBER: 36174A01.DWG
REV.: D

APPENDIX 2

STORMWATER CONCEPT DRAWINGS


MATARAM ROAD
BOUNDARY
BENCH RL 28.7 TBC
BENCH RL 29.3 TBC
BLOCK T
BLOCK V
BLOCK W
CARPARK
METAL FENCE
EX FENCE
FENCE
METAL
CONC DRIVEWAY
BITUMEN
BLOCK WALL
CONC WALL
EX retaining wall
existing pole
existing building
existing playground
new graded & turfed play area
new rainwater soakage pit
new hr & bal(3)
low rl 31.10
shape overland flow to civil engineer details
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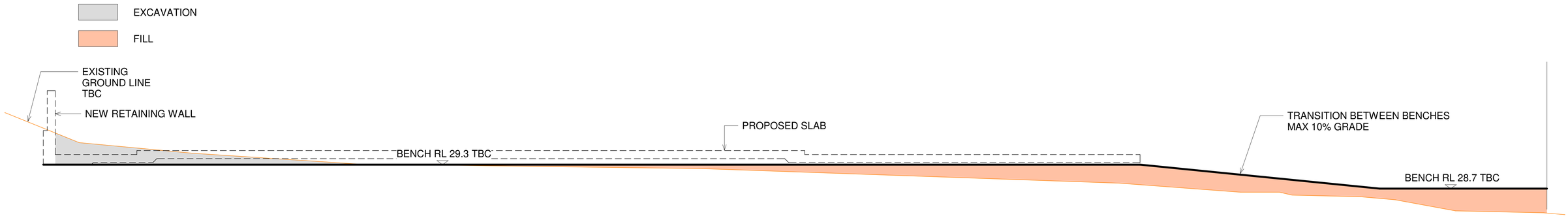
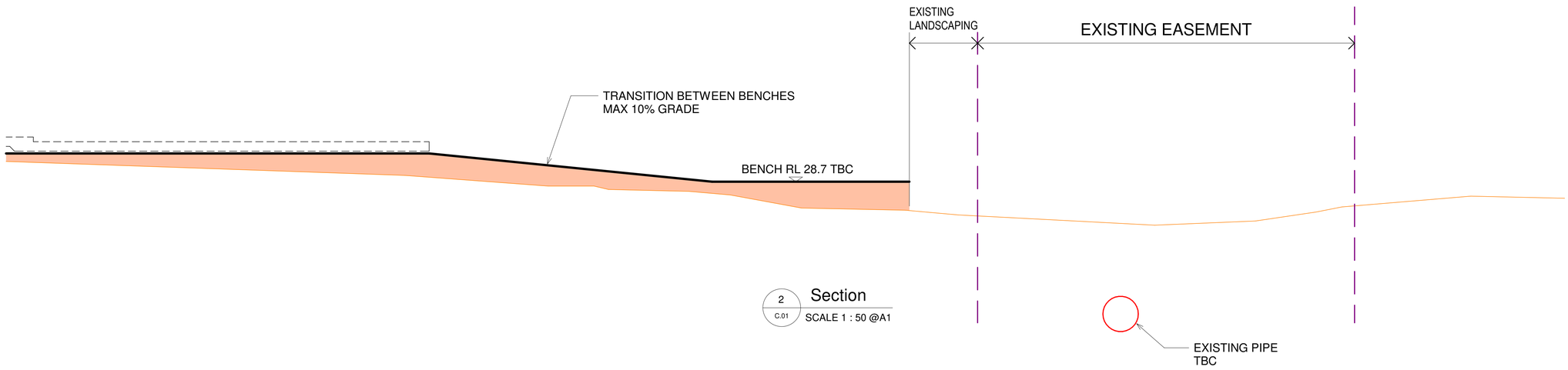


1 C.01 Section
SCALE 1 : 50 @A1



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BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
HL	JM	FOR 50%	24.07.2024	E

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ALTERATIONS & ADDITIONS TO
MacKillop Catholic College
91 SPARKS ROAD,WOONGARRAH, NSW

BULK EXCAVATION SECTIONS

DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. C.02 / REV I
A1 SCALE 1 : 50	DATE	

DOCUMENTATION OF STORMWATER DESIGN

ALTERATIONS & ADDITIONS TO MACKILLOP CATHOLIC COLLEGE

91 SPARKS ROAD,WOONGARRAH, NSW

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STORMWATER DRAWING LIST

Sheet No.	Sheet Name
SW.1	STORMWATER DESIGN - COVER SHEET
SW.2	STORMWATER DESIGN - GENERAL NOTES
SW.3	STORMWATER CATCHMENT PLAN - EXISTING SITE
SW.4	STORMWATER CATCHMENT PLAN - PROPOSED
SW.5	STORMWATER CATCHMENT BOUNDARIES
SW.9	EXISTING SERVICES PLAN - OVERVIEW
SW.10	STORMWATER CONCEPT PLAN - OVERVIEW
SW.11	STORMWATER CONCEPT PLAN - SHEET 1
SW.12	STORMWATER CONCEPT PLAN - SHEET 2
SW.13	STORMWATER CONCEPT PLAN - SHEET 3
SW.14	STORMWATER CONCEPT PLAN - SHEET 4
SW.15	STORMWATER CONCEPT PLAN - SHEET 5
SW.16	STORMWATER CONCEPT PLAN - STAGING
SW.20	STORMWATER TYPICAL DETAILS
SW.21	STORMWATER SECTIONS SHEET 1
SW.22	STORMWATER SECTIONS SHEET 2
SW.23	STORMWATER SECTIONS SHEET 3
SW.24	STORMWATER SECTIONS SHEET 4
SW.41	RETAINING WALL SECTIONS SHEET 1
SW.42	RETAINING WALL SECTIONS SHEET 2
SW.43	RETAINING WALL SECTIONS SHEET 3

NORTH

LOCALITY PLAN
NOT TO SCALE

REFERENCE DOCUMENTS

1. SURVEY DRAWING PREPARED BY:
Degotardi Smith & Partners
Ph. +61 2 9440 1100
SURVEY REFERENCE: 36174
DRAWING NUMBER: 36174A01.DWG
REV. E
DATED: 01/03/2024

2. ARCHITECTURAL DRAWINGS BY:
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Project No. 2700.21

3. CIVIL WORKS DRAWINGS BY:
Cardno Young
DRAWING No. 239656-3A-201 REV F
DATED: 26.08.05

4. HYDRAULIC SERVICES DRAWINGS BY:
ACOR CONSULTANTS
Project No: SY03.0074
Dwg. No: H-02 & H-03

5. STRUCTURAL DRAWINGS BY
JAMES TAYLOR & ASSOCIATES
PROJECT No. 6611
DATED: 09.09.2024

6. HYDRAULIC DRAWINGS BY
JN RESPONSIVE ENGINEERING
Project No: N0231258
Drawing No: H010 No. 1
DATED: 13.08.24

BEFORE YOU DIG www.byda.com.au

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	05.06.2025	K
HL	JM	FOR TENDER	21.02.2025	J
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G

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STORMWATER DESIGN - COVER SHEET

DESIGN JM	DRAWN HL	PROJECT NO. 6611
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A1 SCALE 1 : 100	DATE	

GENERAL

G1. THESE DRAWINGS ARE TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS INCLUDING ALL WORKING DRAWINGS, MAIN CONTRACT, SPECIFICATIONS AND WRITTEN INSTRUCTIONS AS MAY BE ISSUED PRIOR TO OR DURING THE COURSE OF CONSTRUCTION. ALL DISCREPANCIES AND VARIATIONS SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

G2. ALL CIVIL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ALL RELEVANT AND CURRENT S.A.A. CODES.

G3. CIVIL DRAWINGS SHALL NOT BE SCALED IN ORDER TO OBTAIN DIMENSIONS. DIMENSIONS WHERE SHOWN ON CIVIL DRAWINGS SHALL BE CO-ORDINATED WITH ALL OTHER RELEVANT DRAWINGS.

G4. DURING CONSTRUCTION, THE STRUCTURE SHALL BE MAINTAINED IN A STABLE CONDITION AND NO PART SHALL BE OVERSTRESSED.

QUALITY ASSURANCE

1. THE CONTRACTOR SHALL IMPLEMENT AND MAINTAIN A QUALITY ASSURANCE SYSTEM MEETING THE REQUIREMENTS OF AS 9002 (LATEST EDITION). THE QUALITY SYSTEM SHALL BE SUCH THAT RECORDS ARE KEPT OF ALL ASPECTS AND STAGES OF THE WORK.
2. THE RECORDS FOR EACH CONSTRUCTION TASK SHALL BE STAGED AND ITEMISED TO THE SATISFACTION OF THE CONTRACTOR ADMINISTRATOR. THE PROFORMAS FOR RECORDS SHALL BE SUBMITTED TO THE CONTRACTOR ADMINISTRATOR FOR APPROVAL AND WORK SHALL NOT COMMENCE UNTIL SUCH APPROVAL HAS BEEN GIVEN.
3. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN ACCURATE AND UP TO DATE RECORDS AND SHALL MAKE SUCH RECORDS AVAILABLE TO THE CONTRACTOR ADMINISTRATOR IF REQUESTED. FAILURE TO MAINTAIN RECORDS AS SPECIFIED WILL RESULT IN THE CONTRACTOR RE- INSPECTING COMPLETED WORKS IF INSTRUCTED TO DO SO BY THE CONTRACTOR ADMINISTRATOR.
4. AT THE COMPLETION OF EACH STAGE OF THE WORKS THE CONTRACTOR SHALL CERTIFY THAT THOSE WORKS HAVE BEEN UNDERTAKEN AND COMPLETED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATION AND INSTRUCTIONS ISSUED DURING THE COURSE OF THE CONTRACT.

EARTHWORKS

1. THE CONTRACTOR SHALL PROVIDE PROPER FENCING, GUARDING, LIGHTING AND OBSERVATION OF ALL EARTHWORKS, TEMPORARY ROADWAYS, FOOTWAYS, GUARDS AND FENCES AS MAY BE RENDERED NECESSARY FOR THE ACCOMMODATION AND PROTECTION OF PEDESTRIANS, VEHICLES, ANIMALS AND THE PUBLIC.
2. DURING THE EXECUTION OF WORKS, THE CONTRACTOR SHALL MAINTAIN THE INTEGRITY OF EXISTING SERVICES. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED TO THE EXISTING SERVICES TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY, AT NO COST TO THE PRINCIPAL.
3. WHERE IT IS NECESSARY TO REMOVE, DIVERT OR CUT INTO ANY EXISTING SERVICE, THE CONTRACTOR SHALL GIVE AT LEAST THREE (3) DAYS NOTICE OF ITS REQUIREMENTS TO THE SUPERINTENDENT, WHO WILL ADVISE WHAT ARRANGEMENTS SHOULD BE MADE FOR THE ALTERATION OF SUCH EXISTING WORKS
4. THE EXCAVATION SHALL BE CARRIED OUT IN THE LOCATIONS SHOWN AND TO THE LEVELS, WIDTHS AND BATTER SLOPES INDICATED ON THE DRAWINGS.
5. EXCAVATED MATERIAL NOT MEETING THE SPECIFICATION FOR FILL MATERIAL SHALL BE DISPOSED OF OFF SITE IN AN APPROPRIATE MANNER.
6. WHERE EXCAVATION WORK IS REQUIRED IN THE VICINITY OF EXISTING SERVICES, THE CONTRACTOR SHALL SUPPORT ALL SERVICES DURING THE WORKS.
7. WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO USE.
8. UNLESS SPECIFIED OTHERWISE ALL FILL SHALL BE COMPACTED TO A STANDARD MAXIMUM DRY DENSITY RATIO BETWEEN 98% - 102% MAXIMUM AT -1% TO +3% OF STANDARD OPTIMUM MOISTURE CONTENT AS DETERMINED BY AS1289.5.4.1 (LATEST ADDITION)
9. ALL WASTE MATERIALS SHALL BE DISPOSED OFF-SITE IN AN APPROPRIATE MANNER.
10. WHERE ROCK IS EXPOSED DURING EXCAVATION, THE CONTRACTOR SHALL CEASE EXCAVATION AT THIS LOCALITY AND CONTACT THE SUPERINTENDENT WHO WILL THEN ADVISE ON THE LEVEL TO WHICH EXCAVATION IS TAKEN.
11. THE CONTRACTOR SHALL AT ITS OWN EXPENSE DO ALL THINGS NECESSARY TO DIVERT ANY WATER INTERFERING WITH THE PROGRESS OF WORKS, KEEP THE EXCAVATIONS AND TRENCHES FREE FROM WATER WHILE THE WORKS ARE IN PROGRESS AND PREVENT ANY DAMAGE TO THE WORKS BY WATER DUE TO FLOODS OR OTHER CAUSES. THE CONTRACTOR SHALL HAVE PUMPING EQUIPMENT FOR KEEPING THE EXCAVATION OR TRENCHES CONSTANTLY DEWATERED DURING THE TIMES THE WORKS ARE IN PROGRESS. ANY WORK OR MATERIAL DAMAGED BY WATER SHALL BE MADE GOOD BY THE CONTRACTOR.
12. WHERE DIRECTED BY THE SUPERINTENDENT THE BOTTOM OF TRENCHES OR EXCAVATIONS SHALL BE COMPACTED PRIOR TO THE PLACING OF ANY BEDDING OR CONCRETE MATERIALS.SHOULD, IN THE OPINION OF THE SUPERINTENDENT, THE FOUNDATION MATERIAL BE INCAPABLE OF EFFECTIVE COMPACTION, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH APPROPRIATE MATERIAL.

GENERAL COMPACTION NOTES

1. FOUNDATION MATERIAL DEEMED BY THE SUPERINTENDENT AS UNSUITABLE TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
2. UNLESS OTHERWISE APPROVED OR SPECIFIED. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:
   A) FREE FROM ORGANIC AND PERISHABLE MATTER
   B) MAXIMUM PARTICLE SIZE 75MM
   C) PLASTICITY INDEX BETWEEN 2% AND 20%
   D) CBR > 10
3. SELECT FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200MM LOOSE THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289E1.1:
4. LOCATION STANDARD DRY DENSITY
   -AREAS OF SERVICE TRENCHES 98%
   -EMBANKMENTS 100%
   -LANDSCAPED AREAS 90%
   -CONCRETE FOUNDATIONS 100%
5. THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS. ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT HIS COST.
6. COMPACTION CONTROL TESTING SHALL BE CARRIED OUT BY AND AT THE COST OF THE CONTRACTOR TO CONFORM WITH LEVEL 1. AS DEFINED IN AS3798 (LATEST EDITION).

FILL

1. FOUNDATION MATERIAL DEEMED BY THE SUPERINTENDENT AS UNSUITABLE TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
2. UNLESS OTHERWISE APPROVED OR SPECIFIED. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:
   A) FREE FROM ORGANIC AND PERISHABLE MATTER
   B) MAXIMUM PARTICLE SIZE 75MM
   C) PLASTICITY INDEX BETWEEN 2% AND 20%
   D) CBR > 10
3. SELECT FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200MM LOOSE THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289E3.1 (LATEST EDITION) OF NOT LESS THAN THE FOLLOWING STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289E1.1 (LATEST EDITION):
   LOCATION STANDARD DRY DENSITY
   -AREAS OF SERVICE TRENCHES 98%
   -ROAD AND CARPARKS 100%
   -LANDSCAPED AREAS 90%
4. THE CONTRACTOR SHALL PROGRAMME THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS. ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT HIS COST.
5. COMPACTION CONTROL TESTING SHALL BE CARRIED OUT BY AND AT THE COST OF THE CONTRACTOR TO CONFORM WITH LEVEL 1, AS DEFINED IN AS3798 (LATEST EDITION).
6. REPLACEMENT SUBGRADE MATERIAL MAY COMPRISE GRANULAR FILL MATERIAL AND SHOULD HAVE A CBR OF AT LEAST 10%. REPLACEMENT SUBGRADE FILL SHALL BE PLACED ON PROOF ROLLED SUBGRADE IN HORIZONTAL LAYERS OF 200MM TO 250MM MAXIMUM LOOSE THICKNESS (DEPENDING ON THE SIZE OF THE EQUIPMENT) AND COMPACTED TO A MINIMUM DRY DENSITY RATIO (MDDR) OF 98% STANDARD, AT MOISTURE CONTENT WITHIN 2% OF OPTIMUM MOISTURE CONTENT.
7. WHERE EXCAVATED MATERIAL IS TO BE USED FOR FILLING, THE MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO USE.

EXISTING SERVICES

1. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA. THE ACCURACY IS NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO COMMENCING WORK. ALL CLEARANCES AND APPROVALS SHALL ALSO BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY PRIOR TO THE COMMENCEMENT OF WORK.
2. ALL NEW AND EXHUMED SERVICES THAT CROSS EXISTING AND FUTURE ROADS/PAVEMENTS WITHIN THE SITE SHALL BE BACKFILLED WITH DGB20 MATERIAL TO SUBGRADE LEVEL AND COMPACTED TO 98% STANDARD DENSITY RATIO. SUBJECT TO PRIOR APPROVAL FROM RELEVANT AUTHORITY.
3. ON COMPLETION OF SERVICES INSTALLATION. ALL DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS,CONCRETE AREAS, GRAVEL AREAS, GRASSED AREAS AND ROAD PAVEMENTS.
4. CARE TO BE TAKEN WHEN EXCAVATING NEAR UTILITY SERVICES. NO MECHANICAL EXCAVATION TO BE UNDERTAKEN OVER UTILITIES SERVICES. LIAISE WITH RELEVANT AUTHORITY.
5. THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL IF REQUIRED OF ALL EXISTING SERVICES IN AREAS AFFECTED BY THE WORKS WITHIN THE CONTRACT AREA AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT. ALL TO REGULATORY AUTHORITY STANDARDS AND APPROVAL.
6. THE CONTRACTOR IS TO MAINTAIN EXISTING STORMWATER DRAINAGE FLOWS THROUGH THE SITE AT ALL TIMES. MAKE DUE ALLOWANCE FOR ALL SUCH FLOWS AT ALL TIMES.
7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL OBTAIN THE SUPERINTENDENT'S APPROVAL OF THE PROGRAMME FOR THE RELOCATION/CONSTRUCTION OF TEMPORARY SERVICES.
8. CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES AS REQUIRED TO MAINTAIN EXISTING SUPPLY TO ADJOINING PROPERTIES 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.
9. INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE OR DAMAGE TO THE ADJACENT RESIDENCES. CONTRACTOR TO GAIN APPROVAL OF THE SUPERINTENDENT FOR TIME OF INTERRUPTION.
10. THE CONTRACTOR SHALL UNDERTAKE A DIAL BEFORE YOU DIG (DBYD 1100) SERVICES SEARCH IN ADDITION TO PHYSICAL FIELD LOCATION BEFORE THE COMMENCEMENT OF ANY WORKS.

STORMWATER NOTES

1. ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 (LATEST EDITION) STORMWATER DRAINAGE.
2. UNLESS OTHERWISE APPROVED ALL DRAINAGE PIPES SHALL BE APPROVED SPIGOT AND SOCKET RCP PIPES WITH RUBBER RING JOINTS, CLASS '2'.
3. ALL PIPE JUNCTIONS UP TO AND INCLUDING 450DIA AND ALL TAPERS SHALL BE VIA PURPOSE MADE FITTINGS.
4. THE CONTRACTOR IS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION TO DISSIMILAR PIPEWORK.
5. 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 WITH A NON SHRINK EPDXY GROUT TO ENSURE A SMOOTH FINISH.
6. STEP IRONS AT SPACINGS OF 0.3M ARE TO BE PROVIDED IN DRAINAGE PITS MORE THAN 1.0M DEEP.
7. PROVIDE 3.0M LENGTH OF 100DIA SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK AT UPSTREAM END OF EACH PIT.
8. ALL CONCRETE USED IN DRAINAGE PITS SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 32MPA.
9. THE EXCAVATED TRENCH WIDTH FOR PIPE LAYING MUST BE AT LEAST 300mm WIDER THAN THE OUTER DIAMETER OF THE PIPE. PIPES ARE TO BE LAID CENTRALLY WITHIN THE EXCAVATED TRENCH.
10. ALL PIPES ARE TO BE LAID ON A MINIMUM BEDDING OF 75mnn OF SAND GRADED IN ACCORDANCE WITH AS 3500.3 (LATEST EDITION). BEDDING SHALL BE COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY.
11. BACKFILL FOR STORMWATER PITS AND PIPES SHALL BE COMPACTED TO AT LEAST 95% (98% UNDER ROADS) OF THE MAXIMUM DRY DENSITY AND GRADED IN ACCORDANCE WITH AS 3500.3 (LATEST EDITION).
12. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION.
13. UNLESS OTHERWISE SPECIFIED PIPE TRENCH TO BE TYPE H2.
14. THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENCHES ARE SUPPORTED OR PROTECTED TO PREVENT DAMAGE TO OR MOVEMENT OF THESE STRUCTURES
15. UNLESS SPECIFIED ALL DRAINAGE GRATES TO BE CLASS C HEAVY DUTY GALVANISED MILD STEEL TO AS 3996 (LATEST EDITION).
16. CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, FLANGES OR THE LIKE FROM BEARING ON THE TRENCH BOTTOM OR THE UNDERLAY.
17. MATERIAL SHALL BE PLACED IN THE PIPE SURROUND IN LAYERS NOT MORE THAN 200mnn LOOSE THICKNESS AND COMPACT WITHOUT DAMAGING OR DISPLACING THE PIPEWORK. CARE TO BE TAKEN IN VICINITY OF EXISTING SERVICES.
18. UPVC PIPES SHALL CONFORM IN ALL RESPECTS WITH THE REQUIREMENTS OF AS1254 (LATEST EDITION). THE CLASS OF PIPES SHALL BE UPVC "STORMWATER HD" DESIGNED FOR SOLVENT WELD SPIGOT AND SOCKET CONNECTION UNLESS NOTED OTHERWISE.
19. UPVC PIPES SHALL BE SUPPLIED WITH SUFFICIENT QUANTITIES OF SOLVENT FOR MAKING OF THE PIPE JOINTS.
20. UPVC PIPES SHALL BE TRANSPORTED, HANDLED AND STACKED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
21. UPVC PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE WITH THE SOCKET END OF THE PIPE FACING UPSTREAM. WHEN THE PIPES ARE LAID, THE BARREL OF EACH PIPE SHALL BE IN CONTACT WITH THE BEDDING MATERIAL THROUGHOUT ITS FULL LENGTH.
22. THE UPVC PIPE ENDS SHALL BE THOROUGHLY CLEANED BEFORE THE JOINT IS MADE. JOINTING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS DIRECTIONS USING JOINTING SOLVENT AND PRIMER.

SUBSOIL DRAINAGE

1. ALL STORMWATER WORKS ARE TO BE UNDERTAKEN GENERALLY IN ACCORDANCE WITH AS 3500 (LATEST EDITION) STORMWATER DRAINAGE.
2. ALL PIPEWORK SHALL BE BEDDED ON A CONTINUOUS UNDERLAY OF SAND, NOT LESS THAN 75mm THICK IN OTHER THAN ROCK AND 200mm THICK IN ROCK AFTER COMPACTION. THE SAND SHALL BE GRADED IN ACCORDANCE WITH AS3500 (LATEST EDITION) AND COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AND SHALL BE GRADED EVENLY TO THE REQUIRED GRADIENT OF THE PIPELINE.
3. IN WET OR UNSTABLE GROUND CONDITIONS WHERE THE TRENCH BOTTOM REQUIRES FURTHER STABILIZING, ADDITIONAL BEDDING OF 20mm AND/OR 30mm NOMINAL SIZE GGREGATE (AS DIRECTED BY THE SUPERINTENDENT), SHALL BE PLACED BELOW THE STANDARD BEDDING TO A DEPTH DETERMINED BY THE SUPERINTENDENT. WHERE ORDERED BY THE SUPERINTENDENT AN APPROVED FILTER FABRIC SHALL BE USED IN CONJUNCTION WITH THE ADDITIONAL BEDDING.
4. THE BED MATERIAL SHALL BE COMPACTED FOR THE FULL WIDTH OF THE TRENCH BY A MINIMUM OF TWO PASSES OF A VIBRATING PLATE OR HAND TAMPING METHOD TO THE SATISFACTION OF THE SUPERINTENDENT.
5. CHASES SHALL BE FORMED WHERE NECESSARY TO PREVENT SOCKETS, FLANGES OR THE LIKE FROM BEARING ON THE TRENCH BOTTOM OR THE UNDERLAY.
6. THE CONTRACTOR SHALL ENSURE THAT ANY EXISTING STRUCTURES LOCATED ADJACENT TO EXCAVATED TRENCHES ARE SUPPORTED OR PROTECTED TO PREVENT DAMAGE TO OR MOVEMENT OF THESE STRUCTURES
7. THE CONTRACTOR MUST LEAVE ALL SUBSOIL DRAINAGE WORKS UNCOVERED UNTIL ANY TESTING DEEMED NECESSARY BY THE SUPERINTENDENT HAS BEEN PERFORMED.
8. PIPE LAYING SHALL BEGIN AT THE DOWNSTREAM END OF THE LINE.
9. JOINTS SHALL NOT BE MADE UNDERWATER. THE TRENCH SHALL BE DEWATERED TO FACILITATE JOINT MAKING AND INSPECTION. PRECAUTIONS SHALL BE TAKEN TO PREVENT EROSION OF JOINT MATERIAL BY MOVING CURRENTS OF WATER.
10. DRAINAGE LINES SHALL BE CONSTRUCTED TO THE TOLERANCES AS FOLLOWS:

PIPELINE GRADING	LINE TOLERANCE (mm)	LEVEL TOLERANCE (mm)
- LESS THAN 0.6%	50	10
- 0.6% TO 1%	50	20
- GREATER THAN 1%	50	40

NOT WITHSTANDING THE TOLERANCES ABOVE EACH SUBSOIL DRAIN SHALL HAVE A MINIMUM FALL (OF 0.5%) IN THE DIRECTION OF FLOW.
11. BACKFILL MATERIAL SHALL BE INSPECTED AND APPROVED BY THE SUPERINTENDENT PRIOR TO PLACING AND COMPACTION.
12. ALL BACKFILL FOR SUBSOIL DRAINAGE WORKS IS TO BE COMPACTED IN LAYERS NOT EXCEEDING 300mm LOOSE THICKNESS AND COMPACTED WITHOUT DAMAGING OR DISPLACING THE PIPEWORK.
13. BACKFILL FOR SUBSOIL PIPES SHALL BE COMPACTED TO AT LEAST 95% (98% UNDER ROADS) OF THE MAXIMUM DRY DENSITY AT -2% TO +2% OF OPTIMAL MOISTURE CONTENT AND GRADED IN ACCORDANCE WITH AS 3500.3 (LATEST EDITION).
14. 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 CEMENT RENDERED WITH AN EPDXY GROUT TO ENSURE A SMOOTH FINISH.

HL	JM	FOR TENDER	05.06.2025	J
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
BY	CHKD	DESCRIPTION	DATE	REV

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ALTERATIONS & ADDITIONS TO
MacKillop Catholic College
91 SPARKS ROAD,WOONGARRAH, NSW

STORMWATER DESIGN - GENERAL NOTES

DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SW.2 / REV J
A1 SCALE 1 : 1	DATE	

LEGEND

- ROOF AREA
- PAVED/IMPERVIOUS AREA
- GRASSED/PERVIOUS AREA

REFER DRAWING SW.1 FOR REFERENCE DOCUMENTS.

EXISTING SITE CONDITIONS - TOTAL SITE

TOTAL SITE AREA = 74870 m²

ROOF AREA = 14742 m²

PAVED/IMPERVIOUS AREA = 34294 m²

GRASSED/PERVIOUS AREA = 25834 m²

TOTAL IMPERVIOUS AREA = 49036 m² OR 65%

EXISTING SITE CONDITIONS - DEVELOPMENT SITE

TOTAL SITE AREA = 9883 m²

ROOF AREA = 3190 m²

PAVED/IMPERVIOUS AREA = 3561 m²

GRASSED/PERVIOUS AREA = 3132 m²

TOTAL IMPERVIOUS AREA = 6751 m² OR 68%

STORMWATER CATCHMENT PLAN - EXISTING SITE

SCALE1 : 800 @A1

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BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
HL	JM	FOR 50%	24.07.2024	E

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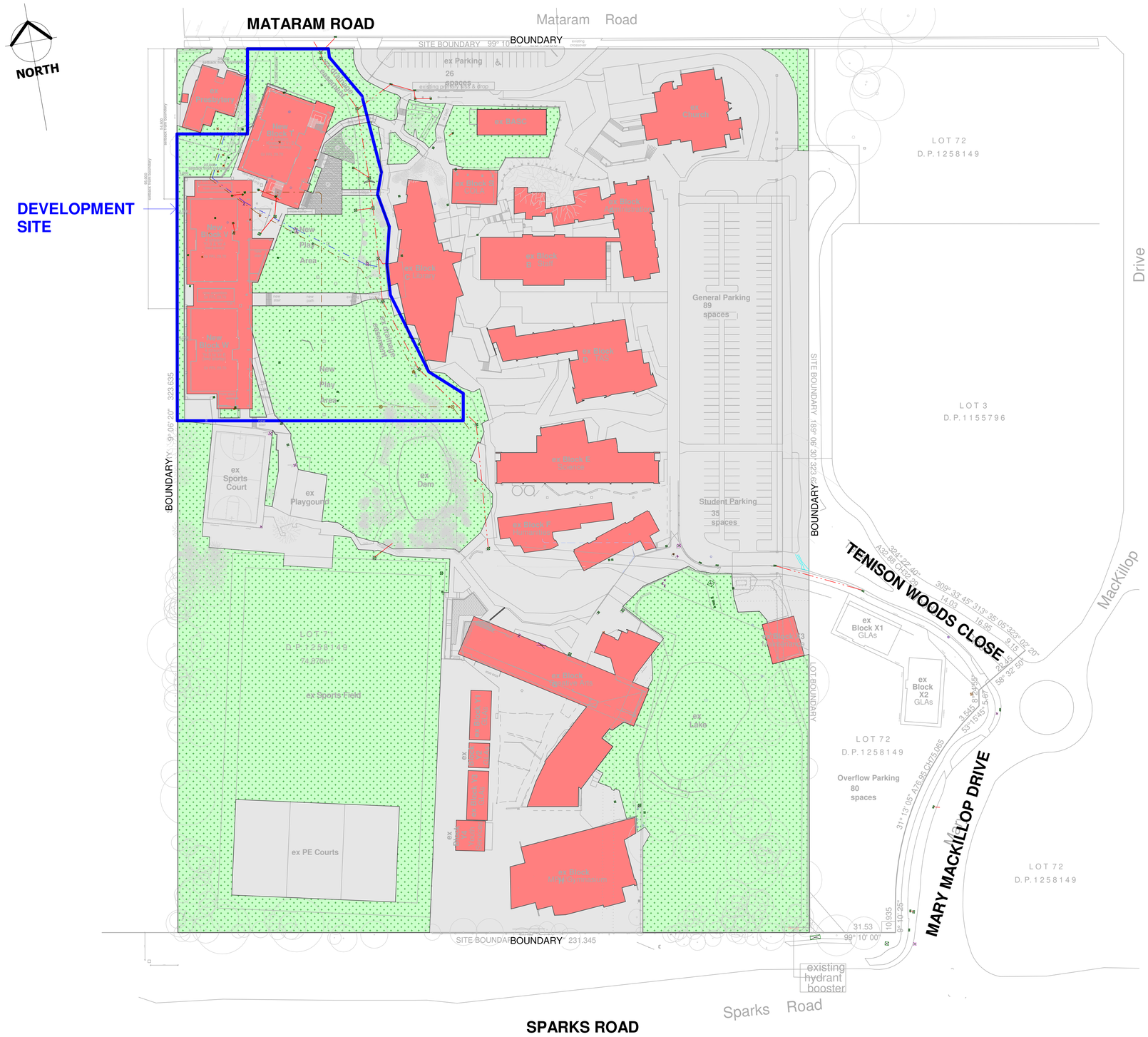
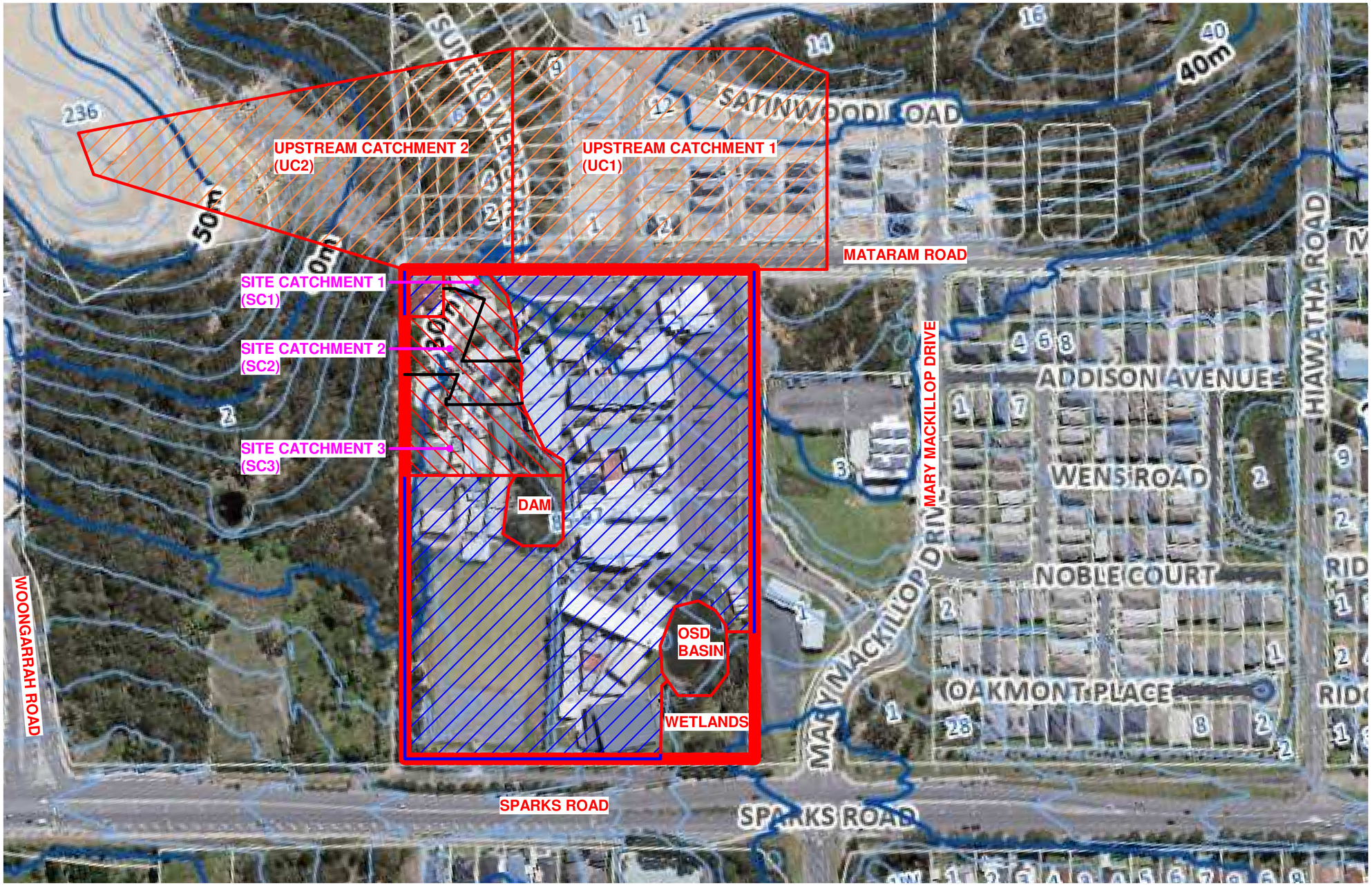
STORMWATER CATCHMENT PLAN - EXISTING SITE

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.3	I


NORTH
MATARAM ROAD
Mataram Road
DEVELOPMENT SITE
SITE BOUNDARY 99° 10'
BOUNDARY
ex Playground
ex Block C
ex Block B
ex Block A
ex Block D
ex Block E
ex Block F
ex Block G
ex Block X1 GLAs
ex Block X2 GLAs
ex Block 1
ex Block 2
ex Block 3
ex Block 4
ex Block 5
ex Block 6
ex Block 7
ex Block 8
ex Block 9
ex Block 10
ex Block 11
ex Block 12
ex Block 13
ex Block



STORMWATER CATCHMENT BOUNDARIES

NOT TO SCALE

LEGEND

- UPSTREAM CATCHMENTS
- SITE CATCHMENTS
- OUTSIDE DEVELOPMENT AREA

COLOUR REPRODUCTION WARNING: ELEMENTS OF THIS DRAWING ARE PRINTED IN COLOUR.

