



Proposed School –

507 MEDOWIE ROAD, MEDOWIE

Stormwater Management Plan

for

Catholic Schools Office

May2018 – Revision 1

MPC Project Ref: 17-828

Contents

1.	Background Information	2
1.1	Preamble	2
1.2	Stormwater Management Plan	2
1.3	Background Information	2
2.	Site and Catchment Details	3
2.1	The Existing Site	3
2.2	2.2 The Proposed Site	3
2.3	Catchment	3
3.	Stormwater and Environmental Management Philosophy	4
4.	Proposed Stormwater Management Facilities	5
4.1	Preamble	5
4.2	Nature and Function of Stormwater Management Facilities	5
4.3	Design Storm Events	5
4.4	Stormwater Harvesting	6
4.5	Stormwater Retention	6
4.6	Site Flood Storage Analysis	8
4.7	Water Quality	8
4.8	Maintenance of Stormwater Management Facilities	9
5.	Construction Phase Erosion and Sediment Controls	10
6.	Summary	11

Appendices

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

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 Retention system
- 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 (Retention)
- 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;
- Site stormwater retention would be required to limit the stormwater discharge off the site;

2. Site and Catchment Details

2.1 The Existing Site

The existing site to be developed comprises of a total plan area of approximately 81200m².

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

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.

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;
- 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;
- 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 – Vol.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 through a new pipe/pit system to a 4000 litre above ground rainwater tank per building, with over flows being connected to the developments detention basins.
- 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 Tank

A 4000 litre rainwater harvesting tank for each building will be used to store the roof water which is to be used for re-use and irrigation purposes. Roof rainwater is piped directly to the harvesting tank via the downpipe system and a first flush device.

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 retention pond.

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 Atlantis 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 (13740m²)

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 (10830m²)

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 (37340m²)

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

Table 1: Stormwater Detention Calculations

Item	Minor Storm	Major Storm
Outflow (L/s)	425 L/s from Basin	634 L/s from Basin

Catchment Area 4 (19265m²)**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 flood 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 incorporated 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.

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:

- Total Suspended Solids – 89.4% reduction
- Total Phosphorus – 78.2% reduction
- Total Nitrogen – 48.8% reduction
- Gross Pollutants – 100% reduction

A copy of the MUSIC model diagram, 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.

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

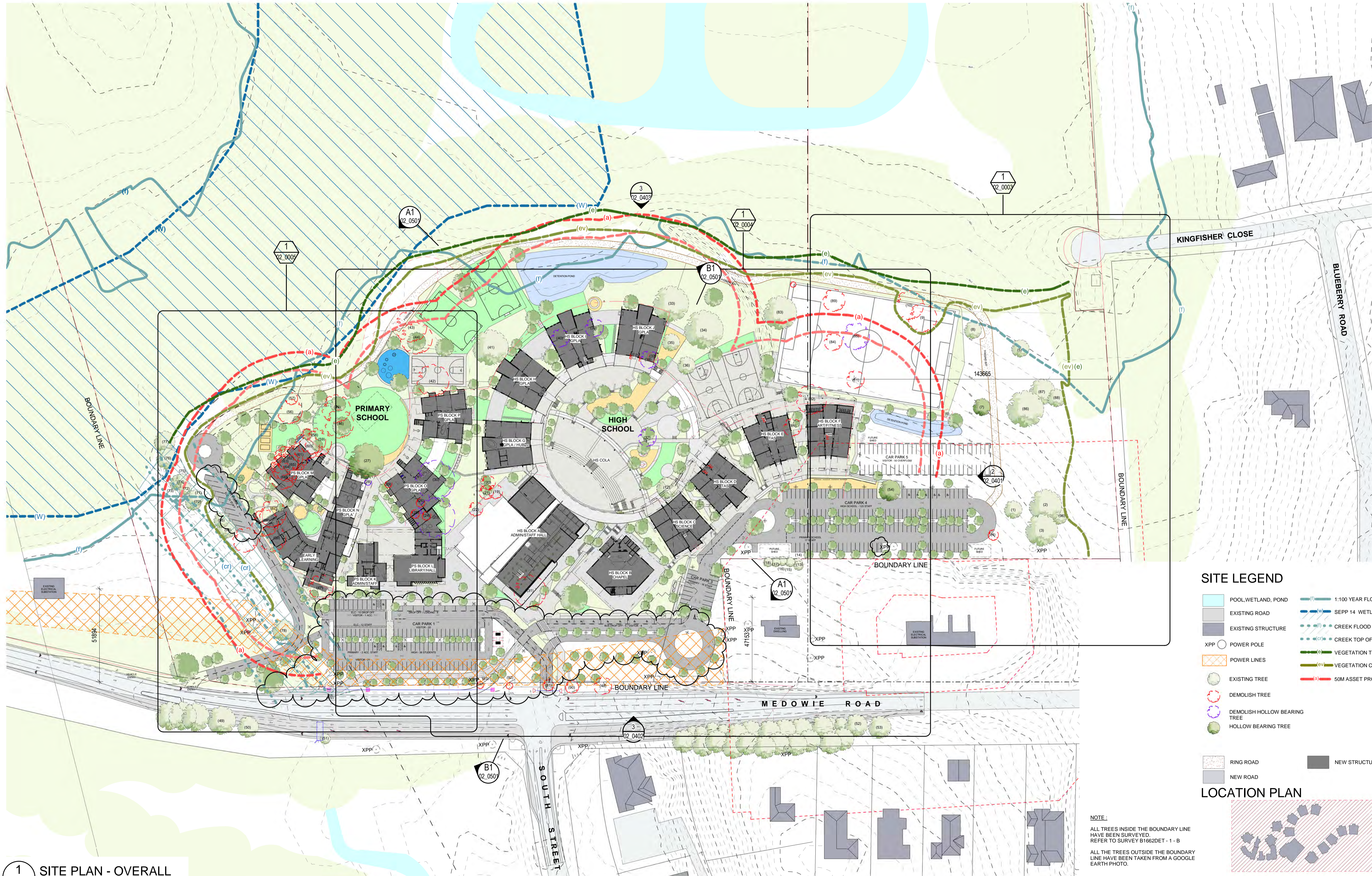
Date: March 2018

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**

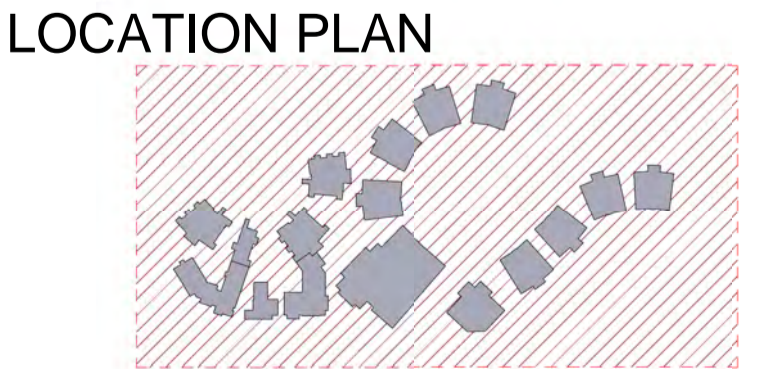
Appendix A

Site Plan



- 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
 - 1:100 YEAR FLOOD LINE
 - SEPP 14 WETLANDS
 - CREEK FLOOD LINE
 - CREEK TOP OF BANK
 - VEGETATION TRUNK LINE
 - VEGETATION CANOPY LINE
 - 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.

1 SITE PLAN - OVERALL
02_0401 SCALE 1:1000

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 - Luke F.JSQ.rvt



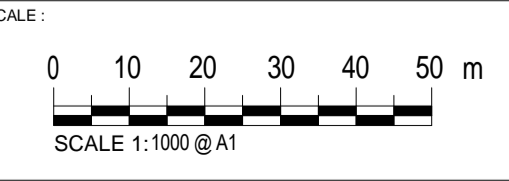
Suite 3 Level 1 496 Hunter St Newcastle NSW 1590
1st Flr 412 424 1078
newcastle@webberarchitects.com www.webberarchitects.com

Directors: Jon Webster, Peter Webster
Associate Directors: Sophie Mackay, Natalie Brooks
Associates: Luke Webster

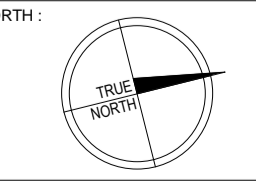
SITE PLAN - OVERALL
CATHERINE MCAULEY CATHOLIC COLLEGE
507 MEDOWIE ROAD, MEDOWIE

ISSUED:
NOT FOR CONSTRUCTION

PROJECT COMMENCEMENT DATE: 01.05.2017



SHEET NUMBER: 2544_02_0002_EE



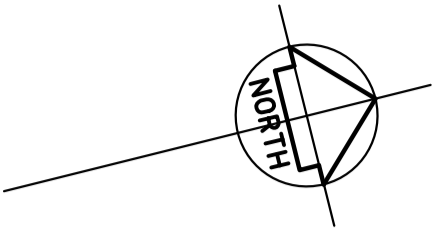
This drawing and the design expressed are copyright and remain the property of Webber Architects. In accordance with the commonwealth copyright act 1968 this drawing and design in whole or part may not be used unless licensed by Webber Architects. Verify all dimensions and falls on site before construction and do not scale from drawing.

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 C10 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 100Ø AG DRAINS IN FILTER SOCKS TO ALL LANDSCAPED AREAS, PLANTER BEDS AND STORMWATER PIPE TRENCHES.
11. ALL AG DRAINS TO BE BEDDED IN COARSE AGGREGATE AND TO BE CONNECTED TO STORMWATER SYSTEM.
12. ALL PITS, DETENTION TANKS AND PROPRIETARY POLLUTION CONTROL DEVICES TO BE CLEANED OF SEDIMENT AT 3 MONTH MAXIMUM INTERVALS.
13. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF WORK.
14. ANY FOOTPATHS, KERB AND GUTTER OR ROADWAY DISTURBED BY WORKS TO BE REINSTATED TO CURRENT COUNCIL REQUIREMENTS.
15. PROVIDE ACCESS LADDER TO TANK AS REQUIRED, REFER TO AS1657.



LEGEND

- DENOTES STORMWATER PIPE
- DENOTES EXISTING CONTOUR
- 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

MATCH
LINE A

NOT FOR CONSTRUCTION

MATCH
LINE C

MATCH
LINE C

MATCH
LINE A

				© Copyright MPC Consulting Engineers as date of issue		<div>COPYRIGHT</div> <div>The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.</div>	<div></div> <div>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@mpceing.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575</div>	<div>CLIENT</div> <div>CATHOLIC SCHOOLS OFFICE</div> <div>TITLE</div> <div>STORMWATER PLAN SHEET 1</div>	<div>PROJECT</div> <div>CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE</div>	DO NOT SCALE DRAWING								
3	DEVELOPMENT APPLICATION	17.5.18	<div>THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW</div>								DRAWN	ENGINEER	No in SET	SHEET				
2	DEVELOPMENT APPLICATION	15.5.18									J.P.	M.S.	--	A1				
1	DEVELOPMENT APPLICATION	28.3.18									SCALES	JOB No	DRAWING No	ISSUE				
0	REVIEW	16.3.18																
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE												


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

MATCH
LINE A

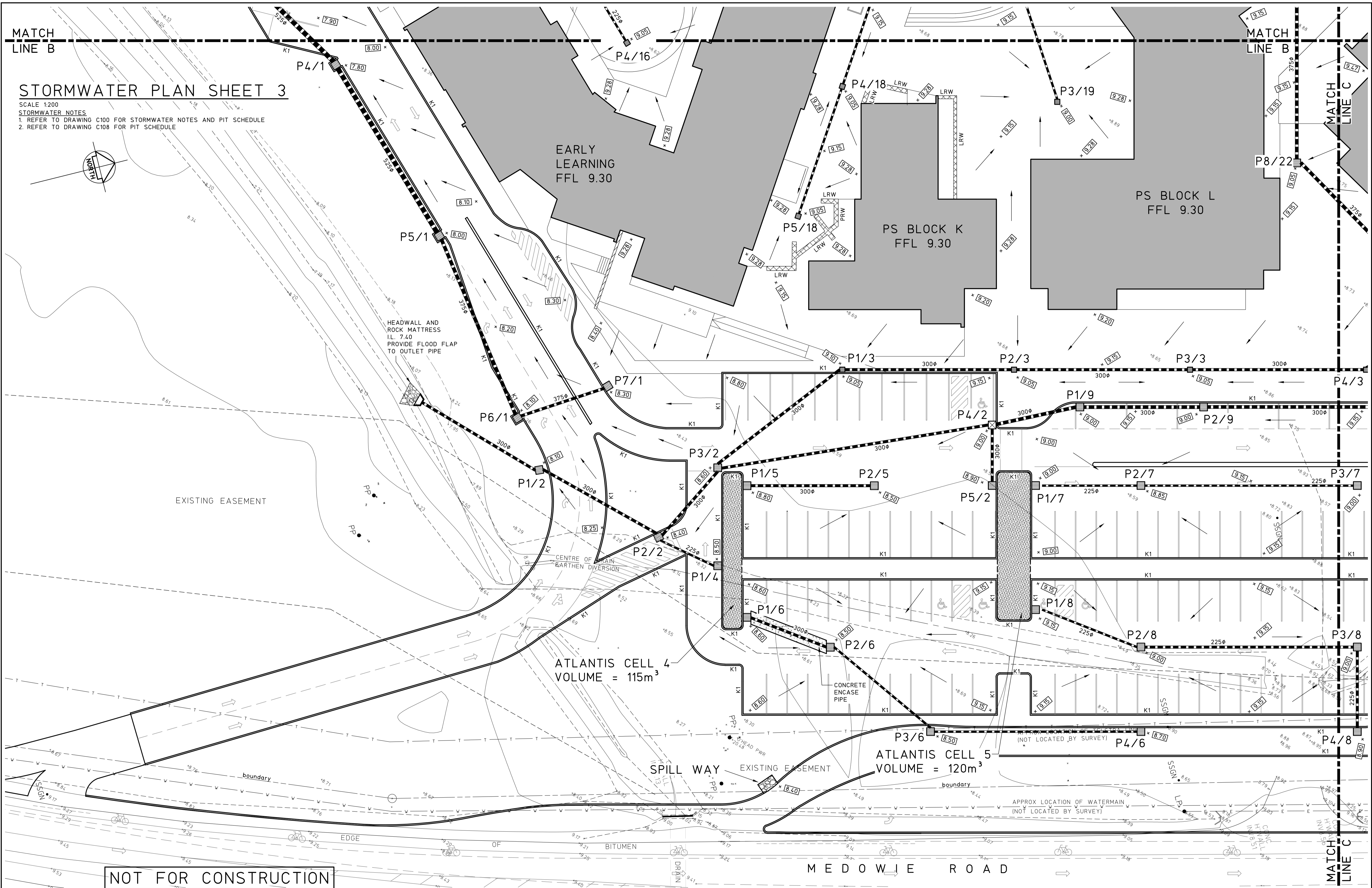
STORMWATER PLAN SHEET 2

SCALE 1:200
STORMWATER NOTES
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE



			© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		 <div>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</div>	CLIENT	PROJECT	DO NOT SCALE DRAWING			
			THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.			CATHOLIC SCHOOLS OFFICE	CATHERINE MCAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE	DRAWN J.P.A.	ENGINEER M.S.	No in SET --	SHEET A1
3	DEVELOPMENT APPLICATION	17.5.18						TITLE					
2	DEVELOPMENT APPLICATION	15.5.18						STORMWATER PLAN					
1	DEVELOPMENT APPLICATION	28.3.18						SHEET 2					
0	REVIEW	16.3.18											
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE							

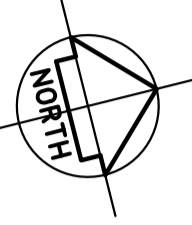
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



