Proposed School –

507 MEDOWIE ROAD, MEDOWIE

Stormwater Management Plan

for

Catholic Schools Office

August 2018 – Revision 2

MPC Project Ref: 17-828

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

Contents

Appendices

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 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 proposed site generally comprises of the following:

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

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 currently passes through an open swale to the south of the proposed school. 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 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;
- 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 B**. 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 site.

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 infiltration tanks and bio filtration detention ponds, Gross Pollutant traps, pollutant pit inserts in the carpark, bio filtration systems and 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 and will be fully detailed in final design documentation.

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 is to be 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 Altantis infiltration tanks and above ground bio-retention basins. Each of the detention tanks and bio retention ponds rely on infiltration as a slow release with high level piped systems allowing release of stormwater at pre-developed flow rates. This method has been adopted due to the flatness of the lower end of the site and that there is limited ability to provide a piped slow release on the site. We have also not used any detention in the carparks to ensure that they remain serviceable without nuisance water during rainfall events.

An infiltration rate of 25mm/hr has been adopted for each basin or tank.

Refer to markup in Attachment C for catchment area details.

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

Catchment Area 1 (13740m^2)

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

Table 1: Stormwater Detention Calculations

Item	Minor Storm	Major Storm
ARI (years)	20	100
Pre-Developed Flow	254 L/s	369 L/s
Control	Infiltration / Recharging the groundwater in each cell + Highlevel overflow	Highlevel outflow pipe from each atlantis cell
Basin Storage Volume	353 m^3	385m^3
Outflow (L/s)	121 L/s from Basin	232 L/s from Basin

Catchment Area 2 (10830m^2)

Table 1: Stormwater Detention Calculations

Item	Minor Storm	Major Storm
ARI (years)	20	100
Pre-Developed Flow	210 L/s	305 L/s
Control	Infiltration / Recharging the groundwater in each cell + Highleve overflow	Highlevel outflow pipe from each atlantis cell
Basin Storage Volume	382 m^3	454m^3
Outflow (L/s)	41 L/s from Basin	83 L/s from Basin

Catchment Area 3 (37340m^2)

Table 1: Stormwater Detention Calculations

Item	Minor Storm	Major Storm
ARI (years)	20	100
Pre-Developed Flow	540 L/s	858 L/s
Control	600 mm diameter orifice + Infiltration	600 mm diameter orifice + Weir RL 7.8
Basin Storage Volume	485 m^3	509m^3
Basin Water Level	7.34 AHD	7.59 AHD
Outflow (L/s)	425 L/s from Basin	634 L/s from Basin

Catchment Area 4 (19265m^2)

Table 1: Stormwater Detention Calculations

Item	Minor Storm	Major Storm
ARI (years)	20	100
Pre-Developed Flow	311 L/s	494 L/s
Control	445 mm diameter orifice + Infiltration	450 mm diameter orifice + Weir RL 8.4
Basin Storage Volume	190 m^3	245m^3
Basin Water Level	8.13 m AHD	8.35 AHD
Outflow (L/s)	209 L/s from Basin	286 L/s from Basin

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, and in particular the Water Quality Targets within the DCP have been impropriated into the overall stormwater management design for the site.

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 enviropod inserts in each pit, atlantis cell infiltration tanks, GPT's then to a bio-retention basin.
- Proprietary "Gross Pollutant Trap" has been specified in the location shown on the stormwater management plans;
- Bio-filtration facilities have been incorporated in the catchment 3 and 4 basins.

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 B**, which collectively achieve the water quality targets listed below:

	Pre-Developed Residual Load	Developed Residual Load	% Reduction
Total Suspended Solids (kg/yr)	2390	608	91.8
Total Phosphorous (kg/yr)	6.82	6.08	63.5
Total Nitrogen (kg/yr)	60.4	60.2	53
Gross Pollutants (kg/yr)	29.8	0.0	100

A copy of the MUSIC model diagrams, including the receiving node pollution reductions achieved, are included in **Appendix E**.

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 D.**

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 F**.

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 D**. 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 Catholic Schools Office, 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,
Director

Date: 12 September 2018

Appendices:

A	**Site Plan**
B	**Stormwater Management Plan**
C	**Catchment and Summary of Stormwater Design Intent**
D	**Erosion and Sediment Control Plan and Calculations**
E	**Stormwater Quality (Music) Model**
F	**Stormwater Maintenance Plan**

Appendix A

Site Plan

1 02_0401 SCALE 1 : 1000

SITE PLAN - OVERALL

SITE LEGEND

- POOL,WETLAND, POND
- EXISTING ROAD
- EXISTING STRUCTURE
- XPP POWER POLE
- POWER LINES
- EXISTING TREE
- DEMOLISH TREE
- DEMOLISH HOLLOW BEARING TREE
- HOLLOW BEARING TREE
- (f) 1:100 YEAR FLOOD LINE
- (w) SEPP 14 WETLANDS
- (cf) CREEK FLOOD LINE
- (cr) CREEK TOP OF BANK
- (e) VEGETATION TRUNK LINE
- (ev) VEGETATION CANOPY LINE
- (a) 50M ASSET PROTECTION ZONE
- RING ROAD
- NEW ROAD
- NEW STRUCTURE

NOTE :

ALL TREES INSIDE THE BOUNDARY LINE HAVE BEEN SURVEYED.
REFER TO SURVEY B1662DET - 1 - B

ALL THE TREES OUTSIDE THE BOUNDARY LINE HAVE BEEN TAKEN FROM A GOOGLE EARTH PHOTO.

LOCATION PLAN

REV	DATE	DESCRIPTION	BY	CHK
W	16.02.2018	DEVELOPED DESIGN - 90%	DF	
X	02.03.2018	FOR CONSULTANT COORDINATION	LK	
Y	09.03.2018	FOR QA	LK	
Z	14.03.2018	FOR CONSULTANT COORDINATION	LK	
AA	29.03.2018	FOR CLIENT APPROVAL	LK	TH
BB	04.04.2018	FOR CLIENT APPROVAL	LK	
CC	16.04.2018	FOR COUNCIL INFORMATION	LK	
DD	04.05.2018	FOR REVIEW	ME	
EE	10.05.2018	FOR CONSULTANT COORDINATION	LK	

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

PRINT DATE: 10/05/2018 3:34:08 PM **FILE PATH:** C:\Users\luke\Documents\2544 Medowie Catholic School_lukeHFJSQ.rvt

Catholic Schools Office
DIOCESE OF MAITLAND-NEWCASTLE

webber architects
commercial and residential
Suite 3, Level 1 496 Hunter St Newcastle • PO Box 807 The Junction 2291
tel +612 4926 1078 • ACN 149153 188 • ABN 85 149 642 569
newcastle@webberarchitects.com • www.webberarchitects.com
Directors Jon Webber (Nominated Architect) 4rA 9059 ARB NO. 6855
Sandra Hinchey, Kainar Bloody
Associate Directors Tim Hayes
Associates Luke Kassing

SITE PLAN - OVERALL

CATHERINE McAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE

ISSUED :

NOT FOR CONSTRUCTION

SCALE :

0 10 20 30 40 50 m

SCALE 1:1000 @ A1

NORTH : TRUE NORTH

PROJECT COMMENCEMENT DATE : 01.05.2017

SHEET NUMBER : **2544_02_0002_EE**

Appendix B

Stormwater Management Plan

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
- RW1 DENOTES RETAINING WALL TO ARCH DETAILS
- LRW DENOTES LANDSCAPE RETAINING WALL TO ARCH DETAILS
- DENOTES DIRECTION OF SURFACE FLOWS

NOTE
ALL CARPARK PITS TO HAVE 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

NORTH

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

MATCH LINE C

MATCH LINE A

MATCH LINE A

MATCH LINE C

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
3	DEVELOPMENT APPLICATION	17.5.18
2	DEVELOPMENT APPLICATION	15.5.18
1	DEVELOPMENT APPLICATION	28.3.18
0	REVIEW	16.3.18

mpc CONSULTING ENGINEERS
Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT: CATHOLIC SCHOOLS OFFICE

TITLE: 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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C100	3

