Proposed School –

507 MEDOWIE ROAD, MEDOWIE

Stormwater Management Plan - Stage 2

for

North Construction

Revision	Issue	Approved	Date
5	Dept Planning Requirements	MS	12.11.19
6	Stage 2 – Dept Planning Requirements	MS	12.10.2020

MPC Project Ref: 17-828

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1. Background Information

1.1 Preamble

The site is located at 507 Medowie Road, Medowie NSW (refer to **Appendix A** for site plans). The proposed redevelopment includes the following:

- 17 School Buildings
- Landscaped areas
- Carpark and Terrace Areas
- Site Detention system
- Rainwater harvesting and Re-use
- Stormwater pollution control

1.2 Stormwater Management Plan

In devising this Stormwater Management Plan for the proposed development, the following issues have been addressed:

- Water Quality Management
- Stormwater Management (Detention)
- Stormwater Harvesting (Rainwater re-use)

The stormwater and environmental management philosophy employed in the Stormwater Management Plan is discussed in Section 3.0.

As well as permanent water management controls, construction phase controls are also addressed, in section 5.0.

In preparing this Stormwater Management Plan a review has been undertaken with Port Stephens Council Development Control Plan, with the aim to incorporate Water Sensitive Urban Design measures.

1.3 Background Information

Based on our review of the DCP and previous experience on similar sites within the Port Stephens Council Precinct, we understand the following:

- that on-site stormwater harvesting measure would be required for the roof areas of the proposed development for reuse in potable water applications and/or landscape areas;
- Site stormwater detention would be required to limit the post developed stormwater discharge off the site to the pre-developed site discharge;
- Water quality measures to ensure that the stormwater discharge from the site creates a Neutral or Beneficial Effect on Water Quality (NorBE) on the receiving Grahamstown drinking water catchment.

2. Site and Catchment Details

2.1 The Existing Site

The existing site to be developed comprises of a total plan area of approximately 81200m^2.

The site currently has an existing dwelling and several sheds which are proposed to be demolished as part of the proposed works.

2.2 2.2 The Proposed Site

Architectural drawings prepared by Webber Architects have been provided to MPC and show the layout of the proposed development. These have been used as the basis of the stormwater management and sediment and erosion control concept design. A copy of the architectural site plan is included as **Appendix A** of this report. The project is to be completed over several stages, a copy of the staging plan is included as **Appendix B** to this Report.

The proposed site generally comprises of the following:

- 17 School Buildings;
- New carparking and roadworks;
- External paving and landscape areas.

It should be noted the proposed school is to be constructed over several stages.

2.3 Catchment

The site does contain survey marked water courses. Therefore the site is used to convey stormwater from the neighbouring catchment areas towards the South West of the site.

Runoff from Medowie road and the Pacific Dunes development currently passes through an open swale to the south and West of the proposed school. The swale connects to a Public drainage system to the west of the proposed school site. Refer to stormwater plan for discharge locations.

The site is bounded residential dwellings to the North, Medowie road to the East and an ecology area to the West.

3. Stormwater and Environmental Management Philosophy

In preparing this Stormwater Management Plan we have consulted with Councils Development Control plan and the Australian Rainfall and Runoff guideless in relation to stormwater. The requirements to be addressed are as follows:

- Ensure that the rate of rainwater runoff from roofs and paved areas from the pre-developed site is not increased for the developed condition for all storms up to and including the 1 in 100 years ARI event;
- Provide detention of the post-developed flows such that they do not exceed the pre-developed conditions;
- Provide rainwater re-use where appropriate, Proprietary first flush devices would be proposed prior to rainwater entering the harvesting tank. Harvested rainwater will be used for irrigation purposes of the landscape areas and sporting fields;
- To ensure Water Sensitive principles are adopted, the site drainage system will also incorporate pollution control measures designed to remove and site generated pollutants in accordance with Port Stephens Councils DCP. The hydraulic engineering consultant will be required to design a system of pollution control in order to satisfy the requirements of the DCP prior to water overflowing from the harvesting tank;
- In accordance with Port Stephens DCP, the Hydraulic mapping for the site is deemed to be Group A, in accordance with the Hydraulic Soil Group Map HSG_004C;
- Water quality measures to ensure that the stormwater discharge from the site creates a Neutral or Beneficial Effect on Water Quality (NorBE) on the receiving Grahamstown drinking water catchment.
- Ensure that overland flow in the event of a choked or blocked piped system does not impact on neighbouring properties or other buildings on the site.
- Install appropriate erosion protection and soil stabilisation measures in association with the proposed site works. Such measures are to be designed in accordance with the requirements of the Managing Urban Stormwater: Soils and Construction 4th Edition – Wol.1 (the “Blue Book”) published by Landcom, 2004

4. Proposed Stormwater Management Facilities

4.1 Preamble

Section 4.2 gives an outline of the nature and function of stormwater management facilities to be incorporated in the proposed development.

Section 4.3 discusses the design storm events for which the stormwater management system is provided.

The site area is shown in **Appendix A**. The location and operation of stormwater management facilities for the catchment is discussed in Section 4.4.

On going maintenance and monitoring of the stormwater management system is discussed in Section 4.5.

4.2 Nature and Function of Stormwater Management Facilities

The stormwater management plan is shown in **Appendix C**. The principal stormwater management components and their function are listed below:

a). The proposed works consists of redevelopment of the entire site. Stormwater systems are designed to cater for roof, hardstand, and landscaped areas.

b). Roof rainwater from each new building will be directed though a new pipe/pit system to a 4000 litre above ground rainwater tank per building (Approximately 68000 litres minimum total capacity) with over flows being connected to the developments detention basins. Final tank locations are to be confirmed during detailed design of the each stage.

c). Retention facilities will be incorporated into the network in accordance with councils DCP. Low flow outlet measures will be provided for minor and major rainfall events with all overflow being directed to the South West and Western areas of the site. The site has been designed to incorporate a mix of Atlantis Flo tanks and detention ponds, Gross Pollutant traps, pollutant pit inserts in the carpark as such stormwater quality for the existing site will not be compromised by the proposed development (refer Appendix B);

4.3 Design Storm Events

The stormwater management system for the proposed 'Developed Site Area' will collect roof rainwater in Harvesting and Retention facilities that will be designed in accordance with councils DCP. Blocked system overflow locations for large storm events have been provided between and around buildings and are directed to the West and Southern boundaries of the site. These flows have been directed to the existing swale that traverses the property, which currently services runoff from the existing property, Medowie Road and the Pacific Dunes Development. This swale connects to the Public Drainage system to the West of the Site.

4.4 Stormwater Harvesting

Roof Rainwater Tanks

It is proposed to use a rainfall depth of 18.5mm for calculation of captured roof water for harvesting tank for each building for the purposes of irrigation. Roof rainwater is piped directly to the harvesting tanks via the downpipe system and a first flush devices.

A total roof area of the proposed development is approximately 15,000 m^2. This roof area will allow a total harvested volume of approximately 280kL. This volume will be divided amongst six rainwater tanks located around the site for the purposes of irrigating landscape areas and the sporting fields. The final location of the rainwater tanks will be determined during the detailed design phase of the project.

In order to ensure supply to the connected uses, there will be a control valve connected to mains supply to maintain a minimum of 10% tank capacity. Mains back-up will require interconnection with Hunter Water mains.

Backflow prevention methods will be provided to ensure the protection of the mains water supply. A demand pump will be provided to supply tank water to internal plumbing fixtures.

Rainwater tanks will be used as a retention system for the proposed roof catchment areas. Water will be released from the rainwater tanks at the calculated pre-developed flows.

A high-level overflow pipe will be provided in the event of high rainfall periods and a blocked overflow which is directed to the sites detention ponds.

4.5 Stormwater Detention

This section refers to the requirements in Port Stephens DCP. The primary aim with site run-off under the DCP is to ensure that the run-off from the developed site replicates that of the natural conditions.

The drainage system has been designed for peak run-off with this run-off being released at a rate comparable with natural conditions during peak rainfall.

The Stormwater Detention is proposed to be in a combination of underground Atlantis Flo tanks and above ground detention basins. Each of the detention tanks and detention basins rely on a slow release orifice to release of stormwater at pre-developed flow rates. We have also not used any detention in the carparks to ensure that they remain serviceable without nuisance water during rainfall events. Water is captured in pits and treated through a series of devices to mitigate any potential impacts on the down stream areas including the mapped coastal wetland and the drinking catchment of Grahamstown Dam. Refer to Section 4.7 for the Water quality controls. Water is released at several locations around the site through a series of headwalls. Each head wall has a level spreader and scour protection to mitigate the risk of the discharged stormwater creating scouring issues on the site and in the open swale.

Refer to mark-up in **Attachment D** for catchment area details.

Pre and Post-Developed Flows are summarised in **Tables 1 to 4** below.

Catchment Area 1 (18374m^2)

Catchment area has an Atlantis detention tank. The information in table 1 is cumulative and incorporates all tanks.

Table 1: Stormwater Detention Calculations

Item	20 % ARI	5% ARI	1% ARI
ARI (years)	5	20	100
Pre-Developed Flow	375 l/s	669 l/s	1090 l/s
Control	Detention Tank with orifice plate control	Detention Tank with orifice plate control	Detention Tank with orifice plate control
Basin Storage Volume	180 m^3	250 m^3	361m^3
Outflow (L/s)	375 L/s from Basin	655 L/s from Basin	826 L/s from Basin

Catchment Area 2 (7670m^2)

Table 1: Stormwater Detention Calculations

Item	20 % ARI	5% ARI	1% ARI
ARI (years)	5	20	100
Pre-Developed Flow	190 l/s	327 l/s	477 l/s
Control	Detention Tank with orifice plate control	Detention Tank with orifice plate control	Detention Tank with orifice plate control
Basin Storage Volume	43 m^3	62 m^3	91m^3
Outflow (L/s)	299 L/s from Basin	299 L/s from Basin	430 L/s from Basin

Catchment Area 3 (38913m^2)

Table 1: Stormwater Detention Calculations

Item	20 % ARI	5% ARI	1% ARI
ARI (years)	5	20	100
Pre-Developed Flow	723 l/s	1220 l/s	2120 l/s
Control	Detention Basin with orifice control	Detention Basin with orifice control	Detention Basin with orifice control
Basin Storage Volume	479 m^3	731 m^3	990 m^3
Basin Water Level	7.90 AHD	8.11 AHD	8.32 AHD
Outflow (L/s)	638 L/s from Basin	1119 L/s from Basin	1913 L/s from Basin

Catchment Area 4 (18893m^2)

Table 1: Stormwater Detention Calculations

Item	20 % ARI	5% ARI	1% ARI
ARI (years)	5	20	100
Pre-Developed Flow	391 l/s	698 l/s	1140 l/s
Control	Detention Basin with orifice control	Detention Basin with orifice control	Detention Basin with orifice control
Basin Storage Volume	150 m^3	185 m^3	230m^3
Basin Water Level	7.96 m AHD	8.11 m AHD	8.29 AHD
Outflow (L/s)	199 L/s from Basin	288 L/s from Basin	427 L/s from Basin

Therefore based on the above, we can confirm that the Post developed flows do not exceed the predeveloped flows. Below is a summary of the 1% AEP total site flows.

Total Site Area – 83,850 m^2

Major Pre-developed Flow – 4827 l/s

Major Post Developed Flow – 3596 l/s

Total Detention Volume – 1672 m^3

4.6 Site Flood Storage Analysis

The site is affected by floor towards the South and South East of the school building. A minimum design floor level of 9.30 AHD has been adopted and is above the maximum flood level provided by Port Stephens Council.

4.7 Water Quality

It is our intention to comply with the Protection of the Environment Operations Act 1997, in particular water quality exiting the site during construction and operation.

Stormwater quality requirements from the Port Stephens Council DCP 2019, and in particular the Water Quality Targets within the DCP which have been have been impropriated into the overall stormwater management design for the site and confirmed using the Port Stephens Councils Music Link Analysis and report, which is included in **Appendix F.**

Water Quality measures for the site have been modelled using MUSIC software and include the following:

- Rainwater from the roof of each building will be directed through a first flush device before being stored in a water re-use tank;
- Stormwater from impervious areas will be directed through Ecosol inserts in each pit, GPT's then to a detention tank or basin.
- Proprietary "Gross Pollutant Trap" has been specified in the location shown on the stormwater management plans;

As part of the water quality assessment to demonstrate that the water quality of the proposed development meets the requirements of the NorBE, we have modelled the predeveloped conditions and compared these results to the results from the developed site. The stormwater quality devices and systems have been specified on the stormwater management plans included in **Appendix C**, which collectively achieve the water quality targets listed below:

NorBE – Water Quality Requriements

	Pre-Developed Residual Load	Developed Residual Load
Total Suspended Solids (kg/yr)	4430	1100
Total Phosphorous (kg/yr)	7.60	5.5
Total Nitrogen (kg/yr)	57.5	57.5
Gross Pollutants (kg/yr)	219	0.01

The table above shows that the water quality measures implemented on the site have a net benefit and reduction of pollutants leaving the site which shows that the implemented measures meet the requirements of the NorBE.

Port Stephens DCP WQO – Treatment Train Effectiveness.

	Sources	Residual Load	% Reduction	Port Stephens WQO's	Does it Pass
Total Suspended Solids (kg/yr)	14200	1100	92.2%	90%	Yes
Total Phosphorous (kg/yr)	25.5	5.5	78.4%	60%	Yes
Total Nitrogen (kg/yr)	137	57.5	58%	45%	Yes
Gross Pollutants (kg/yr)	1360	0.010	100%	90%	Yes

A copy of the MUSIC model diagrams, including the receiving node pollution reductions achieved, and Port Stephens Music Link Report, are included in **Appendix F**.

The basin has also been sized as a temporary sediment control basin for initial bulk earthworks construction phase, in accordance with the procedures in the "*Soils and Construction – Managing Urban Stormwater"* guidelines. Additional details in this regard are included in **Appendix E.**

4.8 Maintenance of Stormwater Management Facilities

Maintenance of concrete pits, pipes and paved flow paths will be minimal as they are generally self-cleansing, and hence only involve very occasional cleaning. Regular inspections of control systems should be carried out to ensure satisfactory performance of the drainage systems proposed. Sediment/pollution control pits and proprietary pollution control devices will be provided prior to entering irrigation and retention facilities. Proprietary tanks or pollution control chambers located in roadway areas will also be accessible for cleaning and maintenance. Maintenance should occur on a 3 month basis or after major storm events. A maintenance plan has been included in **Appendix G**

5. Construction Phase Erosion and Sediment Controls

The construction phase approach adopted for this site will incorporate principles recommended by the NSW Department of Housing, namely:

- Plan for erosion and sediment control concurrently with engineering design and in advance of earthworks proper assessment of site constraints and integration of the various needs;
- Minimise the area of soil exposure;
- Conserve the topsoil where possible:
- Control water flow from the top of the development area, through the works and out the bottom of the site, for example,
    - divert clean runoff above denuded areas
    - minimize slope gradient and length
    - keep runoff at non-erodible velocities
    - trap soil and water pollutants
- Rehabilitate disturbed lands quickly.

A preliminary design of erosion and sediment controls for the overall site development is shown in **Appendix E**. Controls will be provided on the site prior to and during all earthworks in accordance with EPA Site Work Practices. Features of the construction phase erosion and sediment controls adopted for this site include:

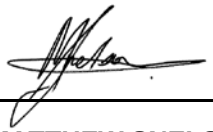
- Prevention of sediment and polluted runoff water from entering the existing adjacent watercourse. This involves the provision of silt fences, catch drains and sediment traps.
- Control of actual and potential soil erosion – grassing and stabilization of embankments and drainage outlets where required.
- Stabilised stockpile areas to prevent wind and water erosion.
- Scour protection at discharge locations.
- Stabilised site access to provide a firm base for vehicle entry/exit and to prevent the main access from becoming a source of sediment.

6. Summary

This stormwater management plan has been prepared by MPC Consulting Engineers for North Construction, and the systems outlined in this report address the requirements of Port Stephens Council DCP.

For further information in relation to this stormwater management plan please contact the undersigned.

Signed:



MATTHEW SNELSON

BE (Civil)(Hons), MIEAust, CPEng, NER

Director

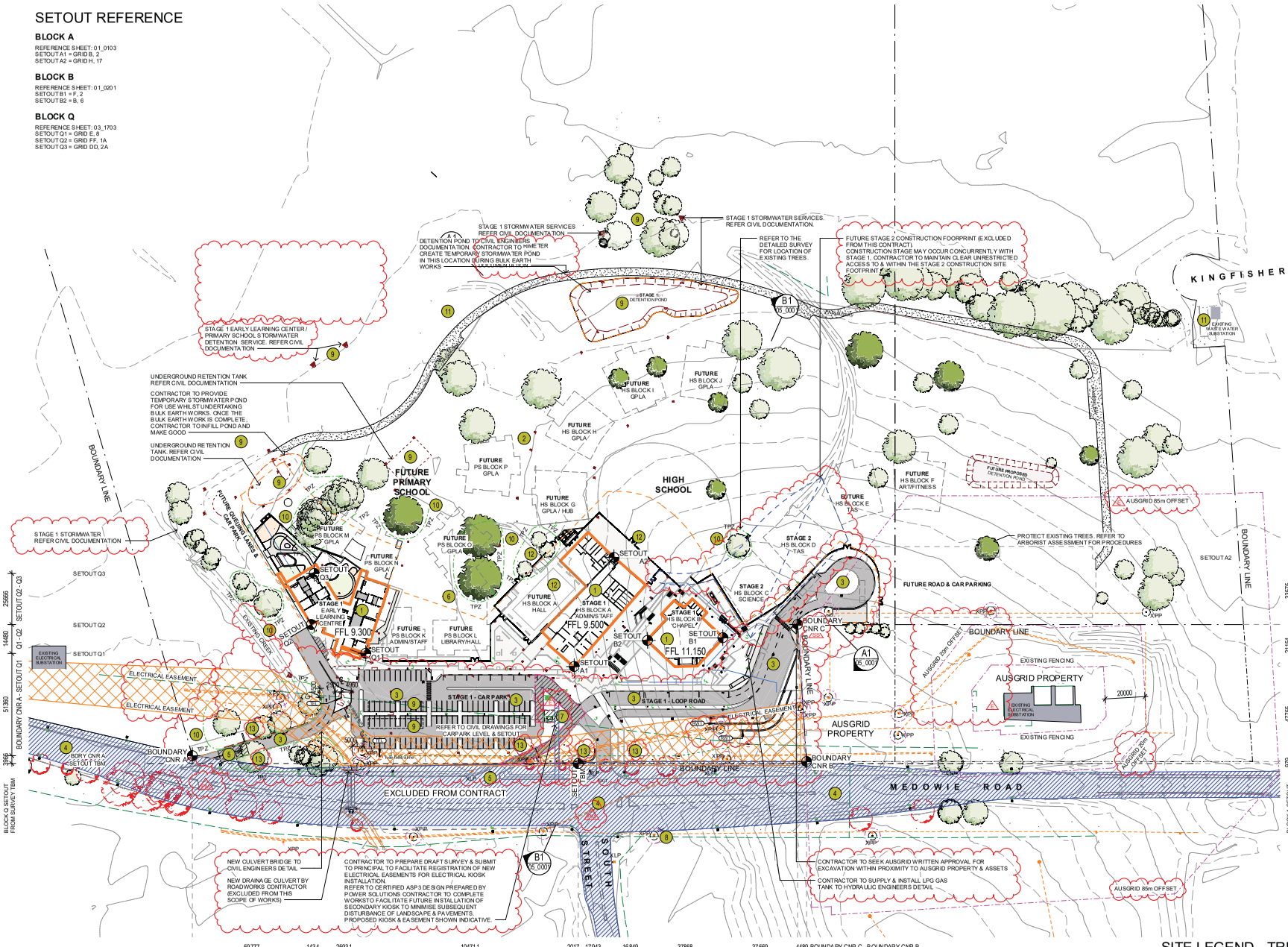
Date: 10 October 2020

Appendices:

A	**Site Plan (Stage 1)**
B	**Site Plan (Stage 2)**
C	**Site Staging Plan**
D	**Stormwater Management Plan (Stage 1)**
E	**Stormwater Management Plan (Stage 2)**
F	**Catchment and Summary of Stormwater Design Intent**
G	**Erosion and Sediment Control (Stage 1)**
H	**Erosion and Sediment Control (Stage 2)**
I	**Stormwater Quality (Music) Model**
J	**Stormwater Maintenance Plan**
K	**Hydrology Assessment**
L	**Evidence of Council Consultation**

Appendix A

Site Plan – Stage 1



SETOUT REFERENCE

BLOCK A

REFERENCE SHEET: 01_0103
SETOUT A1 = GRID B, 2
SETOUT A2 = GRID H, 17

BLOCK B

REFERENCE SHEET: 01_0201
SETOUT B1 = F, 2
SETOUT B2 = B, 6

BLOCK Q

REFERENCE SHEET: 03_1703
SETOUT Q1 = GRID E, 8
SETOUT Q2 = GRID FF, 1A
SETOUT Q3 = GRID DD, 2A

NOTES - STAGE 1

REFER TO THE DETAILED SURVEY PLAN (PREPARED BY PARKER SCANLON PTY LTD DATED 26.07.2018), FOR EXISTING LEVELS, BOUNDARIES, VEGETATION, SITE SERVICES, SITE EASEMENTS, BUILDINGS & INFRASTRUCTURE.

REFER TO CIVIL ENGINEER'S DOCUMENTATION FOR REQUIRED BENCHMARK LEVELS AND EXTENT OF CUT/FILL, SEDIMENTATION & EROSION CONTROL PLANS, STORMWATER PLANS, STORMWATER MANAGEMENT PLAN, AND THE PROPOSED ROADWORKS & DRAINAGE PLANS.

REFER TO THE TRAFFIC IMPACT ASSESSMENT REPORT PREPARED BY SECA SOLUTION DATED 08.04.2019.

REFER TO THE BUSHFIRE ASSESSMENT REPORT (PREPARED BY NEWCASTLE BUSHFIRE CONSULTING ON THE 04.03.2019.) FOR SITE ASSESSMENT, SITE SERVICES, SETBACKS, ATTACK LEVELS, EMERGENCY PROCEDURES & ACCESS .

REFER TO HISTORICAL HERITAGE ASSESSMENT REPORT AND CULTURAL HERITAGE MANAGEMENT PLAN (PREPARED BY BIOSIS), FOR HISTORICAL CONTEXT, ABORIGINAL PAST, ARCHAEOLOGICAL ASSESSMENT AND LEVELS OF SIGNIFICANCE .

REFER TO THE ARBORICULTURAL IMPACT ASSESSMENT REPORT (PREPARED BY JOSEPH PIDUTTI CONSULTING ARBORIST DATED 05.12.2017.) FOR SITE INVESTIGATIONS, LIMITATIONS, TREE PRESERVATIONS & IMPACTS OF THE DEVELOPMENTS.

REFER TO THE BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT AND VEGETATION MANAGEMENT PLAN (PREPARED BY BIOSIS), FOR LANDSCAPE CONTEXT, NATIVE VEGETATION, IMPACT PRESENTATION, AND BIODIVERSITY CREDITS.

REFER TO THE GEOTECHNICAL INVESTIGATION REPORT (PREPARED BY VALLEY CIVIL LAB DATED 20.11.2017), FOR SITE INVESTIGATIONS, SUBSURFACE CONDITIONS, SITE CLASSIFICATION, LABORATORY TESTS, EARTHWORKS , ACID SULFATE SOILS, AND LIMITATIONS.

REFER TO THE ELECTRICAL ENGINEER'S DOCUMENTATION FOR SITE AND BLOCK SPECIFIC ELECTRICAL DESIGN, POWER, A/V AND LIGHTING

REFER TO THE HYDRAULIC ENGINEER'S DOCUMENTATION FOR SITE HYDRAULIC DESIGN, INCLUDING SEWER, WATER, GAS SUPPLY AND WASTE.

REFER TO THE LANDSCAPE ARCHITECTS DOCUMENTATION FOR LANDSCAPE DESIGN PRINCIPLES, MASTERPLAN, PLANTING STRATEGY, PLANTING PALETTE, ACCESS & CIRCULATION, WAY FINDING & ENTRY SIGNAGE, MATERIALS & FINISHES, DETAILED LANDSCAPE PLANS & SECTIONS.

REFER TO CONTAMINATION ASSESSMENT & REMEDIATION ACTION PLAN (PREPARED BY VALLEY CIVIL AB.), FOR SITE INVESTIGATION, HAZARDOUS MATERIAL AUDIT, GROUNDWATER, ACID SULFATE SOILS AND SOIL ASSESSMENTS, AND REMOVAL OF CONTAMINATION ACTION PLAN.

REFER TO THE FLOOD RISK & IMPACT ASSESSMENT REPORT (PREPARED BY BMT WBM PTY LTD DATED 05.03.2018), FOR FLOOD IMPACTS, AND EMERGENCY MANAGEMENT.

REFER TO IMPACT ASSESSMENT REPORT (PREPARED BY KEY INSIGHTS PTY LTD DATED FEBRUARY 2018), FOR COMMUNITY PROFILE, FINDINGS AND ANALYSIS.

