STORMWATER MANAGEMENT REPORT

SINSW Hastings Secondary College - Port Macquarie Campus

16 Owen Street, Port Macquarie NSW 2444

PREPARED FOR
Schools Infrastructure NSW
Level 8
259 George Street
Sydney NSW 2000
Tel: 02 9273 9200

Ref: SY202097-01-CR02
Rev: 4
Date: 21.04.2021

Stormwater Management Report

Date	Revision	Issue	Prepared By	Approved By
26.03.2021	1	Issue For SSDA	E. Flack	
14.04.2021	2	Issue For SSDA	E. Flack	
16.04.2021	3	Issue For SSDA	E. Flack	
21.04.2021	4	Issue For SSDA	E. Flack	

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1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) has been commissioned by School Infrastructure NSW (SINSW) on behalf of the Department of Education (DOE) to prepare the Stormwater Management Report to accompany a development application (DA) to the NSW Department of Planning, Industry and Environment (DPIE) for proposed upgrades to Hastings Secondary College (Port Macquarie Campus), previously known as Port Macquarie High School.

Hastings Secondary College consists of two campuses, being Westport and Port Macquarie. This report has been prepared for proposed works at the Port Macquarie Campus, which consists of two properties, the main campus and the Ag Plot.

The works subject to this proposal are to be carried out on the main Port Macquarie campus which is located at 16 Owen Street, Port Macquarie (the site). The site has a secondary street frontage to Burrawan Street and adjoins Oxley Oval along the eastern boundary.

On 23 December 2020, the Secretary of the DPIE issued Secretary's Environmental Assessment Requirements (SEARs) for SSD Application No. 11920082. This report has been prepared in accordance with the SEARs requirements.

This report covers the works shown as the Northrop Drawing Package required for the development of the site including:

- Stormwater Drainage;
- Stormwater Detention;
- Stormwater Quality / Water Sensitive Urban Design;
- Flooding

1.2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents:

1. State Significant Development Application Civil Documentation prepared by Northrop; Job Number 202097, revision 3.
2. Architectural and Landscape Drawings by FJMT, Project Reference HSWP.
3. Port Macquarie – Hastings Council Development Guidelines and Standards:
    a. Development Control Plan (DCP) 2013
    b. Local Environment Plans (LEP) 2011
    c. D5 – Stormwater Drainage Design
    d. D7 – Stormwater Management
4. Australian and New Zealand Standard AS/NZS 3500.3:2018 Plumbing and Stormwater Drainage.
5. Geotechnical Investigation Report by Douglas Partners, revision 0
6. Site Survey prepared by YSCO Geomatics Land Resource Consultants, dated December 2019

1.3 The Development

1.3.1 Site Location and Context

The site is located approximately 1.2km south east of the Port Macquarie town centre, with access from Oxley Highway (Gordon Street) via Owen Street to the centre, William Street via Owen Street to the north and Burrawan Street via Owen Street to the south. A maintenance access road exists to the east of the site along Burrawan Street.

The site is located at 16 Owen Street, Port Macquarie and is legally known as Lot 111 in DP 1270315. The Port Macquarie Campus site is located within a coastal setting (east), with residential (single two storey and residential flat buildings) located to the west and south and Port Macquarie Bowling Club to the north. The surrounding street network provides on-street parking. Maintenance vehicular access is located off Burrawan Street.

No Natural watercourses are mapped as traversing the site. Scattered vegetation is located throughout the site, with a small area of vegetation concentrated towards the pedestrian access area.

The Port Macquarie Campus site is gently sloping downwards in three general 'platforms' towards the north, with distinct views out towards the ocean and the Hastings River. It also has a distinct view line to the row of Norfolk pine trees along the coastline. The siting of the campus provides many opportunities for ongoing cultural connection to Country. Current built form has an established language of two (2) story, face brick, low pitched metal roof buildings.

The site has an area of approximately 34,500m^2 and is located within the Port Macquarie - Hastings Council Local Government Area (LGA).

The site locality is depicted in Figure 1 below.

Figure 1 - Site Locality

1.3.2 Proposed Development

The upgrades will support high-quality educational outcomes to meet the needs of students within the local community and deliver innovative learning and teaching spaces as follows:

- Demolition works to accommodate new works;

- Upgrade to school entry;
- Construction of new two (2) storey Creative and Performing Arts (CAPA) building;
- Construction of new Police Citizens Youth Club (PCYC);
- Partial refurbishment of Building L;
- Refurbishment and alteration to Building B;
- Removal of Building S and demountable buildings;
- New lift connections, covered outdoor learning area (COLA) and covered walkways;
- Associated earthworks, landscaping, stormwater works, service upgrades; and
- Tree removal/ tree safety works.

No change to current staff or student numbers is proposed.

The proposed site plan is shown below.

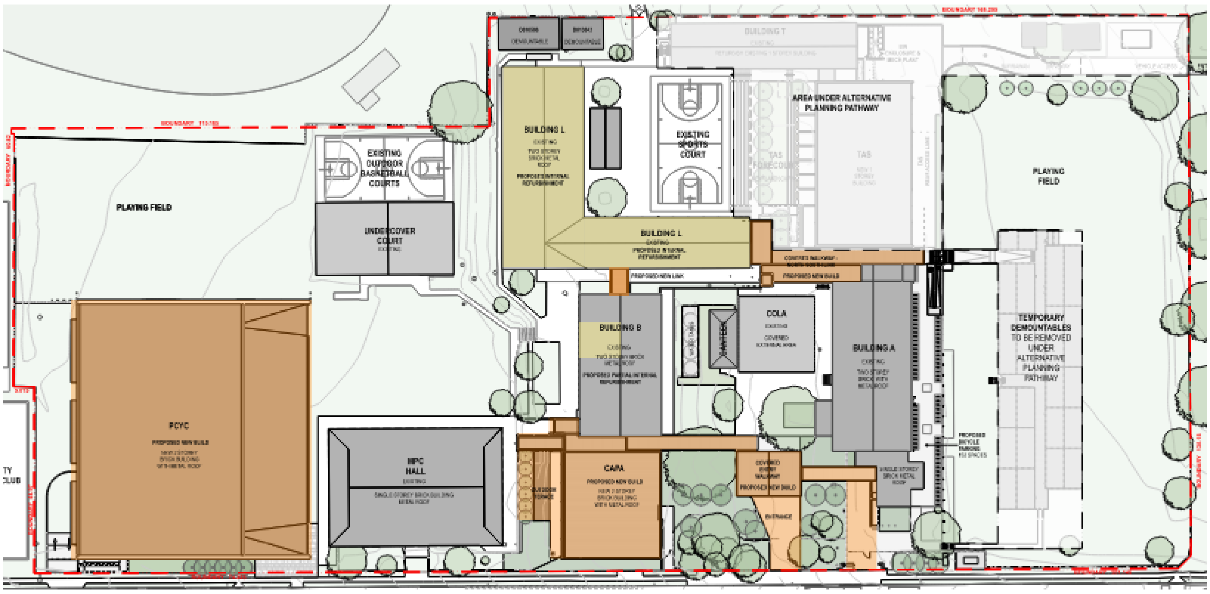

Figure 2 - Site Plan by FJMT Architects

2. Stormwater Management

2.1 Objectives and Controls

The stormwater strategy for the Hastings Secondary College – Port Macquarie Campus development has been developed in accordance with Port Macquarie - Hastings Council Development Plan (DCP) and Water Sensitive Urban Design guidelines.

The general objectives of urban drainage design are:

- To control and manage all stormwater generated within the development;
- To control and manage all stormwater passing through the development from the surrounding catchment;
- To provide an effective legal point of discharge for all collected stormwater, from the development to a natural watercourse, Council drainage system or approved outfall; and
- To achieve these objectives without detrimentally affecting the environment, surface and subsurface water quality, groundwater infiltration characteristics, the adjoining landowners and other landowners near the drainage outlet and watercourses either upstream or downstream of the subdivision.
- To provide a safe and convenient environment for pedestrians and traffic.
- To incorporate principles of Ecological Sustainable Development (ESD

The objectives of small on-site detention systems are as follows:

- The capacity of existing drainage infrastructure shall not be exceeded as a result of developments, which increase the volume and rate of stormwater runoff beyond the capacities originally designed for.
- The likely cumulative impact of similar developments shall not adversely impact on the capacity of the existing drainage system.
- That on-site detention (OSD) systems are able to be effectively maintained by landowners and provide a cost-effective method of meeting the other objectives of this section.
- Provide a simplified method for designers, builders, and owners to determine Council's requirements for on-site detention in relation to volume of detention and permissible rate of discharge to Council's drainage system.
- That on-site detention (OSD) systems meet necessary OH&S guidelines.

2.2 Existing Stormwater Infrastructure

The existing site currently contains a number of existing in-ground stormwater systems that connect into the Council stormwater system. There are currently multiple discharge points from the School stormwater systems into the Council stormwater line that runs through the site. The assumed existing site drainage is shown below in Figure 3. The existing overland flow routes generally follow the existing in-ground system and drain out towards the North Eastern corner of the site.

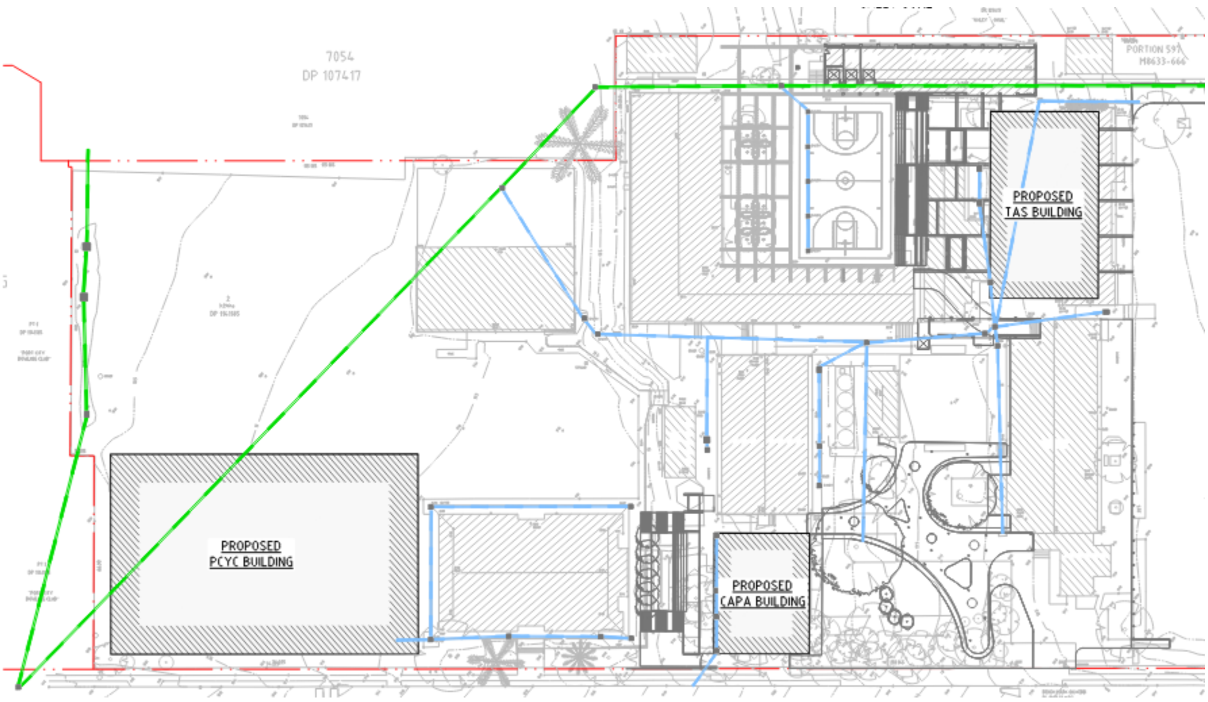

Figure 3 - Existing Stormwater Infrastructure

2.3 Proposed Stormwater Infrastructure

In accordance with both the EFSG and the Council DCP, the inground piped drainage system shall be designed to convey the 1 in 20-year ARI storm. The minimum pipe diameter for the proposed system within the site is to be 225mm in accordance with EFSG requirements. Overland flow is to also be considered for events greater than the design event or in the occurrence of a blockage, with overland flow routes provided away from the proposed and existing buildings and structures. The proposed stormwater system will be designed in accordance with these requirements through the use of DRAINS modelling and analysis. The indicative stormwater layout is shown in the SSDA design drawings, attached as Appendix A. The layout is subject to change pending changes to external grading and landscape.

All unimpacted stormwater outside of the proposed works is to be maintained and remain unchanged. A new stormwater system is proposed for both the new PCYC and CAPA buildings and the associated external works. Stormwater runoff associated with the new buildings and their associated external works will be conveyed via a proposed below-ground pit and pipe system, with each system then directed into an OSD tank before connecting into the existing Council or school system. A separate system will convey all roof water from the PCYC to the proposed 25kL rainwater tank (refer hydraulic documentation and infrastructure Services Report for details) for re-use, with any overflow directed towards the proposed OSD tank.

Due to the location of the proposed PCYC building, the existing Council stormwater line traversing the site will be affected (see Figure 3). Council was contacted to confirm their preferred method of treatment of the existing line. From correspondence with Council, the preferred treatment of the existing stormwater line was to redirect it around the proposed basement of the PCYC by connecting it into the system further downstream. Council also noted that future stormwater upgrades and works are planned in the vicinity of the proposed works and that this needed to be taken into account within the proposed building design. Therefore, in accordance with Council guidelines, a 3m easement between the Northern Boundary and the proposed PCYC is to be maintained, with no permanent structures including retaining walls to be placed within it.

2.4 Stormwater Quantity Management

In accordance with Council's Development Control Plan (DCP), all new developments are required to provide On-site Stormwater Detention (OSD). In accordance with the Council guidelines, all developments are to limit the post-development peak discharge from the site to less than that of the pre-development site, assuming a 'green field' development scenario. The EFSG states that the preferred means for the provision of OSD is the use of an above ground storage system; however, due to site constraints such as aesthetics, spatial limitations, and safety reasons, below ground OSD tanka are proposed for this site.

A catchment plan for both pre- and post-development scenarios can be seen below in Figure 4 and Figure 5.

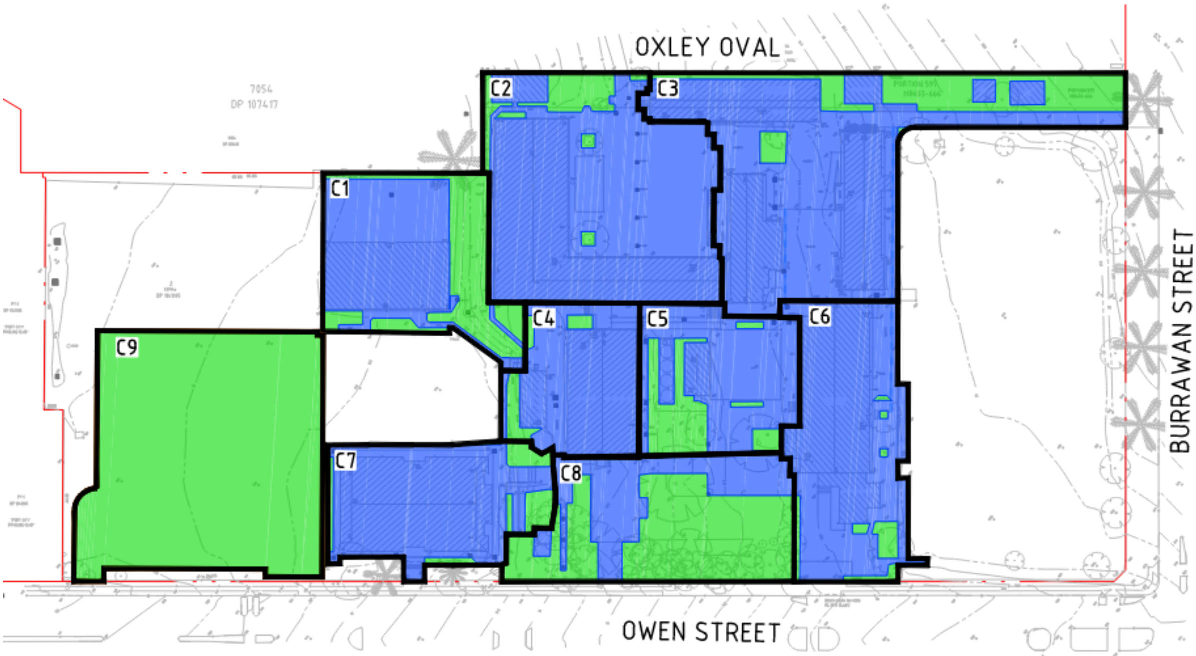

Figure 4 - Pre-Development Catchment Plan

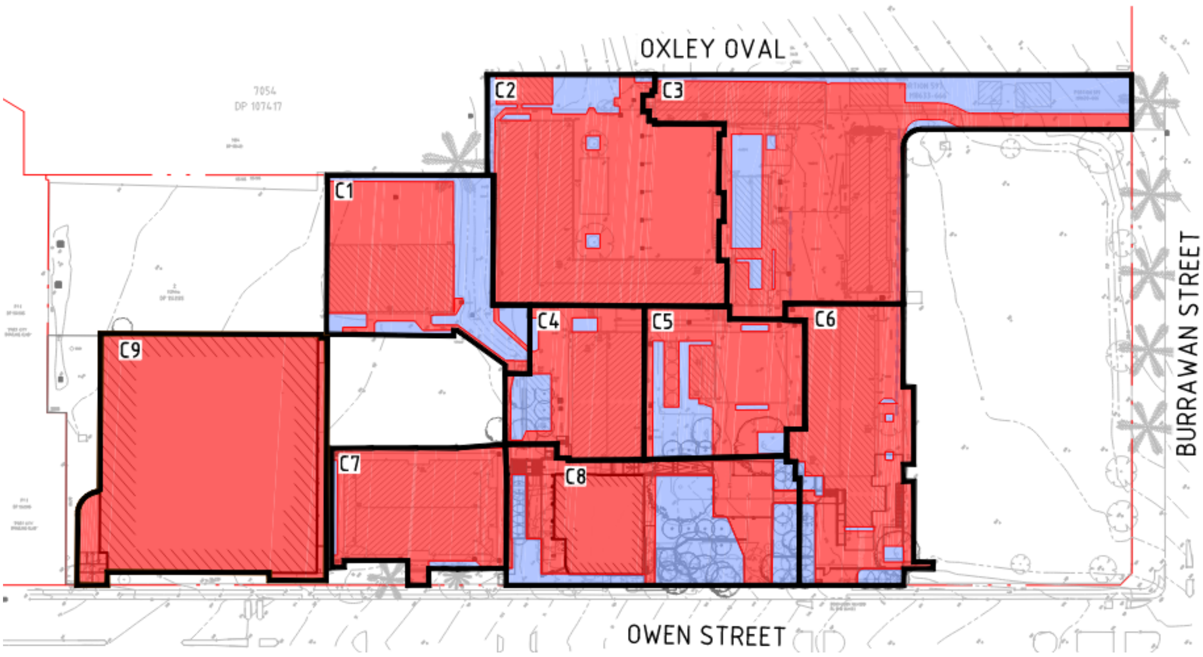

Figure 5 - Post-Development Catchment Plan

DRAINS has been used to model and analyse the proposed stormwater system. The total impervious and pervious areas for both the pre- and post-development scenarios for the site catchments shown in Figure 4 and Figure 5 are shown in Table 1 below.

Table 1 - Catchment Areas for Pre & Post Development Scenarios

		Total Area (m^2)	Impervious Area (m^2)	Pervious Area (m^2)
Catchment 1	**Pre-Development**	1,995	1,277	718
	Post-Development	1,995	1,277	718
Catchment 2	**Pre-Development**	3,406	3,101	305
	Post-Development	3,402	3,100	302
Catchment 3	**Pre-Development**	3,977	3,231	746
	Post-Development	3,982	3,007	975
Catchment 4	**Pre-Development**	1,307	1,187	120
	Post-Development	1,292	1,085	207
Catchment 5	**Pre-Development**	1,559	1,171	388
	Post-Development	1,559	1,171	388
Catchment 6	**Pre-Development**	2,127	1,980	147
	Post-Development	2,127	1,952	175
Catchment 7	**Pre-Development**	1,750	1,517	233
	Post-Development	1,432	1,364	68
Catchment 8	**Pre-Development**	2,250	818	1,432
	Post-Development	2,573	1,580	993
Catchment 9	**Pre-Development**	3,853	0	3,853
	Post-Development	3,853	3,853	0

As illustrated in the table above, only catchments 3 (TAS building) and 8 (CAPA building) have increased impervious areas and so these catchments will require OSD. The OSD and associated works for catchment 3 are included as part of a separate CDC package. The PCYC building which will be located within catchment 9 is still being confirmed and therefore the areas are not shown in the above table, however, as the area is currently a grass playing field, the new building will create new impervious areas and an OSD will be required. The proposed CAPA and its associated landscape areas will be conveyed to an OSD tank located underneath the stairs between the proposed CAPA building and the existing MPC hall prior to discharging into the existing below ground site stormwater system. The proposed PCYC works will be conveyed to an OSD tank located within the adjacent landscaping prior to discharging directly into the Council stormwater system.

The results of the DRAINS model comparing the pre-development target flows and modelled post-development discharge for the affected catchments is shown in the table below.