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

STORMWATER PLAN SHEET 2

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

MATCH LINE A

MATCH LINE E

MATCH LINE B

MATCH LINE C

NORTH

HEADWALL AND ROCK MATTRESS I.L. 7.40

HEADWALL AND ROCK MATTRESS I.L. 6.25

ATLANTIS CELL 2 VOLUME = 30m³

ATLANTIS CELL 3 VOLUME = 345m³

ATLANTIS CELL 1 VOLUME = 15m³

CONCRETE ENCASE PIPE

PS BLOCK M FFL 9.30

PS BLOCK N FFL 9.30

PS BLOCK O FFL 9.30

PS BLOCK P FFL 9.30

P1/38 P1/1 P2/1 P3/1

P1/39 P1/16 P2/16 P3/16 P4/16

P1/40 P1/41 P1/17 P2/17 P3/17 P4/17

P1/18 P2/18 P3/18

P1/19 P2/19

P1/20 P2/20 P3/20

P6/22 P7/22

RW1

525ø 225ø 450ø 375ø

K1

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C101	3

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

STORMWATER PLAN SHEET 3

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

MATCH LINE B

MATCH LINE B

MATCH LINE C

MATCH LINE C

EARLY LEARNING FFL 9.30

PS BLOCK K FFL 9.30

PS BLOCK L FFL 9.30

HEADWALL AND ROCK MATTRESS I.L. 7.40 PROVIDE FLOOD FLAP TO OUTLET PIPE

ATLANTIS CELL 4 VOLUME = 115m³

ATLANTIS CELL 5 VOLUME = 120m³

SPILL WAY

CONCRETE ENCASE PIPE

CENTRE OF MAIN EARTHEN DIVERSION

EXISTING EASEMENT

EXISTING EASEMENT

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

boundary

boundary

EDGE OF BITUMEN

MEDOWIE ROAD

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SHEET 3

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MEDOWIE

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J.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C102	3

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

STORMWATER PLAN SHEET 4

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

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

HEADWALL I.L. 7.20

HEADWALL I.L. 7.20

450Φ

450Φ

DETENTION POND 1
VOLUME = 600m³

1 IN 6 MAX BATTER TYPICAL

HEADWALL I.L. 6.60

HEADWALL I.L. 6.60

HEADWALL I.L. 6.60

600Φ

600Φ

P1/27

P1/28

P1/22

P1/26

P2/22

P2/27

450Φ

300Φ

450Φ

450Φ

300Φ

HS BLOCK I
FFL 9.50

HS BLOCK J
FFL 9.50

RW1

RW1

RW1

LRW

LRW

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3	DEVELOPMENT APPLICATION	17.5.18
2	DEVELOPMENT APPLICATION	15.5.18
1	DEVELOPMENT APPLICATION	28.3.18
0	REVIEW	16.3.18

MPC CONSULTING ENGINEERS

Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

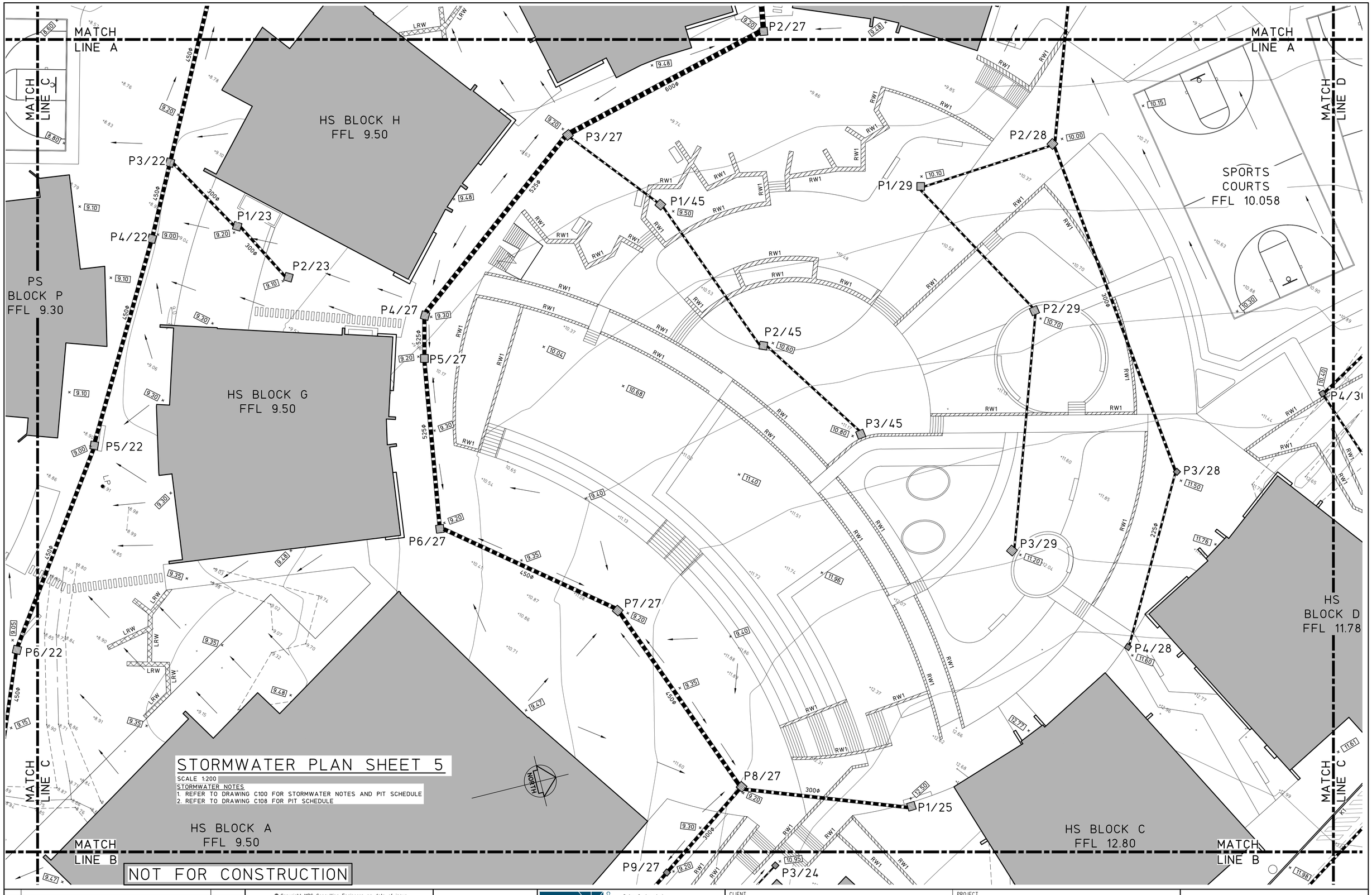
TITLE
STORMWATER PLAN
SHEET 4

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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C103	3

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



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

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C104	3

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

HS BLOCK A
FFL 9.50

HS BLOCK C
FFL 12.80

HS BLOCK B
FFL 11.15

MATCH LINE B

MATCH LINE C

MATCH LINE D

P9/27 P3/24 P10/27 P2/24 P11/27 P1/24 P12/27 P3/43 P2/43 P2/44 P1/43 P1/44 P7/32 P6/32 P8/32 P10/22 P9/22 P1/21 P5/3 P4/3 P3/9 P6/3 P3/7 P4/9 P2/10 P1/10 P3/8 P4/8 P1/46 P2/15 P7/3 P1/15 P1/11 P3/15 P1/14 P2/14 P1/13 P2/13 P1/12 P4/15 P5/15 P3/13

ELEC KIOSK

ATLANTIS CELL 6
VOLUME = 65m³

ATLANTIS CELL 7
VOLUME = 160m³

EXISTING EASEMENT

APPROX LOCATION OF TELSTRA LINE (NOT LOCATED BY SURVEY)

APPROX LOCATION OF ELECTRICAL CABLES (NOT LOCATED BY SURVEY)

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

boundary

LOT 2 DP 587953

EDGE OF BITUMEN

CONCRETE DISH

M E D O W I E R O A D

STORMWATER PLAN SHEET 6

SCALE 1:200

STORMWATER NOTES
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

NOT FOR CONSTRUCTION

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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C105	3

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

STORMWATER PLAN SHEET 7

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

NORTH

MATCH LINE D

MATCH LINE A

boundary

HEADWALL AND ROCK MATTRESS I.L. 7.20

P1/30

9.50

P2/42

8.40

9.00

8.75

9.75

OF

INV

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
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1	DEVELOPMENT APPLICATION	28.3.18
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C106	3

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

NOT FOR CONSTRUCTION

STORMWATER PLAN SHEET 8

SCALE 1:200

STORMWATER NOTES
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

MATCH LINE A

MATCH LINE A

MATCH LINE D

MATCH LINE C

MATCH LINE B

SPORTS COURTS FFL 10.058

HS BLOCK E FFL 10.54

HS BLOCK F FFL 10.54

HS BLOCK D FFL 11.78

DETENTION POND 2
VOLUME = 250m³

HEADWALL I.L. 8.00

HEADWALL I.L. 8.00

HEADWALL I.L. 8.50

HEADWALL I.L. 8.00

HEADWALL I.L. 8.50

SPILLING ROCK LINE RL 8.80

1 IN 6 MAX BATTER TYPICAL

CAR PARK 5

GPT

GPT

P1/31 P2/31 P3/31 P4/31 P2/30 P3/30 P4/30 P5/30 P6/30 P1/42 P2/35 P1/35 P3/33 P4/33 P1/34 P2/33 P5/33 P1/33 P1/32 P2/32 P3/32 P4/32 P5/32 P1/36 P2/36 P3/36 P4/36 P5/36