PREPARATION OF SITE MANAGEMENT PLANS ARE REQUIRED AS PART OF THE CONDITIONS OF CONSENT. THESE INCLUDE AND ARE NOT LIMITED TO:

- REMEDIATION ACTION PLAN
- ABORIGINAL CULTURAL HERITAGE ASSESSMENT (COORDINATION ON SITE ONLY)
- ARCHAEOLOGICAL REPORT (COORDINATION ON SITE ONLY)
- CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN
- ECOLOGICAL MANAGEMENT PLAN
- VEGETATION MANAGEMENT PLAN
- ACID SULPHATE SOIL MANAGEMENT PLAN
- CULTURAL HERITAGE MANAGEMENT PLAN
- STORMWATER MANAGEMENT PLAN
- OPERATIONS AND MAINTENANCE PLAN

REFER TO THE ENVIRONMENTAL IMPACT STATEMENT (EIS).

REFER TO THE LEVEL 3 ASP ELECTRICAL ENGINEERS DOCUMENTATION FOR INFORMATION REGARDING KIOSK LOCATIONS, SITE POWER, AUSGRID CONNECTION AND RELOCATION OF EXISTING SERVICES AND MAXIMUM POWER DEMANDS

SCOPE OF WORKS - STAGE 1

1. PROPOSED STAGE 1 BLOCK A, B AND Q BUILDINGS AND ASSOCIATED SERVICES, LANDSCAPING AND CIVIL WORKS. REFER TO ARCHITECTURAL AND CONSULTANT DOCUMENTATION.
2. ***NOTE DELETED***
3. STAGE 1 CAR PARK AND ASSOCIATED WORKS. REFER TO CIVIL ENGINEERS DOCUMENTATION.
4. ROAD WORKS UPGRADE NOT PART OF SCOPE. REFER TO CIVIL, ELECTRICAL, HYDRAULIC, ARBORIST, LEVEL 3 ASP, SURVEYOR, AND ECOLOGICAL DOCUMENTATION FOR SITE COORDINATION.
5. SITE VEHICLE ENTRY TO CAR PARK AND BUS DROP OFF.
6. ***NOTE DELETED***
7. ELECTRICAL KIOSK SUBSTATION TO BE INSTALLED (ALSO LOCATION OF FUTURE KIOSK) REFER TO ELECTRICAL ENGINEERS DOCUMENTATION.
8. EXISTING HIGH VOLTAGE SWITCH METER TO BE RELOCATED. REFER TO LEVEL 3 ASP ELECTRICAL DOCUMENTATION.
9. DETENTION POND OR TANK, STORMWATER LINES & INTERGRATED PITS TO CIVIL ENGINEERS DOCUMENTATION.
10. DEMARCATION OF ENVIRONMENTAL SENSITIVE AREAS SUCH AS THE CREEK RIPARIAN SETBACK, & TREE PROTECTION ZONES.
11. ***NOTE DELETED***
12. STAGE 1 HIGH SCHOOL PLAY SPACE.
13. ENTRY FENCE AND SIGNAGE. REFER TO LANDSACPE ARCHITECT DETAILS.

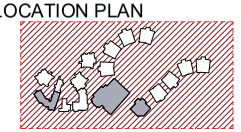
SITE LEGEND - GENERAL

- EXISTING STRUCTURE
- EXISTING POWER POLE WITH 2.1M CONSTRUCTION CLEARANCE (XPP)
- WORKS EXCLUDED FROM SCOPE
- EXTENT OF STAGE 1 WORKS
- EXTENT OF STAGE 2 WORKS
- FUTURE WORKS
- TREE PROTECTION ZONE (TPZ)
- AUSGRID EARTHING SETBACKS FROM INTERNAL AUSGRID FENCE. 4M, 20M & 85M. REFER TO SAFEEARTH ASSESSMENT.

SITE LEGEND - TREES

- EXISTING TREE - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS
- HOLLOW BEARING TREE - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS
- DEMOLISHED TREE - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS
- NEW TREE - REFER TO LANDSCAPE DETAILS

LOCATION PLAN



1 / 04_0001 SITE PLAN - OVERALL - STAGE 1
SCALE 1 : 1000

REV	DATE	DESCRIPTION	BY	CHK
D	17.06.2019	FOR QA	SvR	
E	20.06.2019	FOR ECI	SvR	SH
F	26.10.2019	FOR QA	LK	
G	02.11.2019	FOR CONTRACTS	LK	
H	06.06.2019	FOR CONTRACTS - REVISED	LK	-
I	04.09.2019	FOR COORDINATION	LK	
J	27.09.2019	STAGE 1 - FOR CC ONLY	KK	DF

DRAWINGS COLOUR CODED
PRINT ALL COPIES IN COLOUR

CatholicDiocese

webber

159.RD
FOR CONSTRUCTION CERTIFICATE

SITE PLAN - OVERALL - STAGE 1
MEDOWIE CATHOLIC COLLEGE
CATHERINE McAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE
COMMENCEMENT DATE : 01.05.2017

SHEET NUMBER : **2544 / 02_0031 / J**

TRUE NORTH

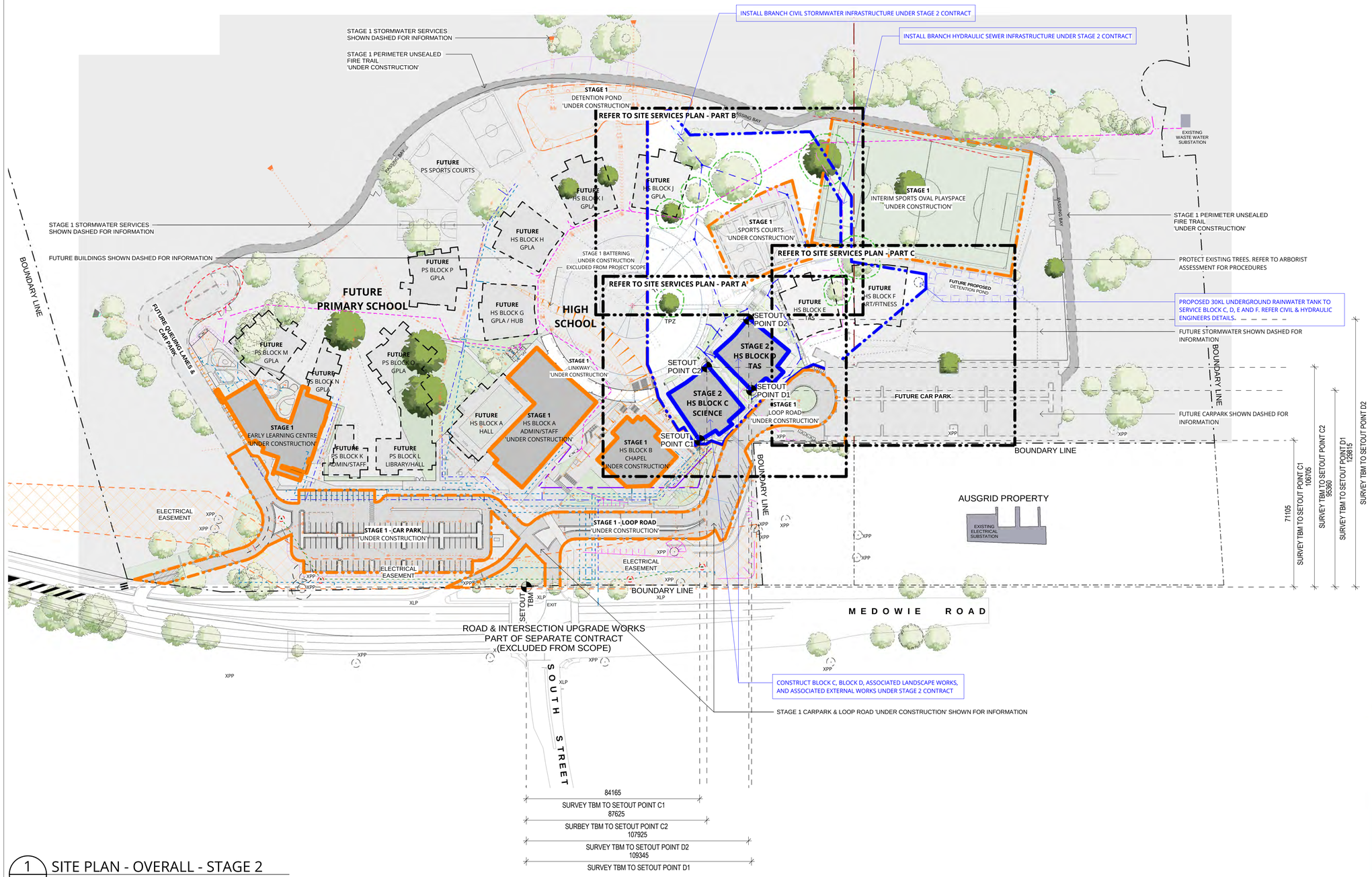
0 10 20 30 40 50 m
SCALE 1:1000 @ A1

BUILDER TO CONFIRM ALL DETAILS, SETOUTS (STILE ETC.), FALLS & CONNECTIONS ON SITE BEFORE CONSTRUCTION

PRINT DATE: 27/09/2019 10:53:10 PM **FILE PATH:** C:\Users\DanielDocuments\2544 Medowie Catholic School\.dwg\sd for emain.rvt

Appendix B

Site Plan – Stage 2



SITE LEGEND - SERVICES

- FUTURE BUILDING
- XPP — POWER POLE + 2.1m CONSTRUCTION CLEARANCE
- POWER LINES
- 12.00 — CIVIL NOMINATED SURFACE LEVEL
- CIVIL NOMINATED SURFACE FALL DIRECTION
- 13.46 — EXISTING CONTOUR & LEVEL
- FS11.59 — LANDSCAPE ARCHITECT NOMINATED LEVEL
- STAGE 1 BUILDING WORKS
- STAGE 2 BUILDING WORKS
- FUTURE BUILDING WORKS
- AUSGRID EARTHING SETBACKS
- ELECTRICAL POWER
- ELECTRICAL COMMUNICATIONS
- ELECTRICAL OVERHEAD
- ELECTRICAL LEVEL 3 ASP
- ELECTRICAL ROAD LIGHTING
- HYDRAULIC SERVICES
- HYDRAULIC HYDRANT WATER
- HYDRAULIC SEWER
- HYDRAULIC GAS
- CIVIL STORMWATER

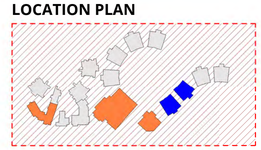
SITE LEGEND - TREES

- **EXISTING TREE** - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS. TO BE RETAINED AND PROTECTED.
- **HOLLOW BEARING TREE** - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS. TO BE RETAINED AND PROTECTED.
- **DEMOLISHED TREE** - REFER TO ARBORIST, BUSHFIRE & VEGETATION REPORTS.
- **NEW TREE** - REFER TO LANDSCAPE DRAWINGS FOR FULL DETAILS.

SITE LEGEND - GENERAL

- XPP — EXISTING POWER POLE WITH 2.1M CONSTRUCTION CLEARANCE
- POWER LINES
- STAGE 1 WORKS
- STAGE 2 WORKS
- FUTURE WORKS
- AUSGRID EARTHING SETBACKS FROM INTERNAL AUSGRID FENCE. 4M, 20M & 85M. REFER TO SAFEEARTH ASSESSMENT.

LOCATION PLAN



1 SITE PLAN - OVERALL - STAGE 2

04_0001 SCALE 1 : 1000

REV	DATE	DESCRIPTION	BY	CHK
0	21.02.2020	FOR TENDER	TB	

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PO Box 807 The Junction NSW 2291
www.webberarchitects.com
Suite 3, Level 1, 426 Hunter Street Newcastle NSW 2300
newcastle@webberarchitects.com
Suite 206, 8 Clarke Street Crows Nest NSW 2065
sydney@webberarchitects.com
(Nominated Architect Jon Webber AIA NSW ARB No 6631) | ABN 87 145 052 194

ISSUED
PRELIMINARY ONLY
NOT FOR CONSTRUCTION

SITE PLAN - OVERALL - STAGE 2
MEDOWIE CATHOLIC COLLEGE
CATHERINE McAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE

COMMENCEMENT DATE : 01.05.2017

SHEET NUMBER : **2544 / 02_0050 / 0**

SCALE 1:1000 @ A1

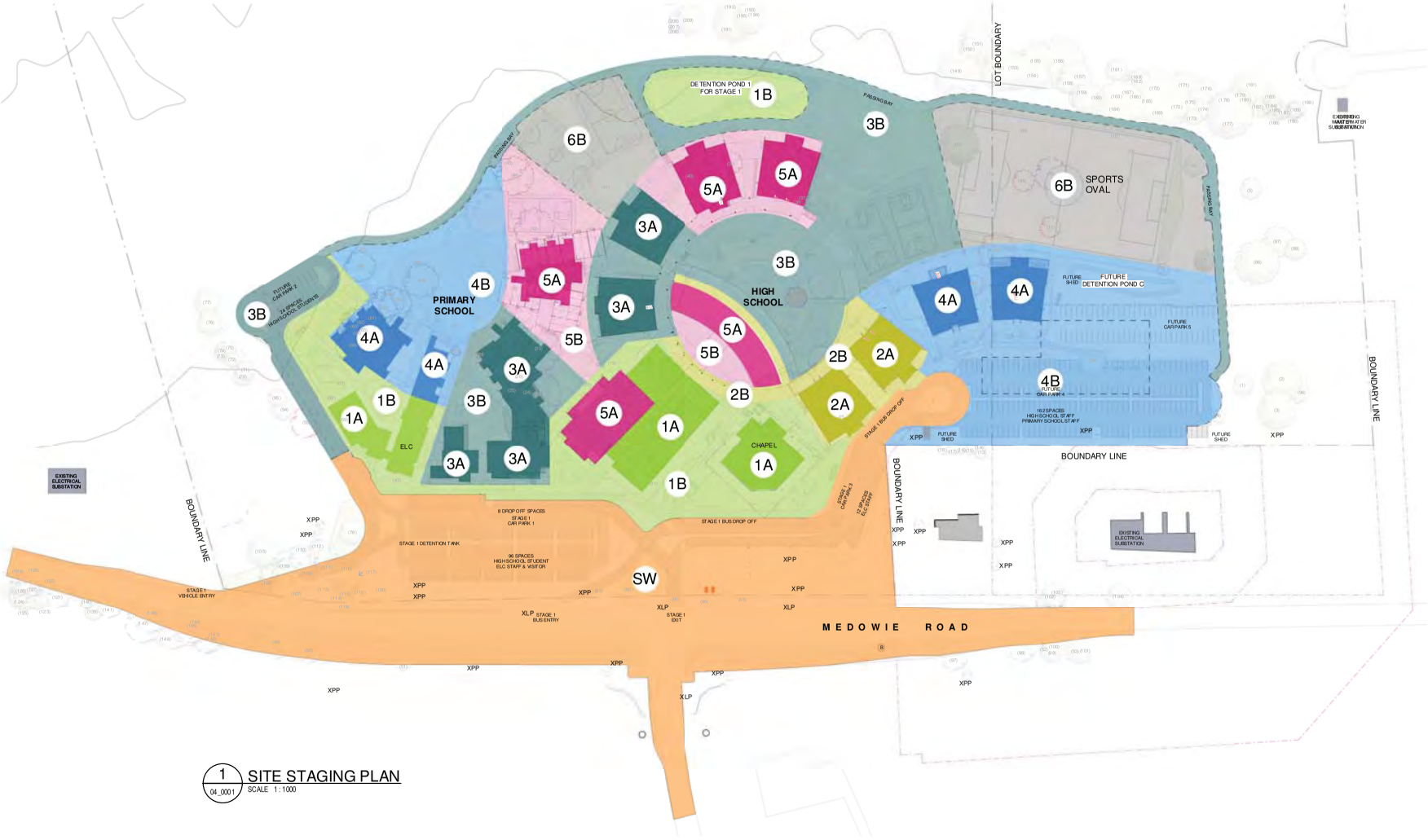
TRUE NORTH

BUILDER TO CONFIRM ALL DETAILS, SETOUTS (TILE, ETC.), FALLS & CONNECTIONS ON SITE BEFORE CONSTRUCTION

PRINT DATE: 21/02/2020 11:19:21 AM **FILE PATH:** T:\Revit Locals\2544 Medowie Catholic School_timothyhwebber.rvt

Appendix C

Site Staging Plan



1
04_0001
SITE STAGING PLAN
SCALE 1:1000

STAGING NOTES

ENABLING WORKS	• ARCHEOLOGICAL SALVAGE, ESTABLISH CONSTRUCTION COMPOUNDS & TEMPORARY SITE ACCESS, ESTABLISH SEDIMENT CONTROLS, DEMOLITION
STAGE - SW	• SITE WORKS - CIVIL/RMS WORKS, SERVICES, ASSOCIATED LANDSCAPING
STAGE - 1A	• HIGH SCHOOL - BLOCK A (ADMINISTRATION, STAFF & CLASSROOMS; • EARLY LEARNING CENTRE - BLOCK Q; • CHAPEL - BLOCK B;
STAGE - 1B	• ASSOCIATED LANDSCAPING, CIVIL, HYDRAULICS, ETC.
STAGE - 2A	• HIGH SCHOOL - BLOCK C (SCIENCE) • HIGH SCHOOL - BLOCK D (TAS)
STAGE - 2B	• COVEREDWAYS, ASSOCIATED LANDSCAPING, CIVIL, HYDRAULICS, ETC.
STAGE - 3A	• HIGH SCHOOL - BLOCK G (LEARNING HUB) • HIGH SCHOOL - BLOCK H (CLASSROOM HUB) • PRIMARY SCHOOL - BLOCK K (ADMINISTRATION, STAFF) • PRIMARY SCHOOL - BLOCK L (LIBRARY, HALL) • PRIMARY SCHOOL - BLOCK O (CLASSROOM HUB)
STAGE - 3B	• ASSOCIATED LANDSCAPING, CIVIL, HYDRAULICS, CARPARK, ETC.
STAGE - 4A	• HIGH SCHOOL - BLOCK E (TAS) • HIGH SCHOOL - BLOCK F (PE.H.PD, ART) • PRIMARY SCHOOL - BLOCK M (CLASSROOM HUB) • PRIMARY SCHOOL - BLOCK N (CLASSROOM HUB)
STAGE - 4B	• ASSOCIATED LANDSCAPING, CIVIL, HYDRAULICS, CAR PARK, ETC.
STAGE - 5A	• HIGH SCHOOL - BLOCK I (CLASSROOM HUB) • HIGH SCHOOL - BLOCK J (CLASSROOM HUB) • HIGH SCHOOL - BLOCK K (COLA) • HIGH SCHOOL - BLOCK A (HALL) • PRIMARY SCHOOL - BLOCK P (CLASSROOM HUB)
STAGE - 5B	• ASSOCIATED LANDSCAPING, CIVIL, HYDRAULICS, ETC.
STAGE - 6B	• SPORTS FIELDS & ASSOCIATED LANDSCAPING.

SITE STAGING LEGEND

SITE WORKS	EARTHWORKS + ASSOCIATED EXTERNAL STRUCTURES
STAGE 1A	BUILDING STRUCTURES
STAGE 1B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES
STAGE 2A	BUILDING STRUCTURES
STAGE 2B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES
STAGE 3A	BUILDING STRUCTURES
STAGE 3B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES
STAGE 4A	BUILDING STRUCTURES
STAGE 4B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES
STAGE 5A	BUILDING STRUCTURES
STAGE 5B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES
STAGE 6B	LANDSCAPING + ASSOCIATED EXTERNAL STRUCTURES

LOCATION PLAN

REV	DATE	DESCRIPTION	BY	CHK
C	09.03.2018	FOR QA	UK	
D	20.03.2018	FOR CLIENT ISSUE	UK	
E	29.03.2018	FOR CLIENT APPROVAL	UK	TH
F	04.04.2018	FOR CLIENT APPROVAL	UK	
G	10.05.2018	FOR CONSULTANT COORDINATION	UK	
H	15.05.2018	FOR DEVELOPMENT APPROVAL	UK	
I	15.06.2018	FOR CROA SITE VISIT	ME	
J	19.12.2018	RESPONSE TO SUBMISSIONS	UK	
K	10.07.2019	FOR STAGING REPORT	TH	

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Catholic Schools Office DIOCESE OF MAITLAND-NEWCASTLE

webber

SITE STAGING PLAN
MEDOWIE CATHOLIC COLLEGE
CATHERINE McAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE

ISSUED :
FOR DA APPROVAL
NOT FOR CONSTRUCTION

PROJECT COMMENCEMENT DATE : 01.05.2017

SCALE :
0 10 20 30 40 50 m
SCALE 1:1000 @ A1

NORTH :

SHEET NUMBER : **2544_DA_01_0005_K**

BUILDER TO CONFIRM ALL DETAILS, SETOUTS (TILE, ETC), FALLS & CONNECTIONS ON SITE BEFORE CONSTRUCTION.

PRINT DATE: 10/07/2019 10:34:24 AM FILE PATH: T:\Revit Locals\2544 Medowie Catholic School_timothy.webber.rvt

DENOTES EXTENTS
OF STAGE 1 WORKS

DETENTION POND 1
VOLUME = 990m³

HS BLOCK I
FFL 9.50

HS BLOCK J
FFL 9.50

HS BLOCK H
FFL 9.50

PS BLOCK P
FFL 9.30

HS BLOCK G
FFL 9.50

SPORTS
COURTS
FFL
10.058

SPORTS
COURTS
FFL
10.058

HS BLOCK E
FFL 10.54

HS BLOCK F
FFL 10.54

CAR
PARK 5

PS BLOCK M
FFL 9.30

PS BLOCK O
FFL 9.30

HS BLOCK D
FFL 11.90

HS BLOCK A
FFL 9.50

HS BLOCK C
FFL 12.80

EARLY
LEARNING
FFL 9.30

PS BLOCK K
FFL 9.30

PS BLOCK L
FFL 9.30

HS BLOCK B
FFL 11.15

EXISTING EASEMENT

EXISTING EASEMENT

EXISTING EASEMENT

APPROX LOCATION OF TELSTRA LINE
NOT LOCATED BY SURVEY

APPROX LOCATION OF WATERMAIN
NOT LOCATED BY SURVEY

APPROX LOCATION OF ELECTRICAL CABLES
NOT LOCATED BY SURVEY

APPROX LOCATION OF TELSTRA LINE
NOT LOCATED BY SURVEY

APPROX LOCATION OF WATERMAIN
NOT LOCATED BY SURVEY

M E D O W I E R O A D

M E D O W I E R O A D

ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE

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Web: www.mpceng.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
OVERALL STORMWATER PLAN

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:600	17-828	DA100	+

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

Appendix D

Stormwater Management Plan (Stage 1)

STAGE 1 STORMWATER PLAN SHEET 1

SCALE 1:200

STORMWATER NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3.
2. ALL PIPES TO HAVE A 1% MINIMUM FALL U.N.O.
3. ALL DOWNPIPES (DP) TO BE SPECIFIED BY ARCHITECT. FOR EXACT LOCATION OF DOWNPIPES, REFER TO ARCHITECTURAL DRAWINGS.
4. ALL PIPES TO BE UPVC U.N.O
5. ALL UPVC PIPES TO BE SEWER GRADE AND TO AS1260.
6. ALL REINFORCED CONCRETE PIPES (RCP) TO BE SPIGOT AND SOCKET TYPE WITH RUBBER RINGS CLASS 2 TO AS4058.
7. PITS TO BE CI&D REINFORCED PRE-CAST CONCRETE PITS OR EQUIVALENT PROPRIETARY PITS.
8. ALL LIDS AND GRATES TO BE PROPRIETARY HEAVY DUTY IN AREAS OF VEHICULAR TRAFFIC, LIGHT DUTY ELSEWHERE, IN ACCORDANCE WITH AS3996.
9. MINIMUM COVER TO STORMWATER PIPES TO BE AS FOLLOW U.N.O:
   TRAFFICABLE AREAS - 450mm, LANDSCAPED AREAS - 300mm.
   PIPES TO BE CONCRETE ENCASED IF MINIMUM COVERS CANNOT BE OBTAINED IN TRAFFICABLE AREAS, REFER TO CLAUSE 3.8 AS3500.3.
   ALTERNATIVELY USE UPVC SEWER GRADE PIPES UNDER ROAD AND BUILDINGS.
10. PROVIDE 100ϕ AG DRAINS IN FILTER SOCKS TO ALL LANDSCAPED AREAS, PLANTER BEDS AND STORMWATER PIPE TRENCHES.
    ALL AG DRAINS TO BE BEDDED IN COARSE AGGREGATE AND TO BE CONNECTED TO STORMWATER SYSTEM.
11. ALL PITS, DETENTION TANKS AND PROPRIETARY POLLUTION CONTROL DEVICES TO BE CLEANED OF SEDIMENT AT 3 MONTH MAXIMUM INTERVALS.
12. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF WORK.
13. ANY FOOTPATHS, KERB AND GUTTER OR ROADWAY DISTURBED BY WORKS TO BE REINSTATED TO CURRENT COUNCIL REQUIREMENTS.
14. PROVIDE ACCESS LADDER TO TANK AS REQUIRED, REFER TO AS1657.