MATCH LINE B

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



NOT FOR CONSTRUCTION

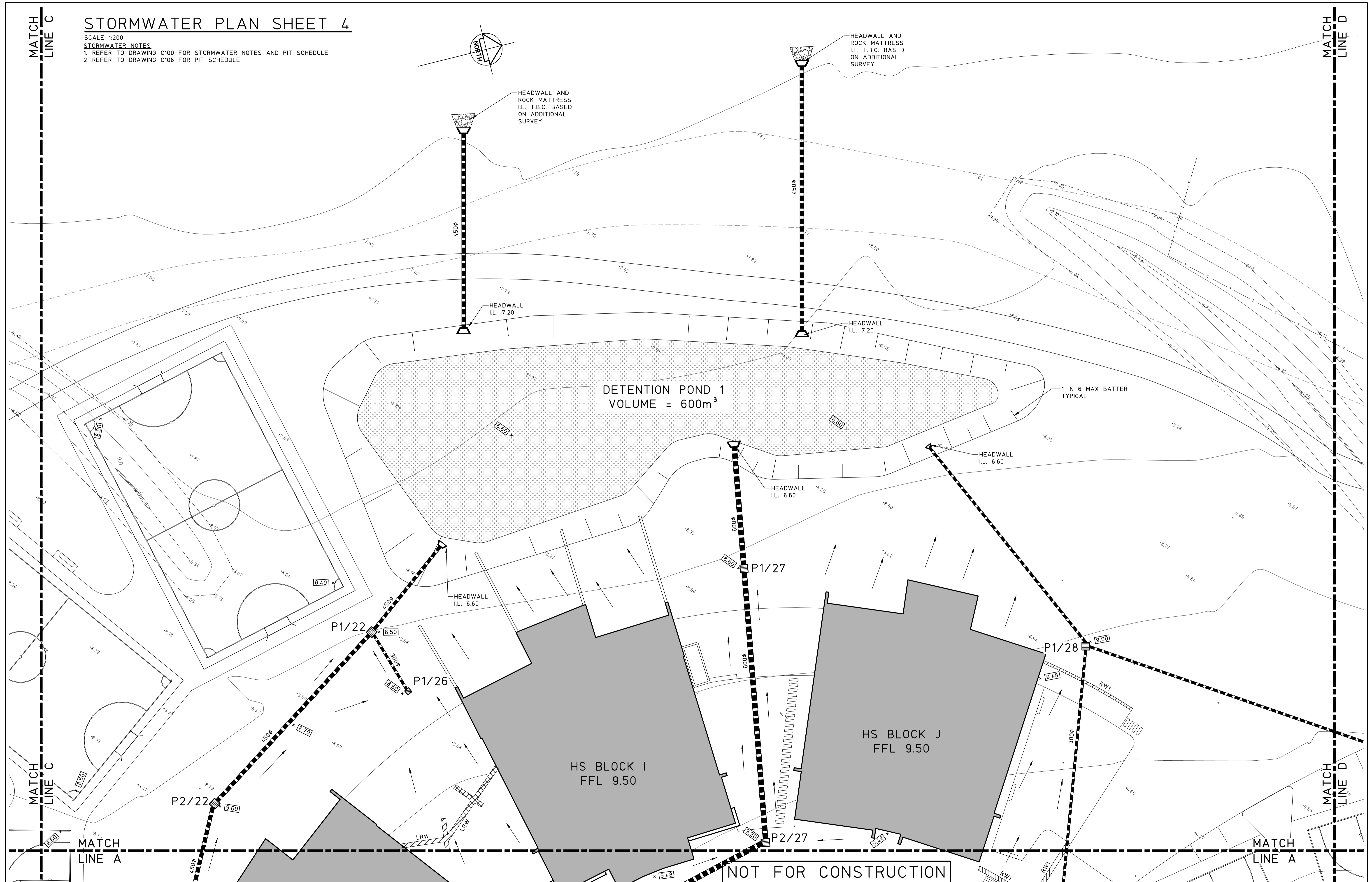
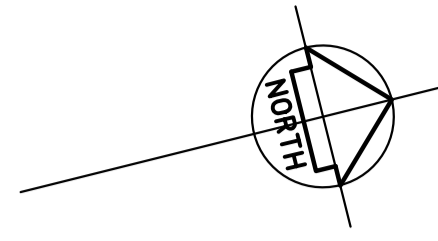
			© Copyright MPC Consulting Engineers as date of issue			COPYRIGHT			CLIENT			PROJECT		
			THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW			The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.			CATHOLIC SCHOOLS OFFICE			CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		
3	DEVELOPMENT APPLICATION	17.5.18				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@mpceing.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575			TITLE			SCALES		
2	DEVELOPMENT APPLICATION	15.5.18							STORMWATER PLAN			JOB No		
1	DEVELOPMENT APPLICATION	28.3.18							SHEET 3			DRAWING No		
0	REVIEW	16.3.18										ISSUE		
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE					1:200			
												17-828		
												C102		
												3		


SCALE 1:200

STORMWATER NOTES

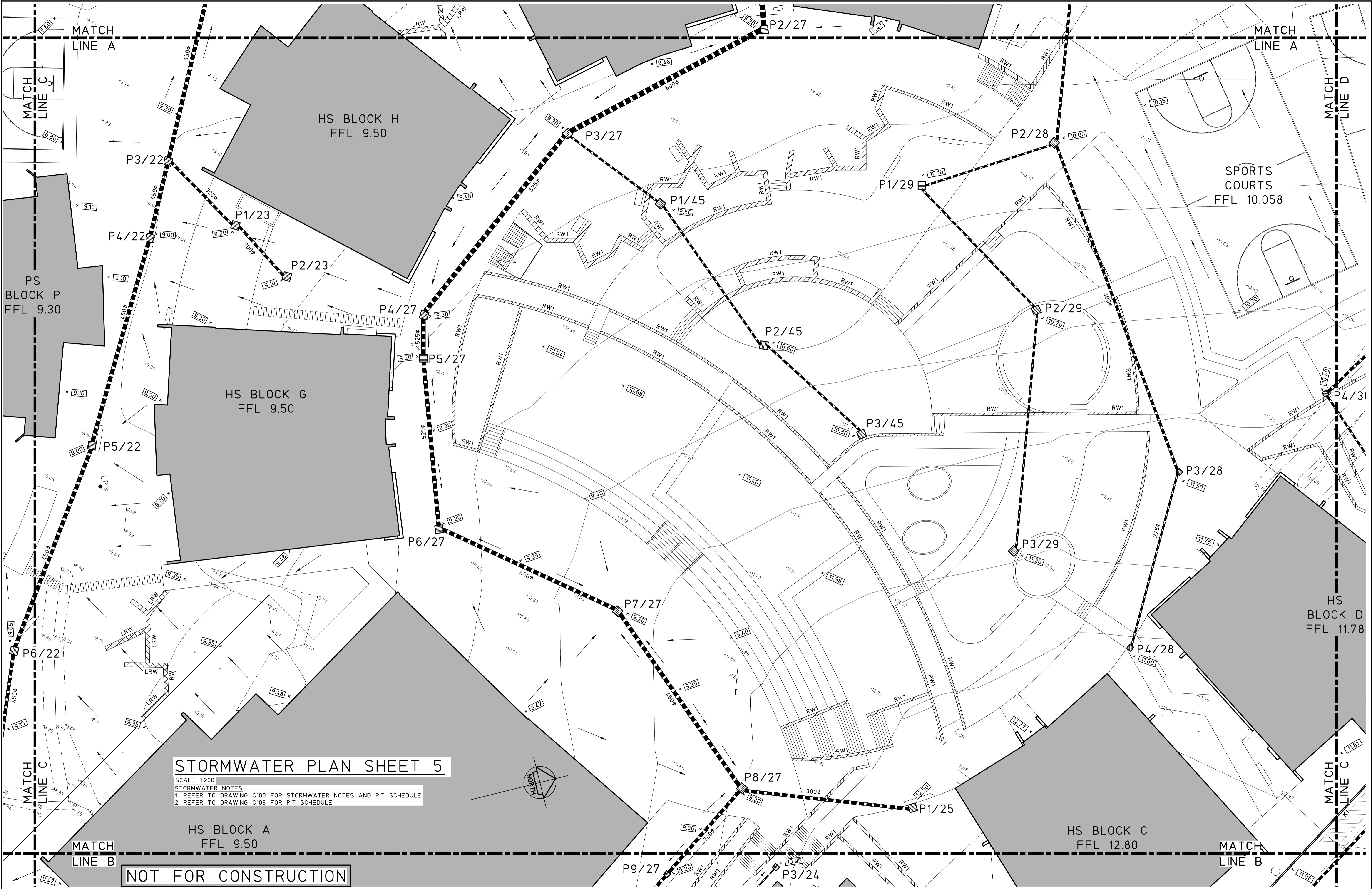
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE

2. REFER TO DRAWING C108 FOR PIT SCHEDULE



				© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		<div></div> <div>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</div>		CLIENT		PROJECT		DO NOT SCALE DRAWING									
				THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		<div>The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.</div>				CATHOLIC SCHOOLS OFFICE		CATHERINE MCAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN		ENGINEER		No in SET		SHEET			
3 DEVELOPMENT APPLICATION		17.5.18										TITLE				J.P.		M.S.		--		A1	
2 DEVELOPMENT APPLICATION		15.5.18										STORMWATER PLAN SHEET 4				SCALES		JOB No		DRAWING No		ISSUE	
1 DEVELOPMENT APPLICATION		28.3.18														1:200		17-828		C103		3	
0 REVIEW		16.3.18																					
ISSUE		REASON FOR ISSUE		DATE		DATE OF RELEASE		RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE													

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



STORMWATER PLAN SHEET 5
SCALE 1:200
STORMWATER NOTES
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE
2. REFER TO DRAWING C108 FOR PIT SCHEDULE

		© Copyright MPC Consulting Engineers as date of issue	
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW	
3	DEVELOPMENT APPLICATION	17.5.18	
2	DEVELOPMENT APPLICATION	15.5.18	
1	DEVELOPMENT APPLICATION	28.3.18	
0	REVIEW	16.3.18	
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE RESPONSIBLE PRINCIPAL SIGNATURE

COPYRIGHT

The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.

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@mpceeng.com.au
Web: www.mpcconsultingengineers.com.au
A.C.N. 098 542 575

CLIENT

CATHOLIC SCHOOLS OFFICE

TITLE

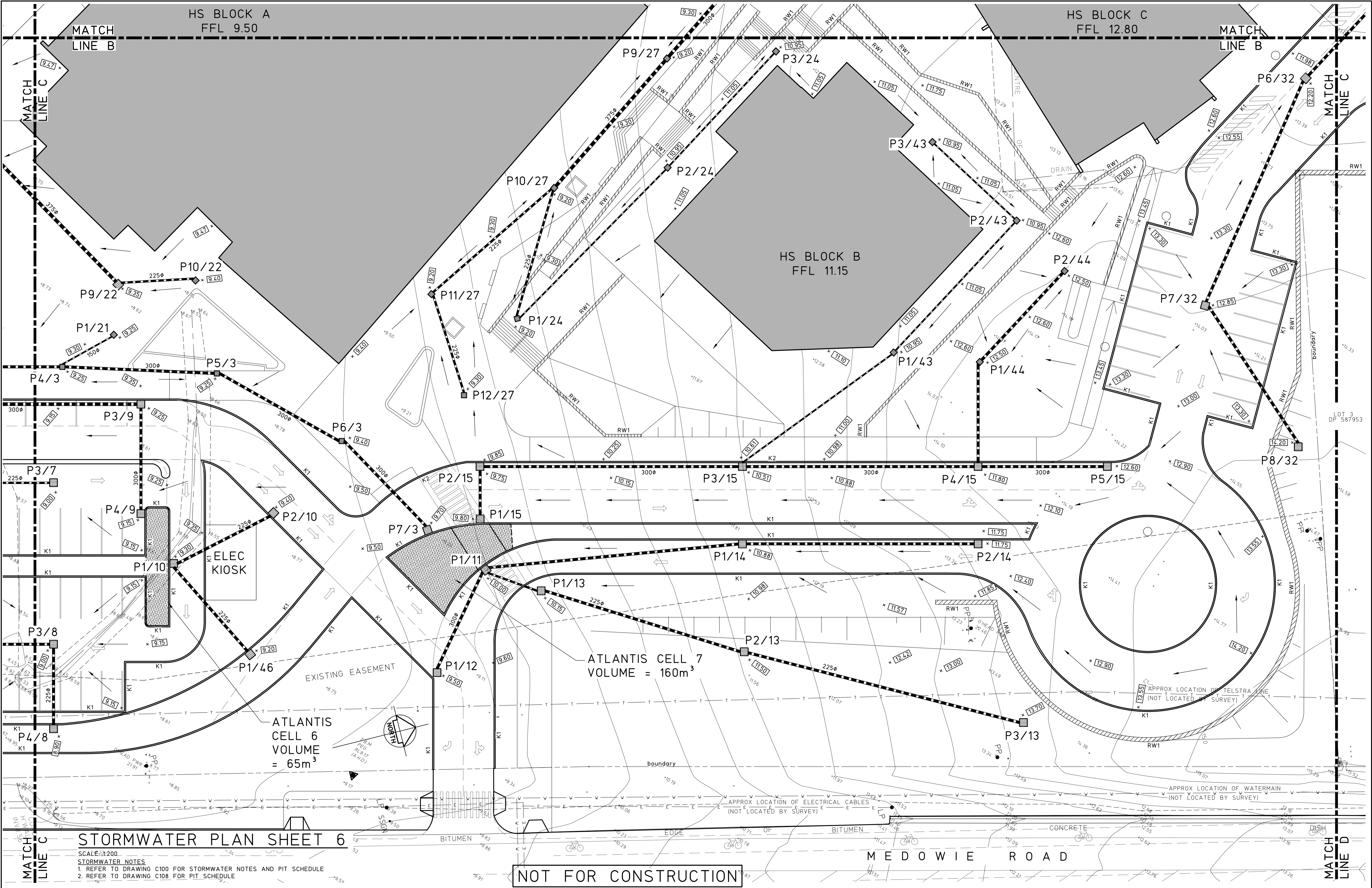
STORMWATER PLAN SHEET 5

PROJECT

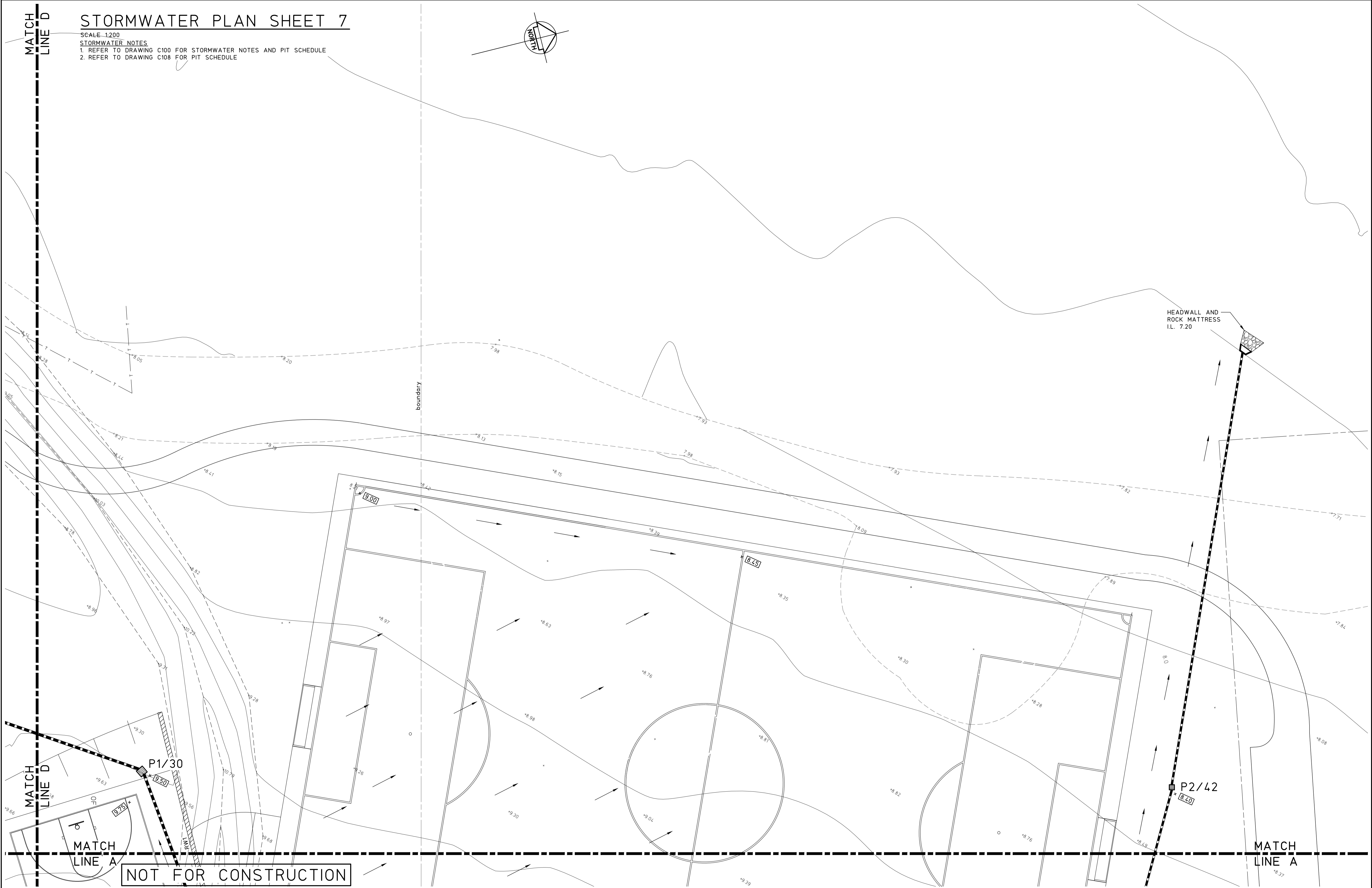
CATHERINE McAULEY CATHOLIC COLLEGE
AT; LOT 412, DP 1063902,
No.507 MEDOWIE ROAD,
MEDOWIE