Table 2 - Site Discharge Summary

		20% AEP (L/s)	1% AEP (L/s)
Catchment 8	**Pre-Development**	72	154
	Post-Development	71	154
Catchment 9	**Pre-Development**	123	263
	Post-Development	109	258

Using the above DRAINS results, the required OSD values are determined as below, noting that additional volume required due to water quality treatment devices and internal weir walls has not been considered.

Table 3 - OSD Summary

	OSD Volume (m^3)	Orifice Size (mm)	Internal Weir Wall Height (m AHD)
Catchment 8	25.2	190	13.95
Catchment 9	50	280	9.9

2.5 Stormwater Quality Management

2.5.1 Adopted Water Quality Objectives

Port Macquarie-Hastings Council Guidelines outline that all new developments are required to implement the principles of Water Sensitive Urban Design (WSUD). These principles include water quality requirements to reduce the pollutant loads in terms of Total Suspended Solids, Total Phosphorus, Total Nitrogen and Gross Pollutants on receiving water bodies.

Stormwater quantity and quality management measures have been modelling using MUSIC software. Both the Council DCP and the Greenstar Design & as-built submission guidelines v1.3 outline different required water quality targets for the development, with the limiting targets being those outlined in the Council guidelines. Therefore, adopted for this design from Council guidelines are presented in Table 4 below.

Table 4 - Water Quality Targets

Pollutant	% Reduction Post-Development Average Annual Load Reduction
Gross Pollutants	100
Total Suspended Solids (TSS)	80
Total Phosphorous (TP)	45
Total Nitrogen (TN)	45

2.5.2 Stormwater Quality Management Scheme

The proposed water quality treatment train incorporated to meet the required targets includes a rainwater re-use tank (only for the PCYC), proprietary stormfilters and proprietary pit baskets.

The proposed rainwater re-use tank will have re-use for internal non-potable uses to reduce the requirement for mains water usage. The rainwater tank details have been taken from the hydraulic design for input into the treatment train. For details on the rainwater tank and water balance, refer to the infrastructure services report.

Pit baskets have been provided as a pre-treatment to target the pollutant reduction of gross pollutants, litter, grit, sediments, and associated oils prior to stormwater discharging into OSD tank where the stormfilters are located to provide tertiary treatment.

2.5.3 Rainfall Data

Historical rainfall records were obtained from the Bureau of Meteorology for Station No. 061078 at Williamtown RAAF. The MUSIC analysis was undertaken using a 6-minute time step for a 4 year time period from 2002 to 2006.

The Evapotranspiration values have been entered as the industry standard for the North Coast area.

2.5.4 Methodology

The water quality modelling software MUSIC v6.3.0 was adopted for the study. Figure 6 shows the layout of the treatment train in the MUSIC Model.

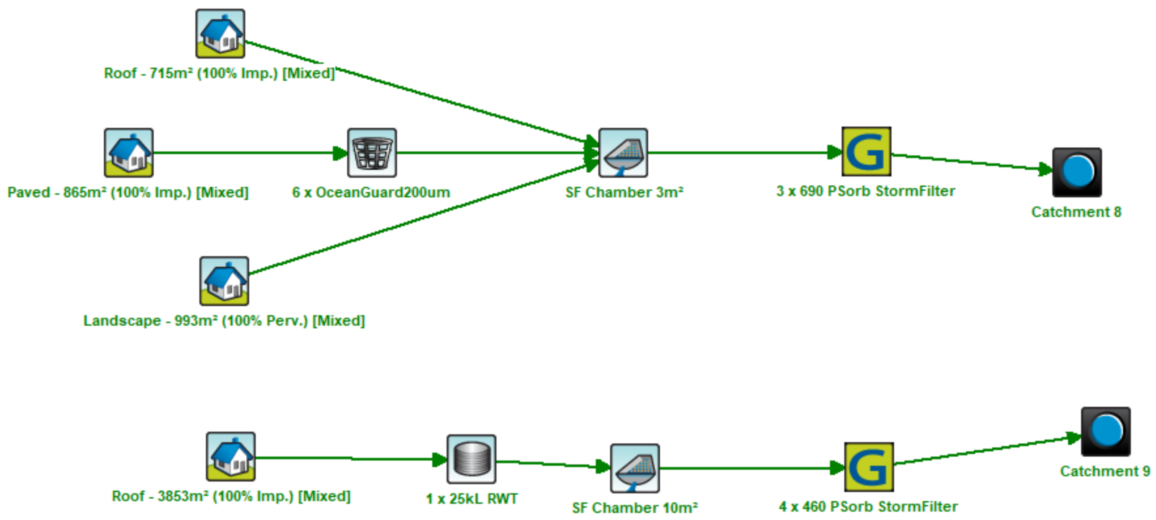

Figure 6 - MUSIC Link and Node Diagram

The following rainfall and runoff parameters have been adopted.

Table 5 - Rainfall Runoff Parameters

Parameter	Recommended Values
Rainfall Threshold (mm/day)	1.5
Soil Storage Capacity (mm)	120
Initial Storage (% of Capacity)	30
Field Capacity (mm)	80
Infiltration Capacity Coefficient – a	200
Infiltration Capacity Exponent – b	1

Initial Depth (mm)	10
Daily Recharge Rate (%)	25
Daily Baseflow Rate (%)	5
Daily Deep Seepage Rate (%)	0

The pollutant concentration parameters used in the model are listed in Table 6:

Table 6 - Water Quality Parameters for MUSIC Source Nodes

Land- Use Category		Log TSS (mg/L)		Log TP (mg/L)		Log TN (mg/L)	
		Storm Flow	Base flow	Storm Flow	Base Flow	Storm Flow	Base Flow
Roof Areas	Mean	1.30	1.20	-0.89	-0.85	0.30	0.11
	Std Dev	0.32	0.17	0.25	0.19	0.19	0.12
Road Areas	Mean	2.43	1.20	-0.30	-0.85	0.34	0.11
	Std Dev	0.32	0.17	0.25	0.19	0.19	0.12

2.5.5 MUSIC Model Results

The results of the analysis show the treatment train will achieve the water quality targets set out in the Council guidelines. The water quality model provides an indication of the pollutant removal rates expected when the nominated treatment train of water quality measures is applied to the proposed development. The results are presented in Table 7 and Table 8.

Table 7 - MUSIC Model Results for CAPA

Pollutant	Before Treatment	After Treatment	% Reduction	% Objective	Compliance
Gross pollutants (kg/yr.)	45.3	0	100	100	OK
Total Suspended Solids (kg/yr)	204	20.8	89.8	80	OK
Total Phosphorus (kg/yr)	0.413	0.122	70.5	45	OK
Total Nitrogen (kg/yr)	3.79	1.99	47.6	45	OK

Table 8 - MUSIC Model Results for PCYC

Pollutant	Before Treatment	After Treatment	% Reduction	% Objective	Compliance
Gross pollutants (kg/yr.)	147	0	100	100	OK
Total Suspended Solids (kg/yr)	299	59.6	80	80	OK
Total Phosphorus	0.962	0.371	61	45	OK

(kg/yr)					
Total Nitrogen (kg/yr)	11.7	6.47	45	45	OK

2.6 Flooding

Northrop have undertaken an investigation to understand the mainstream and local area flooding constraints associated with the site – for the purpose of this site ‘Mainstream’ & ‘Overland Flow’ flooding is been defined below.

1. Mainstream Flooding – flooding within the greater catchment area around the site which is defined by water that flows over banks of creeks and lagoons
2. Overland Flow Flooding – defines as surface runoff before it enters a water way. It is caused by rainfall which flows downhill and concentrates in catchment low points

Based on a review of publicly available Council Mapping and Flood Studies the site does not appear to be subject to mainstream flooding. An extract from Council’s flood mapping is shown below.

Figure 7 - Council Flood Map Extract

Overland flow paths and site grading will also be designed to ensure that both existing and new buildings and habitable areas are not impacted in major storms or in the event of the piped system being blocked.

3. Conclusion

A stormwater management strategy has been derived for the proposed development in accordance with AS/NZS 3500.3:2018 Plumbing and Stormwater Drainage, the EFSG and Council's DCP. Stormwater runoff from the proposed development is to be directed into the proposed underground pit and pipe system and OSD before being directed into conveyed into the existing school or Council stormwater system. An OSD storage system has been designed in accordance with Council guidelines for each building and corresponding landscaping works.

A treatment train has been developed using MUSIC software to demonstrate that the stormwater pollutant load reduction targets are achieved in accordance with the Greenstar Design & as-built submission guidelines v1.3 and Council guidelines. The treatment train consists of proprietary pit baskets installed at each proposed grated inlet pit and proprietary stormfilter cartridges will be added to the OSD tank.

Appendix A – Civil SSDA Plans

HASTINGS SECONDARY COLLEGE

PORT MACQUARIE CAMPUS NSW 2444
CIVIL ENGINEERING SSDA PACKAGE

SOURCE : NEARMAP.COM.AU (©2021)

DRAWING SCHEDULE	
DRG No.	DRAWING TITLE
DA11.01	COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DA11.11	GENERAL ARRANGEMENT PLAN
DA12.01	SEDIMENT AND EROSION CONTROL PLAN
DA12.11	SEDIMENT AND EROSION CONTROL DETAILS
DA14.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 1
DA14.02	SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 2
DA15.01	CAPA OSD DETAILS
DA15.02	PCYC OSD DETAILS
DA16.01	CATCHMENT PLAN

VERIFIER: -
JOB MANAGER: T.HOWE
DESIGNED: E.FLACK
DRAWN: J.PHILLIPS

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	J.P	-	E.F	26.02.21
2	ISSUED FOR SSDA	J.P	-	E.F	26.03.21
3	RE - ISSUED FOR SSDA	J.P	-	E.F	14.04.21

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PROJECT
HASTINGS SECONDARY COLLEGE PORT MACQUARIE
PORT MACQUARIE CAMPUS

DRAWING TITLE
COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN

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DRAWING NUMBER **DA11.01**
REVISION **3**
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JOB MANAGER: T.HOWE
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DRAWING TITLE
GENERAL ARRANGEMENT PLAN

JOB NUMBER
202097

DRAWING NUMBER
DA11.11

REVISION
4

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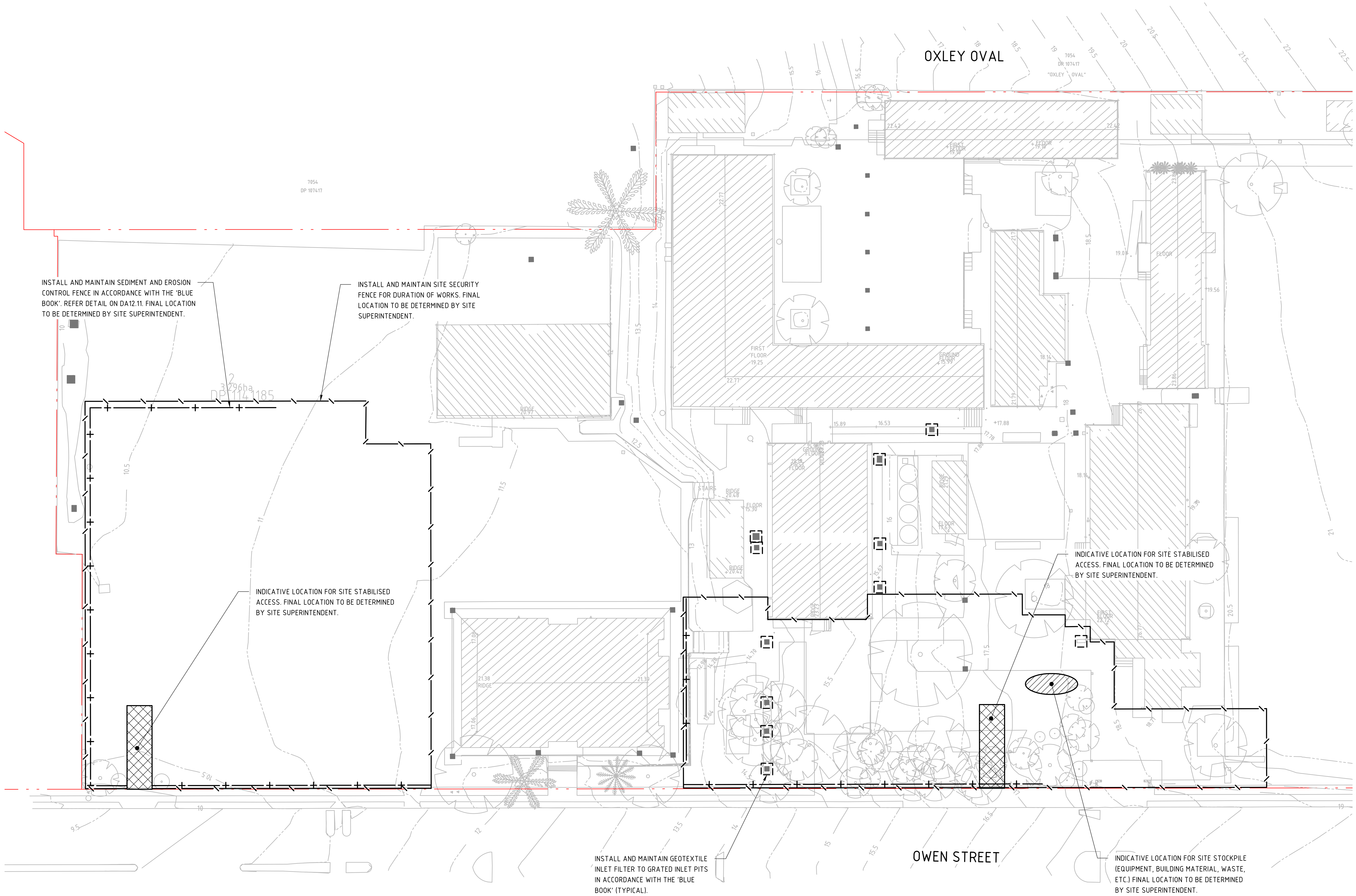

LEGEND

- BOUNDARY LINE
- EXISTING CONTOURS (0.5m INTERVALS)
- SEDIMENT FENCE
- SECURITY FENCE
- DROP INLET SEDIMENT TRAP
- STOCKPILE
- STABILISED SITE ACCESS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL EROSION CONTROL GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.
4. CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
5. CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'
6. THE TOTAL DISTURBED AREA FOR EACH CATCHMENT IS LESS THAN 2500m^2, THEREFORE IN ACCORDANCE WITH THE 'BLUE BOOK', NO SEDIMENT BASIN IS REQUIRED.

DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: T.HOWE VERIFIER:-

NOT FOR CONSTRUCTION

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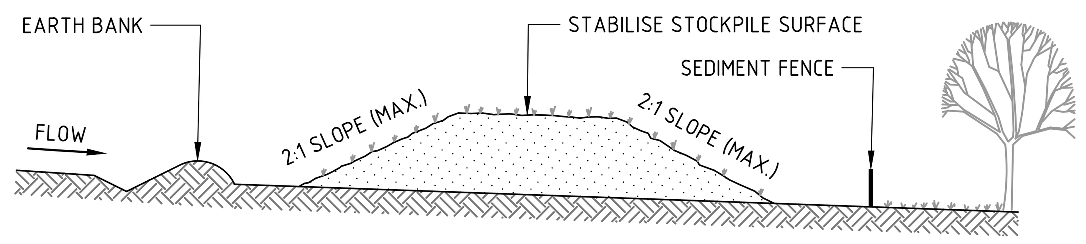
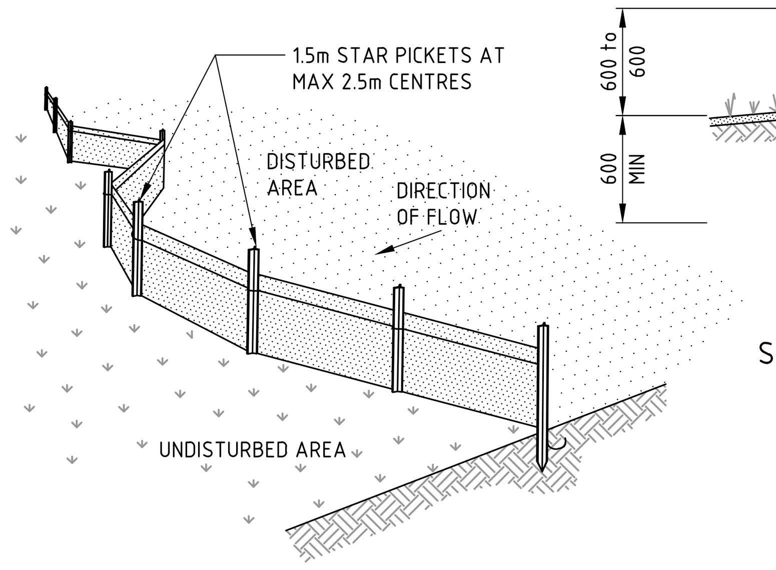
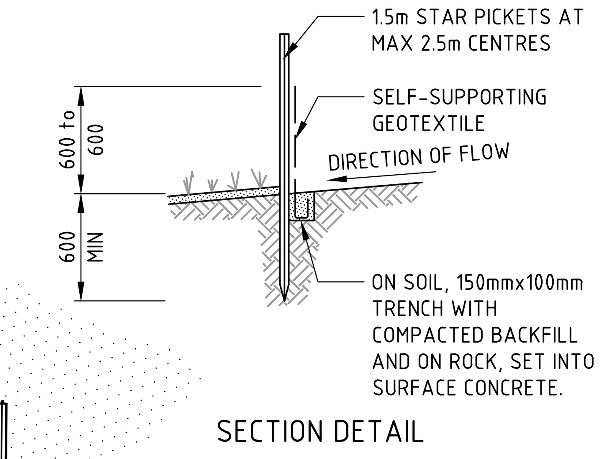


CONSTRUCTION NOTES

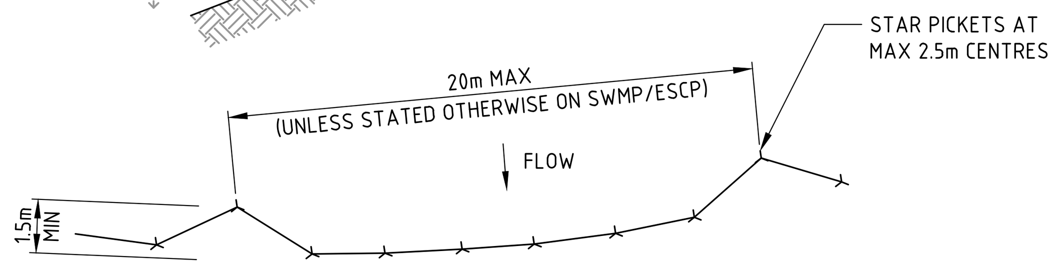
1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILE





SECTION DETAIL

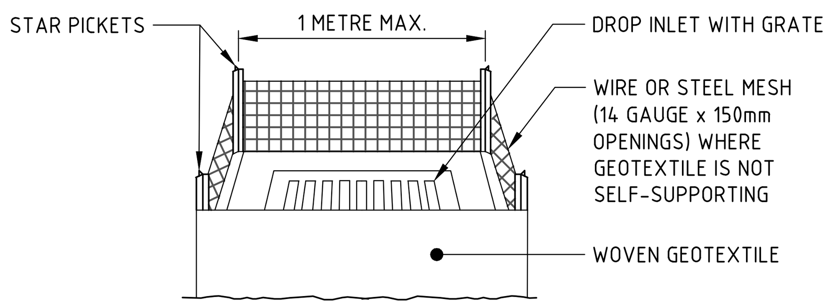


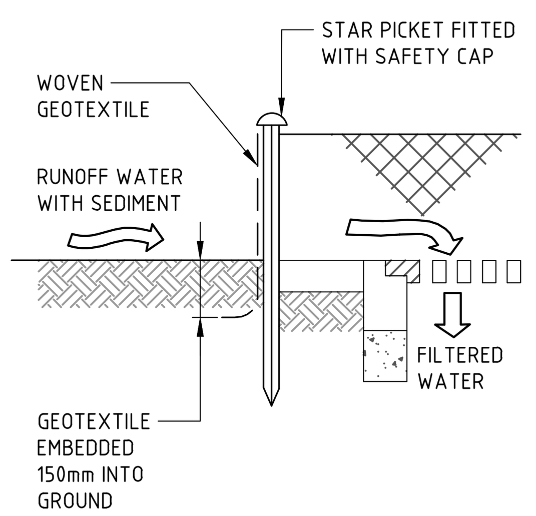
PLAN

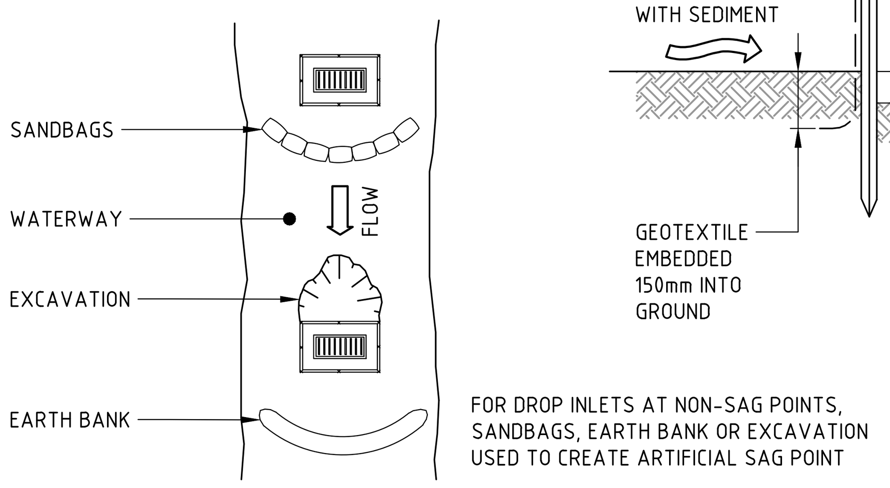
CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm 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 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE



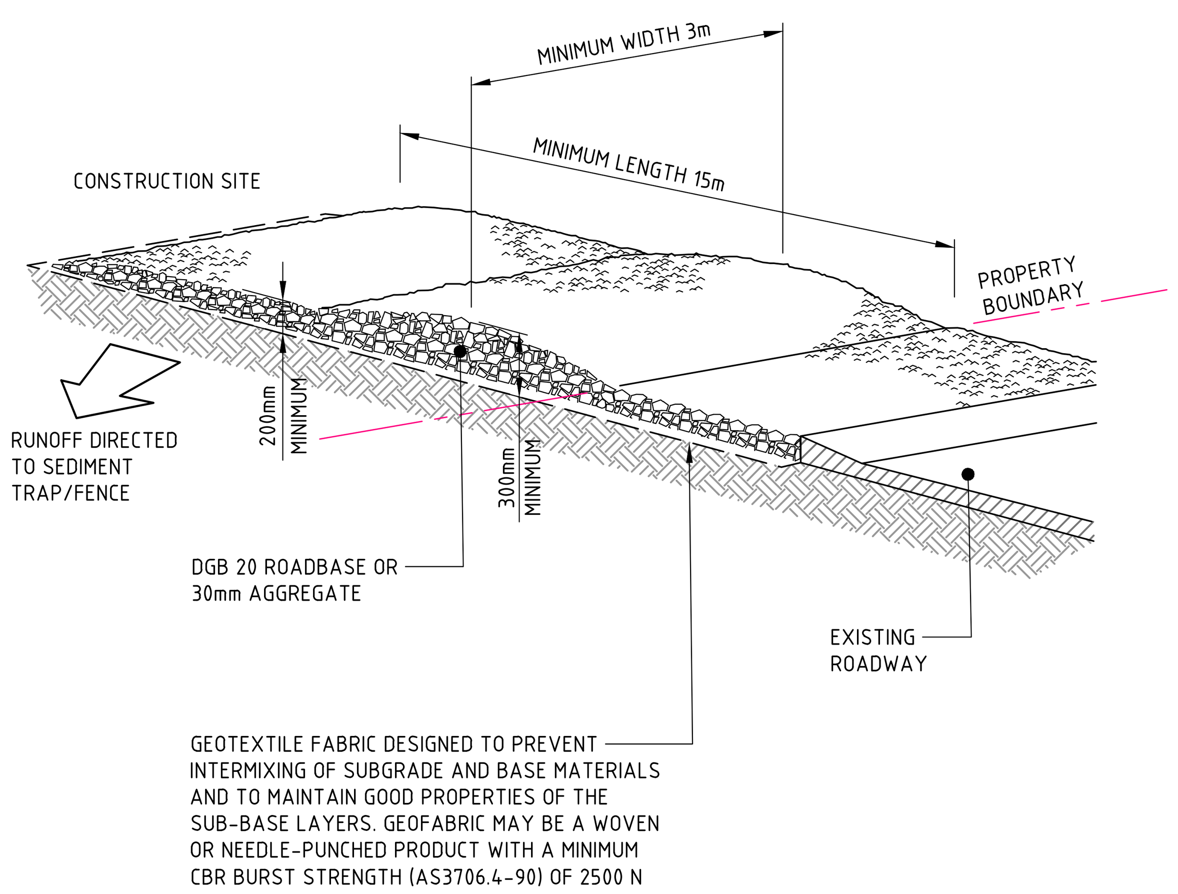




CONSTRUCTION NOTES

1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS



CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm 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

VERIFIER: -
JOB MANAGER: T.HOWE
DESIGNED: E.FLACK
DRAWN: J.PHILLIPS

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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2	ISSUED FOR SSDA	J.P	-	E.F	26.03.21
3	RE - ISSUED FOR SSDA	J.P	-	E.F	14.04.21

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ARCHITECT: fjmt

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Email southcoast@northrop.com.au ABN 81 094 433 100

PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE — PORT MACQUARIE CAMPUS

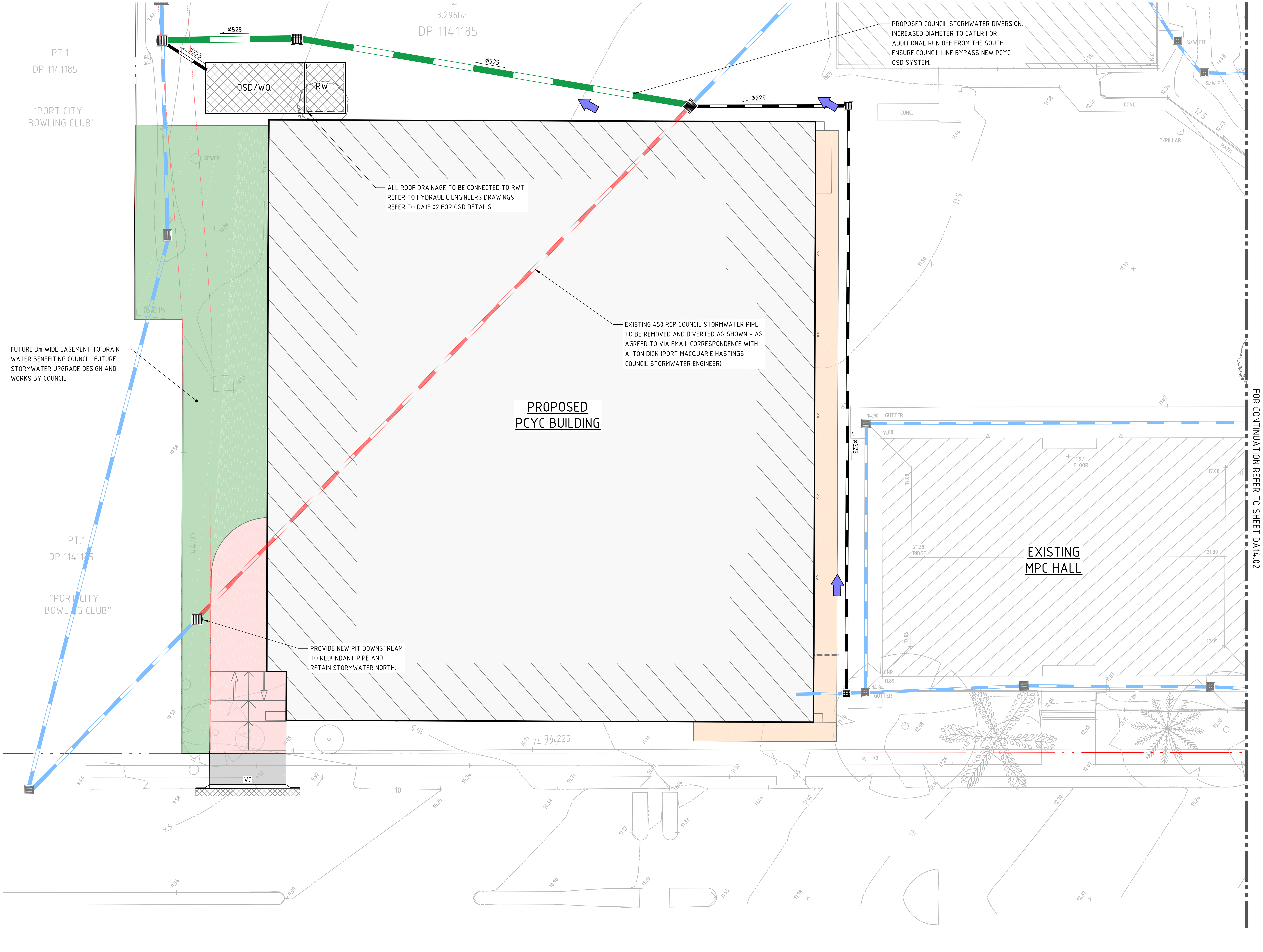
DRAWING TITLE: SEDIMENT AND EROSION CONTROL DETAILS

JOB NUMBER: 202097

DRAWING NUMBER: DA12.11 — REVISION: 3

DRAWING SHEET SIZE = A1

Found : W:\#Jobs\2020\202097 - SINSW Hastings Secondary College Upgrade\D-Drawings\C-Civil\202097-CAD\01-DA\SSDA\202097_DA12.11_SEDIMENT AND EROSION CONTROL DETAILS.dwg
Plotted By : jphillips
Date : 14-4-21 1:48pm



LEGEND

- BOUNDARY LINE
- PROPOSED EASEMENT LINE
- EXISTING CONTOURS (0.5m INTERVALS)
- PROPOSED CONTOURS (0.1m INTERVALS)
- EXISTING STORMWATER PIPE TO BE RETAINED
- EXISTING GRATED TRENCH DRAIN TO BE RETAINED
- EXISTING STORMWATER PIPE TO BE REMOVED
- EXISTING GRATED TRENCH DRAIN TO BE REMOVED
- Ø150 PROPOSED STORMWATER PIPE
- PROPOSED COUNCIL STORMWATER DIVERSION PIPE
- GTD PROPOSED GRATED TRENCH DRAIN
- GRATED INLET PIT (NEW / EXTG)
- JUNCTION PIT (NEW / EXTG)
- OSD PROPOSED OSD TANK
- RW RETAINING WALL
- FALL DIRECTION OF GRADE
- VC PROPOSED VEHICULAR CROSSING
- PROPOSED FOOTPATH PAVEMENT
- PROPOSED VEHICULAR PAVEMENT
- PROPOSED VEHICULAR CROSSING PAVEMENT
- SUSPENDED RAMP - REFER TO STRUCTURAL DRAWINGS
- STRUCTURAL PAVEMENT - REFER STRUCTURAL DRAWINGS
- PROPOSED LANDSCAPING

GENERAL NOTES

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ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

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DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	J.P	-	E.F	26.02.21
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3	RE - ISSUED FOR SSDA	J.P	-	E.F	14.04.21

CLIENT: NSW Government Education Public Schools — Trusted Supplier

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ARCHITECT: fjmt

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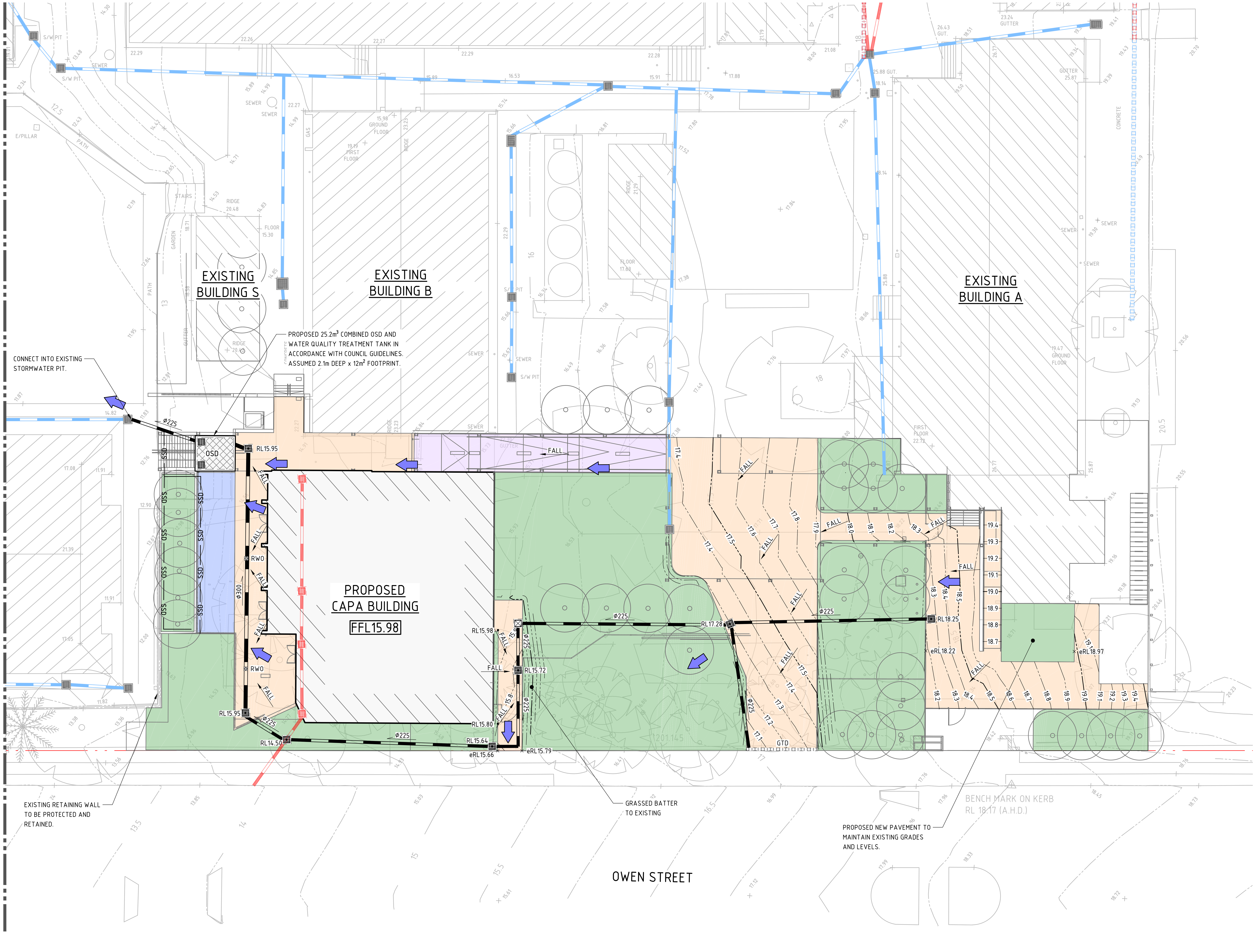
Email southcoast@northrop.com.au ABN 81 094 433 100

PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE
PORT MACQUARIE CAMPUS

DRAWING TITLE: SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 1

JOB NUMBER: 202097
DRAWING NUMBER: DA14.01
REVISION: 3
DRAWING SHEET SIZE = A1

Date: 14-4-21 1:45pm Plotted By: jphillips



LEGEND

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DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

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PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE

PORT MACQUARIE CAMPUS

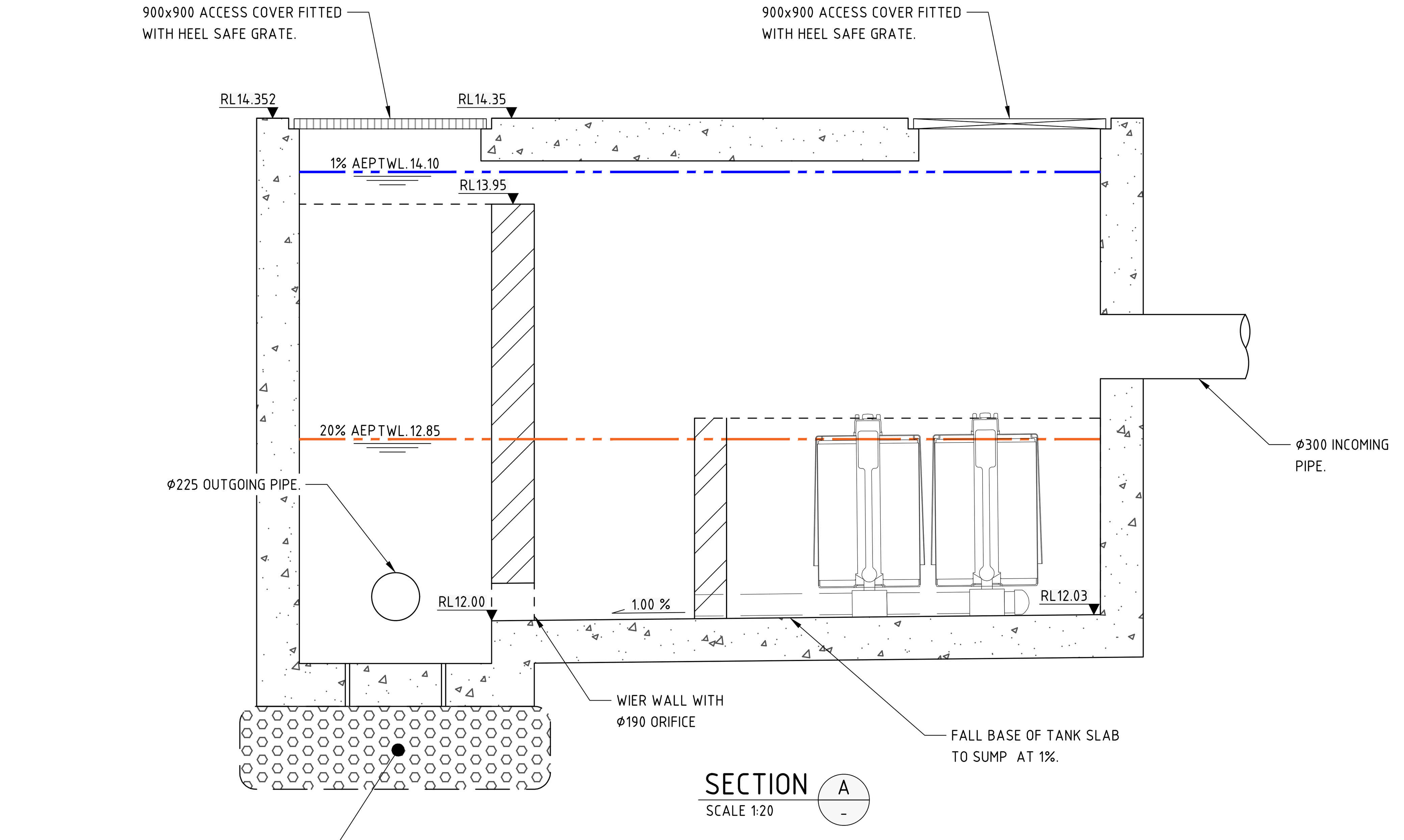
DRAWING TITLE: SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 2