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HL	JM	FOR TENDER	17.09.2024	G
HL	JM	FOR COMMENT	11.09.2024	F
HL	JM	FOR 75%	14.08.2024	E
HL	JM	FOR 50%	24.07.2024	D
BY	CHKD	DESCRIPTION	DATE	REV

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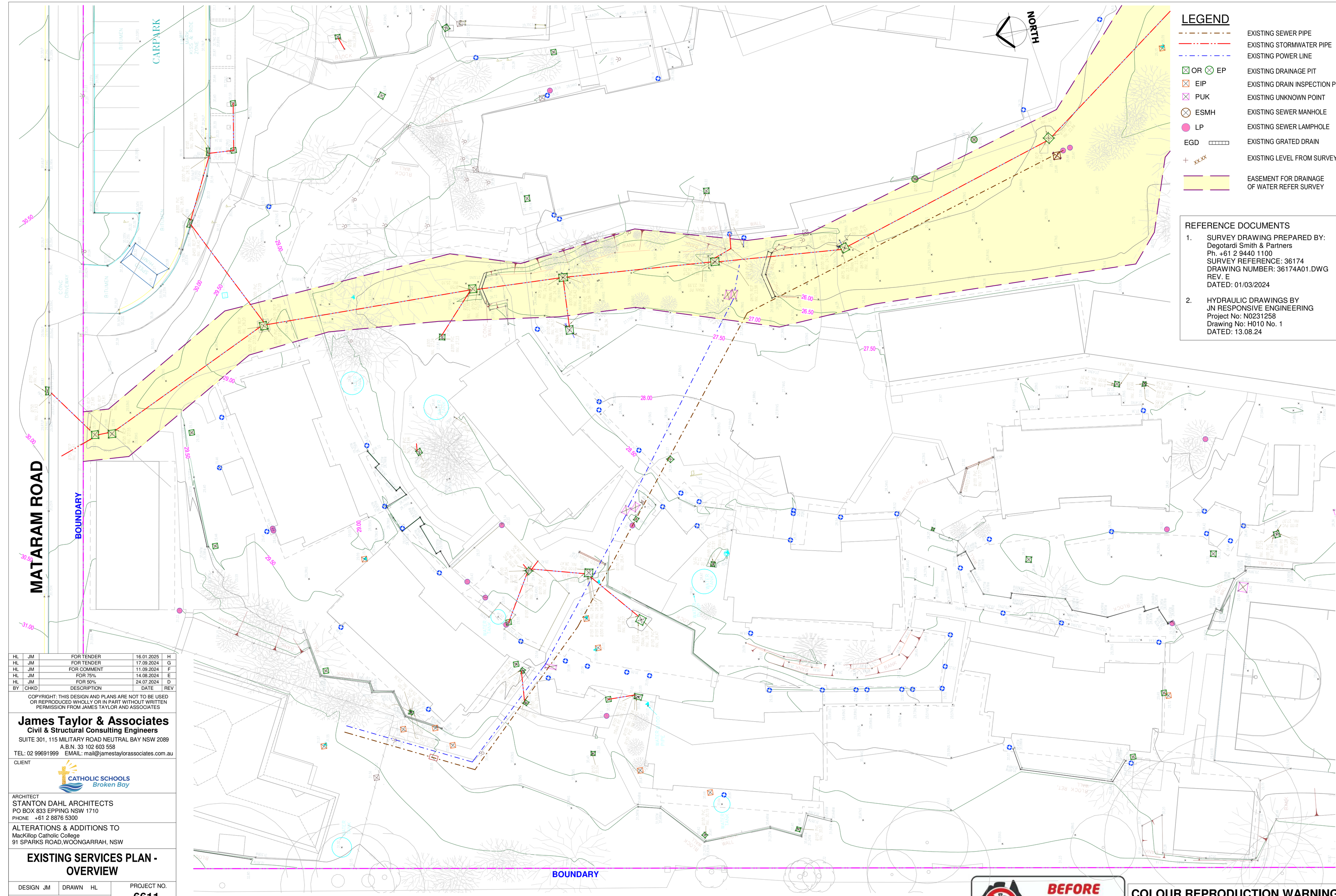
STORMWATER CATCHMENT BOUNDARIES

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.5	H



LEGEND

- EXISTING SEWER PIPE
- EXISTING STORMWATER PIPE
- EXISTING POWER LINE
- OR / EP — EXISTING DRAINAGE PIT
- EIP — EXISTING DRAIN INSPECTION POINT
- PUK — EXISTING UNKNOWN POINT
- ESMH — EXISTING SEWER MANHOLE
- LP — EXISTING SEWER LAMPHOLE
- EGD — EXISTING GRATED DRAIN
- XX.XX — EXISTING LEVEL FROM SURVEY
- EASEMENT FOR DRAINAGE OF WATER REFER SURVEY

REFERENCE DOCUMENTS

1. SURVEY DRAWING PREPARED BY:
   Degotardi Smith & Partners
   Ph. +61 2 9440 1100
   SURVEY REFERENCE: 36174
   DRAWING NUMBER: 36174A01.DWG
   REV. E
   DATED: 01/03/2024
2. HYDRAULIC DRAWINGS BY
   JN RESPONSIVE ENGINEERING
   Project No: N0231258
   Drawing No: H010 No. 1
   DATED: 13.08.24

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	H
HL	JM	FOR TENDER	17.09.2024	G
HL	JM	FOR COMMENT	11.09.2024	F
HL	JM	FOR 75%	14.08.2024	E
HL	JM	FOR 50%	24.07.2024	D

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EXISTING SERVICES PLAN - OVERVIEW

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE 1 : 200	DATE	SW.9	H

EXISTING SERVICES PLAN - OVERVIEW

SCALE 1 : 200 @A1

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CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

NOTES:

- DP, RWO, & PIT LOCATIONS & NUMBERS INDICATIVE ONLY & SUBJECT TO FINAL ARCHITECTURAL SETOUT.
- ALL PIPEWORK 225 DIA UPVC AT MIN 1% FALL U.N.O.
- ALL PITS TO BE 900x900 INSITU CONCRETE U.N.O.
- ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3
- REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION
- ALL SURFACE LEVELS TO BE MIN. 0.5% FALL U.N.O.
- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

NORTH

INSPECTION EYE

SUBSOIL CONNECTION TO BE DISCUSSED WITH ARCHITECT. REINSTATE FOOTPATH AS REQUIRED

NEW CONNECTION TO EXISTING PIT IN ACCORDANCE WITH COUNCIL STANDARD DRAWINGS

INV 24.72 TBC

FUTURE SEWER LOCATION TBC

MAINTAIN EXISTING CONNECTION TO COUNCIL PITS

EXISTING SEWER FOR PRESBYTERY

REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION (TYPICAL)

NEW DISH DRAIN - TYPICAL

MATARAM ROAD

BOUNDARY

CH 0.00 CH 19.04 CH 34.52 CH 43.42 CH 46.61 CH 51.52 CH 71.22 CH 81.76 CH 91.45

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	XX.XX
PROPOSED LEVEL	XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

BY	CHKD	DESCRIPTION	DATE	REV
HA	JM	FOR TENDER	17.03.2025	K
HL	JM	FOR TENDER	16.01.2025	J
HL	JM	FOR TENDER	29.10.2024	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G

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STORMWATER CONCEPT PLAN - OVERVIEW

DESIGN JM	DRAWN HL	PROJECT NO. 6611	
CHKD.			
APPRD.		DRAWING NO. SW.10	REV K
A1 SCALE As indicated	DATE		

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STORMWATER CONCEPT PLAN - OVERVIEW

SCALE 1 : 200 @A1 SCALE 1:400 @A3

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MATARAM ROAD

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	XX.XX
PROPOSED LEVEL	XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

NOTES:

- DP, RWO, & PIT LOCATIONS & NUMBERS INDICATIVE ONLY & SUBJECT TO FINAL ARCHITECTURAL SETOUT.
- ALL PIPEWORK 225 DIA UPVC AT MIN 1% FALL U.N.O.
- ALL PITS TO BE 900x900 INSITU CONCRETE U.N.O.
- ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3
- REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION
- ALL SURFACE LEVELS TO BE MIN. 0.5% FALL U.N.O.
- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

PROTECT SERVICE PITS DURING CONSTRUCTION ADJUST / RELOCATE AS REQUIRED TO MEET UTILITY AUTHORITY REQUIREMENTS.

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

BOUNDARY

EP1-1 Ø 750 INV 27.75 / 29.83 / 29.79 / Ø 750 INV. 27.63

EP1-2 Ø 750 RCP INV. 27.81 / 29.91 / Ø 750 RCP INV. 27.60

EP1-3 29.85 / Ø 750 RCP INV. 27.55

EP1-4 28.70 / Ø250 PVC INV. 27.59 / Ø100 PVC INV. 27.69 / Ø 675 RCP INV. 26.20 / Ø 675 RCP INV. 26.20 / Ø300 PVC INV. 27.29

EP5-1 30.58

EP5-2 30.27

EP5-3 30.09 / Ø150 INV. 29.04

EP5-4 29.99 / Ø300 PVC INV. 28.65 / Ø 450 RCP INV. 28.42

NP1-1 / NP1-2 / NP1-3 / NP1-4

NP2-1 / NP2-2 / NP2-3 / NP2-5 / NP2-6

EXISTING 825Ø PIPE TBC

REMOVE EXISTING PITS AS REQUIRED -TYPICAL

REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION

PIT LOCATION IN LANDSCAPING TBC. IF NEW PITS IMPACT PROPOSED PLANTINGS, PIT LOCATIONS TO SHIFT TO SUIT.

GRATED DRAINS TO THE HYDRAULIC ENGINEERS' DETAILS -TYPICAL

SURFACE TREATMENT OVER EXISTING EASEMENT TO ALLOW FOR REMOVAL FOR FUTURE MAINTENANCE OF EASEMENT. JOINTING TO DELINEATE EASEMENT EXTENTS.

EXISTING 825Ø PIPE TBC

MAINTAIN EXISTING CONNECTION TO COUNCIL PITS. CONSTRUCT NEW CONNECTIONS IF REQUIRED.

UPGRADE EXISTING PIT AS REQUIRED

LID RL TO SUIT ARCHITECT'S LEVELS

300Ø UPVC @ MIN. 1% FALL

Ø 300 INV. 27.24 / Ø 300 INV. 27.23 / Ø 300 INV. 27.00 / Ø 750 INV. 25.10 / Ø 750 INV. 25.03

REFER DRAWING SW.12 FOR CONTINUATION

REFER DRAWING SW.13 FOR CONTINUATION

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STORMWATER CONCEPT PLAN - SHEET 1

SCALE 1 : 100 @A1 1:200 @A3

KEY PLAN

SCALE1 : 3500 @A1

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	J
HL	JM	FOR TENDER	29.10.2024	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F

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STORMWATER CONCEPT PLAN - SHEET 1

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.11	J

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NORTH

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

CONFIRM LOCATION & EXTENTS OF PRESBYTERY STORMWATER.
IF STORMWATER IS IMPACTED BY DEVELOPMENT, REDIRECT & CONNECT INTO NEW SYSTEM.
DETAILS TBC ON SITE.

E1 SW.41 | E1A SW.41 | E2E SW.42 | E2F SW.43 | E2G SW.43

NP1-3 NP1-4 NP1-5 NP1-6 NP1-7 NP1-8
NP2-2 NP2-3 NP2-4 NP2-5
NP3-1 NP3-2 NP3-3 NP3-4 NP3-5

DP DD RWO

300Ø UPVC @ MIN. 1% FALL
300Ø UPVC @ MIN. 2% FALL

BOUNDARY

REFER DRAWING SW.11 FOR CONTINUATION

REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION

GRATED DRAINS TO THE HYDRAULIC ENGINEERS' DETAILS -TYPICAL

REFER DRAWING SW.14 FOR CONTINUATION

REFER DRAWING SW.13 FOR CONTINUATION

WATER TANK

KEY PLAN

SCALE1 : 3500 @A1

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	XX.XX
PROPOSED LEVEL	XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

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- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

BY	CHKD	DESCRIPTION	DATE	REV
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HL	JM	FOR TENDER	16.01.2025	J
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STORMWATER CONCEPT PLAN - SHEET 2

SCALE 1 : 100 @A1 1:200 @A3

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1	SCALE As indicated	DATE	SW.12 K

NORTH

DP

DP

300Ø UPVC
@ MIN. 1% FALL

NP1-5

DP

300Ø UPVC
@ MIN. 1% FALL

NP1-6

NP2-4

DP

REMOVE EXISTING PITS
& PIPES AS REQUIRED
DURING DEMOLITION

GRATED DRAINS TO THE
HYDRAULIC ENGINEERS'
DETAILS -TYPICAL

NP1-7

DP

NP2-3

300Ø UPVC
@ MIN. 1% FALL

NP2-5

NP2-6

Upgrade ex swp

UPGRADE EXISTING PITS
AS REQUIRED

300Ø UPVC
@ MIN. 2% FALL

NP1-8

PROTECT SERVICE PITS
DURING CONSTRUCTION
ADJUST / RELOCATE
AS REQUIRED

REFER DRAWING SW.11 FOR CONTINUATION

EP1-5

SURFACE TREATMENT OVER
EXISTING EASEMENT TO ALLOW
FOR REMOVAL FOR FUTURE
MAINTENANCE.
JOINTING TO DELINEATE
EASEMENT EXTENTS.

NP1-9

EP1-6

MAINTAIN EXISTING CONNECTION
TO COUNCIL PITS.
CONSTRUCT NEW CONNECTIONS
IF REQUIRED

EP1-7

existing
pits

EP1-8

REFER DRAWING SW.12 FOR CONTINUATION

REFER DRAWING SW.14 FOR CONTINUATION

REFER DRAWING SW.15 FOR CONTINUATION

FUTURE SEWER
LOCATION TBC

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

PROTECT SERVICE PITS
DURING CONSTRUCTION
ADJUST / RELOCATE
AS REQUIRED TO MEET
UTILITY AUTHORITY
REQUIREMENTS.

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STORMWATER CONCEPT PLAN - SHEET 3

SCALE 1 : 100 @A1 1:200 @A3

KEY PLAN

SCALE1 : 3500 @A1

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	+ XX.XX
PROPOSED LEVEL	× XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

NOTES:

- DP, RWO, & PIT LOCATIONS & NUMBERS INDICATIVE ONLY & SUBJECT TO FINAL ARCHITECTURAL SETOUT.
- ALL PIPEWORK 225 DIA UPVC AT MIN 1% FALL U.N.O.
- ALL PITS TO BE 900x900 INSITU CONCRETE U.N.O.
- ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3
- REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION
- ALL SURFACE LEVELS TO BE MIN. 0.5% FALL U.N.O.
- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	21.02.2025	J
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F

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ALTERATIONS & ADDITIONS TO
MacKillop Catholic College
91 SPARKS ROAD,WOONGARRAH, NSW

STORMWATER CONCEPT PLAN - SHEET 3

DESIGN JM	DRAWN HL	PROJECT NO.	6611
CHKD.			
APPRD.		DRAWING NO.	SW.13
A1 SCALE As indicated	DATE	REV	J

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REFER DRAWING SW.12 FOR CONTINUATION

NORTH

29.65 LOCAL HIGH POINT

300Ø @ MIN. 1% FALL

NP3-6

300Ø @ MIN. 1% FALL

NP3-7

300Ø @ MIN. 2% FALL

NP4-10

375Ø @ MIN. 3% FALL

300Ø @ MIN. 2% FALL

NP4-1

NP4-2

NP4-3

NP4-4

NP4-5

NP4-6

NP4-7

NP4-8

NP4-9

GRATED DRAINS TO THE HYDRAULIC ENGINEERS' DETAILS -TYPICAL

REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION -TYPICAL

CONFIRM LOCATION & EXTENTS OF BASKET BALL COURT STORMWATER ONSITE. IF REQUIRED, CONNECT TO NEW SYSTEM. DETAILS TBC ONSITE.

EXISTING STORMWATER PIT TBC

PROTECT SERVICE PITS DURING CONSTRUCTION ADJUST / RELOCATE AS REQUIRED TO MEET UTILITY AUTHORITY REQUIREMENTS.

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

REFER DRAWING SW.15 FOR CONTINUATION

BOUNDARY

Amenities Block 1

Stair 3

Lift 1

Stair 2

Stair 1

GLA WG-04

GLA WG-01

GLA WG-03

GLA WG-02

Withdrawal WG

Verandah WG

Shared Practical Activity Area

Circulation

Store 1

Mech Plant

edge of walkway over

1 in 40

1 in 48

new accessible walkway

new trees

landscaping

existing fence

8.450

4.065

KEY PLAN

SCALE1 : 3500 @A1

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	XX.XX
PROPOSED LEVEL	XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

NOTES:

- DP, RWO, & PIT LOCATIONS & NUMBERS INDICATIVE ONLY & SUBJECT TO FINAL ARCHITECTURAL SETOUT.
- ALL PIPEWORK 225 DIA UPVC AT MIN 1% FALL U.N.O.
- ALL PITS TO BE 900x900 INSITU CONCRETE U.N.O.
- ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3
- REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION
- ALL SURFACE LEVELS TO BE MIN. 0.5% FALL U.N.O.
- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	J
HL	JM	FOR TENDER	29.10.2024	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F

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ALTERATIONS & ADDITIONS TO
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91 SPARKS ROAD,WOONGARRAH, NSW

STORMWATER CONCEPT PLAN - SHEET 4

DESIGN JM	DRAWN HL	PROJECT NO.	6611
CHKD.			
APPRD.		DRAWING NO.	SW.14
A1 SCALE As indicated	DATE	REV	J

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STORMWATER CONCEPT PLAN - SHEET 4

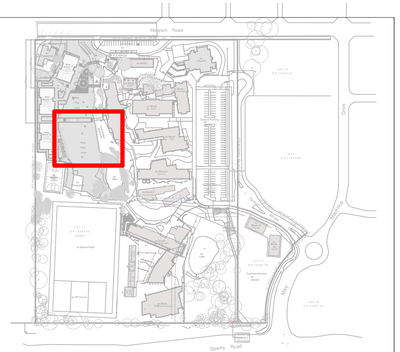
SCALE 1 : 100 @A1 1:200 @A3

REFER DRAWING SW.13 FOR CONTINUATION

NORTH

PROTECT SERVICE PITS DURING CONSTRUCTION ADJUST / RELOCATE AS REQUIRED TO MEET UTILITY AUTHORITY REQUIREMENTS.

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.



KEY PLAN

SCALE1 : 3500 @A1

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	+ XX.XX
PROPOSED LEVEL	× XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

NOTES:

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- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
HL	JM	FOR 50%	24.07.2024	E

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STORMWATER CONCEPT PLAN - SHEET 5

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1	SCALE As indicated	DATE	SW.15 I

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STORMWATER CONCEPT PLAN - SHEET 5

SCALE 1 : 100 @A1 1:200 @A3

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REFER DRAWING SW.14 FOR CONTINUATION

375Ø @ MIN. 3% FALL

NP4-11

EP1-8

375Ø @ MIN. 3% FALL

26.00

NEW CONNECTION TO EXISTING PIT IN ACCORDANCE WITH COUNCIL STANDARD DRAWINGS

CONFIRM LOCATION & DEPTH OF EXISTING SEWER ONSITE NEW STORMWATER PIPE TO BE MIN. 300 ABOVE SEWER. DETAILS TBC.

existing pit

EP1-9

INV 24.72 TBC

ESP

FUTURE SEWER TBC

METAL

26.00

REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION

EP1-10

BLOCK WALL

GRATED

Ø100 PVC INV. 27.77

new swp

ex swp

SW4 SW.24

CONTRACTOR TO LOCATE & VERIFY THE LOCATION, SIZE & DEPTH OF ALL EXISTING UTILITY SERVICES PRIOR TO CARRYING OUT THE WORKS. ADJUST / RELOCATE EXISTING UTILITY SERVICES IN ACCORDANCE WITH THE RELEVANT UTILITY AUTHORITY REQUIREMENTS.

PROTECT SERVICE PITS DURING CONSTRUCTION ADJUST / RELOCATE AS REQUIRED TO MEET UTILITY AUTHORITY REQUIREMENTS.

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- ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3
- REMOVE EXISTING PITS & PIPES AS REQUIRED DURING DEMOLITION
- ALL SURFACE LEVELS TO BE MIN. 0.5% FALL U.N.O.
- INSTALL FLEXIBLE PIPE COUPLINGS AT PIT LOCATIONS AS REQUIRED. LOCATIONS & DETAILS TBC.

NORTH

LEGEND

EXISTING SEWER PIPE	
PROPOSED SEWER PIPE	
EXISTING STORMWATER PIPE	
PROPOSED STORMWATER PIPE	
SUBSOIL AGG DRAIN	
EXISTING POWER LINE	
FLUSH POINT	FP
DOWNPIPE	DP
RAIN WATER OUTLET	RWO
PROPOSED STORMWATER PIT	## - #
PROPOSED STORMWATER PUMP OUT PIT	## - #
PROPOSED SEWER PIT	PSP
PROPOSED GROSS POLLUTANT TRAP	GPT
PROPOSED SPEL FILTER	
EXISTING PIT	OR EP
EXISTING PIT TO BE REMOVED	OR EP
EXISTING SEWER MANHOLE	ESMH
EXISTING LEVEL FROM SURVEY	XX.XX
PROPOSED LEVEL	XX.XX
PROPOSED GRATED DRAIN	GD
PROPOSED FORMED DISH DRAIN	DD
PROPOSED RETAINING WALL	RW
RAINWATER TANK	RWT
ON SITE DETENTION TANK	OSD
OVERLAND FLOW	
NEW KERB + GUTTER	K&G
NEW KERB ONLY	KO

STAGE 2

EXISTING BUILDING TO BE DEMOLISHED STAGE 2

STAGE 3

EXISTING BUILDING TO BE DEMOLISHED STAGE 3

STAGE 1

MATARAM ROAD

BOUNDARY

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	C
HL	JM	FOR TENDER	17.09.2024	B
HL	JM	FOR COMMENT	11.09.2024	A

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STORMWATER CONCEPT PLAN - STAGING

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.16	C

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STORMWATER CONCEPT PLAN - STAGING

SCALE 1 : 200 @A1

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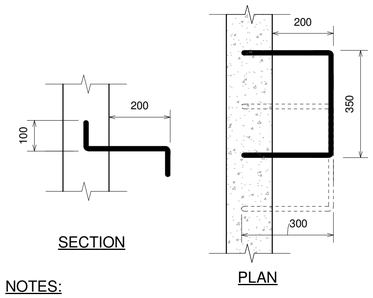
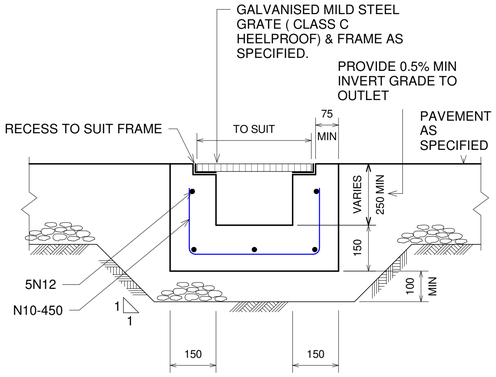


NOTES:

1. WHEN POSITIONING IN STRAIGHT ALIGNMENT, STEP TO BE 400 WIDE.
2. STAGGERED STEPS TO BE 300 WIDE, STEPS TO BE STAGGERED 300 CENTRE TO CENTRE FOR ALTERNATE STEPS WITH MINIMUN 45 OVERLAP.
3. SPACING TO BE UNIFORM TO WITHIN +-8mm IN EACH PIT.
4. STEP IRONS TO BE H.D. GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH LOCAL GOVERNMENT'S CODES & REQUIREMENTS

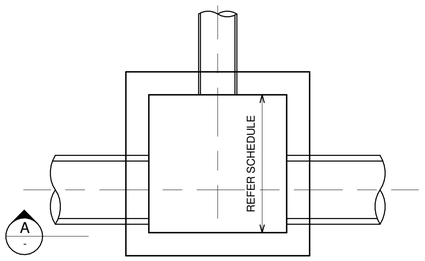
STEP IRONS

NOT TO SCALE



GRATED DRAIN PAVEMENT

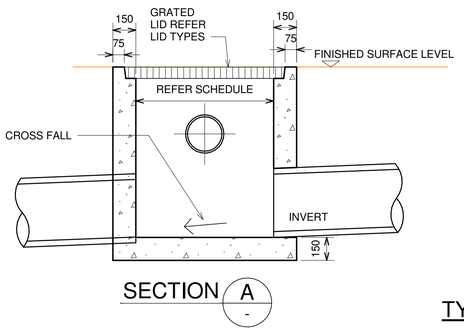
SCALE 1:10



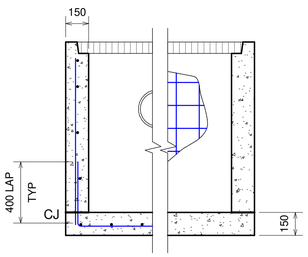
PLAN (LID REMOVED)

NOTES

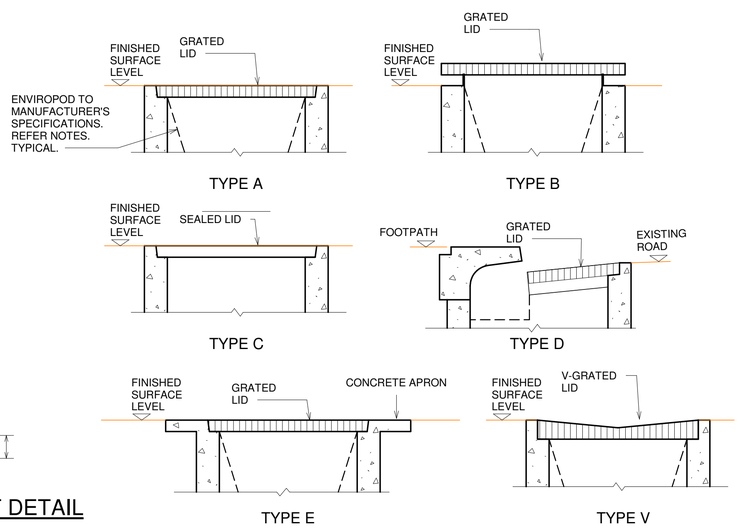
1. CONCRETE STRENGTH N25.
2. SIDE DIMENSIONS WILL VARY SUBJECT TO PIPE SIZE. SIDE DIMENSIONS ARE DETERMINED BY LARGEST OUTSIDE PIPE DIMENSIONS PLUS 200.
3. PIT DIMENSIONS ARE ALSO GOVERNED BY THE DEPTH OF THE PIT.
4. REINFORCEMENT IN WALLS/SLAB TO BE IN ACCORDANCE WITH LOCAL GOVERNMENT'S CODES & REQUIREMENTS
5. UNLESS NOTED OTHERWISE, PROVIDE ENVIROPODS TO ALL GRATED PITS.



SECTION A



TYPICAL PIT REINFORCEMENT DETAIL



PIT LID TYPES

ALL STORMWATER DRAINAGE WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH CENTRAL COAST COUNCIL CIVIL WORKS SPECIFICATIONS & STANDARD DRAWINGS AS REQUIRED

PIT SCHEDULE

PIT NO.	SIZE	SURFACE LEVEL	INVERT LEVEL	GRATE CLASS	LID TYPE
EP1-1	EXISTING	29.83	27.63	EXISTING	EXISTING (D)
EP1-2	EXISTING	29.93	27.61	EXISTING	EXISTING (A)
EP1-3	EXISTING	29.85	27.55	EXISTING	EXISTING (A)
EP1-4	EXISTING	28.70	26.20	EXISTING	EXISTING (A)
EP1-5	EXISTING	27.52	25.03	EXISTING	EXISTING (A)
EP1-6	EXISTING	26.57	24.12	EXISTING	EXISTING (A)
EP1-7	EXISTING	26.72	23.98	EXISTING	EXISTING (A)
EP1-8	EXISTING	25.98	23.72	EXISTING	EXISTING (A)
EP1-9	EXISTING	25.70	22.84	EXISTING	EXISTING (A)
EP1-10	EXISTING	25.40	22.50	EXISTING	EXISTING (A)
EP5-1	EXISTING	30.58	29.98	EXISTING	EXISTING (A)
EP5-2	EXISTING	30.27	29.67	EXISTING	EXISTING (A)
EP5-3	EXISTING	30.05	29.04	EXISTING	EXISTING (D)
EP5-4	EXISTING	29.99	28.42	EXISTING	EXISTING (D)
NP1-1	600x900	29.51**	29.08**	A	V*
NP1-2	600x900	29.44**	28.97**	A	V*
NP1-3	600x900	29.37**	28.84**	A	V*
NP1-4	600x900	29.31**	28.71**	A	V*
NP1-5	900x900	29.26**	28.55**	A	C
NP1-6	900x900	29.40**	28.40**	A	C
NP1-7	900x900	28.58**	28.27**	B	A
NP1-8	900x900	27.80**	27.20**	B	A
NP1-9	900x900	27.40**	25.96**	B	A
NP2-1	900x900	28.87**	28.34**	A	A
NP2-2	900x900	28.62**	28.18**	A	A
NP2-3	900x900	28.60**	28.05**	A	A
NP2-4	900x900	29.58**	28.12**	A	C
NP2-5	900x900	28.50**	27.93**	B	A*
NP2-6	900x900	27.84**	27.23**	B	A
NP3-1	600x900	29.44**	29.01**	A	V*
NP3-2	600x900	29.49**	28.90**	A	V*
NP3-3	600x900	29.53**	28.81**	A	V*
NP3-4	600x900	29.58**	28.69**	A	V*
NP3-5	600x900	29.62**	28.66**	A	V*
NP3-6	600x900	29.62**	28.55**	A	V*
NP3-7	900x900	29.55**	28.32**	A	C
NP4-1	600x900	29.58**	29.15**	A	V*
NP4-2	600x900	29.53**	29.12**	A	V*
NP4-3	600x900	29.48**	29.01**	A	V*
NP4-4	600x900	29.43**	28.90**	A	V*
NP4-5	900x900	29.38**	28.78**	A	A*
NP4-6	900x900	29.33**	28.675**	A	A*
NP4-7	900x900	29.23**	28.20**	A	A*
NP4-8	900x900	28.47**	27.87**	B	A
NP4-9	900x900	28.50**	27.44**	B	A
NP4-10	900x900	28.90**	27.21**	B	A
NP4-11	900x900	26.50**	25.62**	B	A

NOTES

* HEEL SAFE GRATE TYPE REQUIRED FOR PEDESTRIAN SAFETY.