150Φ 225Φ 375Φ 300Φ

RW1 K1

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DATE OF RELEASE | RESPONSIBLE PRINCIPAL SIGNATURE | ISSUE

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CLIENT
CATHOLIC SCHOOLS OFFICE

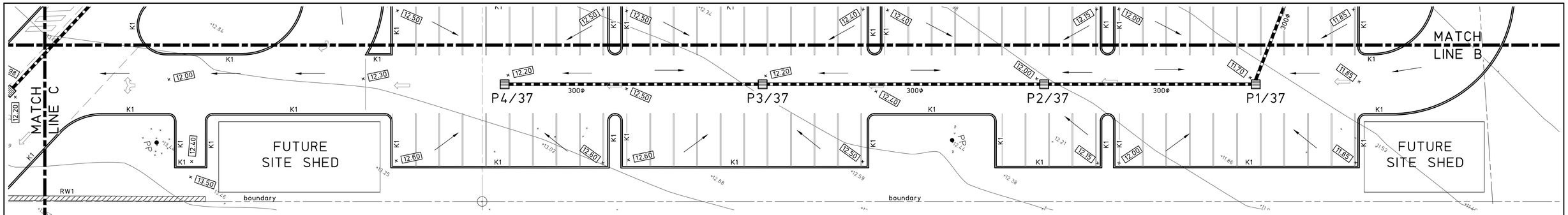
TITLE
STORMWATER PLAN
SHEET 8

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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C107	3

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



STORMWATER PLAN SHEET 9

SCALE 1:200

STORMWATER NOTES

1. REFER TO DRAWING C100 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

PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
P1/1	600x600	GRATED PIT	7.60	6.90
P2/1	600x600	GRATED PIT	7.60	7.00
P3/1	600x600	GRATED PIT	7.70	7.10
P4/1	600x600	GRATED PIT	7.80	7.20
P5/1	600x600	GRATED PIT	8.00	7.35
P6/1	600x600	GRATED PIT	8.10	7.50
P7/1	600x600	GRATED PIT	8.30	7.60
P1/2	600x600	GRATED PIT	8.10	7.50
P2/2	600x600	GRATED PIT	8.40	7.60
P3/2	600x600	GRATED PIT	8.60	7.70
P4/2	600x600	GRATED PIT	9.00	7.90
P5/2	600x600	GRATED PIT	8.90	8.00
P1/3	600x600	GRATED PIT	9.05	7.85
P2/2	600x600	GRATED PIT	9.05	7.95
P3/3	600x600	GRATED PIT	9.05	8.05
P4/3	600x600	GRATED PIT	9.25	8.15
P5/3	600x600	GRATED PIT	9.25	8.35
P6/3	600x600	GRATED PIT	9.40	8.50
P7/3	600x600	GRATED PIT	9.70	8.60
P1/4	600x600	GRATED PIT	8.50	7.70
P1/5	600x600	GRATED PIT	8.80	7.70
P2/5	600x600	GRATED PIT	8.60	7.85
P1/6	600x600	GRATED PIT	8.60	7.70
P2/6	600x600	GRATED PIT	8.50	7.85
P3/6	600x600	GRATED PIT	8.50	8.10
P4/6	600x600	GRATED PIT	8.70	8.20
P1/7	600x600	GRATED PIT	9.00	8.00
P2/7	600x600	GRATED PIT	8.85	8.10
P3/7	600x600	GRATED PIT	9.00	8.25
P1/8	600x600	GRATED PIT	9.15	8.00
P2/8	600x600	GRATED PIT	9.00	8.10
P3/8	600x600	GRATED PIT	9.00	8.25
P4/8	600x600	GRATED PIT	8.90	8.40
P1/9	600x600	GRATED PIT	9.00	8.00
P2/9	600x600	GRATED PIT	9.00	8.15
P3/9	600x600	GRATED PIT	9.25	8.30
P4/9	600x600	GRATED PIT	9.15	8.40
P1/10	600x600	GRATED PIT	9.30	8.70
P2/10	600x600	GRATED PIT	9.50	8.90
P1/11	600x600	GRATED PIT	10.00	8.65
P1/12	600x600	GRATED PIT	9.50	8.80
P1/13	600x600	GRATED PIT	10.15	9.75
P2/13	600x600	GRATED PIT	11.50	10.80
P3/13	600x600	GRATED PIT	13.70	12.50
P1/14	600x600	GRATED PIT	10.88	8.80
P2/14	600x600	GRATED PIT	11.75	11.08
P1/15	600x600	GRATED PIT	9.80	8.52
P2/15	600x600	GRATED PIT	9.75	8.60
P3/15	600x600	GRATED PIT	10.51	9.80
P4/15	600x600	GRATED PIT	11.80	11.12
P5/15	600x600	GRATED PIT	12.60	11.90
P1/16	600x600	GRATED PIT	8.10	7.10
P2/16	600x600	GRATED PIT	8.85	7.85

PIT SCHEDULE

PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
P3/16	600x600	GRATED PIT	9.05	8.15
P4/16	600x600	GRATED PIT	9.05	8.33
P1/17	600x600	GRATED PIT	8.70	7.30
P2/17	600x600	GRATED PIT	8.80	7.40
P3/17	600x600	GRATED PIT	9.05	8.30
P4/17	600x600	GRATED PIT	9.05	8.55
P1/18	600x600	GRATED PIT	9.05	7.50
P2/18	600x600	GRATED PIT	9.05	7.63
P3/18	600x600	GRATED PIT	9.05	7.78
P4/18	600x600	GRATED PIT	9.05	7.83
P5/18	600x600	GRATED PIT	9.05	7.88
P1/19	600x600	GRATED PIT	9.05	7.75
P2/19	600x600	GRATED PIT	9.05	7.97
P3/19	600x600	GRATED PIT	9.00	8.10
P1/20	600x600	GRATED PIT	9.00	7.83
P2/20	600x600	GRATED PIT	9.00	8.00
P3/20	600x600	GRATED PIT	9.00	8.15
P1/21	600x600	GRATED PIT	9.25	8.80
P1/22	600x600	GRATED PIT	8.50	7.00
P2/22	600x600	GRATED PIT	9.00	7.20
P3/22	600x600	GRATED PIT	9.10	7.60
P4/22	600x600	GRATED PIT	9.00	7.70
P5/22	600x600	GRATED PIT	9.00	8.00
P6/22	600x600	GRATED PIT	9.05	8.25
P7/22	600x600	GRATED PIT	9.05	8.35
P8/22	600x600	GRATED PIT	9.05	8.60
P9/22	600x600	GRATED PIT	9.35	8.80
P10/22	600x600	GRATED PIT	9.40	8.88
P1/23	600x600	GRATED PIT	9.20	8.40
P2/23	600x600	GRATED PIT	9.10	8.50
P1/24	600x600	GRATED PIT	9.20	8.44
P2/24	600x600	GRATED PIT	10.95	8.60
P3/24	600x600	GRATED PIT	10.95	8.80
P1/25	600x600	GRATED PIT	12.50	8.64
P1/26	600x600	GRATED PIT	9.20	7.75
P1/27	600x600	GRATED PIT	8.60	6.65
P2/27	600x600	GRATED PIT	9.20	7.00
P3/27	600x600	GRATED PIT	9.20	7.25
P4/27	600x600	GRATED PIT	9.30	7.50
P5/27	600x600	GRATED PIT	9.20	7.55
P6/27	600x600	GRATED PIT	9.20	7.75
P7/27	600x600	GRATED PIT	9.20	8.00
P8/27	600x600	GRATED PIT	9.20	8.26
P9/27	600x600	GRATED PIT	9.20	8.39
P10/27	600x600	GRATED PIT	9.20	8.58
P11/27	600x600	GRATED PIT	9.20	8.70
P12/27	600x600	GRATED PIT	9.30	8.80
P1/28	600x600	GRATED PIT	9.00	8.00
P2/28	600x600	GRATED PIT	10.00	9.26
P3/28	600x600	GRATED PIT	11.50	10.70
P4/28	600x600	GRATED PIT	11.60	10.90
P1/29	600x600	GRATED PIT	10.10	9.50
P2/29	600x600	GRATED PIT	10.70	10.00
P3/29	600x600	GRATED PIT	11.20	10.20