JOB NUMBER: 202097

DRAWING NUMBER: DA14.02 REVISION: 3

DRAWING SHEET SIZE = A1

Plotted By: jphillips Date: 14-4-21 2:04pm



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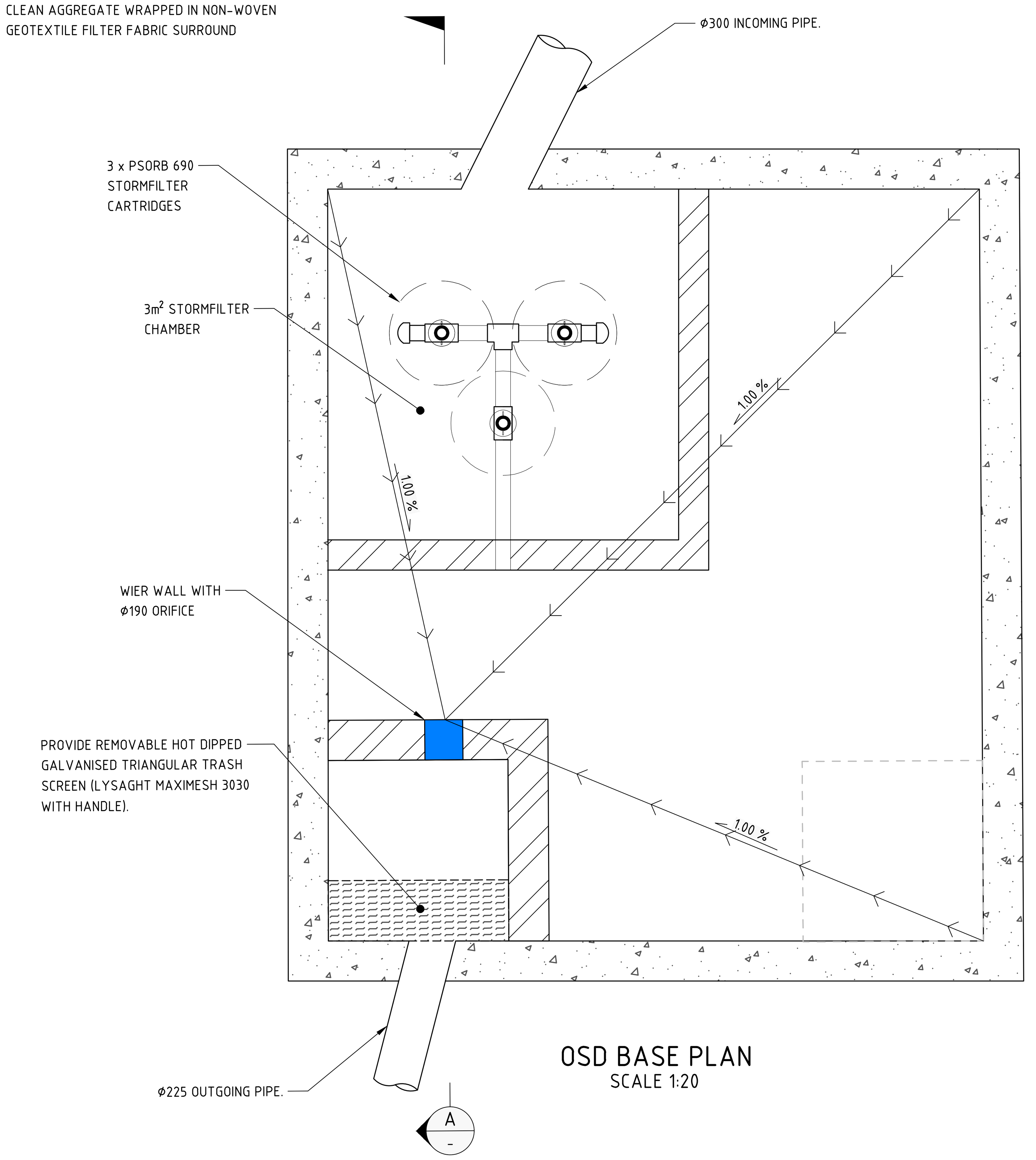
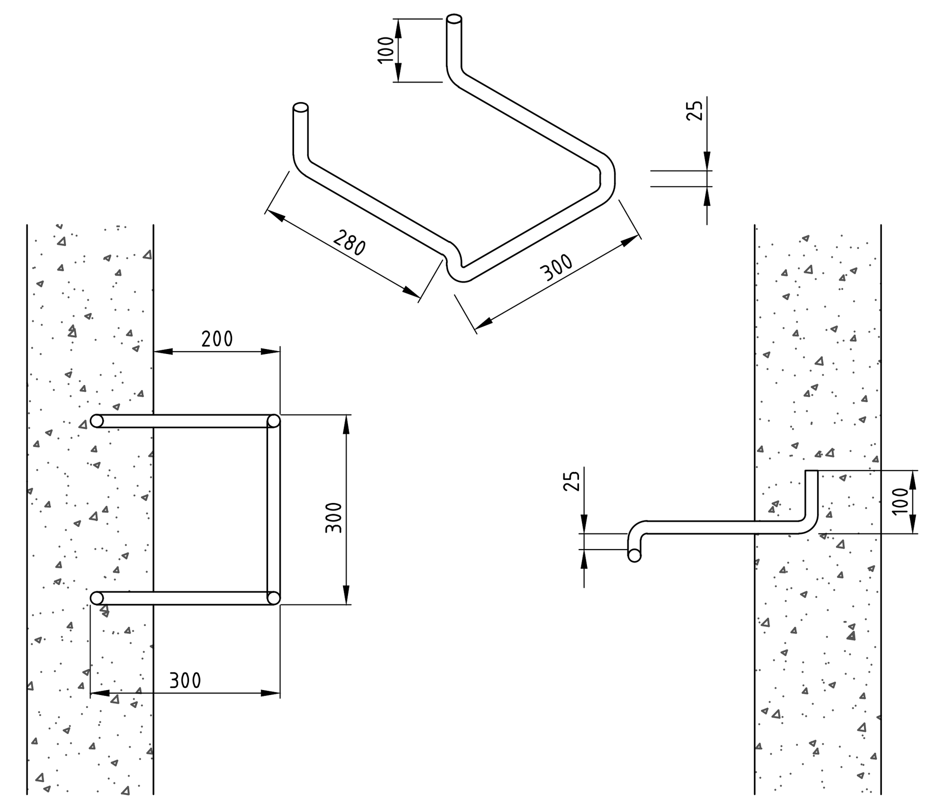
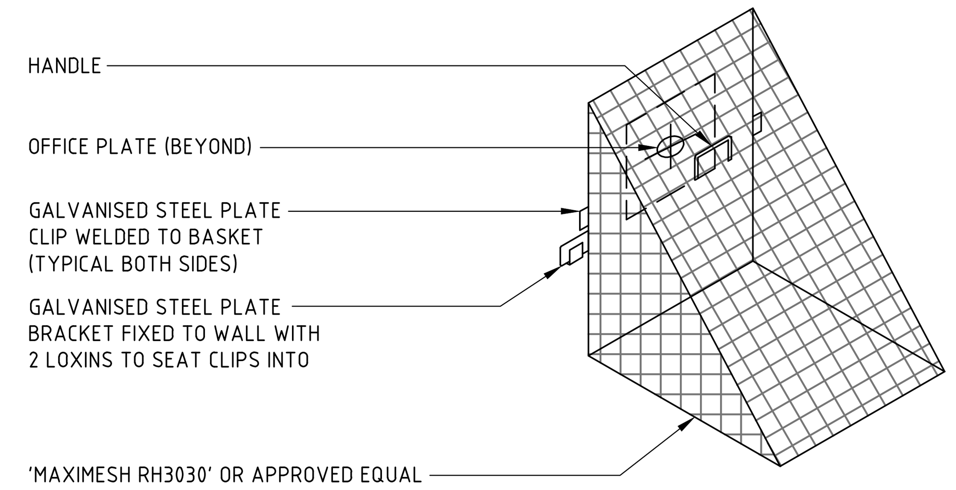


OSD BASE PLAN
SCALE 1:20

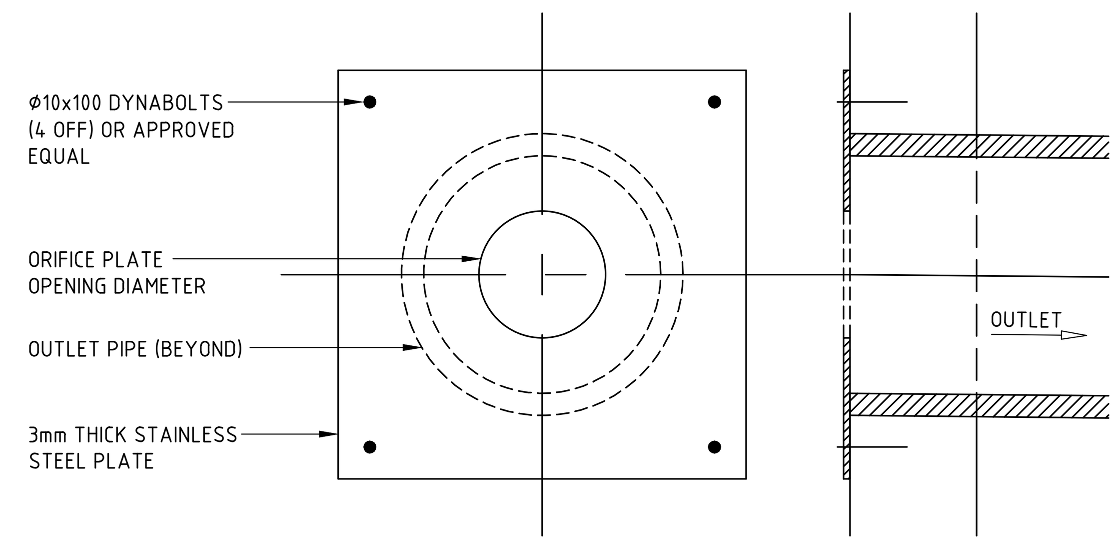


STEP IRON DETAIL

STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN, PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN 1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS



TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

- ORIFICE PLATE - Ø 190

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DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

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Date : 14-4-21 1:49pm

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PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

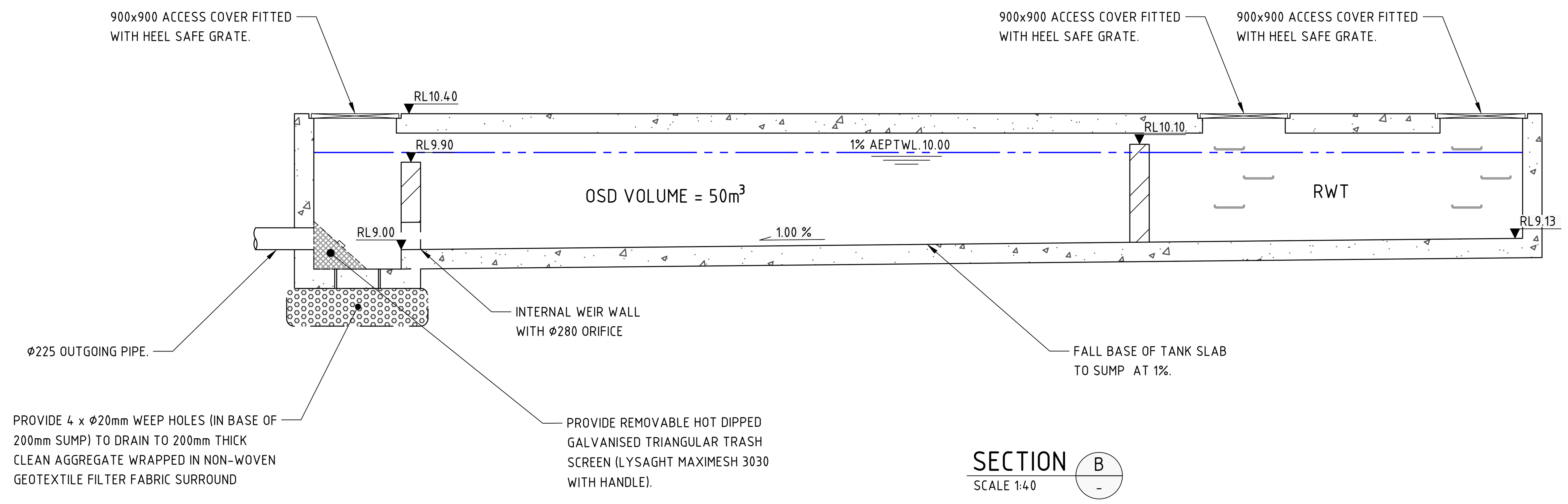
DRAWING TITLE
CAPA OSD DETAILS

JOB NUMBER
202097

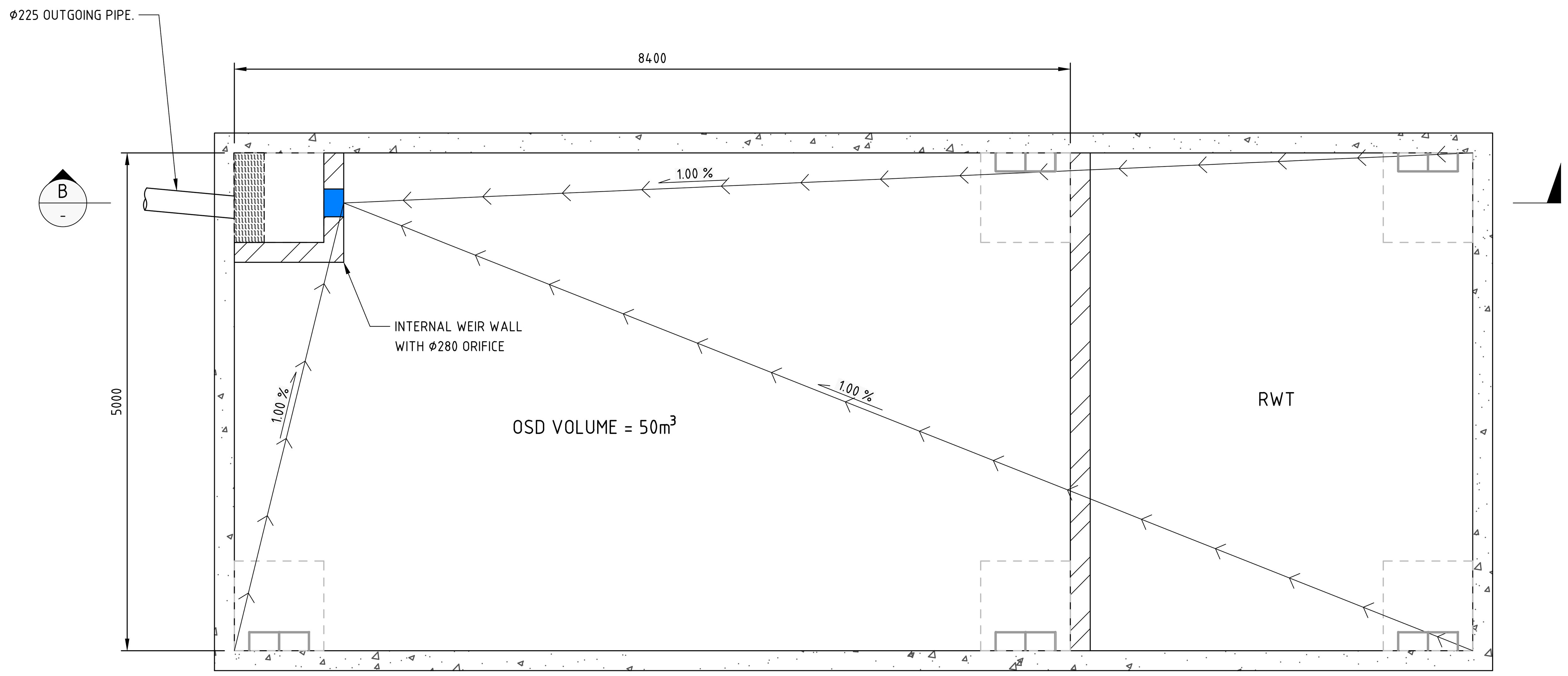
DRAWING NUMBER
DA15.01

REVISION
3

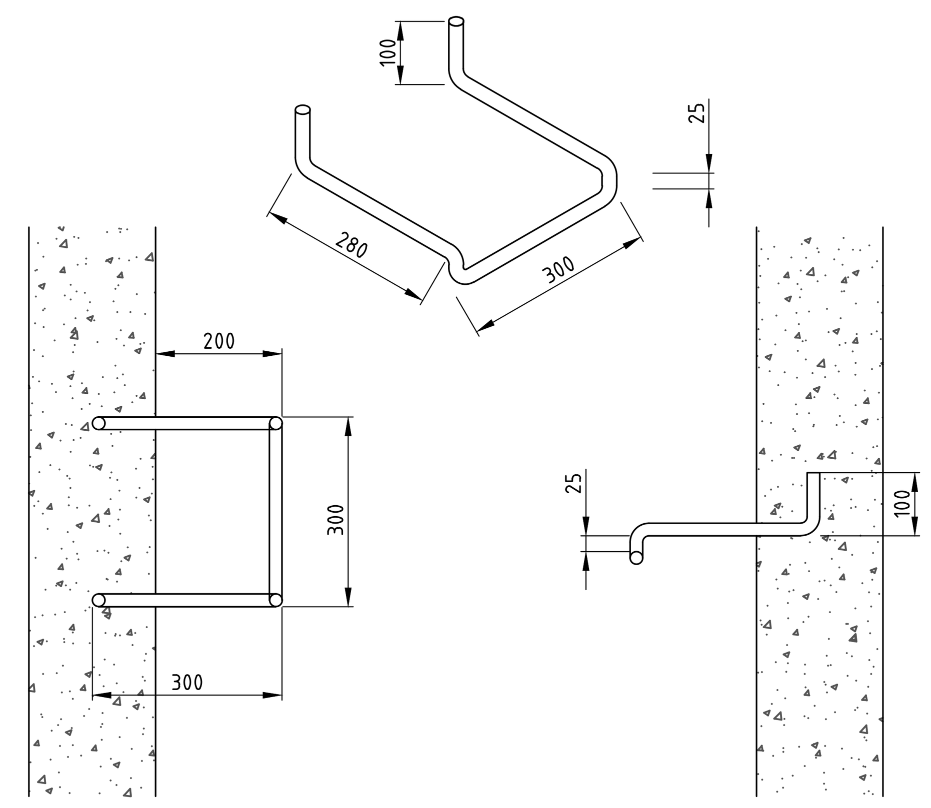
DRAWING SHEET SIZE = A1



SECTION B
SCALE 1:40



OSD BASE PLAN
SCALE 1:40



STEP IRON DETAIL

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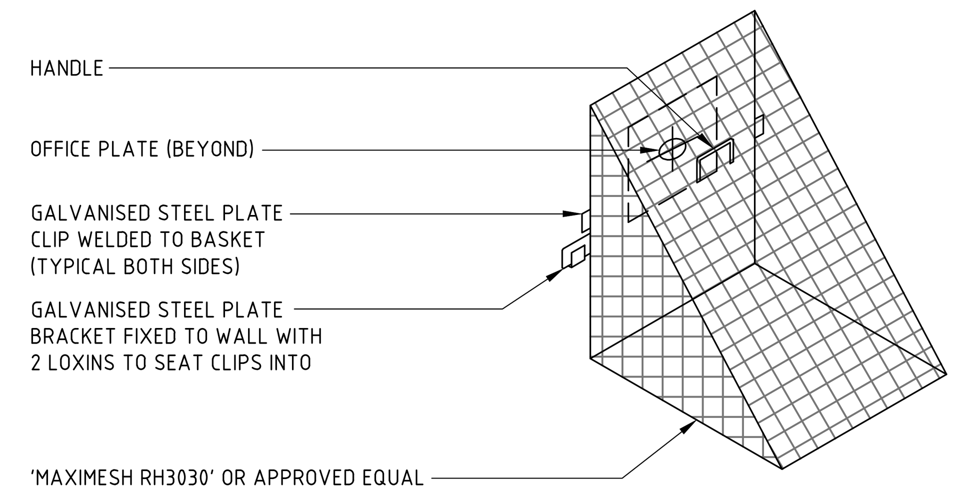
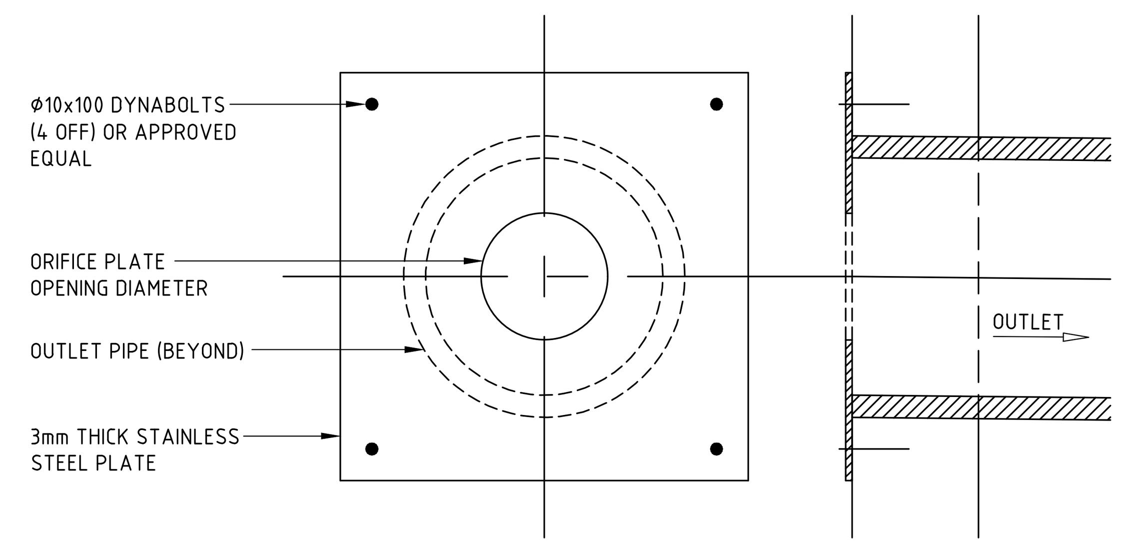


TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

- ORIFICE PLATE - Ø 190

DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

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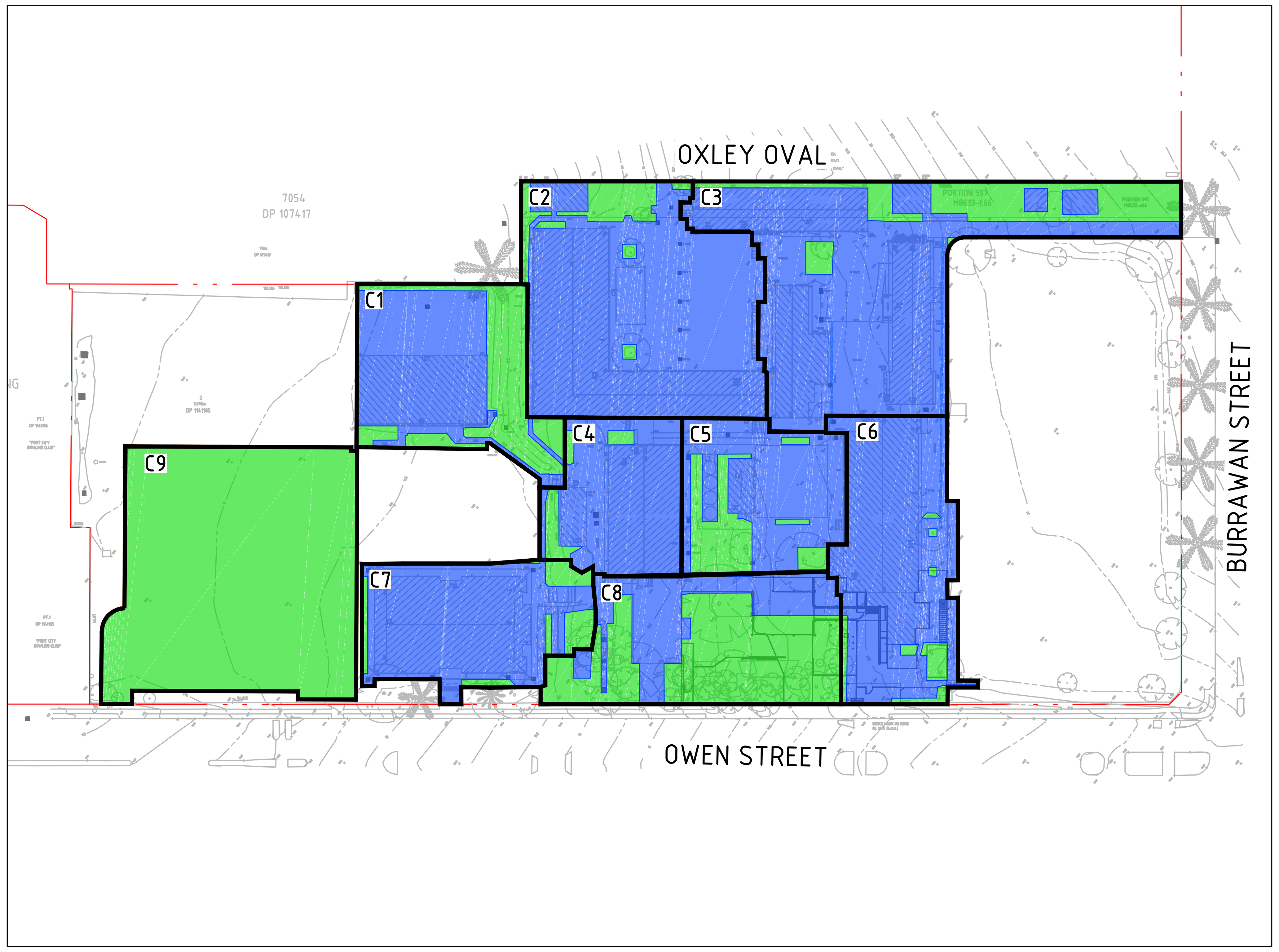
PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE
PORT MACQUARIE CAMPUS