** LEVELS INDICATIVE ONLY & SUBJECT TO FINAL ARCHITECTURAL LAYOUT.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	J
HL	JM	FOR TENDER	29.10.2024	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F

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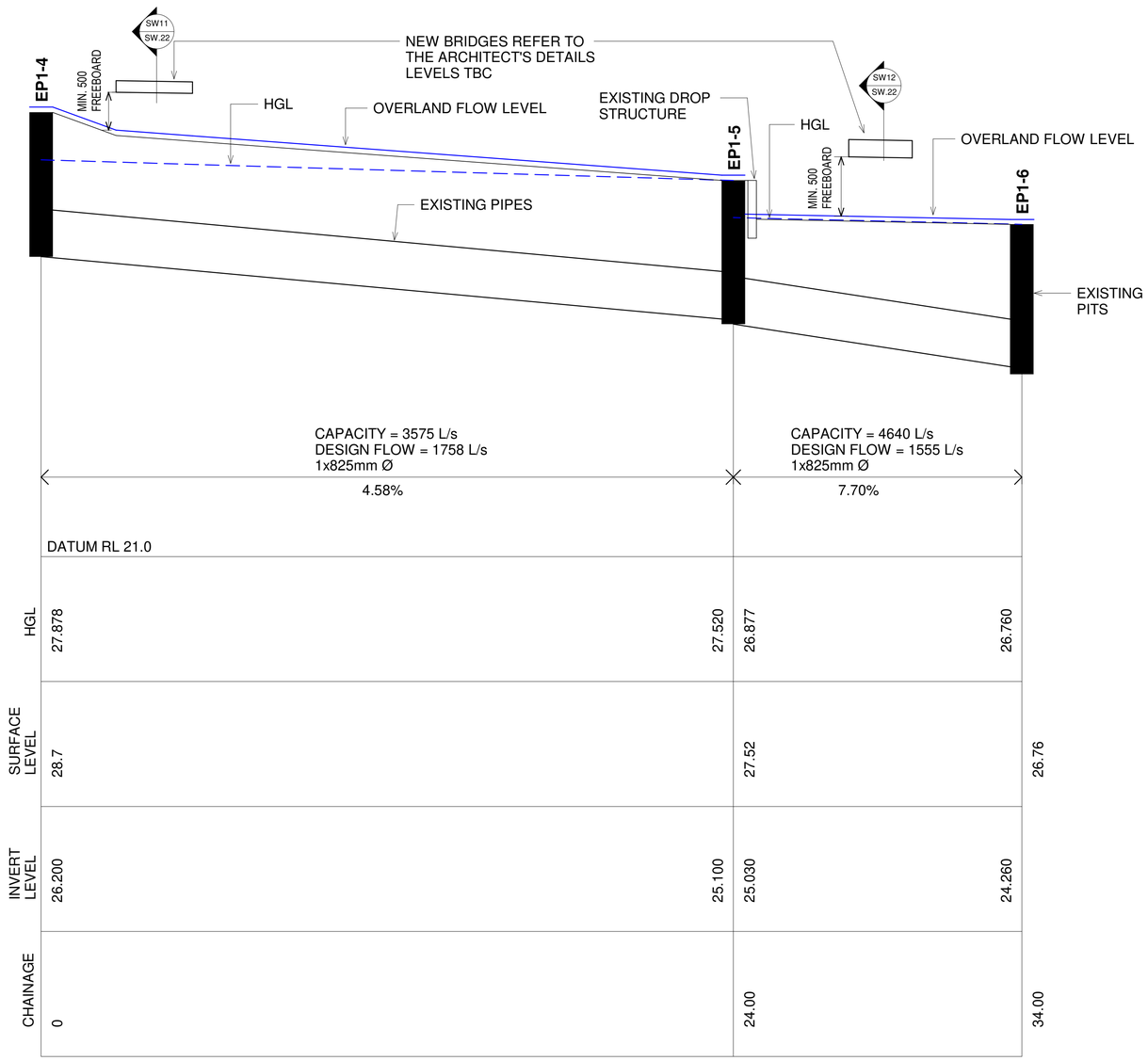
STORMWATER TYPICAL DETAILS

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.20	J



SW1 / SW.11 **LONGITUDINAL SECTION - EP1-4 TO EP1-6**

SCALE 1:100 @A1 HORIZONTAL
SCALE 1:50 @A1 VERTICAL

RESULTS FROM DRAINS MODEL FOR POST DEVELOPMENT CATCHMENTS
RESULTS FOR CRITICAL 1% AEP STORM EVENT

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	I
HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
HL	JM	FOR 50%	24.07.2024	E

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STORMWATER SECTIONS SHEET 1

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APPRD.		DRAWING NO.	REV
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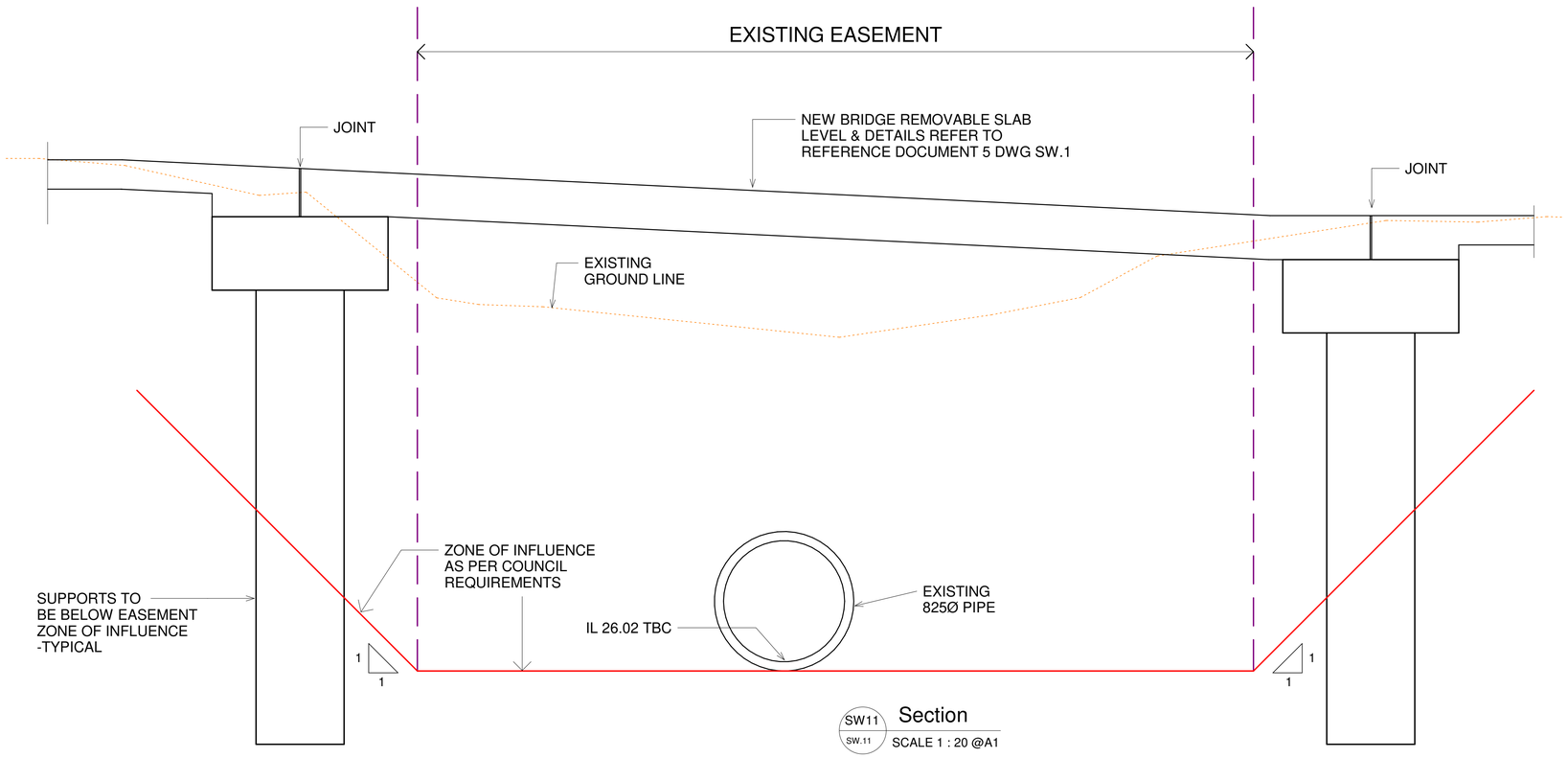
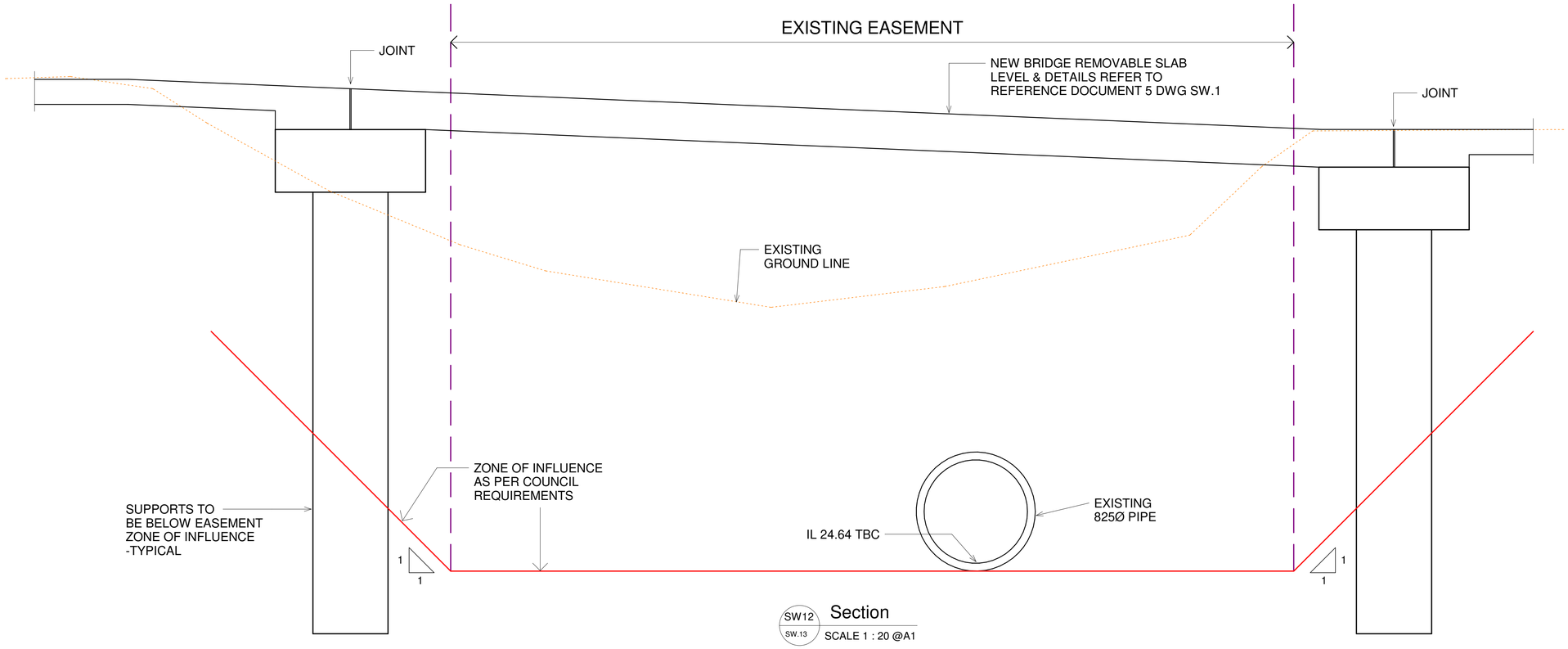


SW11 / SW.11 Section

SCALE 1 : 20 @A1



SW12 / SW.13 Section

SCALE 1 : 20 @A1

BY	CHKD	DESCRIPTION	DATE	REV
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HL	JM	FOR TENDER	17.09.2024	H
HL	JM	FOR COMMENT	11.09.2024	G
HL	JM	FOR 75%	14.08.2024	F
HL	JM	FOR 50%	24.07.2024	E

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STORMWATER SECTIONS SHEET 2

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
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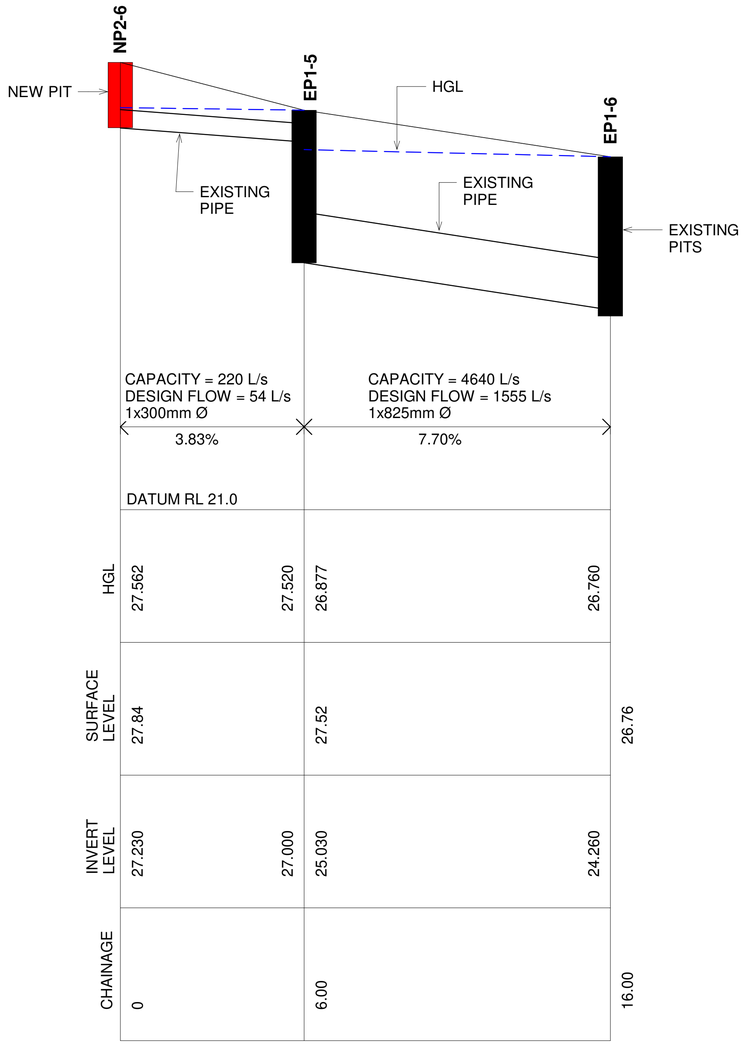
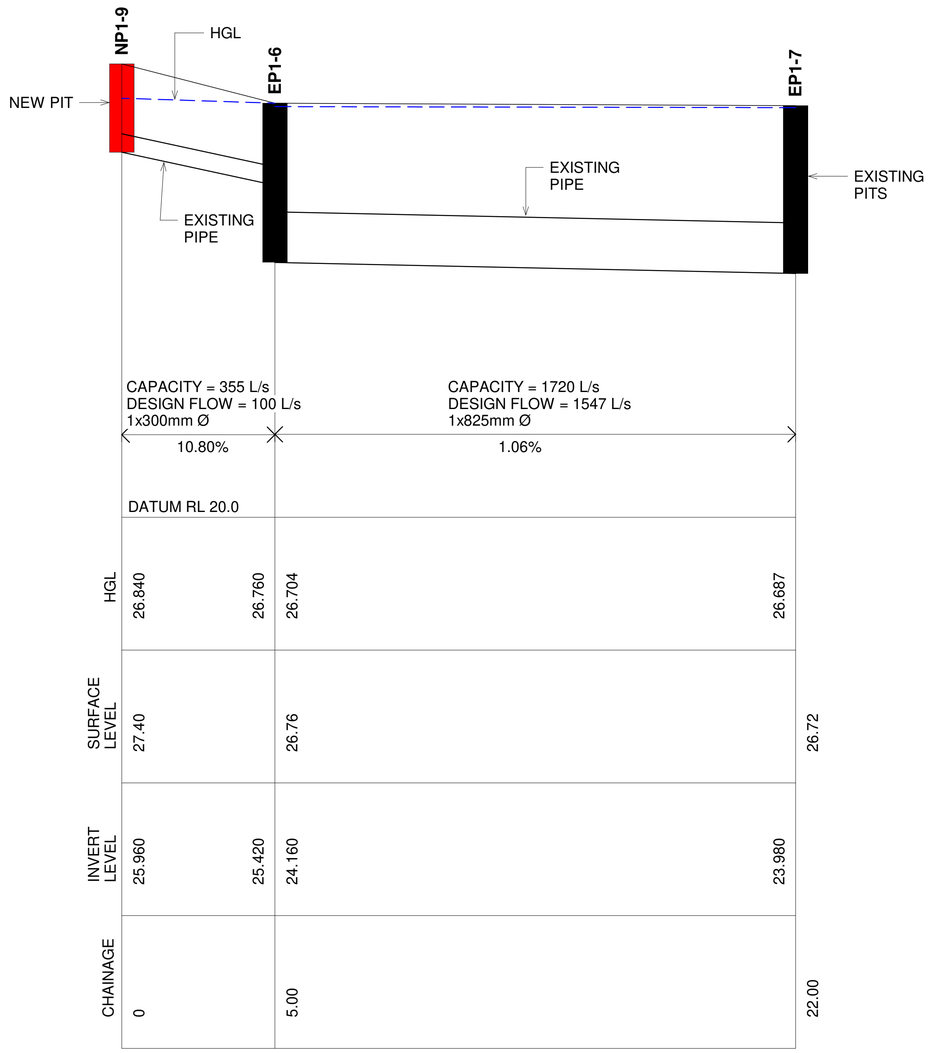


SW2 SW.11 **LONGITUDINAL SECTION - NP2-6 TO EP1-6**

SCALE 1:100 @A1 HORIZONTAL
SCALE 1:50 @A1 VERTICAL

RESULTS FROM DRAINS MODEL FOR POST DEVELOPMENT CATCHMENTS
RESULTS FOR CRITICAL 1% AEP STORM EVENT



SW3 SW.13 **LONGITUDINAL SECTION - NP1-9 TO EP1-7**

SCALE 1:100 @A1 HORIZONTAL
SCALE 1:50 @A1 VERTICAL

RESULTS FROM DRAINS MODEL FOR POST DEVELOPMENT CATCHMENTS
RESULTS FOR CRITICAL 1% AEP STORM EVENT

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	G
HL	JM	FOR TENDER	17.09.2024	F
HL	JM	FOR COMMENT	11.09.2024	E
HL	JM	FOR 75%	14.08.2024	D
HL	JM	FOR 50%	24.07.2024	C

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ALTERATIONS & ADDITIONS TO
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STORMWATER SECTIONS SHEET 3

DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SW.23 / REV G
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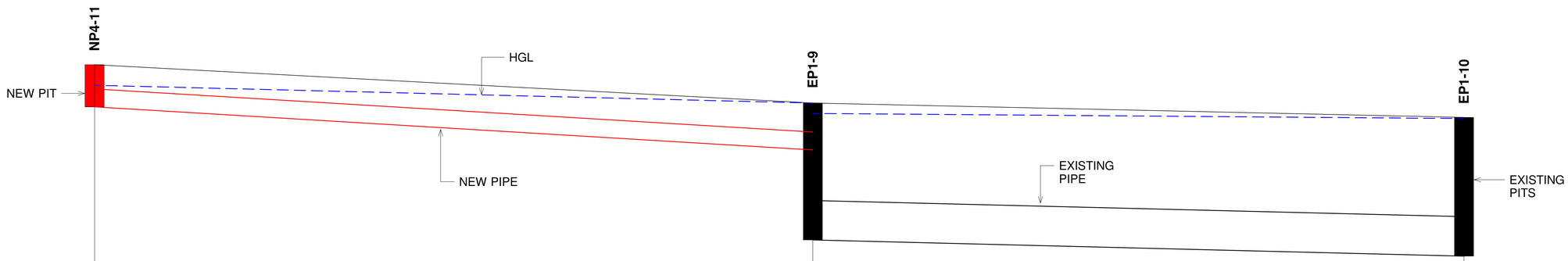

DATUM RL 20.0

HGL	26.071	25.700	25.483	25.376
SURFACE LEVEL	26.50		25.7	25.40
INVERT LEVEL	25.620	24.720	22.840	22.500
CHAINAGE	0		30.00	57.20

SW4
SW.15

LONGITUDINAL SECTION - NP4-11 TO EP1-10

SCALE 1:100 @A1 HORIZONTAL
SCALE 1:50 @A1 VERTICAL

RESULTS FROM DRAINS MODEL FOR POST DEVELOPMENT CATCHMENTS
RESULTS FOR CRITICAL 1% AEP STORM EVENT

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	G
HL	JM	FOR TENDER	17.09.2024	F
HL	JM	FOR COMMENT	11.09.2024	E
HL	JM	FOR 75%	14.08.2024	D
HL	JM	FOR 50%	24.07.2024	C

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ALTERATIONS & ADDITIONS TO
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STORMWATER SECTIONS SHEET 4

DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SW.24 / REV G
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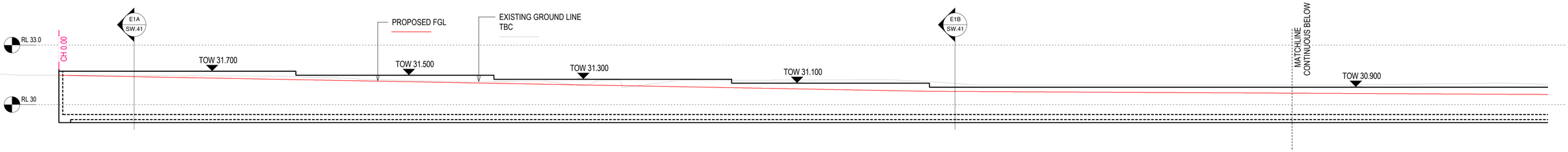

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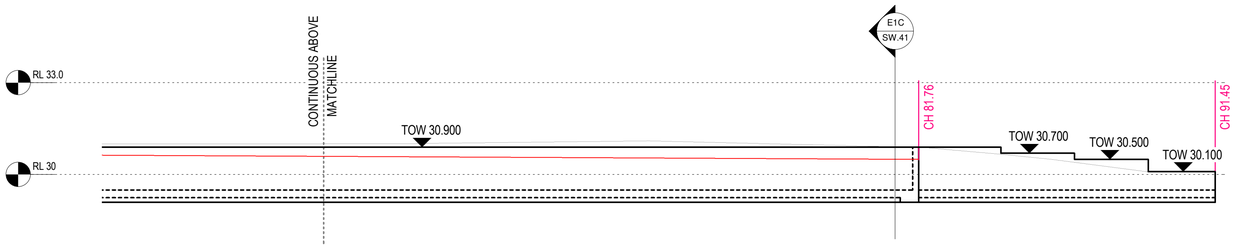

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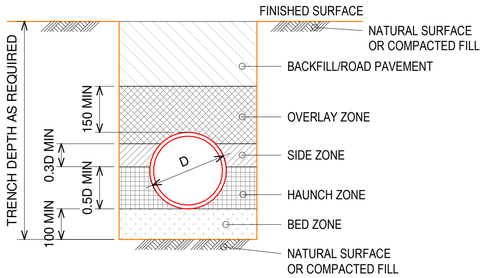
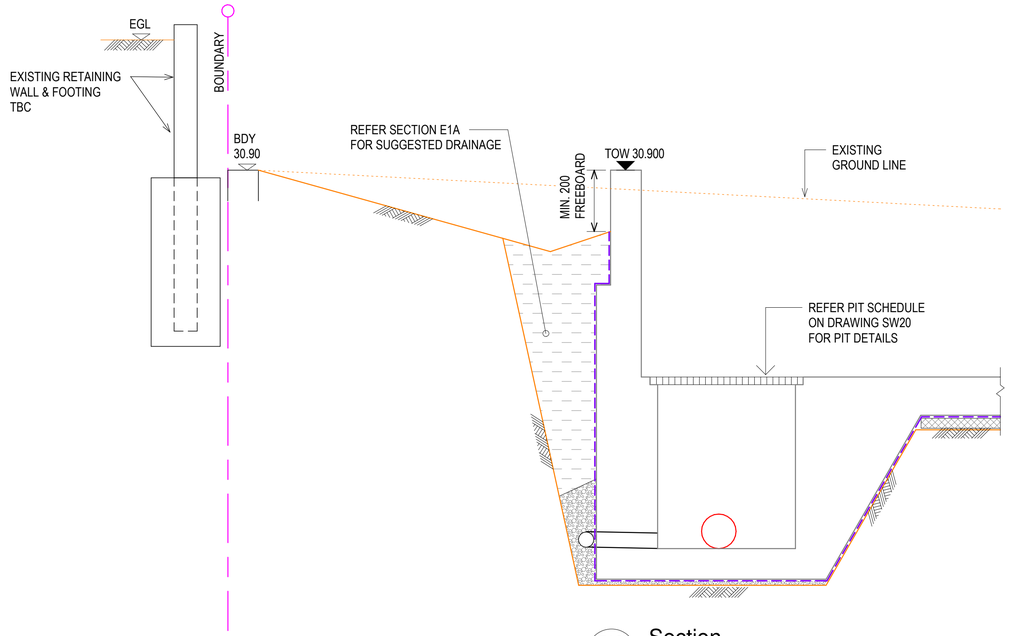


NOTES:

1. INSTALLATION OF PIPES SHALL BE IN ACCORDANCE WITH AS/NZS 3500.3
2. BEDDING AND BACKFILLING OF PIPES SHALL BE IN ACCORDANCE WITH AS/NZS 3725 TYPE HS3 SUPPORT.
3. REINFORCED CONCRETE PIPES SHALL BE MANUFACTURED IN ACCORDANCE WITH AS 4058; AND FIBRE REINFORCED CEMENT PIPES SHALL BE MANUFACTURED IN ACCORDANCE WITH AS 4139.
4. WHERE MINIMUM DISTANCES CANNOT BE ACHIEVED, A CONTROLLED LOW STRENGTH MATERIAL MAY BE USED.
5. WHERE PRACTICABLE, MINIMUM PIPE COVER SHALL BE PROVIDED TO THE PIPE MANUFACTURER'S SPECIFICATION, OR BY THE USE OF A PIPE CLASS PROGRAM.
6. TRENCH EXCAVATIONS AT LEAST 1.5m DEEP SHALL REQUIRE BENCHING, SHORING OR BATTERING TO SUPPORT ALL SIDES OF THE TRENCH, TO COMPLY WITH WORK HEALTH AND SAFETY LEGISLATION.

TYPICAL DRAINAGE PIPE TRENCH DETAIL

SCALE 1 : 10 @A1



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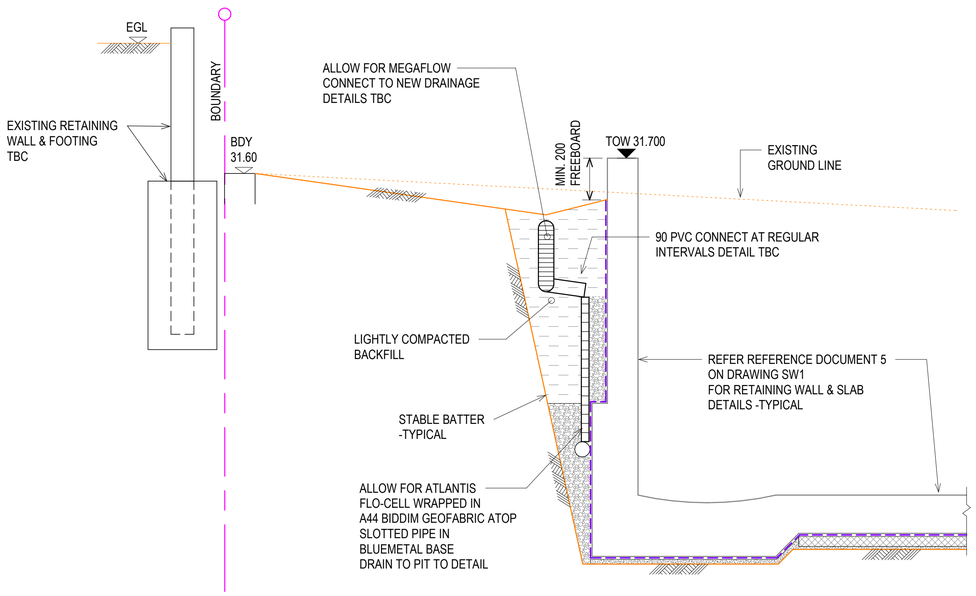

E1A SW.10 **Section**
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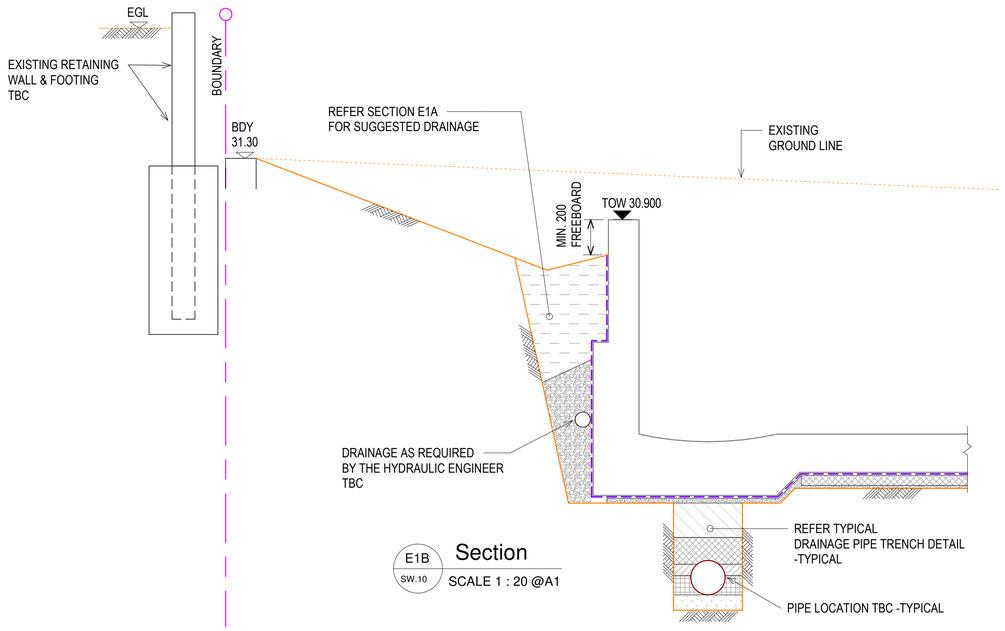

E1B SW.10 **Section**
SCALE 1 : 20 @A1

COLOUR REPRODUCTION WARNING: ELEMENTS OF THIS DRAWING ARE PRINTED IN COLOUR.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR TENDER	16.01.2025	E
HL	JM	FOR TENDER	29.10.2024	D
HL	JM	FOR TENDER	17.09.2024	C
HL	JM	FOR COMMENT	11.09.2024	B
HL	JM	FOR 75%	14.08.2024	A

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ALTERATIONS & ADDITIONS TO
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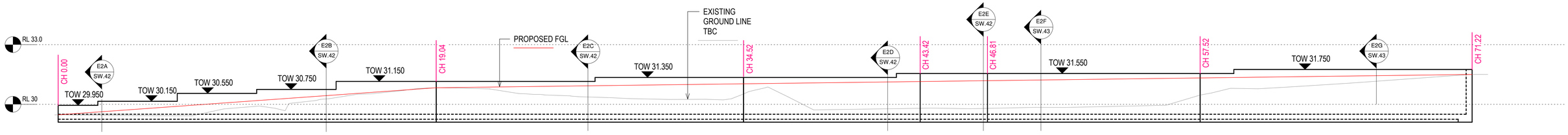
RETAINING WALL SECTIONS SHEET 1

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE As indicated	DATE	SW.41	E



E2 SW.10 **Section**
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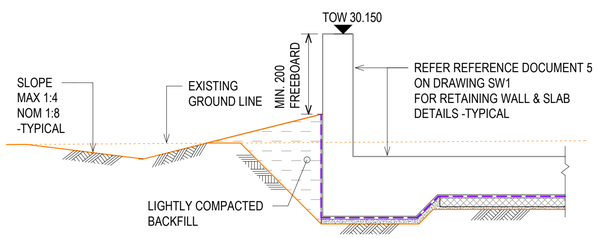

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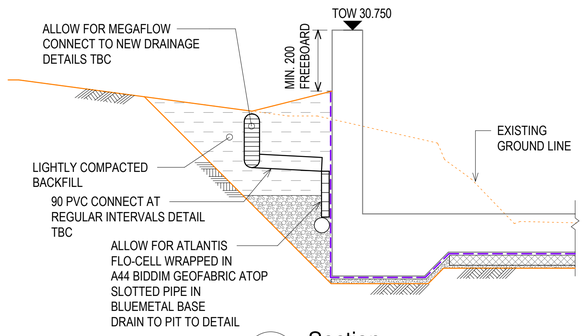

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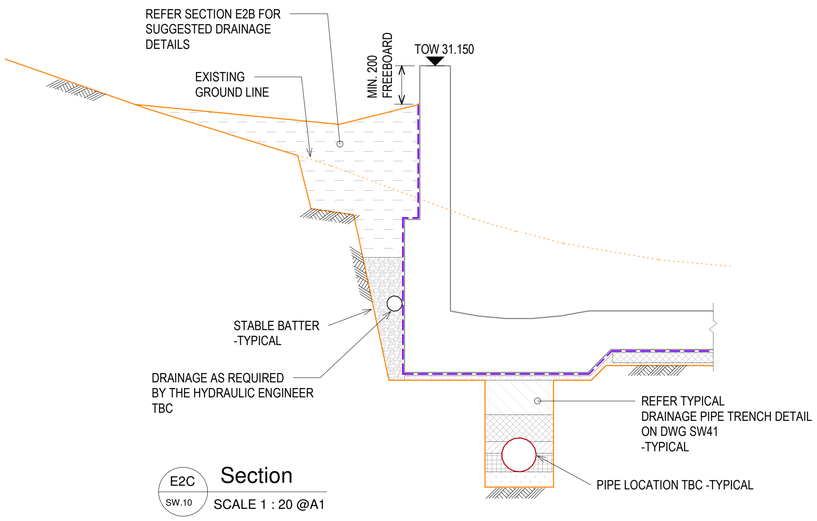