LEGEND

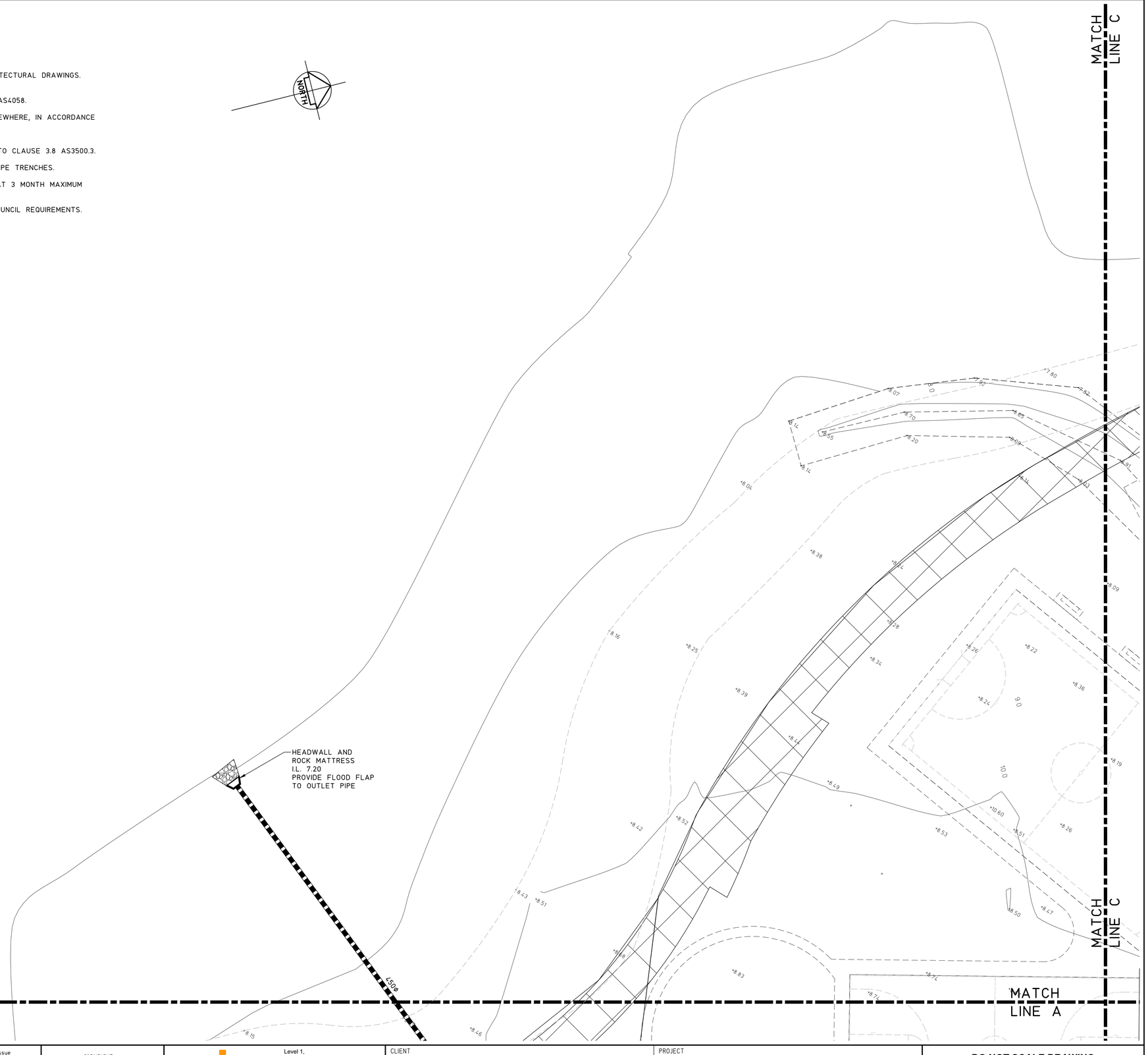
- DENOTES STORMWATER PIPE
- DENOTES EXISTING CONTOUR
- *8.25 DENOTES EXISTING LEVELS
- 9.00 × DENOTES DESIGN SPOT LEVELS
- K1 DENOTES 120 HIGH KERB U.N.O.
- K2 DENOTES ROLLED KERB TO ARCH DETAILS
- K3 DENOTES KERB AND GUTTER
- IR DENOTES INSPECTION RISER LOCATION
- CD1 DENOTES CONCRETE DISH DRAIN
- RW1 DENOTES RETAINING WALL TO ARCH DETAILS
- LRW DENOTES LANDSCAPE RETAINING WALL TO ARCH DETAILS
- DENOTES DIRECTION OF SURFACE FLOWS
- T2 DENOTES 35000 LITRE ABOVE GROUND WATER STORAGE TANK STORING ROOF RAINWATER TO MANUFACTURERS SPECIFICATION. TANK SHALL BE FITTED WITH A FIRST FLUSH SYSTEM, PUMP TO SUPPLY TOILETS AND LAUNDRIES AND A DIVERSION SWITCH TO MAINS SUPPLY ON TANK BEING EMPTY. BACK FLOW PREVENTION TO MAINS WATER SHALL BE PROVIDED. TANK TO OVERFLOW TO STORMWATER SYSTEM.
- 'GP' DENOTES GROSS POLLUTANT TRAP, REFER TO DRAWING C102.08 FOR SCHEDULE

NOTE
ALL CARPARK PITS TO HAVE ECOSOL PIT INSERTS TO CAPTURE HYDROCARBENS PRIOR TO DETENTION AND GPT FOR ADDITIONAL TREATMENT

NOTE
ALL ROOF WATER TO CONNECT TO AT WITH FIRST FLUSH DEVICE TYPICAL

NOTE
ADDITIONAL PITS IN LANDSCAPE AREAS T.B.C. DURING DETAILED DESIGN PHASE

PROVIDE 4000 LITRE SLIMLINE WATER STORAGE TANKS STORING ROOF RAINWATER TO MANUFACTURERS SPECIFICATION TO EACH BLOCK. TANK SHALL BE FITTED WITH A FIRST FLUSH SYSTEM, PUMP TO SUPPLY TOILETS AND LAUNDRIES AND A DIVERSION SWITCH TO MAINS SUPPLY ON TANK BEING EMPTY.
BACK FLOW PREVENTION TO MAINS WATER SHALL BE PROVIDED. TANK TO OVERFLOW TO STORMWATER SYSTEM.
LOCATIONS TO ARCH DETAILS
U.N.O.



ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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Email: admin@mpceng.com.au
Web: www.mpceng.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 1

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

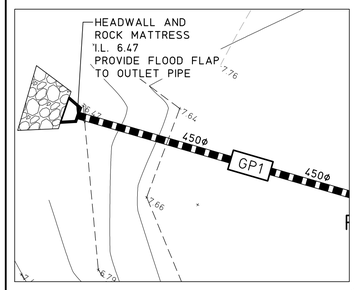
DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.00	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 2

SCALE 1:200

STORMWATER NOTES
1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE



MATCH LINE A

MATCH LINE A

MATCH LINE C

MATCH LINE C

MATCH LINE B

MATCH LINE B

NORTH

ATLANTIS CELL 1
VOLUME = 400m³

P1/27
P8/3
P1/26
P7/3
P2/1
P1/1
P3/1
P4/1
P5/1
P5/2
P4/2
P3/2
P2/2
P1/2
P6/3
P5/3
P4/3
P3/3
P2/3
P13/11
P12/11

GP2

RW1

T1

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

DATE OF RELEASE | RESPONSIBLE PRINCIPAL SIGNATURE | ISSUE

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 2

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.01	5+

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 3

SCALE 1:200

STORMWATER NOTES
1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE

MATCH LINE B

MATCH LINE B

MATCH LINE C

MATCH LINE C

NORTH

EARLY LEARNING
FFL 9.30

P1/2

P2/3

P1/3

P11/11

P1/28

P11/4

P1/9

P2/9

P1/8

P1/7

P6/4

P5/4

P1/29

P8/4

P9/4

P1/30

P10/4

P7/4

P2/10

P1/10

P5/5

P4/5

ATLANTIS CELL 2
VOLUME = 220m³

HEADWALL AND
ROCK MATTRESS
I.L. 7.20
PROVIDE FLOOD FLAP
TO OUTLET PIPE

PROVIDE CULVERT WITH
PROPRIETARY HEADWALLS
AT BOTH SIDES
REFER TO DETAILS

AG LINE FROM BIOSWALE TO
DIVERT TO EXISTING SWALE

CENTRE OF DRAIN
EARTHEN DIVERSION

LOCATION AND EXISTING
LEVELS TO BE CONFIRMED
PRIOR TO CONSTRUCTION
OF PROPOSED CULVERT

EXISTING EASEMENT

EXISTING EASEMENT

SPILL WAY

APPROX LOCATION OF TELSTRA LINE
(NOT LOCATED BY SURVEY)

APPROX LOCATION OF WATERMAIN
(NOT LOCATED BY SURVEY)

EDGE OF BITUMEN

DRAIN

M E D O W I E R O A D

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
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2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 3

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.02	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 4

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE

NOTE
PROVIDE 175Φ ORIFICE TO PITS P1/24, P2/24, P1/25, P2/25, REFER TO DRAWING C102.50 FOR "ORIFICE PLATE 3 ELEVATION"

NORTH

MATCH LINE C

MATCH LINE D

MATCH LINE A

HEADWALL AND ROCK MATTRESS I.L. T.B.C. BASED ON ADDITIONAL SURVEY

HEADWALL AND ROCK MATTRESS I.L. T.B.C. BASED ON ADDITIONAL SURVEY

1 IN 3 MAX BATTER

SPILLWAY RL = 8.60

DETENTION POND 1
VOLUME = 990m³

P3/24
2×300Φ
300Φ
HEADWALL I.L. 7.60

P3/25
2×300Φ
300Φ
HEADWALL I.L. 7.60

P1/24
P2/24
P1/25
P2/25
225Φ

HEADWALL I.L. 7.60

HEADWALL I.L. 7.60

P13/15
2×630Φ
GP5

P18/11
630Φ
GP4

P17/11
630Φ
560Φ

P12/15
2×630Φ

450Φ

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
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1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 4

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.03	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

MATCH LINE A

MATCH LINE C

MATCH LINE D

MATCH LINE B

P16/11

P15/11

P14/11

P13/11

P12/15

P11/15

P10/15

P9/15

P8/15

P7/15

P6/15

P5/15

P5/18

P4/16

P3/17

P2

P1/23

560ø

2×630ø

2×560ø

2×500ø

2×450ø

2×375ø

300ø

225ø

T2

225ø OVERFLOW PIPE

DOWNPIPE CONNECTION

RE-USE PIPE FOR TOILETS AND LAUNDRIES TO HYDRAULIC ENGINEERS SPECIFICATIONS AND DETAILS

HS BLOCK A
FFL 9.50

NORTH

STAGE 1 STORMWATER PLAN SHEET 5

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 5

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.04	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 6

STORMWATER NOTES
1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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Web: www.mpceng.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 6

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.05	5

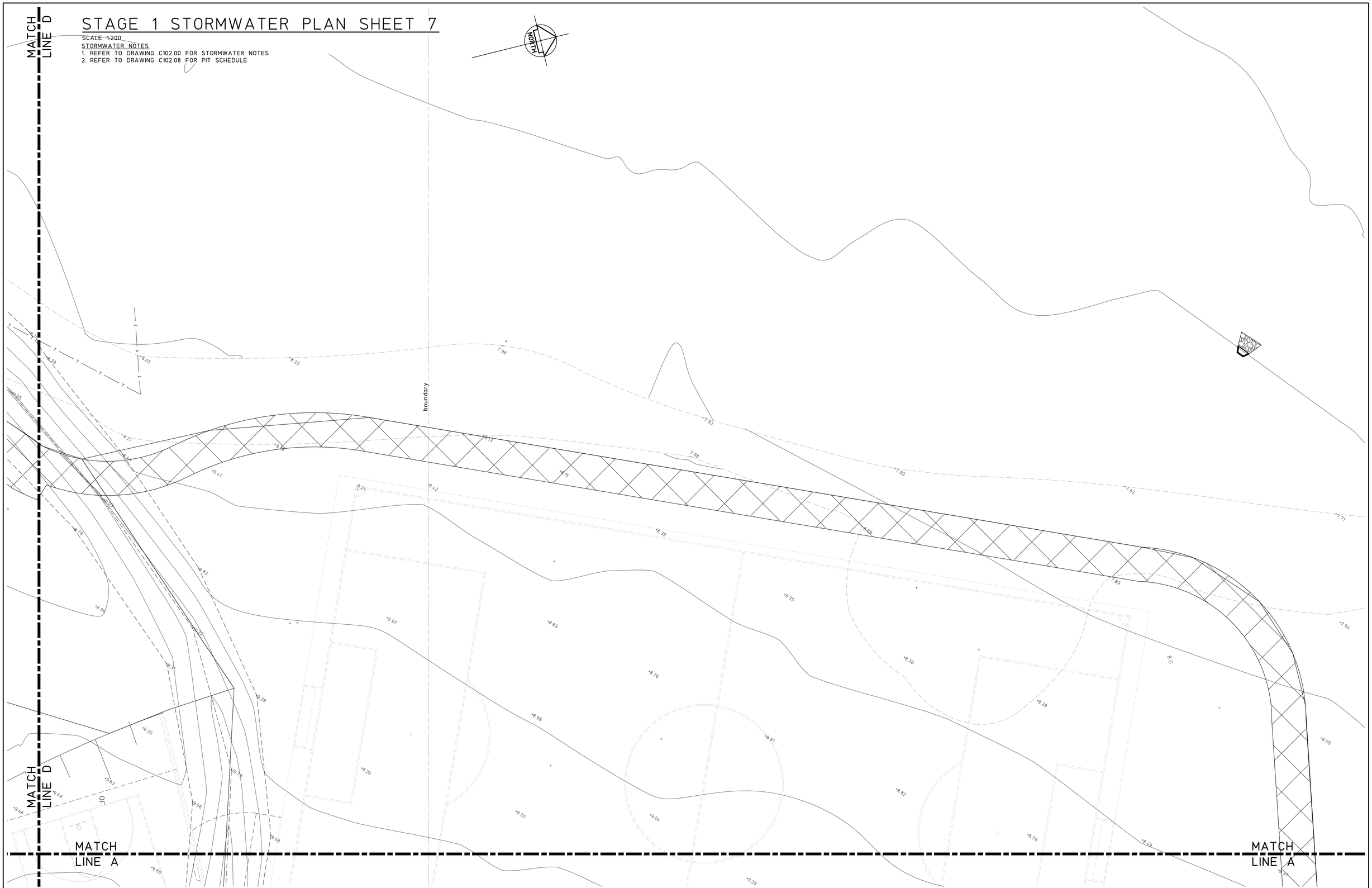
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 7

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE



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0	60% COORDINATION	10.8.18

DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 7

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.06	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 STORMWATER PLAN SHEET 8

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES
2. REFER TO DRAWING C102.08 FOR PIT SCHEDULE

MATCH LINE A

MATCH LINE A

MATCH LINE D

MATCH LINE C

MATCH LINE B

NORTH

LOT 413
DP 1063902

P1/21

P2/21

P2/22

P1/22

225ø

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
4	FINAL CO-ORDINATION	14.10.19
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CLIENT
CATHOLIC SCHOOLS OFFICE

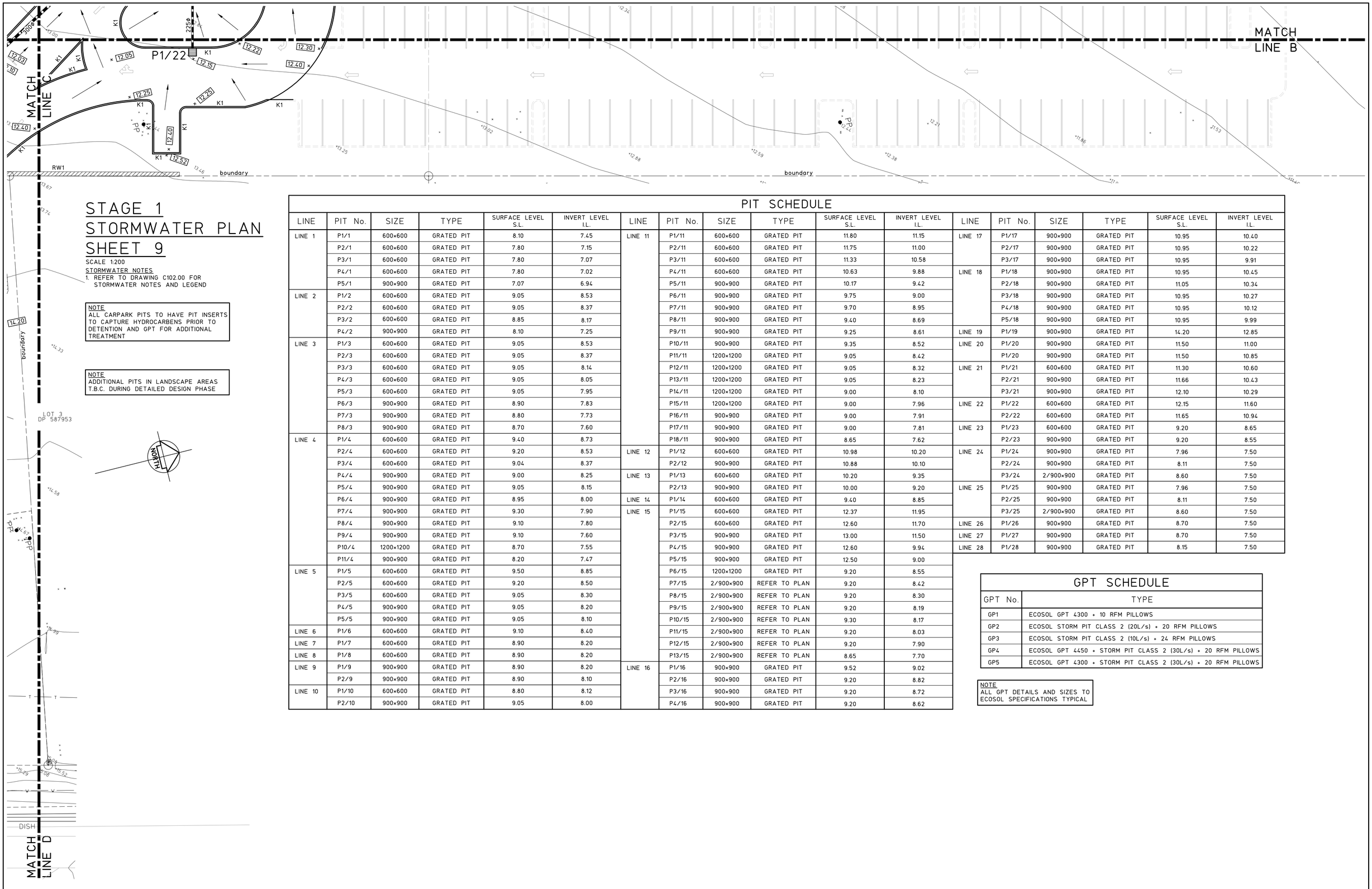
TITLE
STAGE 1 STORMWATER PLAN
SHEET 8

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.07	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



STAGE 1 STORMWATER PLAN SHEET 9

SCALE 1:200

STORMWATER NOTES
1. REFER TO DRAWING C102.00 FOR STORMWATER NOTES AND LEGEND

NOTE
ALL CARPARK PITS TO HAVE PIT INSERTS TO CAPTURE HYDROCARBENS PRIOR TO DETENTION AND GPT FOR ADDITIONAL TREATMENT

NOTE
ADDITIONAL PITS IN LANDSCAPE AREAS T.B.C. DURING DETAILED DESIGN PHASE

PIT SCHEDULE

LINE	PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
LINE 1	P1/1	600×600	GRATED PIT	8.10	7.45
	P2/1	600×600	GRATED PIT	7.80	7.15
	P3/1	600×600	GRATED PIT	7.80	7.07
	P4/1	600×600	GRATED PIT	7.80	7.02
	P5/1	900×900	GRATED PIT	7.07	6.94
LINE 2	P1/2	600×600	GRATED PIT	9.05	8.53
	P2/2	600×600	GRATED PIT	9.05	8.37
	P3/2	600×600	GRATED PIT	8.85	8.17
	P4/2	900×900	GRATED PIT	8.10	7.25
LINE 3	P1/3	600×600	GRATED PIT	9.05	8.53
	P2/3	600×600	GRATED PIT	9.05	8.37
	P3/3	600×600	GRATED PIT	9.05	8.14
	P4/3	600×600	GRATED PIT	9.05	8.05
	P5/3	600×600	GRATED PIT	9.05	7.95
	P6/3	900×900	GRATED PIT	8.90	7.83
	P7/3	900×900	GRATED PIT	8.80	7.73
	P8/3	900×900	GRATED PIT	8.70	7.60
LINE 4	P1/4	600×600	GRATED PIT	9.40	8.73
	P2/4	600×600	GRATED PIT	9.20	8.53
	P3/4	600×600	GRATED PIT	9.04	8.37
	P4/4	900×900	GRATED PIT	9.00	8.25
	P5/4	900×900	GRATED PIT	9.05	8.15
	P6/4	900×900	GRATED PIT	8.95	8.00
	P7/4	900×900	GRATED PIT	9.30	7.90
	P8/4	900×900	GRATED PIT	9.10	7.80
	P9/4	900×900	GRATED PIT	9.10	7.60
	P10/4	1200×1200	GRATED PIT	8.70	7.55
	P11/4	900×900	GRATED PIT	8.20	7.47
LINE 5	P1/5	600×600	GRATED PIT	9.50	8.85
	P2/5	600×600	GRATED PIT	9.20	8.50
	P3/5	600×600	GRATED PIT	9.05	8.30
	P4/5	900×900	GRATED PIT	9.05	8.20
	P5/5	900×900	GRATED PIT	9.05	8.10
LINE 6	P1/6	600×600	GRATED PIT	9.10	8.40
LINE 7	P1/7	600×600	GRATED PIT	8.90	8.20
LINE 8	P1/8	600×600	GRATED PIT	8.90	8.20
LINE 9	P1/9	900×900	GRATED PIT	8.90	8.20
	P2/9	900×900	GRATED PIT	8.90	8.10
LINE 10	P1/10	600×600	GRATED PIT	8.80	8.12
	P2/10	900×900	GRATED PIT	9.05	8.00
LINE 11	P1/11	600×600	GRATED PIT	11.80	11.15
	P2/11	600×600	GRATED PIT	11.75	11.00
	P3/11	600×600	GRATED PIT	11.33	10.58
	P4/11	600×600	GRATED PIT	10.63	9.88
	P5/11	900×900	GRATED PIT	10.17	9.42
	P6/11	900×900	GRATED PIT	9.75	9.00
	P7/11	900×900	GRATED PIT	9.70	8.95
	P8/11	900×900	GRATED PIT	9.40	8.69
	P9/11	900×900	GRATED PIT	9.25	8.61
	P10/11	900×900	GRATED PIT	9.35	8.52
	P11/11	1200×1200	GRATED PIT	9.05	8.42
	P12/11	1200×1200	GRATED PIT	9.05	8.32
	P13/11	1200×1200	GRATED PIT	9.05	8.23
	P14/11	1200×1200	GRATED PIT	9.00	8.10
	P15/11	1200×1200	GRATED PIT	9.00	7.96
	P16/11	900×900	GRATED PIT	9.00	7.91
	P17/11	900×900	GRATED PIT	9.00	7.81
	P18/11	900×900	GRATED PIT	8.65	7.62
LINE 12	P1/12	600×600	GRATED PIT	10.98	10.20
	P2/12	900×900	GRATED PIT	10.88	10.10
LINE 13	P1/13	600×600	GRATED PIT	10.20	9.35
	P2/13	900×900	GRATED PIT	10.00	9.20
LINE 14	P1/14	600×600	GRATED PIT	9.40	8.85
LINE 15	P1/15	600×600	GRATED PIT	12.37	11.95
	P2/15	600×600	GRATED PIT	12.60	11.70
	P3/15	900×900	GRATED PIT	13.00	11.50
	P4/15	900×900	GRATED PIT	12.60	9.94
	P5/15	900×900	GRATED PIT	12.50	9.00
	P6/15	1200×1200	GRATED PIT	9.20	8.55
	P7/15	2/900×900	REFER TO PLAN	9.20	8.42
	P8/15	2/900×900	REFER TO PLAN	9.20	8.30
	P9/15	2/900×900	REFER TO PLAN	9.20	8.19
	P10/15	2/900×900	REFER TO PLAN	9.30	8.17
	P11/15	2/900×900	REFER TO PLAN	9.20	8.03
	P12/15	2/900×900	REFER TO PLAN	9.20	7.90
	P13/15	2/900×900	REFER TO PLAN	8.65	7.70
LINE 16	P1/16	900×900	GRATED PIT	9.52	9.02
	P2/16	900×900	GRATED PIT	9.20	8.82
	P3/16	900×900	GRATED PIT	9.20	8.72
	P4/16	900×900	GRATED PIT	9.20	8.62
LINE 17	P1/17	900×900	GRATED PIT	10.95	10.40
	P2/17	900×900	GRATED PIT	10.95	10.22
	P3/17	900×900	GRATED PIT	10.95	9.91
LINE 18	P1/18	900×900	GRATED PIT	10.95	10.45
	P2/18	900×900	GRATED PIT	11.05	10.34
	P3/18	900×900	GRATED PIT	10.95	10.27
	P4/18	900×900	GRATED PIT	10.95	10.12
	P5/18	900×900	GRATED PIT	10.95	9.99
LINE 19	P1/19	900×900	GRATED PIT	14.20	12.85
LINE 20	P1/20	900×900	GRATED PIT	11.50	11.00
	P1/20	900×900	GRATED PIT	11.50	10.85
LINE 21	P1/21	600×600	GRATED PIT	11.30	10.60
	P2/21	900×900	GRATED PIT	11.66	10.43
	P3/21	900×900	GRATED PIT	12.10	10.29
LINE 22	P1/22	600×600	GRATED PIT	12.15	11.60
	P2/22	600×600	GRATED PIT	11.65	10.94
LINE 23	P1/23	600×600	GRATED PIT	9.20	8.65
	P2/23	900×900	GRATED PIT	9.20	8.55
LINE 24	P1/24	900×900	GRATED PIT	7.96	7.50
	P2/24	900×900	GRATED PIT	8.11	7.50
	P3/24	2/900×900	GRATED PIT	8.60	7.50
LINE 25	P1/25	900×900	GRATED PIT	7.96	7.50
	P2/25	900×900	GRATED PIT	8.11	7.50
	P3/25	2/900×900	GRATED PIT	8.60	7.50
LINE 26	P1/26	900×900	GRATED PIT	8.70	7.50
LINE 27	P1/27	900×900	GRATED PIT	8.70	7.50
LINE 28	P1/28	900×900	GRATED PIT	8.15	7.50