PIT SCHEDULE

PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
P1/30	600x600	GRATED PIT	9.50	8.43
P2/30	600x600	GRATED PIT	10.00	9.00
P3/30	600x600	GRATED PIT	10.30	9.50
P4/30	600x600	GRATED PIT	10.40	9.70
P5/30	600x600	GRATED PIT	11.60	10.00
P6/30	600x600	GRATED PIT	10.80	10.20
P1/31	600x600	GRATED PIT	8.80	8.04
P2/31	600x600	GRATED PIT	9.00	8.21
P3/31	600x600	GRATED PIT	9.20	8.41
P4/31	600x600	GRATED PIT	9.40	8.64
P1/32	600x600	GRATED PIT	10.20	8.70
P2/32	600x600	GRATED PIT	10.80	8.80
P3/32	600x600	GRATED PIT	11.40	10.30
P4/32	600x600	GRATED PIT	11.20	10.45
P5/32	600x600	GRATED PIT	11.40	10.65
P6/32	600x600	GRATED PIT	12.20	11.65
P7/32	600x600	GRATED PIT	12.85	12.25
P8/32	600x600	GRATED PIT	14.20	12.80
P1/33	600x600	GRATED PIT	10.27	8.92
P2/33	600x600	GRATED PIT	10.27	9.07
P3/33	600x600	GRATED PIT	10.27	9.17
P4/33	600x600	GRATED PIT	10.27	9.43
P5/33	600x600	GRATED PIT	10.27	9.58
P1/34	600x600	GRATED PIT	10.27	9.43
P1/35	600x600	GRATED PIT	10.27	9.35
P2/35	600x600	GRATED PIT	10.27	9.51
P1/36	600x600	GRATED PIT	10.40	9.50
P2/36	600x600	GRATED PIT	10.80	9.70
P3/36	600x600	GRATED PIT	11.30	10.00
P4/36	600x600	GRATED PIT	11.30	10.29
P5/36	600x600	GRATED PIT	11.30	10.55
P1/37	600x600	GRATED PIT	11.70	10.70
P2/37	600x600	GRATED PIT	12.00	10.90
P3/37	600x600	GRATED PIT	12.20	11.19
P4/37	600x600	GRATED PIT	12.20	11.45
P1/38	600x600	GRATED PIT	7.60	6.20
P1/39	600x600	GRATED PIT	7.80	7.00
P1/40	600x600	GRATED PIT	8.70	7.80
P1/41	600x600	GRATED PIT	8.70	7.80
P1/42	600x600	GRATED PIT	8.70	7.90
P2/42	600x600	GRATED PIT	8.40	7.50
P1/43	600x600	GRATED PIT	10.95	10.00
P2/43	600x600	GRATED PIT	10.95	10.10
P3/43	600x600	GRATED PIT	10.95	10.20
P1/44	600x600	GRATED PIT	12.50	11.40
P2/44	600x600	GRATED PIT	12.50	11.50
P1/45	600x600	GRATED PIT	9.50	7.50
P2/45	600x600	GRATED PIT	10.60	9.60
P3/45	600x600	GRATED PIT	10.80	9.80
P1/46	600x600	GRATED PIT	9.20	8.80

NOT FOR CONSTRUCTION

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CLIENT
CATHOLIC SCHOOLS OFFICE

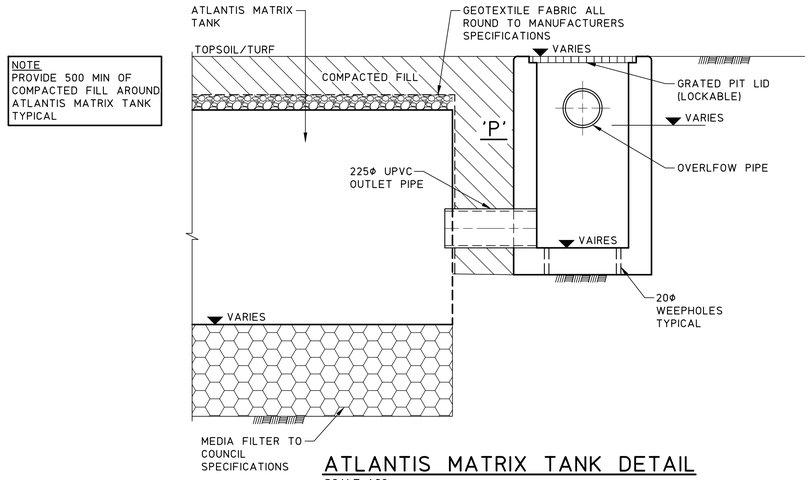
TITLE
STORMWATER PLAN
SHEET 9

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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C108	3

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

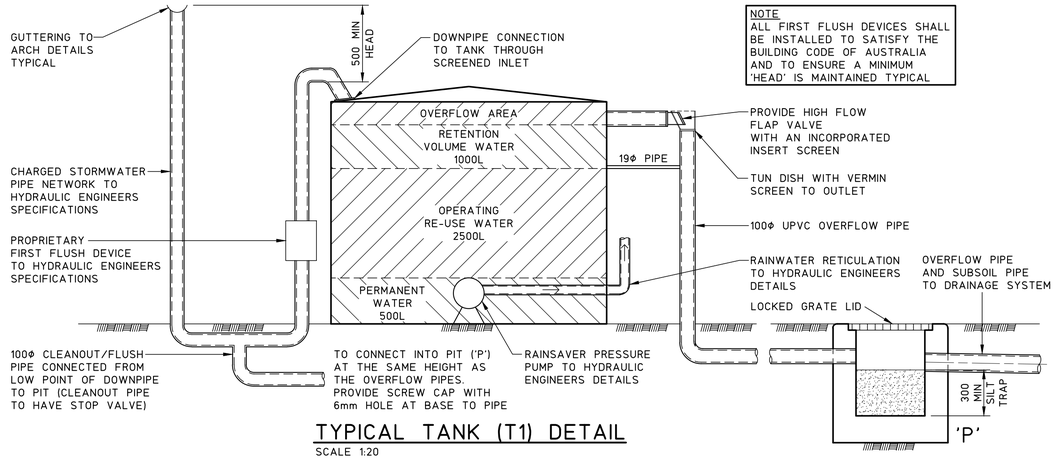


ATLANTIS MATRIX TANK DETAIL

SCALE 1:20

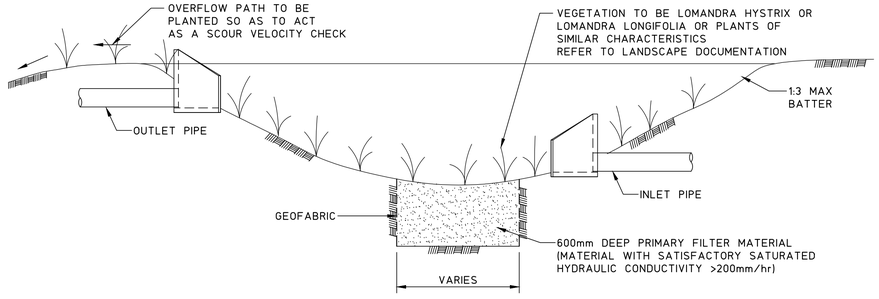
ATLANTIS MATRIX TANK NOTES

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



TYPICAL TANK (T1) DETAIL

SCALE 1:20



TYPICAL DETENTION POND DETAIL

SCALE 1:50

NOT FOR CONSTRUCTION

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2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	26.3.18

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THE JUNCTION, NSW 2291
Tel: (02) 4927 5566
Fax: (02) 4927 5577
Email: admin@mpceng.com.au
Web: www.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT: CATHOLIC SCHOOLS OFFICE

TITLE: 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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:50, 20	17-828	C109	2