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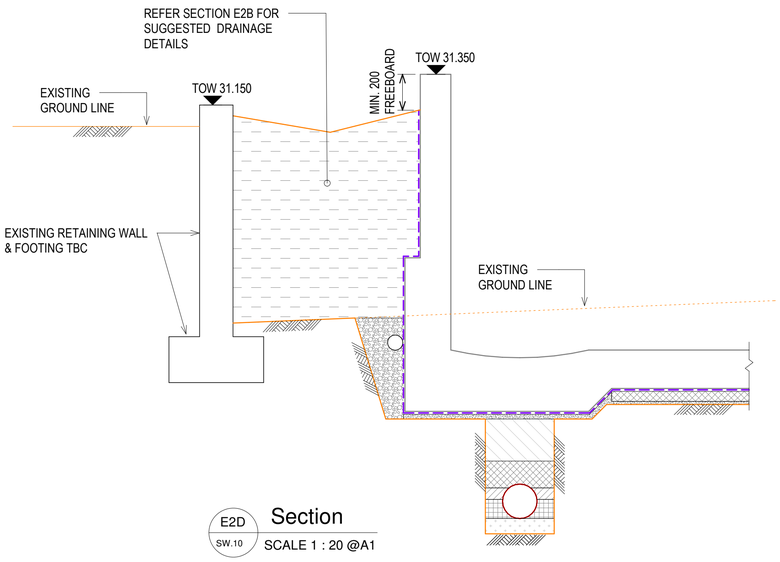

E2D SW.10 **Section**
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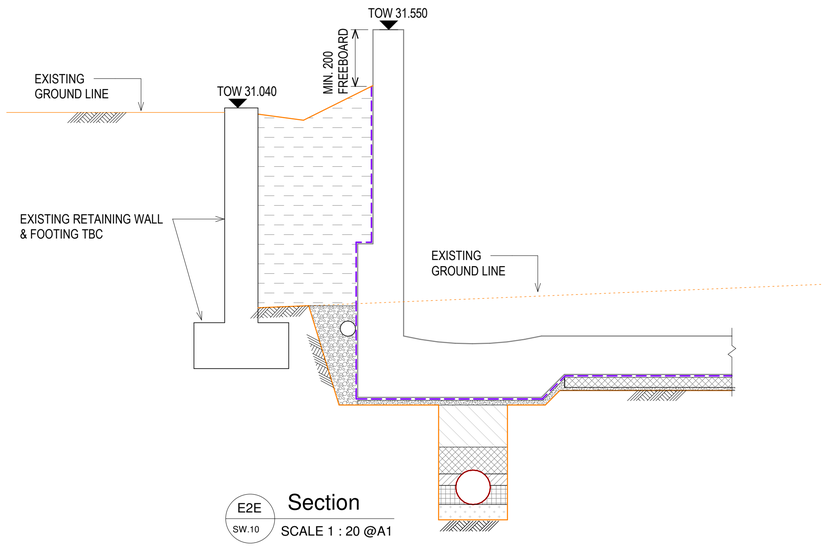

E2E SW.10 **Section**
SCALE 1 : 20 @A1

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HL	JM	FOR TENDER	29.10.2024	D
HL	JM	FOR TENDER	17.09.2024	C
HL	JM	FOR COMMENT	11.09.2024	B
HL	JM	FOR 75%	14.08.2024	A

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RETAINING WALL SECTIONS SHEET 2

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
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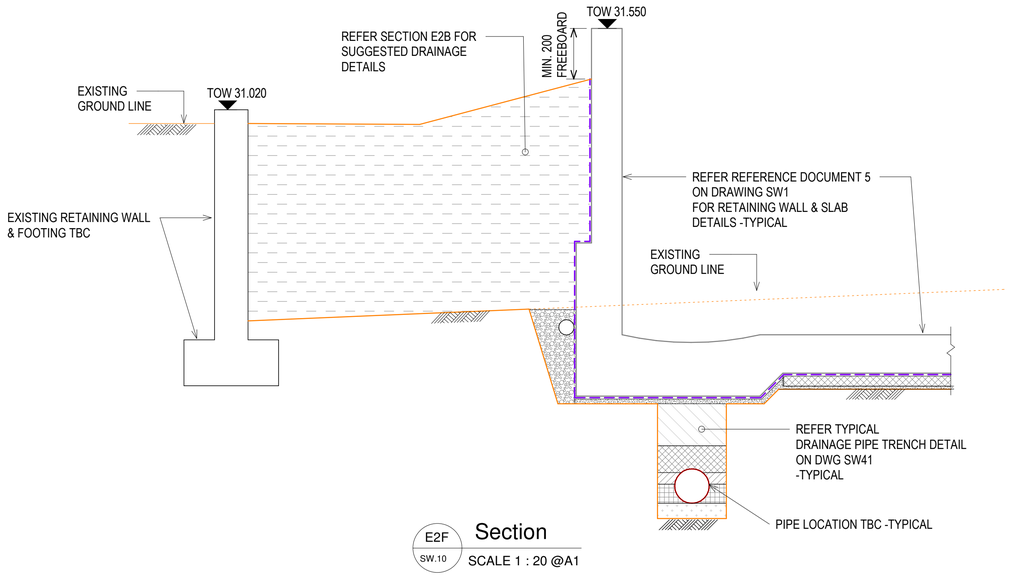
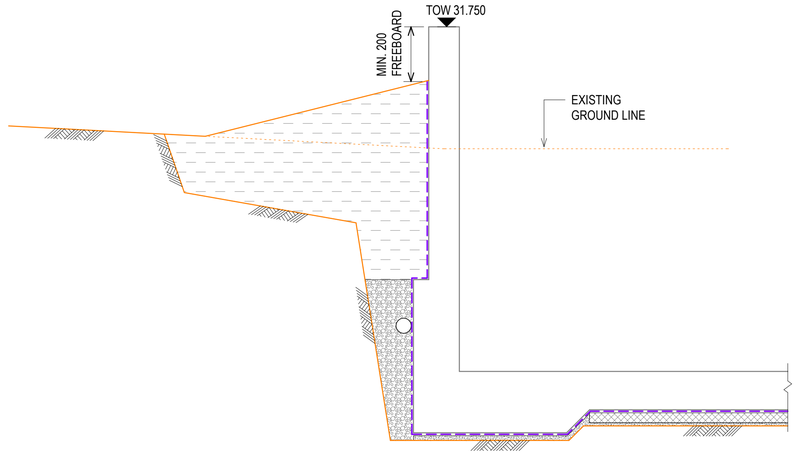


E2F / SW.10 **Section**

SCALE 1 : 20 @A1



E2G / SW.10 **Section**

SCALE 1 : 20 @A1

BY	CHKD	DESCRIPTION	DATE	REV
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HL	JM	FOR TENDER	29.10.2024	D
HL	JM	FOR TENDER	17.09.2024	C
HL	JM	FOR COMMENT	11.09.2024	B
HL	JM	FOR 75%	14.08.2024	A

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ALTERATIONS & ADDITIONS TO
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RETAINING WALL SECTIONS SHEET 3

DESIGN JM	DRAWN HL	PROJECT NO.	
CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE 1 : 20	DATE	SW.43	E

APPENDIX 3

COUNCIL PRE DA NOTES

RECORD OF PRE-DEVELOPMENT ADVICE

APPLICANT DETAILS

Name	Annabel Johnson		
Company	EPM Projects		
Phone	0434 484 346	Email	ajohnson@epmprojects.com.au

MEETING DETAILS - PDA/200/2023

Date	Thursday 12 October 2023	Time	1pm-2pm
Venue	Microsoft Teams – **PDA/200/2023**	Fees	$2,795 - Paid

PROPERTY DETAILS

Description of proposed development	Alterations and additions to the existing school including increasing the student numbers by an additional 220
Estimated cost of development	$26,000,000
Address	School MacKillop Catholic College, 85-97 Sparks Road, WOONGARRAH NSW 2259

ATTENDEES

Council Representatives

Name	Position	Phone Number
Ross Edwards	Town Planner	02 4306 7900
Alex Batten	Observer	
Tania Halbert	Urban Design	
James Karsten	Water & Sewer (comments)	
Steve McDonald	Traffic Engineer	
Mark Dowdell	Development Engineer	

RECORD OF PRE-DEVELOPMENT ADVICE

Craig Glynn	Trees (comment)	

Applicant Representatives

Name	Position / Company	Phone Number
Stephen Earp		
Caroline Hart		
Keith Cookson		
Kripa Vadakke		
Timothy Steele		

RECORD OF ADVICE

SUBJECT SITE

- Subject site is legally described as Lot 71 DP1258149 at No. 85-97 Sparks Road, Woongarrah.
- The site has an area of approximately 7.487ha and is currently occupied by an existing educational establishment which caters for Kindergarten to Year 12 (refer to Figure 1).
- The site is zoned R1 General Residential pursuant to the *Central Coast Local Environmental Plan 2022*.
- The site is within bushfire prone land and the south east corner of the site is subject to probable maximum flood level.
- The site adjoins existing residential development, medical centre and land that has been approved for subdivision which are currently under construction.
- The site fronts Sparks Road which is a classified road that is managed by Transport for NSW.

RECORD OF PRE-DEVELOPMENT ADVICE

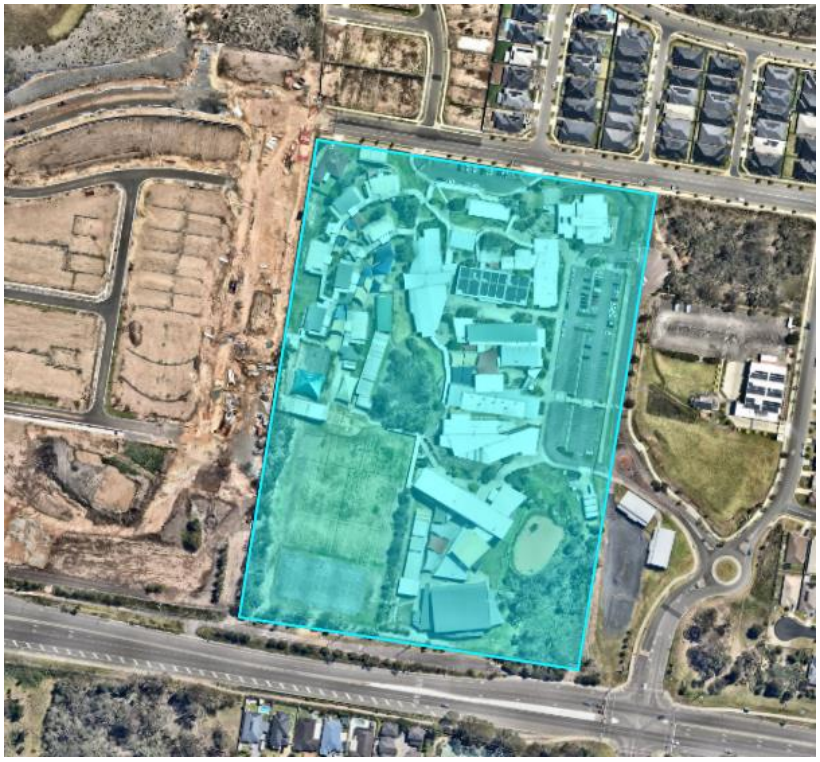


***Figure 1**: Aerial view of subject site Nearmap dated 29/10/2023*

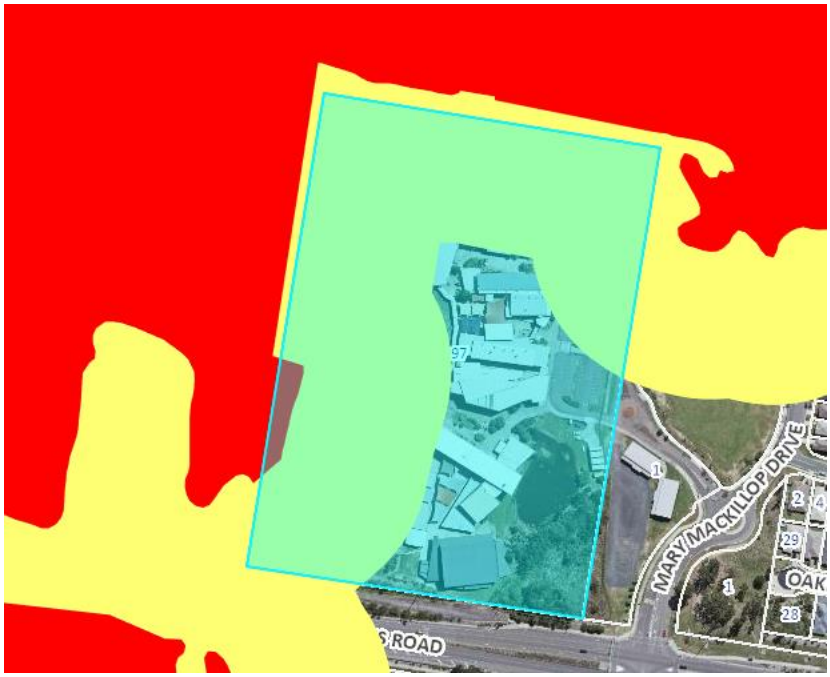


***Figure 2:** Bushfire prone land*

Figure 3: *Flood prone land mapping indicating probable maximum flood level*

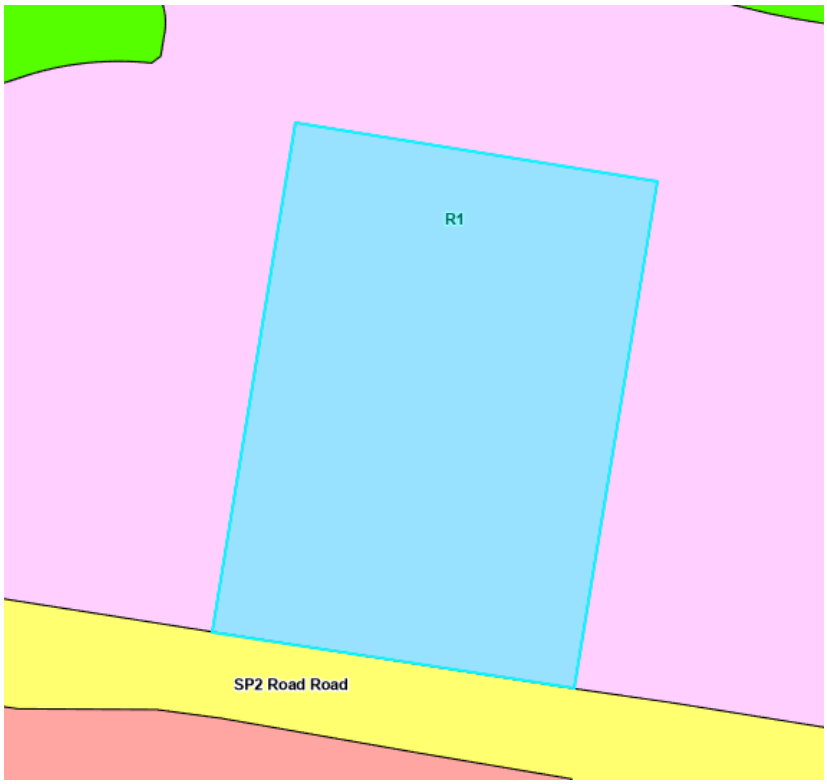


Figure 4: *Zoning map – R1 General Residential*

RECORD OF PRE-DEVELOPMENT ADVICE

PROPOSAL

- The proposal comprises the following alterations and additions to the existing school in stages:
    - Demolition of seven (7) classroom buildings and ancillary structures.
    - Construction of two-storey building comprising eight (8) new primary GLAs (Block V).
    - Construction of two-storey building comprising eight (8) new primary GLAs (Block W).
    - Construction of three-storey building comprising twelve (12) new primary GLAs (Block T).
    - Covered outdoor learning area (COLA).
    - Playground redevelopment and pathways.
    - Additional 220 students.

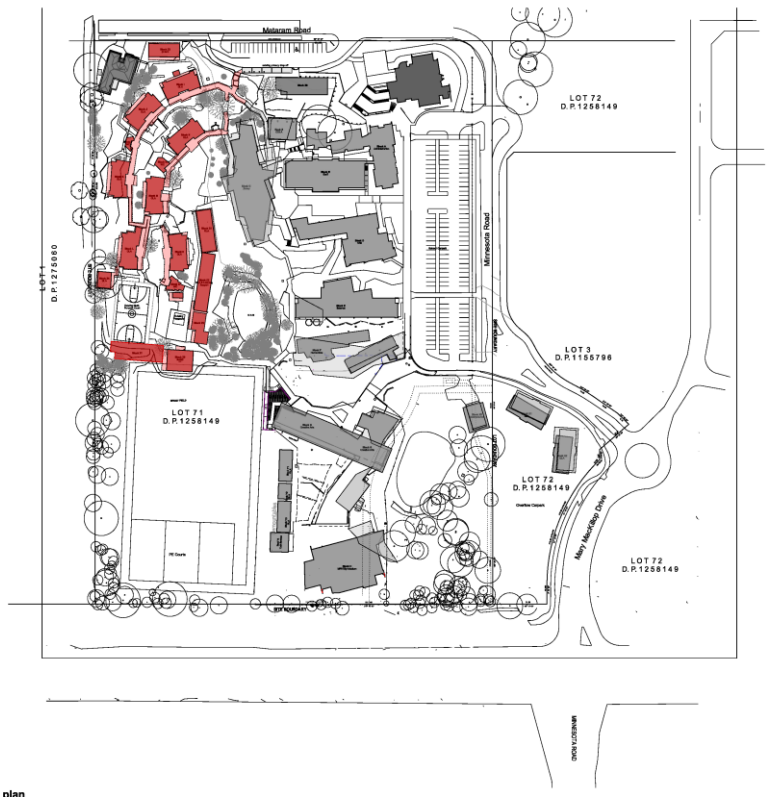


***Figure 5**: Site Plan*

RECORD OF PRE-DEVELOPMENT ADVICE

Figure 6: *Elevations*

BACKGROUND

Council's records show that the site has been used for an educational establishment.

PLANNING

s. 4.15 (1)(a)(i) of the *Environmental Planning and Assessment Act 1979*: Provisions of Relevant Instruments/ Plans/ Polices

Environmental Planning and Assessment Act 1979

Accessed here: Environmental Planning and Assessment Act 1979

- Delegation of Matters to Council staff

Regardless of the number of submissions received during the development application process the application will be referred to the Regional Planning Panel. Council confirms the concept of 'unique objections' comes from the Ministerial Directions for the Operation of Local Planning Panels (Local Planning Panels Direction – Operational Procedures) which includes the following additional wording relating to a 'unique submission':

> *A **unique submission** means a submission which is in substance unique, distinctive of unlike any other submission. It does not mean a petition or any submission that contains the same or substantially the same text. Separate unique submissions may be made in relation to the same issue. One individual, or one household, could potentially submit multiple unique submissions*

There is limited other direction/guidance in respect to what constitutes a 'unique submission'. The frequently asked questions on the Department of Planning and Environments website state the following in relation to the unique submissions:

> ***How are petitions counted in the number of objections received and what is considered a unique submission?***
>
> *Each petition counts as one objection. It is the same for form letters. A single submission signed by 10 people counts as one unique submission. Objections need to be unique to be counted individually. Council assessment staff can decide if a submission is unique.*
>
> ***If a development application was notified twice, the second time with amended plans, are objections from both notification periods counted in the contentious criteria?***
>
> *Yes. Under criteria 2(b) of the development application referral direction, objections are counted from both notification periods if the objection is unique and has not been withdrawn by the original submitter.*
>
> ***Can the number of objections received be reduced if amended plans address the issues?***
>
> *No. Once a development application receives 10 unique objections, it must be referred to the LPP. The only exception is if a council's submissions policy specifies a different number of objections.*

Rural Fires Act 1997

The subject site is bushfire affected. The NSW Rural Fire Service (NSW RFS) has, under the *Rural Fires Act 1997*, a statutory obligation to protect life, property and the environment through fire suppression and fire prevention. Section 4.14 of the *Environmental Planning and Assessment Act 1979* indicates that all new development on bush fire prone land to comply with *Bush Fire Protection 2019* (PBP 2019). The proposed Development Application (DA) must be accompanied by a Bush Fire Assessment Report (BFAR) that explains how compliance with PBP 2019 is to be achieved. All asset protection zones are to be within the subject site.

In addition to the above the proposed school is identified as 'integrated development' for the purposes of Section 100B (special fire protection purpose) of the *Rural Fires Act 1997* and is required to be assessed by the Rural Fire Service. The applicant is advised to liaise with RFS regarding the proposed development of land prior to the DA lodgement.

State Environmental Planning Policy (Planning Systems) 2021

Accessed here: State Environmental Planning Policy (Planning Systems) 2021

As per Clause 2.19 (1) of SEPP (Planning Systems) 2021, the proposed development is deemed to be regionally significant development, as the development is for an educational establishment with the value of works being greater than $5 million. Therefore, the determining authority for this type of development will be the Regional Planning Panel.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Accessed here: State Environmental Planning Policy (Biodiversity and Conservation) 2021 - NSW Legislation

- Chapter 4 Koala Habitat Protection 2021

  Part 4.2 Development Control of Koala Habitats

  The subject site is over 1ha in size does not have an approved koala plan of management applying to the land. The SEE will have to demonstrate the proposed development will not impact on the Koala habitat. If Council is not satisfied that the development will not cause adverse impact on Koala habitat, a Koala Assessment Report may be requested to be prepared by a suitably qualified and experienced person.

State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)

Accessed here:
State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)

- Chapter 4 – Remediation of Land

  Clause 4.6 (b) requires that consent not be granted until Council has considered whether the land is contaminated. If the land is contaminated, the Council needs to be satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purposes for which the development is proposed to be carried out.

  Details of the potential contamination of the subject site needs to be provided as part of the development application which can be in the form of a preliminary site investigation report.

State Environmental Planning Policy (Transport and Infrastructure) 2021

Accessed here: State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP)

- Clause 2.119 – Development with frontage to classified road

  Clause 2.119 relates to development with frontage to a classified road (Main Road) and seeks to ensure that new development does not compromise the effective and ongoing operation and function of classified roads, and to prevent or reduce the potential impact of traffic noise and vehicle emission on development adjacent to classified roads. The application will be referred to Transport for NSW (TfNSW) for comments regarding the proposal.

  It is to be demonstrated that the development being for an educational establishment will not be significantly impacted by road noise and will not impact the ongoing operation of Sparks Road. Therefore, an acoustic report and a traffic and car parking impact assessment report should accompany any development application.

- Clause 2.120 - Impact of road noise or vibration on non-road development

  The proposed alterations and additions to the existing educational establishment is subject to addressing the requirements of this clause due to that Sparks Road has an average daily traffic volume of more than 20,000 vehicles. Therefore, it must be demonstrated within an acoustic report prepared by a suitably qualified acoustic engineer that the development will not be impacted by road noise or vibration.

- Chapter 3 – Educational establishments and child care facilities

  The proposed development which is for the intent of an educational establishment is required to address the controls under Part 3.4 of this SEPP. Compliance with the SEPP is to be demonstrated within the Statement of Environmental Effects.

  Particular consideration should be given to how the proposed development satisfies the design quality principles set out in Schedule 8 of this SEPP and whether the development enables the use of the school facilities to be shared with the community.

- Clause 3.58 – Traffic-generating development

  The proposed additions will accommodate an additional 220 students and is deemed to be traffic generating development and will be referred to TfNSW for comments regarding the proposal. A traffic and car parking impact assessment report should accompany the development application.

State Environmental Planning Policy (Sustainable Buildings) 2022

Accessed here: State Environmental Planning Policy (Sustainable Buildings) 2022

Any development application lodged with Council will need to be accompanied with a BASIX Certificate in accordance with the requirements of this SEPP. Please note, any BASIX certificate accompanying a development must have been issued no earlier than 3 months before the date on which the application is made.

Notes: Development applications lodged after 1 October 2023 for dwellings/alts and adds/dual occ's etc, can rely on a BASIX certificate that is dated within 3 months of the date of lodgement of the DA, notwithstanding that legislation is no longer in effect.

Homebuyers who sign a building contract for a new house or duplex before 1 October 2023 can apply to use the current BASIX standards. Up until 30 June 2024, eligible applicants can generate a BASIX certificate that meets the standards that existed prior to 1 October 2023. They must submit this certificate with their development application or complying development certificate before it expires. In this case however, the applicant will need to supply a copy of the signed building contract to enable the transitional provision to be applied.

No transitional arrangements apply to residential apartment buildings and other multi-unit developments. These types of developments post 1 October 2023, will need to comply with new BASIX provisions and be accompanied by a BASIX certificate produced under these new provisions.

RECORD OF PRE-DEVELOPMENT ADVICE

Central Coast Local Environmental Plan 2022

Accessed here: Central Coast Local Environmental Plan 2022

Permissibility

- The proposed alterations and additions to an educational establishment is permitted within the R1 General Residential zone per the *Central Coast Local Environmental Plan 2022* (CCLEP) with Council consent. The development is defined as an educational establishment which is defined follows:

  Educational establishment *means a building or place used for education (including teaching), being –*

  a) a school, or

  b) a tertiary institution, including a university or a TAFE establishment, that provides formal education and is constituted by or under an Act.

  The proposed development is to demonstrate consistency with the objectives of the R1 zone in accordance with Clause 2.3 of the CCLEP 2022.

Relevant Clauses

- Clause 4.3 – Height of Buildings:

  This clause requires buildings to comply with the Height of Buildings Map (HOB). The HOB indicates that the site has a maximum height of development of 9.5m. The proposed development indicates that a breach of the maximum building height of 4.2m (44.21% variation) will occur as part of the proposed development.

  The significant non-compliance with the height control will require the submission of a written request to justify the contravention of the development standard in accordance with CCLEP 2022, Clause 4.6 Exceptions to Development Standards.

- Clause 4.4 - Floor space ratio:

  The floor space ratio map indicates the subject site is not subject to maximum FSR. The proposed FSR of the development on site will be considered on merit.

- Clause 4.6 – Exceptions to development

  The subject site is non-compliant with regards to the required maximum 9.5m building height standard as per Clause 4.3 above.

  The applicant will be required to address Clause 4.6 of the CCLEP in the SEE to justify the contravention of the development standards.

  Clause 4.6 of the CCLEP provides for an appropriate degree of flexibility in applying certain development standards to particular development and seeks to achieve better town planning outcomes by allowing flexibility in the application of development standards in particular circumstances.

  Clause 4.6 (3) of the CCLEP provides that development consent must not be granted for development that contravenes a development standard unless the consent authority has considered a written request from the applicant that seeks to justify the contravention of the development standard by demonstrating: *(a) that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and (b) that there are sufficient environmental planning grounds to justify contravening the development standard.*

  Clause 4.6 (4) provides that development consent must not be granted for development that contravenes a development standard unless: *(a) the consent authority is satisfied that: (i) the applicant's written request has adequately addressed the matters required to be demonstrated by subclause (3), and (ii) the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out, and (b) the concurrence of the Secretary has been obtained.*

  Clause 4.6 (5) requires that, in deciding whether to grant concurrence, the Secretary must consider: *(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning, and (b) the public benefit of maintaining the development standard, and (c) any other matters required to be taken into consideration by the Secretary before granting concurrence.*

  Key points Council have noted which will need to be addressed include the applicant justifying why the development standard is considered to be unreasonable or unnecessary in the circumstances of their proposed development, evidence that there are sufficient environmental planning grounds to justify contravening the development standard and how the proposed development will be in the public interest.

- Clause 5.21 – Flood Planning:

  The site is at or below the flood planning level.

  The development application must address this flooding risk to ensure Council is satisfied that the development–

  a) *is compatible with the flood function and behaviour on the land, and*
  b) *will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and*
  c) *will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and*
  d) *incorporates appropriate measures to manage risk to life in the event of a flood, and*
  e) *will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.*

  Please refer to the comments provided by Council's Development Engineer in relation to flooding requirements.

- Clause 6.2 - Public utility infrastructure

  Development consent must not be granted for development on land in an urban release area unless the Council is satisfied that any public utility infrastructure that is essential for the proposed development is available or that adequate arrangements have been made to make that infrastructure available when it is required.

- Clause 7.6 - Essential services:

  The consent authority cannot grant consent unless it is satisfied that all services that are essential for the development are available or that adequate arrangements have been made to make them available when required. The site is currently serviced and the development application must address the provisions of this Clause.

- Clause 7.23 – Transitional period for floodplain risk management:

  The proposed development involving an educational establishment is identified on land being within 1% flood level and the probable maximum flood level therefore the provisions of Clause 7.3 of the Wyong Local Environmental Plan 2013 are applicable. Please refer to the comments provided by Council's Development Engineer in relation to flooding requirements.

s. 4.15(1)(a)(ii) of the *Environmental Planning and Assessment Act 1979:* Draft Environmental Planning Instruments

No draft Environmental Planning Instruments apply to this application.

s. 4.15(1)(a)(iii) of the *Environmental Planning and Assessment Act 1979*: Provisions of any development control plan

Central Coast Development Control Plan 2022

Accessed here: Central Coast Development Control Plan 2022

The Statement of Environmental Effects (SEE) must demonstrate compliance with the following development controls as relevant. Justification for any non-compliances will be required, demonstrating the proposal will still achieve objectives of the relevant clause(s) and the development will be assessed on a merit basis.

- Part 1.2 - Notification of Development Proposals

  The proposed development will be notified as per APPENDIX A – NOTIFICATION TABLE of Part 1.2.

- Part 2: Development Provisions

  2.13 Transport and Parking

  Clause 2.13.3 of CCDCP 2022 requires the following car parking to be provided for the school containing primary and high school students:

  Primary school:

  1 space per staff member and 14 drop off spaces (can be on-street) per 100 students.

  Secondary school:

  1 space per staff and 7 drop off spaces (maybe onstreet)

  Minimum of 2 spaces for disabled students to be provided on site for Primary and Secondary and 1 space for Pre-schools
  1 space per 8 senior/adult students for student parking

  Bus standing areas, parent drop-off and set-down are to be provided subject to a

Transport Management Plan (TMP) based on anticipated mode split Adequate 'Kiss-and-Ride' facility is to be provided at all education establishments and is to be addressed in the TMP.

It is suggested that details of the staff levels and the number of students are outlined with the required traffic and parking assessment report to demonstrate that the site can cater for the required car parking in accordance with the DCP car parking requirements and that there will be no impact on traffic movements in the vicinity of the site.

2.14 Site Waste Management

The proposal is to be designed in accordance with the requirements of Chapter 2.14 of the CCDCP – Site Waste Management and this DCP chapter is to be addressed in the SEE. A Waste Management Plan is to be submitted with any Development Application, addressing demolition, construction and on-going waste.

- Part 3: Environmental Controls

  3.1 Floodplain Management and Water Cycle Management

  The former Wyong and Gosford Councils had adopted different methodology for the mapping of hazard zones and the treatment of risk.

  Northern Area (Former Wyong LGA):

  - This chapter sets out the development controls for land subject to flood related development controls, including prescriptive criteria (Clause 3.1.4.1), performance based assessment provisions, and identifies when a Floodplain Management Plan is required.

  Please refer to the comments provided by Council's Development Engineer within this report.

  3.5 Tree and Vegetation Management

  Should the application include tree removal then a tree removal and retention plan is required to be provided. Tree Protection Zones and protection measures for trees to be retained, must be shown on the plan. This plan must be based on the advice of an AQF5 qualified Arborist and must specifically include consideration of any area where deep excavation is required. A landscape plan should also accompany the development application which details the existing and proposed vegetation to be provided on site.

- Related Documents

  Waste Control Guidelines

Masterplans

Other Matters

Assessment of Development Applications Policy

Accessed here: Assessment of Development Applications Policy

This Policy is designed to outline the principles of dealing with unclear, illegible, grossly non-compliant, deficient and amended applications and to encourage the lodgement of good quality applications. This policy will enable the delivery of a consistent, equitable and efficient development assessment service, which is only possible when applications are submitted with the required information so an informed, proper and timely assessment can be made on the application.

Some key points for consideration in lodging a development application are highlighted below:

- Where pre-lodgement meetings have been held, the minutes of those meeting will be reviewed by the assessing officer as part of the assessment of any subsequent application, and also provided as an attachment to any determining body (Local Planning Panel or Regional Planning Panel).

- As a rule, Council will not request additional information on an application, at the pre lodgement stage or during assessment, unless the information is relatively straightforward and can be provided within a short timeframe (maximum 4 weeks). The onus is on the applicant to ensure that the application, when submitted, is complete and ready for assessment.

- Council will assess and determine an application on the information submitted upon lodgement. Any expectation that Council will defer an application, either pre or post lodgement, to enable the submission of additional information that is not relatively straightforward, is misguided.

Amendments to development applications post lodgement may require additional notification and assessment fees as outlined in Councils adopted fees and charges:

- For major amendments that require re-notification, 50% of the original DA fee will be required to be paid to enable the application to progress.

- For minor amendments which do not require re-notification, 25% of the original DA fee will be required to be paid to enable the application to progress.

- Should an application require re- referral to an external design review panel, the regulated fee paid at lodgement, may be required to be paid again.

Of note, a development application and modification application may be amended or varied by the applicant (**but only with the agreement of the consent authority**) at any time before the application is determined pursuant to clause 38(1) and clause 113 (1) of the *Environmental Planning and Assessment Regulation 2021* respectively. If the consent authority declines to accept an amended proposal during assessment, the application will be determined in its submitted form.

Having regard to the above, it is recommended you address any concerns raised in this advice prior to the lodgement any application.

Grant Funding:

Grant funding is a way to help build thriving communities.

The Central Coast Council Grant Finder Portal provides a comprehensive list of all grant and funding opportunities available for Central Coast businesses, community groups, not-for-profits and individuals.

For more details in this matter please call on 4325 8861 or email grants@centralcoast.nsw.gov.au.