DO NOT SCALE DRAWING			
DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
SCALES 1:200	JOB No 17-828	DRAWING No C104	ISSUE 3

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



			© Copyright MPC Consulting Engineers as date of issue			COPYRIGHT			CLIENT			PROJECT		
			THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW			The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.			CATHOLIC SCHOOLS OFFICE			CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		
									TITLE			DO NOT SCALE DRAWING		
									STORMWATER PLAN SHEET 6			DRAWN J.P.		
												ENGINEER M.S.		
												No in SET --		
												SHEET A1		
												JOB No 17-828		
												DRAWING No C105		
												ISSUE 3		
									</					



				© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		<div></div> <div>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@mpceeng.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575</div>		CLIENT		PROJECT		DO NOT SCALE DRAWING					
				THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		<div>The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.</div>				CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE							
										TITLE									
										STORMWATER PLAN SHEET 7									
3	DEVELOPMENT APPLICATION	17.5.18										DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1				
2	DEVELOPMENT APPLICATION	15.5.18																	
1	DEVELOPMENT APPLICATION	28.3.18																	
0	REVIEW	16.3.18																	
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE						SCALES 1:200		JOB No 17-828		DRAWING No C106		ISSUE 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

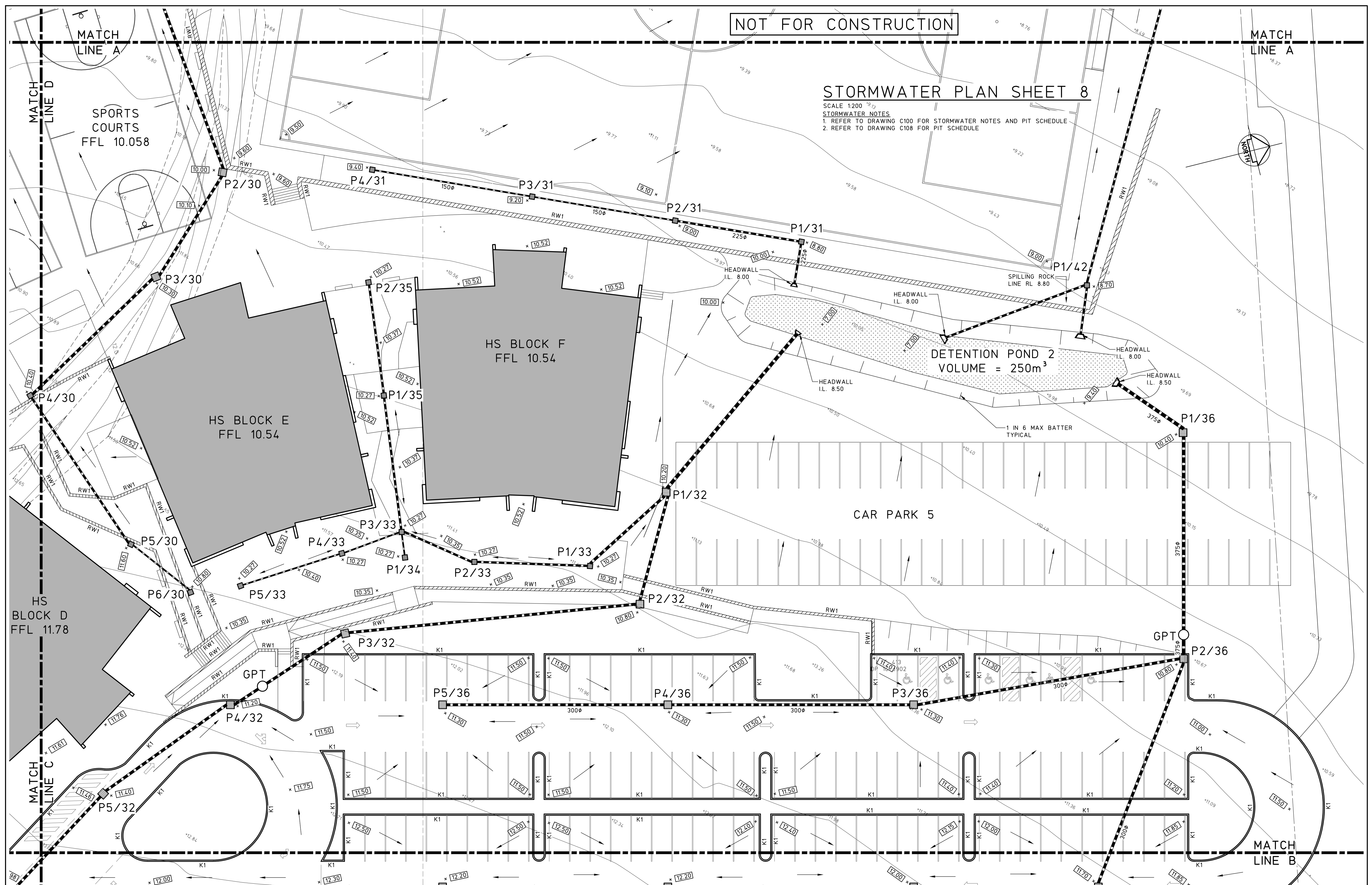
STORMWATER PLAN SHEET 8


SCALE 1:200 ^{9.13} //

STORMWATER NOTES

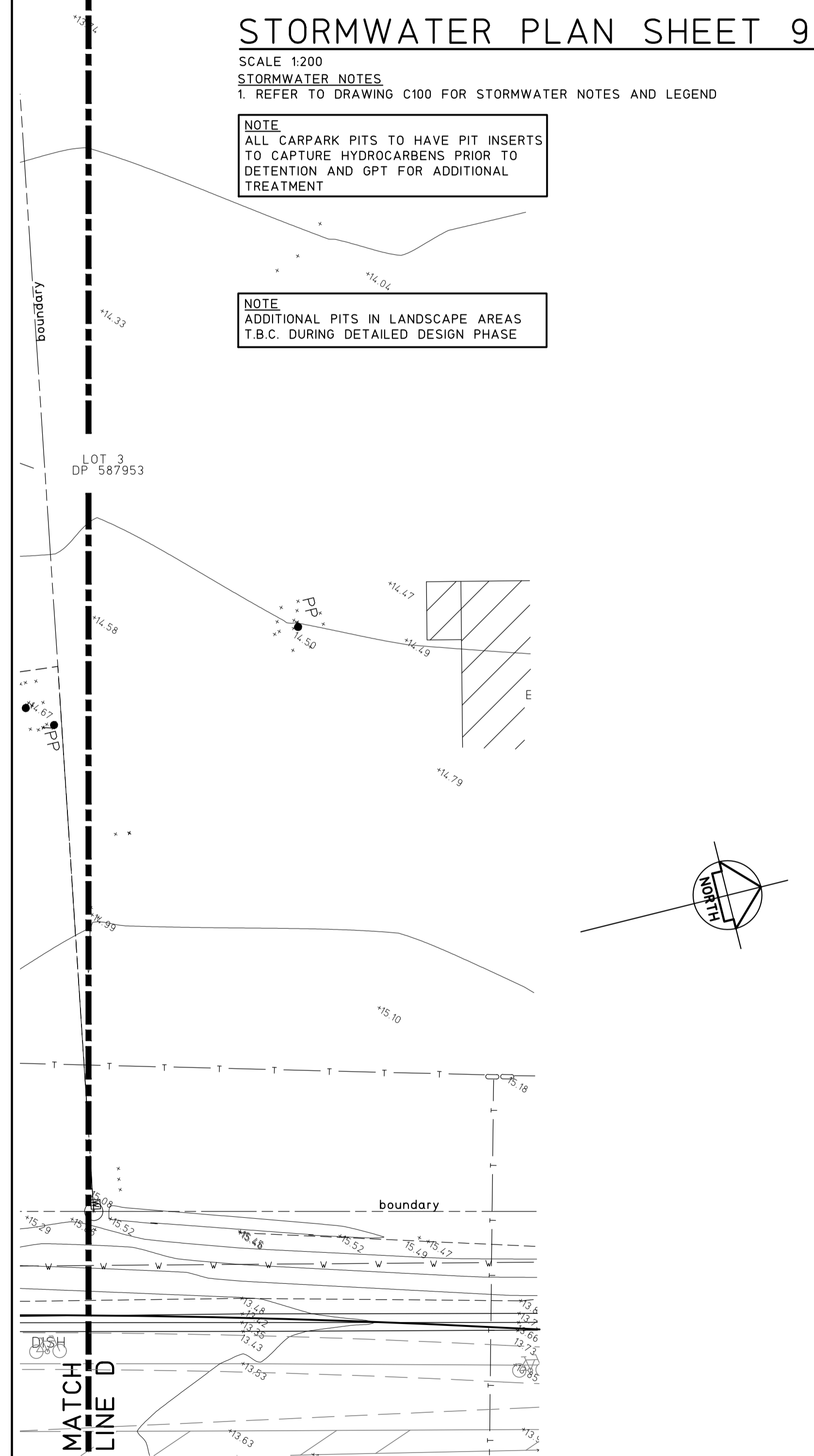
1. REFER TO DRAWING C100 FOR STORMWATER NOTES AND PIT SCHEDULE

2. REFER TO DRAWING C108 FOR PIT SCHEDULE



			© Copyright MPC Consulting Engineers as date of issue			COPYRIGHT			<div>CONSULTING ENGINEERS</div> <div>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@mpcpe.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575</div>			CLIENT			PROJECT			DO NOT SCALE DRAWING				
			THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW			The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.						CATHOLIC SCHOOLS OFFICE			CATHERINE MCAULEY CATHOLIC COLLEGE AT: LOT 412, DP 1063902, NO.507 MEDOWIE ROAD, MEDOWIE			DRAWN J.P.		ENGINEER M.S.	No in SET --	SHEET A1
3	DEVELOPMENT APPLICATION	17.5.18										TITLE			STORMWATER PLAN			SCALES	JOB No	DRAWING No	ISSUE	
2	DEVELOPMENT APPLICATION	15.5.18										SHEET 8						1:200	17-828	C107	3	
1	DEVELOPMENT APPLICATION	28.3.18																				
0	REVIEW	16.3.18																				
ISSUE	REASON FOR ISSUE		DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE			ISSUE														

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



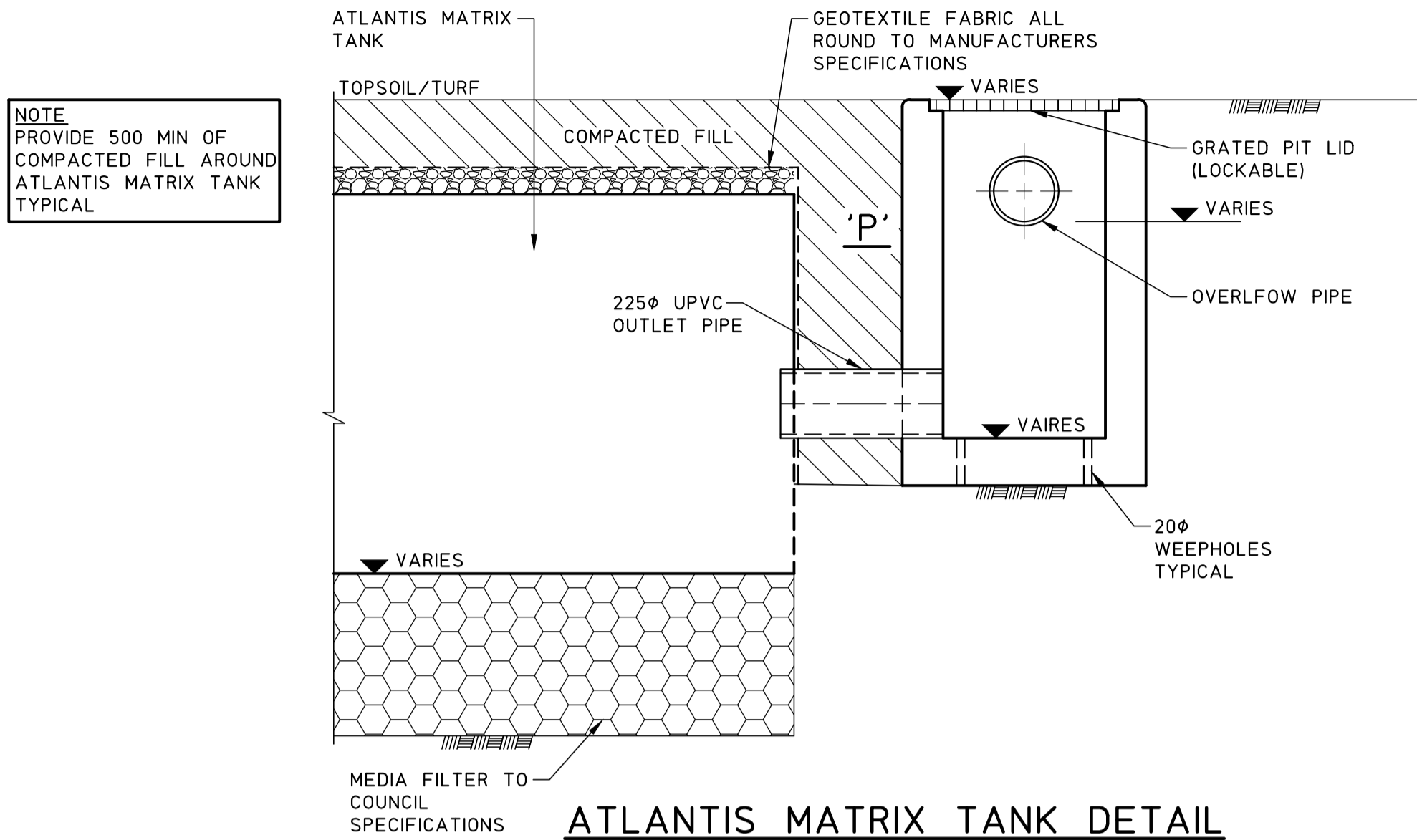
PIT No.	SIZE	TYPE	SURFACE LEVEL S.L.	INVERT LEVEL I.L.
P3/16	600x600	GRATED PIT	9.05	8.15
P4/16	600x600	GRATED PIT	9.05	8.33
P1/17	600x600	GRATED PIT	8.70	7.30
P2/17	600x600	GRATED PIT	8.80	7.40
P3/17	600x600	GRATED PIT	9.05	8.30
P4/17	600x600	GRATED PIT	9.05	8.55
P1/18	600x600	GRATED PIT	9.05	7.50
P2/18	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

				© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		<div></div> <div>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</div>		CLIENT		PROJECT		DO NOT SCALE DRAWING									
				THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.				CATHOLIC SCHOOLS OFFICE		CATHERINE MCAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE											
3	DEVELOPMENT APPLICATION		17.5.18									TITLE				DRAWN		ENGINEER		No in SET		SHEET	
2	DEVELOPMENT APPLICATION		15.8.18									STORMWATER PLAN				J.P.		M.S.		---		A1	
1	DEVELOPMENT APPLICATION		28.3.18									SHEET 9				SCALES		JOB No		DRAWING No		ISSUE	
0	REVIEW		16.3.18											1:200		17-828		C108		3			
ISSUE	REASON FOR ISSUE			DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE															