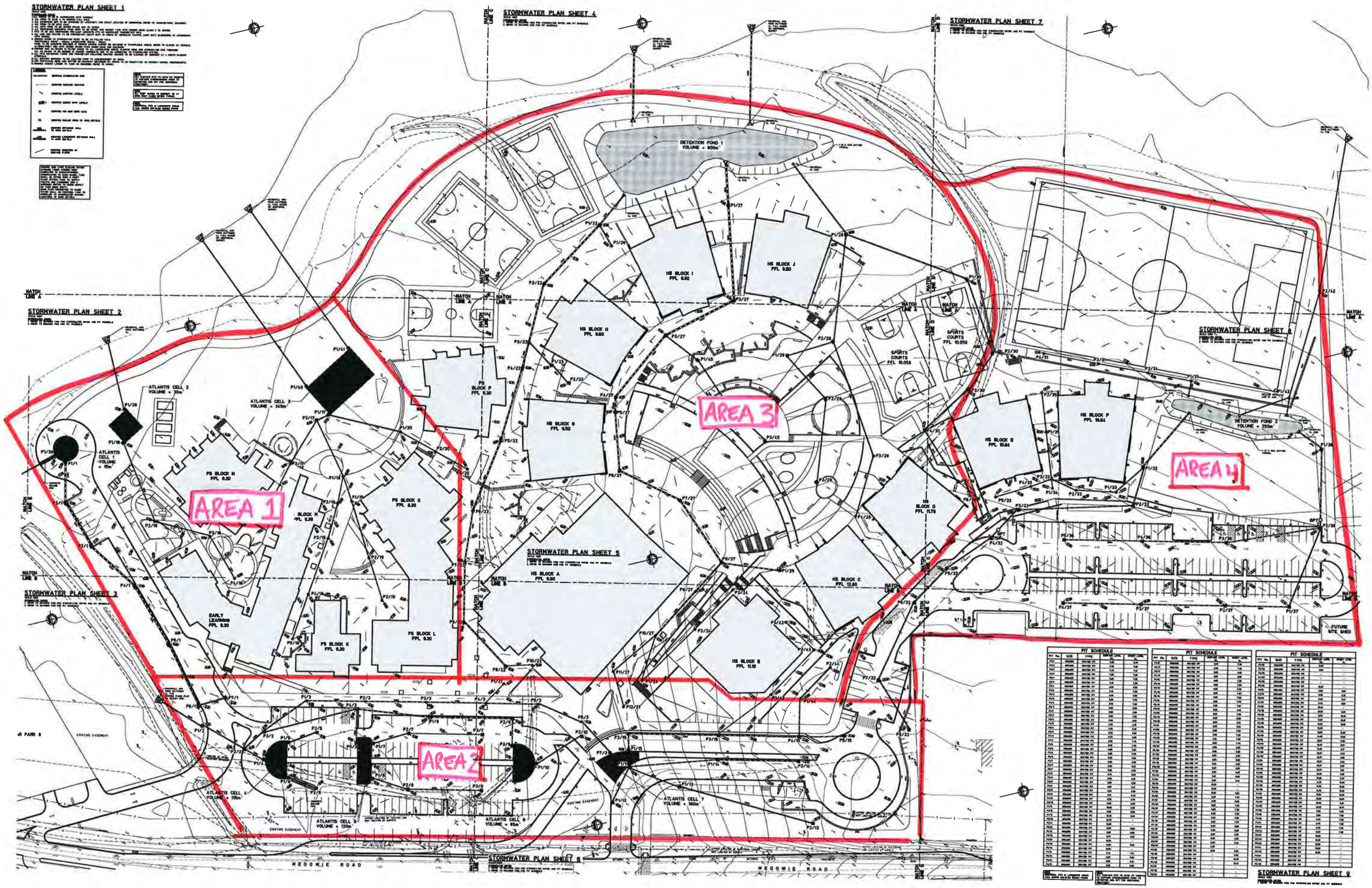
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

Appendix C

Catchment Areas and Summary of Stormwater Design Intent

CATCHMENT AREA PLAN

MPC REF: 17-828.



Appendix D

Erosion and Sediment Control Plan and Calculations

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 TROCKS 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
- POND 3: DENOTES SEDIMENT POND, 294m³ SETTLING ZONE, 147m³ 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 sacrificial 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 requirements. The final setup for temporary internal outlet structures 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 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 some 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

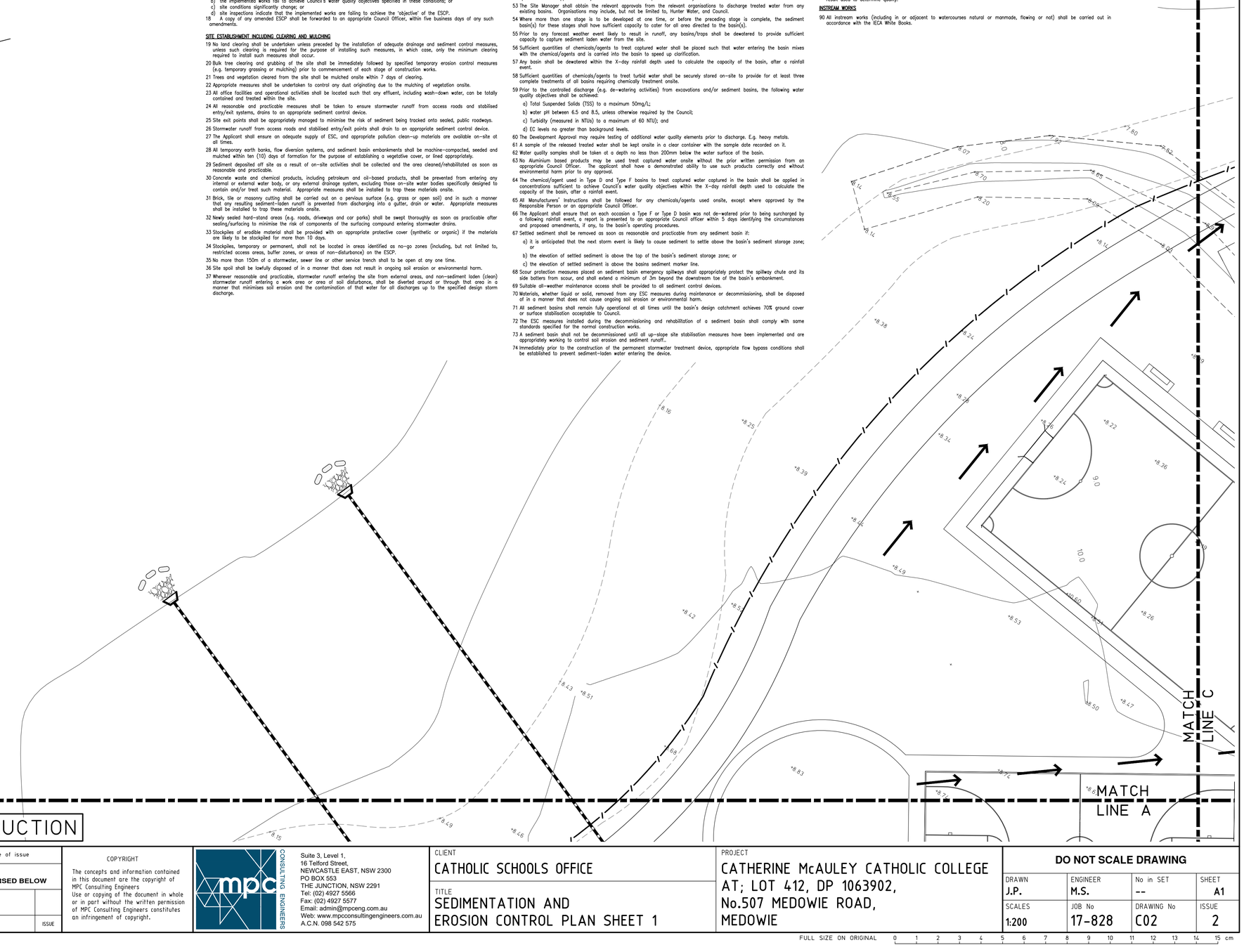
75 Temporary Stabilisation may be attained using vegetation, non rewettable soil polymers, or pneumatically applied erosion controls.
76 All cut and fill earth batters less than 3m in elevation shall be topsoiled, and grass seeded/hydromulched within 10 days of completion of grading in consultation with 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.



NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

DATE OF RELEASE | RESPONSIBLE PRINCIPAL SIGNATURE | ISSUE

mpc CONSULTING ENGINEERS
Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT: CATHOLIC SCHOOLS OFFICE