GPT SCHEDULE

GPT No.	TYPE
GP1	ECOSOL GPT 4300 + 10 RFM PILLOWS
GP2	ECOSOL STORM PIT CLASS 2 (20L/s) + 20 RFM PILLOWS
GP3	ECOSOL STORM PIT CLASS 2 (10L/s) + 24 RFM PILLOWS
GP4	ECOSOL GPT 4450 + STORM PIT CLASS 2 (30L/s) + 20 RFM PILLOWS
GP5	ECOSOL GPT 4300 + STORM PIT CLASS 2 (30L/s) + 20 RFM PILLOWS

NOTE
ALL GPT DETAILS AND SIZES TO ECOSOL SPECIFICATIONS TYPICAL

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER PLAN
SHEET 9

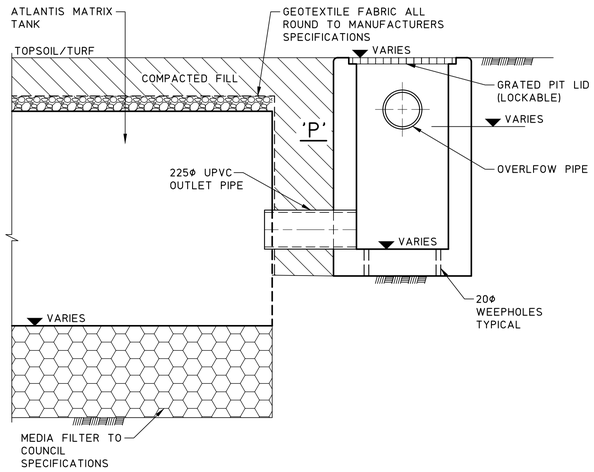
PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102.08	5

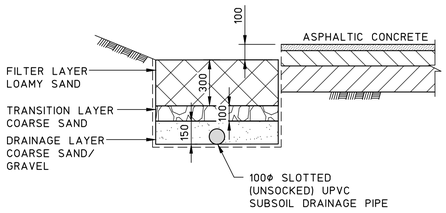
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

NOTE
PROVIDE 500 MIN OF COMPACTED FILL AROUND ATLANTIS MATRIX TANK TYPICAL

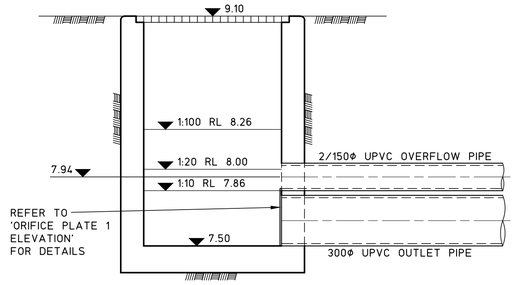


TYPICAL ATLANTIS MATRIX TANK DETAIL
SCALE 1:20

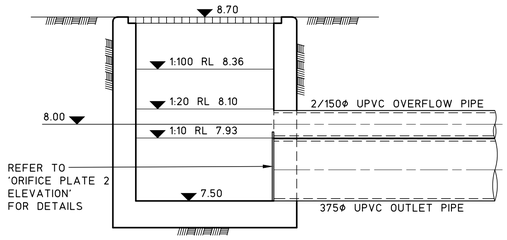
ATLANTIS MATRIX TANK NOTES
1. TRENCHING SHALL BE CLEAR OF STRUCTURAL FOUNDATIONS WITHIN THE RANGE OF 1m (MIN.) IN CLEAN SAND AND 5m (MIN.) IN CLAY.
2. THE TRENCHING SHALL BE PLACED LEVEL ALONG THE CONTOUR OF THE NATURAL OR FINISHED SURFACE.
3. THE TRENCHING SHALL BE PLACED WITHIN THE PROPERTY TO ACHIEVE MAX. AREA, SLOPING AWAY FROM THE TRENCH, FOR DISPOSAL OF WATER.
4. IT IS THE OWNERS RESPONSIBILITY TO REGULARLY CLEAN THE PIT AND MAINTAIN THE SYSTEM.
5. PROVIDE 150Φ INSPECTION POINTS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION



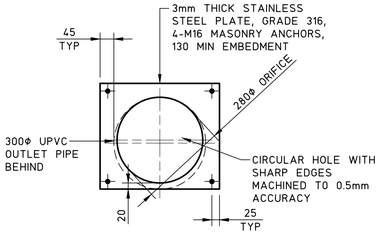
BIOSWALE BS1 DETAILS
SCALE 1:20



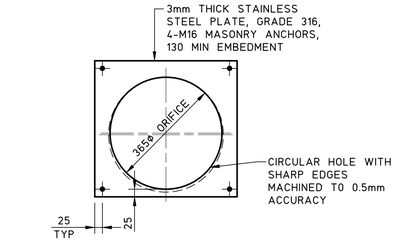
PIT P1/30 DETAIL
SCALE 1:20



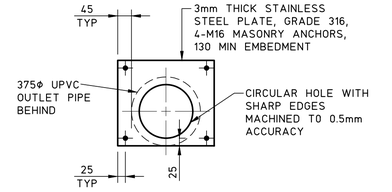
PIT P1/26 DETAIL
SCALE 1:20



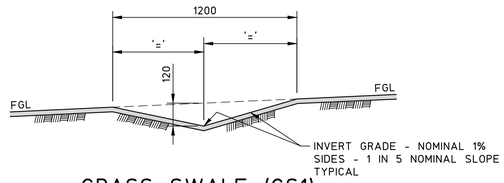
ORIFICE PLATE 1 ELEVATION
SCALE 1:10



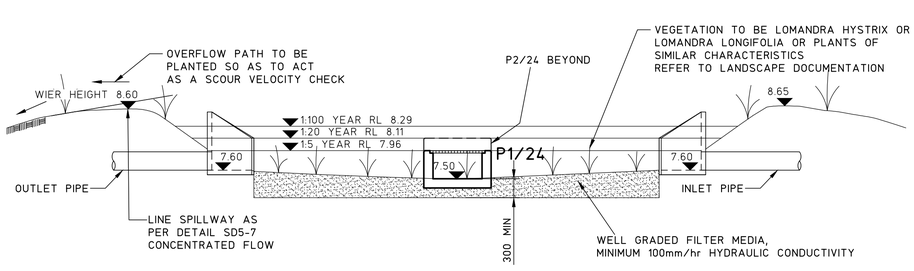
ORIFICE PLATE 2 ELEVATION
SCALE 1:10



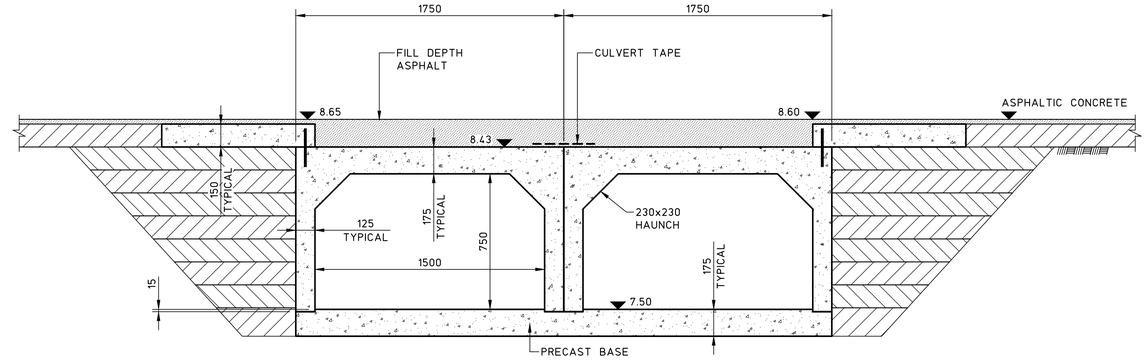
ORIFICE PLATE 3 ELEVATION
SCALE 1:10



GRASS SWALE (GS1)
SCALE 1:20



TYPICAL DETENTION POND DETAIL
SCALE 1:50



TYPICAL CULVERT DETAIL
SCALE 1:20

ISSUE	REASON FOR ISSUE	DATE
5	CONSTRUCTION CERTIFICATE	22.10.19
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 STORMWATER DETAILS

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:50, 20	17-828	C102.50	5

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

Appendix E

Stormwater Management Plan (Stage 2)

MATCH LINE E

MATCH LINE E

P10/1

P9/1

P8/1

P1/4

P4/2

P7/1

P6/1

P3/2

P5/1

P2/2

P1/2

P4/1

P1/3

P3/1

P2/1

P1/1

HS BLOCK D
FFL 11.78

HS BLOCK C
FFL 12.80

STAGE OUTLINE TYPICAL

STAGE 1
STAGE 2

200 WIDE, 200 MIN DEEP GRATED DRAIN TO CONNECT TO PIT (P3/2)

200 WIDE, 200 MIN DEEP GRATED DRAIN TO CONNECT TO PIT (P2/2)

150 WIDE, 100 MIN DEEP GRATED DRAINS

NOTE
BUILDER TO ENSURE AG LINES ARE INSTALLED IN ACCORDANCE WITH MPC'S NOTES ON C202.01 AND DETAILS ON S30.11

REFER TO HYDRAULIC ENGINEERS DRAWINGS FOR DOWNPIPE CONNECTION, LOCATION AND TANK RE-USE

T1

HEADWALL
I.L. 10.00

HATCHING DENOTES SCOUR PROTECTION

HATCHING DENOTES LEVEL SPREADER, RL 10.30

FUTURE CARPARK

boundary

STAGE 2 STORMWATER PLAN SHEET 1

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C102.01 FOR STORMWATER NOTES

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 2 STORMWATER PLAN
SHEET 1

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C202.00	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 2 STORMWATER PLAN
SHEET 2

SCALE 1:200

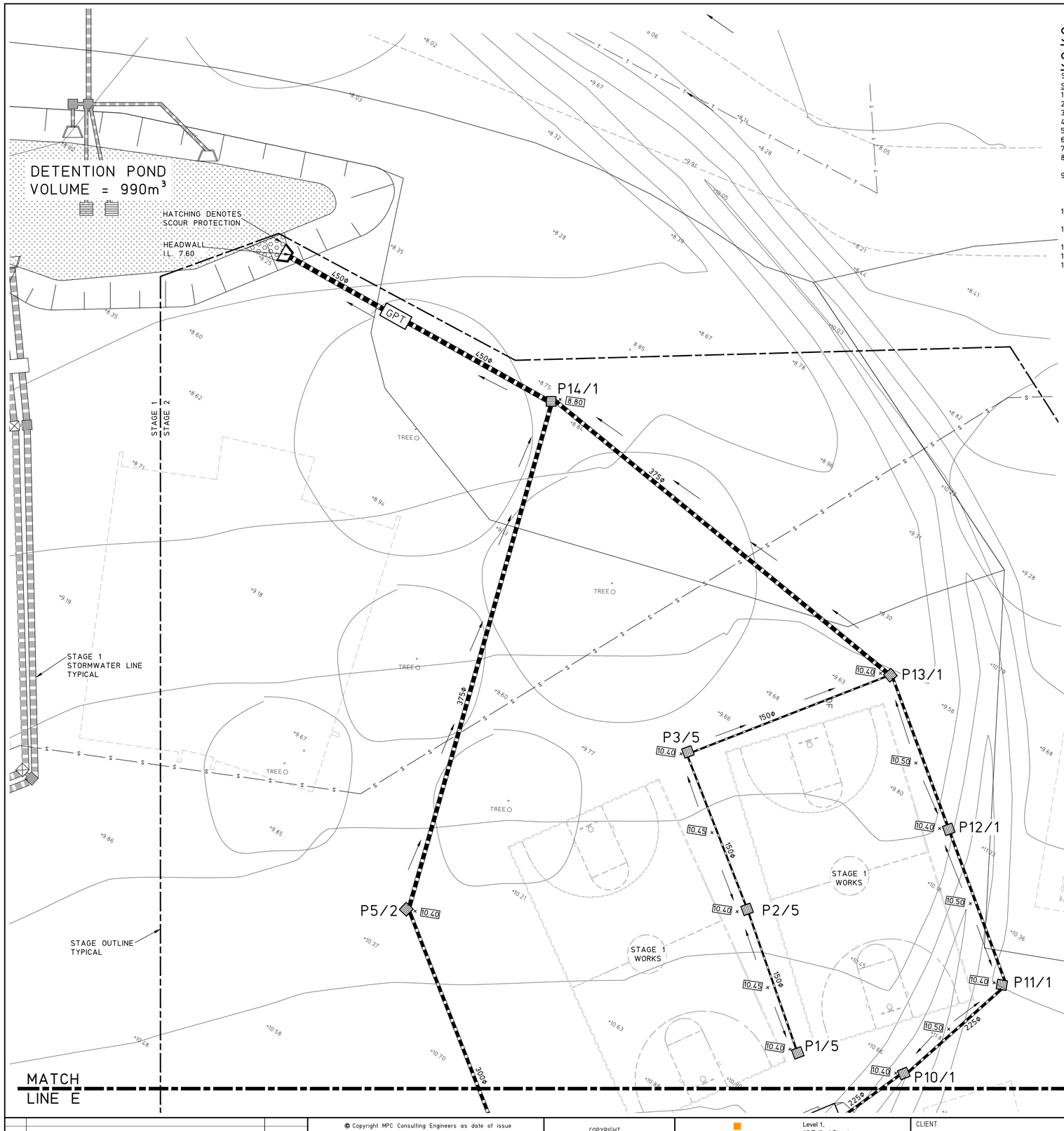
STORMWATER NOTES

1. ALL WORKS TO BE IN ACCORDANCE WITH AS3500.3.
2. ALL PIPES TO HAVE A 1% MINIMUM FALL U.N.O.
3. ALL DOWNPIPES (DP) TO BE SPECIFIED BY ARCHITECT. FOR EXACT LOCATION OF DOWNPIPES, REFER TO ARCHITECTURAL DRAWINGS.
4. ALL PIPES TO BE UPVC U.N.O
5. ALL UPVC PIPES TO BE SEWER GRADE AND TO AS1260.
6. ALL REINFORCED CONCRETE PIPES (RCP) TO BE SPIGOT AND SOCKET TYPE WITH RUBBER RINGS CLASS 2 TO AS4058.
7. PITS TO BE CI&D REINFORCED PRE-CAST CONCRETE PITS OR EQUIVALENT PROPRIETARY PITS.
8. ALL LIDS AND GRATES TO BE PROPRIETARY HEAVY DUTY IN AREAS OF VEHICULAR TRAFFIC, LIGHT DUTY ELSEWHERE, IN ACCORDANCE WITH AS3996.
9. MINIMUM COVER TO STORMWATER PIPES TO BE AS FOLLOW U.N.O:
   TRAFFICABLE AREAS - 450mm, LANDSCAPED AREAS - 300mm.
   PIPES TO BE CONCRETE ENCASED IF MINIMUM COVERS CANNOT BE OBTAINED IN TRAFFICABLE AREAS, REFER TO CLAUSE 3.8 AS3500.3.
   ALTERNATIVELY USE UPVC SEWER GRADE PIPES UNDER ROAD AND BUILDINGS.
10. PROVIDE 100Φ AG DRAINS IN FILTER SOCKS TO ALL LANDSCAPED AREAS, PLANTER BEDS AND STORMWATER PIPE TRENCHES.
    ALL AG DRAINS TO BE BEDDED IN COARSE AGGREGATE AND TO BE CONNECTED TO STORMWATER SYSTEM.
11. ALL PITS, DETENTION TANKS AND PROPRIETARY POLLUTION CONTROL DEVICES TO BE CLEANED OF SEDIMENT AT 3 MONTH MAXIMUM INTERVALS.
12. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF WORK.
13. ANY FOOTPATHS, KERB AND GUTTER OR ROADWAY DISTURBED BY WORKS TO BE REINSTATED TO CURRENT COUNCIL REQUIREMENTS.
14. PROVIDE ACCESS LADDER TO TANK AS REQUIRED, REFER TO AS1657.

NOTE
BUILDER TO PROVIDE ADEQUATE SHORING IN ORDER TO MAINTAIN STABILITY OF EXISTING NEIGHBOURING STRUCTURES AND FENCES DURING EXCAVATION WORKS TYPICAL

NOTE
SETOUT AND ALIGNMENT OF WALLS TO BOUNDARY TO ARCHITECTS DETAILS TYPICAL

NOTE
ALL SETOUT, DIMENSIONS AND RL's TO ARCHITECTS SPECIFICATION & DETAILS



LEGEND

	DENOTES STORMWATER PIPE
	DENOTES EXISTING CONTOUR
*8.25	DENOTES EXISTING LEVELS
9.00 ×	DENOTES DESIGN SPOT LEVELS
'RW'	DENOTES RETAINING WALL, REFER TO DRAWING S30.01 FOR DETAILS
	DENOTES DIRECTION OF SURFACE FLOWS
HOB	DENOTES 200 HIGH HOB, REFER TO DETAIL
GPT	DENOTES GROSS POLLUTANT TRAP
T1	DENOTES 30000 LITRE SLIMLINE WATER STORAGE TANK STORING ROOF RAINWATER TO MANUFACTURERS SPECIFICATION. TANK SHALL BE FITTED WITH A FIRST FLUSH SYSTEM, PUMP TO SUPPLY TOILETS AND LAUNDRY AND A DIVERSION SWITCH TO MAINS SUPPLY ON TANK BEING EMPTY. BACK FLOW PREVENTION TO MAINS WATER SHALL BE PROVIDED. TANK TO OVERFLOW TO STORMWATER SYSTEM.

PIT SCHEDULE

PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
P1/1	600×600	GRATED PIT	11.70	11.25
P2/1	600×600	GRATED PIT	11.80	11.13
P3/1	600×600	GRATED PIT	11.60	11.03
P4/1	600×600	GRATED PIT	11.60	10.93
P5/1	600×600	GRATED PIT	11.60	10.90
P6/1	600×600	GRATED PIT	11.60	10.60
P7/1	600×600	GRATED PIT	10.45	10.00
P8/1	600×600	GRATED PIT	10.45	9.90
P9/1	900×900	GRATED PIT	10.40	9.80
P10/1	900×900	GRATED PIT	10.40	9.70
P11/1	900×900	GRATED PIT	10.40	9.50
P12/1	900×900	GRATED PIT	10.40	9.35
P13/1	900×900	GRATED PIT	10.40	9.20
P14/1	900×900	GRATED PIT	8.80	8.00
P1/2	600×600	GRATED PIT	11.70	11.25
P2/2	600×600	GRATED PIT	12.15	11.15
P3/2	600×600	GRATED PIT	11.65	11.00
P4/2	600×600	GRATED PIT	11.60	10.90
P5/2	900×900	GRATED PIT	10.40	9.70
P1/3	600×600	GRATED PIT	12.15	11.70
P1/4	600×600	GRATED PIT	11.65	11.20
P1/5	600×600	GRATED PIT	10.40	9.60
P2/5	600×600	GRATED PIT	10.40	9.50
P3/5	600×600	GRATED PIT	10.40	9.40

NOTE
STAGE 1 CONTRACTOR TO INSTALL PIT P11/1 TO P14/1 INCLUDING OUTLET TO BASIN AND HEADWALL AS PART OF STAGE 1 WORKS

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 2 STORMWATER PLAN
SHEET 2

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

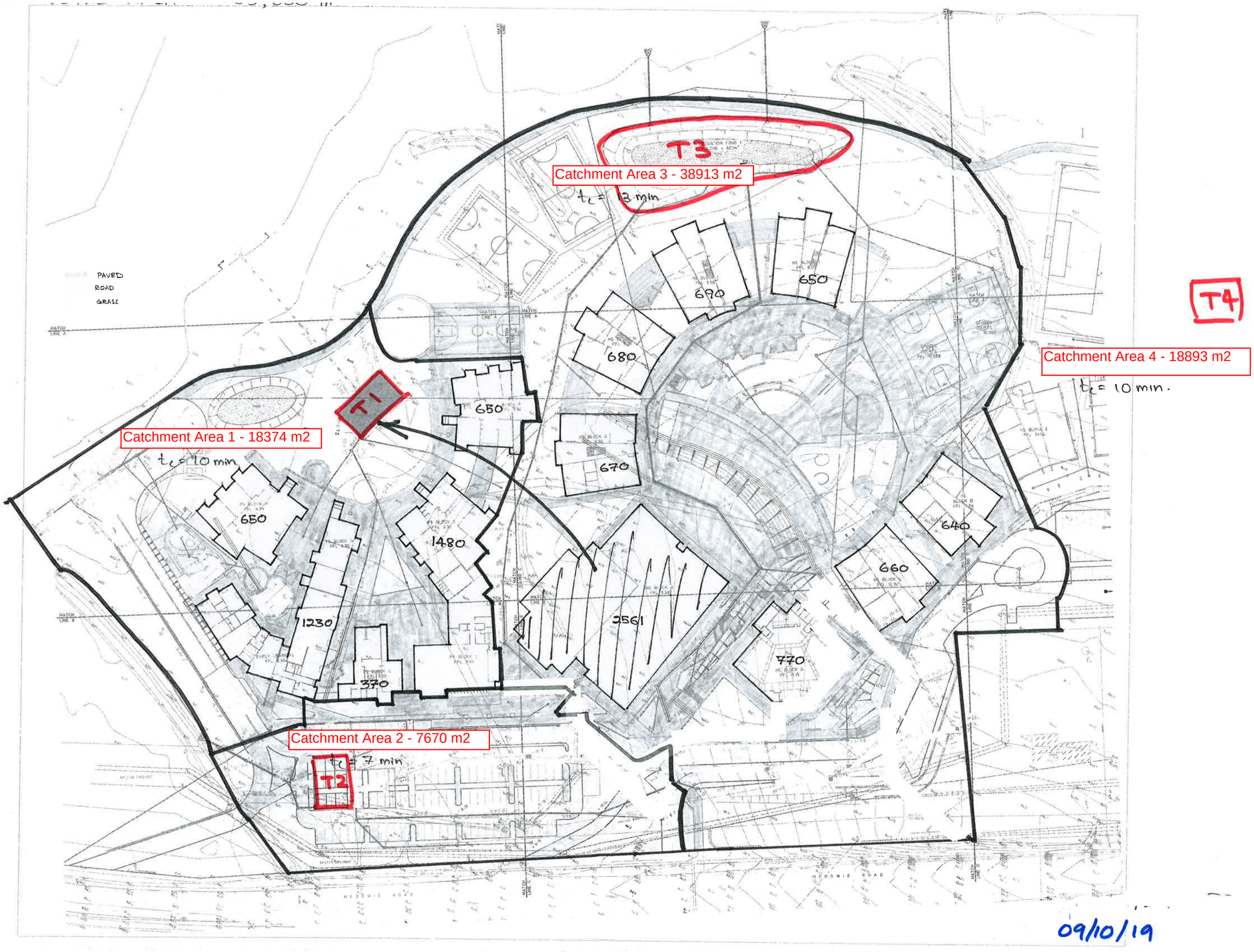
DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C202.01	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

Appendix F

Catchment Areas and Summary of Stormwater Design Intent


T3
Catchment Area 3 - 38913 m2
t_c = 13 min
T4
Catchment Area 4 - 18893 m2
t_c = 10 min.
T1
Catchment Area 1 - 18374 m2
t_c = 10 min
T2
Catchment Area 2 - 7670 m2
t_c = 7 min
PAVED
ROAD
GRASS
650
690
650
680
650
670
1480
640
660
1230
2561
770
370
MEDOWIE ROAD
09/10/19

Appendix G

Erosion and Sediment Control Plan (Stage 1)

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 1

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. SELECTIVE CLEARING OF VEGETATION TO BE RESTRICTED TO NOMINATED AREAS WITH CLEARED VEGETATION WIND ROWED ON THE CONTOUR.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO SITE DISTURBANCE.
3. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE.
4. NO MORE THAN 150m OF TRENCH TO BE OPEN AT ANY ONE TIME.
5. CUT AND FILL BATTER GRADIENTS OF 1:2 (MAXIMUM).
6. A STRIP OF TURF 450mm WIDE IS TO BE PLACED IMMEDIATELY BEHIND THE KERB ON ALL NEW ROAD TO ACT AS A FILTER TRAP. REFER TO DETAIL SD6-13.
7. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED BY SITE SUPERVISOR AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED STOCKPILE SITE.
8. THE PROJECT MANAGER TO INFORM ALL CONTRACTORS AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
9. NO DISTURBED AREA IS TO REMAIN DENUDED LONGER THAN 14 DAYS.
10. ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S OPERATION.
11. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAY'S WORK.
12. ORANGE BARRIER TAPE TO BE AFFIXED TO TOP OF SEDIMENT CONTROL BARRIER TO IDENTIFY WORK AREA.
13. ALL SEDIMENTATION & EROSION CONTROL MEASURES ARE TO STRICTLY COMPLY WITH THE GUIDELINES DETAILED IN THE DEPARTMENT OF HOUSING PUBLICATION, "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", 4TH EDITION.
14. WATER TRUCKS TO BE USED AS REQUIRED TO PREVENT WIND EROSION.
15. SUBGRADE MATERIAL TO BE CONSTRUCTED IMMEDIATELY FOLLOWING FILL.