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

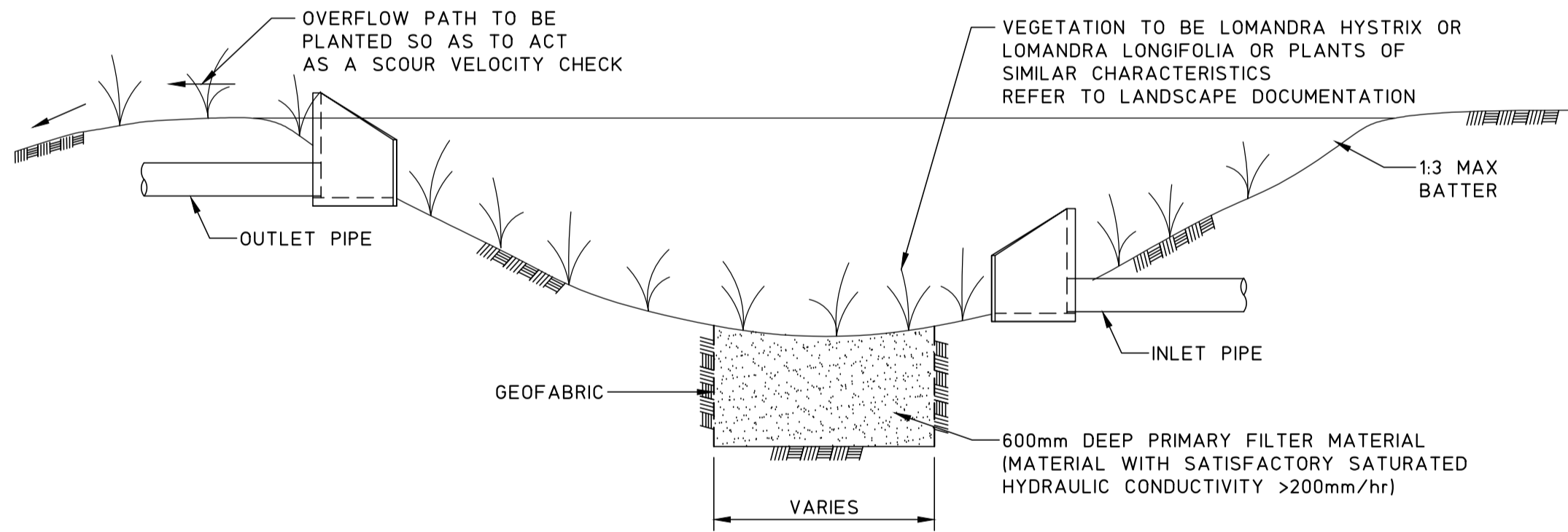


ATLANTIS MATRIX TANK DETAIL

SCALE 1:20

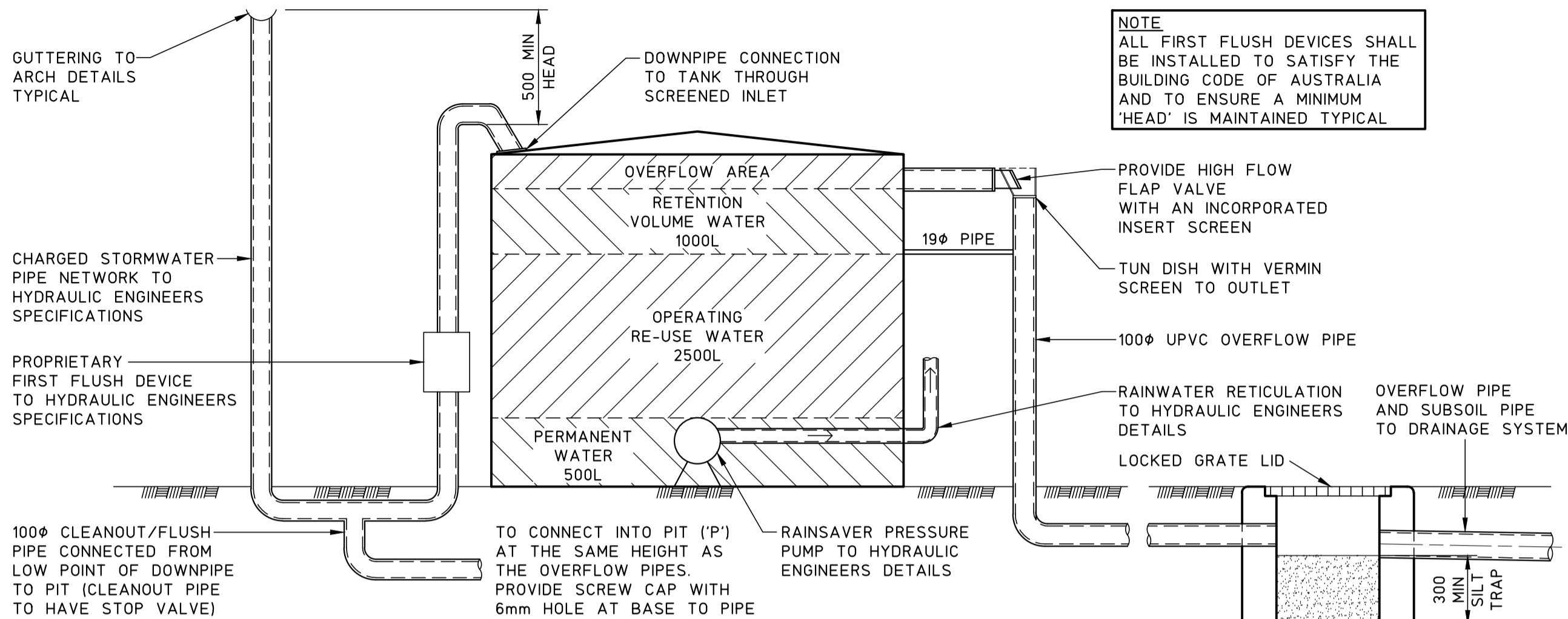
ATLANTIS MATRIX TANK NOTES

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 150Ø INSPECTION POINTS IN ACCORDANCE WITH MANUFACTURERS SPECIFICATION



TYPICAL DETENTION POND DETAIL


SCALE 1:50



TYPICAL TANK (T1) DETAIL

SCALE 1:20

NOT FOR CONSTRUCTION

				© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT			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@mpceing.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			
				THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.						DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
												SCALES 1:50, 20	JOB No 17-828	DRAWING No C109	ISSUE 2
ISSUE	REASON FOR ISSUE		DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE								
2	DEVELOPMENT APPLICATION		17.5.18												
1	DEVELOPMENT APPLICATION		15.5.18												
0	DEVELOPMENT APPLICATION		28.3.18												

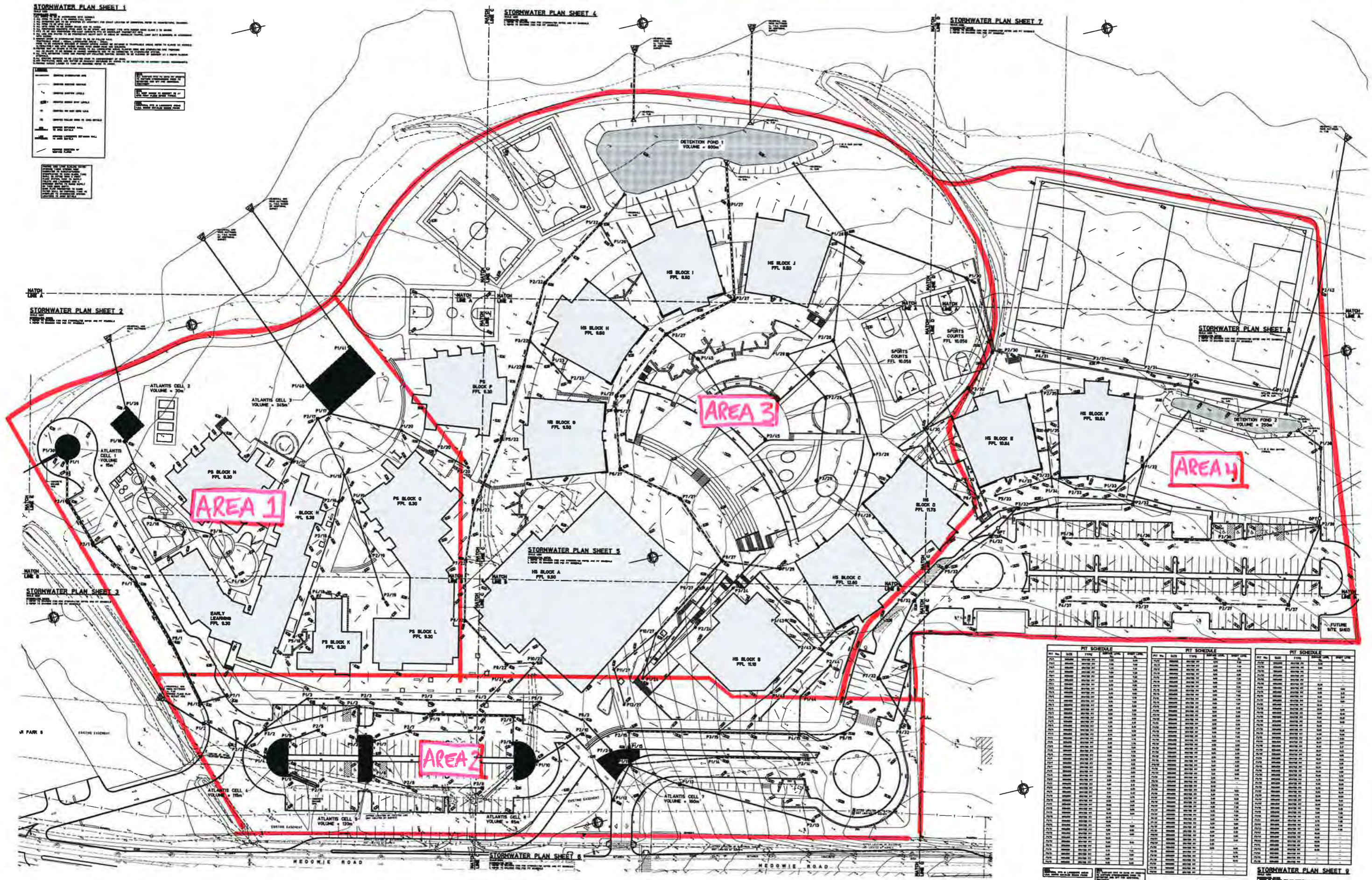
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm

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

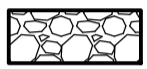
SEDIMENTATION AND EROSION CONTROL NOTES

1. SELECTIVE CLEARING OF VEGETATION TO BE RESTRICTED TO NOMINATED AREAS WITH CLEARED VEGETATION BOUND BY 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 DENUDE LONGER THAN 14 DAYS.
10. ALL FILLS ARE TO BE LEFT WITH A LIP AT THE TOP OF THE SLOPE AT THE END OF EACH DAY'S OPERATION.
11. THE CONTRACTOR MUST ENSURE THE SUITABILITY AND INTEGRITY OF ALL WORKS AT THE END OF EACH DAY'S WORK.
12. ORANGE BARRIER TAPE TO BE AFFIXED TO TOP OF SEDIMENT CONTROL BARRIER TO IDENTIFY WORK AREA.
13. ALL SEDIMENTATION & EROSION CONTROL MEASURES ARE TO STRICTLY COMPLY WITH THE GUIDELINES DETAILED IN THE DEPARTMENT OF HOUSING PUBLICATION, "MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION", 4TH EDITION.
14. WATER TRUCKS TO BE USED AS REQUIRED TO PREVENT WIND EROSION.
15. SUBGRADE MATERIAL TO BE CONSTRUCTED IMMEDIATELY FOLLOWING FILL.

LEGEND



DENOTES ALLOWABLE AREA FOR TEMPORARY STOCKPILING OF CUT SOIL MATERIAL, REFER TO DETAIL SD4-1



DENOTES ROCK CHECK DAM, REFER TO DETAIL SD5-4



DENOTES EARTH BANK (LOW FLOW), REFER TO DETAIL SD5-5



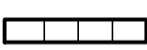
DENOTES SEDIMENT POND, 374m³ SETTLING ZONE, 187m³ SEDIMENT STORAGE, REFER TO DETAIL SD6-4



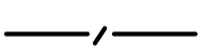
DENOTES SEDIMENT POND, 567m³ SETTLING ZONE, 283m³ SEDIMENT STORAGE, REFER TO DETAIL SD6-4



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



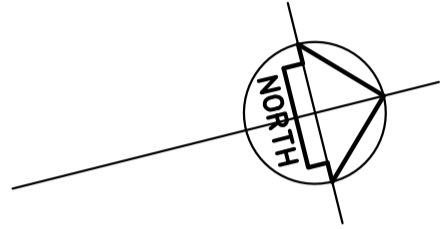
DENOTES GEOTEXTILE INLET FILTER, REFER TO DETAIL SD6-12



DENOTES STABILISED SITE ACCESS, REFER TO DETAIL SD6-14



DENOTES LEVEL SPREADER




MATCH LINE A

NOT FOR CONSTRUCTION

MATCH LINE C

MATCH LINE C

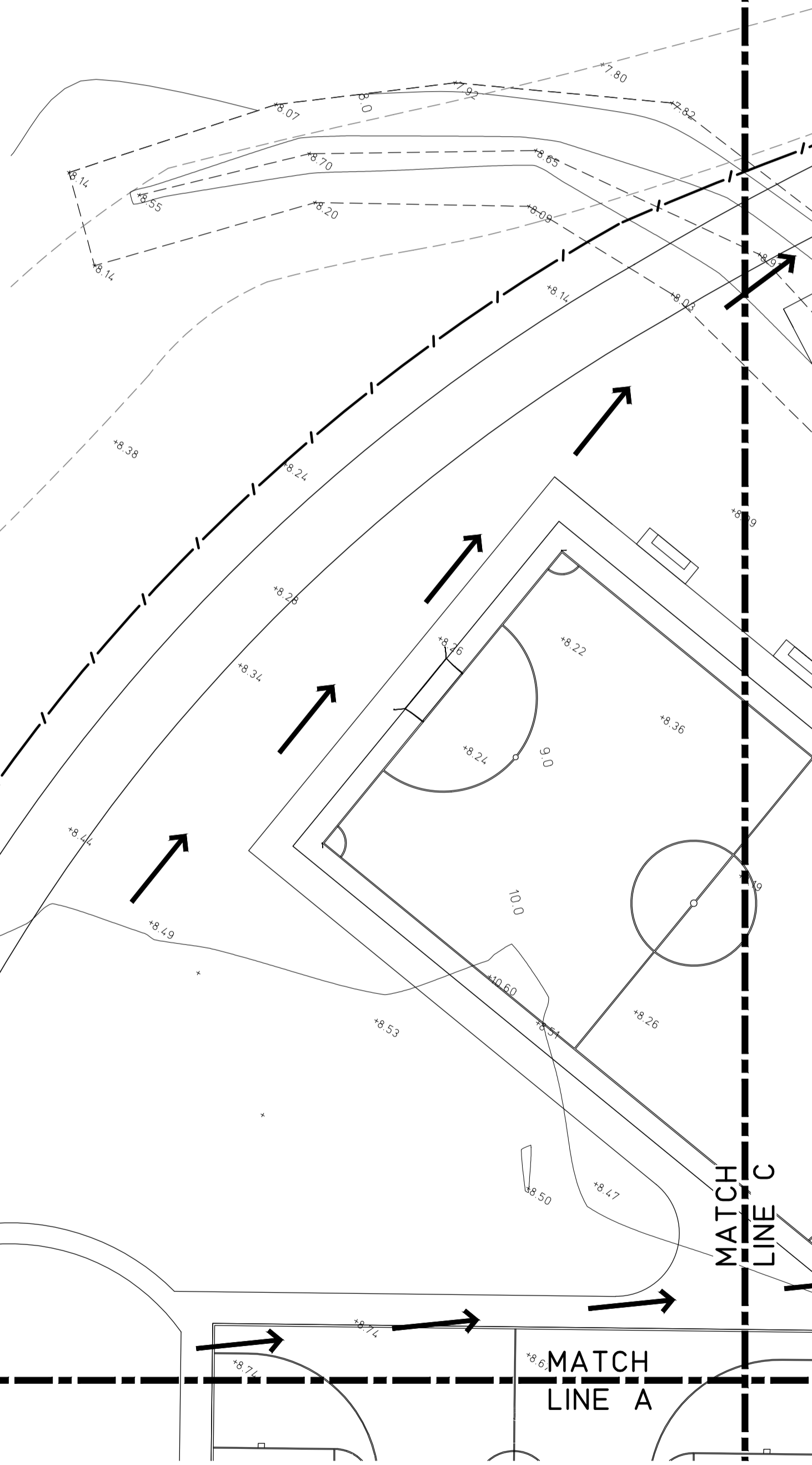
MATCH LINE A

				© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		 <div>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</div>		CLIENT		PROJECT		DO NOT SCALE DRAWING							
				THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		<div>The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.</div>				CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN		ENGINEER		No in SET		SHEET	
2		DEVELOPMENT APPLICATION		17.5.18						TITLE		SEDIMENTATION AND		SCALES		JOB No		DRAWING No		ISSUE	
1		DEVELOPMENT APPLICATION		15.5.18						EROSION CONTROL PLAN SHEET 1		1:200		17-828		C02		2			
0		DEVELOPMENT APPLICATION		28.3.18																	
ISSUE		REASON FOR ISSUE		DATE		DATE OF RELEASE		RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE											

- 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 ESCP 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 (Australia), 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 use/for 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 standards 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-disturbance 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 machine-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 seeded 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 Whenever 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 topped, and grass seeded/hydrated 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 70% 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 properly flooding issues shall be engaged. 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 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 be installed and be carried into the basin to speed up clarification.
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 turbid water shall be placed such that water entering the basin mixes with the chemicals/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 it:
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 basin's sediment marker line.
68 Scour protection measures placed on sediment basin emergency spillways shall appropriately protect the spillway chute and its side batters from scour, and shall extend a minimum of 3m beyond the downstream toe of the basin's embankment.
69 Suitable all-weather maintenance access shall be provided to all sediment control devices.
70 Materials, whether liquid or solid, removed from any ESC measures during maintenance or decommissioning, shall be disposed of in a manner that does not cause ongoing soil erosion or environmental harm.
71 All sediment basins shall remain fully operational at all times until the basin's design catchment achieves 70% ground cover or surface stabilisation acceptable to Council.
72 The ESC measures installed during the decommissioning and rehabilitation of a sediment basin shall comply with same standards specified for the normal construction works.
73 A sediment basin shall not be decommissioned until all up-slope site stabilisation measures have been implemented and are appropriately working to control soil erosion and sediment runoff.
74 Immediately prior to the construction of the permanent stormwater treatment device, appropriate flow bypass conditions shall be established to prevent sediment-laden water entering the device.