Estimated Development Costs

This guide explains how Council determines the 'estimated cost of works' and the application fees payable and is applicable to Development Applications, Construction Certificates and Complying Development Certificates.

As of 4 March 2024, The *Environmental Planning and Assessment Amendment (Estimated Development Cost) Regulation 2023* (EDC Reg) and *State Environmental Planning Policy Amendment (Estimated Development Cost) 2023* (SEPP Amendment) will amend the *Environmental Planning and Assessment Regulation 2021* (EPA Reg) and relevant local and state environmental planning policies to include a new definition for *'estimated development costs'* (EDC).

The new EDC definition will replace the current definitions of 'cost of development' and 'capital investment value' used across the planning system which affect the calculation of fees in connection with planning applications, the trigger for certain developments to be dealt with as regionally significant development, State significant development or State significant infrastructure, and determination as to whether development is BASIX development. The definition, which will be inserted in the EPA Reg as the new section 6, will define EDC as:

'the estimated cost of carrying out the development, including the following -:
(a) the design and erection of a building and associated infrastructure,
(b) the carrying out of a work,
(c) the demolition of a building or work,
(d) fixed or mobile plant and equipment.

Section 6(2) will provide that EDC does **not** include:

(a) amounts payable, or the cost of land dedicated or other benefit provided, under a condition imposed under the Act, Division 7.1 or 7.2 or a planning agreement,
(b) costs relating to a part of the development that is the subject of a separate development consent or approval,
(c) and costs, including costs of marketing and selling land,
(d) costs of the ongoing maintenance or use of the development,
(e) GST.

The EDC Reg will also insert a new section 251 which will apply where a fee specified in Schedule 4 to the EPA Reg relating to an application is based on the EDC of proposed development. Section 251(2) will require a consent authority to *'use the estimated development cost specified in the application, unless, in the consent authority's opinion, the specified estimated development cost is not genuine*
or accurate.'

The NSW Department of Planning & Environment (DPE) has recommended that councils require applications with an EDC that is greater than $3 million be accompanied by a detailed quantity surveyor report which has been prepared by a quantity surveyor certified by the Australian Institute of Quantity Surveyors (AIQS), or a quantity surveyor chartered by the Royal Institute of Chartered Surveyors (RICS). However, for applications with an EDC of less than $3 million, the DPE has recommended that councils require a cost estimate report. The purpose of this distinction is to allow councils to use a single cost report to determine fees, planning pathway or anything else that refers to EDC.

Government Information (Public Access)

Under the Government Information (Public Access) Act 2009 (NSW) (GIPA Act), you are entitled to see a lot of information that Council holds in records such as Development Application approvals and approved Plans. You can informally apply for this information from Council. Information will be informally released if there is no overriding public interest against release of the information. For example, you may be entitled to information about yourself, but not someone else. The Informal Information Access Request Form includes guidelines to help you with lodging your request. There is no fee for the request, however charges may apply for if you require a printed copy from Council. If the floor, elevation or section plans are requested and you are not the

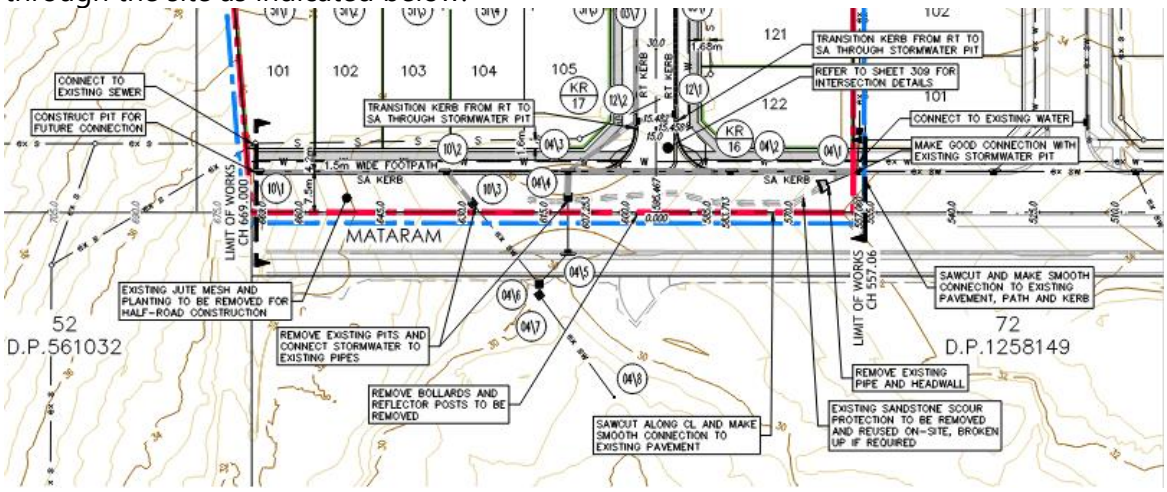
property owner, you may be requested by Council to provide written consent from the property owner.

You also need to be aware of copyright restrictions as this can impact Council's ability to provide access to certain information. In certain circumstances, Council requires consent from a document or plan copyright owner before we can provide you with a copy of the requested documents. This is because of copyright restrictions imposed on Council under the Copyright Act 1968 (Cth). The form, Consent to Council – Copyright Form, includes information on how to locate the copyright owner. Please have the copyright owner complete the form and provide it with your request. Complete the informal access to information form if you are unable to provide copyright owners consent.

Advice pertaining to referral officers:

ENGINEERING

There is a 825mm diameter and 525mm diameter pipe discharging to a 825mm diameter pipe through the site as indicated below:



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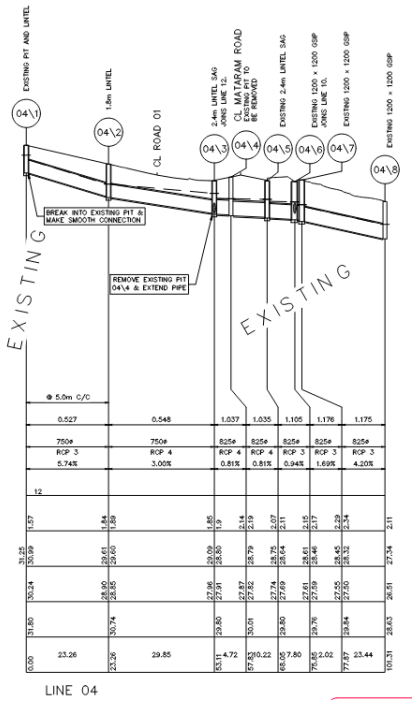

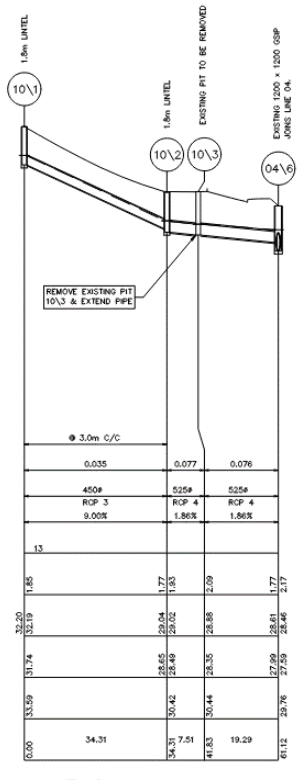

Figure 7: *Drainage plans*

A catchment analysis should be undertaken to determine the impact on the drainage system through the site for both the minor and major flows (5yr and 100yr ARI).

This will determine if the Cola area can be built over to upper reach of the swale within the site adjoining Mataram Road. This will also determine if any additional works are required to the swale system through the site and if any additional safety measure are need to the swale.

The swale also formed part of the water quality treatment train through the site. Any alterations to the swale should have consideration to the effects on water quality. Any significant changes should be supported by modelling.

The same applies to the extension of the Kiss and Ride. Any new connection to Mataram Road can be dealt with via a s.138 Roads Act approval.

There is no objection to the Cola spanning over the drainage easement if the drainage analysis supports the case. Any foundations supporting the structure need to be compliant to Council's zone of influence requirements for Drainage pipes. See DCP extract below.

The surface treatment of the area would need to be designed and constructed so that the section over the pipe could be removed if the pipe needed to be excavated.

The height of the Cola appears not to create a material or substantial interference with the operation of the easement.

TREES

Arboricultural Impact Assessment

In order to address the proposed tree removal on the site, an Arboricultural Impact Assessment is required. The assessment must be prepared by a qualified arborist (minimum AQF Level 5) and include assessment of all trees (> 3 m in height) on, or where relevant, adjoining the subject site.

The report must address the impact of the proposal on health of existing trees, detail any trees unsuitable for retention and provide a Tree Protection Plan that specifies measures required to protect trees to be retained. Any cavities (tree hollows) identified by the Arborist are to be documented in the report. Retention of existing native trees with medium to long SULE ratings is to be maximised, this is to include consideration of moving the development footprint to allow improved tree retention. All retained trees must include tree protection measures consistent with the Australian Standard AS4970-2009 Protection of Trees on Development Sites.

Landscape Plan

A detailed Landscape Plan is required to be submitted with the DA. It must be completed by a suitably qualified Landscape Architect/Designer with input from a qualified Ecologist. An Ecologist is to be engaged to determine suitable species and planting densities. Local provenance stock must be used for all landscaping to help ensure the integrity of the adjoining Coastal Wetland is not affected. The Landscape Plan is to integrate with the Bushfire Assessment and Arborist Report.

Landscaping maintenance and replacement criteria (minimum 3 years) is required to be specified to ensure the establishment/survival of landscaping, replacement planting (where necessary) and weed removal.

TRAFFIC

A traffic and parking impact report must accompany the development application. The traffic survey is to include Mataram Road and Mary MacKillop (4v leg intersection). It is proposed as signals in Council's contributions plan.

Also the traffic consultant should assume that the Mataram Road connection between Hiawatha Road and Woongarrah Drive exists.

The traffic consultant can then make some assumptions as to how the school traffic is distributed onto the road network.

URBAN DESIGN

- The DA should have a site plan at a bigger scale of the proposed 3 buildings and the outdoor areas – the comments below are preliminary based on the information provided.
- The DA should provide floor plans of the proposed buildings all together so the interaction between the spaces can be understood.
- The school is very different architecturally from the St Peters school and located within a different context.
- St Peters had more heavy masonry and brick buildings and the surrounding residential is more traditional 1990s brick residential.
- MacKillop has a more lightweight architecture with floating decks and walkways and open balustrading. There is much more use of metal cladding and metal detailing. The surrounding residential will be present day architecture using contemporary materials.
- The landscape design of the MacKillop school is more playful bush and natural gardens with less formal play spaces.

- It would be good if the new buildings and play areas can incorporate or retain natural areas and materials to connect with environment and retain the playful nature of the school identity.

- Roof treatments will be a big consideration for the MacKillop school due to the surrounding topography and vantage points from the roads and the hilltop park.

- It would be good to see some variations in roof forms in the DA, especially by breaking up the two Blocks V and W. The roof forms of Blocks V and W are joined together and make the design appear very lengthy and monotonous. Consider different roof forms and how the two buildings may be connected but be visually separated. This is important because this elevation on the west will be highly visible to the future residents.

- The development will also be viewed from the kiss and drop area and Block T should address this street elevation and provide a visual connection to the surrounding residential and a welcoming entry point.

- SEPP sustainable buildings provides an opportunity to do something with roofs e.g. solar, rainwater collection, and also with the landscaping.

- WSUD treatments are evident in the residential subdivisions and in the school, and it would be good to see this continued.

- Building height there may be good argument for varying the height limit as it is non-residential, will provide benefits, 3rd storey building is setback from boundary, could also provide a visual connection to the church.

WATER & SEWER

- Based on the current proposal, a section 307 Certificate under the Water Management Act will need to be obtained should a DA application be supported.

- Developer Contributions under the Water Management Act will apply at a rate of 0.04 Equivalent Tenements per additional pupil/staff. The current 2023/24 rate is $6,584.79 per equivalent tenement.

- More information is located page 7 & 8 of the Northern_Region_Water_Supply_and_Sewerage_Development_Servicing_Plan_2019.

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CONTRIBUTIONS

- A detailed contributions quote can be obtained from Council's Section 7.11 Contributions Officer. Please note that fees are required to be paid prior to issue of the construction certificate and that contributions will be adjusted to the amount applicable at the time of payment.

- Refer to the link for access to full copies of the Section 7.11 and 7.12 Plans.

Housing and Productivity Contribution (HPC)

- The HPC applies to the whole of the Central Coast Local Government area and to the following types of development:

Region	HPC class of development	Amount	HPC unit
Greater Sydney	Residential subdivision	$12,000	new dwelling lot
	Residential strata subdivision	$10,000	new strata dwelling lot
	High-density residential development	$10,000	new high-density dwelling
	Commercial development	$30	square metre of new GFA
	Industrial development	$15	square metre of new GFA
Central Coast Illawarra-Shoalhaven Lower Hunter	Residential subdivision	$8,000	new dwelling lot
	Residential strata subdivision	$6,000	new strata dwelling lot
	High-density residential development	$6,000	new high-density dwelling
	Manufactured home estate	$6,000	new dwelling site
	Commercial development	$30	square metre of new GFA
	Industrial development	$15	square metre of new GFA

- The HPC came into effect on 1 October 2023 and will apply to development applications and complying development certificates across 43 council areas in the Greater Sydney, Illawarra-Shoalhaven, Lower Hunter and Central Coast regions. The Ministerial Order sets out how the contribution will operate.

- The HPC will be required to be paid prior to issue of a construction certificate/CDC/Subdivision Certificate, depending on the type of work consented to.

ENVIRONMENTAL HEALTH

- To allow for proper assessment of the impacts of construction and ongoing operation of the school on the surrounding residential receivers, an acoustic report is requested to be prepared by a suitably qualified acoustic consultant that meets the technical eligibility criteria for membership with the Association of Australasian Acoustical Consultants. The report must

be prepared in accordance with the NSW EPAs Noise Policy for Industry (2017). This report should include a Noise Management Plan that details noise mitigation measures and recommendations to mitigate noise impacts both during construction and ongoing use.

- Provide a Soil and Water Management Plan in accordance with Section 2.3 of the 'Blue Book' *(Managing Urban Stormwater: Soils and Construction, Landcom, 2004)*. The plan shall be prepared by a suitably qualified environmental/civil consultant. Section 9.3 of the Blue Book provides guidance on preparing a Soil and Water Management Plan for medium-density development.

SUMMARY OF ADVICE

The following comments comprise a summary of the key issues identified within this advice, with identified recommendations, if appropriate:

- The proposed development will be determined by the Regional Planning Panel as per Clause 2.19 (1) of SEPP (Planning Systems) 2021.

- The proposed development is deemed to be integrated development (special fire protection purposes) under Clause 100B of the *Rural Fires Act 1997* and requires concurrence from the NSW RFS.

  All bushfire Asset Protection Zones (APZs) are to be contained within the site as per the required bushfire report which is to be prepared by a suitably qualified bushfire consultant.

- The proposed development is to comply with the relevant provisions of the *SEPP (Transport and Infrastructure) 2021, SEPP (Resilience and Hazards) 2021 and SEPP (Biodiversity and Conservation) 2021* that are relevant to this proposal.

- Written Clause 4.6 variation request for the proposed building height non-compliance with Clause 4.3 of the CCLEP 2022.

- An acoustic report prepared by a suitably qualified acoustic engineer demonstrating that the development will not be impacted by road noise and will not have a detrimental impact on the adjoining residential areas.

- The proposed development is to comply with the provisions of the *Central Coast Local Environmental Plan 2022* and the *Central Coast Development Control Plan 2022*.

- A Traffic and Parking Impact Assessment is required to demonstrate that the proposed development has sufficient car parking or on any vehicle's movements in the vicinity of the site.

- A preliminary site investigation report is required to demonstrate that the site is not contaminated and is suitable for the development.
- A waste management plan is required for the demolition, construction and ongoing waste management of the development.
- An Arboricultural Impact Assessment is required for the proposed tree removal.
- A staging plan for the proposed development must accompany the application.

Should you wish to discuss any of the above, please contact Ross Edwards, on email ross.edwards@centralcoast.nsw.gov.au

DA LODGEMENT REQUIREMENTS

Recommended/ Required Documentation

The following documentation is to be submitted with any Development Application:

- Architectural plans, including site plan, floor plans, elevations, sections and long sections. Provide dimensions, loading areas, and waste storage areas on the floor plans.
- Survey Plan.
- Statement of Environmental Effects.
- Quantity Surveyors Report.
- Traffic and Parking Impact Assessment.
- Geotechnical Report.
- BASIX Certificate.
- Arborist Report.
- Preliminary Civil Engineering Plans.
- Erosion and Sedimentation Control Plan/ Soil and Water Management Plan.
- A Bushfire Assessment Report in accordance with *Planning for Bushfire Protection 2019*.
- Landscape Plan.

- Acoustic Report.
- Operational Management Plan (including hours of operation, lighting, noise control, waste management, servicing, carparking and any other relevant information).
- Access Report.
- Services Plan.
- Waste Management Plan using Council's template.

The *Environmental Planning and Assessment Regulation 2021* (Regulation) requires certain applications for development to be in an approved form. The approved form is defined in Schedule 7 of that Regulation as a form approved by the Planning Secretary and published on the NSW Planning Portal. This document lists the mandatory documents and drawings that are part of the approved form.

Planning circular – PS 22-004 also advises councils, applicants and practitioners of updated requirements for development applications, complying development certificate applications and State significant development applications made under the *Environmental Planning and Assessment Act 1979*.

You may also wish to review Councils Guide for Applicants on Supporting Document Requirements, accessed here: Supporting Document Guide

Development Application Forms

When submitting your development application to Council via the NSW Planning Portal, you will be required to submit supporting documents with your application. Some of these will be forms provided by Council for you to fill in, including:

- Part B – Application Detail and Owner(s) Consent Form

ePlanning Tools

The Planning Enquiry tool within Central Coast Council's ePlanning Portal allows you to view the following information related to your property: land zone; bushfire status; flooding status; maximum building height; maximum floor space ratio; and minimum subdivision lot size. In addition, this tool can provide the Gosford LEP and DCP planning controls relevant to your proposed development: Online maps | Central Coast Council (nsw.gov.au)

NSW Department of Planning and Environment "Your Guide to the DA Process"

RECORD OF PRE-DEVELOPMENT ADVICE

This website, Your guide to the DA process | Planning (nsw.gov.au) explains the development assessment and construction approval process to help you in preparing and lodging assessment ready development applications (DAs) as well as explaining the next steps to get them building.

Fee Quote

Our Customer Service Staff will be able to provide you a fee quote for Development Application Fees and Construction Certificate Fees on 02 4306 7900 or email at ask@centralcoast.nsw.gov.au

Disclaimer

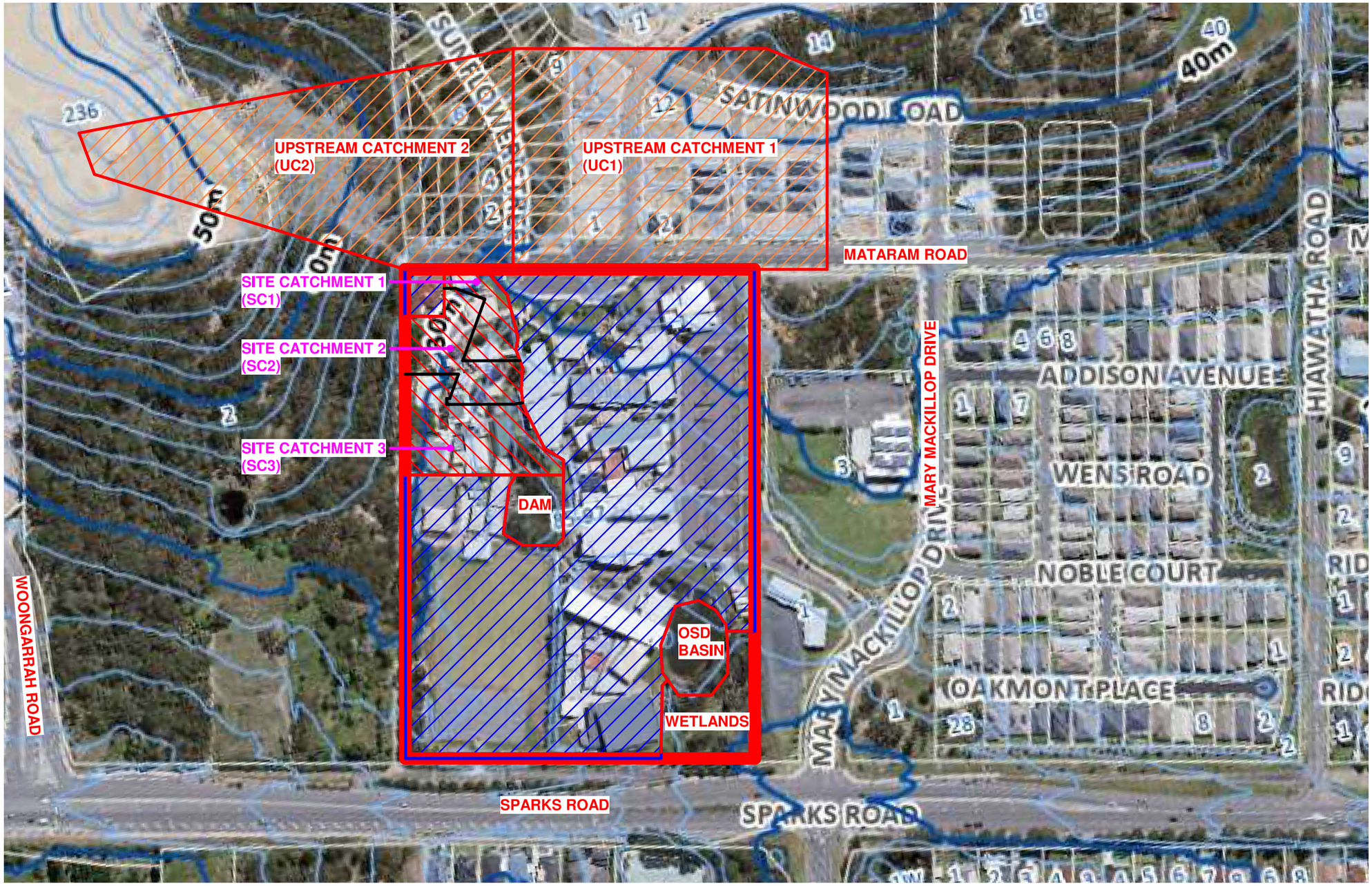
The information provided verbally and/or within the text of any document by Central Coast Council is for the purpose of assisting you with understanding the planning controls relating to your land and/or proposed development and the application process that may be applicable. It is recommended that anyone contemplating the carrying out of development or the purchasing of land in the Central Coast Local Government Area (LGA) obtain their own planning advice from a suitably qualified professional such as a town planner or private solicitor specialising in land use and/or planning law. Please note that Council is not able to recommend the name or contact details of such professionals.

Ross Edwards
Principal Development Planner
DEVELOPMENT ASSESSMENT

Date: 20 November 2023

APPENDIX 4

CATCHMENT BOUNDARIES



STORMWATER CATCHMENT BOUNDARIES

NOT TO SCALE

LEGEND

- UPSTREAM CATCHMENTS
- SITE CATCHMENTS
- OUTSIDE DEVELOPMENT AREA

COLOUR REPRODUCTION WARNING: ELEMENTS OF THIS DRAWING ARE PRINTED IN COLOUR.

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR DA	17.07.2024	C
HL	JM	ISSUE FOR REVIEW	26.06.2024	B
HL	JM	FOR DA	04.04.2024	A

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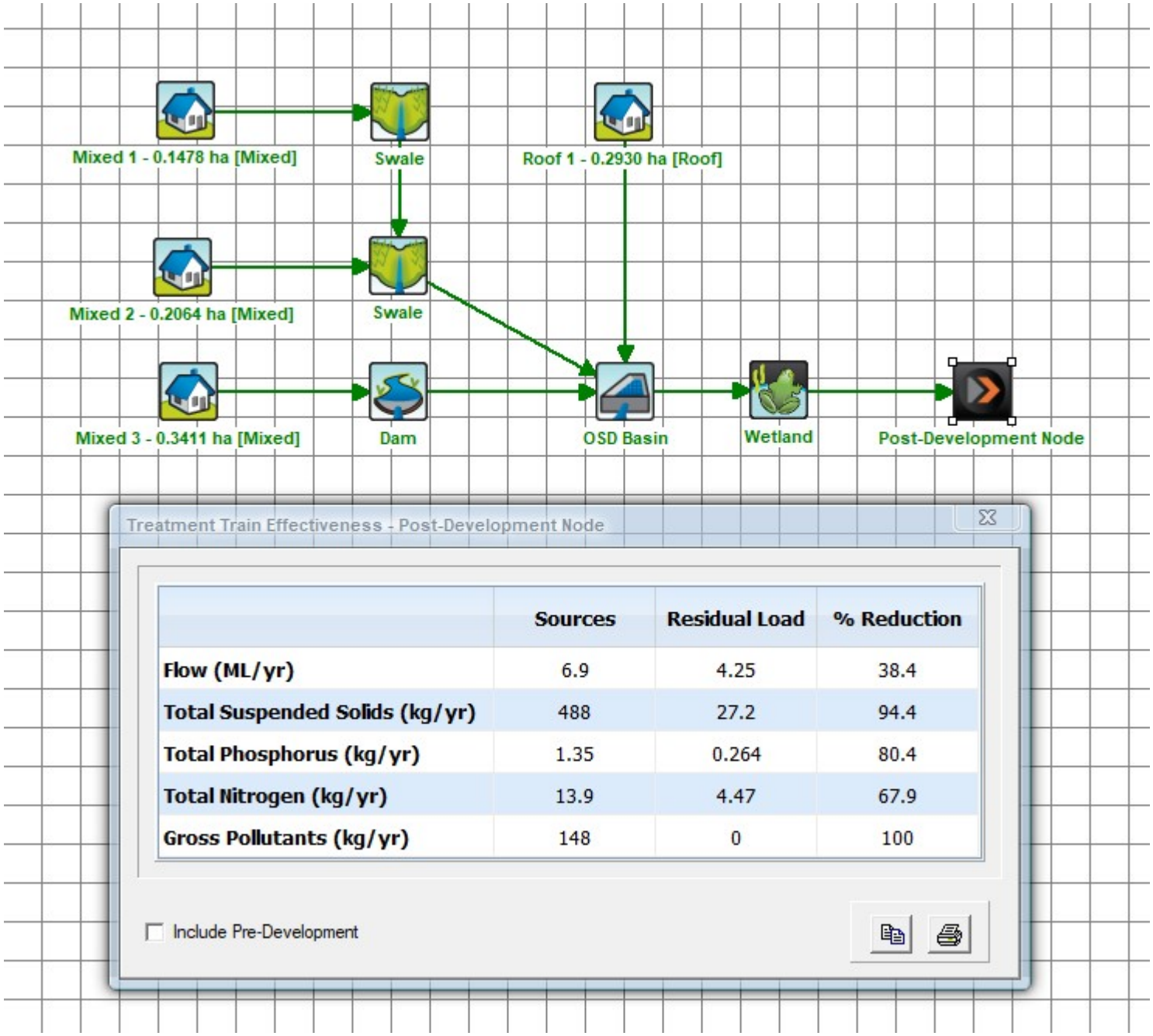
ALTERATIONS & ADDITIONS TO
MacKillop Catholic College
91 SPARKS ROAD,WOONGARRAH, NSW

STORMWATER CATCHMENT BOUNDARIES

DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SW.5 / REV C
A1	SCALE As indicated	DATE

APPENDIX 5

MUSIC MODEL



Treatment Train Effectiveness - Post-Development Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	6.9	4.25	38.4
Total Suspended Solids (kg/yr)	488	27.2	94.4
Total Phosphorus (kg/yr)	1.35	0.264	80.4
Total Nitrogen (kg/yr)	13.9	4.47	67.9
Gross Pollutants (kg/yr)	148	0	100

☐ Include Pre-Development

APPENDIX 6

MUSIC-LINK REPORT

MUSIC-*link* Report

Project Details		Company Details	
Project:	6611	**Company:**	JTA
Report Export Date:	25/06/2024	**Contact:**	James McCallum
Catchment Name:	MUSIC Model - Rev C	**Address:**	
Catchment Area:	0.987ha	**Phone:**	02 9969 1999
Impervious Area*:	41.79%	**Email:**	jmccallum@jamestaylorassociates.com.au
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1974 - 31/12/1993 11:54:00 PM		
Mean Annual Rainfall:	1297mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.34		
Study Area:	Lowland		
Scenario:	Central Coast Development		

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

Treatment Train Effectiveness

Node: Post-Development Node	Reduction
Flow	38.4%
TSS	94.4%
TP	80.4%
TN	67.9%
GP	100%

Treatment Nodes

Node Type	Number
Wetland Node	2
Detention Basin Node	2
Pond Node	2
Swale Node	3

Source Nodes

Node Type	Number
Urban Source Node	9

Comments

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Pond	Dam	Evaporative Loss as % of PET	100	100	100
Pond	Dam	Evaporative Loss as % of PET	100	100	100
Pond	Dam	Extended detention depth (m)	0.25	1	0.48
Pond	Dam	Extended detention depth (m)	0.25	1	0.48
Post	Post-Development Node	% Load Reduction	None	None	38.4
Post	Post-Development Node	GP % Load Reduction	90	None	100
Post	Post-Development Node	TN % Load Reduction	45	None	67.9
Post	Post-Development Node	TP % Load Reduction	45	None	80.4
Post	Post-Development Node	TSS % Load Reduction	80	None	94.4
Pre	Pre-Development Node	% Load Reduction	None	None	21.6
Pre	Pre-Development Node	GP % Load Reduction	90	None	100
Pre	Pre-Development Node	TN % Load Reduction	45	None	58.9
Pre	Pre-Development Node	TP % Load Reduction	45	None	77.4
Pre	Pre-Development Node	TSS % Load Reduction	80	None	94.9
Swale	Swale	Bed slope	0.02	0.05	0.03
Swale	Swale	Bed slope	0.02	0.05	0.03
Swale	Swale	Bed slope	0.02	0.05	0.03
Urban	Mixed 1 - 0.1478 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 1 - 0.1478 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 1 - 0.1478 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 1 - 0.1478 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 1 - 0.1478 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Mixed 1 - 0.1478 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Mixed 1 - 0.753 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 1 - 0.753 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 1 - 0.753 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 1 - 0.753 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 1 - 0.753 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Mixed 1 - 0.753 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Mixed 2 - 0.2064 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 2 - 0.2064 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 2 - 0.2064 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 2 - 0.2064 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 2 - 0.2064 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Mixed 2 - 0.2064 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Mixed 2 - 0.416 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 2 - 0.416 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 2 - 0.416 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 2 - 0.416 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 2 - 0.416 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Mixed 2 - 0.416 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Mixed 3 - 0.182 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 3 - 0.182 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 3 - 0.182 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 3 - 0.182 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 3 - 0.182 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Mixed 3 - 0.182 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Mixed 3 - 0.3411 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.11	0.11	0.11
Urban	Mixed 3 - 0.3411 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.85	-0.85	-0.85
Urban	Mixed 3 - 0.3411 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.2	1.2	1.2
Urban	Mixed 3 - 0.3411 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Mixed 3 - 0.3411 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.6	-0.6	-0.6
Urban	Mixed 3 - 0.3411 ha	Stormflow Total Suspended Solids Mean (log mg/L)	2.15	2.15	2.15
Urban	Roof 1 - 0.115 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.32
Urban	Roof 1 - 0.115 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.82
Urban	Roof 1 - 0.115 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.1
Urban	Roof 1 - 0.115 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Roof 1 - 0.115 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.89	-0.89	-0.89
Urban	Roof 1 - 0.115 ha	Stormflow Total Suspended Solids Mean (log mg/L)	1.3	1.3	1.3
Urban	Roof 1 - 0.2930 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.32
Urban	Roof 1 - 0.2930 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.82
Urban	Roof 1 - 0.2930 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.1
Urban	Roof 1 - 0.2930 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Roof 1 - 0.2930 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.89	-0.89	-0.89
Urban	Roof 1 - 0.2930 ha	Stormflow Total Suspended Solids Mean (log mg/L)	1.3	1.3	1.3
Urban	Roof 2 - 0.364 ha	Baseflow Total Nitrogen Mean (log mg/L)	0.32	0.32	0.32
Urban	Roof 2 - 0.364 ha	Baseflow Total Phosphorus Mean (log mg/L)	-0.82	-0.82	-0.82
Urban	Roof 2 - 0.364 ha	Baseflow Total Suspended Solids Mean (log mg/L)	1.1	1.1	1.1
Urban	Roof 2 - 0.364 ha	Stormflow Total Nitrogen Mean (log mg/L)	0.3	0.3	0.3
Urban	Roof 2 - 0.364 ha	Stormflow Total Phosphorus Mean (log mg/L)	-0.89	-0.89	-0.89
Urban	Roof 2 - 0.364 ha	Stormflow Total Suspended Solids Mean (log mg/L)	1.3	1.3	1.3
Wetland	Wetland	Evaporative Loss as % of PET	125	125	125
Wetland	Wetland	Evaporative Loss as % of PET	125	125	125
Wetland	Wetland	Exfiltration Rate (mm/hr)	0	0	0
Wetland	Wetland	Exfiltration Rate (mm/hr)	0	0	0
Wetland	Wetland	Extended detention depth (m)	0.25	0.75	0.4
Wetland	Wetland	Extended detention depth (m)	0.25	0.75	0.4
Wetland	Wetland	Notional Detention Time (hrs)	48	72	50
Wetland	Wetland	Notional Detention Time (hrs)	48	72	50
Wetland	Wetland	Number of CSTR Cells	4	4	4