TITLE: 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	C02	2

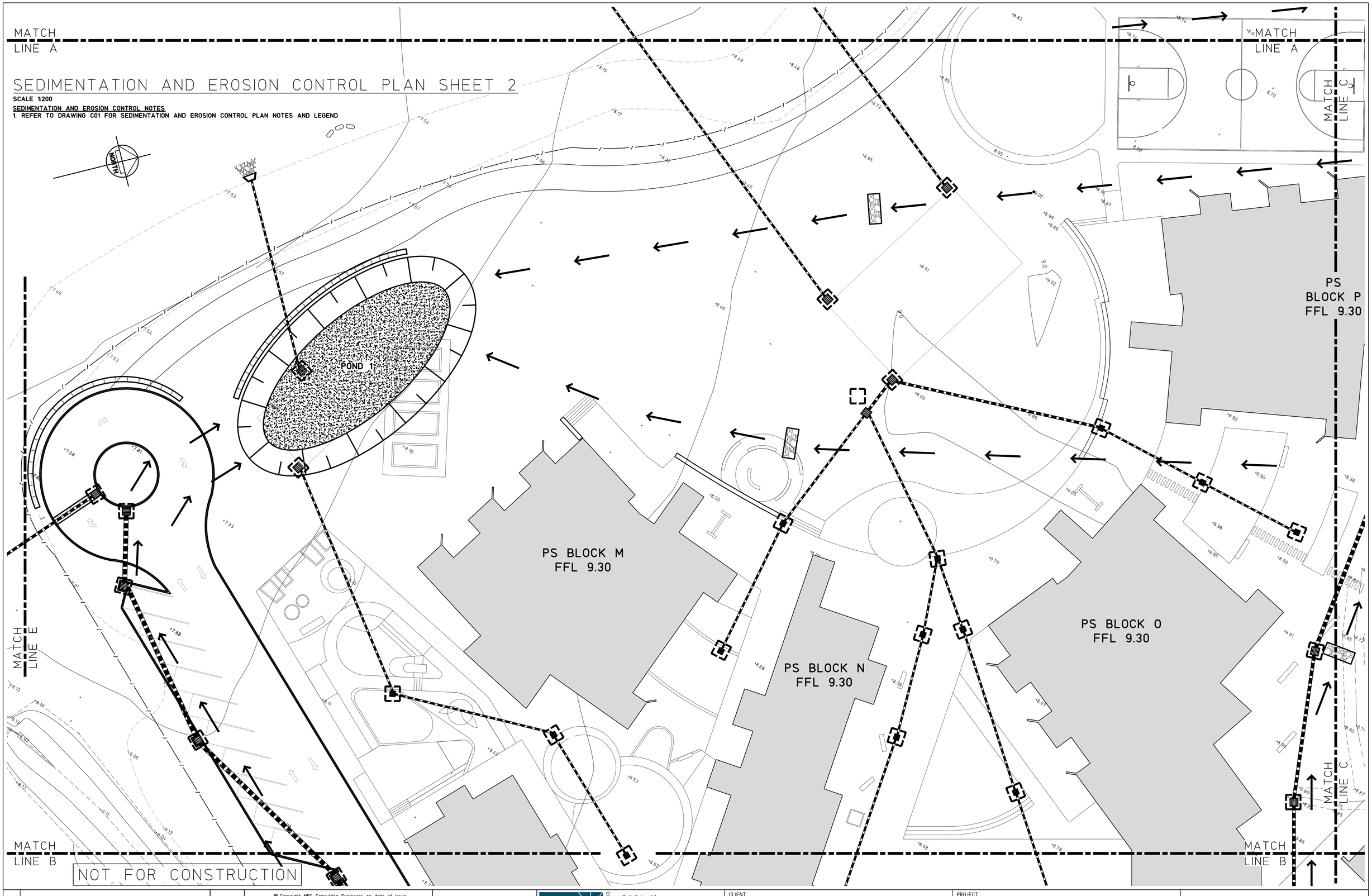
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

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



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Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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
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SCALES	JOB No	DRAWING No	ISSUE
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FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

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

MATCH LINE B

MATCH LINE B

MATCH LINE C

EARLY LEARNING FFL 9.30

PS BLOCK K FFL 9.30

PS BLOCK L FFL 9.30

EXISTING EASEMENT

EXISTING EASEMENT

boundary

boundary

EDGE OF BITUMEN

DRAIN

SSGN

LP

PP

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

M E D O W I E R O A D

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
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0	DEVELOPMENT APPLICATION	28.3.18

mpc CONSULTING ENGINEERS

Suite 3, Level 1,
16 Telford Street,
NEWCASTLE EAST, NSW 2300
PO BOX 553
THE JUNCTION, NSW 2291
Tel: (02) 4927 5566
Fax: (02) 4927 5577
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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
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SCALES	JOB No	DRAWING No	ISSUE
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SEDIMENTATION AND EROSION CONTROL PLAN SHEET 4

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

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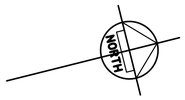

MATCH LINE C

MATCH LINE D

POND 2

HS BLOCK I
FFL 9.50

HS BLOCK J
FFL 9.50

MATCH LINE A

MATCH LINE C

MATCH LINE D

MATCH LINE A

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

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Suite 3, Level 1,
16 Telford Street,
NEWCASTLE EAST, NSW 2300
PO BOX 553
THE JUNCTION, NSW 2291
Tel: (02) 4927 5566
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A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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
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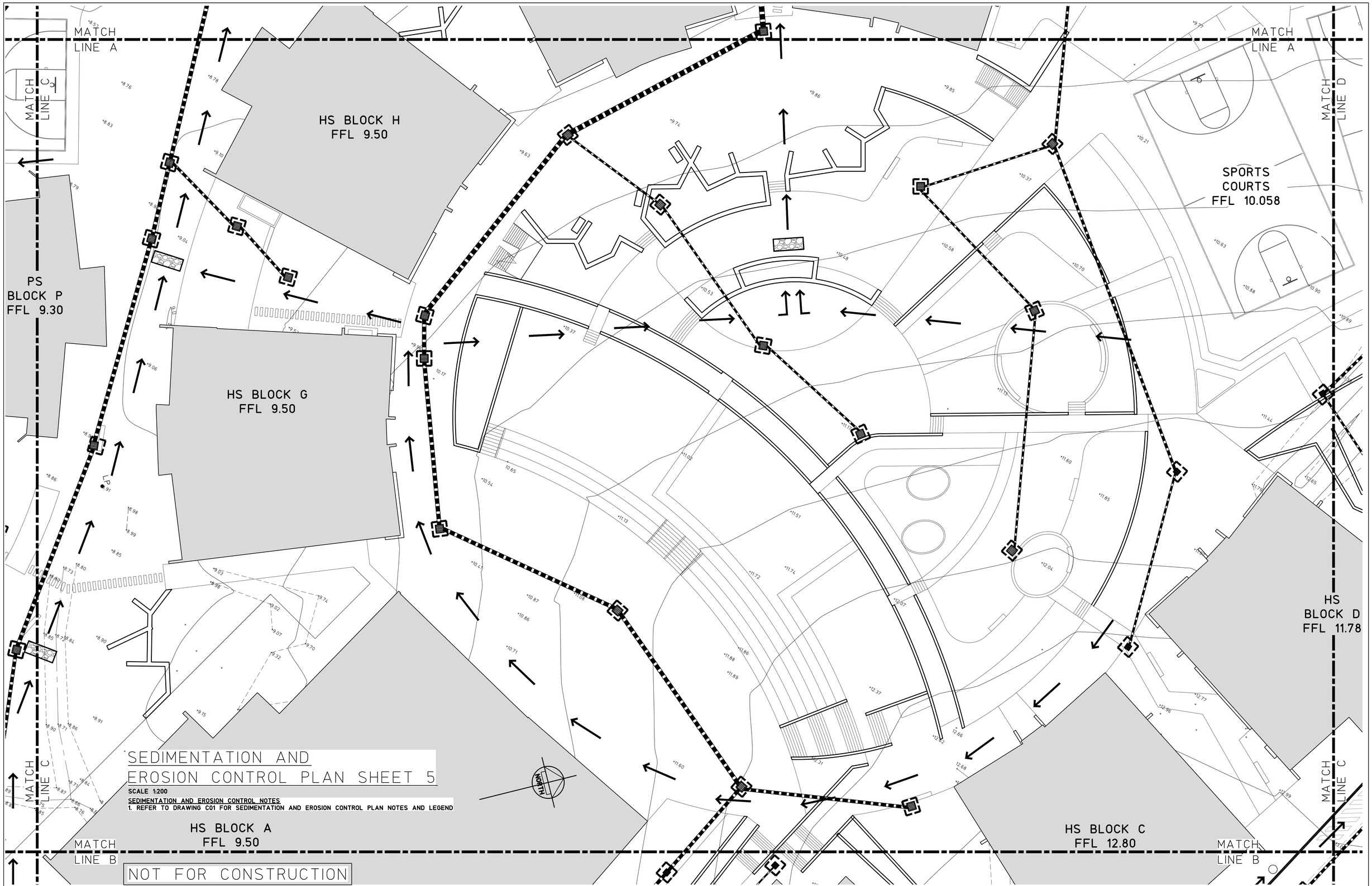

SEDIMENTATION AND EROSION CONTROL PLAN SHEET 5

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

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

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

mpc CONSULTING ENGINEERS
Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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	C06	2

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

HS BLOCK A
FFL 9.50

HS BLOCK C
FFL 12.80

HS BLOCK B
FFL 11.15

MATCH LINE B

MATCH LINE B

MATCH LINE C

MATCH LINE C

ELEC KIOSK

EXISTING EASEMENT

NORTH

T.B.M. PEG R 9.17 (A.H.D.)