- REVEGETATION/STABILISATION**
75 Temporary Stabilisation may be obtained 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 topped, and grass seeded/hydrated 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 ESCP 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/hydraseed/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 phases.
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.



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

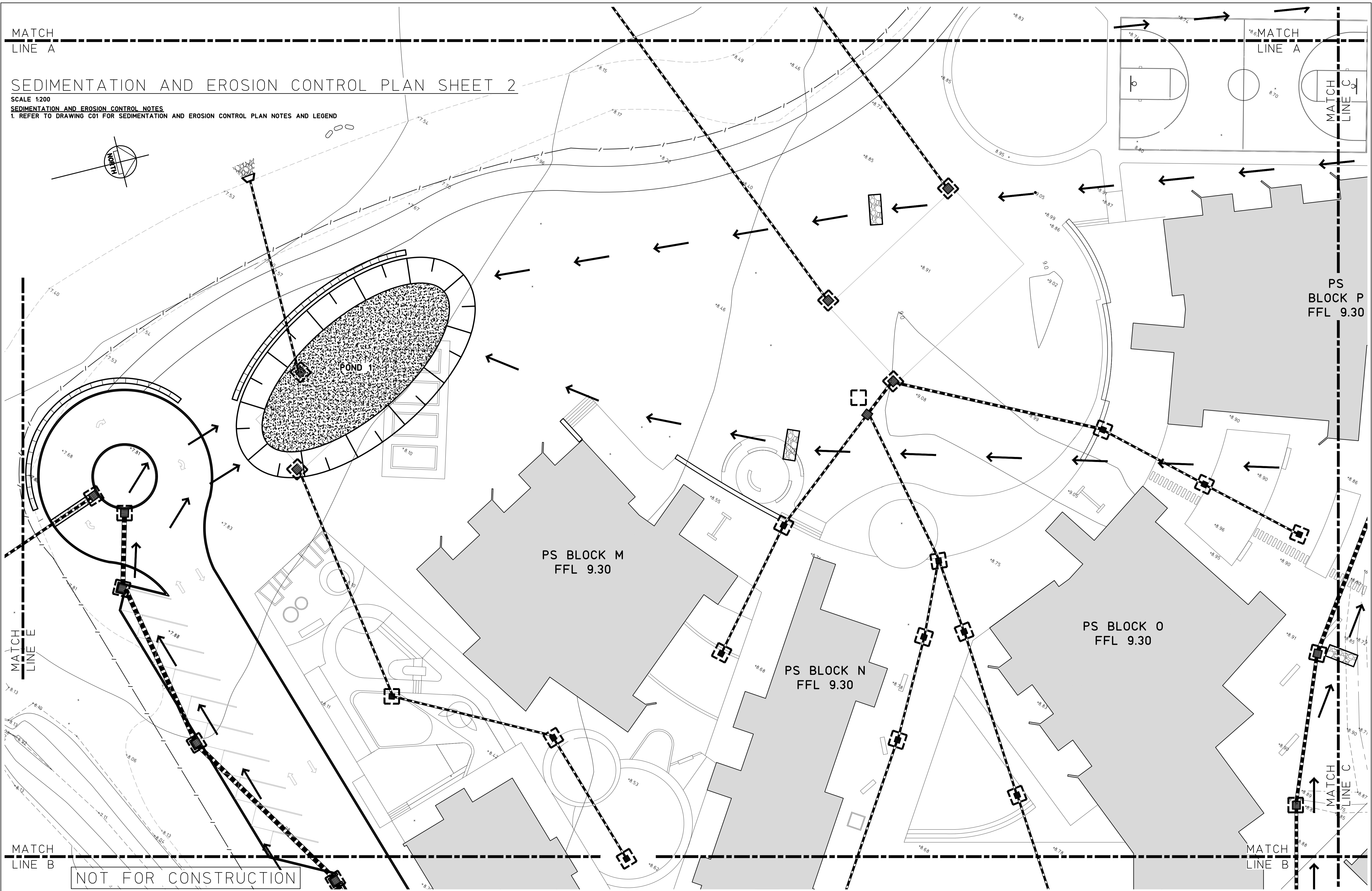
MATCH
LINE A

SEDIMENTATION AND EROSION CONTROL PLAN SHEET 2

SCALE 1:200

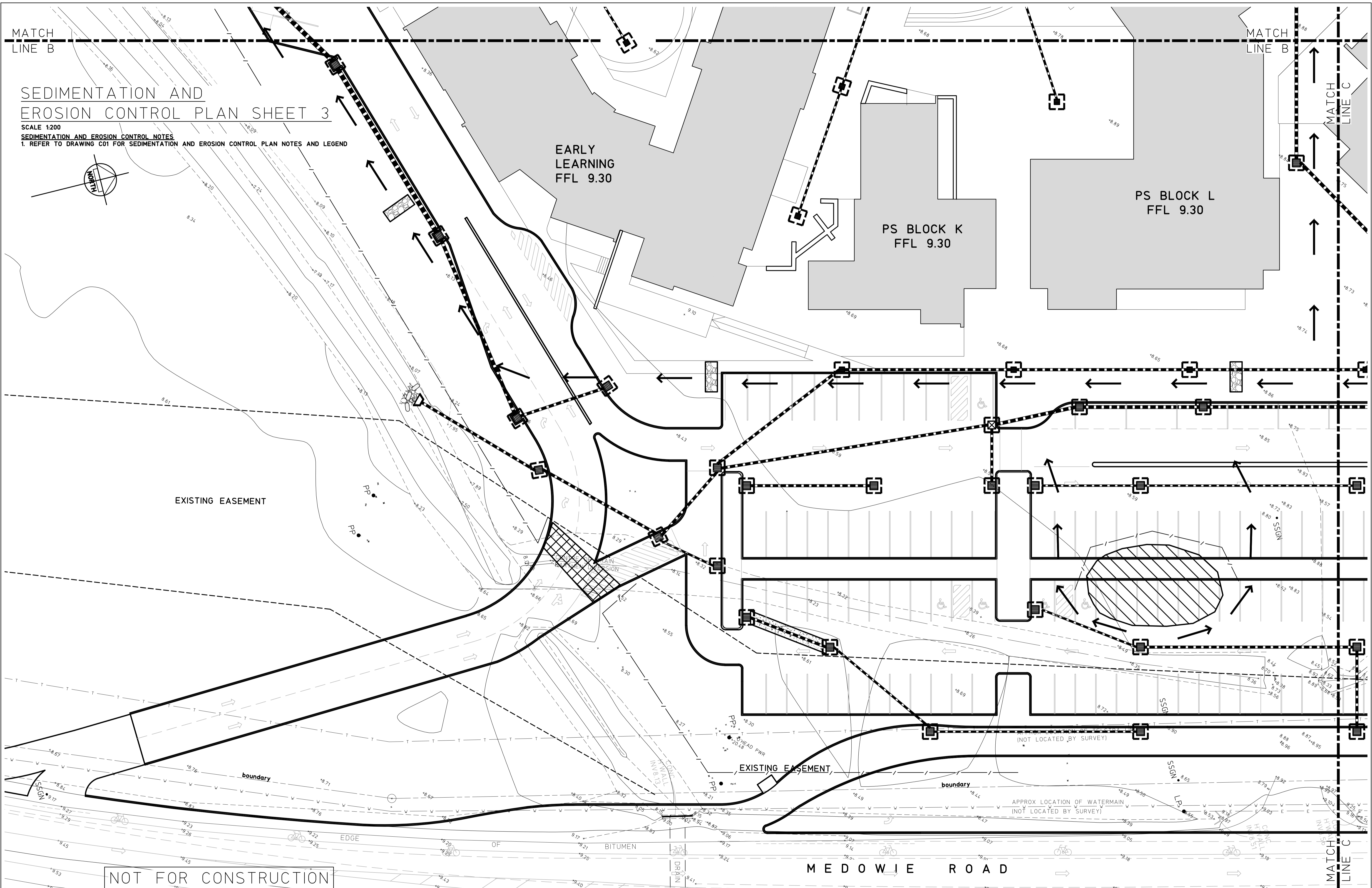
SEDIMENTATION AND EROSION CONTROL NOTES

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



		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT			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										
2 DEVELOPMENT APPLICATION		17.5.18	THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.						DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1						
1 DEVELOPMENT APPLICATION		15.5.18									0 DEVELOPMENT APPLICATION	28.3.18	SCALES 1:200	JOB No 17-828	DRAWING No C03	ISSUE 2				
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE															

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



		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		CLIENT		PROJECT		DO NOT SCALE DRAWING			
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.		CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
2 DEVELOPMENT APPLICATION		17.5.18				TITLE SEDIMENTATION AND EROSION CONTROL PLAN SHEET 3				SCALES 1:200	JOB No 17-828	DRAWING No C04	ISSUE 2
1 DEVELOPMENT APPLICATION		15.5.18											
0 DEVELOPMENT APPLICATION		28.3.18											
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE									

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

MATCH
LINE C

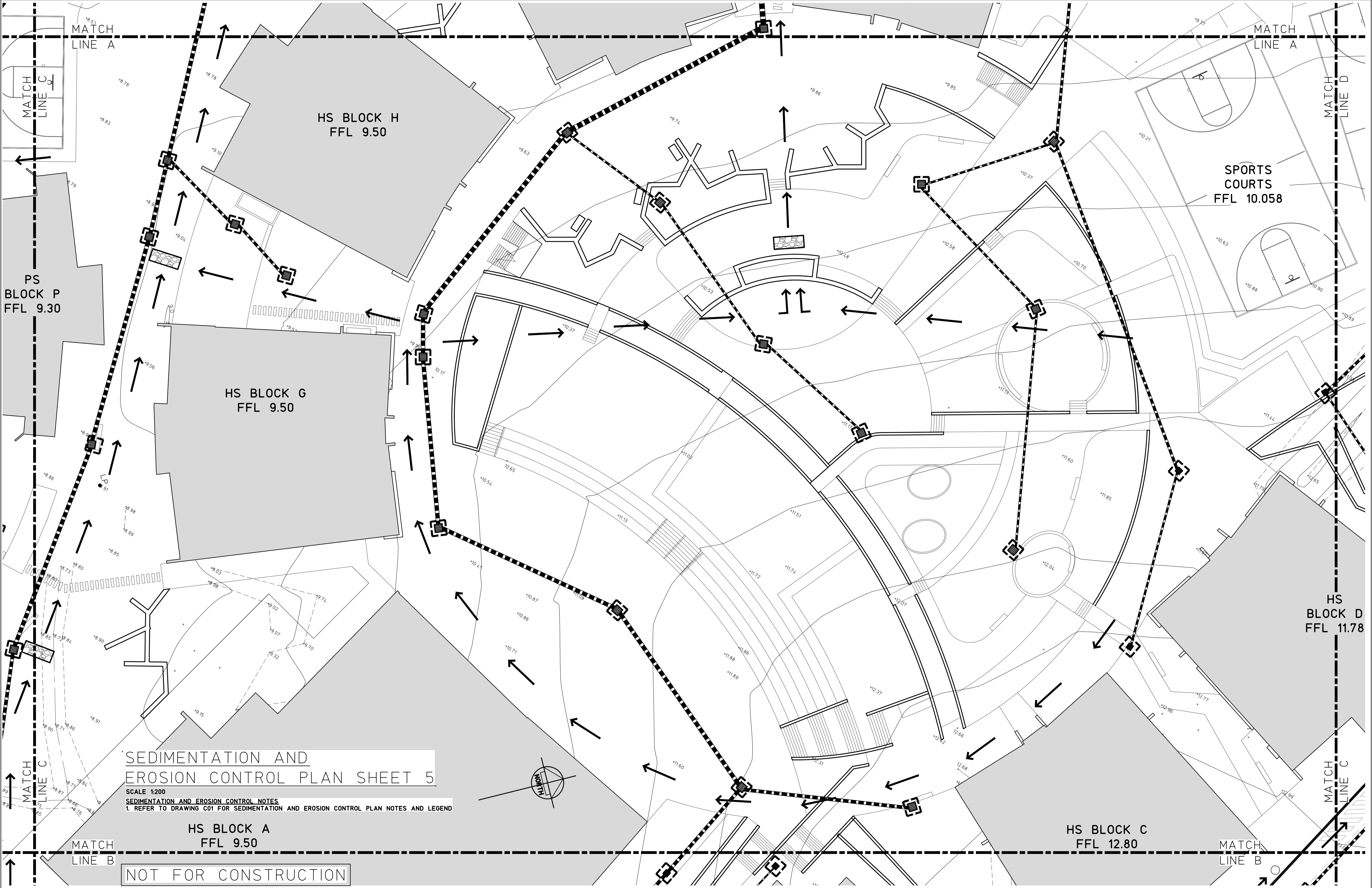
SEDIMENTATION AND EROSION CONTROL NOTES



NOT FOR CONSTRUCTION

		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		 <div>CONSULTING ENGINEERS</div> <div>Suite 3, Level 1, 18 Tallford 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</div>		CLIENT		PROJECT		DO NOT SCALE DRAWING							
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDOSED BELOW		<div>The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.</div>				CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN		ENGINEER		No in SET		SHEET	
1		17.5.18						TITLE		SEDIMENTATION AND		J.P.		M.S.		--		A1	
2 DEVELOPMENT APPLICATION		15.5.18						EROSION CONTROL PLAN SHEET 4				SCALES		JOB No		DRAWING No		ISSUE	
0 DEVELOPMENT APPLICATION		28.3.18								1:200		17-828		C05		2			
ISSUE		DATE		DATE OF RELEASE		RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE											
REASON FOR ISSUE																			

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 5

SCALE 1:200
SEDIMENTATION AND EROSION CONTROL NOTES
1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

© Copyright MPC Consulting Engineers as date of issue		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW	
2	DEVELOPMENT APPLICATION	17.5.18	
1	DEVELOPMENT APPLICATION	15.5.18	
0	DEVELOPMENT APPLICATION	28.3.18	
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE
			RESPONSIBLE PRINCIPAL SIGNATURE
			ISSUE

COPYRIGHT

The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.