LEGEND

- DENOTES ALLOWABLE AREA FOR TEMPORARY STOCKPILING OF CUT SOIL MATERIAL, REFER TO DETAIL SD4-1
- DENOTES ROCK CHECK DAM, REFER TO DETAIL SD5-4
- DENOTES EARTH BANK (LOW FLOW), REFER TO DETAIL SD5-5
- POND 1 — DENOTES SEDIMENT POND, 374m³ SETTLING ZONE, 187m³ SEDIMENT STORAGE, REFER TO DETAIL SD6-4
- POND 2 — DENOTES SEDIMENT POND, 567m³ SETTLING ZONE, 283m³ SEDIMENT STORAGE, REFER TO DETAIL SD6-4
- DENOTES STRAW BALE FILTER, REFER TO DETAIL SD6-7
- DENOTES SEDIMENT FENCE, REFER TO DETAIL SD6-8
- DENOTES MESH AND GRAVEL INLET FILTER, REFER TO DETAIL SD6-11
- DENOTES GEOTEXTILE INLET FILTER, REFER TO DETAIL SD6-12
- DENOTES STABILISED SITE ACCESS, REFER TO DETAIL SD6-14
- DENOTES LEVEL SPREADER

NORTH

EROSION AND SEDIMENTATION CONTROL NOTES:

The following notes may not be relevant to each development.

GENERAL

1 ESCP refers to Erosion and Sediment Control Plan or a Soil and Water Management Plan (SWMP).
2 ESC refers to erosion and sediment control.
3 Sediment, includes, but is not limited to, clay, silt, sand, gravel, soil, mud, cement, and ceramic waste.
4 Any reference to the Blue Book refers to Managing Urban Stormwater – Soils and Construction. Landcom, 2004.
5 Any reference to the IECA White Books (2008) refers to IECA 2008. Best Practice Erosion and Sediment Control. Books 1–6.International Erosion Control Association (Australasia). Picton NSW.
6 Any material deposited in any conservation area from works associated with the development shall be removed immediately by measures involving minimal ground and/or vegetation disturbance and no machinery, or following directions by Council and/or within a timeframe advised by Council.

THE ESCP:

7 The ESCP and its associated ESC measures shall be constantly monitored, reviewed, and modified as required to correct deficiencies. Council has the right to direct changes if, in its opinion, the measures that are proposed or have been installed are inadequate to prevent pollution.
8 Prior to any activities onsite, the responsible person(s) is to be nominated. The responsible person(s) shall be responsible for the ESC measures onsite. The name, address and 24 hour contact details of the person(s) shall be provided to Council in writing. Council shall be advised within 48 hours of any changes to the responsible person(s), or their contact details, in writing.
9 At least 14 days before the natural surface is disturbed in any new stage, the contractor shall submit to the Certifier, a plan showing ESC measures for that Stage. The degree of design detail shall be based on the disturbed area.
10 At any time during construction, the ESC measures onsite shall be appropriate for the area of disturbance and its characteristics including soils (in accordance with those required for the site as per DCP).
11 The implementation of the ESCP shall be supervised by personnel with appropriate qualifications and/or experience in ESC on construction sites.
12 The approved ESCP shall be available on-site for inspection by Council officers while work activities are occurring.
13 The approved ESCP shall be up to date and show a timeline of installation, maintenance and removal of ESC measures.
14 All ESC measures shall be appropriate for the Sediment Type(s) of the soils onsite, in accordance with the Blue Book, IECA White Books or other current recognised industry standard for ESC for Australian conditions.
15 Adequate site data, including soil data from a NATA approved Laboratory, shall be obtained to allow the preparation of an appropriate ESCP, and allow the selection, design and specification of required ESC measures.
16 All works shall be carried out in accordance with the approved ESCP (as amended from time to time) unless circumstances arise where:
   a) compliance with the ESCP would increase the potential for environmental harm; or
   b) circumstances change during construction and those circumstances could not have been foreseen; or
   c) Council determines that unacceptable off-site sedimentation is occurring as a result of a land-disturbing activity. In either case, the person(s) responsible may be required to take additional, or alternative protective action, and/or undertake reasonable restoration works within the timeframe specified by the Council.
17 Additional ESC measures shall be implemented, and a revised ESCP submitted for approval to the certifier (within five business days of any such amendments) in the event that:
   a) there is a high probability that serious or material environmental harm may occur as a result of sediment leaving the site; or
   b) the implemented works fail to achieve Council's water quality objectives specified in these conditions; or
   c) site conditions significantly change; or
   d) site inspections indicate that the implemented works are failing to achieve the 'objective' of the ESCP.
18 A copy of any amended ESCP shall be forwarded to an appropriate Council Officer, within five business days of any such amendments.

SITE ESTABLISHMENT INCLUDING CLEARING AND MULCHING

19 No land clearing shall be undertaken unless preceded by the installation of adequate drainage and sediment control measures, unless such clearing is required for the purpose of installing such measures, in which case, only the minimum clearing required to install such measures shall occur.
20 Bulk tree clearing and grubbing of the site shall be immediately followed by specified temporary erosion control measures (e.g. temporary grassing or mulching) prior to commencement of each stage of construction works.
21 Trees and vegetation cleared from the site shall be mulched onsite within 7 days of clearing.
22 Appropriate measures shall be undertaken to control any dust originating due to the mulching of vegetation onsite.
23 All office facilities and operational activities shall be located such that any effluent, including wash-down water, can be totally contained and treated within the site.
24 All reasonable and practicable measures shall be taken to ensure stormwater runoff from access roads and stabilised entry/exit systems, drains to an appropriate sediment control device.
25 Site exit points shall be appropriately managed to minimise the risk of sediment being tracked onto sealed, public roadways.
26 Stormwater runoff from access roads and stabilised entry/exit points shall drain to an appropriate sediment control device.
27 The Applicant shall ensure an adequate supply of ESC, and appropriate pollution clean-up materials are available on-site at all times.
28 All temporary earth banks, flow diversion systems, and sediment basin embankments shall be mechine–compacted, seeded and mulched within ten (10) days of formation for the purpose of establishing a vegetative cover, or lined appropriately.
29 Sediment deposited off site as a result of on-site activities shall be collected and the area cleaned/rehabilitated as soon as reasonable and practicable.
30 Concrete waste and chemical products, including petroleum and oil–based products, shall be prevented from entering any internal or external water body, or any external drainage system, excluding those on-site water bodies specifically designed to contain and/or treat such material. Appropriate measures shall be installed to trap these materials onsite.
31 Brick, tile or masonry cutting shall be carried out on a pervious surface (e.g. grass or open soil) and in such a manner that any resulting sediment–laden runoff is prevented from discharging into a gutter, drain or water. Appropriate measures shall be installed to trap these materials onsite.
32 Newly sealed hard–stand areas (e.g. roads, driveways and car parks) shall be swept thoroughly as soon as practicable after sealing/surfacing to minimise the risk of components of the surfacing compound entering stormwater drains.
33 Stockpiles of erodible material shall be provided with an appropriate protective cover (synthetic or organic) if the materials are likely to be stockpiled for more than 10 days.
34 Stockpiles, temporary or permanent, shall not be located in areas identified as no–go zones (including, but not limited to, restricted access areas, buffer zones, or areas of non–disturbance) on the ESCP.
35 No more than 150m of a stormwater, sewer line or other service trench shall to be open at any one time.
36 Site spoil shall be lawfully disposed of in a manner that does not result in ongoing soil erosion or environmental harm.
37 Wherever reasonable and practicable, stormwater runoff entering the site from external areas, and non–sediment laden (clean) stormwater runoff entering a work area or area of soil disturbance, shall be diverted around or through that area in a manner that minimises soil erosion and the contamination of that water for all discharges up to the specified design storm discharge.

SITE MANAGEMENT INCLUDING DUST

38 Priority shall be given to the prevention, or at least the minimisation, of soil erosion, rather than the trapping of displaced sediment. Such a clause shall not reduce the responsibility to apply and maintain, at all times, all necessary ESC measures.
39 Measures used to control wind erosion shall be appropriate for the location and prevent soil erosion at all times, including working hours, out of hours, weekends, public holidays, and during any other shutdown periods.
40 The application of liquid or chemical–based dust suppression measures shall ensure that sediment–laden runoff resulting from such measures does not create a traffic or environmental hazard.
41 All cut and fill earth batters less than 3m in elevation shall be topsoiled, and grass seeded/hydromulched within 10 days of completion of grading in consultation with Council.
42 Once cut/fill operations have been finalised in a section, all disturbed areas that are not being worked on shall be stabilised in accordance with time lines in the Blue Book.
43 All reasonable and practicable measures shall be taken to prevent, or at least minimise, the release of sediment from the site.
44 Suitable all–weather maintenance access shall be provided to all sediment control devices.
45 Sediment control devices, other than sediment basins, shall be de–silted and made fully operational as soon as reasonable and practicable after a sediment–producing event, whether natural or artificial, if the device's sediment retention capacity falls below 75% of its design retention capacity.
46 All erosion and sediment control measures, including drainage control measures, shall be maintained in proper working order at all times during their operational lives.
47 Washing/flushing of sealed roadways shall only occur where sweeping has failed to remove sufficient sediment and there is a compelling need to remove the remaining sediment (e.g. for safety reasons). In such circumstances, all reasonable and practicable sediment control measures shall be used to prevent, or at least minimise, the release of sediment into receiving waters. Only those measures that will not cause safety and property flooding issues shall be employed. Sediment removed from roadways shall be disposed of in a lawful manner that does not cause ongoing soil erosion or environmental harm.
48 Sediment removed from sediment traps and places of sediment deposition shall be disposed of in a lawful manner that does not cause ongoing soil erosion or environmental harm.

SEDIMENT BASINS – INSTALLATION, MAINTENANCE AND REMOVAL INCLUDING SEDIMENT TRAPS

49 As–Constructed plans shall be prepared for all constructed Sediment Basins and associated emergency spillways. Such plans shall verify the basin's dimensions, levels and volumes comply with the approved design drawings. These plans may be requested by the Certifier or Council.
50 Sediment basins shall be constructed and fully operational prior to any other soil disturbance in their catchment.
51 Install an internal gated valve, or similar, in any outlet pipe once pipes installed, or install a non–slotted pipe from basin through wall to external outlet point. The valve shall be connected to a riser made from slotted pipe in the basin. The valve may be opened once captured water meets water quality parameters. The final setup for temporary internal outlet structures is to be confirmed prior to construction with Council. This setup will enable discharge of treated water from site without need for pumping.
52 A sediment storage level marker post shall be with a cross member set just below the top of the sediment storage zone (as specified on the approved ESCP). At least a 75mm wide post shall be firmly set into the basin floor.
53 The Site Manager shall obtain the relevant approvals from the relevant organisations to discharge treated water from any existing basins. Organisations may include, but not be limited to, Hunter Water, and Council.
54 Where more than one stage is to be developed at one time, or before the preceding of stage is complete, the sediment basin(s) for these stages shall have sufficient capacity to cater for all area directed to the basin(s).
55 Prior to any forecast weather event likely to result in runoff, any basins/traps shall be dewatered to provide sufficient capacity to capture sediment laden water from the site.
56 Sufficient quantities of chemicals/agents to treat captured water shall be placed such that water entering the basin mixes with the chemical/agents and is carried into the basin to speed up clarification.
57 Any basin shall be dewatered within the X–day rainfall depth used to calculate the capacity of the basin, after a rainfall event.
58 Sufficient quantities of chemicals/agents to treat turbid water shall be securely stored on–site to provide for at least three complete treatments of all basins requiring chemically treatment onsite.
59 Prior to the controlled discharge (e.g. de–watering activities) from excavations and/or sediment basins, the following water quality objectives shall be achieved:
   a) Total Suspended Solids (TSS) to a maximum 50mg/L;
   b) water pH between 6.5 and 8.5, unless otherwise required by the Council;
   c) Turbidity (measured in NTUs) to a maximum of 60 NTU); and
   d) EC levels no greater than background levels.
60 The Development Approval may require testing of additional water quality elements prior to discharge. E.g. heavy metals.
61 A sample of the released treated water shall be kept onsite in a clear container with the sample date recorded on it.
62 Water quality samples shall be taken at a depth no less than 200mm below the water surface of the basin.
63 No Aluminium based products may be used treat captured water onsite without the prior written permission from an appropriate Council Officer. The applicant shall have a demonstrated ability to use such products correctly and without environmental harm prior to any approval.
64 The chemical/agent used in Type D and Type F basins to treat captured water captured in the basin shall be applied in concentrations sufficient to achieve Council's water quality objectives within the X–day rainfall depth used to calculate the capacity of the basin, after a rainfall event.
65 All Manufacturers' Instructions shall be followed for any chemicals/agents used onsite, except where approved by the Responsible Person or an appropriate Council Officer.
66 The Applicant shall ensure that on each occasion a Type F or Type D basin was not de–watered prior to being surcharged by a following rainfall event, a report is presented to an appropriate Council officer within 5 days identifying the circumstances and proposed amendments, if any, to the basin's operating procedures.
67 Settled sediment shall be removed as soon as reasonable and practicable from any sediment basin if:
   a) it is anticipated that the next storm event is likely to cause sediment to settle above the basin's sediment storage zone; or
   b) the elevation of settled sediment is above the top of the basin's sediment storage zone; or
   c) the elevation of settled sediment is above the basins sediment marker line.
68 Scour protection measures placed on sediment basin emergency spillways shall appropriately protect the spillway chute and its side batters from scour, and shall extend a minimum of 3m beyond the downstream toe of the basin's embankment.
69 Suitable all–weather maintenance access shall be provided to all sediment control devices.
70 Materials, whether liquid or solid, removed from any ESC measures during maintenance or decommissioning, shall be disposed of in a manner that does not cause ongoing soil erosion or environmental harm.
71 All sediment basins shall remain fully operational at all times until the basin's design catchment achieves 70% ground cover or surface stabilisation acceptable to Council.
72 The ESC measures installed during the decommissioning and rehabilitation of a sediment basin shall comply with same standards specified for the normal construction works.
73 A sediment basin shall not be decommissioned until all up–slope site stabilisation measures have been implemented and are appropriately working to control soil erosion and sediment runoff..
74 Immediately prior to the construction of the permanent stormwater treatment device, appropriate flow bypass conditions shall be established to prevent sediment–laden water entering the device.

REVEGETATION/STABILISATION

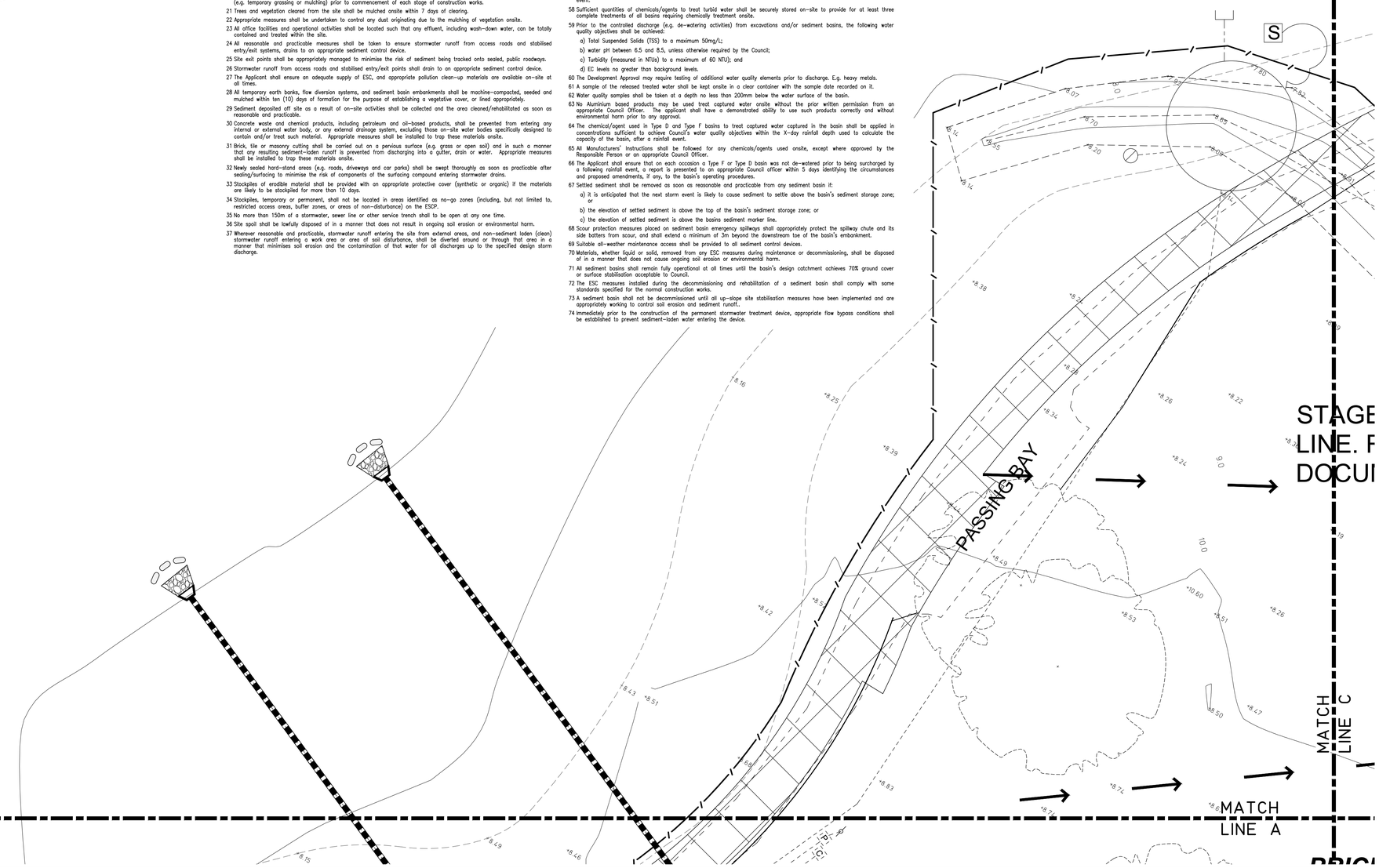
75 Temporary Stabilisation may be attained using vegetation, non rewettable soil polymers, or pneumatically applied erosion controls.
76 All cut and fill earth batters less than 3m in elevation shall be topsoiled, and grass seeded/hydromulched within 10 days of completion of grading in consultation with Council.
77 Once cut/fill operations have been finalised in a section, all disturbed areas that are not being worked on shall be stabilised in accordance with time lines in the Blue Book.
78 The PSCC Seed mix shall be used unless stated on the ESCP/SWMP.
79 The pH level of topsoil shall be appropriate to enable establishment and growth of specified vegetation prior to initiating the establishment of vegetation.
80 Non rewettable binder shall be used in all hydromulch/hydroseed/polymer mixes on slopes or works adjacent to a water course.
81 Soil ameliorants shall be added to the soil in accordance with an approved Landscape Plan, Vegetation Management Plan, and/or soil analysis.
82 Surface soil density, compaction and surface roughness shall be adjusted prior to seeding/planting in accordance with an approved Landscape Plan, Vegetation Management Plan, and/or soil analysis.
83 Procedures for initiating a site shutdown, whether programmed or un–programmed, shall incorporate revegetation of all soil disturbances unless otherwise approved by Council. The stabilisation works shall not rely upon the longevity of non–vegetated erosion control blankets, or temporary soil binders.

SITE MONITORING AND MAINTENANCE

84 The Applicant shall ensure that appropriate procedures and suitably qualified personnel are engaged to plan and conduct site inspections and water quality monitoring throughout the construction and maintenance phase.
85 All ESC measures shall be inspected and any maintenance undertaken immediately:
   a) at least daily (when work is occurring on–site); and
   b) at least weekly (when work is not occurring on–site); and
   c) within 24hrs of expected rainfall; and
   d) within 18hrs of a rainfall event that causes runoff on the site.
86 Written records shall be kept onsite of ESC monitoring and maintenance activities conducted during the construction and maintenance periods, and be available to Council officers on request.
87 All environmentally relevant incidents shall be recorded in a field log that shall remain accessible to all relevant regulatory authorities.
88 All water quality data, including dates of rainfall, dates of testing, testing results and dates of water release, shall be kept in an on–site register. The register is to be maintained up to date for the duration of the approved works and be available on–site for inspection by [insert name of regulatory authority] on request.
89 At nominated instream water monitoring sites, a minimum of 3 water samples shall be taken and analysed, and the average result used to determine quality.

INSTREAM WORKS

90 All instream works (including in or adjacent to watercourses natural or manmade, flowing or not) shall be carried out in accordance with the IECA White Books.



ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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A.C.N. 098 542 575

CLIENT: CATHOLIC SCHOOLS OFFICE

TITLE: STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 1

PROJECT: CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.00	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

ROPOSED STAGE 1 SEWER PUMP
TATION. REFER HYDRAULIC
OCUMENTATION

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

SCALE 1:200
SEDIMENTATION AND EROSION CONTROL NOTES
REFER DRAWING C101.02 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

MATCH LINE A

MATCH LINE A

MATCH LINE C

MATCH LINE B

MATCH LINE B

NORTH

POND 1

24 SPACES HIGH SCHOOL STUDE

FUTURE QUEING LANES & CARPARK

FUTURE PS BLOCK M GPLA

GD01 26

FUTURE PS BLOCK N GPLA

FUTURE PS BLOCK O GPLA

FUTURE PS BLOCK P GPLA

ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.01	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 3

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

EXISTING TELSTRA LINE SHOWN SOLID GREEN. SERVICE TO BE RELOCATION OR PROTECTION.

STAGE 1 CAR PARK LIGHTING

STAGE 1 STORMWATER LINE. REFER CIVIL DOCUMENTATION

MATCH LINE B

MATCH LINE B

MATCH LINE C

MATCH LINE C

STAGE 1 EARLY LEARNING CENTRE
FFL 9.30

FUTURE PS BLOCK K ADMIN/STAFF

FUTURE PS BLOCK L LIBRARY/HALL

STAGE 1 - CARPARK 1
106 SPACES

STAGE 1 DETENTION TANK

EARLY WORKS SITE ACCESS TO REMAIN AS REQUIRED

STAGE 1 BUS ENTRY

ELECTRICAL EASEMENT

EXISTING EASEMENT

CENTRE OF DRAIN - EARTHEN DIVERSION

new telstra line

EXISTING EASEMENT

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

(NOT LOCATED BY SURVEY)

boundary

boundary

EDGE OF BITUMEN

DRAIN

M E D O W I E R O A D

4500

2900

4960

5000

XPP

XPP

XPP

XLP

TEL

TEL

SSGN

SSGN

SSGN

MS

LP

3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
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ISSUE	REASON FOR ISSUE	DATE

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 3

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.02	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 4

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

NORTH

MATCH LINE C

MATCH LINE D

MATCH LINE A

STAGE 1 STORMWATER SERVICES
REFER CIVIL DOCUMENTATION

STAGE 1 STORMWATER LINE. REFER CIVIL DOCUMENTATION

OVERFLOW SPILLWAY

DETENTION POND 1
FOR STAGE 1

DETENTION POND 1
VOLUME 1500m³

POND 2

PASSING BAY

FUTURE
HS BLOCK I
GPLA

UP

FUTURE
HS BLOCK J
GPLA

PRICING OPTION

ISSUE	REASON FOR ISSUE	DATE
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0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 4

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.03	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

MATCH LINE A

MATCH LINE A

MATCH LINE C

MATCH LINE D

PRICING OPTION

BLOCK FLV
GPLA

GPLA

FUTURE
HS BLOCK H
GPLA

P

FUTURE
HS BLOCK G
GPLA / HUB

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 5

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND.