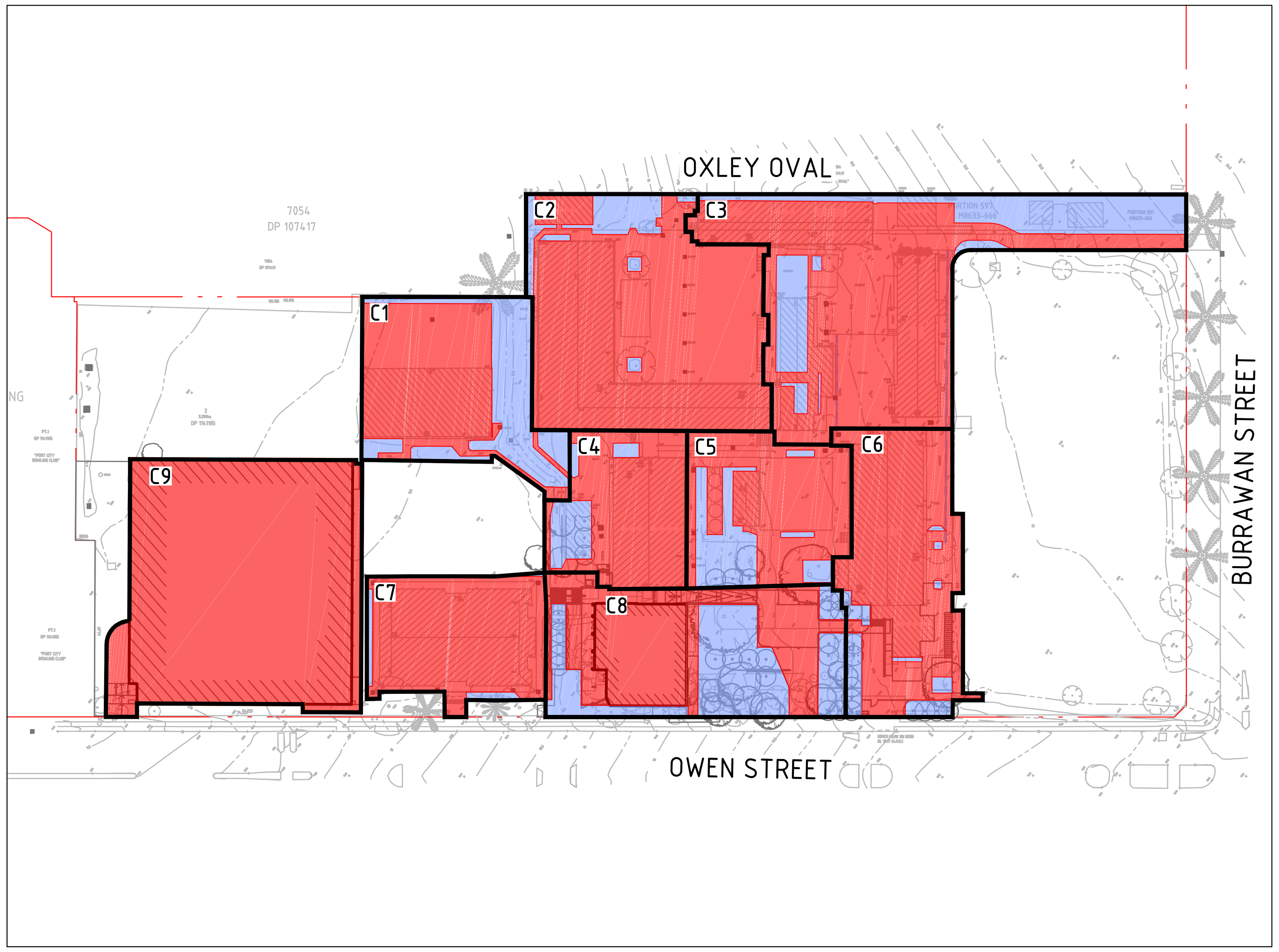
DRAWING TITLE
PCYC OSD DETAILS

JOB NUMBER 202097
DRAWING NUMBER DA15.02
REVISION 3
DRAWING SHEET SIZE = A1

Plotted By: jphillips
Date: 14-4-21 1:49pm



PRE-DEVELOPMENT
SCENARIO



POST-DEVELOPMENT
SCENARIO

LEGEND

- CATCHMENT BOUNDARY
- PRE DEVELOPMENT IMPERVIOUS AREA
- PRE DEVELOPMENT PERVIOUS AREA
- POST DEVELOPMENT IMPERVIOUS AREA
- POST DEVELOPMENT PERVIOUS AREA

DESIGN SUMMARY

NOTE: REFER TO NORTHROP'S STORMWATER MANAGEMENT REPORT OF DETAILED STORMWATER DESIGN AND METHODOLOGY.

ONSITE DETENTION:
COUNCIL AREA: PORT MACQUARIE - HASTINGS
DESIGN BASIS:
- PRE (GREENFEILD) TO POST DEVELOPMENT CONDITIONS

AS PER CATCHMENT CALCULTIONS THE FOLLOWING CATCHMENTS REQUIRE OSD UNDER COUNCILS DESIGN BASIS:

- CATCHMENT 8 (CAPA AND ENTRY)
- CATCHMENT 9 (PCYC)

OSD SIZING ANALYSIS AND SIZING CARRIED OUT USING DRAINS STORMWATER HYDROLOGIC AND HYDRAULIC SOFTWARE IN ACCORDANCE WITH COUNCIL'S DESIGN GUIDELINES.

OSD SUMMARY:
- BELOW GROUND BLOCKWORK TANKS
- LOW FLOW OUTLETS VIA ORIFICE
- HIGH FLOW OUTLET VIA INTERNAL WEIR
-

SITE DISCHARGE CALCULATIONS (WITH OSD):

CAPA AND ENTRY	20% AEP	1%AEP
PRE DEVELOPMENT	72 L/s	154 L/s
POST-DEVELOPMENT	71 L/s	154 L/s

CAPA AND ENTRY:
- VOLUME VOLUME: 23.7cu.m
- LOW FLOW ORIFICE: 109 ø (IL:12.0)
- HIGH FLOW INTERNAL WEIR : 0.55 W (RL:13.95)

PCYC	20% AEP	1% AEP
PRE-DEVELOPMENT	123L/s	109L/s
POST-DEVELOPMENT	263L/s	258L/s

PCYC:
- VOLUMES: $50m^3$
- LOW FLOW ORIFICE: ø280
- HIGH FLOW INTERNAL WEIR: RL9.90

WATER QUALITY:
MUSIC MODEL SUMMARY (REFER NORTHROP REPORT FOR FURTHER DETAILS).

TREATMENT NODES:
- RAINWATER TANK (PCYC)
- OCEAN PROTECT OCEAN GUARDS
- OCEAN PROTECT STORMFILTER CARTRIDGES

TREATMENT STANDARDS:

POLLUTANT	REDUCTION STANDARDS	REDUCTION ACHIEVED
GROSS POLLUTANTS	100%	100%
TOTAL SUSPENDED SOLIDS	80%	80%
TOTAL PHOSPHORUS	45%	61%
TOTAL NITROGEN	45%	45%

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH COUNCILS MUSIC MODELLING GUIDELINES.

CATCHMENT CALCULATIONS

ADDRESSED UNDER SEPARATE PACKAGE. (CATCHMENT 3)

		TOTAL AREA	IMPERVIOUS	PERVIOUS	OSD REQUIRED
CATCHMENT 1	PRE	$1995m^2$	$1277m^2$ (64%)	$718m^2$ (36%)	NO
	POST	$1995m^2$	$1277m^2$ (64%)	$718m^2$ (36%)	
CATCHMENT 2	PRE	$3406m^2$	$3101m^2$ (91%)	$305m^2$ (9%)	NO
	POST	$3402m^2$	$3100m^2$ (92%)	$302m^2$ (8%)	
CATCHMENT 3 (TAS AND BUILDING 3)	PRE	$3977m^2$	$3231m^2$ (81%)	$746m^2$ (19%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$3982m^2$	3007^2 (75%)	$975m^2$ (25%)	
CATCHMENT 4	PRE	$1307m^2$	$1187m^2$ (91%)	$120m^2$ (9%)	NO
	POST	$1292m^2$	$1085m^2$ (84%)	$207m^2$ (16%)	
CATCHMENT 5	PRE	$1559m^2$	$1171m^2$ (75%)	$388m^2$ (25%)	NO
	POST	$1559m^2$	$1171m^2$ (75%)	$388m^2$ (25%)	
CATCHMENT 6	PRE	$2127m^2$	$1980m^2$ (93%)	$147m^2$ (7%)	NO
	POST	$2127m^2$	$1952m^2$ (92%)	$175m^2$ (8%)	
CATCHMENT 7	PRE	$1750m^2$	$1517m^2$ (87%)	$233m^2$ (13%)	NO
	POST	$1432m^2$	$1364m^2$ (95%)	$68m^2$ (5%)	
CATCHMENT 8 (CATCHMENT AND ENTRY)	PRE	$2250m^2$	$818m^2$ (92%)	$1432m^2$ (8%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$2573m^2$	$1580m^2$ (61%)	$993m^2$ (39%)	
CATCHMENT 9	PRE	$3853m^2$	$0m^2$ (0%)	$3853m^2$ (100%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$3853m^2$	$3853m^2$ (84%)	$0m^2$ (0%)	

VERIFIER: -
JOB MANAGER: T.HOWE
DESIGNED: E.FLACK
DRAWN: J.PHILLIPS

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1	ISSUED FOR COORDINATION	J.P	-	E.F	26.02.21
2	ISSUED FOR SSDA	J.P	-	E.F	26.03.21
3	RE - ISSUED FOR SSDA	J.P	-	E.F	14.04.21
4	RE - ISSUED FOR SSDA	J.P	-	E.F	21.04.21

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PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

DRAWING TITLE
CATCHMENT PLAN

JOB NUMBER 202097
DRAWING NUMBER DA16.01
REVISION 4
DRAWING SHEET SIZE = A1

Found : W:\#Jobs\2020\202097 - SINSW Hastings Secondary College Upgrade\D-Drawings\C-Civil\202097-CAD\01-DA\SSDA\202097_DA16.01_CATCHMENT PLAN.dwg
Plotted By : jphillips
Date : 21-4-21 9:53am

HASTINGS SECONDARY COLLEGE

PORT MACQUARIE CAMPUS NSW 2444
CIVIL ENGINEERING SSDA PACKAGE

SOURCE : NEARMAP.COM.AU (©2021)

DRAWING SCHEDULE

DRG No.	DRAWING TITLE
DA11.01	COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN
DA11.11	GENERAL ARRANGEMENT PLAN
DA12.01	SEDIMENT AND EROSION CONTROL PLAN
DA12.11	SEDIMENT AND EROSION CONTROL DETAILS
DA14.01	SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 1
DA14.02	SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 2
DA15.01	CAPA OSD DETAILS
DA15.02	PCYC OSD DETAILS
DA16.01	CATCHMENT PLAN

DRAWN: J.PHILLIPS DESIGNED: E.FLACK JOB MANAGER: T.HOWE VERIFIER: -

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PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

DRAWING TITLE
COVERSHEET, DRAWING SCHEDULE AND LOCALITY PLAN

JOB NUMBER 202097

DRAWING NUMBER DA11.01 REVISION 3

DRAWING SHEET SIZE = A1

Date : 14-4-21 1:48pm Plotted By : jphillips

DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
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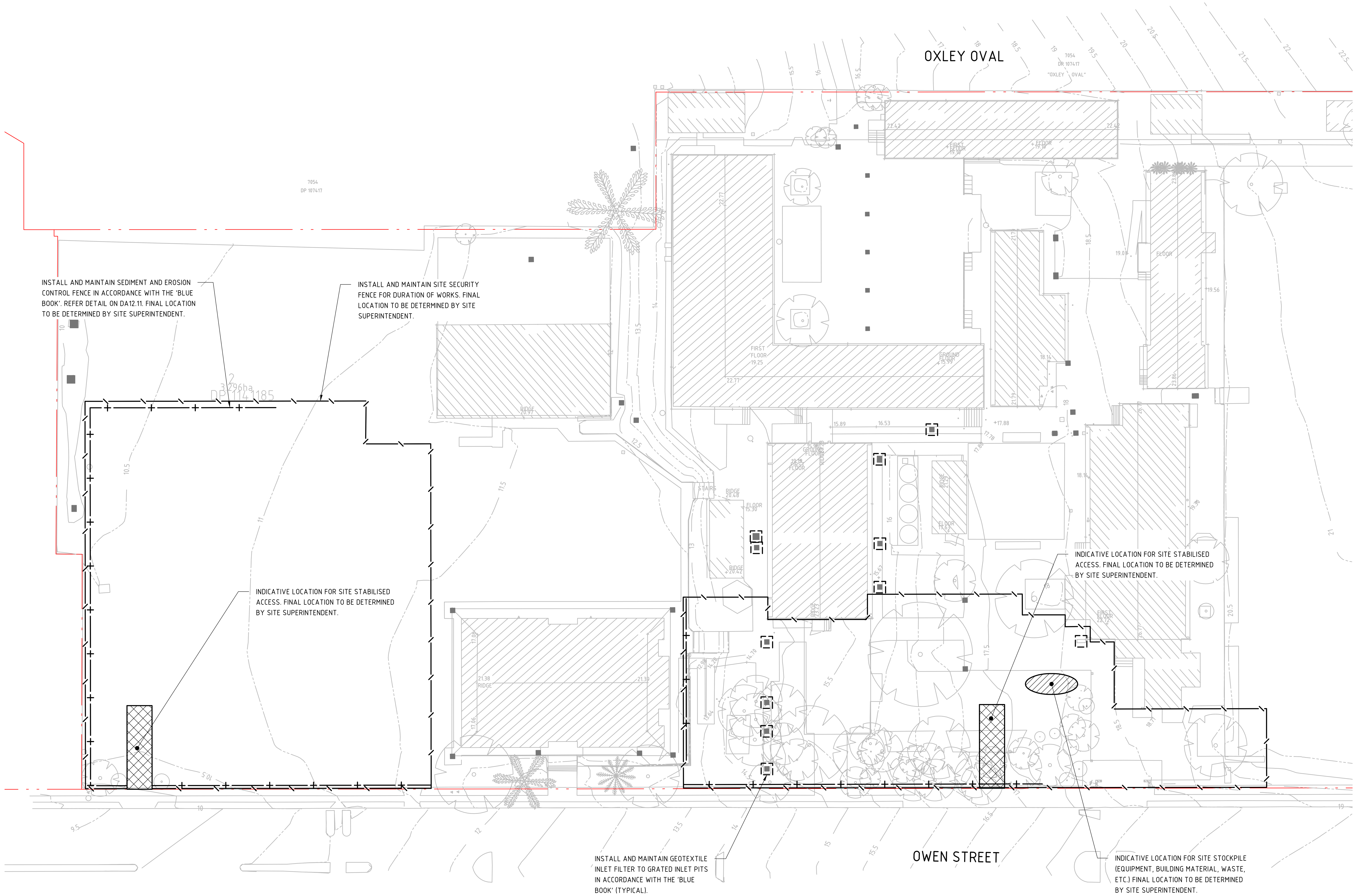
PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

DRAWING TITLE
GENERAL ARRANGEMENT PLAN

JOB NUMBER 202097
DRAWING NUMBER DA11.11
REVISION 4
DRAWING SHEET SIZE = A1

Date: 21-4-21 9:53am Plotted By: jphillips



LEGEND

- BOUNDARY LINE
- EXISTING CONTOURS (0.5m INTERVALS)
- SEDIMENT FENCE
- SECURITY FENCE
- DROP INLET SEDIMENT TRAP
- STOCKPILE
- STABILISED SITE ACCESS

GENERAL NOTES:

1. REFER SPECIFICATIONS NOTES FOR SEDIMENT AND SOIL EROSION CONTROL GENERAL REQUIREMENTS.
2. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH COUNCIL / RELEVANT AUTHORITY SPECIFICATIONS AND DETAILS.
3. ALL SEDIMENT AND SOIL EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE 'BLUE BOOK'. CONTRACTOR TO ENSURE THESE MEASURES ARE IN PLACE AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION WORKS.
4. CONTRACTOR TO PROVIDE 'WIRE MESH AND GRAVEL SEDIMENT FILTER' TO ALL PAVED / ROAD AREAS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'.
5. CONTRACTOR TO PROVIDE 'GEOTEXTILE INLET FILTER TRAPS' TO ALL STORMWATER DRAINAGE INLETS (BOTH PROPOSED AND EXISTING) IN ACCORDANCE WITH THE 'BLUE BOOK'
6. THE TOTAL DISTURBED AREA FOR EACH CATCHMENT IS LESS THAN 2500m^2, THEREFORE IN ACCORDANCE WITH THE 'BLUE BOOK', NO SEDIMENT BASIN IS REQUIRED.

DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

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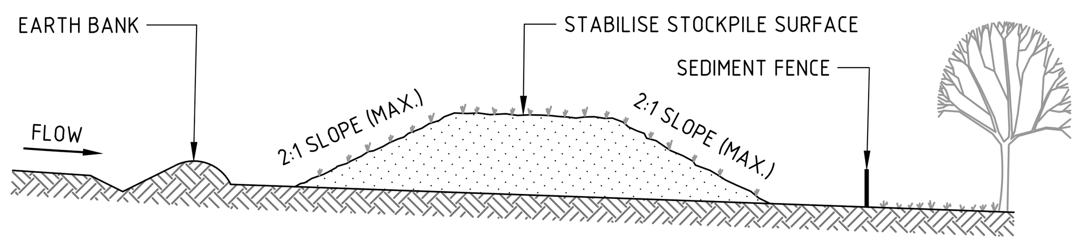
PROJECT
HASTINGS SECONDARY COLLEGE PORT MACQUARIE
PORT MACQUARIE CAMPUS

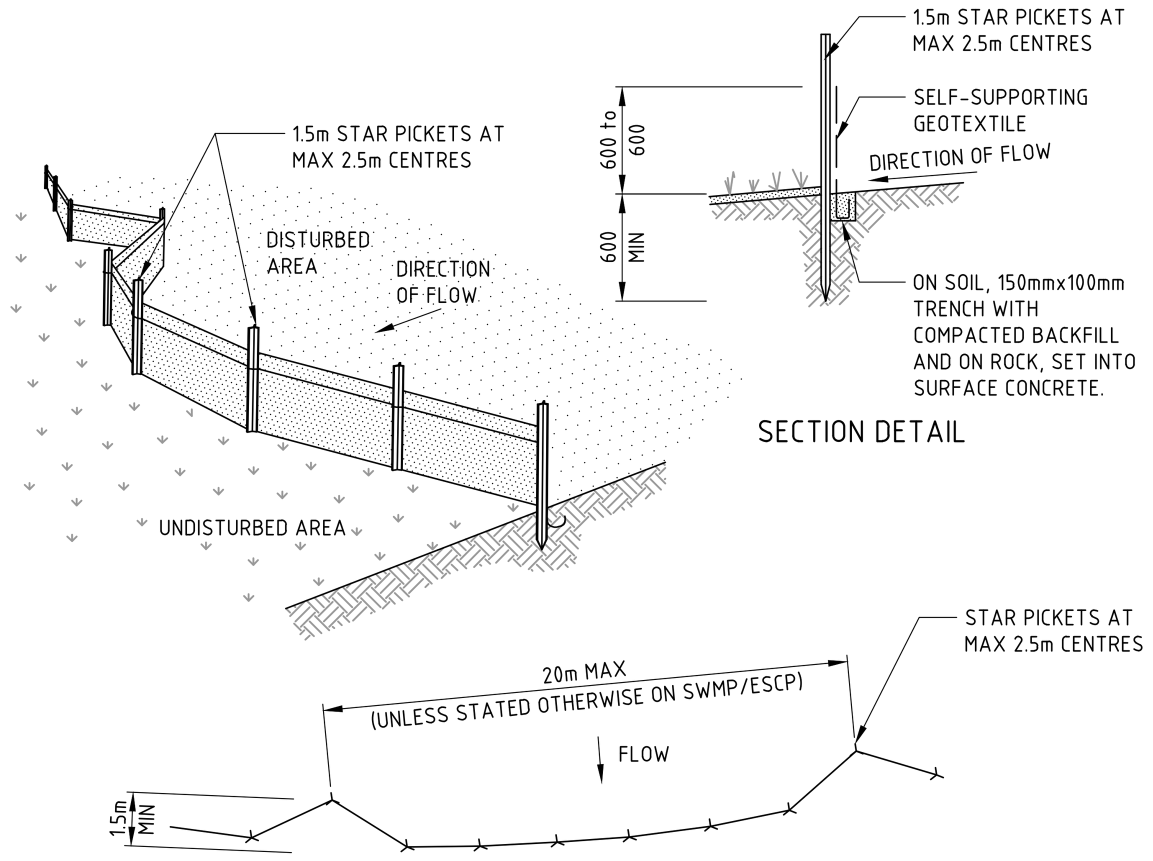
DRAWING TITLE
SEDIMENT AND EROSION CONTROL PLAN

JOB NUMBER **202097**
DRAWING NUMBER **DA12.01**
REVISION **3**
DRAWING SHEET SIZE = A1



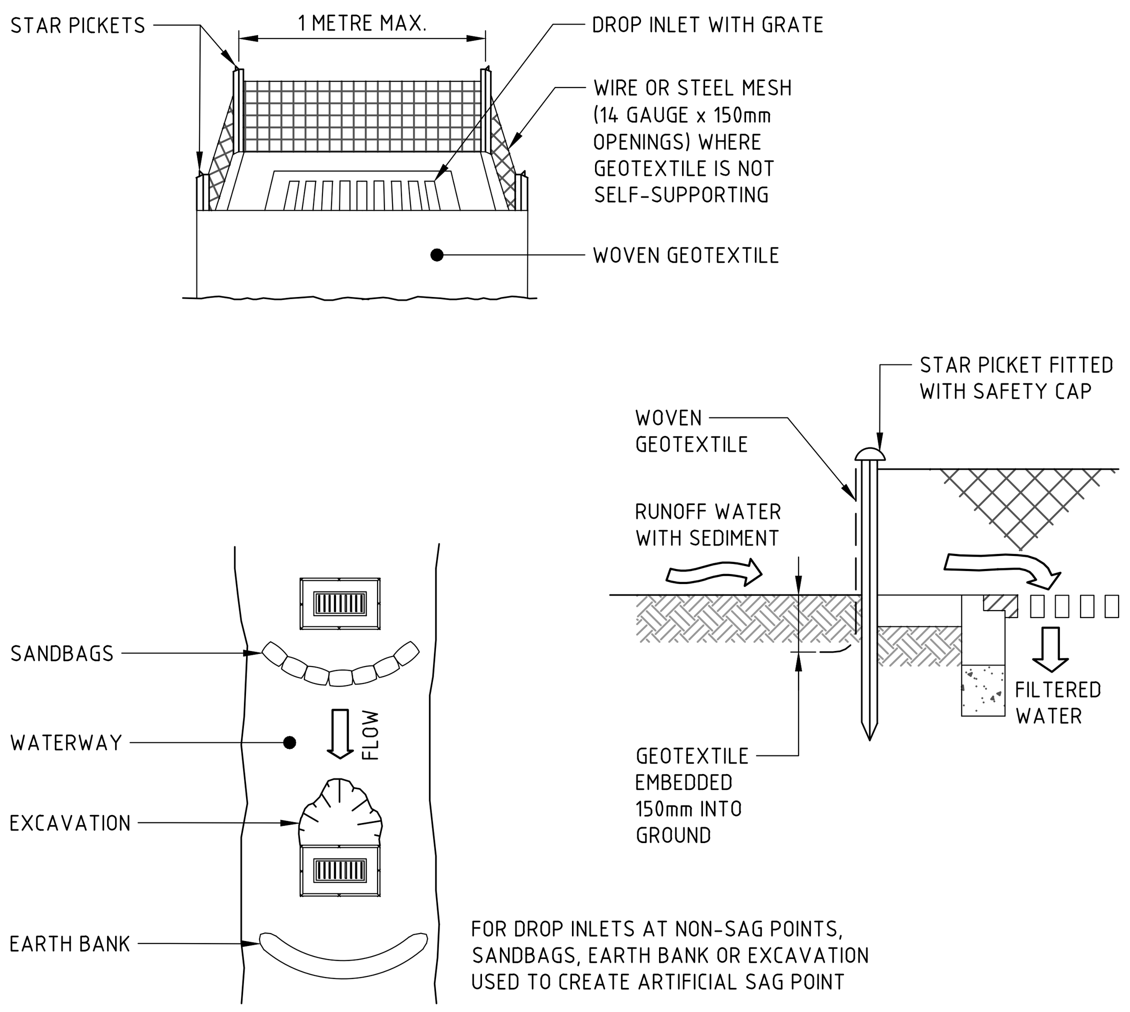
CONSTRUCTION NOTES
1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES (STANDARD DRAWING 6-8) 1 TO 2m DOWNSLOPE.

STOCKPILE



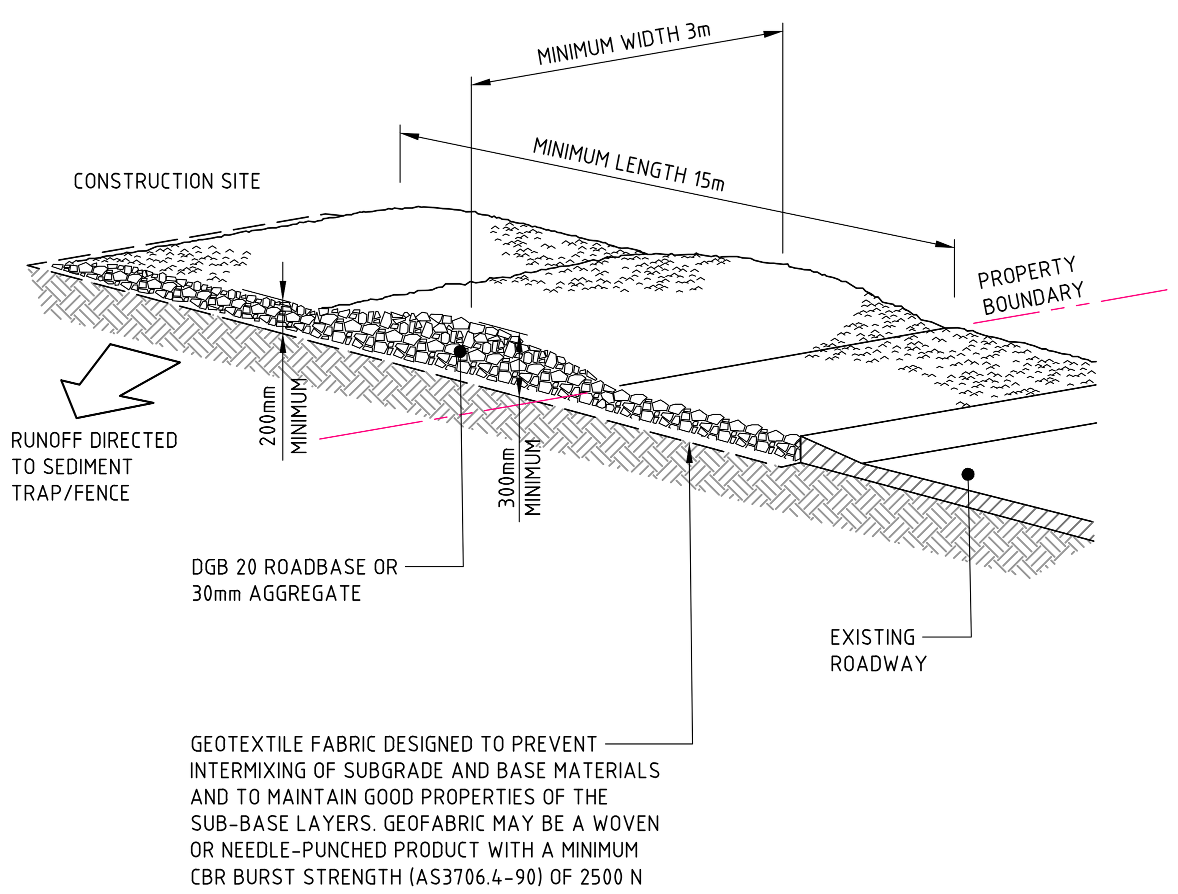
CONSTRUCTION NOTES
1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
2. CUT A 150mm 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 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE



CONSTRUCTION NOTES
1. FABRICATE A SEDIMENT BARRIER MADE FROM GEOTEXTILE OR STRAW BALES.
2. FOLLOW STANDARD DRAWING 6-7 AND STANDARD DRAWING 6-8 FOR INSTALLATION PROCEDURES FOR THE STRAW BALES OR GEOFABRIC. REDUCE THE PICKET SPACING TO 1 METRE CENTRES.
3. IN WATERWAYS, ARTIFICIAL SAG POINTS CAN BE CREATED WITH SANDBAGS OR EARTH BANKS AS SHOWN IN THE DRAWING.
4. DO NOT COVER THE INLET WITH GEOTEXTILE UNLESS THE DESIGN IS ADEQUATE TO ALLOW FOR ALL WATERS TO BYPASS IT.

GEOTEXTILE INLET FILTER TRAPS



CONSTRUCTION NOTES
1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm 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

VERIFIER: -
JOB MANAGER: T.HOWE
DESIGNED: E.FLACK
DRAWN: J.PHILLIPS

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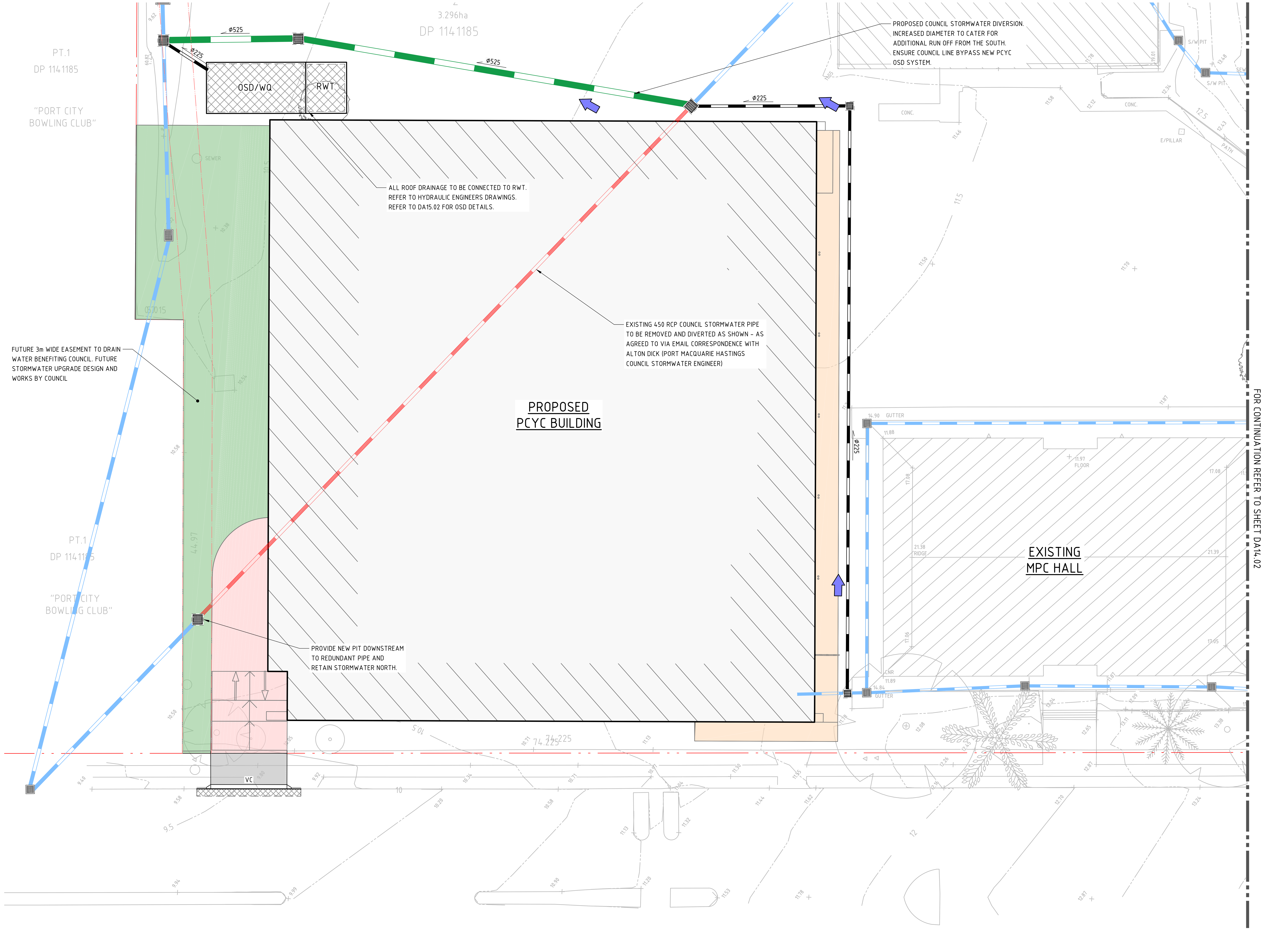
PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE
PORT MACQUARIE CAMPUS

DRAWING TITLE: SEDIMENT AND EROSION CONTROL DETAILS

JOB NUMBER: 202097
DRAWING NUMBER: DA12.11
REVISION: 3
DRAWING SHEET SIZE = A1

Date : 14-4-21 1:48pm Plotted By : jphillips Found : W:\#jobs\2020\202097 - SINSW Hastings Secondary College Upgrade\D-Drawings\C-Civil\202097-CAD\01-DA\SSDA\202097_DA12.11__SEDIMENT AND EROSION CONTROL DETAILS.dwg



LEGEND

- BOUNDARY LINE
- PROPOSED EASEMENT LINE
- EXISTING CONTOURS (0.5m INTERVALS)
- PROPOSED CONTOURS (0.1m INTERVALS)
- EXISTING STORMWATER PIPE TO BE RETAINED
- EXISTING GRATED TRENCH DRAIN TO BE RETAINED
- EXISTING STORMWATER PIPE TO BE REMOVED
- EXISTING GRATED TRENCH DRAIN TO BE REMOVED
- Ø150 PROPOSED STORMWATER PIPE
- PROPOSED COUNCIL STORMWATER DIVERSION PIPE
- GTD PROPOSED GRATED TRENCH DRAIN
- GRATED INLET PIT (NEW / EXTG)
- JUNCTION PIT (NEW / EXTG)
- OSD PROPOSED OSD TANK
- RW RETAINING WALL
- FALL DIRECTION OF GRADE
- VC PROPOSED VEHICULAR CROSSING
- PROPOSED FOOTPATH PAVEMENT
- PROPOSED VEHICULAR PAVEMENT
- PROPOSED VEHICULAR CROSSING PAVEMENT
- SUSPENDED RAMP - REFER TO STRUCTURAL DRAWINGS
- STRUCTURAL PAVEMENT - REFER STRUCTURAL DRAWINGS
- PROPOSED LANDSCAPING

GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DETAIL SURVEY DATA WAS SUPPLIED BY YSCO GEOMATICS LAND RESOURCE CONSULTANTS, DRAWING DATED 09/12/2019.

EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

ALL STORMWATER MANAGEMENT MEASURES SHOWN ON THIS DRAWING HAVE BEEN PREPARED FOR SCHEMATIC DESIGN PURPOSES TO DEMONSTRATE FEASIBILITY. ALL MEASURES WILL BE SUBJECT TO DETAIL DESIGN AND MAY BE SUBJECT TO VARIATION PROVIDED THAT THE DESIGN INTENT IS MAINTAINED.

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DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
VERIFIER: -

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PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE — PORT MACQUARIE CAMPUS

DRAWING TITLE: SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 1

JOB NUMBER: 202097

DRAWING NUMBER: DA14.01 — REVISION: 3

DRAWING SHEET SIZE = A1

Found : W:\#jobs\2020\202097 - SINSW Hastings Secondary College Upgrade\D-Drawings\C-Civil\202097-CAD\01-DA\SSDA\202097_DA14.01_SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 1.dwg
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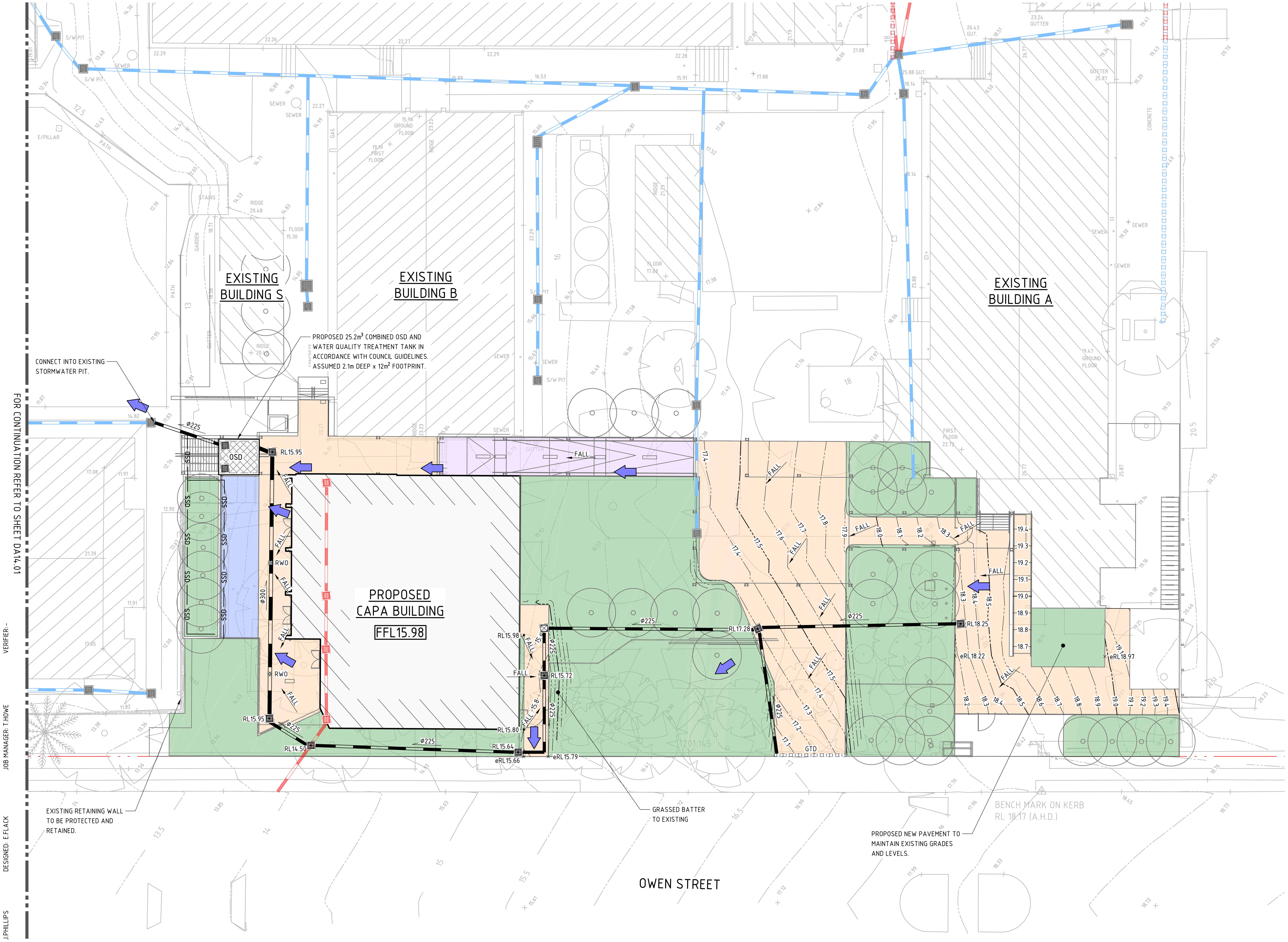

LEGEND

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- EXISTING CONTOURS (0.5m INTERVALS)
- PROPOSED CONTOURS (0.1m INTERVALS)
- EXISTING STORMWATER PIPE TO BE RETAINED
- EXISTING GRATED TRENCH DRAIN TO BE RETAINED
- EXISTING STORMWATER PIPE TO BE REMOVED
- EXISTING GRATED TRENCH DRAIN TO BE REMOVED
- Ø150 — PROPOSED STORMWATER PIPE
- PROPOSED COUNCIL STORMWATER DIVERSION PIPE
- GTD — PROPOSED GRATED TRENCH DRAIN
- GRATED INLET PIT (NEW / EXTG)
- JUNCTION PIT (NEW / EXTG)
- OSD — PROPOSED OSD TANK
- RW — RETAINING WALL
- FALL — DIRECTION OF GRADE
- VC — PROPOSED VEHICULAR CROSSING
- PROPOSED FOOTPATH PAVEMENT
- PROPOSED VEHICULAR PAVEMENT
- PROPOSED VEHICULAR CROSSING PAVEMENT
- SUSPENDED RAMP – REFER TO STRUCTURAL DRAWINGS
- STRUCTURAL PAVEMENT – REFER STRUCTURAL DRAWINGS
- PROPOSED LANDSCAPING

GENERAL NOTES

THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH OTHER SUCH WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCY SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DIMENSIONS ARE IN MILLIMETRES & ALL LEVELS ARE IN METRES, UNO (UNLESS NOTED OTHERWISE).