O'HEAD PWR 21.91

O'HEAD PWR

boundary

boundary

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)

DRAIN

EDGE BITUMEN

EDGE BITUMEN

CONCRETE

DISH

LOT 2 DP 587953

M E D O W I E R O A D

SEDIMENTATION AND EROSION CONTROL PLAN SHEET 6

SCALE 1:200

SEDIMENTATION AND EROSION CONTROL NOTES

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

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

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A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
SEDIMENTATION AND EROSION CONTROL 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.P.	M.S.	--	A1
SCALES	JOB No	DRAWING No	ISSUE
1:200	17-828	C07	2

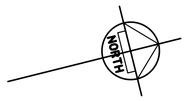
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

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



MATCH LINE D

MATCH LINE A

boundary

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

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THE JUNCTION, NSW 2291
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CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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	C08	2

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

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 A

MATCH LINE D

MATCH LINE C

MATCH LINE B

SPORTS COURTS FFL 10.058

HS BLOCK E FFL 10.54

HS BLOCK F FFL 10.54

HS BLOCK D FFL 11.78

POND 3

CAR PARK 5

LOT 413 DP 1063902

GPT

GPT

NORTH

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

DATE OF RELEASE | RESPONSIBLE PRINCIPAL SIGNATURE | ISSUE

mpc CONSULTING ENGINEERS

Suite 3, 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.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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	C09	2

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

MATCH LINE C

MATCH LINE B

FUTURE SITE SHED

FUTURE SITE SHED

boundary

boundary

boundary

boundary

boundary

SEPTIC TANK

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

LOT 2 DP 587953

LOT 22 DP 715013

EXISTING ELECTRICAL SUB STATION

TRACK

TRACK

TRACK

CONC HWALL

APPROX LOCATION OF WATERMAIN (NOT LOCATED BY SURVEY)

BITUMEN

DRAIN

DISH

CONCRETE

DISH

DRAIN

MEDOWIE ROAD

MATCH LINE D

NOT FOR CONSTRUCTION

NORTH

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
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

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CLIENT
CATHOLIC SCHOOLS OFFICE

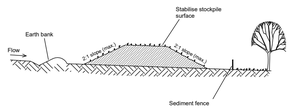
TITLE
SEDIMENTATION AND EROSION CONTROL PLAN SHEET 9

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	C10	2

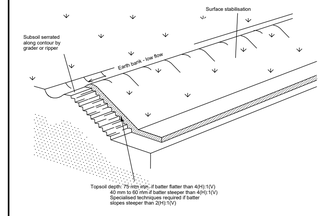
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



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.

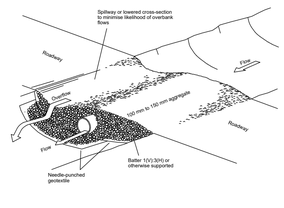
STOCKPILES SD 4-1



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.

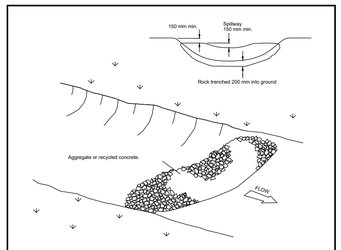
REPLACING TOPSOIL SD 4-2



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.

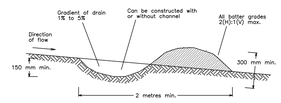
TEMPORARY WATERWAY CROSSING SD 5-1



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

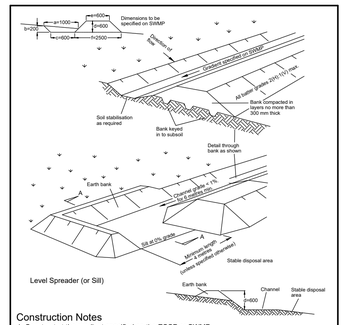


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

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.

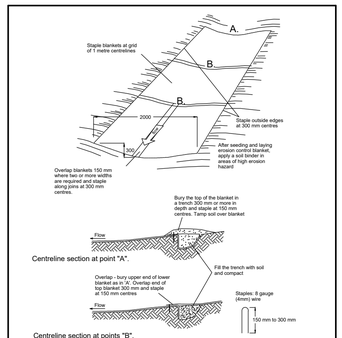
EARTH BANK (LOW FLOW) SD 5-5



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.

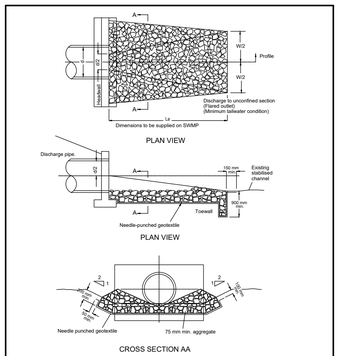
EARTH BANK (HIGH FLOWS) SD 5-6



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.

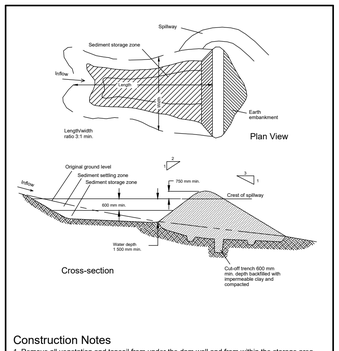
RECP : CONCENTRATED FLOW SD 5-7



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.

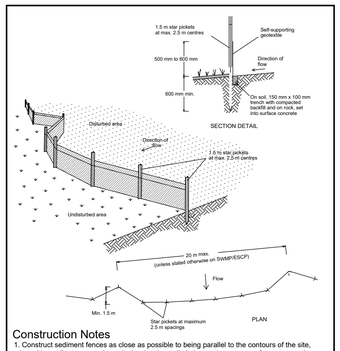
ENERGY DISSIPATER SD 5-8



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.

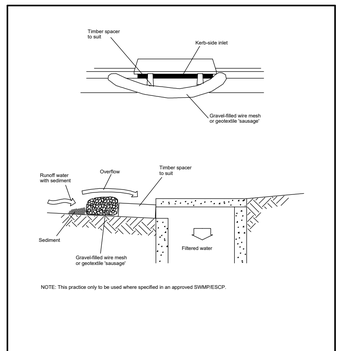
EARTH BANK - WET
(APPLIES TO TYPE D AND TYPE F SOILS ONLY) SD 6-4



Construction Notes

1. Construct 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

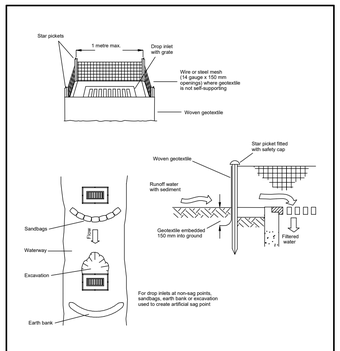


NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

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.

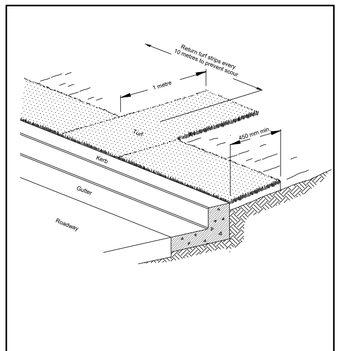
MESH AND GRAVEL INLET FILTER SD 6-11



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.

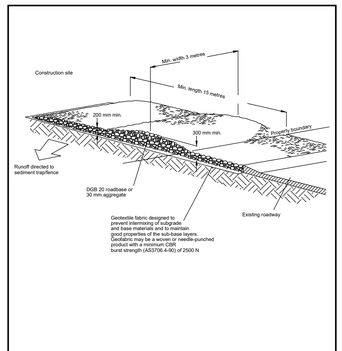
GEOTEXTILE INLET FILTER SD 6-12



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



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

NOT FOR CONSTRUCTION

ISSUE	REASON FOR ISSUE	DATE
2	DEVELOPMENT APPLICATION	17.5.18
1	DEVELOPMENT APPLICATION	15.5.18
0	DEVELOPMENT APPLICATION	28.3.18

CONSULTING ENGINEERS
Suite 3, Level 1,
16 Telford Street,
NEWCASTLE EAST, NSW 2300
PO BOX 553
THE JUNCTION, NSW 2291
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A.C.N. 098 542 575