STAGE 1
HS BLOCK A
ADMIN/STAFF
HS BLOCK A
FFL 9.50

NORTH

MATCH LINE C

MATCH LINE B

FUTURE
HS BLOCK A

FUTURE
HS BLOCK D
TAS

FUTURE
HS BLOCK C
SCIENCE

MATCH LINE C

MATCH LINE B

ISSUE	REASON FOR ISSUE	DATE
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 5

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.04	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

MATCH LINE B

FUTURE HS BLOCK A HALL

HS BLOCK A FFL 9.50

HS BLOCK B FFL 11.15

HS BLOCK C SCIENCE

MATCH LINE B

MATCH LINE C

MATCH LINE C

STAGE 1 CARPARK 3 16 SPACES

MSB

STAGE 1 - LOOP ROAD

XPP

XPP

XPP

XPP

XLP

XLP

EXISTING EASEMENT

ELECTRICAL EASEMENT

boundary

boundary

APPROX LOCATION OF TELSTRA LINE (NOT LOCATED BY SURVEY)

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

APPROX LOCATION OF ELECTRICAL CABLES (NOT LOCATED BY SURVEY)

EDGE OF BITUMEN

EDGE OF CONCRETE

DISH

STAGE 1 EXIT

M E D O W I E R O A D

PROPOSED ELECTRICAL UNDERGROUND CONDUIT.
REFER TO LEVEL 3 ASP ELECTRICAL ENGINEER'S DOCUMENTA

MATCH LINE D

LOT 3 DP 587953

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 7

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

NORTH

MATCH LINE D

MATCH LINE D

MATCH LINE A

MATCH LINE A

boundary

STAGE 1 SEW
INSTALLED C
TREE ROOT Z
HYDRAULIC D

PASSIVE BAY

OF

ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 7

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.06	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 8

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

MATCH LINE A

MATCH LINE D

MATCH LINE C

MATCH LINE B

MATCH LINE A

FUTURE HS BLOCK E TAS

FUTURE HS BLOCK F ART/FITNESS

FUTURE DETENTION POND C

POND 3

FUTURE ROAD & CARPARKING

EXISTING POWER POLE & WIRES TO BE REMOVED DURING LATER STAGES.

LOT 413 DP 1063902

NORTH

ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT: CATHOLIC SCHOOLS OFFICE

TITLE: STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 8

PROJECT: CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.07	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

EXISTING POWER POLE TO BE REMOVED AND LOWERED TO NEW DESIGN LEVEL. (APPROX. 1.2M LOWER)

EXISTING DWELLING WATER METER ON AUSGRID PROPERTY TO BE RELOCATED WITHIN SITE BOUNDARY. CONTRACTOR TO COORDINATE.

EXISTING TELSTRA LINE SHOWN SOLID GREEN. SERVICE TO BE RELOCATION OR PROTECTION.

& WIRES TO BE REMOVED DURING LATER STAGES.

MATCH LINE C

MATCH LINE B

MATCH LINE D

FUTURE SHED

FUTURE SHED

XPP

XPP

XPP

XPP

XPP

PPB

boundary

boundary

boundary

boundary

LOT 3 DP 587953

LOT 22 DP 715013

EXISTING 1 AND 2 STOREY F/C W/B DWELLING

EXISTING ELECTRICAL SUBSTATION

EXISTING ELECTRICAL SUB STATION

TRACK

TRACK

TRACK

RETAINING WALL

SEPTIC TANK

BITUMEN

CONCRETE

DISH

DRAIN

DISH

DRAIN

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

M E D O W I E R O A D

NORTH

STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 9

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

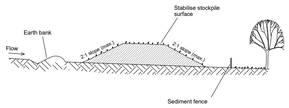
TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 9

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101.08	3

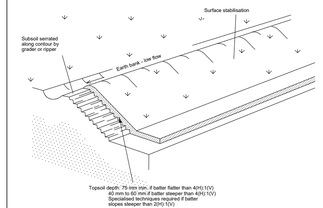
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



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.

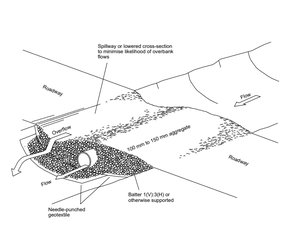
STOCKPILES SD 4-1



Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

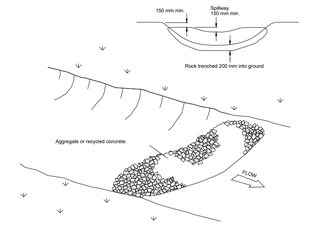
REPLACING TOPSOIL SD 4-2



Construction Notes

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3(H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

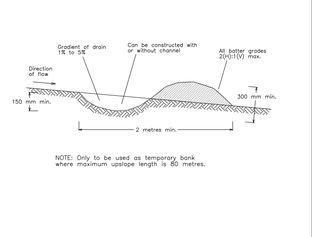
TEMPORARY WATERWAY CROSSING SD 5-1



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM SD 5-4

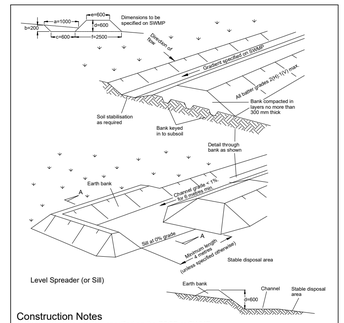


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

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.

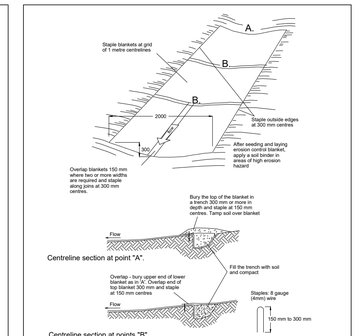
EARTH BANK (LOW FLOW) SD 5-5



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.

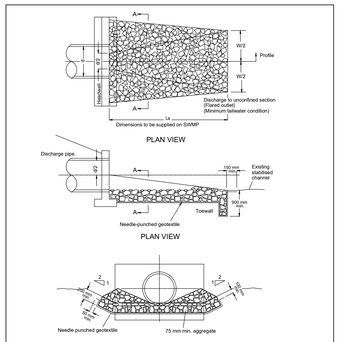
EARTH BANK (HIGH FLOWS) SD 5-6



Construction Notes

1. Remove any rocks, clods, sticks or grass from the surface before laying matting
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end.
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

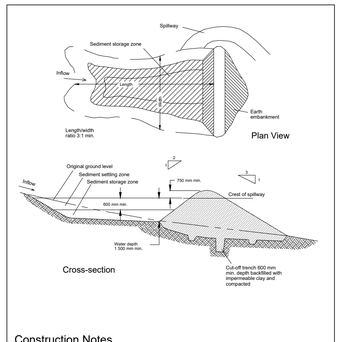
RECP : CONCENTRATED FLOW SD 5-7



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.

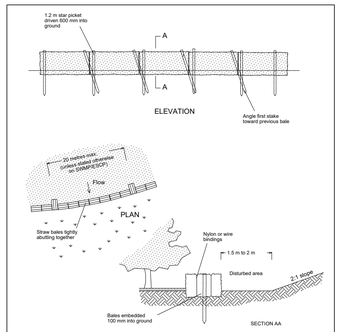
ENERGY DISSIPATER SD 5-8



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.

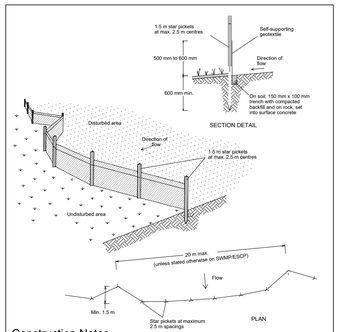
EARTH BANK - WET
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY) SD 6-4



Construction Notes

1. Construct the straw bale filter as close as possible to being parallel to the contours of the site.
2. Place bales lengthwise in a row with ends tightly abutting. Use straw to fill any gaps between bales. Straws are to be placed parallel to ground.
3. Ensure that the maximum height of the filter is one bale.
4. Embed each bale in the ground 75 mm to 100 mm and anchor with two 1.2 metre star pickets or stakes. Angle the first star picket or stake in each bale towards the previously laid bale. Drive them 600 mm into the ground and, if possible, flush with the top of the bales. Where star pickets are used and they protrude above the bales, ensure they are fitted with safety caps.
5. Where a straw bale filter is constructed downslope from a disturbed batter, ensure the bales are placed 1 to 2 metres downslope from the toe.
6. Establish a maintenance program that ensures the integrity of the bales is retained - they could require replacement each two to four months.

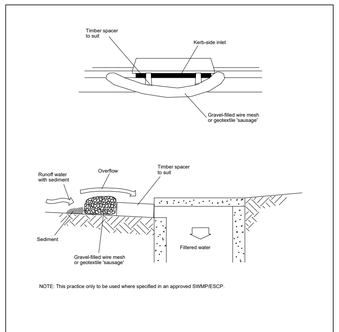
STRAW BALE FILTER SD 6-7



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

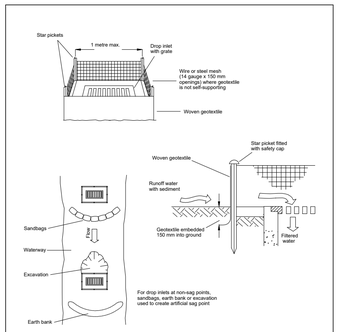


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

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.

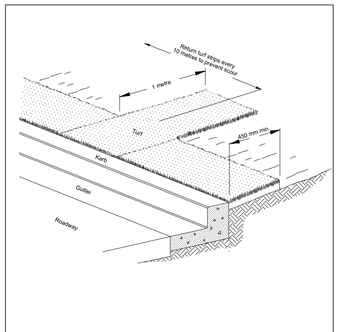
MESH AND GRAVEL INLET FILTER SD 6-11



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-8 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

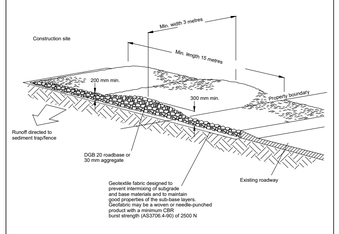


Construction Notes

1. Install a 450 mm minimum wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.4 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the turf strip following the ESCP/SWMP.

KERBSIDE TURF STRIP SD 6-13

SEDIMENTATION AND EROSION CONTROL DETAILS



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

ISSUE	REASON FOR ISSUE	DATE
3	CONSTRUCTION CERTIFICATE	30.9.19
2	REVISED TENDER	27.5.19
1	TENDER	26.10.18
0	60% COORDINATION	10.8.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 1 SEDIMENTATION AND EROSION CONTROL DETAILS

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
N.T.S.	17-828	C101.50	3

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

Appendix H

Erosion and Sediment Control Plan (Stage 2)

MATCH LINE E

MATCH LINE E

HS BLOCK D
BEL 11.31

HS BLOCK C
BEL 12.33

STAGE OUTLINE TYPICAL

STAGE 1
STAGE 2

TREE

T1

SEPTIC TANK

boundary

STAGE 2 BULK EARTHWORKS PLAN SHEET 1

SCALE 1:200

SITE PREPARATION NOTES
1. REFER TO DRAWING S10.01 FOR SITE PREPERATION NOTES.

SUB-GRADE PREPARATION
1. REFER TO DRAWING C200.01 FOR SUB-GRADE PREPERATION NOTES.

NOTE
CONTRACTOR TO ALLOW TO REMOVE ALL EXCESS SPOIL AS A RESULT OF THE EARTHWORKS FROM SITE

NOTE
ALL EXISTING TOPSOIL, UNCONTROLLED FILL, VEGETATION OR OTHER POTENTIALLY DELETERIOUS MATERIAL SHOULD BE REMOVED TO SPOIL OR STOCKPILED FOR REUSE AS LANDSCAPING MATERIALS ONLY. ANY UNDERLYING VERY STIFF CLAYS AND WEATHERED ROCK SHOULD BE CAREFULLY STRIPPED AS NECESSARY AND STOCKPILED FOR REUSE AS GENERAL SITE FILL TYPICAL

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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CLIENT
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TITLE
STAGE 2 BULK EARTHWORKS PLAN SHEET 1

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C200.00	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 2 BULK EARTHWORKS PLAN SHEET 2

SCALE 1:200

SITE PREPARATION NOTES
1. REFER TO DRAWING S10.01 FOR SITE PREPERATION NOTES.

SUB-GRADE PREPARATION
1. REMOVE TOPSOIL AND ALL OTHER DELETERIOUS MATERIALS.
2. PROOF ROLL NATURAL SURFACE WITH A ROLLER OF AT LEAST 10 TONNE STATIC WEIGHT.
3. REMOVE ANY SOFT AREAS.
4. BUILDING PLATFORM AND EXTERNAL PAVING AREAS COMPACTION IS TO BE CARRIED OUT BY ROLLING AT OPTIMUM MOISTURE CONTENT TO OBTAIN A DENSITY EQUIVALENT OF **100%** DRY DENSITY STANDARD IN ACCORDANCE WITH AS1289 E1.1.
5. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY.

LEGEND

× 12.26	DENOTES PROPOSED SUB-GRADE LEVEL
×10.48	DENOTES EXISTING LEVELS
	DENOTES EXISTING CONTOURS
BEL	DENOTES PROPOSED SUB-GRADE LEVEL UNDER BUILDING (BULK EARTHWORKS LEVEL)

NOTE
ALL EXISTING TOPSOIL, UNCONTROLLED FILL, VEGETATION OR OTHER POTENTIALLY DELETERIOUS MATERIAL SHOULD BE REMOVED TO SPOIL OR STOCKPILED FOR REUSE AS LANDSCAPING MATERIALS ONLY. ANY UNDERLYING VERY STIFF CLAYS AND WEATHERED ROCK SHOULD BE CAREFULLY STRIPPED AS NECESSARY AND STOCKPILED FOR REUSE AS GENERAL SITE FILL TYPICAL

NOTE
CONTRACTOR TO ALLOW TO REMOVE ALL EXCESS SPOIL AS A RESULT OF THE EARTHWORKS FROM SITE

N POND
= 990m³

STAGE 1
STAGE 2

STAGE OUTLINE TYPICAL

STAGE 1 WORKS

STAGE 1 WORKS

TREE

MATCH LINE E

MATCH LINE E

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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CLIENT
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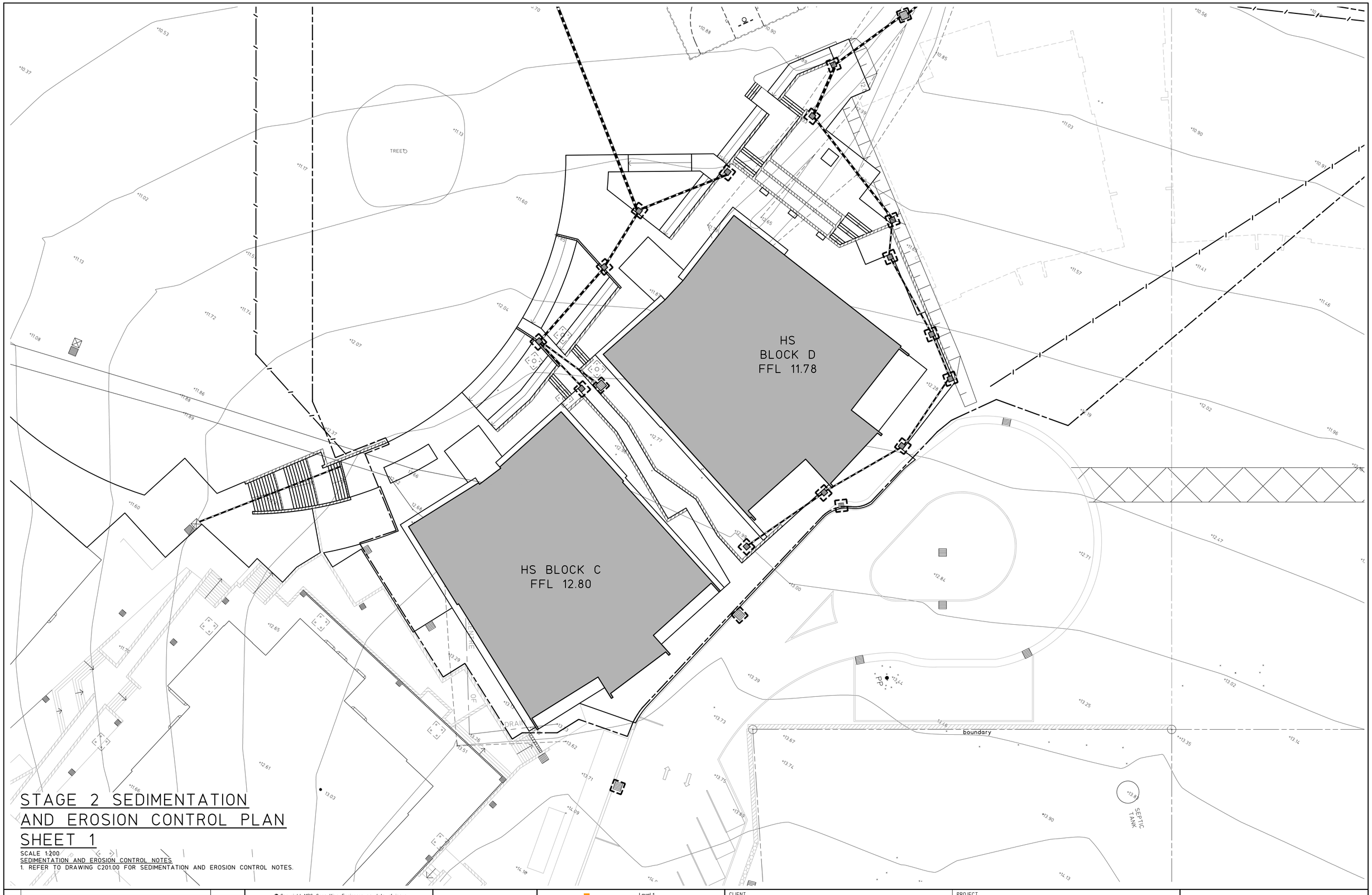
TITLE
STAGE 2 BULK EARTHWORKS PLAN SHEET 2

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C200.01	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



STAGE 2 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 1

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. REFER TO DRAWING C201.00 FOR SEDIMENTATION AND EROSION CONTROL NOTES.

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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CLIENT
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TITLE
STAGE 2 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 1

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C201.00	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

STAGE 2 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

1. SELECTIVE CLEARING OF VEGETATION TO BE RESTRICTED TO NOMINATED AREAS WITH CLEARED VEGETATION WIND ROWED ON THE CONTOUR.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED PRIOR TO SITE DISTURBANCE.
3. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED AT THE NOMINATED SITE.
4. NO MORE THAN 150m OF TRENCH TO BE OPEN AT ANY ONE TIME.
5. CUT AND FILL BATTER GRADIENTS OF 1:2 (MAXIMUM).
6. A STRIP OF TURF 450mm WIDE IS TO BE PLACED IMMEDIATELY BEHIND THE KERB ON ALL NEW ROAD TO ACT AS A FILTER TRAP. REFER TO DETAIL SD6-13.
7. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED BY SITE SUPERVISOR AFTER EACH RAINFALL EVENT FOR STRUCTURAL DAMAGE AND ALL TRAPPED SEDIMENT TO BE REMOVED TO A NOMINATED STOCKPILE SITE.
8. THE PROJECT MANAGER TO INFORM ALL CONTRACTORS AND SUB-CONTRACTORS OF THEIR OBLIGATIONS UNDER THE EROSION AND SEDIMENT CONTROL PLAN.
9. NO DISTURBED AREA IS TO REMAIN DENUDED LONGER THAN 14 DAYS.
10. ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S OPERATION.
11. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAY'S WORK.
12. ORANGE BARRIER TAPE TO BE AFFIXED TO TOP OF SEDIMENT CONTROL BARRIER TO IDENTIFY WORK AREA.
13. ALL SEDIMENTATION & EROSION CONTROL MEASURES ARE TO STRICTLY COMPLY WITH THE GUIDELINES DETAILED IN THE DEPARTMENT OF HOUSING PUBLICATION, "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", 4TH EDITION.
14. WATER TRUCKS TO BE USED AS REQUIRED TO PREVENT WIND EROSION.
15. SUBGRADE MATERIAL TO BE CONSTRUCTED IMMEDIATELY FOLLOWING FILL.

LEGEND

- DENOTES MESH AND GRAVEL INLET FILTER, REFER TO DETAIL SD6-11
- DENOTES GEOTEXTILE INLET FILTER, REFER TO DETAIL SD6-12
- DENOTES SEDIMENT FENCE, REFER TO DETAIL SD6-8

STAGE 1 WORKS

STAGE 1 WORKS

TREE

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

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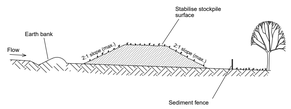
TITLE
STAGE 2 SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C201.01	00

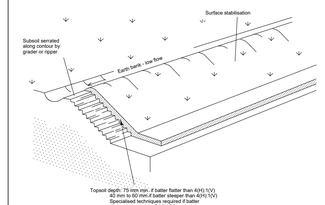
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



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.

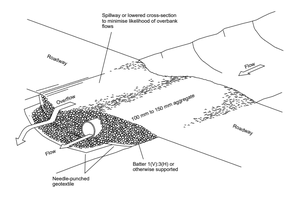
STOCKPILES SD 4-1



Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

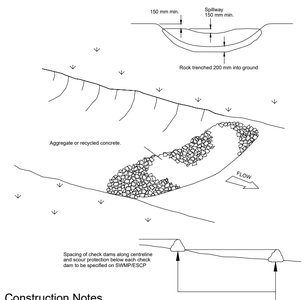
REPLACING TOPSOIL SD 4-2



Construction Notes

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punched textile over the base of the crossing.
3. Place clean, rigid, non polluting aggregate or gravel in the 100 mm to 150 mm size class over the fabric to a minimum depth of 200 mm.
4. Provide a 3-metre wide carriageway with sufficient length of culvert pipe to allow less than a 3(H): 1 (V) slope on side batters.
5. Install a lower section to act as an emergency spillway in greater than
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

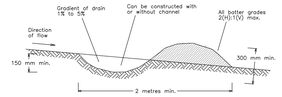
TEMPORARY WATERWAY CROSSING SD 5-1



Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

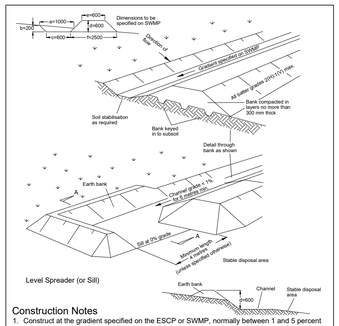
ROCK CHECK DAM SD 5-4



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.

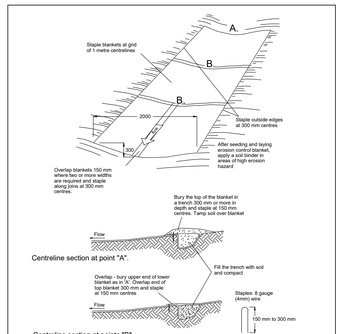
EARTH BANK (LOW FLOW) SD 5-5



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. Section AA
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.

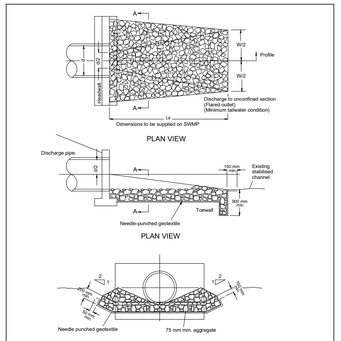
EARTH BANK (HIGH FLOWS) SD 5-6



Construction Notes

1. Remove any rocks, clods, sticks or grass from the surface before laying matting
2. Ensure that topsoil is at least 75 mm deep.
3. Complete fertilising and seeding before laying the matting.
4. Ensure fabric will be continuously in contact with the soil by grading the surface carefully first.
5. Lay the fabric in "shingle-fashion", with the end of each upstream roll overlapping those downstream. Ensure each roll is anchored properly at its upslope end.
6. Ensure that the full width of flow in the channel is covered by the matting up to the design storm event, usually in the 10-year ARI time of concentration storm event.
7. Divert water from the structure until vegetation is stabilised properly.

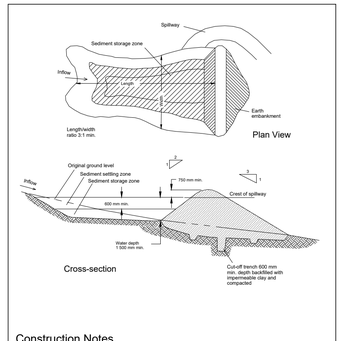
RECP : CONCENTRATED FLOW SD 5-7



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.

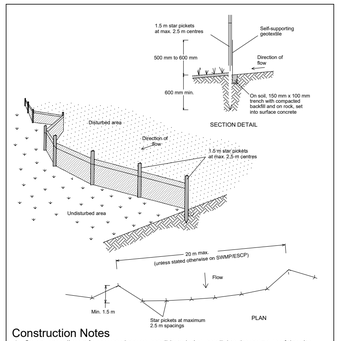
ENERGY DISSIPATER SD 5-8



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.

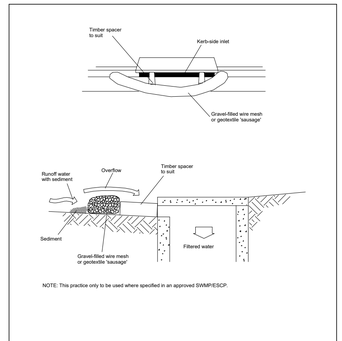
EARTH BASIN - WET
(APPLIES TO TYPE D AND TYPE F SOILS ONLY) SD 6-4



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.