NO DIMENSION SHALL BE OBTAINED BY SCALING THE DRAWINGS.

ALL LEVELS AND SETTING OUT DIMENSIONS SHOWN ON THE DRAWINGS SHALL BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF THE WORK.

DETAIL SURVEY DATA WAS SUPPLIED BY YSCO GEOMATICS LAND RESOURCE CONSULTANTS, DRAWING DATED 09/12/2019.

EXISTING SERVICES WHERE SHOWN HAVE BEEN PLOTTED FROM SUPPLIED DATA AND SUCH THEIR ACCURACY CAN NOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF WORK.

ON COMPLETION OF STORMWATER INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL CONDITION, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS, UNLESS DIRECTED OTHERWISE.

ALL STORMWATER MANAGEMENT MEASURES SHOWN ON THIS DRAWING HAVE BEEN PREPARED FOR SCHEMATIC DESIGN PURPOSES TO DEMONSTRATE FEASIBILITY. ALL MEASURES WILL BE SUBJECT TO DETAIL DESIGN AND MAY BE SUBJECT TO VARIATION PROVIDED THAT THE DESIGN INTENT IS MAINTAINED.

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DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: I.HOWE
VERIFIER: -

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR COORDINATION	J.P	-	E.F	26.02.21
2	ISSUED FOR SSDA	J.P	-	E.F	26.03.21
3	RE - ISSUED FOR SSDA	J.P	-	E.F	14.04.21

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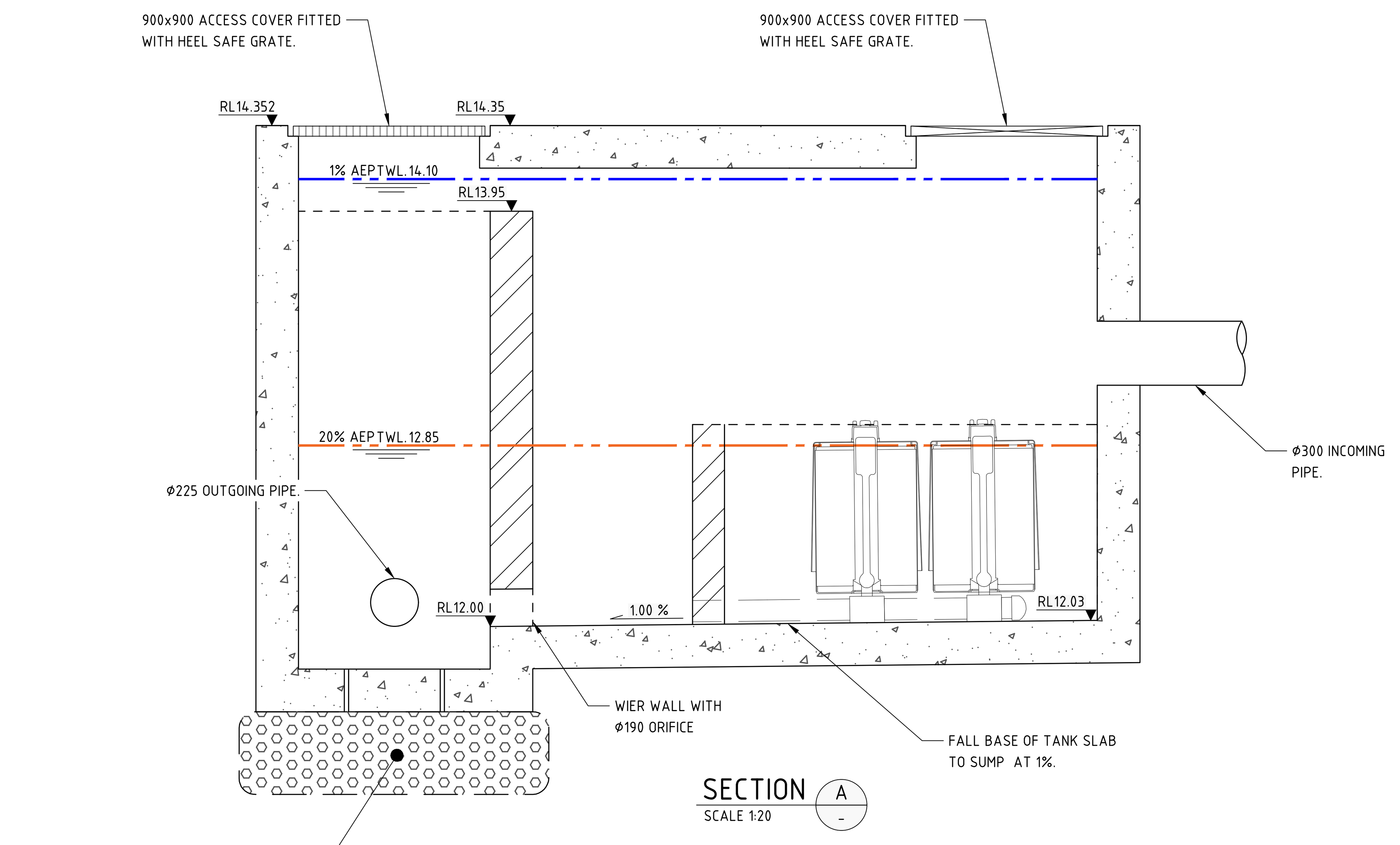
PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

DRAWING TITLE
SITEWORKS AND STORMWATER MANAGEMENT PLAN - SHEET 2

JOB NUMBER 202097
DRAWING NUMBER DA14.02
REVISION 3
DRAWING SHEET SIZE = A1

Date : 14-4-21 2:04pm Plotted By : jphillips



SECTION A
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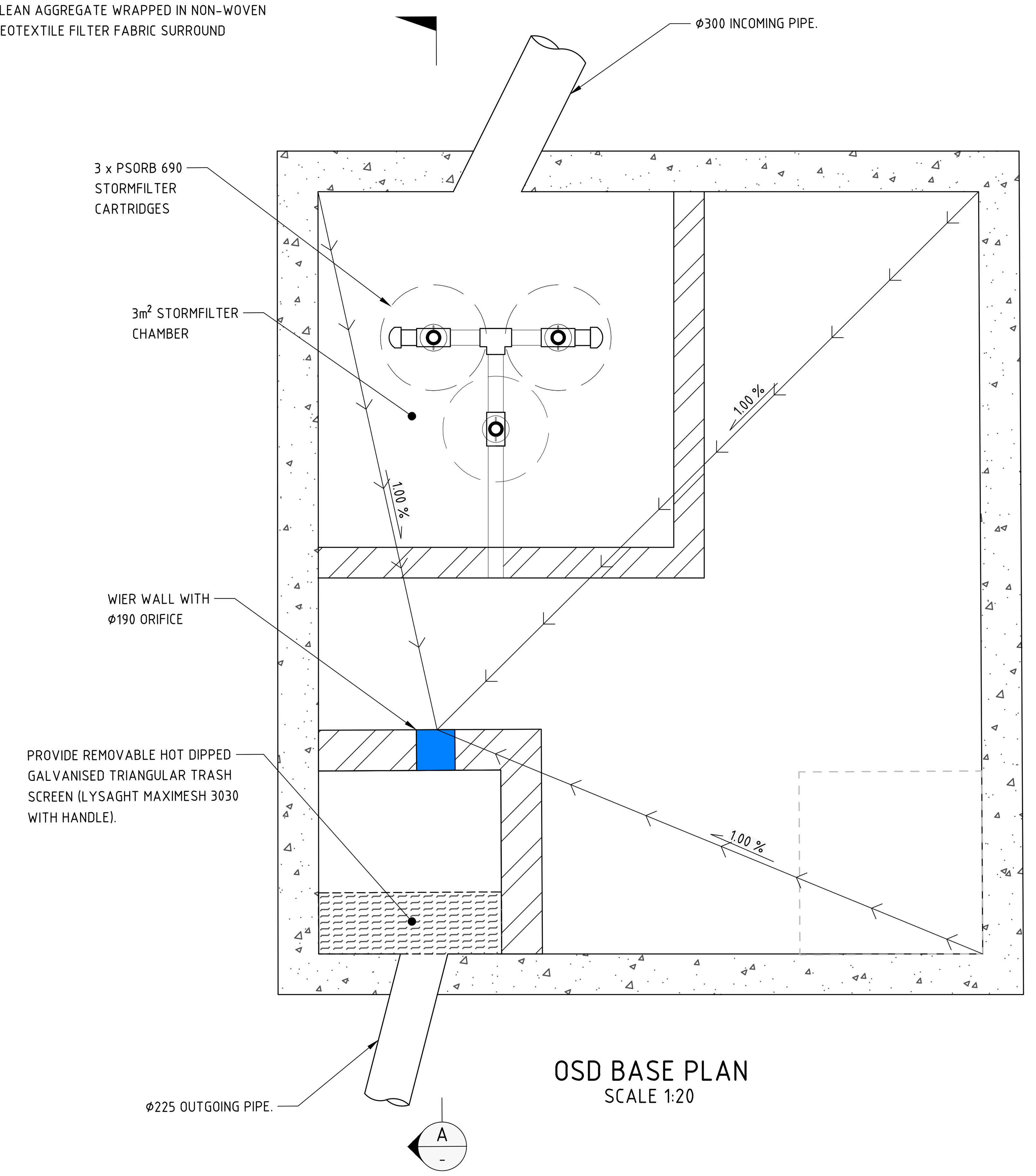
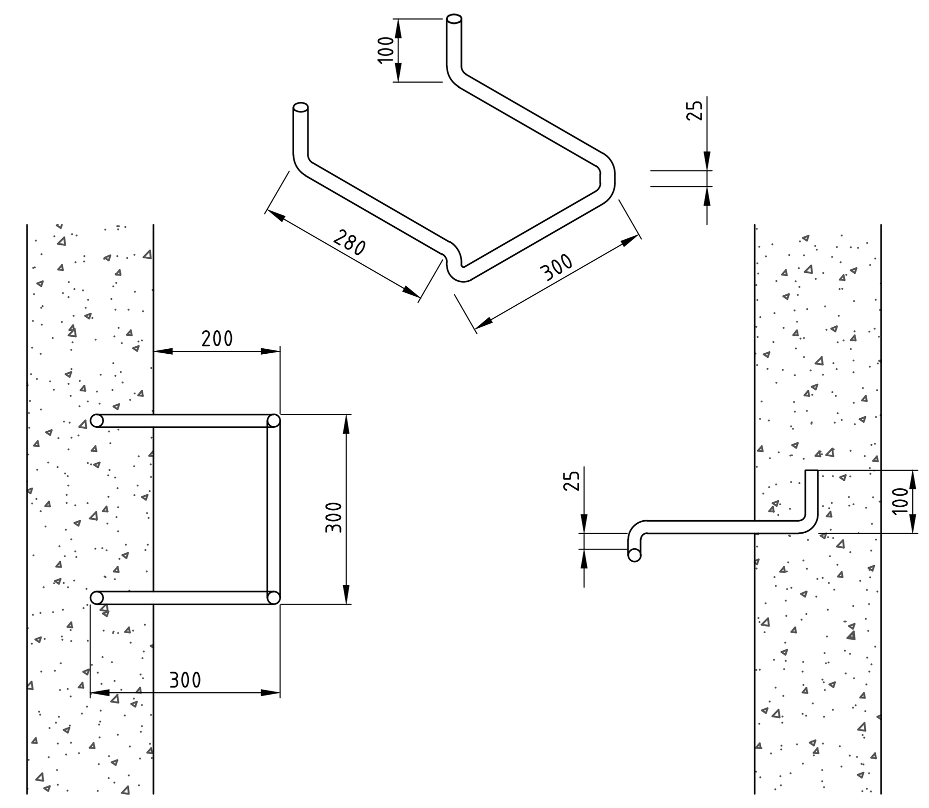
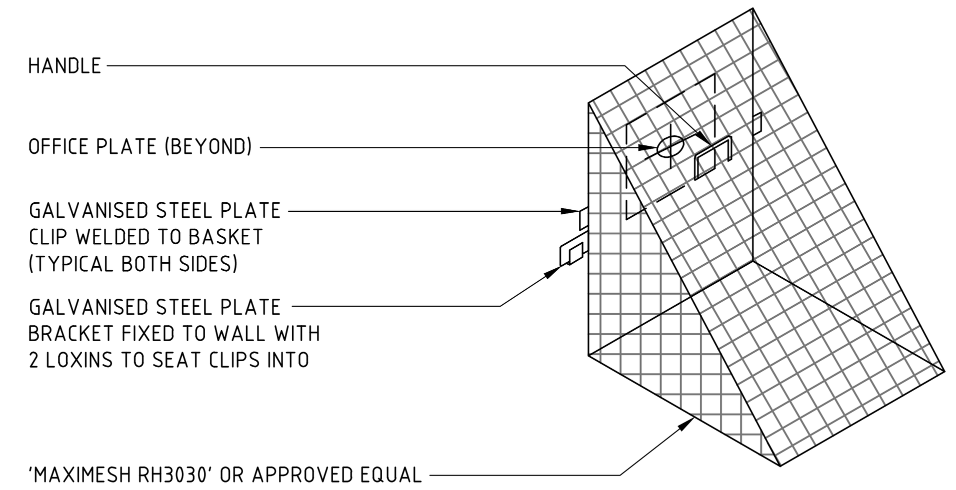


OSD BASE PLAN
SCALE 1:20

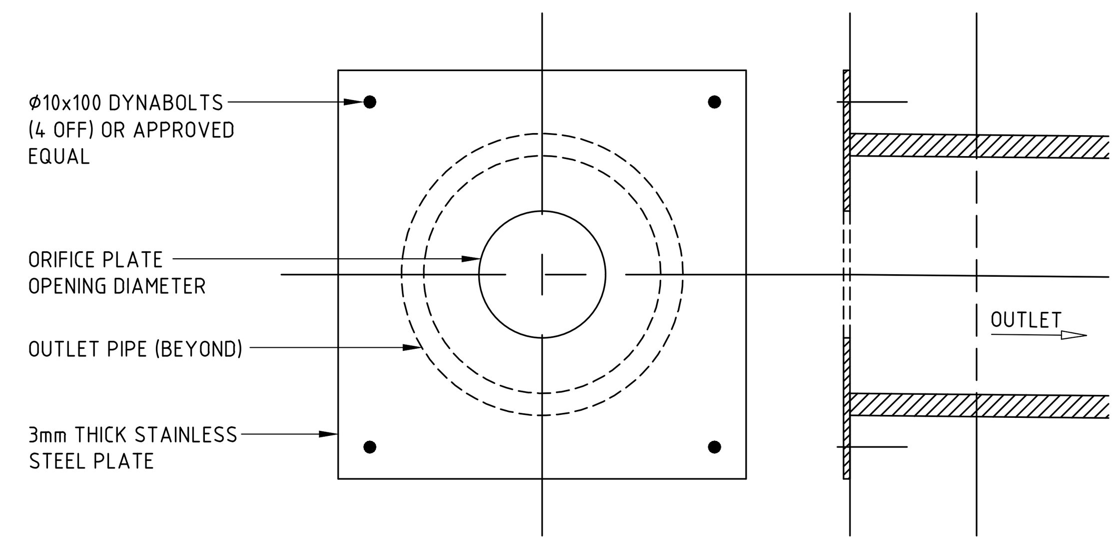


STEP IRON DETAIL

STEP IRON OF 20mm GALVANISED STEEL MADE TO SHAPE AND DIMENSIONS AS SHOWN, PLACED AT 300 CENTRES AND STAGGERED HORIZONTALLY FOR ALL PITS DEEPER THAN 1.0m. THE USE OF PROPRIETARY STEP IRONS ARE ACCEPTABLE PROVIDED THE PRODUCT IS IN ACCORDANCE WITH AUSTRALIAN STANDARDS



TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

- ORIFICE PLATE – Ø 190

DRAWN: J.PHILLIPS
DESIGNED: E.FLACK
JOB MANAGER: T.HOWE
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PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE
PORT MACQUARIE CAMPUS

DRAWING TITLE
CAPA OSD DETAILS

JOB NUMBER
202097
DRAWING NUMBER
DA15.01
REVISION
3
DRAWING SHEET SIZE = A1

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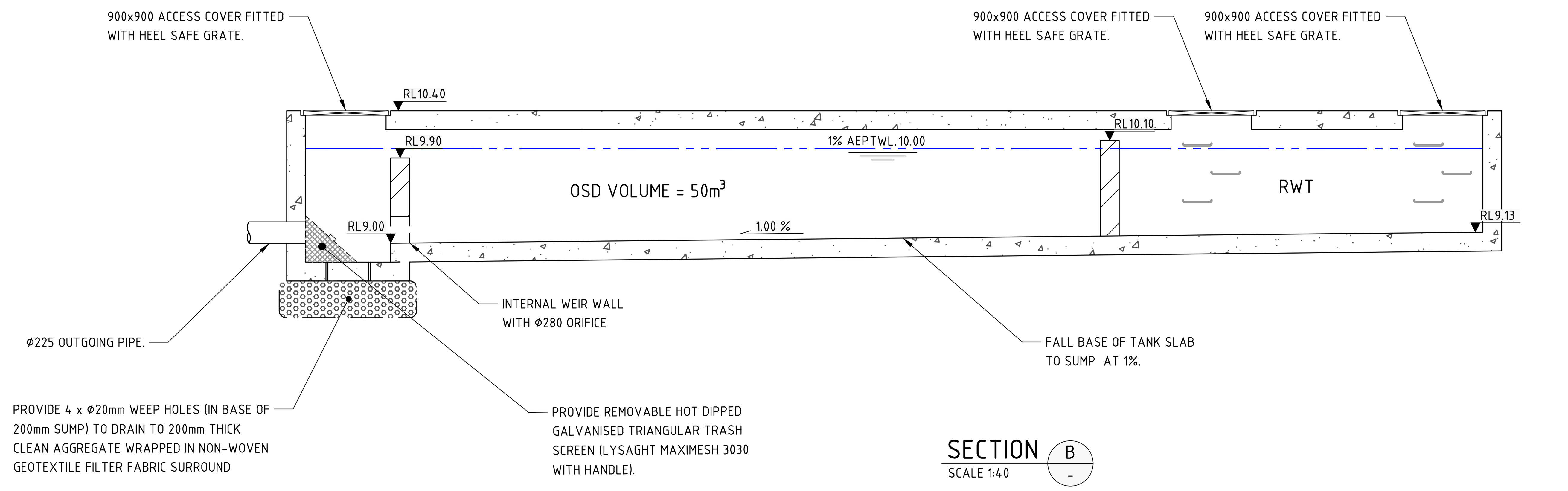
Plotted By : jphillips
Date : 14-4-21 1:49pm