CLIENT
CATHOLIC SCHOOLS OFFICE

TITLE
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	C11	2

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

Appendix E

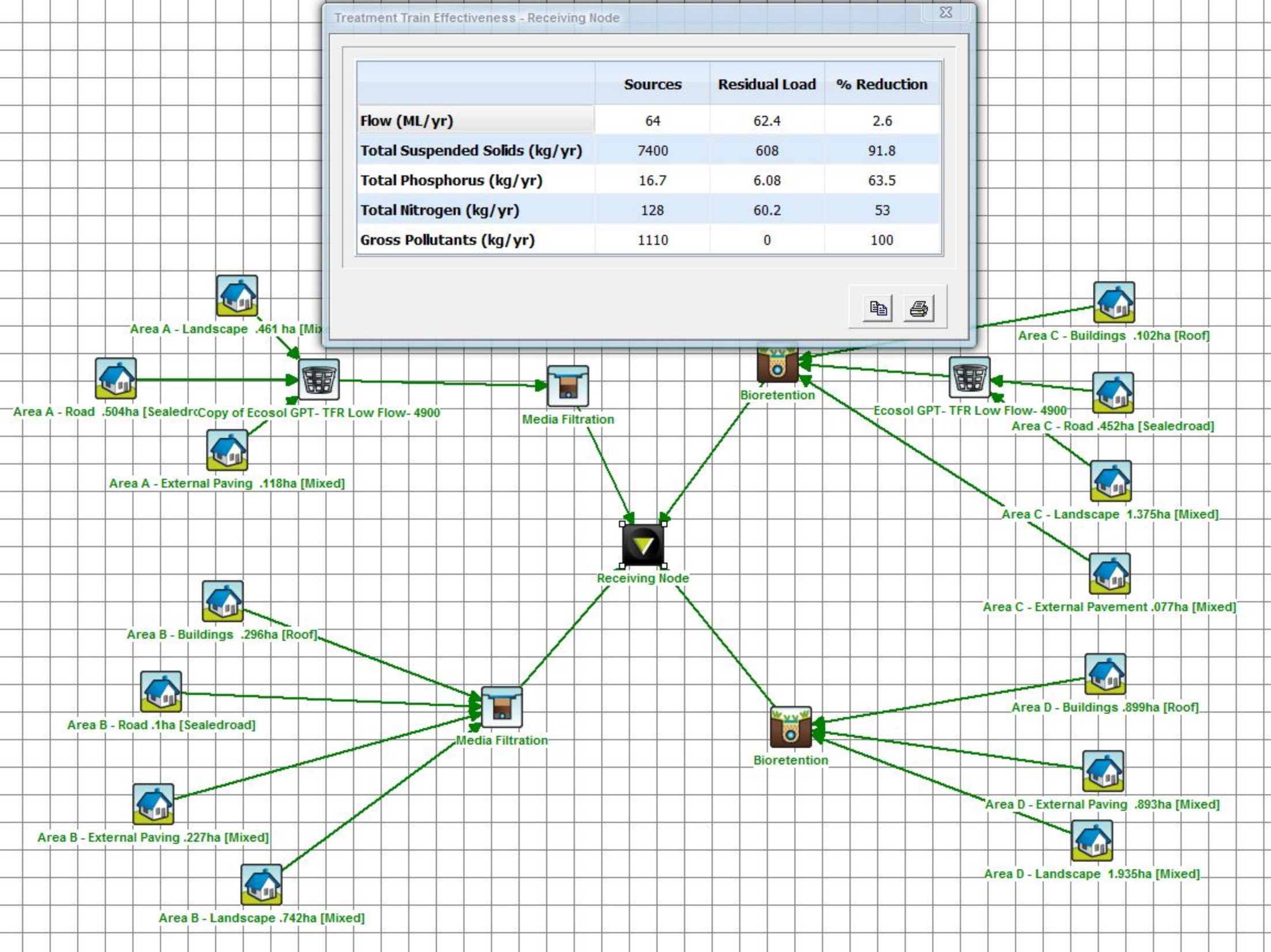
Water Quality (MUSIC) Model

Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	24.3	24.3	0
Total Suspended Solids (kg/yr)	2390	2390	0
Total Phosphorus (kg/yr)	6.82	6.82	0
Total Nitrogen (kg/yr)	60.4	60.4	0
Gross Pollutants (kg/yr)	29.8	29.8	0

Treatment Train Effectiveness - Receiving Node

	Sources	Residual Load	% Reduction
Flow (ML/yr)	64	62.4	2.6
Total Suspended Solids (kg/yr)	7400	608	91.8
Total Phosphorus (kg/yr)	16.7	6.08	63.5
Total Nitrogen (kg/yr)	128	60.2	53
Gross Pollutants (kg/yr)	1110	0	100



MUSIC-*link* Report

Project Details		Company Details	
Project:	Developed Site	**Company:**	MPC Consulting Engineers
Report Export Date:	23/08/2018	**Contact:**	Matthew Snelson
Catchment Name:	Music 2 Latest Model	**Address:**	16 Telford Street, Newcastle East NSW
Catchment Area:	8.885ha	**Phone:**	02 4927 5566
Impervious Area*:	49.20%	**Email:**	matthews@mpceng.com.au
Rainfall Station:	WILLIAMTOWN RAAF - Station 061078 - Zone B		
Modelling Time-step:	6 Minutes		
Modelling Period:	1/01/1998 - 31/12/2007 11:54:00 PM		
Mean Annual Rainfall:	1125mm		
Evapotranspiration:	1394mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.31		
Study Area:	Williamtown		
Scenario:	Sensitive Catchment - Sandy soils		

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

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Receiving Node	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	2.58%	Media Filtration Node	2	Urban Source Node	14
TSS	91.8%	Bio Retention Node	2		
TP	63.5%	GPT Node	2		
TN	53%				
GP	100%				

Comments

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Bio	Bioretention	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention	Hi-flow bypass rate (cum/sec)	None	None	100
Bio	Bioretention	PET Scaling Factor	2.1	2.1	2.1
Bio	Bioretention	PET Scaling Factor	2.1	2.1	2.1
GPT	Copy of Ecosol GPT- TFR Low Flow- 4900	Hi-flow bypass rate (cum/sec)	None	99	0.315
GPT	Ecosol GPT- TFR Low Flow- 4900	Hi-flow bypass rate (cum/sec)	None	99	0.315
Receiving	Receiving Node	% Load Reduction	None	None	2.58
Receiving	Receiving Node	GP % Load Reduction	90	None	100
Receiving	Receiving Node	TN % Load Reduction	45	None	53
Receiving	Receiving Node	TP % Load Reduction	60	None	63.5
Receiving	Receiving Node	TSS % Load Reduction	90	None	91.8
Urban	Area A - External Paving .118ha	Area Impervious (ha)	None	None	0.118
Urban	Area A - External Paving .118ha	Area Pervious (ha)	None	None	0
Urban	Area A - External Paving .118ha	Total Area (ha)	None	None	0.118
Urban	Area A - Landscape .461 ha	Area Impervious (ha)	None	None	0
Urban	Area A - Landscape .461 ha	Area Pervious (ha)	None	None	0.461
Urban	Area A - Landscape .461 ha	Total Area (ha)	None	None	0.461
Urban	Area A - Road .504ha	Area Impervious (ha)	None	None	0.504
Urban	Area A - Road .504ha	Area Pervious (ha)	None	None	0
Urban	Area A - Road .504ha	Total Area (ha)	None	None	0.504
Urban	Area B - Buildings .296ha	Area Impervious (ha)	None	None	1
Urban	Area B - Buildings .296ha	Area Pervious (ha)	None	None	0
Urban	Area B - Buildings .296ha	Total Area (ha)	None	None	1
Urban	Area B - External Paving .227ha	Area Impervious (ha)	None	None	0.227
Urban	Area B - External Paving .227ha	Area Pervious (ha)	None	None	0
Urban	Area B - External Paving .227ha	Total Area (ha)	None	None	0.227
Urban	Area B - Landscape .742ha	Area Impervious (ha)	None	None	0
Urban	Area B - Landscape .742ha	Area Pervious (ha)	None	None	0.742
Urban	Area B - Landscape .742ha	Total Area (ha)	None	None	0.742
Urban	Area B - Road .1ha	Area Impervious (ha)	None	None	0.1
Urban	Area B - Road .1ha	Area Pervious (ha)	None	None	0
Urban	Area B - Road .1ha	Total Area (ha)	None	None	0.1
Urban	Area C - Buildings .102ha	Area Impervious (ha)	None	None	0.102
Urban	Area C - Buildings .102ha	Area Pervious (ha)	None	None	0
Urban	Area C - Buildings .102ha	Total Area (ha)	None	None	0.102
Urban	Area C - External Pavement .077ha	Area Impervious (ha)	None	None	0.077
Urban	Area C - External Pavement .077ha	Area Pervious (ha)	None	None	0
Urban	Area C - External Pavement .077ha	Total Area (ha)	None	None	0.077
Urban	Area C - Landscape 1.375ha	Area Impervious (ha)	None	None	0
Urban	Area C - Landscape 1.375ha	Area Pervious (ha)	None	None	1.375

Only certain parameters are reported when they pass validation

Node Type	Node Name	Parameter	Min	Max	Actual
Urban	Area C - Landscape 1.375ha	Total Area (ha)	None	None	1.375
Urban	Area C - Road .452ha	Area Impervious (ha)	None	None	0.452
Urban	Area C - Road .452ha	Area Pervious (ha)	None	None	0
Urban	Area C - Road .452ha	Total Area (ha)	None	None	0.452
Urban	Area D - Buildings .899ha	Area Impervious (ha)	None	None	0.899
Urban	Area D - Buildings .899ha	Area Pervious (ha)	None	None	0
Urban	Area D - Buildings .899ha	Total Area (ha)	None	None	0.899
Urban	Area D - External Paving .893ha	Area Impervious (ha)	None	None	0.893
Urban	Area D - External Paving .893ha	Area Pervious (ha)	None	None	0
Urban	Area D - External Paving .893ha	Total Area (ha)	None	None	0.893
Urban	Area D - Landscape 1.935ha	Area Impervious (ha)	None	None	0
Urban	Area D - Landscape 1.935ha	Area Pervious (ha)	None	None	1.935
Urban	Area D - Landscape 1.935ha	Total Area (ha)	None	None	1.935

Only certain parameters are reported when they pass validation

Appendix F

Stormwater Maintenance Plan

MPC Ref: 17-828
March 2018

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