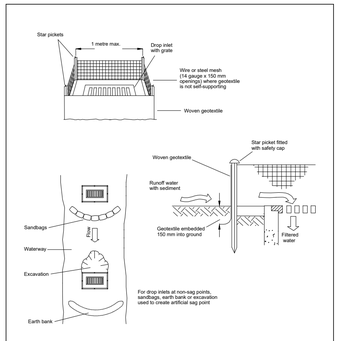
SEDIMENT FENCE SD 6-8



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.

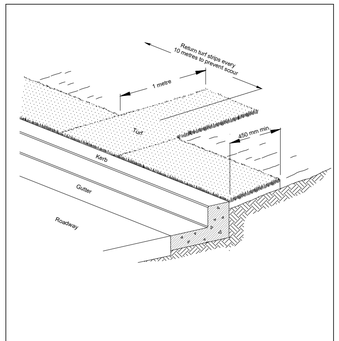
MESH AND GRAVEL INLET FILTER SD 6-11



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-8 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.

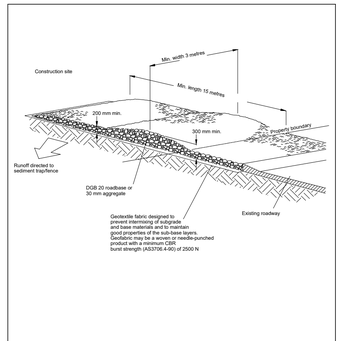
GEOTEXTILE INLET FILTER SD 6-12



Construction Notes

1. Install a 450 mm minimum wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.4 metre long turf strips normal to the kerb every 10 metres.
3. Rehabilitate disturbed soil behind the turf strip following the ESCP/SWMP.

KERBSIDE TURF STRIP SD 6-13



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

SEDIMENTATION AND EROSION CONTROL DETAILS

ISSUE	REASON FOR ISSUE	DATE
01	REVISED TENDER	23.4.20
00	TENDER	3.4.20

mpc consulting engineers civil+structural

Level 1,
16 Telford Street,
NEWCASTLE EAST, NSW 2300
PO BOX 553
THE JUNCTION, NSW 2291
Tel: (02) 4927 5566
Fax: (02) 4927 5577
Email: admin@mpceng.com.au
Web: www.mpceng.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
STAGE 2 SEDIMENTATION AND EROSION CONTROL DETAILS

PROJECT
CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE

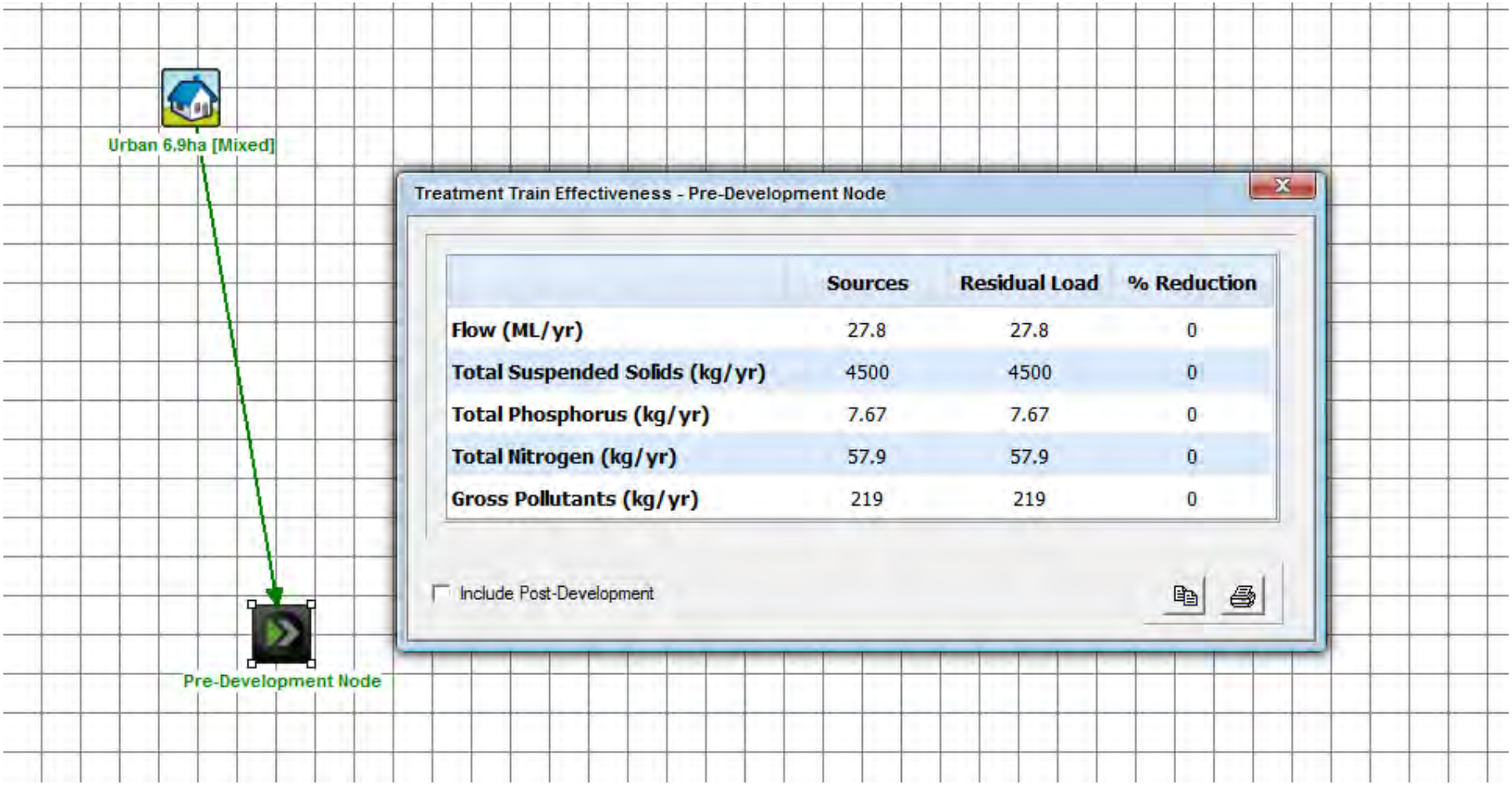
DO NOT SCALE DRAWING

DRAWN	ENGINEER	No in SET	SHEET
J.L.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C201.50	01

FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

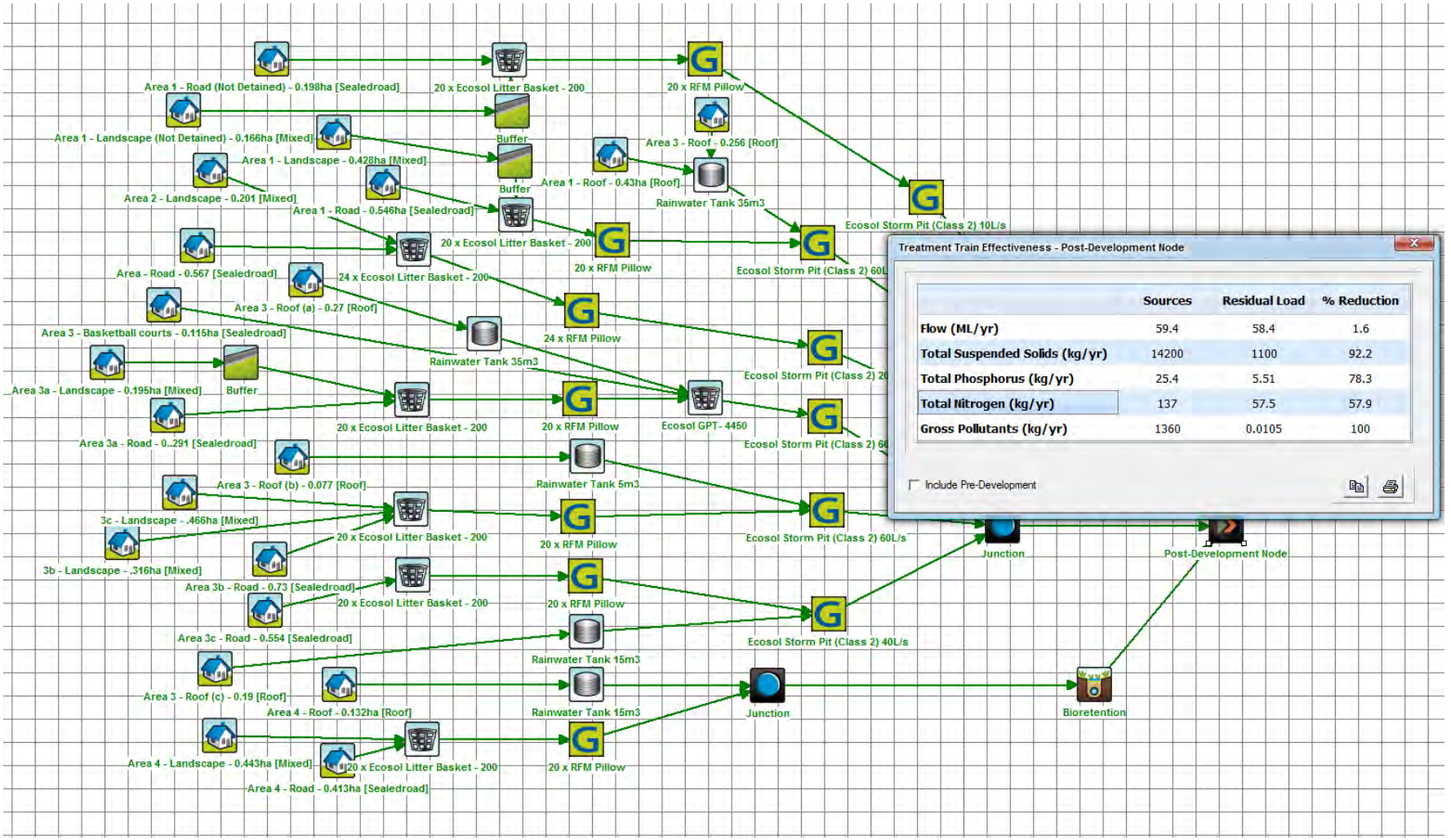
Appendix I

Water Quality (MUSIC) Model



	Sources	Residual Load	% Reduction
Flow (ML/yr)	27.8	27.8	0
Total Suspended Solids (kg/yr)	4500	4500	0
Total Phosphorus (kg/yr)	7.67	7.67	0
Total Nitrogen (kg/yr)	57.9	57.9	0
Gross Pollutants (kg/yr)	219	219	0

PRE-DEVELOPED SITE



POST DEVELOPMENT SITE

MUSIC-*link* Report

Project Details		Company Details	
Project:	CMCC Medowie	**Company:**	MPC Consulting Engineers
Report Export Date:	24/10/2019	**Contact:**	Matthew Snelson
Catchment Name:	18-NSW-5390 MEDOWIE R2 Option 2 MPC Edit r4 -SK	**Address:**	16 Telford St, Newcastle East
Catchment Area:	6.984ha	**Phone:**	02 49275566
Impervious Area*:	66.64%	**Email:**	matthews@mpceng.com.au
Rainfall Station:	WILLIAMTOWN RAAF - Station 061078 - Zone C		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1998 - 31/12/2007 11:54:00 PM		
Mean Annual Rainfall:	1238mm		
Evapotranspiration:	1394mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.32		
Study Area:	Raymond Terrace		
Scenario:	Default Catchment - Clay soils		

* 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	1.62%
TSS	92.2%
TP	78.3%
TN	57.9%
GP	100%

Treatment Nodes

Node Type	Number
Rain Water Tank Node	5
Bio Retention Node	1
Buffer Node	3
GPT Node	8
Generic Node	13

Source Nodes

Node Type	Number
Urban Source Node	22

Comments

Pre-development not included in developed site controls

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	Bioretention	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention	PET Scaling Factor	2.1	2.1	2.1
Buffer	Buffer	Proportion of upstream impervious area treated	None	None	0.5
Buffer	Buffer	Proportion of upstream impervious area treated	None	None	0.5
Buffer	Buffer	Proportion of upstream impervious area treated	None	None	0.5
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	20 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1
GPT	24 x Ecosol Litter Basket - 200	Hi-flow bypass rate (cum/sec)	None	99	1.2
GPT	Ecosol GPT- 4450	Hi-flow bypass rate (cum/sec)	None	99	0.26
Post	Post-Development Node	% Load Reduction	None	None	1.62
Post	Post-Development Node	GP % Load Reduction	90	None	100
Post	Post-Development Node	TN % Load Reduction	45	None	57.9
Post	Post-Development Node	TP % Load Reduction	60	None	78.3
Post	Post-Development Node	TSS % Load Reduction	90	None	92.2
Pre	Pre-Development Node	% Load Reduction	None	None	0
Rain	Rainwater Tank 15m3	% Reuse Demand Met	None	None	0
Rain	Rainwater Tank 15m3	% Reuse Demand Met	None	None	0
Rain	Rainwater Tank 35m3	% Reuse Demand Met	None	None	0
Rain	Rainwater Tank 35m3	% Reuse Demand Met	None	None	0
Rain	Rainwater Tank 5m3	% Reuse Demand Met	None	None	0
Urban	3b - Landscape - .316ha	Area Impervious (ha)	None	None	0.030
Urban	3b - Landscape - .316ha	Area Pervious (ha)	None	None	0.285
Urban	3b - Landscape - .316ha	Total Area (ha)	None	None	0.316
Urban	3c - Landscape - .466ha	Area Impervious (ha)	None	None	0.045
Urban	3c - Landscape - .466ha	Area Pervious (ha)	None	None	0.420
Urban	3c - Landscape - .466ha	Total Area (ha)	None	None	0.466
Urban	Area - Road - 0.567	Area Impervious (ha)	None	None	0.511
Urban	Area - Road - 0.567	Area Pervious (ha)	None	None	0.055
Urban	Area - Road - 0.567	Total Area (ha)	None	None	0.567
Urban	Area 1 - Landscape - 0.428ha	Area Impervious (ha)	None	None	0.041
Urban	Area 1 - Landscape - 0.428ha	Area Pervious (ha)	None	None	0.386
Urban	Area 1 - Landscape - 0.428ha	Total Area (ha)	None	None	0.428
Urban	Area 1 - Landscape (Not Detained) - 0.166ha	Area Impervious (ha)	None	None	0.016
Urban	Area 1 - Landscape (Not Detained) - 0.166ha	Area Pervious (ha)	None	None	0.149
Urban	Area 1 - Landscape (Not Detained) - 0.166ha	Total Area (ha)	None	None	0.166
Urban	Area 1 - Road - 0.546ha	Area Impervious (ha)	None	None	0.492

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Area 1 - Road - 0.546ha	Area Pervious (ha)	None	None	0.053
Urban	Area 1 - Road - 0.546ha	Total Area (ha)	None	None	0.546
Urban	Area 1 - Road (Not Detained) - 0.198ha	Area Impervious (ha)	None	None	0.178
Urban	Area 1 - Road (Not Detained) - 0.198ha	Area Pervious (ha)	None	None	0.019
Urban	Area 1 - Road (Not Detained) - 0.198ha	Total Area (ha)	None	None	0.198
Urban	Area 1 - Roof - 0.43ha	Area Impervious (ha)	None	None	0.43
Urban	Area 1 - Roof - 0.43ha	Area Pervious (ha)	None	None	0
Urban	Area 1 - Roof - 0.43ha	Total Area (ha)	None	None	0.43
Urban	Area 2 - Landscape - 0.201	Area Impervious (ha)	None	None	0.019
Urban	Area 2 - Landscape - 0.201	Area Pervious (ha)	None	None	0.181
Urban	Area 2 - Landscape - 0.201	Total Area (ha)	None	None	0.201
Urban	Area 3 - Basketball courts - 0.115ha	Area Impervious (ha)	None	None	0.103
Urban	Area 3 - Basketball courts - 0.115ha	Area Pervious (ha)	None	None	0.011
Urban	Area 3 - Basketball courts - 0.115ha	Total Area (ha)	None	None	0.115
Urban	Area 3 - Roof - 0.256	Area Impervious (ha)	None	None	0.256
Urban	Area 3 - Roof - 0.256	Area Pervious (ha)	None	None	0
Urban	Area 3 - Roof - 0.256	Total Area (ha)	None	None	0.256
Urban	Area 3 - Roof (a) - 0.27	Area Impervious (ha)	None	None	0.27
Urban	Area 3 - Roof (a) - 0.27	Area Pervious (ha)	None	None	0
Urban	Area 3 - Roof (a) - 0.27	Total Area (ha)	None	None	0.27
Urban	Area 3 - Roof (b) - 0.077	Area Impervious (ha)	None	None	0.077
Urban	Area 3 - Roof (b) - 0.077	Area Pervious (ha)	None	None	0
Urban	Area 3 - Roof (b) - 0.077	Total Area (ha)	None	None	0.077
Urban	Area 3 - Roof (c) - 0.19	Area Impervious (ha)	None	None	0.19
Urban	Area 3 - Roof (c) - 0.19	Area Pervious (ha)	None	None	0
Urban	Area 3 - Roof (c) - 0.19	Total Area (ha)	None	None	0.19
Urban	Area 3a - Landscape - 0.195ha	Area Impervious (ha)	None	None	0.009
Urban	Area 3a - Landscape - 0.195ha	Area Pervious (ha)	None	None	0.185
Urban	Area 3a - Landscape - 0.195ha	Total Area (ha)	None	None	0.195
Urban	Area 3a - Road - 0..291	Area Impervious (ha)	None	None	0.277
Urban	Area 3a - Road - 0..291	Area Pervious (ha)	None	None	0.013
Urban	Area 3a - Road - 0..291	Total Area (ha)	None	None	0.291
Urban	Area 3b - Road - 0.73	Area Impervious (ha)	None	None	0.658
Urban	Area 3b - Road - 0.73	Area Pervious (ha)	None	None	0.071
Urban	Area 3b - Road - 0.73	Total Area (ha)	None	None	0.73
Urban	Area 3c - Road - 0.554	Area Impervious (ha)	None	None	0.499
Urban	Area 3c - Road - 0.554	Area Pervious (ha)	None	None	0.054
Urban	Area 3c - Road - 0.554	Total Area (ha)	None	None	0.554
Urban	Area 4 - Landscape - 0.443ha	Area Impervious (ha)	None	None	0.042
Urban	Area 4 - Landscape - 0.443ha	Area Pervious (ha)	None	None	0.400

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Area 4 - Landscape - 0.443ha	Total Area (ha)	None	None	0.443
Urban	Area 4 - Road - 0.413ha	Area Impervious (ha)	None	None	0.372
Urban	Area 4 - Road - 0.413ha	Area Pervious (ha)	None	None	0.040
Urban	Area 4 - Road - 0.413ha	Total Area (ha)	None	None	0.413
Urban	Area 4 - Roof - 0.132ha	Area Impervious (ha)	None	None	0.132
Urban	Area 4 - Roof - 0.132ha	Area Pervious (ha)	None	None	0
Urban	Area 4 - Roof - 0.132ha	Total Area (ha)	None	None	0.132
Urban	Urban 6.9ha	Area Impervious (ha)	None	None	0.381
Urban	Urban 6.9ha	Area Pervious (ha)	None	None	6.518
Urban	Urban 6.9ha	Total Area (ha)	None	None	6.9

Only certain parameters are reported when they pass validation

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Pre	Pre-Development Node	GP % Load Reduction	90	None	0
Pre	Pre-Development Node	TN % Load Reduction	45	None	0
Pre	Pre-Development Node	TP % Load Reduction	60	None	0
Pre	Pre-Development Node	TSS % Load Reduction	90	None	0

Only certain parameters are reported when they pass validation

Appendix J

Stormwater Maintenance Plan

MPC Ref: 17-828
October 2019

PLAN OF MANAGEMENT
FOR
STORMWATER DRAINAGE SYSTEM

PROPOSED DEVELOPMENT AT:
507 MEDOWIE ROAD, MEDOWIE NSW

MPC Consulting Engineers
Suite 3, Level 1,
16 Telford Street,
NEWCASTLE EAST NSW 2300
PO Box 553
THE JUNCTION NSW 2291

Phone: (02) 4927 5566
Fax: (02) 4927 5577
Email: admin@mpceng.com.au
Web : mpcconsultingengineers.com.au

ACN 098 542 575
ABN 14 904 295 412

The below schedules provide a timetable for various maintenance procedures which are relevant to the current stormwater system.
It also outlines the persons responsible and describes the actions required for each maintenance activity.

Regular checks for blockages should be undertaken after significant rainfall events outside the scheduled maintenance times.

Inspection of the Detention basin and Gross Pollutant Traps should be carried out by qualified personnel.

PITS/CARPARK/ROADWAY			
Maintenance Action	**Frequency**	**Responsibility**	**Procedure**
Inspect outlet pipe and remove any blockage	3 monthly	Owner	Remove grate and screen to inspect outlet
Inspect internal walls of pit for cracks or spalling	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required.
Inspect grate for damage or blockage	3 monthly	Owner	Check both sides of grate for corrosion, damage or blockage
Inspect screen and clean	3 monthly	Owner	Remove grate and screen and clean if required
Check attachment of screen to wall of pit	Annually	Maintenance Contractor	Remove grate and screen. Ensure screen fixings are secure. Repair as required
Inspect sump and remove any sediment	3 monthly	Owner	Remove grate and screen. Remove sediment build up
Inspect car park for litter	Weekly	Owner	Remove any surface litter
Inspect car park for surface debris	3 monthly	Owner	Surface sweep and vacuum carpark pavement/hardstand to remove surface debris

DETENTION BASIN / OTHER			
Maintenance Action	**Frequency**	**Responsibility**	**Procedure**
Inspect internal walls of pits for cracks or spalling	Annually	Maintenance Contractor	Remove grate to inspect internal walls. Repair as required.
Check inlet clear of debris	6 monthly	Owner	Remove leaves and debris from inlet
Check overflow clear of debris	6 monthly	Owner	Remove leaves and debris from overflow
Check roof gutters	6 monthly	Owner	Remove leaves and debris from roof gutters
Check sediment level in basin	6 monthly	Maintenance contractor	Inspect flush and clean as required.
Detention Basin	Monthly	Maintenance contractor	Mow and weed detention basin
Enviropod pit inserts	6 Monthly	Maintenance contractor	Clean and flush pit inserts as per manufacturers specification
GPT	6 monthly	Maintenance contractor	Clean and flush GPT as per manufacturers specification
Inspect grates for damage or blockage	3 monthly	Owner	Check both sides of grate for corrosion, damage or blockage

Check outlet pipe	6 monthly	Owner	Inspect to ensure outlet is clear – clean as required
Check low level detention outlet is clear	6 monthly	Owner	Inspect to ensure outlet is clear – clean as required

Appendix K

SSD Table of Confirmation

Document name: Stormwater Management System, Rev 02 August 2018
Date received by DPIE: 18 September 2019
Date DPIE comments sent to the Applicant: 18 October 2019

Comment No.	Condition	Requirement	Document reference	DPIE comment	Project team Response	Amendment Made? (Y/N)	Page/Section
1	B3	Prior to the issue of a construction certificate, the Applicant must design an operational stormwater management system for the development and submit it to the satisfaction of the Planning Secretary	This Plan (Section 4)	The Applicant has prepared a Stormwater Management Plan (SMP) addressing the Water Quality and Stormwater management and Stormwater Harvesting. Section 4 of the plan details the Proposed Stormwater management Facilities. The SMP has been submitted to the Department for approval. **CLOSED**	No action required.		
2	(a)	be designed by a suitably qualified and experienced person(s);		The Department has reviewed the plan and notes that the SMP is prepared by a qualified person; Matthew Snelson (BE Civil (Hons), MIEAust) **DPIE Comment: Please update the plan to note details of the Author's experience.**		Yes.	Page 11
3	(b)	be generally in accordance with the conceptual design in the EIS;	Section 4.2	The Department has reviewed the SMP and notes that it is similar to what was submitted along with the EIS. The SMP notes that details of the some of the stormwater infrastructure will be confirmed during the detailed design of the Site. **DPIE Comment: The Department requests that the SMP to be updated to include the following:** **Update section 4.2 -B to include the reference to plans showing the location of the roof rain water tanks.**	Refer to plans C100 seriesdrawings for loaction of rainwater harvesting tanks	Yes	Appendix B
4	(c)	be designed in accordance with Port Stephens DCP, Infrastructure Specification and the current Australian Rainfall and Runoff guidelines using the Hydrologic Soil Mapping data for Port Stephens (available from Council);	Section 3.0 Section 4.3 Section 4.7	Section 3 notes that the SMP has been prepared in consultation with Council's Development Control plan in relation to stormwater. The site drainage system will incorporate pollution control measures designed to remove and site generated pollutants in accordance with Port Stephens Councils DCP. Section 4.3 notes that the stormwater management system for the proposed 'Developed Site Area' will collect roof rainwater in Harvesting and Retention facilities that will be designed in accordance with council's DCP. Section 4.7 notes that Stormwater quality requirements from the Port Stephens Council DCP, and in particular the Water Quality Targets within the DCP have been impropriated into the overall stormwater management design for the site. **DPIE Comment: The Department notes that reference to Port Stephens DCP is included in the SMP, However the SMP does not address the requirements of current Australian Rainfall and Runoff guidelines using the Hydrologic Soil Mapping data for Port Stephens, therefore Department requests to update the SMP to include the requirements of the current Australian Rainfall and Runoff guidelines.**		Yes	Section 3, Page 4
5	(d)	A geotechnical Engineer must determine the steady state infiltration rate at each proposed infiltration device location, using the Double Ring Infiltrometer test method (ASTM D3385-18), if current Hydrological Soil Mapping data is not adopted;		**DPIE Comment: Please refer to comment 4 above , if current Hydrological Soil Mapping data is not adopted, please update the SMP to address the requirements of condition 5.**	Not Applicable - Refer a to item 4 above		
6	(e)	On-Site Stormwater Detention/Infiltration with supporting calculations for a system capable of catering for a range of rainfall scenarios up to and including the 1% AEP Rainfall Event;		Section 4.5 notes that the Stormwater Detention is proposed to be in a combination of underground Atlantis infiltration tanks and above ground bio-retention basins. Mark up plan to show catchment areas is provided in Appendix C . Stormwater Detention Calculations for the minor and major storm events for each catchment area is provided in Table 1 to 4 in section 4.5. **DPIE Comment: It is unclear if the post development flow will be similar to the Pre-development flow. The Department requests to update section 4.5 to show that On-Site Stormwater Detention system is capable of catering for upto and including 1% AEP rain during the Post development as well.**	Section 4.5 identifies the site stomrwater detentioon management. Page 7 and 8 identify each detention basin, their pre and post developed flows and volumes.	Yes	Section 4.5, Page 7 & 8
7	(f)	An emergency overland flow path for major storm events, catering for a range of rainfall scenarios up to and including the 1% AEP Rainfall Event, that is directed to the public drainage system;		**DPIE Comment: Please provide reference to the section in the SMP where the requirements of this conditions are addressed.**	Srefer to Section 2.3 and 4.3	Yes	Section 2.3 and 4.3