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

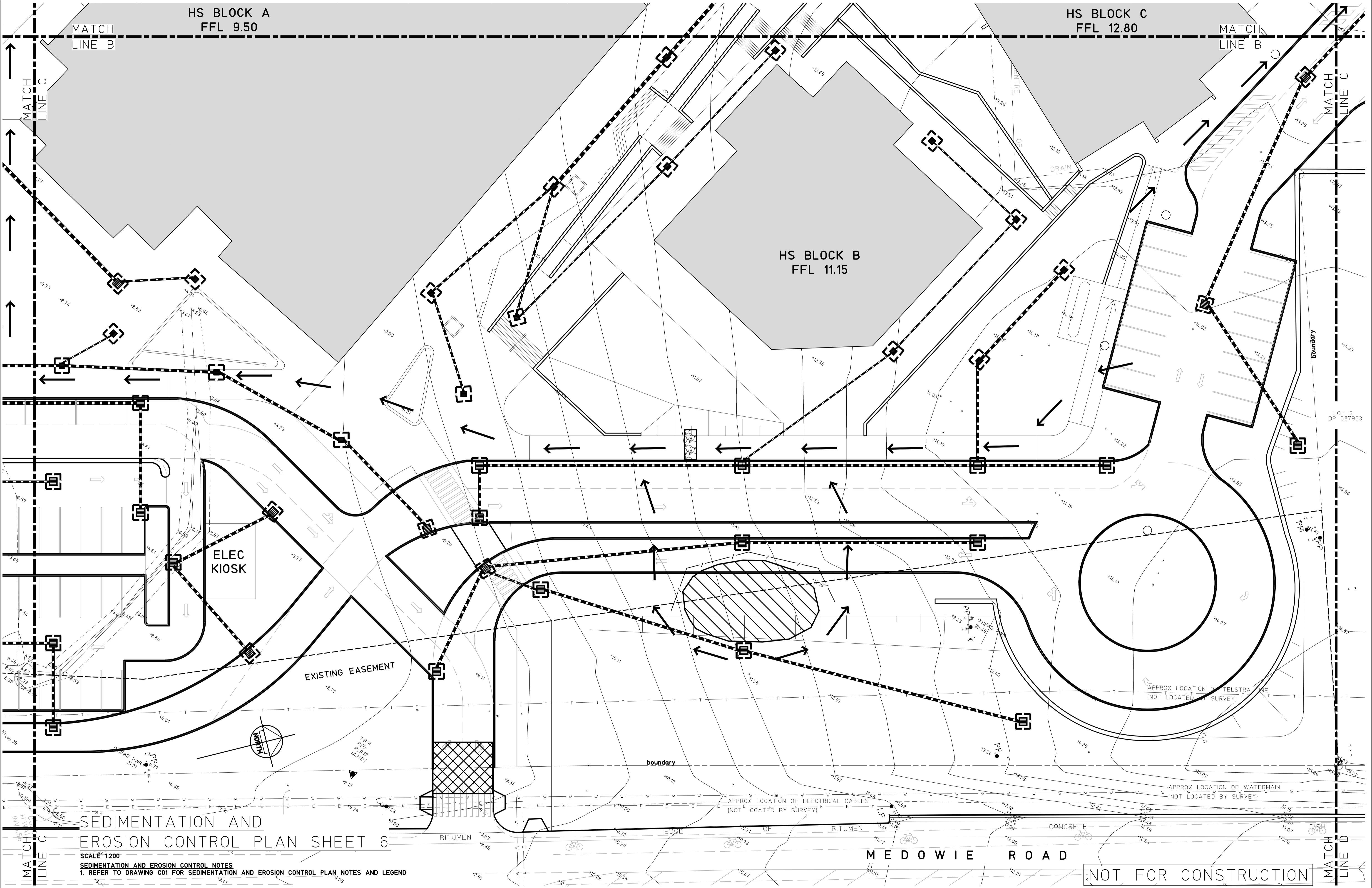
SEDIMENTATION AND
EROSION CONTROL PLAN SHEET 5

PROJECT

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

DO NOT SCALE DRAWING			
DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
SCALES 1:200	JOB No 17-828	DRAWING No C06	ISSUE 2

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

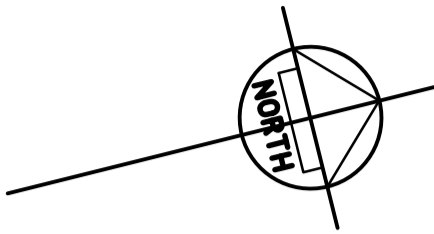


		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		<div><div>CONSULTING ENGINEERS</div><div>mpc</div></div>	Suite 3, Level 1, 16 Telford Street, NEWCASTLE EAST, NSW 2300 PO BOX 553 THE JUNCTION, NSW 2291 Tel: (02) 4927 5566 Fax: (02) 4927 5577 Email: admin@mpceng.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575	CLIENT CATHOLIC SCHOOLS OFFICE TITLE SEDIMENTATION AND EROSION CONTROL PLAN SHEET 6	PROJECT CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE	DO NOT SCALE DRAWING			
2 DEVELOPMENT APPLICATION		17.5.18		DRAWN J.P.	ENGINEER M.S.					No in SET --	SHEET A1		
1 DEVELOPMENT APPLICATION		15.5.18		SCALES 1:200	JOB No 17-828					DRAWING No C07	ISSUE 2		
0 DEVELOPMENT APPLICATION		28.3.18											
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE	ISSUE								



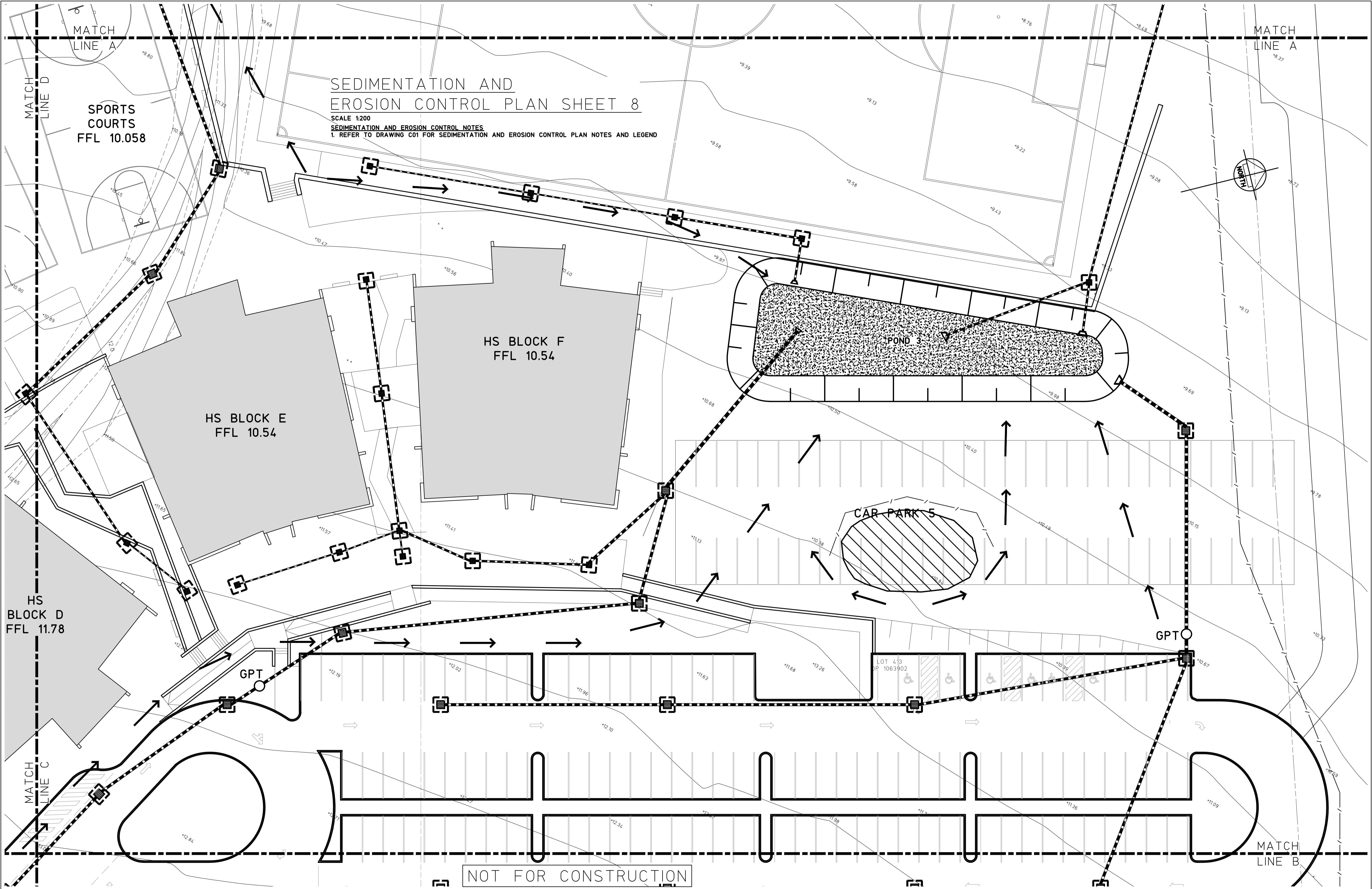
SEDIMENTATION AND
EROSION CONTROL PLAN SHEET 7

SCALE 1:200
SEDIMENTATION AND EROSION CONTROL NOTES
1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND



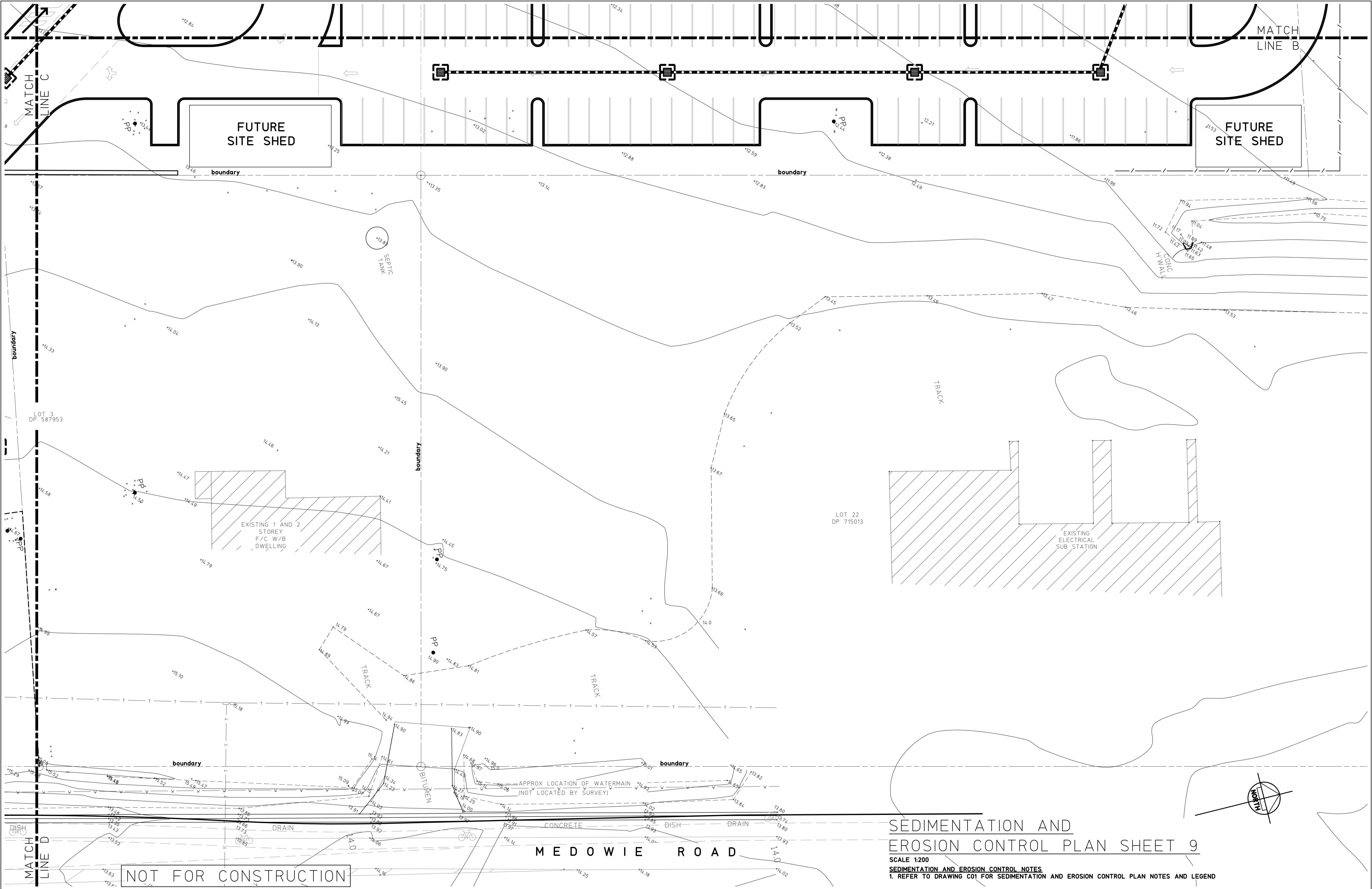
		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		 <div>CONSULTING ENGINEERS</div>	Suite 3, Level 1, 16 Telford Street, NEWCASTLE EAST, NSW 2300 PO BOX 553 THE JUNCTION, NSW 2291 Tel: (02) 4927 5566 Fax: (02) 4927 5577 Email: admin@mpceng.com.au Web: www.mpcconsultingengineers.com.au A.C.N. 098 542 575	CLIENT CATHOLIC SCHOOLS OFFICE	PROJECT CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE	DO NOT SCALE DRAWING									
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.						DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1						
										SCALES 1:200	JOB No 17-828	DRAWING No C08	ISSUE 2						
2	DEVELOPMENT APPLICATION	17.5.18																	
1	DEVELOPMENT APPLICATION	15.5.18																	
0	DEVELOPMENT APPLICATION	28.3.18																	
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE													

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



		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		 <div>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</div>	CLIENT		PROJECT		DO NOT SCALE DRAWING				
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.			CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1	
2 DEVELOPMENT APPLICATION		17.5.10					TITLE				SCALES	JOB No	DRAWING No	ISSUE	
1 DEVELOPMENT APPLICATION		15.5.10					SEDIMENTATION AND EROSION CONTROL PLAN SHEET 8				1:200	17-828	C09	2	
0 DEVELOPMENT APPLICATION		28.3.10													
ISSUE	REASON FOR ISSUE		DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE								

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

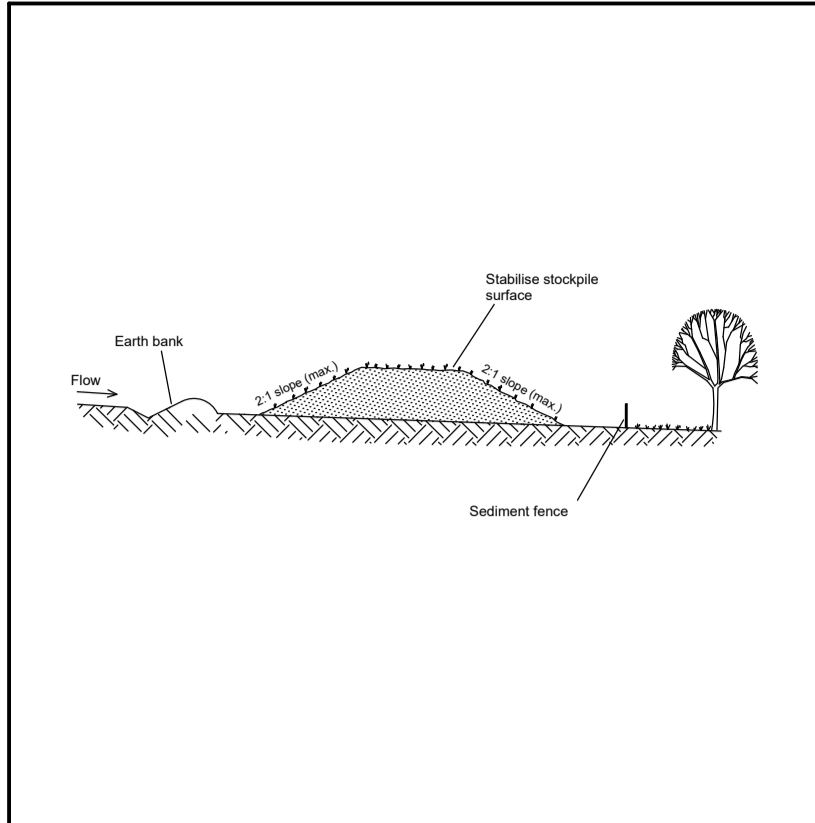


SEDIMENTATION AND
EROSION CONTROL PLAN SHEET 9

SCALE 1:200
SEDIMENTATION AND EROSION CONTROL NOTES
1. REFER TO DRAWING C01 FOR SEDIMENTATION AND EROSION CONTROL PLAN NOTES AND LEGEND

		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT			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 9	PROJECT CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE	DO NOT SCALE DRAWING			
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.						DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
										SCALES 1:200	JOB No 17-828	DRAWING No C10	ISSUE 2
2	DEVELOPMENT APPLICATION	17.5.18											
1	DEVELOPMENT APPLICATION	15.5.18											
0	DEVELOPMENT APPLICATION	28.3.18											
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE							

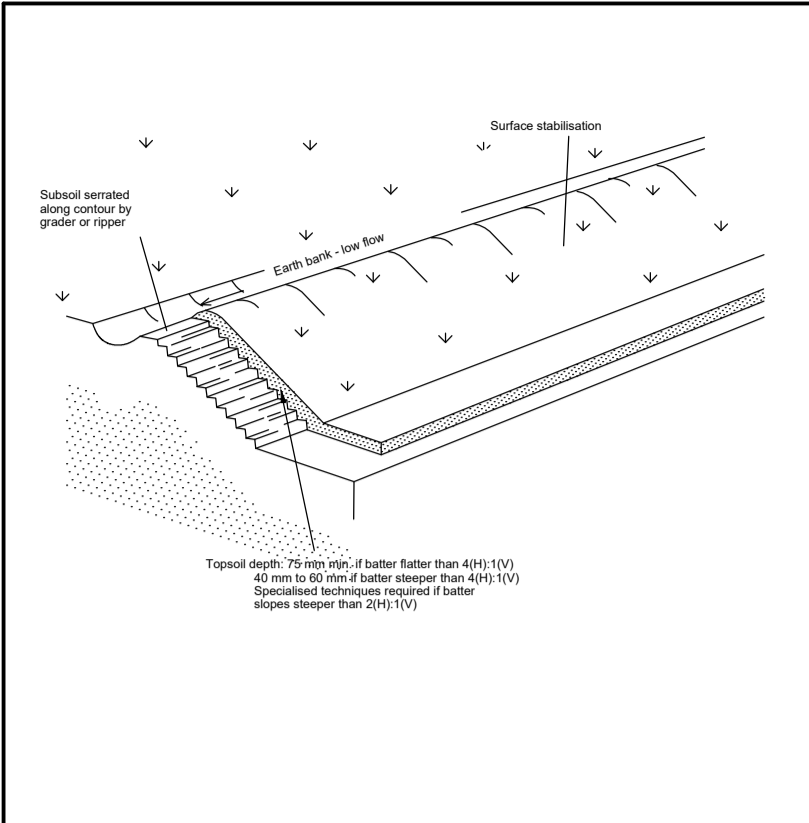
FULL SIZE ON ORIGINAL 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 cm



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 6.10.
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.