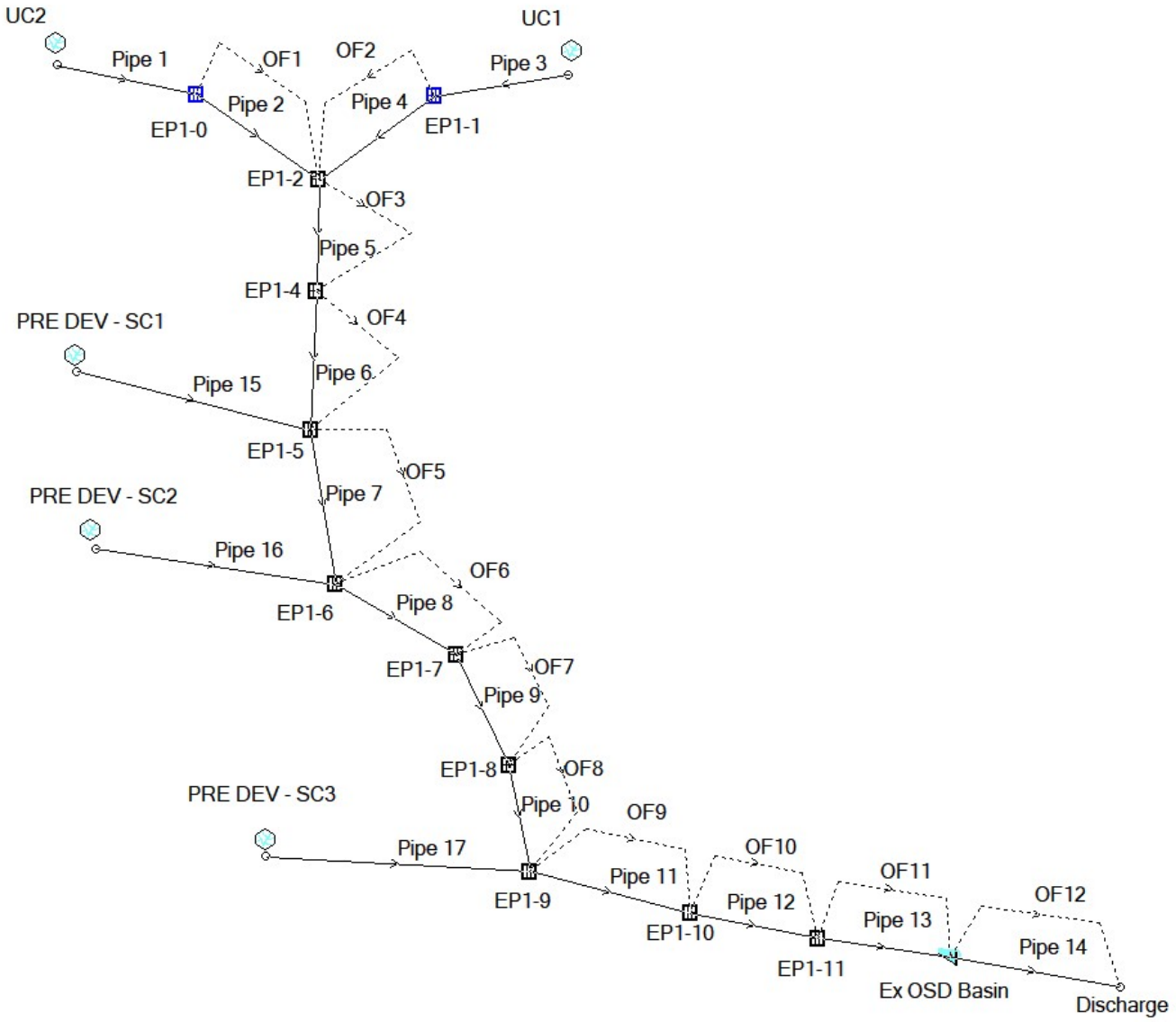
Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Wetland	Wetland	Number of CSTR Cells	4	4	4

Only certain parameters are reported when they pass validation

APPENDIX 7

DRAINS MODEL - PRE DEVELOPMENT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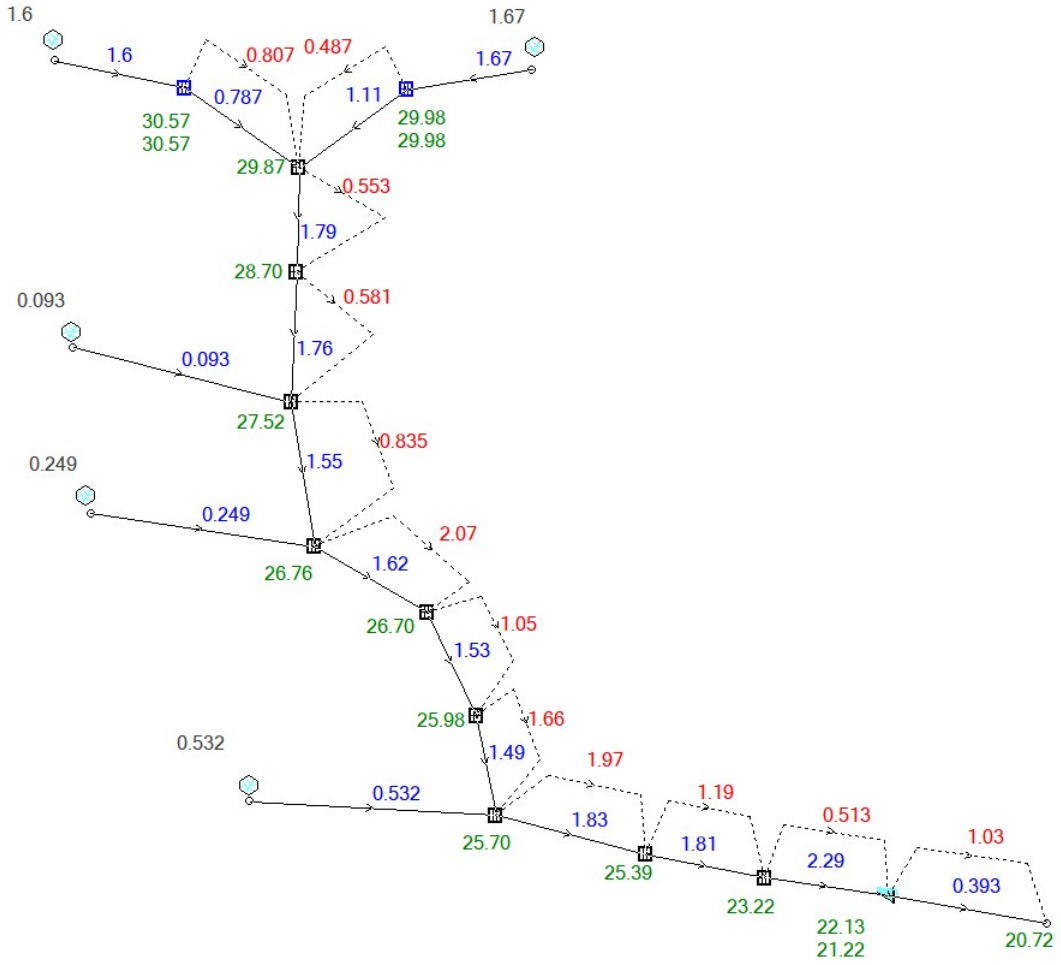
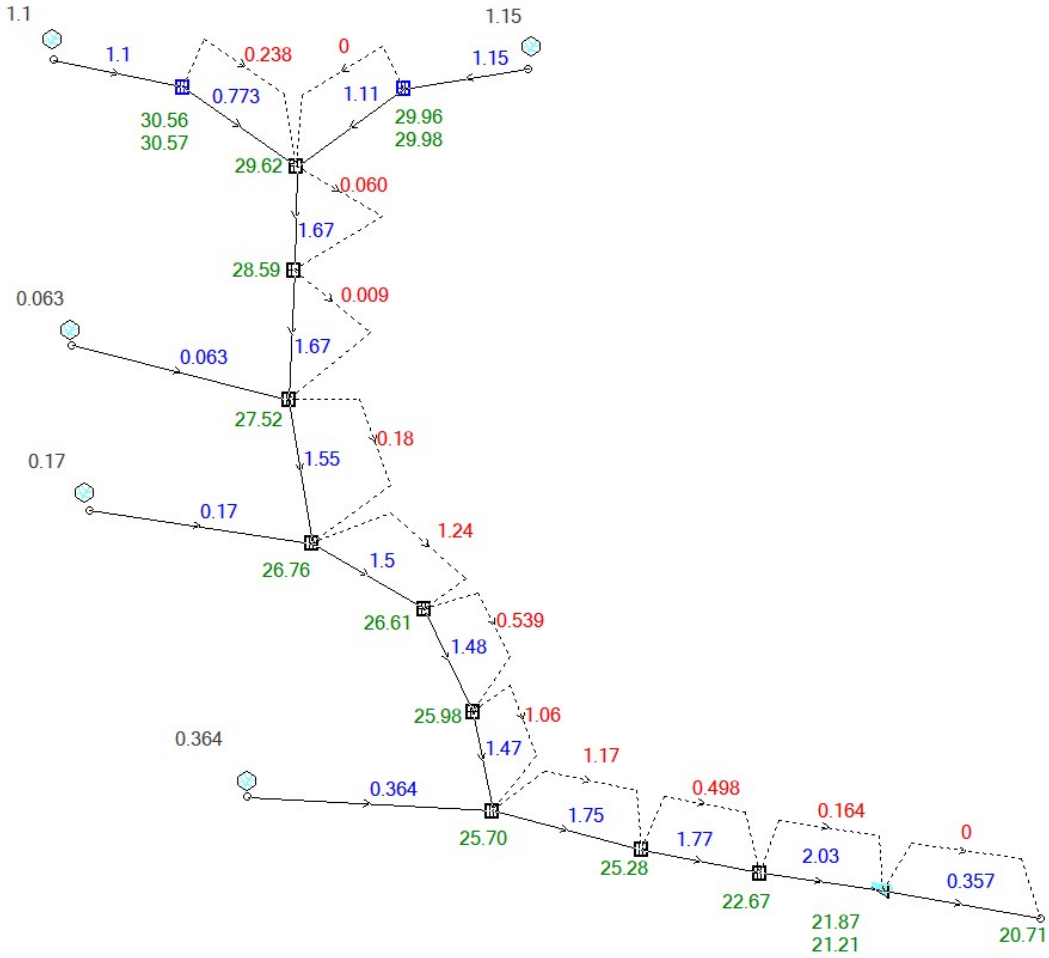
UC1
Pipe 1
OF1
OF2
Pipe 3
Pipe 2
Pipe 4
EP1-0
EP1-1
EP1-2
OF3
Pipe 5
EP1-4
OF4
PRE DEV - SC1
Pipe 6
Pipe 15
EP1-5
OF5
Pipe 7
PRE DEV - SC2
Pipe 16
OF6
EP1-6
Pipe 8
EP1-7
OF7
Pipe 9
EP1-8
OF8
PRE DEV - SC3
Pipe 10
OF9
Pipe 17
OF10
Pipe 11
OF11
EP1-9
Pipe 12
OF12
Pipe 13
EP1-10
Pipe 14
EP1-11
Ex OSD Basin
Discharge

Results for median storm in critical 1% AEP ensembles using Lite hydraulic model.

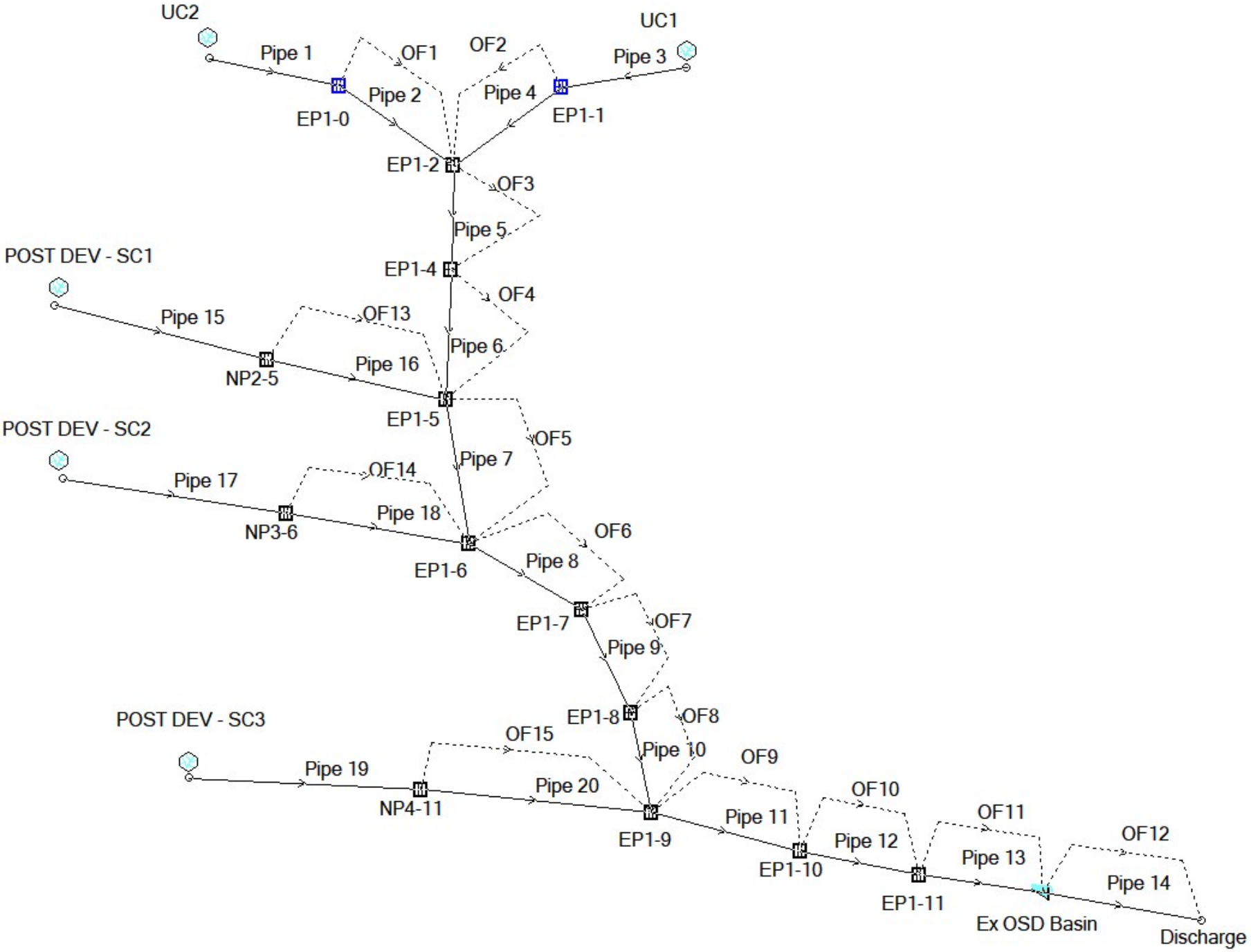


Results for median storm in critical 5% AEP ensembles using Lite hydraulic model.



APPENDIX 8

DRAINS MODEL - POST DEVELOPMENT


UC2
UC1
Pipe 1
OF1
OF2
Pipe 3
Pipe 2
Pipe 4
EP1-0
EP1-1
EP1-2
OF3
Pipe 5
POST DEV - SC1
EP1-4
OF4
Pipe 15
OF13
Pipe 6
Pipe 16
NP2-5
EP1-5
POST DEV - SC2
OF5
Pipe 7
Pipe 17
OF14
Pipe 18
NP3-6
OF6
EP1-6
Pipe 8
EP1-7
OF7
Pipe 9
POST DEV - SC3
EP1-8
OF8
OF15
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Pipe 19
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OF10
NP4-11
Pipe 11
OF11
EP1-9
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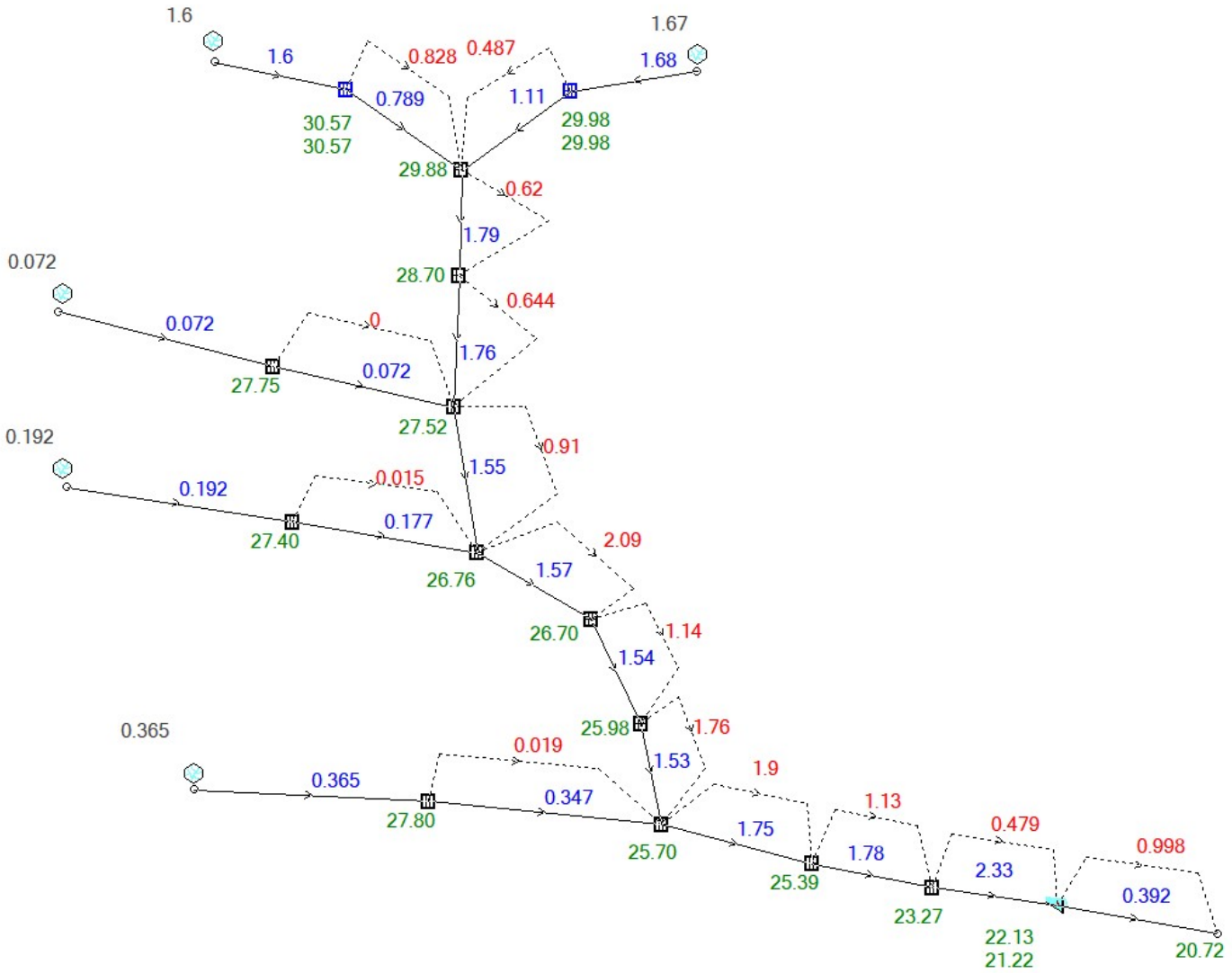
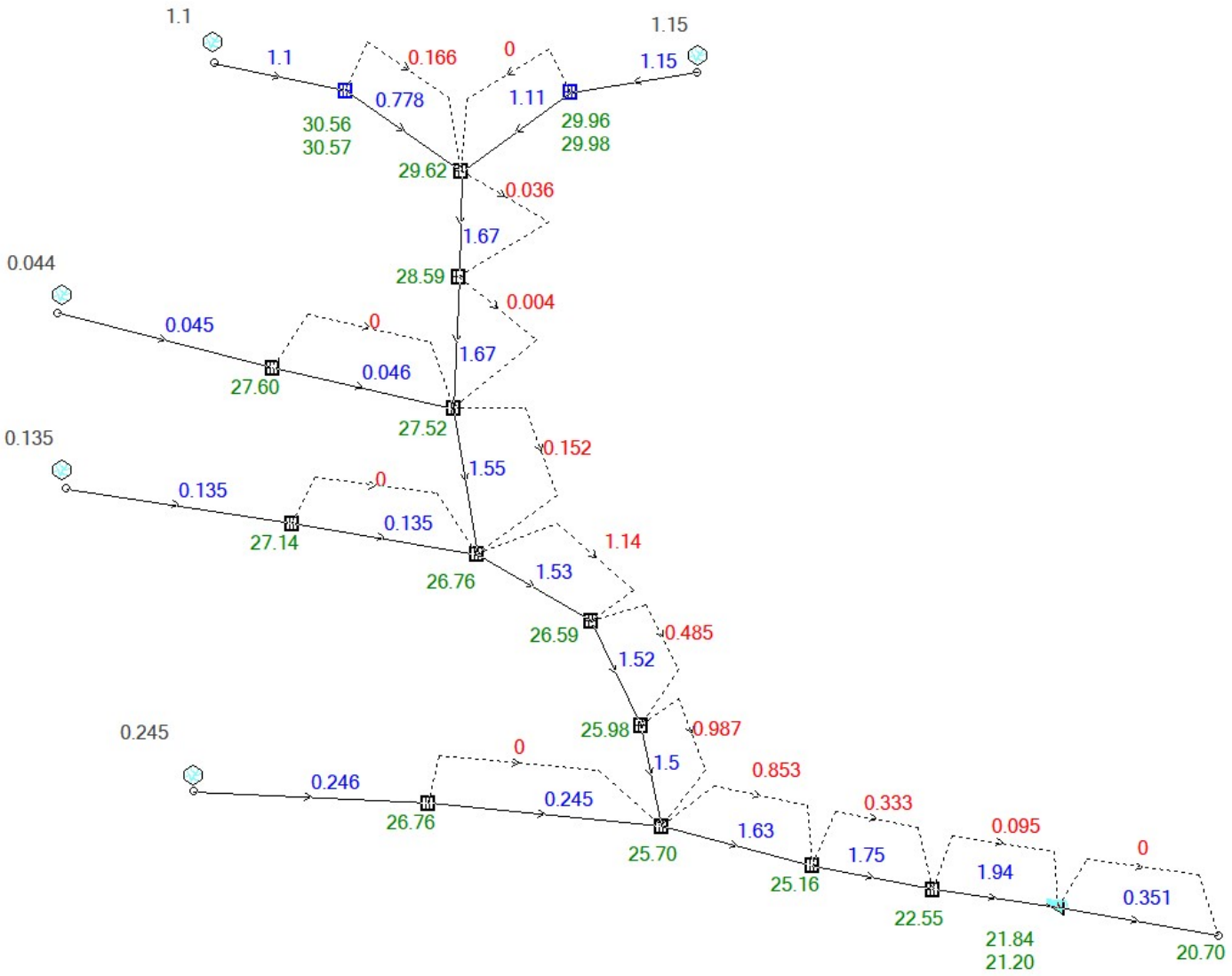
EP1-10
Pipe 13
Pipe 14
EP1-11
Ex OSD Basin
Discharge

Results for median storm in critical 1% AEP ensembles using Lite hydraulic model.



Results for median storm in critical 5% AEP ensembles using Lite hydraulic model.



APPENDIX 9

DRAINS DATA - PRE DEVELOPMENT 1% AEP

PIT / NODE DETAILS Version 15

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff.	Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond Dept (m)	Major Safe Pond Depth (m)
N17910	Node						31		0		1005	-828.333		3128958		No					
EP1-0	Sag	NSW RTA S	SA3	3	1.5		30.42	0.15	0	0.5	1160.833	-860.833	No	13290	1 x Ku	No	New	900	Yes	0.12	0.2
EP1-2	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		29.93		0	0.5	1298.333	-956.667	No	13294	1 x Ku	No	New	6000	Yes		
EP1-4	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		28.7		0	0.5	1295.004	-1080.88	No	16766337	1 x Ku	No	New	900	No		
EP1-5	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		27.52		0	0.5	1289.139	-1237.56	No	13301	1 x Ku	No	New	900	No		
EP1-6	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		26.76		0	0.5	1316.667	-1410	No	13315	1 x Ku	No	New	900	No		
EP1-7	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		26.72		0	0.5	1451.2	-1488.16	No	61125099	1 x Ku	No	New	900	No		
EP1-8	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		25.98		0	0.5	1510.24	-1612	No	61125098	1 x Ku	No	New	900	No		
EP1-9	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		25.7		0	0.5	1534.72	-1731.52	No	13319	1 x Ku	No	New	900	No		
EP1-10	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		25.4		0	0.5	1714.72	-1779.04	No	59317012	1 x Ku	No	New	900			
EP1-11	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5		23.77		0	0.5	1857.28	-1806.4	No	13336	1 x Ku	No	New	900	No		
Discharge	Node						20.3		0		2194.24	-1861.12		13350		No					
N20278	Node						31		0		1577.778	-838.889		3716280		No					
EP1-1	Sag	NSW RTA S	SA3	3	1.5		29.83	0.15	0	0.5	1427.141	-862.905	No	13291	1 x Ku	No	New	900	Yes	0.12	0.2
N20284	Node						28.38		0		1027.84	-1171.36		3716300		No					
N20288	Node						29.38		0		1048	-1370.08		3716333		No					
N20290	Node						27.8		0		1239.52	-1715.68		3716350		No					
N23395	Node								0		2209.36	-219.28		4283104		No					
N50352	Node								0		2566.48	-235.12		8206211		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Typ	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id
Ex OSD Ba	20	880		Culvert	0.5					2005.6	-1828	No			13347
	20.8	1900													
	22	1900													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%) %	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
UC2	N17910	2.2	80	20	0	3	30	2										0				1
UC1	N20278	2.3	80	20	0	3	30	2										0				1
PRE DEV -	N20284	0.1478	62	38	0	2	15	2										0				1
PRE DEV -	N20288	0.3494	75	25	0	2	15.5	2										0				1
PRE DEV -	N20290	0.86	66	34	0	3	30	2										0				1
NATURE - '	N23395	7.487	0	100	0	5	45	2										0				1
NATURE - I	N50352	1.022	0	100	0	5	45	2										0				1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	RL (m)	etc (m)
Pipe 1	N17910	EP1-0	10	28.85	28.65	2	Concrete, I	525	525	0.013	New	1	N17910	0					
Pipe 2	EP1-0	EP1-2	26.8	28.65	28.152	1.86	Concrete, I	525	525	0.013	New	1	EP1-0	0					
Pipe 5	EP1-2	EP1-4	21	27.6	26.5	5.24	Concrete, I	825	825	0.013	New	1	EP1-2	0					
Pipe 6	EP1-4	EP1-5	24	26.2	25.1	4.58	Concrete, I	825	825	0.013	New	1	EP1-4	0					
Pipe 7	EP1-5	EP1-6	10	25.03	24.26	7.7	Concrete, I	825	825	0.013	New	1	EP1-5	0					
Pipe 8	EP1-6	EP1-7	17	24.16	23.98	1.06	Concrete, I	825	825	0.013	New	1	EP1-6	0					
Pipe 9	EP1-7	EP1-8	14.7	23.98	23.77	1.43	Concrete, I	825	825	0.013	New	1	EP1-7	0					
Pipe 10	EP1-8	EP1-9	27	23.72	23.44	1.04	Concrete, I	825	825	0.013	New	1	EP1-8	0					
Pipe 11	EP1-9	EP1-10	30	22.84	22.5	1.13	Concrete, I	825	825	0.013	New	1	EP1-9	0					
Pipe 12	EP1-10	EP1-11	129	22.5	21.21	1	Concrete, I	825	825	0.013	New	1	EP1-10	0					
Pipe 13	EP1-11	Ex OSD Ba	30	21.21	20.8	1.37	Concrete, I	900	900	0.013	New	1	EP1-11	0					
Pipe 14	Ex OSD Ba	Discharge	50	20.8	20.3	1	Concrete, I	450	450	0.013	New	1	Ex OSD Ba	0					
Pipe 3	N20278	EP1-1	10	27.755	27.655	1	Concrete, I	825	825	0.013	New	1	N20278	0					
Pipe 4	EP1-1	EP1-2	5.5	27.655	27.6	1	Concrete, I	825	825	0.013	New	1	EP1-1	0					
Pipe 15	N20284	EP1-5	10	25.53	25.03	5	Concrete, I	300	300	0.013	New	1	N20284	0					
Pipe 16	N20288	EP1-6	10	24.66	24.16	5	Concrete, I	300	300	0.013	New	1	N20288	0					
Pipe 17	N20290	EP1-9	10	23.34	22.84	5	Concrete, I	300	300	0.013	New	1	N20290	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	etc etc

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Stor (m)	SafeDepth Minor Stor (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id
OF1	EP1-0	EP1-2		0.1			Overflow a	0.3	0	0.6	3	0	13299
OF3	EP1-2	EP1-4		0.1			4 m wide p	0.3	0.15	0.4	5	0	38585501
OF4	EP1-4	EP1-5		0.1			4 m wide p	0.3	0.15	0.4	3	0	16766311
OF5	EP1-5	EP1-6		0.1			4 m wide p	0.3	0.15	0.6	9	0	13318
OF6	EP1-6	EP1-7		0.1			4 m wide p	0.3	0.15	0.6	3	0	13325
OF7	EP1-7	EP1-8		0.1			4 m wide p	0.3	0.15	0.6	3	0	61125121
OF8	EP1-8	EP1-9		0.1			4 m wide p	0.3	0.15	0.6	3	0	61125122
OF9	EP1-9	EP1-10		0.2			4 m wide p	0.3	0.15	0.6	3	0	13346
OF10	EP1-10	EP1-11		0.7			4 m wide p	0.3	0.15	0.6	3	0	59317022
OF11	EP1-11	Ex OSD Ba		0.2			4 m wide p	0.3	0.15	0.6	3	0	13349
OF12	Ex OSD Ba	Discharge		0.3	22	15	1.45 4 m wide p	0.3	0.15	0.6	3	0	13352
OF2	EP1-1	EP1-2		0.1			Overflow a	0.3	0	0.6	1	0	13300

PIPE COVER DETAILS

Name	Type	Dia (mm)	Safe Cover	Cover (m)	
Pipe 1	Concrete, I	525	0.6	1.2	
Pipe 2	Concrete, I	525	0.6	1.2	
Pipe 5	Concrete, I	825	0.45	1.31	
Pipe 6	Concrete, I	825	0.45	1.53	
Pipe 7	Concrete, I	825	0.45	1.6	
Pipe 8	Concrete, I	825	0.45	1.71	
Pipe 9	Concrete, I	825	0.45	1.32	
Pipe 10	Concrete, I	825	0.45	1.37	
Pipe 11	Concrete, I	825	0.45	1.97	
Pipe 12	Concrete, I	825	0.45	1.68	
Pipe 13	Concrete, I	900	0.45	-1.77	Unsafe
Pipe 14	Concrete, I	450	0.45	-1.29	Unsafe
Pipe 3	Concrete, I	825	0.45	1.29	
Pipe 4	Concrete, I	825	0.45	1.29	
Pipe 15	Concrete, I	300	0.45	2.16	
Pipe 16	Concrete, I	300	0.45	2.27	
Pipe 17	Concrete, I	300	0.45	2.53	

This model has no pipes with non-return valves

DRAINS results prepared from Version 2023.11.8726.15750

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N17910	31.94		1.928				
EP1-0	30.57	30.57	0	2.6	0	0.807	Outlet System
EP1-2	29.87		1.741		0.06	0.553	Inlet Capacity
EP1-4	28.7		0.888		0	0.581	Outlet System

EP1-5	27.52		0.942		0	0.835	Outlet System
EP1-6	26.76		1.228		0	2.067	Outlet System
EP1-7	26.7		2.594		0.02	1.047	Inlet Capacity
EP1-8	25.98		1.539		0	1.665	Outlet System
EP1-9	25.7		2.163		0	1.995	Outlet System
EP1-10	25.39		2.63		0.01	1.219	Inlet Capacity
EP1-11	23.25		2.063		0.52	0.527	Inlet Capacity
Discharge	20.72		1.521				
N20278	30.18		2.016				
EP1-1	29.98	29.98	0	2.6	0	0.487	Outlet System
N20284	27.64		0.118				
N20288	27.41		0.306				
N20290	28.62		0.661				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
UC2	1.601	1.555	0.046	3	30	2	1% AEP, 5 min burst, Storm 1
UC1	1.674	1.625	0.048	3	30	2	1% AEP, 5 min burst, Storm 1
PRE DEV -	0.093	0.081	0.012	2	15	2	1% AEP, 5 min burst, Storm 1
PRE DEV -	0.249	0.231	0.018	2	15.5	2	1% AEP, 5 min burst, Storm 1
PRE DEV -	0.532	0.501	0.031	3	30	2	1% AEP, 5 min burst, Storm 1
NATURE - ¹	1.836	0	1.836	5	45	2	1% AEP, 1 hour burst, Storm 4
NATURE - I	0.251	0	0.251	5	45	2	1% AEP, 1 hour burst, Storm 4

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 1	1.601	7.4	31.938	30.57	1% AEP, 5 min burst, Storm 1
Pipe 2	0.787	3.64	30.201	29.874	1% AEP, 5 min burst, Storm 1
Pipe 5	1.791	3.35	29.024	28.7	1% AEP, 10 min burst, Storm 5
Pipe 6	1.758	3.29	27.878	27.52	1% AEP, 15 min burst, Storm 10
Pipe 7	1.555	2.91	26.877	26.76	1% AEP, 5 min burst, Storm 1
Pipe 8	1.616	3.02	26.713	26.698	1% AEP, 5 min burst, Storm 1
Pipe 9	1.534	2.87	26.131	25.98	1% AEP, 5 min burst, Storm 1
Pipe 10	1.494	2.79	25.792	25.7	1% AEP, 10 min burst, Storm 7
Pipe 11	1.835	3.43	25.496	25.386	1% AEP, 5 min burst, Storm 1
Pipe 12	1.806	3.38	24.747	23.254	1% AEP, 5 min burst, Storm 1
Pipe 13	2.326	3.66	22.497	22.131	1% AEP, 10 min burst, Storm 10
Pipe 14	0.393	2.55	21.932	20.717	1% AEP, 1.5 hour burst, Storm 5
Pipe 3	1.674	3.13	30.182	29.98	1% AEP, 5 min burst, Storm 1
Pipe 4	1.114	2.08	29.883	29.874	1% AEP, 10 min burst, Storm 1
Pipe 15	0.093	1.31	27.638	27.52	1% AEP, 5 min burst, Storm 1
Pipe 16	0.249	3.53	27.409	26.76	1% AEP, 5 min burst, Storm 1
Pipe 17	0.532	7.53	28.617	25.7	1% AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0.807	0.807	9.286	0.062	0.09	12.91	1.49	1% AEP, 10 min burst, Storm 7
OF3	0.553	0.553	1.401	0.076	0.17	4	2.25	1% AEP, 10 min burst, Storm 5
OF4	0.581	0.581	1.431	0.088	0.17	4	1.98	1% AEP, 10 min burst, Storm 5
OF5	0.835	0.835	2.119	0.08	0.26	4	3.19	1% AEP, 10 min burst, Storm 5
OF6	2.067	2.067	2.2	0.175	0.57	4	3.23	1% AEP, 15 min burst, Storm 5
OF7	1.047	1.047	2.2	0.12	0.3	4	2.5	1% AEP, 15 min burst, Storm 5
OF8	1.665	1.665	2.2	0.154	0.46	4	2.99	1% AEP, 15 min burst, Storm 5
OF9	1.995	1.995	2.2	0.171	0.55	4	3.2	1% AEP, 10 min burst, Storm 10
OF10	1.219	1.219	2.2	0.131	0.34	4	2.64	1% AEP, 10 min burst, Storm 10
OF11	0.527	0.527	2.2	0.084	0.16	4	1.9	1% AEP, 10 min burst, Storm 10
OF12	1.032	1.032	2.2	0.119	0.3	4	2.49	1% AEP, 1.5 hour burst, Storm 5
OF2	0.487	0.487	11.081	0.064	0.06	13.03	0.88	1% AEP, 10 min burst, Storm 6

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Ex OSD Ba	22.13	3615.1	1.425	0.393	1.032

Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Pre Dev - REV 3
{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Pre Dev - REV 3.drn run at 17:13:01 on 17/7/2024 using Watercom Drains v2023.11.8726.15750

The maximum water level in these storages exceeds the maximum elevation you specified: Ex OSD Basin.
DRAINS has extrapolated the Elevation vs Storage table to a higher Elevation. Please provide accurate values for higher elevations.