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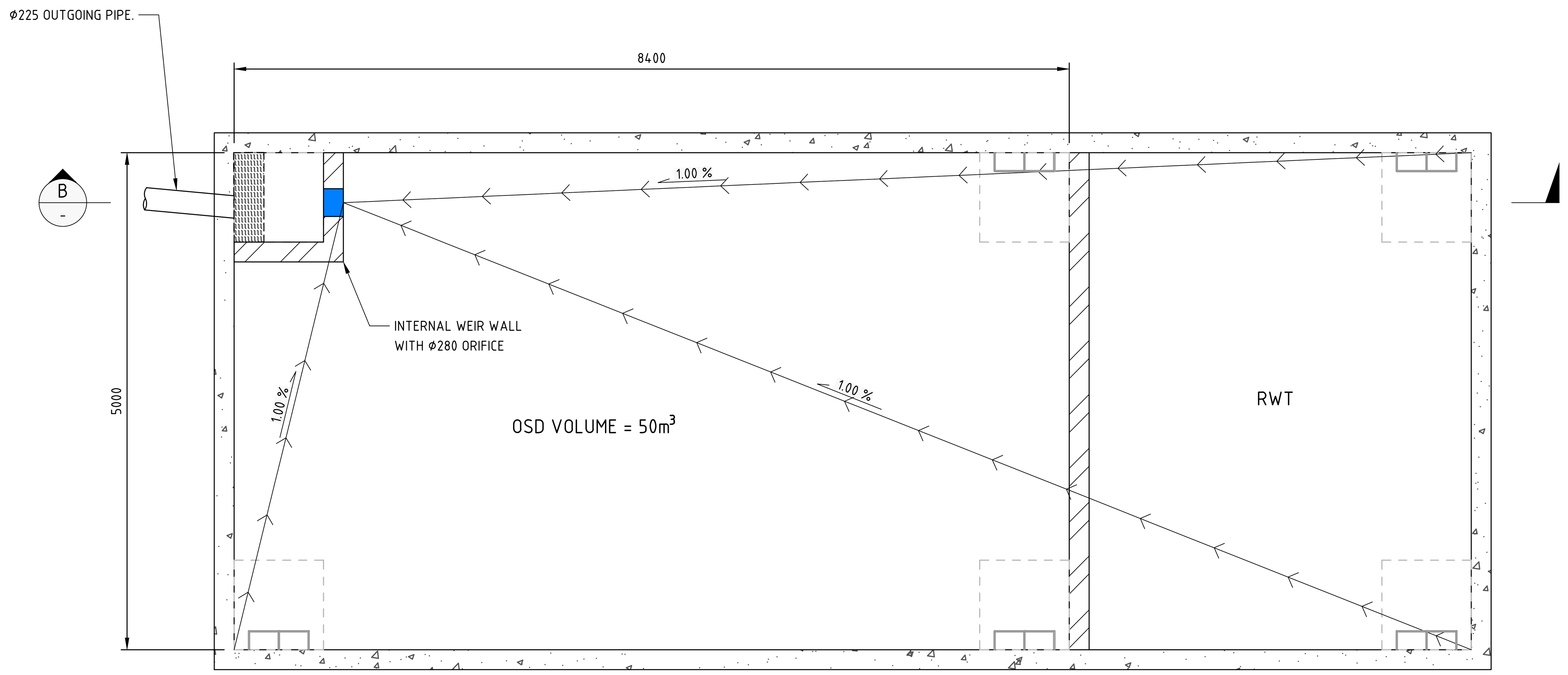
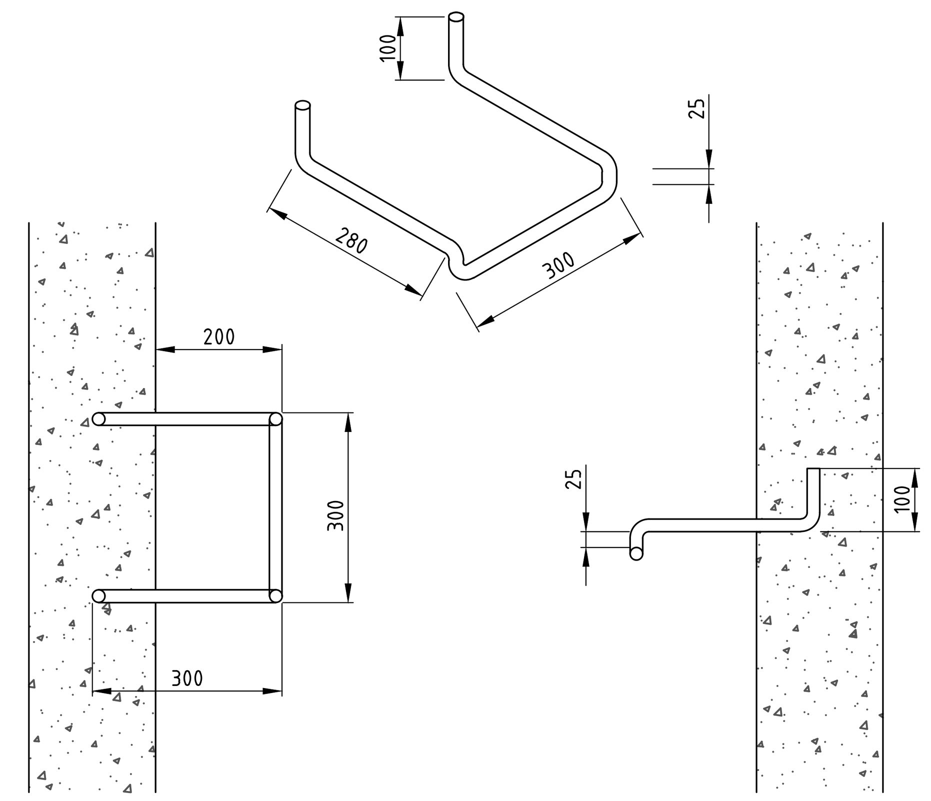


OSD BASE PLAN
SCALE 1:40



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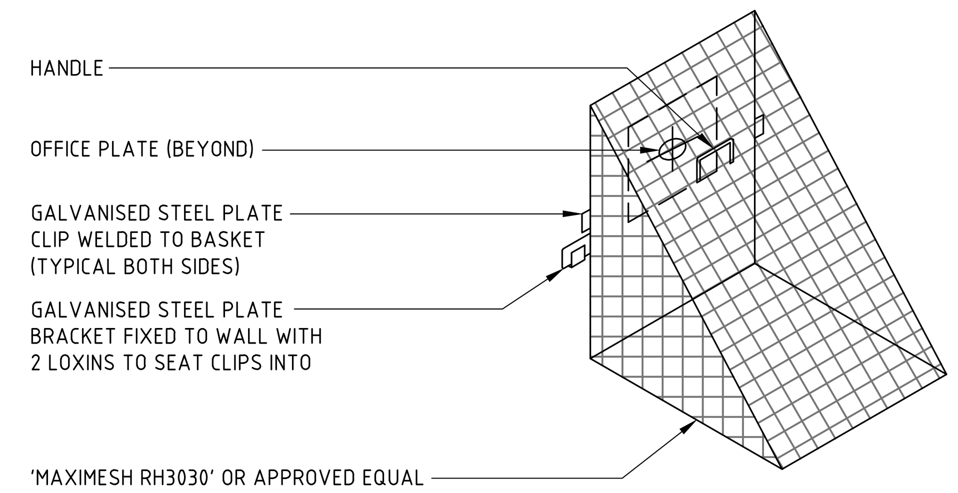
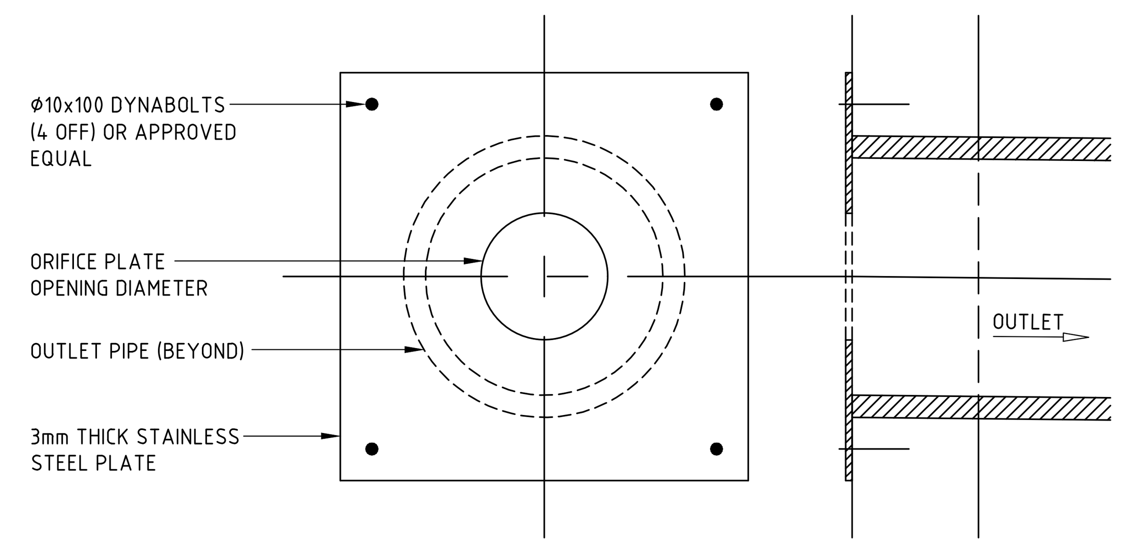


TRASH SCREEN DETAIL



ORIFICE PLATE DETAIL

- ORIFICE PLATE - Ø 190

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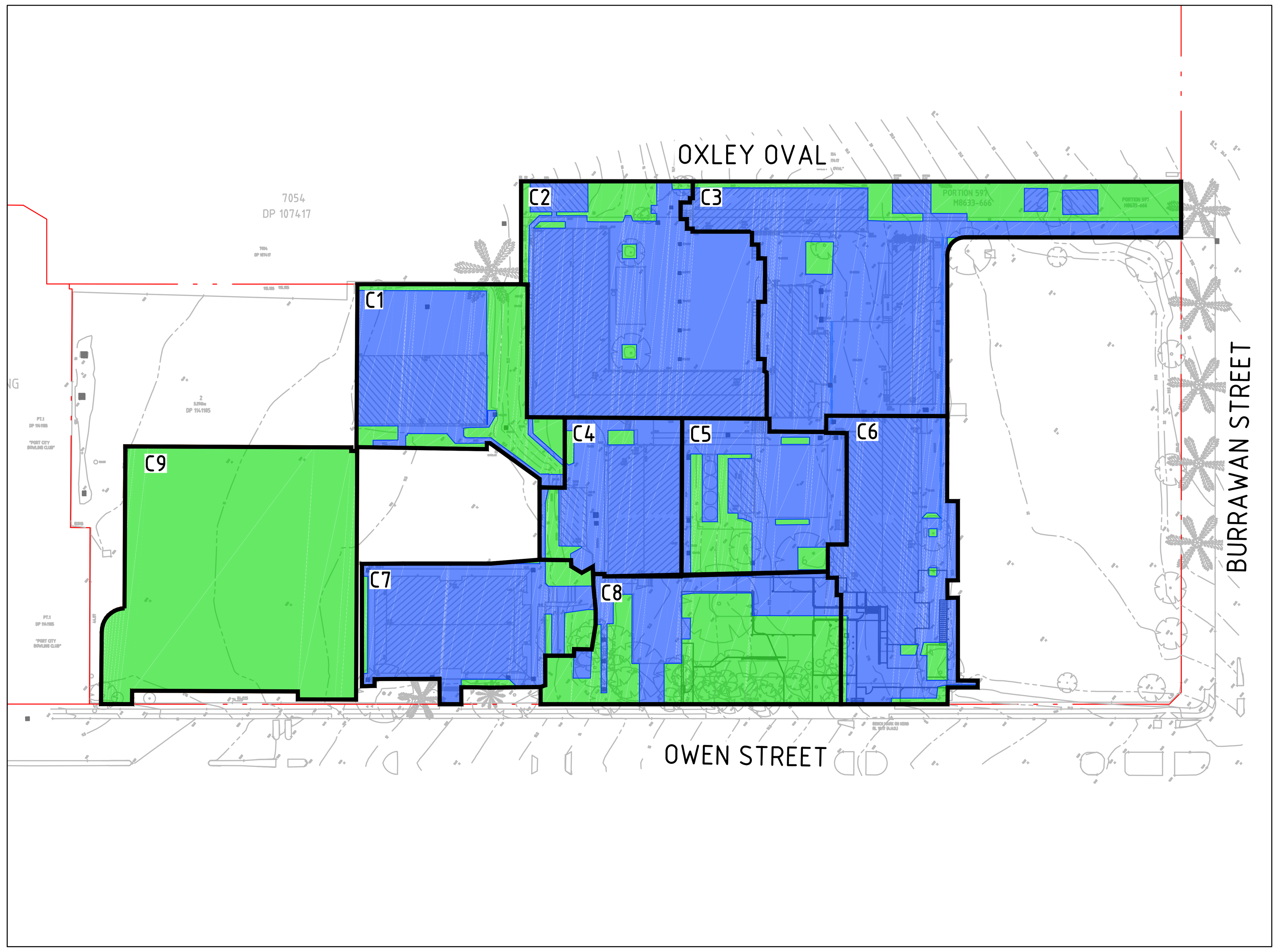
PROJECT: HASTINGS SECONDARY COLLEGE PORT MACQUARIE
PORT MACQUARIE CAMPUS

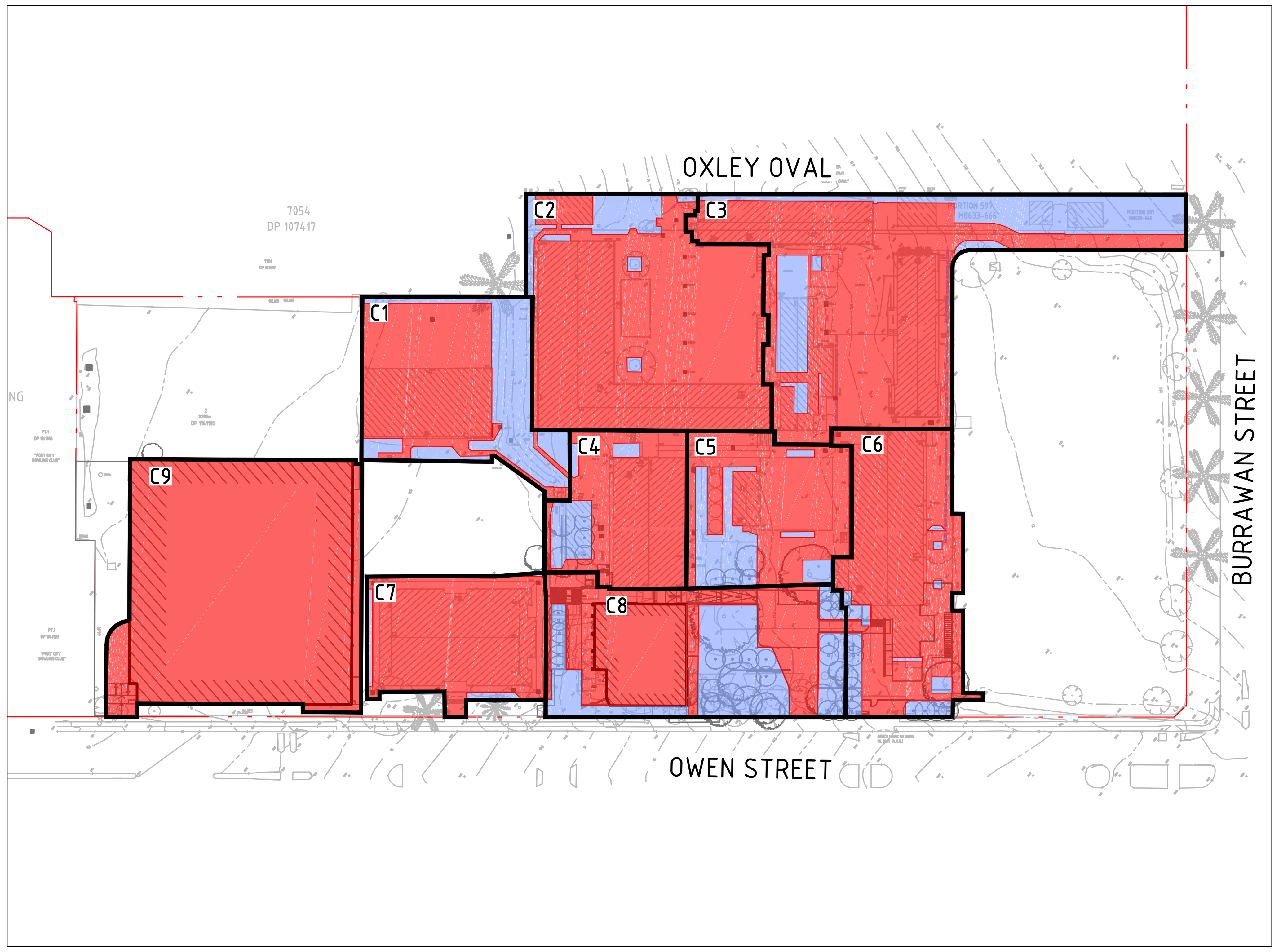
DRAWING TITLE: PCYC OSD DETAILS

JOB NUMBER: 202097
DRAWING NUMBER: DA15.02   REVISION: 3
DRAWING SHEET SIZE = A1

Found : W:\#Jobs\2020\202097 - SINSW Hastings Secondary College Upgrade\D-Drawings\C-Civil\202097-CAD\01-DA\SSDA\202097_DA15.02_PCYC OSD DETAILS.dwg   Plotted By : jphillips   Date : 14-4-21 1:45pm



PRE-DEVELOPMENT
SCENARIO



POST-DEVELOPMENT
SCENARIO

LEGEND

- CATCHMENT BOUNDARY
- PRE DEVELOPMENT IMPERVIOUS AREA
- PRE DEVELOPMENT PERVIOUS AREA
- POST DEVELOPMENT IMPERVIOUS AREA
- POST DEVELOPMENT PERVIOUS AREA

DESIGN SUMMARY

NOTE: REFER TO NORTHROP'S STORMWATER MANAGEMENT REPORT OF DETAILED STORMWATER DESIGN AND METHODOLOGY.

ONSITE DETENTION:
COUNCIL AREA: PORT MACQUARIE - HASTINGS
DESIGN BASIS:

- PRE (GREENFEILD) TO POST DEVELOPMENT CONDITIONS

AS PER CATCHMENT CALCULTIONS THE FOLLOWING CATCHMENTS REQUIRE OSD UNDER COUNCILS DESIGN BASIS:

- CATCHMENT 8 (CAPA AND ENTRY)
- CATCHMENT 9 (PCYC)

OSD SIZING ANALYSIS AND SIZING CARRIED OUT USING DRAINS STORMWATER HYDROLOGIC AND HYDRAULIC SOFTWARE IN ACCORDANCE WITH COUNCIL'S DESIGN GUIDELINES.

OSD SUMMARY:

- BELOW GROUND BLOCKWORK TANKS
- LOW FLOW OUTLETS VIA ORIFICE
- HIGH FLOW OUTLET VIA INTERNAL WEIR
-

SITE DISCHARGE CALCULATIONS (WITH OSD):

CAPA AND ENTRY	20% AEP	1%AEP
PRE DEVELOPMENT	72 L/s	154 L/s
POST-DEVELOPMENT	71 L/s	154 L/s

CAPA AND ENTRY:

- VOLUME VOLUME: 23.7cu.m
- LOW FLOW ORIFICE: 109 Ø (IL:12.0)
- HIGH FLOW INTERNAL WEIR : 0.55 W (RL:13.95)

PCYC	20% AEP	1% AEP
PRE-DEVELOPMENT	123L/s	109L/s
POST-DEVELOPMENT	263L/s	258L/s

PCYC:

- VOLUMES: $50m^3$
- LOW FLOW ORIFICE: Ø280
- HIGH FLOW INTERNAL WEIR: RL9.90

WATER QUALITY:
MUSIC MODEL SUMMARY (REFER NORTHROP REPORT FOR FURTHER DETAILS).

TREATMENT NODES:

- RAINWATER TANK (PCYC)
- OCEAN PROTECT OCEAN GUARDS
- OCEAN PROTECT STORMFILTER CARTRIDGES

TREATMENT STANDARDS:

POLLUTANT	REDUCTION STANDARDS	REDUCTION ACHIEVED
GROSS POLLUTANTS	100%	100%
TOTAL SUSPENDED SOLIDS	80%	80%
TOTAL PHOSPHORUS	45%	61%
TOTAL NITROGEN	45%	45%

MUSIC MODEL PARAMETERS IN ACCORDANCE WITH COUNCILS MUSIC MODELLING GUIDELINES.

CATCHMENT CALCULATIONS

ADDRESSED UNDER SEPARATE PACKAGE. → CATCHMENT 3

		TOTAL AREA	IMPERVIOUS	PERVIOUS	OSD REQUIRED
CATCHMENT 1	PRE	$1995m^2$	$1277m^2$ (64%)	$718m^2$ (36%)	NO
	POST	$1995m^2$	$1277m^2$ (64%)	$718m^2$ (36%)	
CATCHMENT 2	PRE	$3406m^2$	$3101m^2$ (91%)	$305m^2$ (9%)	NO
	POST	$3402m^2$	$3100m^2$ (92%)	$302m^2$ (8%)	
CATCHMENT 3 (TAS AND BUILDING 3)	PRE	$3977m^2$	$3231m^2$ (81%)	$746m^2$ (19%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$3982m^2$	3007^2 (75%)	$975m^2$ (25%)	
CATCHMENT 4	PRE	$1307m^2$	$1187m^2$ (91%)	$120m^2$ (9%)	NO
	POST	$1292m^2$	$1085m^2$ (84%)	$207m^2$ (16%)	
CATCHMENT 5	PRE	$1559m^2$	$1171m^2$ (75%)	$388m^2$ (25%)	NO
	POST	$1559m^2$	$1171m^2$ (75%)	$388m^2$ (25%)	
CATCHMENT 6	PRE	$2127m^2$	$1980m^2$ (93%)	$147m^2$ (7%)	NO
	POST	$2127m^2$	$1952m^2$ (92%)	$175m^2$ (8%)	
CATCHMENT 7	PRE	$1750m^2$	$1517m^2$ (87%)	$233m^2$ (13%)	NO
	POST	$1432m^2$	$1364m^2$ (95%)	$68m^2$ (5%)	
CATCHMENT 8 (CATCHMENT AND ENTRY)	PRE	$2250m^2$	$818m^2$ (92%)	$1432m^2$ (8%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$2573m^2$	$1580m^2$ (61%)	$993m^2$ (39%)	
CATCHMENT 9	PRE	$3853m^2$	$0m^2$ (0%)	$3853m^2$ (100%)	YES - POST DEVELOPMENT FLOW TO BE LESS THAN PRE-DEVELOPMENT (GREENFIELD) FLOW
	POST	$3853m^2$	$3853m^2$ (84%)	$0m^2$ (0%)	

VERIFIER: -
JOB MANAGER: T.HOWE
DESIGNED: E.FLACK
DRAWN: J.PHILLIPS

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PROJECT
HASTINGS SECONDARY COLLEGE
PORT MACQUARIE

PORT MACQUARIE CAMPUS

DRAWING TITLE
CATCHMENT PLAN

JOB NUMBER
202097

DRAWING NUMBER
DA16.01

REVISION
4

DRAWING SHEET SIZE = A1

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