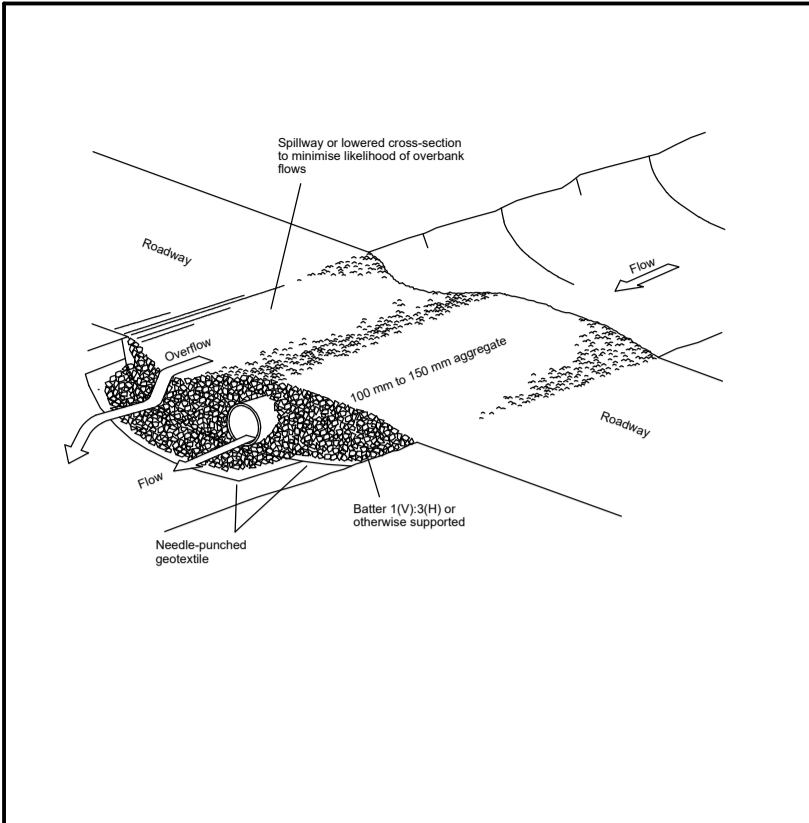
STOCKPILES SD 4-1



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.

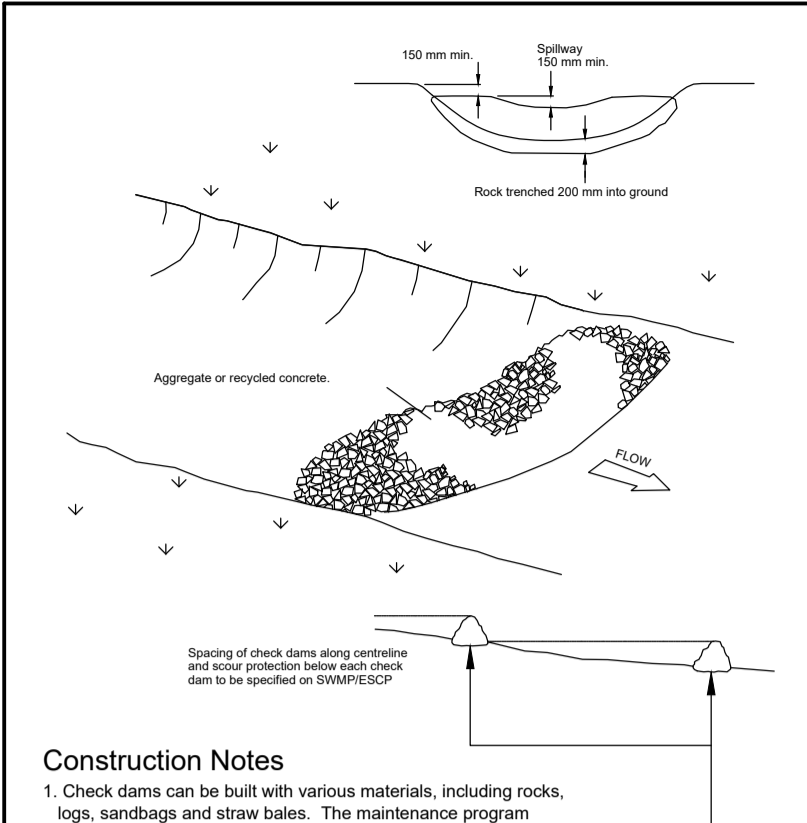
REPLACING TOPSOIL SD 4-2



Construction Notes

1. Prohibit all traffic until the access way is constructed.
2. Strip any topsoil and place a needle-punctured 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 cartway 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 100 mm lower than the outer edges.
6. Ensure that culvert outlets extend beyond the toe of fill embankments.

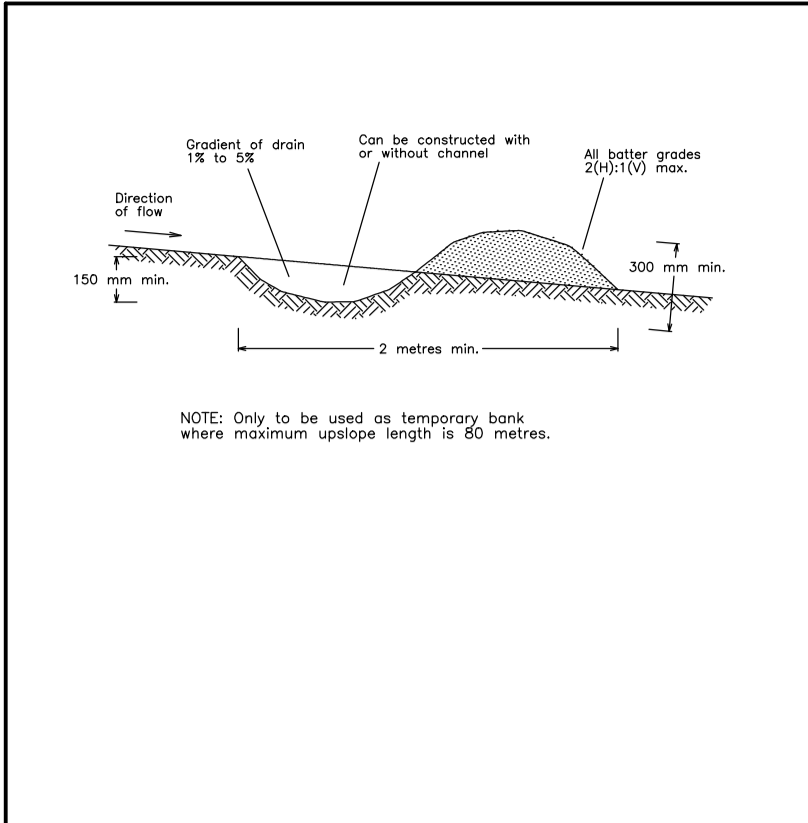
TEMPORARY WATERWAY CROSSING SD 5-1



Construction Notes

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

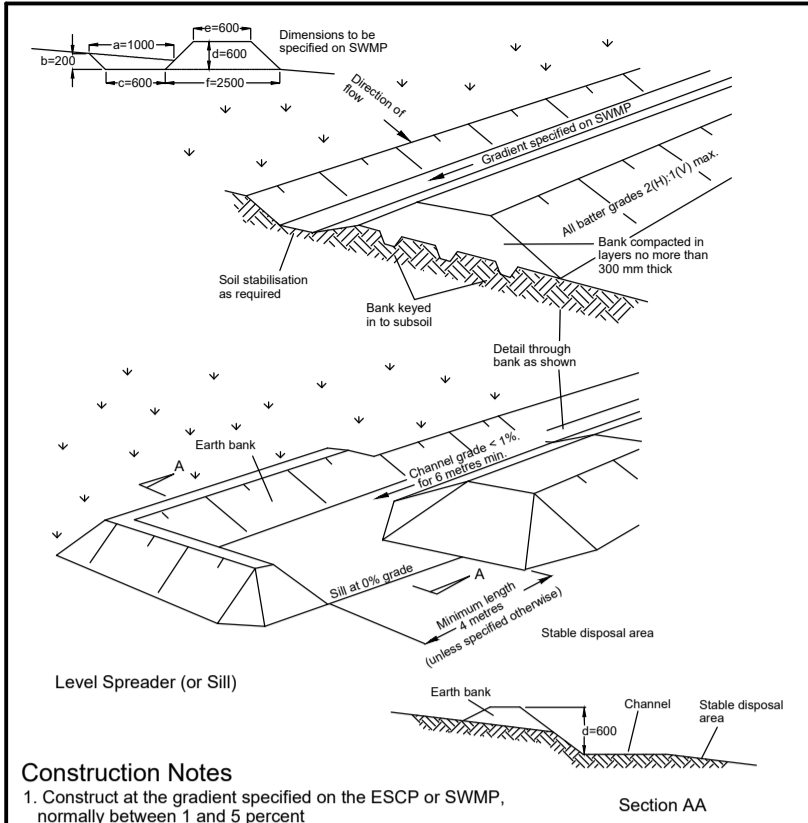
ROCK CHECK DAM SD 5-4



Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, 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.

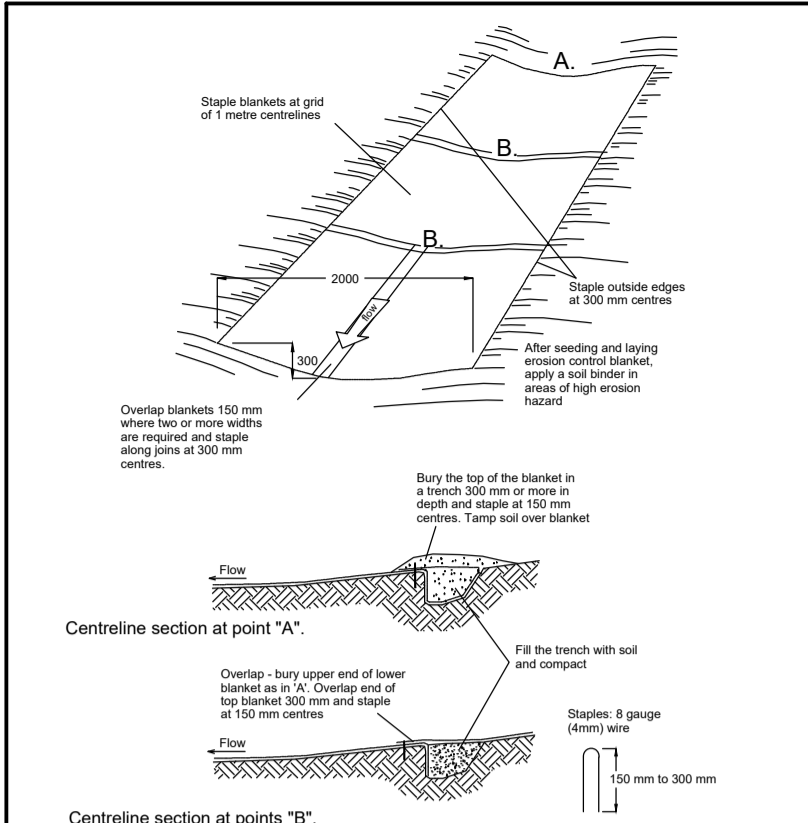
EARTH BANK (LOW FLOW) SD 5-5



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.

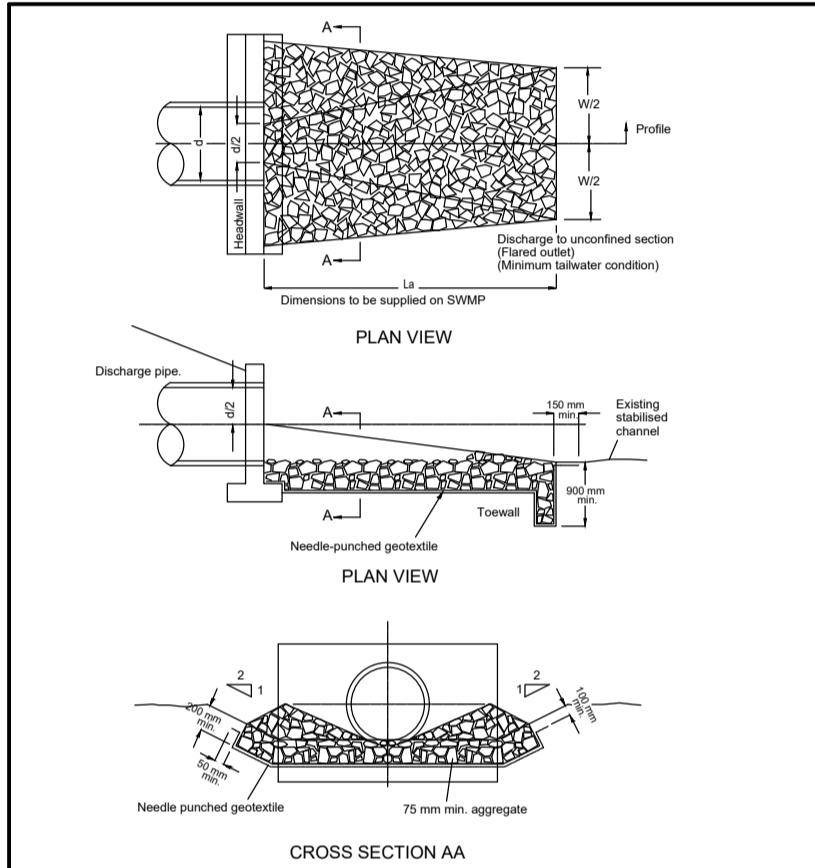
EARTH BANK (HIGH FLOWS) SD 5-6



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 "single-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.

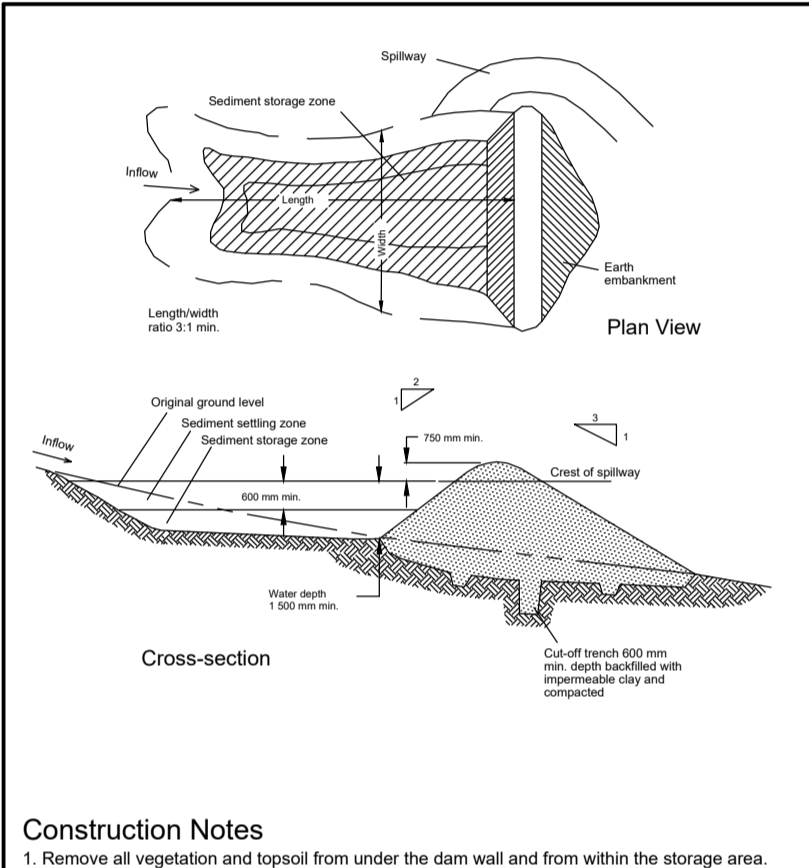
RECP : CONCENTRATED FLOW SD 5-7



Construction Notes

1. Compact the subgrade fit to the density of the surrounding undisturbed material.
2. Prepare a smooth, even foundation for the structure that will ensure that the needle-punctured 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.

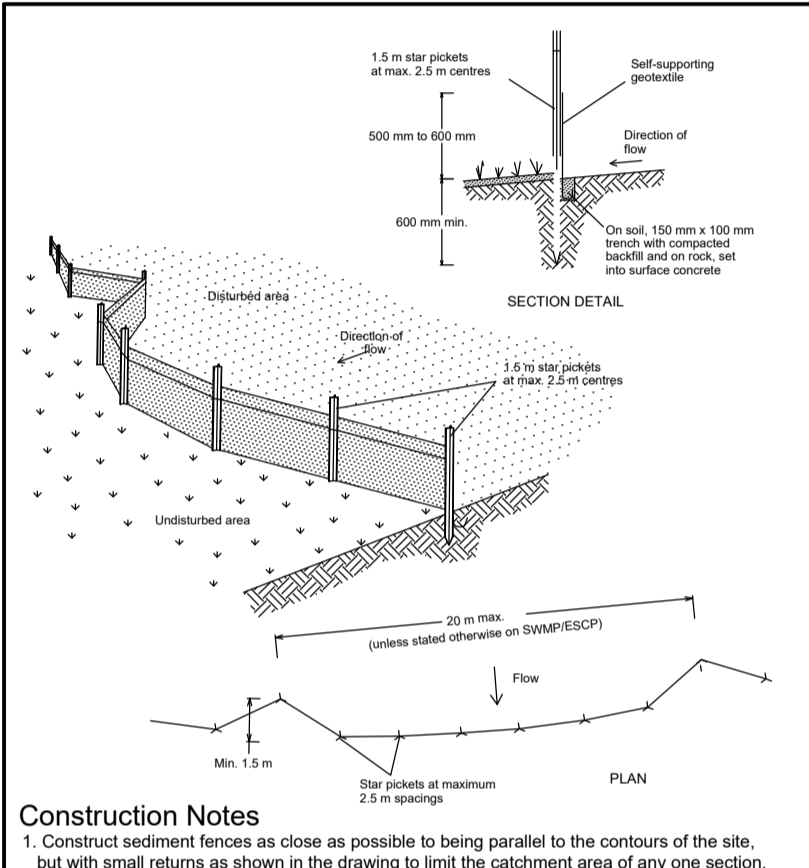
ENERGY DISSIPATER SD 5-8



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 rear crest.
3. Maintain the trench free of water and compact 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.

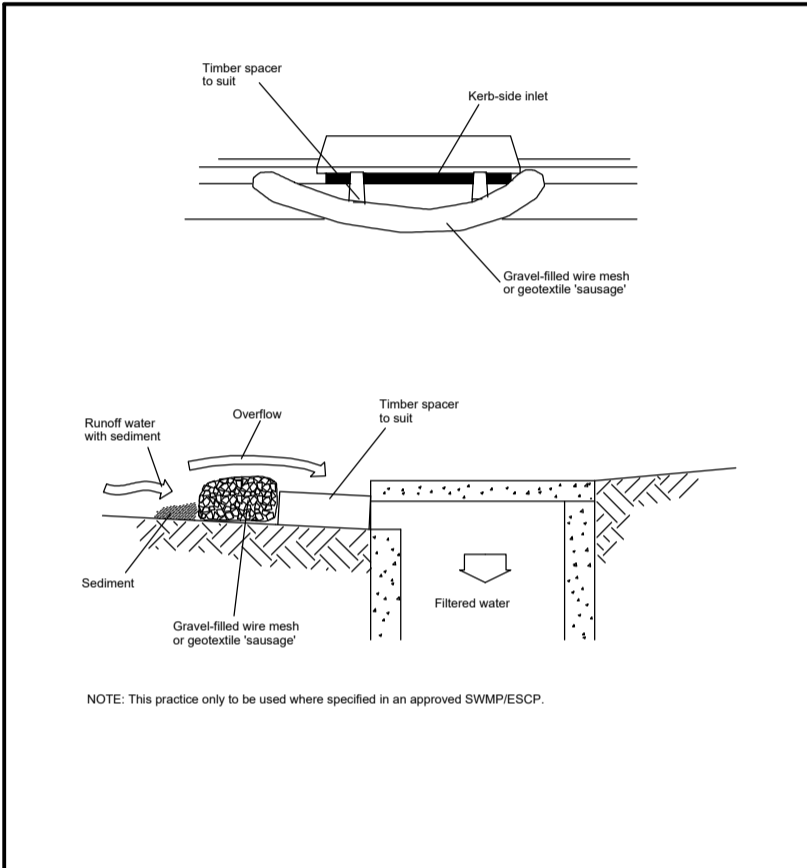
EARTH BANK - WET (APPLIES TO TYPE D' AND TYPE F SOILS ONLY) SD 6-4



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.

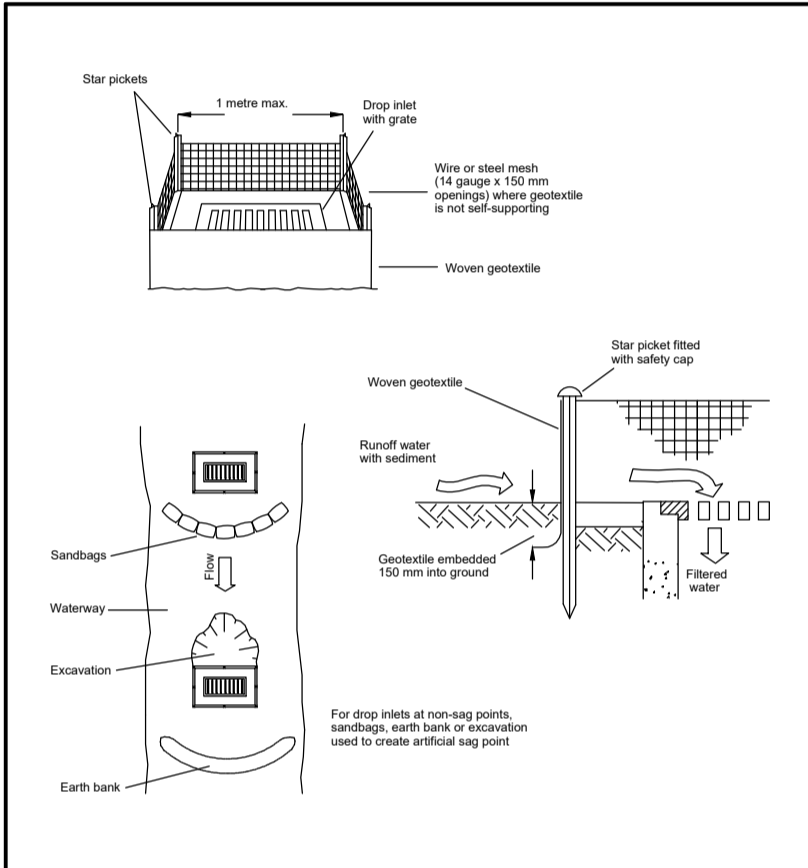
SEDIMENT FENCE SD 6-8



Construction Notes

1. Install filters to kerb mesh only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fit 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.

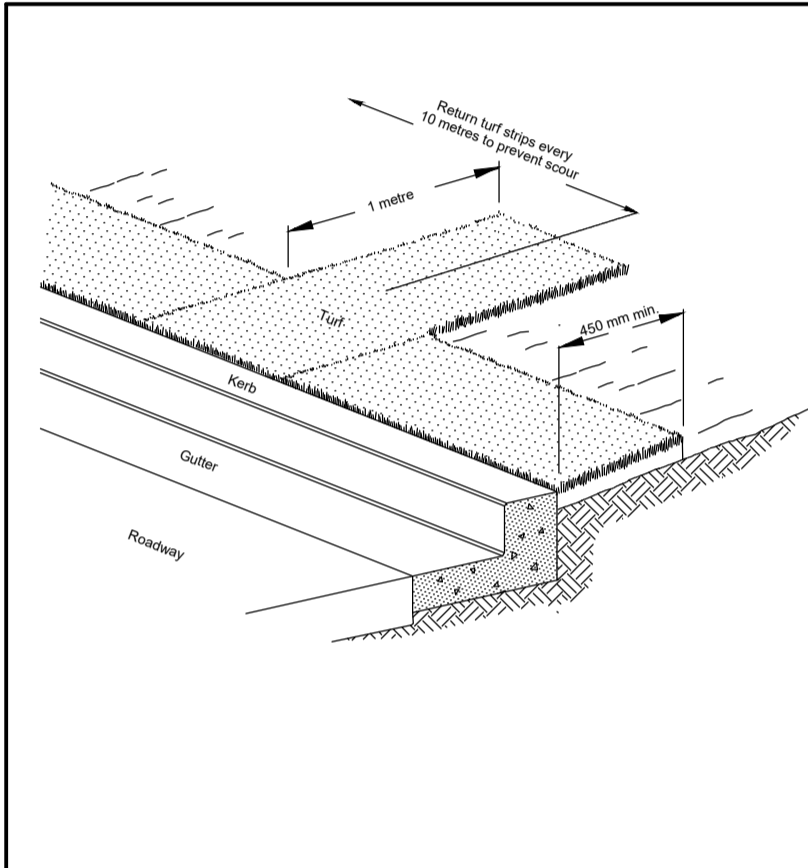
MESH AND GRAVEL INLET FILTER SD 6-11



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 geotextile. 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.

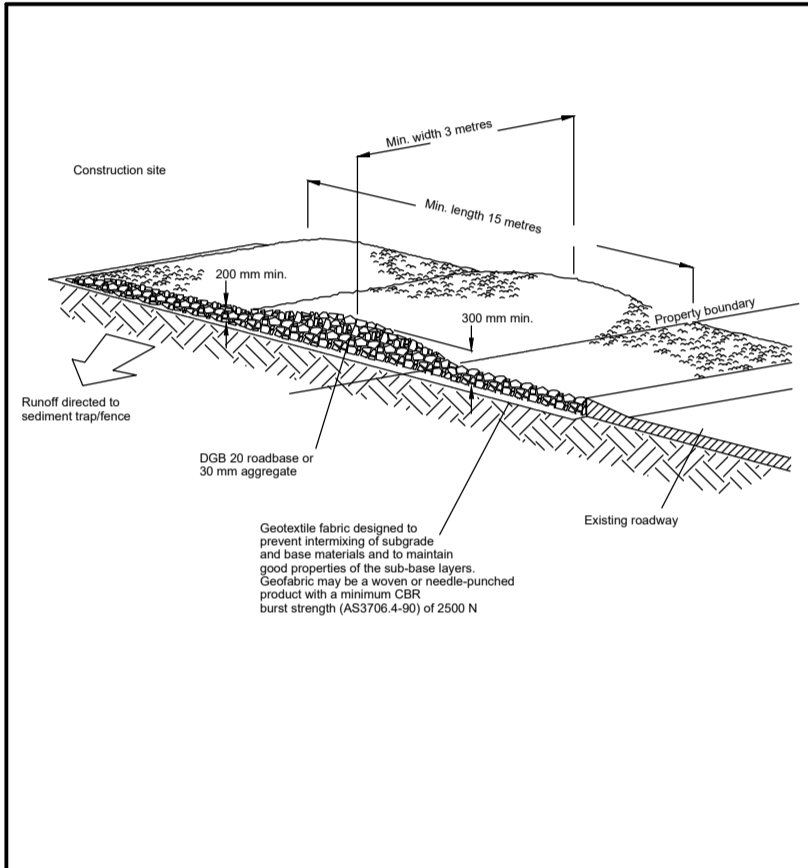
GEOTEXTILE INLET FILTER SD 6-12



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 metres 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-punctured 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

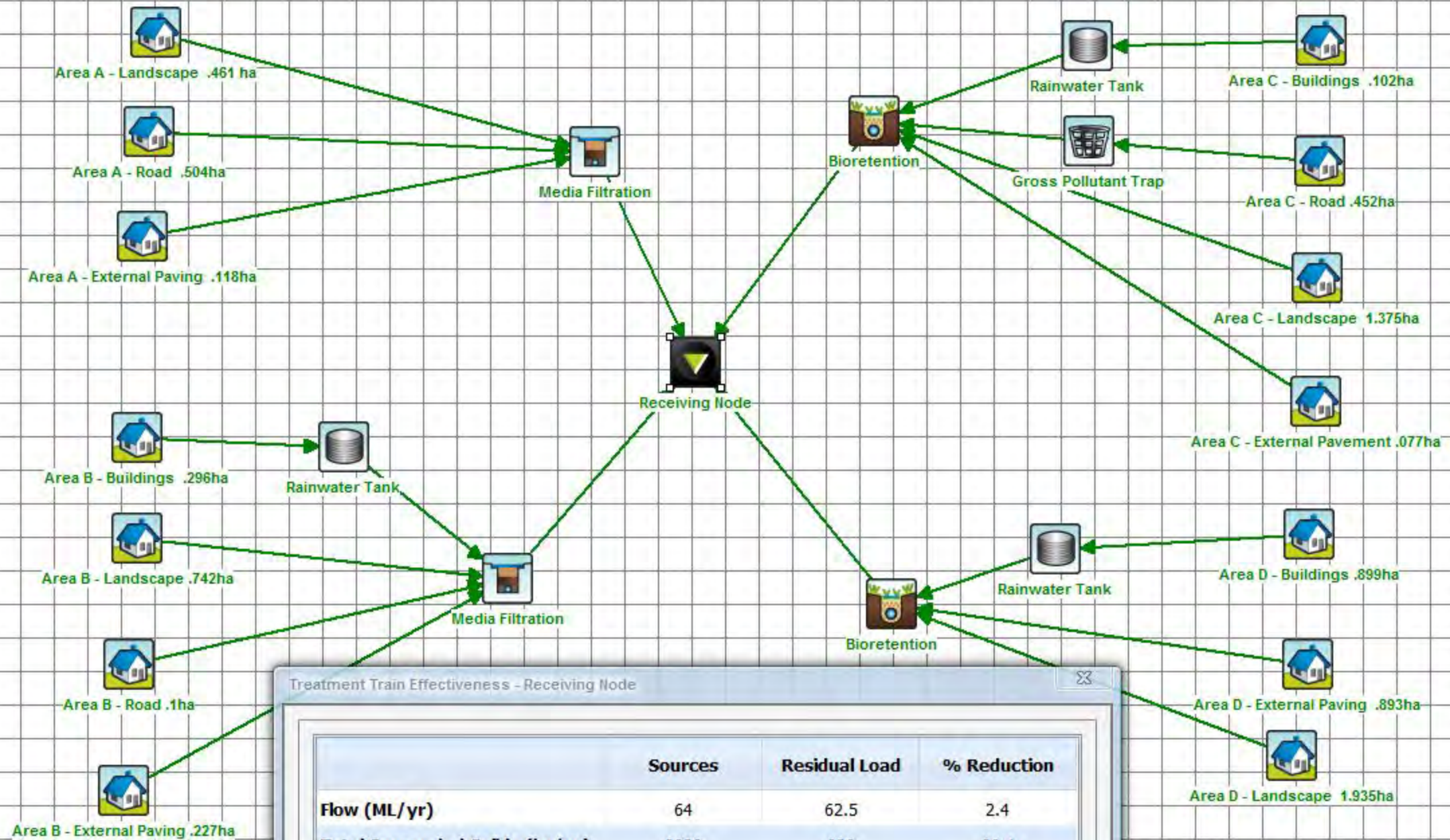
NOT FOR CONSTRUCTION

		© Copyright MPC Consulting Engineers as date of issue		COPYRIGHT		CLIENT		PROJECT		DO NOT SCALE DRAWING			
		THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION UNLESS ENDORSED BELOW		The concepts and information contained in this document are the copyright of MPC Consulting Engineers. Use or copying of the document in whole or in part without the written permission of MPC Consulting Engineers constitutes an infringement of copyright.		CATHOLIC SCHOOLS OFFICE		CATHERINE McAULEY CATHOLIC COLLEGE AT; LOT 412, DP 1063902, No.507 MEDOWIE ROAD, MEDOWIE		DRAWN J.P.	ENGINEER M.S.	No in SET --	SHEET A1
2 DEVELOPMENT APPLICATION		17.5.10				TITLE SEDIMENTATION AND EROSION CONTROL DETAILS				SCALES N.T.S.	JOB No 17-828	DRAWING No C11	ISSUE 2
1 DEVELOPMENT APPLICATION		15.5.10											
0 DEVELOPMENT APPLICATION		28.3.10											
ISSUE	REASON FOR ISSUE	DATE	DATE OF RELEASE	RESPONSIBLE PRINCIPAL SIGNATURE		ISSUE							

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)	64	62.5	2.4
Total Suspended Solids (kg/yr)	8830	938	89.4
Total Phosphorus (kg/yr)	99.3	21.7	78.2
Total Nitrogen (kg/yr)	125	64.1	48.8
Gross Pollutants (kg/yr)	1110	0	100



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**

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.



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

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

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

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