Upwelling occurred at: EP1-8, EP1-4, EP1-9, EP1-6, EP1-5, EP1-2
Freeboard was less than 0.15m at EP1-7, EP1-10, EP1-1, EP1-0
Flows were safe in all overflow routes.

DRAINS results prepared from Version 2023.11.8726.15750

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N17910	31.23		1.282				
EP1-0	30.57	30.56	0	2.6	0	0.261	Outlet System
EP1-2	29.62		0.291		0.31	0.068	Inlet Capacity
EP1-4	28.59		0.079		0.11	0.01	Inlet Capacity
EP1-5	27.52		0.013		0	0.18	Outlet System
EP1-6	26.76		0.213		0	1.242	Outlet System
EP1-7	26.61		1.319		0.11	0.539	Inlet Capacity
EP1-8	25.98		0.583		0	1.063	Outlet System
EP1-9	25.7		1.118		0	1.166	Outlet System
EP1-10	25.28		1.488		0.12	0.498	Inlet Capacity
EP1-11	22.67		0.68		1.1	0.164	Inlet Capacity
Discharge	20.71		0.073				
N20278	30.04		1.34				
EP1-1	29.98	29.96	0	2.3	0	0	Outlet System
N20284	27.59		0.08				
N20288	27.08		0.207				
N20290	27.07		0.437				

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
UC2	1.1	1.074	0.026	3	30	2	5% AEP, 5 min burst, Storm 1
UC1	1.15	1.122	0.027	3	30	2	5% AEP, 5 min burst, Storm 1
PRE DEV -	0.063	0.056	0.007	2	15	2	5% AEP, 5 min burst, Storm 1
PRE DEV -	0.17	0.16	0.01	2	15.5	2	5% AEP, 5 min burst, Storm 1
PRE DEV -	0.364	0.346	0.017	3	30	2	5% AEP, 5 min burst, Storm 1
NATURE - ¹	1.13	0	1.13	5	45	2	5% AEP, 1 hour burst, Storm 1
NATURE - I	0.154	0	0.154	5	45	2	5% AEP, 1 hour burst, Storm 1

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 1	1.1	5.08	31.234	30.57	5% AEP, 5 min burst, Storm 1
Pipe 2	0.773	3.57	30.065	29.617	5% AEP, 5 min burst, Storm 1
Pipe 5	1.672	3.13	28.872	28.589	5% AEP, 5 min burst, Storm 1
Pipe 6	1.672	3.13	27.844	27.52	5% AEP, 5 min burst, Storm 1
Pipe 7	1.555	2.91	26.877	26.76	5% AEP, 5 min burst, Storm 1
Pipe 8	1.5	2.81	26.643	26.608	5% AEP, 5 min burst, Storm 1
Pipe 9	1.484	2.78	26.112	25.98	5% AEP, 5 min burst, Storm 1
Pipe 10	1.469	2.75	25.792	25.7	5% AEP, 5 min burst, Storm 1
Pipe 11	1.75	3.27	25.425	25.275	5% AEP, 5 min burst, Storm 1
Pipe 12	1.775	3.32	24.495	22.673	5% AEP, 5 min burst, Storm 1
Pipe 13	2.03	3.19	22.135	21.875	5% AEP, 5 min burst, Storm 1
Pipe 14	0.357	2.36	21.71	20.706	5% AEP, 1.5 hour burst, Storm 7
Pipe 3	1.151	2.15	30.044	29.98	5% AEP, 5 min burst, Storm 1
Pipe 4	1.114	2.08	29.65	29.617	5% AEP, 5 min burst, Storm 1
Pipe 15	0.063	0.89	27.59	27.52	5% AEP, 5 min burst, Storm 1
Pipe 16	0.17	2.41	27.076	26.76	5% AEP, 5 min burst, Storm 1
Pipe 17	0.364	5.15	27.074	25.7	5% AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0.261	0.261	0	0.038	0.04	10.45	1.03	5% AEP, 10 min burst, Storm 8
OF3	0.068	0.068	1.401	0.032	0.03	4	1	5% AEP, 10 min burst, Storm 8
OF4	0.01	0.01	1.431	0.019	0.01	1.92	0.55	5% AEP, 10 min burst, Storm 8
OF5	0.18	0.18	2.119	0.041	0.07	4	1.73	5% AEP, 5 min burst, Storm 1
OF6	1.242	1.242	1.573	0.132	0.35	4	2.66	5% AEP, 5 min burst, Storm 1
OF7	0.539	0.539	1.573	0.085	0.16	4	1.92	5% AEP, 5 min burst, Storm 1
OF8	1.063	1.063	1.573	0.121	0.3	4	2.51	5% AEP, 5 min burst, Storm 1
OF9	1.166	1.166	1.573	0.128	0.33	4	2.59	5% AEP, 5 min burst, Storm 1
OF10	0.498	0.498	1.573	0.081	0.15	4	1.88	5% AEP, 5 min burst, Storm 1
OF11	0.164	0.164	1.573	0.049	0.06	4	1.21	5% AEP, 5 min burst, Storm 1
OF12	0	0	1.573	0	0	0	0	
OF2	0	0	0	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Ex OSD Ba	21.87	3128.6	0.357	0.357	0

Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Pre Dev - REV 3

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Pre Dev - REV 3.drn run at 17:13:45 on 17/7/2024 using Watercom Drains v2023.11.8726.15750

Upwelling occurred at: EP1-8, EP1-9, EP1-6, EP1-5

Freeboard was less than 0.15m at EP1-7, EP1-10, EP1-4, EP1-1, EP1-0

The maximum flow in these overflow routes is unsafe: OF1These sag pits have unsafe water levels for minor storms: EP1-1, EP1-0

APPENDIX 10

DRAINS DATA - POST DEVELOPMENT 1% AEP

PIT / NODE DETAILS Version 15

Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond Dept (m)	Major Safe Pond Depth (m)
N17910	Node					31		0		1005	-828.333		3128958		No					
EP1-0	Sag	NSW RTA S	SA3	3	1.5	30.42	0.15	0	0.5	1160.833	-860.833	No	13290	1 x Ku	No	New	900	Yes	0.12	0.2
EP1-2	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	29.93		0	0.5	1298.333	-956.667	No	13294	1 x Ku	No	New	6000	Yes		
EP1-4	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	28.7		0	0.5	1295.004	-1080.88	No	16766337	1 x Ku	No	New	900	No		
EP1-5	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	27.52		0	0.5	1289.139	-1237.56	No	13301	1 x Ku	No	New	900	No		
EP1-6	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	26.76		0	0.5	1316.667	-1410	No	13315	1 x Ku	No	New	900	No		
EP1-7	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	26.72		0	0.5	1451.2	-1488.16	No	61125099	1 x Ku	No	New	900	No		
EP1-8	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	25.98		0	0.5	1510.24	-1612	No	61125098	1 x Ku	No	New	900	No		
EP1-9	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	25.7		0	0.5	1534.72	-1731.52	No	13319	1 x Ku	No	New	900	No		
EP1-10	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	25.4		0	0.5	1714.72	-1779.04	No	59317012	1 x Ku	No	New	900			
EP1-11	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	23.77		0	0.5	1857.28	-1806.4	No	13336	1 x Ku	No	New	900	No		
Discharge	Node					20.3		0		2194.24	-1861.12		13350		No					
N20278	Node					31		0		1577.778	-838.889		3716280		No					
EP1-1	Sag	NSW RTA S	SA3	3	1.5	29.83	0.15	0	0.5	1427.141	-862.905	No	13291	1 x Ku	No	New	900	Yes	0.12	0.2
N20284	Node					28.38		0		820.48	-1123.84		3716300		No					
NP2-5	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	28.3		0	0.5	1073.92	-1188.64	No	56424430	1 x Ku	No	New				
N20288	Node					29.38		0		830	-1332		3716333		No					
NP3-6	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	27.4		0	0.5	1097.2	-1373.2	No	56424421	1 x Ku	No	New				
N20290	Node					27.8		0		980.32	-1691.2		3716350		No					
NP4-11	OnGrade	OTHER PIT	900 x 900	SURCHARGE	1.5	27.8		0	0.5	1259.68	-1704.16	No	56424415	1 x Ku	No	New				
N23395	Node							0		2209.36	-219.28		4283104		No					
N50352	Node							0		2566.48	-235.12		8206211		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Typ	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id
Ex OSD Ba	20	880		Culvert	0.5					2005.6	-1828	No			13347
	20.8	1900													
	22	1900													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%) %	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
UC2	N17910	2.2	80	20	0	3	30	2										0				1
UC1	N20278	2.3	80	20	0	3	30	2										0				1
POST DEV	N20284	0.1478	24	76	0	2	15	2										0				1
POST DEV	N20288	0.3494	51	49	0	2	15.5	2										0				1
POST DEV	N20290	0.86	41	59	0	3	30	2										0				1
NATURE - '	N23395	7.487	0	100	0	5	45	2										0				1
NATURE - I	N50352	1.022	0	100	0	5	45	2										0				1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	Rl (m)	Chg (m)	RL (m)	etc (m)
Pipe 1	N17910	EP1-0	10	28.85	28.65	2	Concrete, I	525	525	0.013	New	1	N17910	0					
Pipe 2	EP1-0	EP1-2	26.8	28.65	28.152	1.86	Concrete, I	525	525	0.013	New	1	EP1-0	0					
Pipe 5	EP1-2	EP1-4	21	27.6	26.5	5.24	Concrete, I	825	825	0.013	New	1	EP1-2	0					
Pipe 6	EP1-4	EP1-5	24	26.2	25.1	4.58	Concrete, I	825	825	0.013	New	1	EP1-4	0					
Pipe 7	EP1-5	EP1-6	10	25.03	24.26	7.7	Concrete, I	825	825	0.013	New	1	EP1-5	0					
Pipe 8	EP1-6	EP1-7	17	24.16	23.98	1.06	Concrete, I	825	825	0.013	New	1	EP1-6	0					
Pipe 9	EP1-7	EP1-8	14.7	23.98	23.77	1.43	Concrete, I	825	825	0.013	New	1	EP1-7	0					
Pipe 10	EP1-8	EP1-9	27	23.72	23.44	1.04	Concrete, I	825	825	0.013	New	1	EP1-8	0					
Pipe 11	EP1-9	EP1-10	27.2	22.84	22.5	1.25	Concrete, I	825	825	0.013	New	1	EP1-9	0					
Pipe 12	EP1-10	EP1-11	129	22.5	21.21	1	Concrete, I	825	825	0.013	New	1	EP1-10	0					
Pipe 13	EP1-11	Ex OSD Ba	30	21.21	20.8	1.37	Concrete, I	900	900	0.013	New	1	EP1-11	0					
Pipe 14	Ex OSD Ba	Discharge	50	20.8	20.3	1	Concrete, I	450	450	0.013	New	1	Ex OSD Ba	0					
Pipe 3	N20278	EP1-1	10	27.755	27.655	1	Concrete, I	825	825	0.013	New	1	N20278	0					
Pipe 4	EP1-1	EP1-2	5.5	27.655	27.6	1	Concrete, I	825	825	0.013	New	1	EP1-1	0					
Pipe 15	N20284	NP2-5	8	27.31	27.23	1	Concrete, I	225	225	0.013	New	1	N20284	0					
Pipe 16	NP2-5	EP1-5	6	27.23	27	3.83	Concrete, I	300	300	0.013	New	1	NP2-5	0					
Pipe 17	N20288	NP3-6	25	27.91	25.99	7.68	Concrete, I	300	300	0.013	New	1	N20288	0					
Pipe 18	NP3-6	EP1-6	5	25.96	25.42	10.8	Concrete, I	300	300	0.013	New	1	NP3-6	0					
Pipe 19	N20290	NP4-11	25	26.62	26.12	2	Concrete, I	375	375	0.013	New	1	N20290	0					
Pipe 20	NP4-11	EP1-9	35	26.09	24.6	4.26	Concrete, I	375	375	0.013	New	1	NP4-11	0					

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	Chg (m)	Bottom Elev (m)	Height of S (m)	etc etc

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Stor (m)	Safe Depth Minor Stor (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id	
OF1	EP1-0	EP1-2	0.1				Overflow a	0.3	0	0.6	3	0	13299	26.8
OF3	EP1-2	EP1-4	0.1				4 m wide p	0.3	0.15	0.4	5	0	38585501	12
OF4	EP1-4	EP1-5	0.1				4 m wide p	0.3	0.15	0.4	3	0	16766311	24
OF5	EP1-5	EP1-6	0.1				4 m wide p	0.3	0.15	0.6	9	0	13318	10
OF6	EP1-6	EP1-7	0.1				4 m wide p	0.3	0.15	0.6	3	0	13325	17
OF7	EP1-7	EP1-8	0.1				4 m wide p	0.3	0.15	0.6	3	0	61125121	14.7
OF8	EP1-8	EP1-9	0.1				4 m wide p	0.3	0.15	0.6	3	0	61125122	27
OF9	EP1-9	EP1-10	0.2				4 m wide p	0.3	0.15	0.6	3	0	13346	30
OF10	EP1-10	EP1-11	0.7				4 m wide p	0.3	0.15	0.6	3	0	59317022	129
OF11	EP1-11	Ex OSD Ba	0.2				4 m wide p	0.3	0.15	0.6	3	0	13349	30
OF12	Ex OSD Ba	Discharge	0.3	22	15	1.45	4 m wide p	0.3	0.15	0.6	3	0	13352	50
OF2	EP1-1	EP1-2	0.1				Overflow a	0.3	0	0.6	1	0	13300	5.5
OF13	NP2-5	EP1-5	0.1				4 m wide p	0.3	0.15	0.6	3	0	56987390	15
OF14	NP3-6	EP1-6	0.1				4 m wide p	0.3	0.15	0.6	3	0	56987394	5
OF15	NP4-11	EP1-9	0.2				4 m wide p	0.3	0.15	0.6	3	0	56987395	33

PIPE COVER DETAILS

Name	Type	Dia (mm)	Safe Cover	Cover (m)	
Pipe 1	Concrete, I	525	0.6	1.2	
Pipe 2	Concrete, I	525	0.6	1.2	
Pipe 5	Concrete, I	825	0.45	1.31	
Pipe 6	Concrete, I	825	0.45	1.53	
Pipe 7	Concrete, I	825	0.45	1.6	
Pipe 8	Concrete, I	825	0.45	1.71	
Pipe 9	Concrete, I	825	0.45	1.32	
Pipe 10	Concrete, I	825	0.45	1.37	
Pipe 11	Concrete, I	825	0.45	1.97	
Pipe 12	Concrete, I	825	0.45	1.68	
Pipe 13	Concrete, I	900	0.45	-1.77	Unsafe
Pipe 14	Concrete, I	450	0.45	-1.29	Unsafe
Pipe 3	Concrete, I	825	0.45	1.29	
Pipe 4	Concrete, I	825	0.45	1.29	
Pipe 15	Concrete, I	225	0.45	0.81	
Pipe 16	Concrete, I	300	0.45	0.19	Unsafe
Pipe 17	Concrete, I	300	0.45	1.08	
Pipe 18	Concrete, I	300	0.45	1.01	
Pipe 19	Concrete, I	375	0.45	0.77	
Pipe 20	Concrete, I	375	0.45	0.69	

This model has no pipes with non-return valves

DRAINS results prepared from Version 2023.11.8726.15750

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N17910	31.94		1.928				
EP1-0	30.57	30.57	0	2.6	0	0.828	Outlet System
EP1-2	29.88		1.741		0.05	0.62	Inlet Capacity
EP1-4	28.7		0.888		0	0.644	Outlet System
EP1-5	27.52		0.942		0	0.91	Outlet System
EP1-6	26.76		1.256		0	2.09	Outlet System
EP1-7	26.7		2.579		0.02	1.138	Inlet Capacity
EP1-8	25.98		1.522		0	1.756	Outlet System
EP1-9	25.7		2.164		0	1.895	Outlet System
EP1-10	25.39		2.47		0.01	1.131	Inlet Capacity
EP1-11	23.27		1.962		0.5	0.479	Inlet Capacity
Discharge	20.72		1.436				
N20278	30.18		2.016				
EP1-1	29.98	29.98	0	2.6	0	0.487	Outlet System
N20284	27.84		0.086				
NP2-5	27.75		0		0.55	0	None
N20288	28.39		0.255				
NP3-6	27.4		0		0	0.015	Outlet System
N20290	28.87		0.494				
NP4-11	27.8		0		0	0.019	Outlet System

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
UC2	1.601	1.555	0.046	3	30	2	1% AEP, 5 min burst, Storm 1
UC1	1.674	1.625	0.048	3	30	2	1% AEP, 5 min burst, Storm 1
POST DEV	0.072	0.023	0.052	2	15	2	1% AEP, 20 min burst, Storm 10
POST DEV	0.192	0.157	0.035	2	15.5	2	1% AEP, 5 min burst, Storm 1
POST DEV	0.365	0.311	0.053	3	30	2	1% AEP, 5 min burst, Storm 1
NATURE - ¹	1.836	0	1.836	5	45	2	1% AEP, 1 hour burst, Storm 4
NATURE - I	0.251	0	0.251	5	45	2	1% AEP, 1 hour burst, Storm 4

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 1	1.601	7.4	31.938	30.57	1% AEP, 5 min burst, Storm 1
Pipe 2	0.789	3.65	30.206	29.883	1% AEP, 5 min burst, Storm 1
Pipe 5	1.793	3.35	29.026	28.7	1% AEP, 10 min burst, Storm 9
Pipe 6	1.758	3.29	27.878	27.52	1% AEP, 15 min burst, Storm 10
Pipe 7	1.555	2.91	26.877	26.76	1% AEP, 5 min burst, Storm 1
Pipe 8	1.57	2.94	26.714	26.7	1% AEP, 5 min burst, Storm 1
Pipe 9	1.539	2.88	26.131	25.98	1% AEP, 5 min burst, Storm 1
Pipe 10	1.53	2.86	25.792	25.7	1% AEP, 5 min burst, Storm 1
Pipe 11	1.755	3.28	25.489	25.385	1% AEP, 5 min burst, Storm 1
Pipe 12	1.776	3.32	24.75	23.265	1% AEP, 5 min burst, Storm 1
Pipe 13	2.334	3.67	22.499	22.128	1% AEP, 10 min burst, Storm 7
Pipe 14	0.392	2.55	21.929	20.717	1% AEP, 1.5 hour burst, Storm 5
Pipe 3	1.675	3.13	30.183	29.98	1% AEP, 5 min burst, Storm 1
Pipe 4	1.114	2.08	29.892	29.883	1% AEP, 10 min burst, Storm 6
Pipe 15	0.072	1.81	27.842	27.747	1% AEP, 20 min burst, Storm 10
Pipe 16	0.072	1.02	27.587	27.52	1% AEP, 20 min burst, Storm 10
Pipe 17	0.192	2.72	28.387	27.4	1% AEP, 5 min burst, Storm 1
Pipe 18	0.177	2.5	26.935	26.76	1% AEP, 5 min burst, Storm 1
Pipe 19	0.365	3.31	28.873	27.8	1% AEP, 5 min burst, Storm 1
Pipe 20	0.347	3.14	27.054	25.7	1% AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q	U/S Max Q	D/S Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0.828	0.828	9.286	0.063	0.09	12.97	1.51	1% AEP, 10 min burst, Storm 7
OF3	0.62	0.62	1.401	0.08	0.19	4	2.37	1% AEP, 10 min burst, Storm 9
OF4	0.644	0.644	1.431	0.093	0.19	4	2.06	1% AEP, 10 min burst, Storm 9
OF5	0.91	0.91	2.119	0.084	0.28	4	3.28	1% AEP, 10 min burst, Storm 9
OF6	2.09	2.09	2.2	0.176	0.57	4	3.25	1% AEP, 15 min burst, Storm 2
OF7	1.138	1.138	2.2	0.126	0.32	4	2.57	1% AEP, 10 min burst, Storm 9
OF8	1.756	1.756	2.2	0.159	0.48	4	3.04	1% AEP, 10 min burst, Storm 9
OF9	1.895	1.895	2.2	0.166	0.52	4	3.13	1% AEP, 15 min burst, Storm 2
OF10	1.131	1.131	2.2	0.125	0.32	4	2.58	1% AEP, 15 min burst, Storm 2
OF11	0.479	0.479	2.2	0.08	0.15	4	1.83	1% AEP, 15 min burst, Storm 2
OF12	0.998	0.998	2.2	0.117	0.29	4	2.45	1% AEP, 1.5 hour burst, Storm 5
OF2	0.487	0.487	11.081	0.064	0.06	13.03	0.88	1% AEP, 10 min burst, Storm 6
OF13	0	0	2.2	0	0	0	0	
OF14	0.015	0.015	2.2	0.023	0.01	4	0.47	1% AEP, 5 min burst, Storm 1
OF15	0.019	0.019	2.2	0.024	0.01	4	0.51	1% AEP, 5 min burst, Storm 1

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Ex OSD Ba	22.13	3609.6	1.39	0.392	0.998

Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Post Dev - REV 2
{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Post Dev - REV 2.drn run at 17:06:19 on 17/7/2024 using Watercom Drains v2023.11.8726.15750

The maximum water level in these storages exceeds the maximum elevation you specified: Ex OSD Basin.
DRAINS has extrapolated the Elevation vs Storage table to a higher Elevation. Please provide accurate values for higher elevations.

Upwelling occurred at: EP1-8, NP3-6, NP4-11, EP1-4, EP1-9, EP1-6, EP1-5, EP1-2
Freeboard was less than 0.15m at EP1-7, EP1-10, EP1-1, EP1-0
Flows were safe in all overflow routes.

DRAINS results prepared from Version 2023.11.8726.15750

PIT / NODE DETAILS Version 8

Name	Max HGL	Max Pond HGL	Max Surfac Flow Arrivi (cu.m/s)	Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
N17910	31.23		1.282				
EP1-0	30.57	30.56	0	2.6	0	0.166	Outlet System
EP1-2	29.62		0.281		0.31	0.036	Inlet Capacity
EP1-4	28.59		0.076		0.11	0.004	Inlet Capacity
EP1-5	27.52		0.012		0	0.152	Outlet System
EP1-6	26.76		0.199		0	1.142	Outlet System
EP1-7	26.59		1.24		0.13	0.485	Inlet Capacity
EP1-8	25.98		0.538		0	0.987	Outlet System
EP1-9	25.7		1.061		0	0.853	Outlet System
EP1-10	25.16		1.158		0.24	0.333	Inlet Capacity
EP1-11	22.55		0.494		1.22	0.095	Inlet Capacity

Discharge	20.7		0				
N20278	30.04		1.34				
EP1-1	29.98	29.96	0	2.3	0	0	Outlet System
N20284	27.9		0.059				
NP2-5	27.6		0		0.7	0	None
N20288	28.06		0.174				
NP3-6	27.14		0		0.26	0	None
N20290	27.26		0.321				
NP4-11	26.76		0		1.04	0	None

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
UC2	1.1	1.074	0.026	3	30	2	5% AEP, 5 min burst, Storm 1
UC1	1.15	1.122	0.027	3	30	2	5% AEP, 5 min burst, Storm 1
POST DEV	0.044	0.016	0.032	2	15	2	5% AEP, 30 min burst, Storm 5
POST DEV	0.135	0.102	0.044	2	15.5	2	5% AEP, 15 min burst, Storm 7
POST DEV	0.245	0.215	0.03	3	30	2	5% AEP, 5 min burst, Storm 1
NATURE - '	1.13	0	1.13	5	45	2	5% AEP, 1 hour burst, Storm 1
NATURE - I	0.154	0	0.154	5	45	2	5% AEP, 1 hour burst, Storm 1

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe 1	1.1	5.08	31.234	30.57	5% AEP, 5 min burst, Storm 1
Pipe 2	0.778	3.59	30.065	29.617	5% AEP, 5 min burst, Storm 1
Pipe 5	1.672	3.13	28.872	28.589	5% AEP, 5 min burst, Storm 1
Pipe 6	1.672	3.13	27.844	27.52	5% AEP, 5 min burst, Storm 1
Pipe 7	1.555	2.91	26.877	26.76	5% AEP, 5 min burst, Storm 1
Pipe 8	1.533	2.87	26.633	26.594	5% AEP, 5 min burst, Storm 1
Pipe 9	1.517	2.84	26.109	25.98	5% AEP, 5 min burst, Storm 1
Pipe 10	1.498	2.8	25.791	25.699	5% AEP, 5 min burst, Storm 1
Pipe 11	1.629	3.05	25.335	25.156	5% AEP, 5 min burst, Storm 1
Pipe 12	1.748	3.27	24.375	22.551	5% AEP, 5 min burst, Storm 1
Pipe 13	1.941	3.1	22.071	21.839	5% AEP, 15 min burst, Storm 5
Pipe 14	0.351	2.34	21.679	20.704	5% AEP, 1.5 hour burst, Storm 7
Pipe 3	1.151	2.15	30.044	29.98	5% AEP, 5 min burst, Storm 1
Pipe 4	1.114	2.08	29.65	29.617	5% AEP, 5 min burst, Storm 1
Pipe 15	0.045	1.14	27.902	27.599	5% AEP, 20 min burst, Storm 4
Pipe 16	0.046	0.65	27.543	27.52	5% AEP, 15 min burst, Storm 4
Pipe 17	0.135	3.8	28.061	27.138	5% AEP, 15 min burst, Storm 7
Pipe 18	0.135	1.91	26.863	26.76	5% AEP, 15 min burst, Storm 7
Pipe 19	0.246	2.22	27.257	26.76	5% AEP, 5 min burst, Storm 1
Pipe 20	0.245	2.33	26.429	25.699	5% AEP, 5 min burst, Storm 1

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0.166	0.166	0	0.031	0.03	9.49	0.91	5% AEP, 10 min burst, Storm 1
OF3	0.036	0.036	1.401	0.027	0.02	4	0.75	5% AEP, 10 min burst, Storm 1
OF4	0.004	0.004	1.431	0.013	0.01	1.33	0.44	5% AEP, 10 min burst, Storm 1
OF5	0.152	0.152	2.119	0.038	0.06	4	1.66	5% AEP, 5 min burst, Storm 1
OF6	1.142	1.142	1.573	0.126	0.32	4	2.58	5% AEP, 5 min burst, Storm 1
OF7	0.485	0.485	1.573	0.08	0.15	4	1.85	5% AEP, 5 min burst, Storm 1
OF8	0.987	0.987	1.573	0.117	0.28	4	2.42	5% AEP, 5 min burst, Storm 1
OF9	0.853	0.853	1.573	0.108	0.25	4	2.29	5% AEP, 15 min burst, Storm 5
OF10	0.333	0.333	1.573	0.068	0.11	4	1.58	5% AEP, 15 min burst, Storm 5
OF11	0.095	0.095	1.573	0.04	0.04	4	0.96	5% AEP, 15 min burst, Storm 5
OF12	0	0	1.573	0	0	0	0	
OF2	0	0	0	0	0	0	0	
OF13	0	0	1.573	0	0	0	0	
OF14	0	0	1.573	0	0	0	0	
OF15	0	0	1.573	0	0	0	0	

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Ex OSD Ba	21.84	3061.1	0.351	0.351	0

Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Post Dev - REV 2

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for DRAINS Lite v2023.11.8726.15750 - 6611 - DRAINS - Development Site - Post Dev - REV 2.drn run at 17:09:50 on 17/7/2024 using Watercom Drains v2023.11.8726.15750

Upwelling occurred at: EP1-8, EP1-9, EP1-6, EP1-5

Freeboard was less than 0.15m at EP1-7, EP1-4, EP1-1, EP1-0

The maximum flow in these overflow routes is unsafe: OF1These sag pits have unsafe water levels for minor storms: EP1-1, EP1-0

APPENDIX 11

EXTRACTS FROM CCC TUGGERAH LAKES FLOODPLAIN RISK MANAGEMENT STUDY AND PLAN

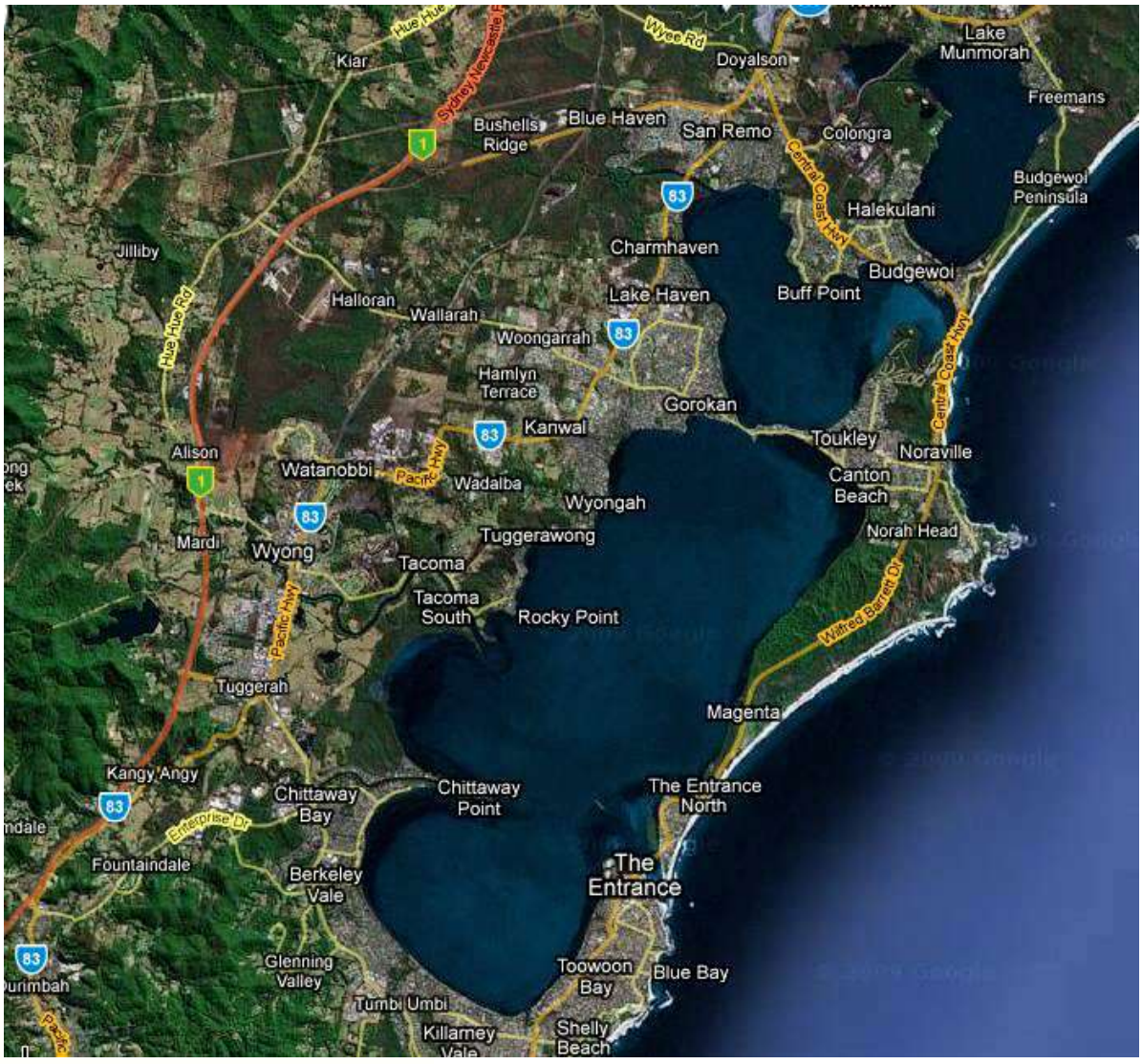
WYONG SHIRE COUNCIL

TUGGERAH LAKES

FLOODPLAIN RISK MANAGEMENT

STUDY and PLAN

FINAL REPORT



wma water

November 2014

8. FLOOD RELATED DEVELOPMENT CONTROL PRECINCTS

8.1. Background

Wyong Council has revised the Floodplain Management Chapter of the Development Control Plan and this will be exhibited in 2014. The intent of the DCP revision is to:

- Refer to on-line flood planning maps on Council's website, rather than maps embedded within the LEP;
- Simplify the development control matrix;
- Achieve compliance with Council's interim Sea Level Rise policy;
- Interact effectively with the Exempt and Complying Development Codes State Environment Planning Policy (SEPP).

Under the Codes SEPP proposed development on a "flood control lot" can still potentially proceed without the matter coming to Council's attention. Development in flood fringe areas can potentially be approved under a Complying Development Certificate (CDC), unless the land is considered by the Council to be *Flood Storage Area, Flow Path, High Hazard, High Risk or Floodway*.

It is proposed to map the four Precinct Areas in the DCP for the sake of CDCs and Council's own development controls and this mapping would be consistent with the LEP mapping.

Precinct 1: Above FPL to PMF
Precinct 2: Up to FPL
Precinct 3: Flood Storage and Flow Paths
Precinct 4: High Hazard

Note that a CDC could potentially be approved in either Precinct 1 or Precinct 2 without the DA coming to Council. It is therefore important that Council's on-line mapping and DCP clearly distinguish the different precincts.

8.2. Precincts that would apply for Tuggerah Lakes Foreshore Areas

Precinct 1: Above FPL to PMF

- Zero area. Does not apply given that FPL = PMF

Precinct 2: Up to FPL

- RL 2.7mAHD. Area below FPL (2.2 + 0.5 = 2.7)

Precinct 3: Flood Storage and Flow Paths

- RL 1.8mAHD. Within this area the depth of flooding in a 1% AEP flood would be at least 0.4m and this level would also match the 5% AEP flood level trigger level for non-habitable floors, car parking and driveways in the codes SEPP.

Final Report

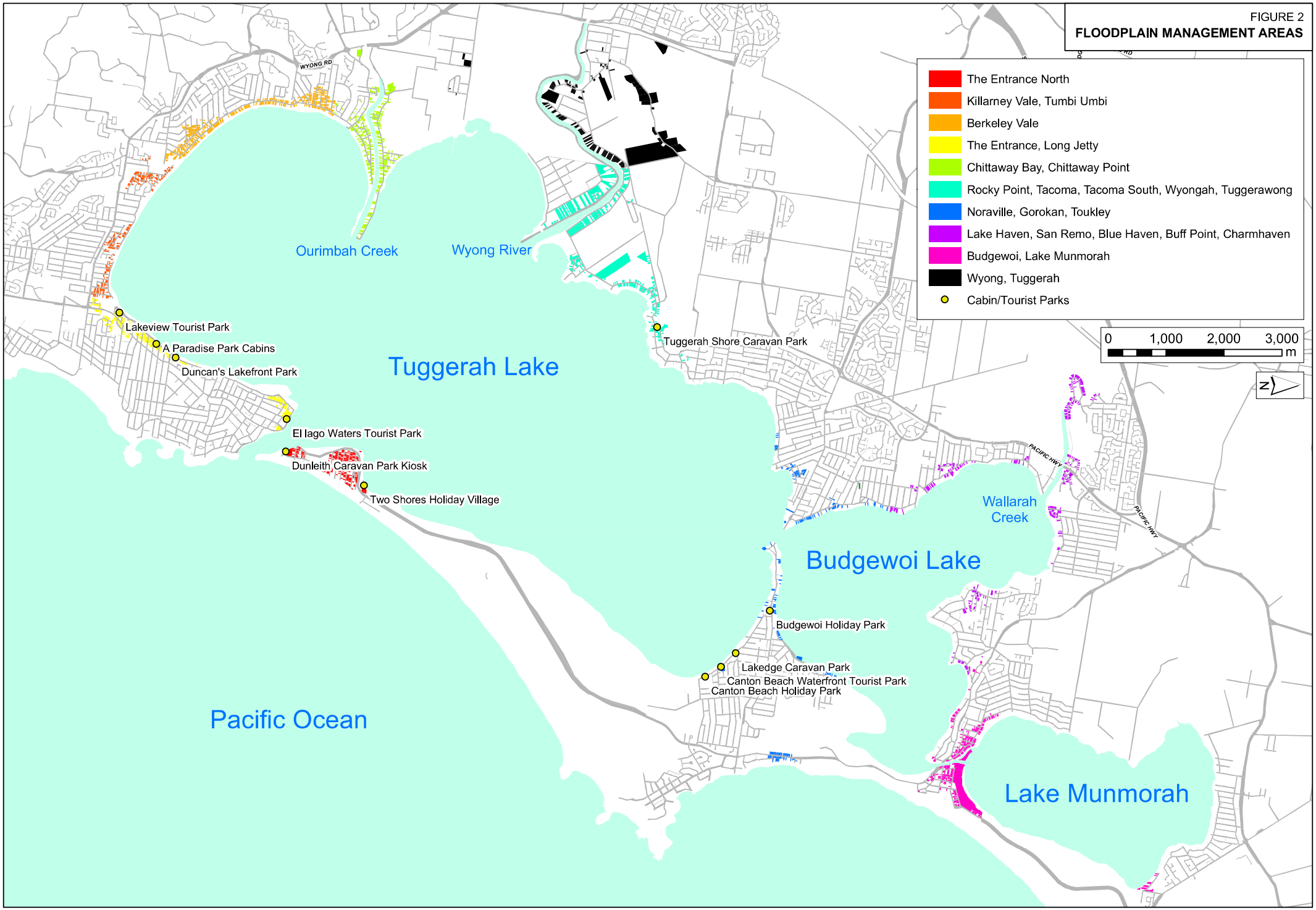
Precinct 4: High Hazard

- RL 1.2mAHD, within this area the depth of flooding in a 1% AEP flood would be at least 1.0m, which is defined by the provisional hydraulic hazard categorization as high hazard.

Refer to Wyong Shire Council's Development Control Plan 2013, Chapter 3.3: Floodplain Management to view the Development Control Matrix.

Final Report

FIGURE 2
FLOODPLAIN MANAGEMENT AREAS



J:\Jobs\29001\Arcview\Arcmaps\FigureX_FloodplainManagementAreas.mxd

APPENDIX 12

SOIL AND WATER MANAGEMENT PLAN

DOCUMENTATION OF SOIL & WATER MANAGEMENT PLAN

ALTERATIONS & ADDITIONS TO MACKILLOP CATHOLIC COLLEGE

91 SPARKS ROAD,WOONGARRAH, NSW

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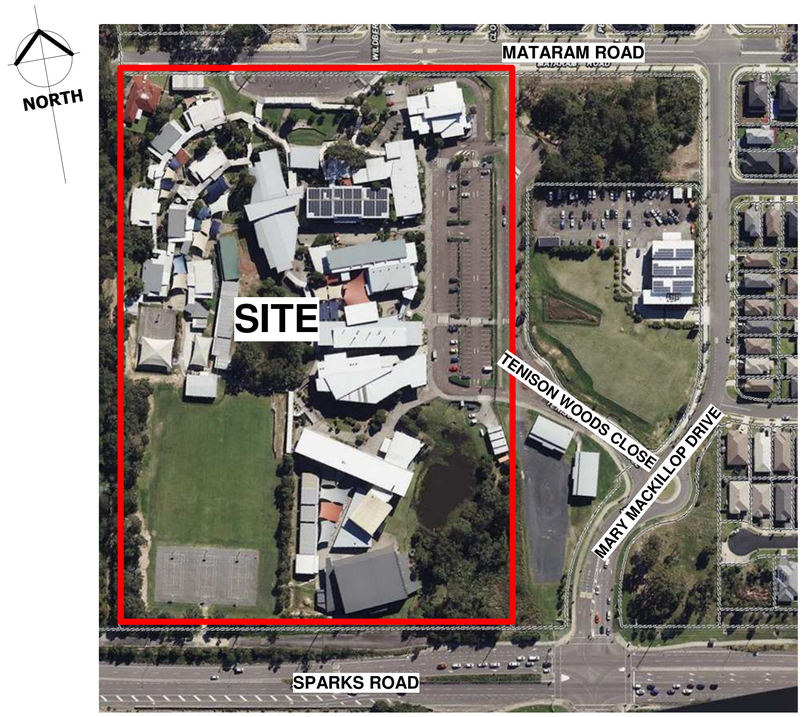
SOIL & WATER MANAGEMENT DRAWING LIST

Sheet No.	Sheet Name
SM.1	COVER SHEET AND NOTES
SM.11	SOIL & WATER MANAGEMENT PLAN - STAGE 1
SM.12	SOIL & WATER MANAGEMENT PLAN - STAGE 2
SM.13	SOIL & WATER MANAGEMENT PLAN - STAGE 3
SM.21	SOIL & WATER MANAGEMENT SECTIONS
SM.31	STANDARD DRAWINGS SHEET 1
SM.32	STANDARD DRAWINGS SHEET 2
SM.33	STANDARD DRAWINGS SHEET 3



LOCALITY PLAN
NOT TO SCALE

SOIL & WATER MANAGEMENT NOTES

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS; NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION' (THE 'BLUE BOOK'). THIS SOIL AND WATER MANAGEMENT PLAN DETAILS THE ACTIONS TO BE TAKEN FOR THE MANAGEMENT OF STORMWATER DURING CONSTRUCTION.
2. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
3. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
4. INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
5. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
6. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
7. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
8. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
9. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
11. GROUNDWATER SEEPAGE RATES AND QUALITY TO BE MONITORED AND TREATED IF REQUIRED DURING CONSTRUCTION IN ACCORDANCE WITH REQUIREMENTS OF SUPERVISING GEOTECHNICAL ENGINEER.
12. ALL INLET PROTECTION + SILT FENCES SHALL BE INSPECTED EVERY WEEK AND AFTER RAIN EVENTS. REPAIR AND REMEDIATE AS REQUIRED.

THE CONTRACTOR SHALL ENSURE COUNCIL ASSETS AND THE UTILITIES ARE PROTECTED AT ALL TIMES. ANY AND ALL DAMAGES TO COUNCIL ASSETS AND/OR UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SPECIFICATION OF COUNCIL AND THE UTILITIES AUTHORITY AND AT NO COST TO THE PRINCIPAL OR JAMES TAYLOR ASSOCIATES ENGINEERS.

SEDIMENT BASIN/TANKS MANAGEMENT NOTES

1. REFER TO REFERENCE DOCUMENT 7 FOR SEDIMENT BASIN CALCULATIONS IN ACCORDANCE WITH THE BLUE BOOK.
2. PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TANKS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.
3. ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED.
4. NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
5. THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS/TANKS TO TREAT TURBID WATER CAPTURED IN THE BASIN/TANKS MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN/TANKS, AFTER A RAINFALL EVENT.
6. ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
7. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/TANKS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE BASIN/TANKS/TRAP.
8. ANY BASIN/TANKS MUST BE DEWATERED AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN/TANKS ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES.
9. INSPECT THE SEDIMENT BASINS/TANKS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

REFERENCE DOCUMENTS

1. SURVEY DRAWING PREPARED BY:
   Degotardi Smith & Partners
   Ph. +61 2 9440 1100
   SURVEY REFERENCE: 36174
   DRAWING NUMBER: 36174A01.DWG
   REV. E
   DATED: 01/03/2024
2. ARCHITECTURAL DRAWINGS BY:
   STANTON DAHL
   Ph. +61 2 8876 5300
   Project No. 2700.21
3. CIVIL WORKS DRAWINGS BY:
   Cardno Young
   DRAWING No. 239656-3A-201 REV F
   DATED: 26.08.05
4. HYDRAULIC SERVICES DRAWINGS BY:
   ACOR CONSULTANTS
   Project No: SY03.0074
   Dwg. No: H-02 & H-03
5. STRUCTURAL DRAWINGS BY
   JAMES TAYLOR & ASSOCIATES
   PROJECT No. 6611
6. HYDRAULIC DRAWINGS BY
   JN RESPONSIVE ENGINEERING
   Project No: N0231258
   Drawing No: H010 No. 1
   DATED: 13.08.24
7. STORMWATER REPORT BY
   JAMES TAYLOR & ASSOCIATES
   PROJECT No. 6611
8. STORMWATER DRAWINGS BY
   JAMES TAYLOR & ASSOCIATES
   PROJECT No. 6611

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ALTERATIONS & ADDITIONS TO
MacKillop Catholic College
91 SPARKS ROAD,WOONGARRAH, NSW

COVER SHEET AND NOTES

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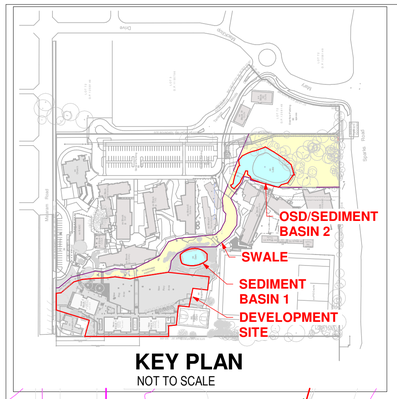

KEY PLAN
NOT TO SCALE

NORTH

LOCATION OF EROSION & SEDIMENT CONTROL MEASURES TBC. ALL EROSION & SEDIMENT CONTROL TO BE CONSTRUCTED & MAINTAINED IN ACCORDANCE WITH COUNCIL STANDARDS.

LEGEND

- EXISTING STORMWATER PIPE
- SITE FENCE
- SEDIMENT FENCE
- EXISTING PIT ⊠ OR ⊗ EP
- PIT PROTECTION
- OVERLAND FLOW
- EARTH BANK
- ROCK CHANNEL
- EXISTING BUFFER AREA
- NEW BUFFER AREA

EXISTING SEDIMENT BASINS LOCATED DOWNSTREAM

EASEMENT FOR DRAINAGE OF WATER REFER SURVEY

EXISTING GRASS SWALE BUFFER

SEDIMENT BASIN 1

PROTECT PITS FOLLOWING SD6-12

PROTECT PIT FOLLOWING SD6-11

ENERGY DISSIPATOR / LEVEL SPREADER FOLLOWING SD5-8

MIN. 2m

INSPECTION PIT

OVERFLOW PIPE FOR CLEAN WATER 225Ø @MIN. 3% FALL

EXISTING BUILDINGS TO REMAIN DURING STAGE 1

LIGHTLY REVEGETATE DISTURBED AREA

LOCATION TBC WITH CONTRACTOR FOR ACCESS REQUIREMENTS

SEDIMENT FENCE FOLLOWING SD6-8

EARTH BANK (LOW FLOW)

CLEAN WATER DISCHARGED INTO EXISTING SYSTEM

MATARAM ROAD

BOUNDARY

STABILISED ACCESS LOCATION TBC FOLLOWING SD6-14

EARTH BANK (HIGH FLOW) FOLLOWING SD5-6

MATERIAL STORAGE

TOP SOIL STOCK PILE FOLLOWING SD4-1

EXISTING STORMWATER PITS DECOMISSIONED AS REQUIRED

WASTE

OUTLINE OF PROPOSED BUILDINGS FOR STAGE 1

SEDIMENT BASIN MIN. CAPACITY 58m³ FOLLOWING SD6-4

ROCK CHANNELTO DIRECT OVERLAND FLOW TO SEDIMENT BASIN

EARTH BANK (LOW FLOW) FOLLOWING SD5-5

BOUNDARY

SITE FENCE

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SOIL & WATER MANAGEMENT PLAN - STAGE 1

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SOIL & WATER MANAGEMENT PLAN - STAGE 1

SCALE 1 : 200 @A1

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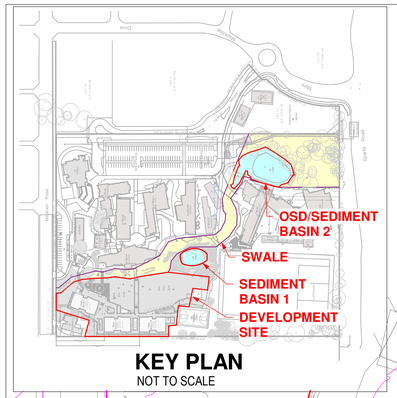

KEY PLAN
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LOCATION OF EROSION & SEDIMENT CONTROL MEASURES TBC. ALL EROSION & SEDIMENT CONTROL TO BE CONSTRUCTED & MAINTAINED IN ACCORDANCE WITH COUNCIL STANDARDS.

LEGEND

- EXISTING STORMWATER PIPE
- SITE FENCE
- SEDIMENT FENCE
- EXISTING PIT (OR EP)
- PIT PROTECTION
- OVERLAND FLOW
- EARTH BANK
- ROCK CHANNEL
- EXISTING BUFFER AREA
- NEW BUFFER AREA

NORTH

EXISTING SEDIMENT BASINS LOCATED DOWNSTREAM

EASEMENT FOR DRAINAGE OF WATER REFER SURVEY

NEW & EXISTING BUFFER AREAS TO TREAT SEDIMENT LADEN RUNOFF

EXISTING GRASS SWALE BUFFER

PROTECT PITS FOLLOWING SD6-12

PROTECT PIT FOLLOWING SD6-11

PROTECT PITS DURING DEMOLITION

MATERIAL STORAGE

SEDIMENT FENCE FOLLOWING SD6-8

WASTE

OUTLINE OF PROPOSED BUILDINGS FOR STAGE 2

LIGHTLY REVEGETATE DISTURBED AREA FOR BUFFER

TOP SOIL STOCK PILE FOLLOWING SD4-1

EXISTING STORMWATER PITS DECOMISSIONED AS REQUIRED

EXISTING BUILDINGS TO REMAIN DURING STAGE 2

STABILISED ACCESS LOCATION TBC

SITE FENCE

MATARAM ROAD

BOUNDARY

Block Z1 GLA

Block Z2 GLA

Block 0 GLA

Block R WC

Block V GLA

Block W GLA

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SOIL & WATER MANAGEMENT PLAN - STAGE 2

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SOIL & WATER MANAGEMENT PLAN - STAGE 2

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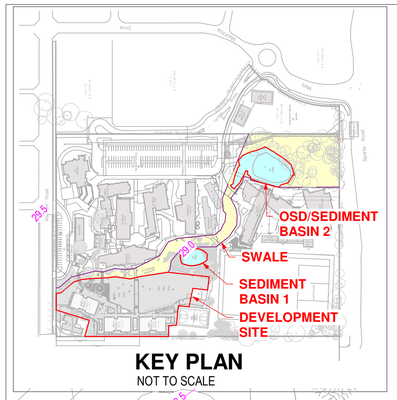

KEY PLAN
NOT TO SCALE

NORTH

LOCATION OF EROSION & SEDIMENT CONTROL MEASURES TBC. ALL EROSION & SEDIMENT CONTROL TO BE CONSTRUCTED & MAINTAINED IN ACCORDANCE WITH COUNCIL STANDARDS.

LEGEND
- EXISTING STORMWATER PIPE
- SITE FENCE
- SEDIMENT FENCE
- EXISTING PIT (OR EP)
- PIT PROTECTION
- OVERLAND FLOW
- EARTH BANK
- ROCK CHANNEL
- EXISTING BUFFER AREA
- NEW BUFFER AREA

SEDIMENT BASIN 1

EASEMENT FOR DRAINAGE OF WATER REFER SURVEY

EXISTING GRASS SWALE BUFFER

PROTECT PITS FOLLOWING SD6-12

SEDIMENT FENCE FOLLOWING SD6-8

STABILISED ACCESS LOCATION TBC

EXISTING BUFFER AREAS & SEDIMENT BASIN TO TREAT SEDIMENT LADEN RUNOFF

TOP SOIL STOCK PILE FOLLOWING SD4-1

EXISTING STORMWATER PITS DECOMISSIONED AS REQUIRED

Block T GLA

Block V GLA

Block W GLA

Block Z GLA

relocate off site

existing stairs (to be removed)

existing pavement to remain

existing building

existing tennis court

METAL FENCE

WIRE/MESH FENCE

CHAINWIRE FENCE

BOUNDARY

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ALTERATIONS & ADDITIONS TO
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SOIL & WATER MANAGEMENT PLAN - STAGE 3

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SOIL & WATER MANAGEMENT PLAN - STAGE 3
SCALE 1 : 200 @A1

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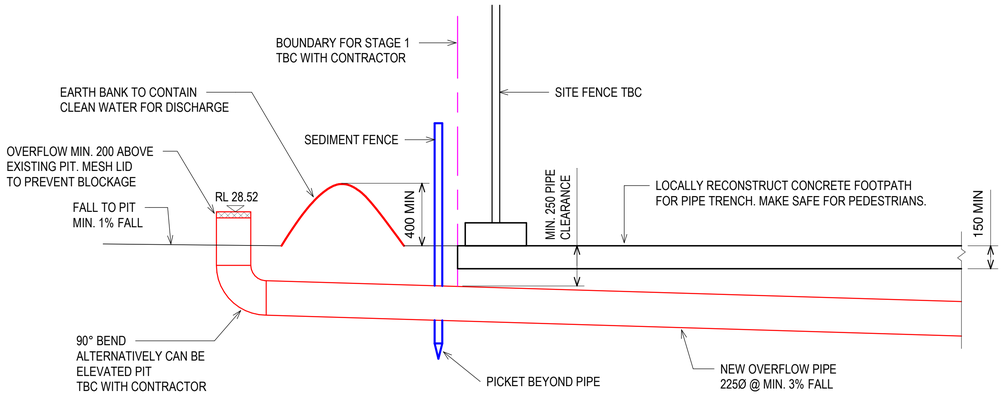
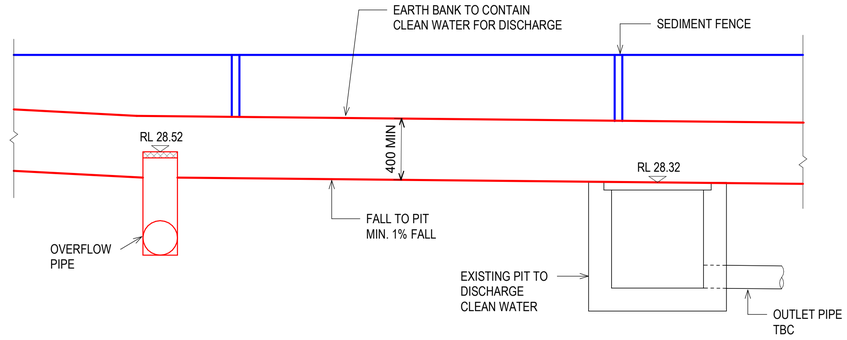


1 SM.11 **Section**
SCALE 1 : 20 @A1



2 SM.11 **Section**
SCALE 1 : 20 @A1

BY	CHKD	DESCRIPTION	DATE	REV
HL	JM	FOR DA	05.06.2025	A

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ALTERATIONS & ADDITIONS TO
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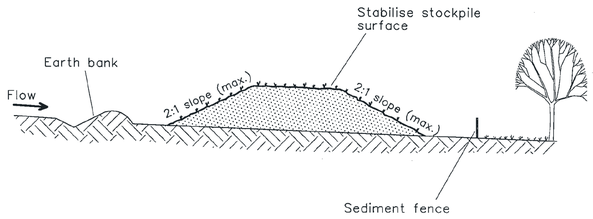
SOIL & WATER MANAGEMENT SECTIONS

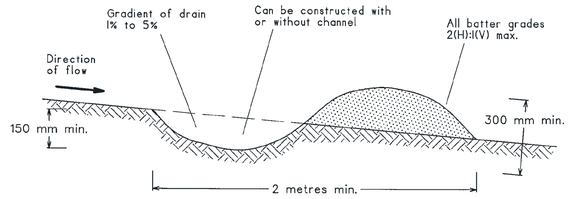
DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SM.21 / REV A
A1 SCALE 1 : 20	DATE	



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES **SD 4-1**

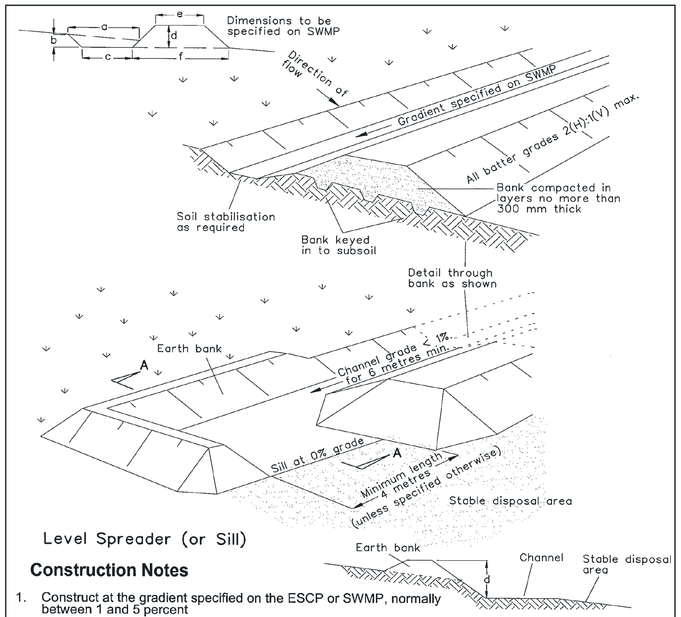


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) **SD 5-5**



Level Spreader (or Sill)

Section AA

Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

EARTH BANK (HIGH FLOWS) **SD 5-6**

BY	CHKD	DESCRIPTION	DATE	REV
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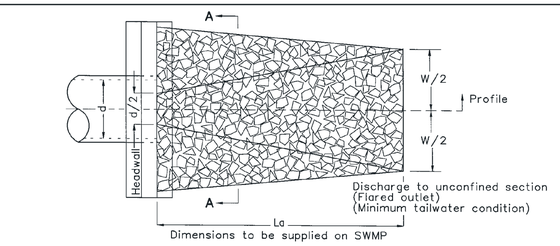
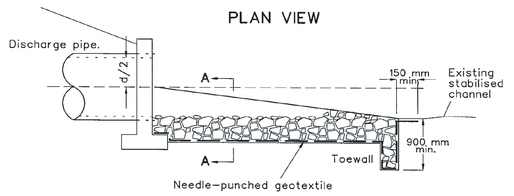
STANDARD DRAWINGS SHEET 1

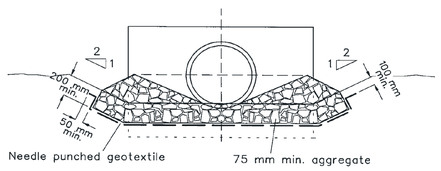
DESIGN JM	DRAWN HL	PROJECT NO. 6611
CHKD.		
APPRD.		DRAWING NO. SM.31 / REV A
A1	SCALE 1 : 100	DATE



PLAN VIEW



PLAN VIEW



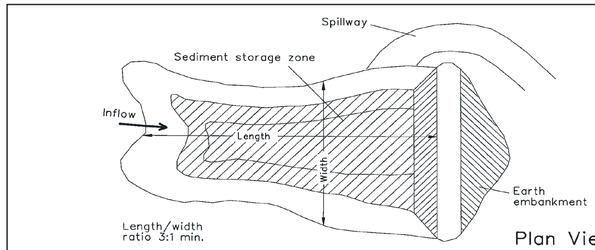
CROSS SECTION AA

Construction Notes

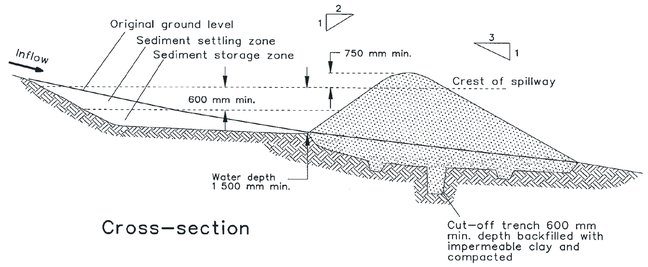
1. Compact the subgrade fill to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punched geotextile does not sustain serious damage when covered with rock.
3. Should any minor damage to the geotextile occur, repair it before spreading any aggregate. For repairs, patch one piece of fabric over the damage, making sure that all joints and patches overlap more than 300 mm.
4. Lay rock following the drawing, according to Table 5.2 of Landcom (2004) and with a minimum diameter of 75 mm.
5. Ensure that any concrete or riprap used for the energy dissipater or the outlet protection conforms to the grading limits specified on the SWMP.

ENERGY DISSIPATER **SD 5-8**

5-34



Plan View



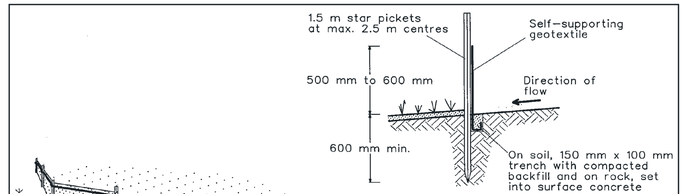
Cross–section

Construction Notes

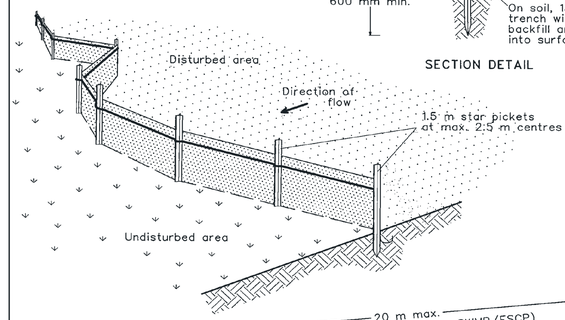
1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

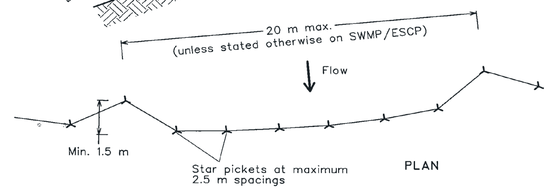
EARTH BASIN - WET **SD 6-4**
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

6-19



SECTION DETAIL





PLAN

Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE **SD 6-8**

6-36

BY	CHKD	DESCRIPTION	DATE	REV
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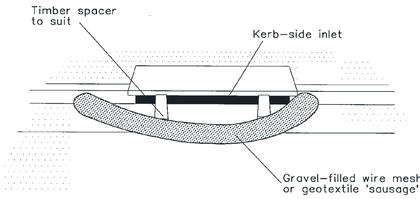
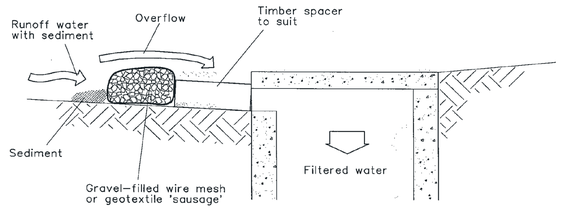
STANDARD DRAWINGS SHEET 2

DESIGN JM	DRAWN HL	PROJECT NO.	6611
CHKD.			
APPRD.		DRAWING NO.	REV
A1 SCALE 1 : 100	DATE	SM.32	A



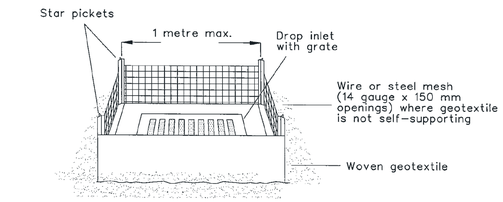


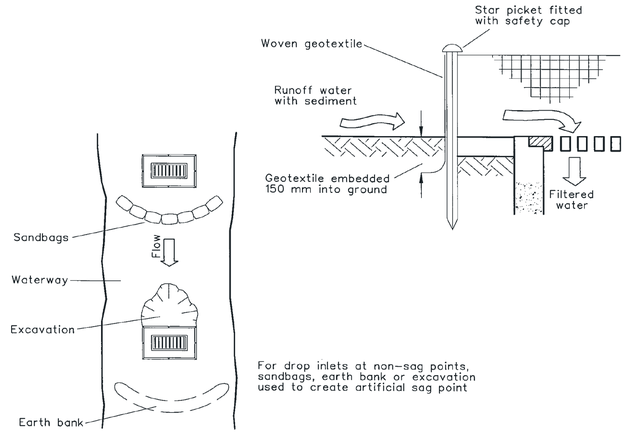
NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER **SD 6-11**

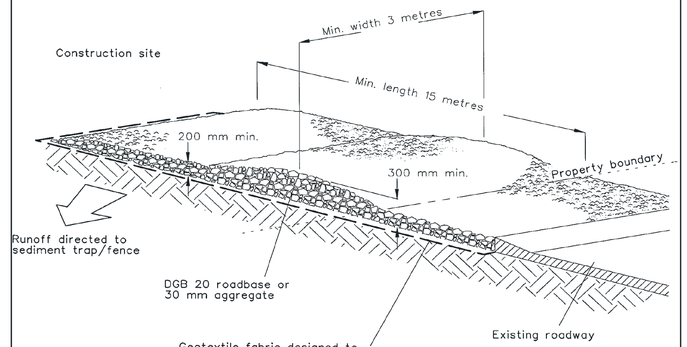




Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

GEOTEXTILE INLET FILTER **SD 6-12**



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200-mm thick pad over the geotextile using road base or 30-mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

STABILISED SITE ACCESS **SD 6-14**

BY	CHKD	DESCRIPTION	DATE	REV
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STANDARD DRAWINGS SHEET 3

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CHKD.		6611	
APPRD.		DRAWING NO.	REV
A1 SCALE 1 : 100	DATE	SM.33	A