8	(g)	Water quality control devices that comply with the requirements of the applicable Port Stephens DCP 2019;	Section 4.7	Section 4.7 notes that Stormwater quality requirements from the Port Stephens Council DCP, and in particular the Water Quality Targets within the DCP have been impropriated into the overall stormwater management design for the site. The stormwater quality devices and systems have been specified on the stormwater management plans and included in Appendix B, however the reference to the requirements of the applicable Port Stephens DCP 2019 is not included. **DPIE Comment: Please update section 4.7 and where relevant in the plan that the Water quality control devices that comply with the requirements of the applicable Port Stephens DCP 2019.**	Water quality has been confirmed by using Port Stephens councils Music Link, which is repferenced in Section 4.7 and results in Appendix E	Yes	Section 4.7 and Appendix E
9	(h)	Evidence that the water quality control devices comply with Council's water quality targets, Music Modelling and Music Link Certificate;	Section 4.7, Appendix E	Section 4.7 notes the stormwater quality devices and systems that have been specified on the SMP in Appendix B, which collectively achieve the water quality targets listed in Table on page 9. A copy of the MUSIC model diagrams, including the receiving node pollution reductions achieved, are also included in Appendix E. **DPIE Comment: The Department requests clarification if the limits specified in the Table on page 9 reflect the Council's water quality targets.**		Yes	Section 4.3
10	(i)	Evidence of Council (or relevant authority) approval for stormwater connection to the public system, with the above supporting details endorsed, under Section 68 of the Local Government Act 1993 or Section 138 of the Roads Act 1993;		**DPIE Comment: Please provide evidence of approvals required under condition B3(i).**	By Others		
11	(j)	be in accordance with applicable Australian Standards;		**DPIE Comment: Please update the SMP to include reference to relevant Australian Standards, where required.**	MPC's drawings have referenced all relevant standards to the design.	Yes	Appendix B
12	(k)	Stormwater Management Plans with details of drainage infrastructure including the following;					
13	(i)	detailed flow regime analysis that demonstrates that the development would not impact significantly on the quantity of surface and groundwater flows to and from the adjacent coastal wetland;	Section 4.5	Section 4.5 notes that the primary aim with site run-off under the DCP is to ensure that run-off from the developed site replicates that of the natural conditions. The drainage system is to be designed for peak run-off with this run-off being released at a rate comparable with natural conditions during peak rainfall. However, it is not satisfactorily demonstrated that development would not impact significantly on the quantity of surface and groundwater flows to and from the adjacent coastal wetland. **DPIE Comment: The Department requests to to update the SMP to address all the requirements of condition B3(k)(ii).**	The site stormwater has been design to cater for the 1% AEP event. By detaning storms upto the 1% event and controlling the outflows to pre-developed flows, MPC have demonstrated that the site replicates and improves pre-deveoped condition	Yes	Section 4.5
14	(ii)	assessment of the localised impact of the stormwater discharges to the coastal wetlands including proposed mitigation measures to prevent scouring, sedimentation and other physical impacts at the stormwater drainage system outlets into the coastal wetlands on the northern boundary of the Site;		Section 4.7 notes that modelling between predeveloped conditions and compared these results to the results from the developed site demonstrate that the water quality of the proposed development meets the requirements of the Neutral Neutral or Beneficial Effect on Water Quality (NorBE). DPIE Comment: The information for assessment of the localised impact of the stormwater discharges to the coastal wetlands including proposed mitigation measures to prevent scouring, sedimentation and other physical impacts at the stormwater drainage system outlets into the coastal wetlands on the northern boundary of the Site are not included. The Department requests to update the plan to address the requirements of condition k(ii).	Refer to section 4.7 - Water Quality	Yes	Section 4.7
15	(iii)	details of measures to manage increased stormwater volumes from the development surfaces (e.g. stormwater harvesting, distributed infiltration, increased surface area to enhance evapotranspiration and infiltration and diversion of stormwater (where feasible);	Section 4.4 Section 4.5	Section 4.4 details the measures for the rainwater harvesting that includes use of captured roof water for the purpose of irrigation harvesting. Section 4.5 notes the Stormwater Detention is proposed to be in a combination of underground Altantis infiltration tanks and above ground bio-retention basins. **CLOSED**	No action required.		
16	(iv)	consistency of the sizes, volumes and number of on-site detention basins and the headwalls with the existing sediment basins and headwalls on the Site;	Appendix B	Plans in Appendix B shows 2 detention ponds (Detention Pond 1 -Volume-600m3 on sheet 4 and Detention Pond 2 -Volume-250m3 on sheet 8). **DPIE Comment: Please confirm if only 2 detention ponds will be used on site or more will be included during the detailed design. The Departmemtn also requests information for the headwalls with the existing sediment basins and headwalls on the Site.**	Refer to Section 4.5 updated plans in Appendix B	Yes	Section 4.5 and Appendix B
17	(v)	demonstrate that gross pollutant, total suspended solid, phosphorus and nitrogen loads discharged from the development into the coastal wetland after stormwater treatment comply with Council's load-based water quality targets;		**DPIE Comment: Please refer to comment h above.**		Yes	Section 4.7 and Appendix E
18	(vi)	demonstrate that the proposed development would not significantly impact on the quality of surface and groundwater flows to and from the adjacent coastal wetland; and		**DPIE Comment: Please refer to comment (k)(i) above.**			Refer to Section 4.5 and 4.7

19	(vii)	demonstrate how Water Sensitive Urban Design (WSUD) design principles have been considered across the development to mitigate potential impacts on the mapped coastal wetlands.	Section 1.2	Section 1.2 notes that in preparing this Stormwater Management Plan a review has been undertaken with Port Stephens Council Development Control Plan, with the aim to incorporate Water Sensitive Urban Design measures. Please refer to comment above for 4(c). **DPIE Comment: It is however not clearly demonstrated how the Water Sensitive Urban Design (WSUD) principles have been considered across the development to mitigate potential impacts on the mapped coastal wetlands. Please update the Plan to address condition k(vii).**			Refer to Section 4.5 and 4.7
20	(l)	a report prepared by a suitably qualified ecologist assessing the impacts of any changes to hydrology (flow regimes) and stormwater runoff quality associated with the development on the EECs, TECs, threatened species located within the coastal wetlands to the south of the site and on the overall biophysical, hydrological and ecological integrity of the mapped wetlands within the site and the adjoining lands; and		The Applicant engaged Biosis Pty Ltd to undertake an assessment addressing Condition B3 (l) of the Development Consent for McAuley Catholic College (SSD 8989) at 507 Medowie Road, Medowie, NSW (the study area). The report was submitted to the Department alongwith the SMP. **CLOSED**	No action required.		
21	(m)	evidence of consultation with Council to determine the location of the stormwater assets and in the preparation of the stormwater plans and flood reports, plans for relocating Council assets (if any), proposed connections and the protection of relevant assets.		**DPIE Comment: The Department requests to include evidence of the consultation undertaken with the Council.**	To Others		

Appendix L

Hydrology Assessment

30 August 2019

Paul Sniekers
Contracts Administrator
North Construction & Building Pty Ltd
L1, 163 Lambton Road
Broadmeadow NSW 2259

Dear Paul

Re: Coastal Wetland and proximity areas impact assessment for Catherine McAuley Catholic College, Medowie

Project no.30449

Biosis Pty Ltd was commissioned by North Construction & Building Pty Ltd to undertake an assessment addressing Condition B3 (l) of the Development Consent for McAuley Catholic College (SSD 8989) at 507 Medowie Road, Medowie, NSW (the study area). Condition B3 (l) states: *"a report prepared by a suitably qualified ecologist assessing the impacts of changes to hydrology (flow regimes) and stormwater runoff quality associated with the development on the Endangered Ecological Communities (EECs), Threatened Ecological Communities (TECs), threatened species located within the coastal wetlands to the south of the site and on the overall biophysical, hydrological and ecological integrity of the mapped wetlands within the site and the adjoining lands"*

Biosis understands that North Construction & Building Pty Ltd proposes to construct an educational facility, McAuley Catholic College on behalf of Trustees of the Roman Catholic Church for the Diocese of Maitland - Newcastle (the project). This assessment is required to fulfil Condition B3(l) of the development consent.

The objective of this assessment is to use a desktop review of background documents relating to the study area, including relevant construction and stormwater plans and the Catherine McAuley Catholic College Biodiversity Development Assessment Report (BDAR) (Biosis 2018) to assess the potential impacts of changes to hydrology and stormwater runoff associated with the development on the surrounding biodiversity values. The focus of this assessment is the coastal wetland area mapped under the State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) to the south and west of the study area. The details of any potential changes to hydrology and perceived direct or indirect impacts for local biodiversity values will be detailed in this report.

Background

The approved development is to be located at 2 Kingfisher Close Medowie (Appendix 1 Figure 1). The development will involve the demolition of an existing dwelling, shed and out buildings and the construction of a primary school, high school, chapel, childcare centre, associated infrastructure and landscaping. The development will include construction and operation of stormwater infrastructure designed to ensure that post development stormwater volumes and water quality are not substantially different to pre-development values.

The study area

The study area for the purposes of this report is defined as total the construction footprint and the total area of impact within coastal wetland and its proximity area as mapped the Coastal Management SEPP. The study area is within Port Stephens Council Local Government Area (LGA). The study area is located within Lot 412 and 413 DP 1063902 and covers an area of 21 hectares. The subject site is located within the study area and is defined as the total area of disturbance; including both the construction and operational footprints. The landuse of the area surrounding the study area consists of rural, large lot and low density residential areas, a golf course, roads and further extents of SEPP mapped coastal wetlands.

Part of the southern and western section of the construction footprint intersects with the coastal wetland and its proximity area as mapped under the Coastal Management SEPP (Figure 1). The Catherine McAuley Catholic College, Medowie Biodiversity Development Assessment Report (BDAR) (Biosis 2018) has identified two plant community types (PCTs) within the study area that are consistent with threatened ecological communities (TECs) listed under the NSW Biodiversity Conservation Act 2016 (BC Act) and lie within the coastal wetland areas. These include:

- Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community (Swamp Sclerophyll Forest EEC):
  - Restricted to PCT 1718 and located to the west and north of the study area. The subject site contains 0.22 hectares of Swamp Sclerophyll Forest EEC.
- Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions (Hunter Lowland Redgum Forest EEC):
  - Restricted to the PCT 1598 and located along the western edge of the study area. The subject site contains 0.17 hectares of Hunter Lowland Redgum Forest EEC.

Method

Information provided by North Construction & Building as well as other key information and legislation reviewed for this assessment include:

- Biosis, *Catherine McAuley Catholic College, Medowie Biodiversity Development Assessment Report*
- De Witt Consulting, *Environmental Impact Statement: Proposed Catholic College 2 Kingfisher Close and 507 Medowie Road, Medowie*.
- MPC Consulting Engineers *Proposed School 507 Medowie Road Medowie Stormwater Management Plan*
- NSW Government; Department of Planning, Industry and Environment *Development Consent for McAuley Catholic College (SSD 8989) at 507 Medowie Road, Medowie*.
- NSW Government, *SEPP (Coastal Management) 2018*.

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act):
  - State Environmental Planning Policy (Coastal Management) 2018
- *Biodiversity Conservation Act 2016*.

- *Water Management Act 2000* (WM Act).

Findings

The subject site consists of a total area of approximately 8.1 hectares, which will drain towards the south-west and into the mapped coastal wetland and its proximity area. No natural water courses have been identified on the subject site. An open swale drainage line has been identified at the southern end of the study area. The water catchment of the subject site also includes runoff from neighbouring catchment areas as indicated through topographic mapping of the area.

A Stormwater Management Plan has been prepared by MPC Consulting Engineers which lays out proposed designs and principles for Medowie Catholic College's stormwater system addressing the requirements of Port Stephens Council DCP. The system utilises stormwater harvesting (rainwater tanks) and stormwater detention to ensure that run-off from the site replicates pre-developed conditions. To comply with the *Protection of the Environment Operations Act 1997* the plan utilises a system of envirpod inserts, infiltration tanks, gross pollutant traps and bio-retention basins to reduce stormwater pollutant levels including suspended solids, nutrients (phosphorus and nitrogen), gross pollutants (litter and organic debris), sedimentation and erosion resulting from changes to flow velocity. MUSIC software was used by MPC Consulting Engineers to model water quality measurements through the planned stormwater system. The modelling includes the volume of flow through the system, the quantity of pollutant inputs from various sources into the stormwater system and the predicted residual load exiting the system and possibly entering the coastal wetland and its proximity area. The values produced from the MUSIC software are displayed in Table 1. In order to confirm predicted water quality results from the MUSIC modelling it is recommended that appropriate water quality analysis be conducted.

Table 1 Water Quality (MUSIC) Model *(MPC– Stormwater Management Plan)*

Parameter	Sources	Residual Load	% Reduction
Flow (Ml/yr)	64	62.5	2.4
Total Suspended Solids (kg/yr)	8830	938	89.4
Total Phosphorus (kg/yr)	99.3	21.7	78.2
Total Nitrogen (kg/yr)	124	64.1	48.8
Gross Pollutants (kg/yr)	1110	0	100

According to the Stormwater Management Plan a total of eight headwall units for the discharge of stormwater are proposed to be placed on the western and southern sides of the subject site. A number of these units are located within the mapped coastal wetland area. In accordance with Division 1, Clause 10 of the Coastal Management SEPP any development carried out on land identified as "coastal wetlands" may be carried out only with development consent.

The Stormwater Management Plan also identifies principles and recommendations set out by the NSW Department of Housing to reduce erosion and sediments entering the coastal wetlands during the developments construction. These practices include; planning erosion and sediment controls alongside engineer designs ahead of earthworks with consideration of site constraint assessments, minimising soil exposure, conserving the topsoil where possible, controlling water flowing through the site, reducing run-off velocities, trapping soil and water pollutants and completing rehabilitation works as soon as possible. Sediment and erosion controls will be implemented in accordance with NSW Environmental Protection Authority Site Work Practices and include; silt fences, catch drains, sediment traps, grassing and stabilization

of embankments and drainage outlets, stabilised stockpile areas, scour protection at discharge locations and stabilised site access for vehicles.

To determine if the development will introduce significant changes to water quality entering the coastal wetland and its proximity area it is important to consider background water quality inputs form current landuse in the area surrounding and upstream of the site. According to topographical mapping the surrounding landuse upstream of the study area consists predominately of an 18-hole golf course, residential housing and roads. Various land use practices such as the use of fertilizers and pesticides, runoff from impervious surfaces, and erosion/sedimentation due to landscape and vegetation modification, golf courses introduce various pollutants including phosphorus, nitrogen, suspended solids and gross pollutants into aquatic ecosystems (Klein, 1999). Residential areas and roads also introduce various stormwater pollutants into aquatic ecosystems. Common residential pollutants include gross pollutants, nitrates, phosphates, heavy metals, surfactants, petrochemicals and sediments which can be introduced through activities such as landscape modification, increased road surfaces, gardening, construction and spillages (DEC, 2006). Landuse activities from both the golf course and surrounding residential areas could feasibly introduce higher background pollutant and volume loadings than that of the study area's modelled residual loadings (Table 1). However in order to verify background water quality levels from areas upstream of the site and to compare them to predicted water quality levels in the MUSIC model it is recommended that appropriate water quality analysis be conducted.

If water quality inputs from land use areas upstream of the study area are considered, modelled residual loading volumes from the development's stormwater system should not lead to significant alterations to water quality currently entering the coastal wetland, its proximity area and surrounding TECs identified in the BDAR and their ecological integrity. If the development is completed with appropriate sedimentation and erosion control measures as planned, the increase in erosion and volumes of sediment potentially entering and impacting upon the coastal wetlands and TECs will be negligible. Appropriate water quality analysis should be conducted to verify current water quality parameters and compare them to predictions from the stormwater management plan. Relevant plans and guidelines should be adhered to when implementing these measures.

Conclusion

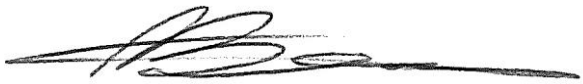
Appropriate water quality analysis should be conducted to verify background water quality from areas upstream of the subject site and to verify that water quality as predicted by the MUSIC modelling will not significantly affect water quality currently entering the coastal wetland.

Unless already obtained, development consent is required for the proposed headwall units planned within the SEPP mapped coastal wetlands, in accordance with Division 1, Clause 10 of the Coastal Management SEPP.

If operated and constructed with approved plans and procedures, stormwater pollutants and flow rate exiting the development site and entering the coastal wetland should not change significantly from conditions currently present given the context of current land usage. As such the stormwater management associated with the construction and operation of the proposed Medowie Catholic College should not have a significant effect on the current EECs, TECs and threatened species located within the coastal wetlands or on the current biophysical, hydrological and ecological integrity of the coastal wetland. However, appropriate water quality analysis should be conducted to verify current levels and provide a comparison.

I trust that this advice is of assistance to you however please contact me on 0418 577 661 if you would like to discuss any elements further.

Yours sincerely



Adam Baus

Project Aquatic Ecologist

References

Biosis 2018. *Catherine McCauley Catholic College, Medowie BDAR*. Report for Webber Architects. Authors: A Barreto, S Allison, C Corden, Biosis Pty Ltd, Newcastle. Project no.26652

DEC. 2006. Managing Urban Stormwater Harvesting and Reuse. New South Wales Government Department of Environment and Conservation, Sydney

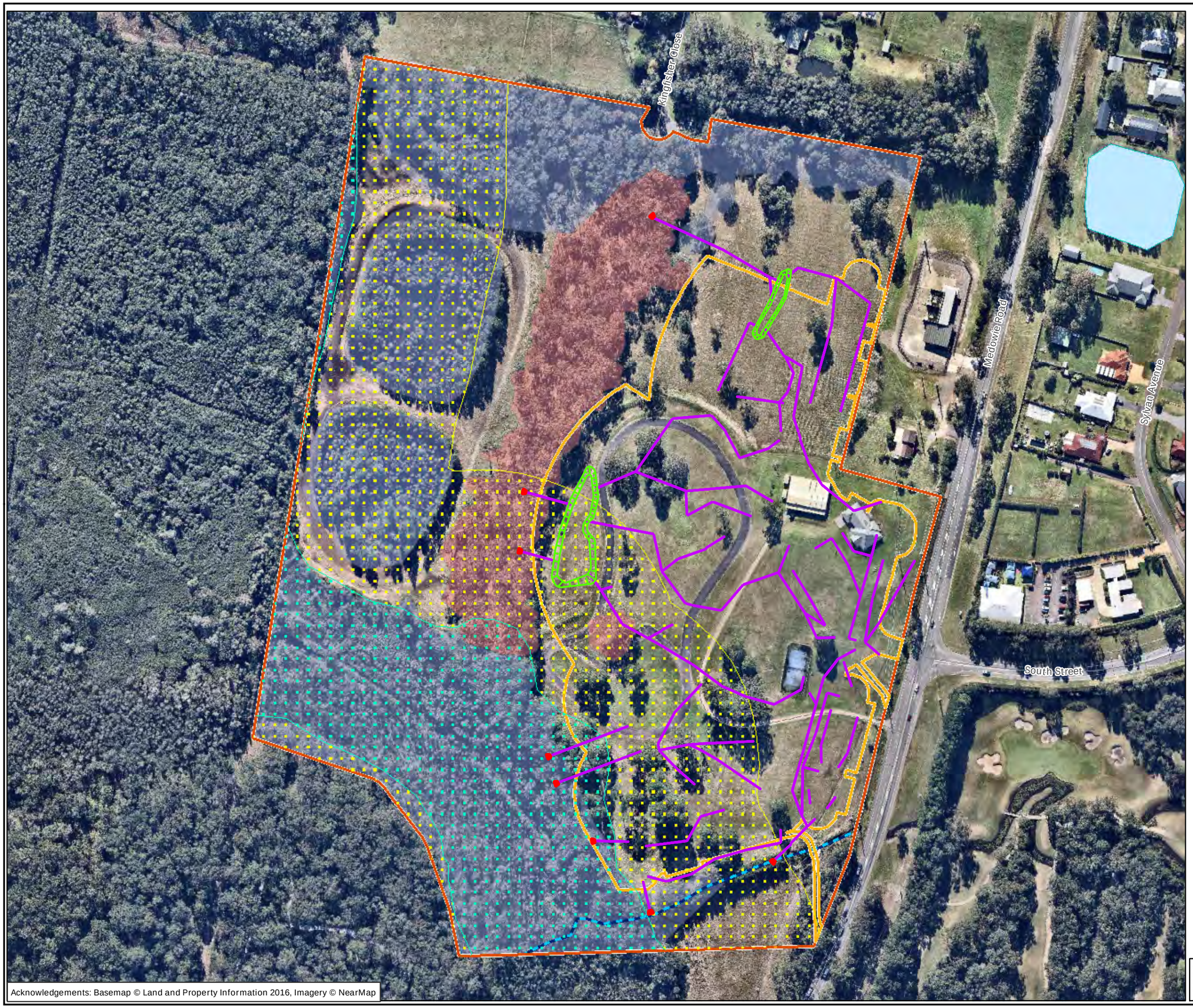
De Witt Consulting 2018. *Environmental Impact Statement: Proposed Catholic College 2 Kingfisher Close and 507 Medowie Road, Medowie – Lot 412 and Lot 413 DP 1063902*

Klein R D. 1999. *Protecting the Aquatic Environment from the Effects of Golfcourses*. Community & Environmental Defense Services, Maryland

MPC Consulting Engineers 2018, *Proposed School – 507 Medowie Road, Medowie, Stormwater Management Plan*

NSW Government: DPIE 2019. *Development Consent for McAuley Catholic College (SSD 8989).*

Appendix 1 Figure 1



Legend

- Study area
- Subject site
- HydroLine (Biosis 2018)

Stormwater plan

- Headwall
- Stormwater pipeline
- Retention pond

SEPP Coastal Management

- Coastal Wetlands
- Coastal Wetlands Proximity Area

Threatened Ecological Community

- Hunter Lowland Redgum Forest EEC
- Swamp Sclerophyll Forest EEC

Acknowledgements: Basemap © Land and Property Information 2016, Imagery © NearMap

Figure 1 Study area and coastal wetland

0 40 80 120

Metres

Scale: 1:2,349 @ A3

Coordinate System: GDA 1994 MGA Zone 56

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 30449
Date: 30 August 2019,
Checked by: SNA, Drawn by: AEDM, Last edited by: skumar
Location:P:\30400s\30449\Mapping
30449_F1_CoastalM

Appendix M

Evidence of Council Consultation

north
BUILDING WITH TRUST

CATHERINE McAULEY CATHOLIC COLLEGE
SSD 8989 / A8

EVIDENCE OF CONSULTATION

Between

Port Stephens Council — Authority / Approver

And

NCB - Webbers - MPC — Builder/Consultant

on 09/10/19

Subject: B3, & C16 Consultation

Details:

Discussion regarding requirements of SSD conditions B3 & C16 for council comment

Outcome of Consultation
Matters resolved:

Matters unresolved:
- Easements for overland flow to alternate discharge point to public System.
- S68 application

Actions:
- Easement discussions with neighbours.
- Submission/approval of S68.

Consultation Completed:

Signed:

Signed: 9/10/19
(Senior Development Engineer)

Other Comments: