UNIVERSITY OF NEWCASTLE CENTRAL COAST CAMPUS

305 MANN STREET GOSFORD
CIVIL WORKS - SEWER DIVERSION

LOCALITY PLAN

NORTHROP

DRAWING SCHEDULE

DWG No.	DRAWING TITLE
C_GOA_DWG_SEW1.1	SEWER DIVERSION COVER SHEET
C_GOA_DWG_SEW2.1	SEWER DIVERSION PLAN
C_GOA_DWG_SEW3.1	SEWER DIVERSION LONGITUDINAL SECTION

DRAWN: JOSHUA FISHER DESIGNED: KARINA BARRETT JOB MANAGER: DANIEL HOLLAND VERIFIER:

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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2	TENDER	JC			12.05.23
3	FOR APPROVAL	KB		KB	29.11.23
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NORTHROP
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1668 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT: UNIVERSITY OF NEWCASTLE PROPOSED CENTRAL COAST CAMPUS 305 MANN ST

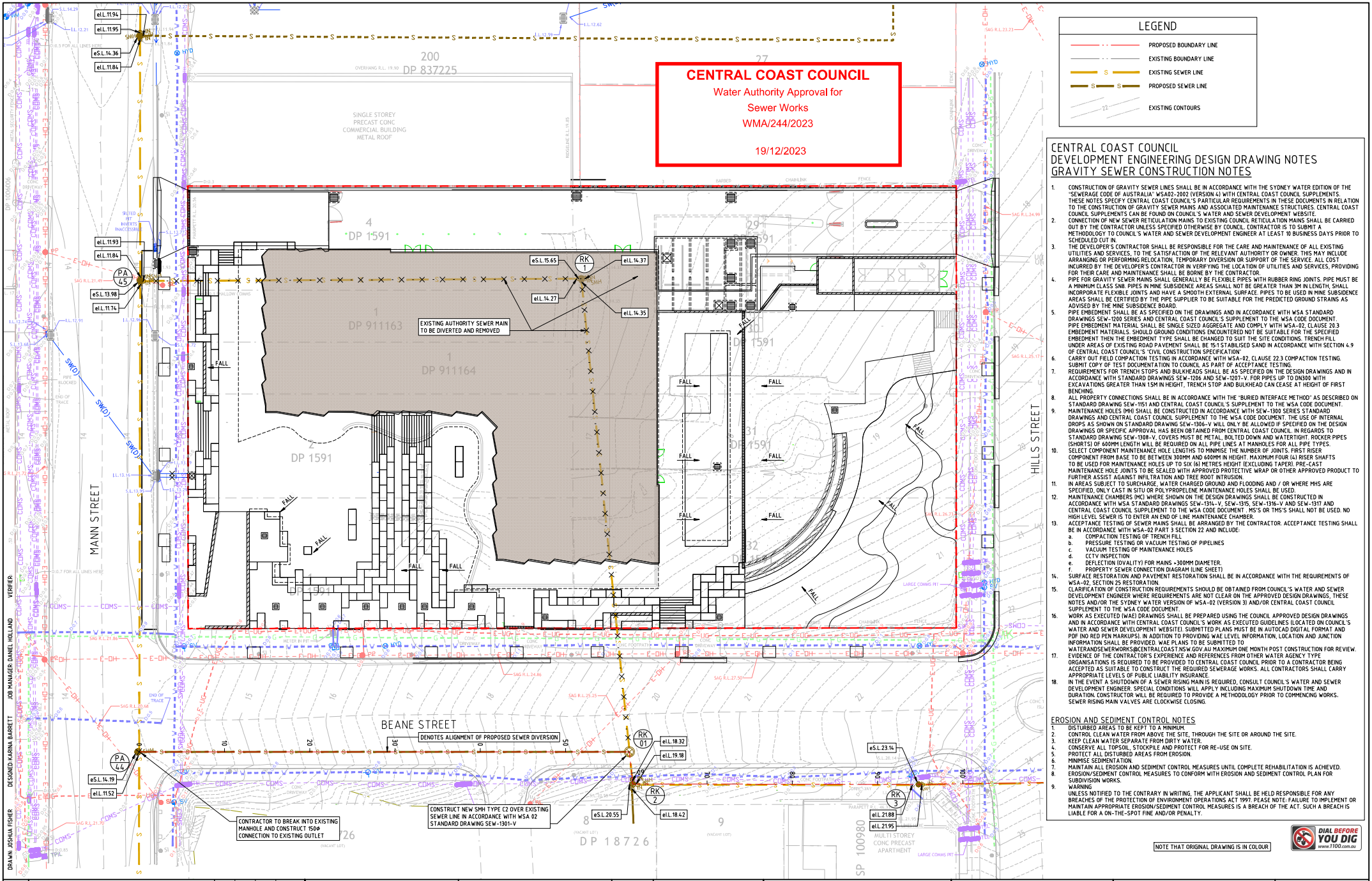
DRAWING TITLE: INTERNAL CIVIL WORKS SEWER DIVERSION COVER SHEET

JOB NUMBER: MB221453

DRAWING NUMBER: C_GOA_DWG_SEW1.1

REVISION: 4

DRAWING SHEET SIZE = A1



CENTRAL COAST COUNCIL
DEVELOPMENT ENGINEERING DESIGN DRAWING NOTES
GRAVITY SEWER CONSTRUCTION NOTES

1. CONSTRUCTION OF GRAVITY SEWER LINES SHALL BE IN ACCORDANCE WITH THE SYDNEY WATER EDITION OF THE "SEWERAGE CODE OF AUSTRALIA" WSA02-2002 (VERSION 4) WITH CENTRAL COAST COUNCIL SUPPLEMENTS. THESE NOTES SPECIFY CENTRAL COAST COUNCIL'S PARTICULAR REQUIREMENTS IN THESE DOCUMENTS IN RELATION TO THE CONSTRUCTION OF GRAVITY SEWER MAINS AND ASSOCIATED MAINTENANCE STRUCTURES. CENTRAL COAST COUNCIL SUPPLEMENTS CAN BE FOUND ON COUNCIL'S WATER AND SEWER DEVELOPMENT WEBSITE.
2. CONNECTION OF NEW SEWER RETICULATION MAINS TO EXISTING COUNCIL RETICULATION MAINS SHALL BE CARRIED OUT BY THE CONTRACTOR UNLESS SPECIFIED OTHERWISE BY COUNCIL. CONTRACTOR IS TO SUBMIT A METHODOLOGY TO COUNCIL'S WATER AND SEWER DEVELOPMENT ENGINEER AT LEAST 10 BUSINESS DAYS PRIOR TO SCHEDULED CUT IN.
3. THE DEVELOPER'S CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE AND MAINTENANCE OF ALL EXISTING UTILITIES AND SERVICES, TO THE SATISFACTION OF THE RELEVANT AUTHORITY OR OWNER. THIS MAY INCLUDE ARRANGING OR PERFORMING RELOCATION, TEMPORARY DIVERSION OR SUPPORT OF THE SERVICE. ALL COST INCURRED BY THE DEVELOPER'S CONTRACTOR IN VERIFYING THE LOCATION OF UTILITIES AND SERVICES, PROVIDING FOR THEIR CARE AND MAINTENANCE SHALL BE BORNE BY THE CONTRACTOR.
4. PIPE FOR GRAVITY SEWER MAINS SHALL GENERALLY BE FLEXIBLE PIPES WITH RUBBER RING JOINTS. PIPE MUST BE A MINIMUM CLASS SN8. PIPES IN MINE SUBSIDENCE AREAS SHALL NOT BE GREATER THAN 3M IN LENGTH, SHALL INCORPORATE FLEXIBLE JOINTS AND HAVE A SMOOTH EXTERNAL SURFACE. PIPES TO BE USED IN MINE SUBSIDENCE AREAS SHALL BE CERTIFIED BY THE PIPE SUPPLIER TO BE SUITABLE FOR THE PREDICTED GROUND STRAINS AS ADVISED BY THE MINE SUBSIDENCE BOARD.
5. PIPE EMBEDMENT SHALL BE AS SPECIFIED ON THE DRAWINGS AND IN ACCORDANCE WITH WSA STANDARD DRAWINGS SEW-1200 SERIES AND CENTRAL COAST COUNCIL'S SUPPLEMENT TO THE WSA CODE DOCUMENT. PIPE EMBEDMENT MATERIAL SHALL BE SINGLE SIZED AGGREGATE AND COMPLY WITH WSA-02, CLAUSE 20.3 EMBEDMENT MATERIALS. SHOULD GROUND CONDITIONS ENCOUNTERED NOT BE SUITABLE FOR THE SPECIFIED EMBEDMENT THEN THE EMBEDMENT TYPE SHALL BE CHANGED TO SUIT THE SITE CONDITIONS. TRENCH FILL UNDER AREAS OF EXISTING ROAD PAVEMENT SHALL BE 15:1 STABILISED SAND IN ACCORDANCE WITH SECTION 4.9 OF CENTRAL COAST COUNCIL'S 'CIVIL CONSTRUCTION SPECIFICATION'
6. CARRY OUT FIELD COMPACTION TESTING IN ACCORDANCE WITH WSA-02, CLAUSE 22.3 COMPACTION TESTING. SUBMIT COPY OF TEST DOCUMENTATION TO COUNCIL AS PART OF ACCEPTANCE TESTING.
7. REQUIREMENTS FOR TRENCH STOPS AND BULKHEADS SHALL BE AS SPECIFIED ON THE DESIGN DRAWINGS AND IN ACCORDANCE WITH STANDARD DRAWINGS SEW-1206 AND SEW-1207-V. FOR PIPES UP TO DN300 WITH EXCAVATIONS GREATER THAN 1.5M IN HEIGHT, TRENCH STOP AND BULKHEAD CAN CEASE AT HEIGHT OF FIRST BENCHING.
8. ALL PROPERTY CONNECTIONS SHALL BE IN ACCORDANCE WITH THE "BURIED INTERFACE METHOD" AS DESCRIBED ON STANDARD DRAWING SEW-1151 AND CENTRAL COAST COUNCIL'S SUPPLEMENT TO THE WSA CODE DOCUMENT.
9. MAINTENANCE HOLES (MH) SHALL BE CONSTRUCTED IN ACCORDANCE WITH SEW-1300 SERIES STANDARD DRAWINGS AND CENTRAL COAST COUNCIL SUPPLEMENT TO THE WSA CODE DOCUMENT. THE USE OF INTERNAL DROPS AS SHOWN ON STANDARD DRAWING SEW-1306-V WILL ONLY BE ALLOWED IF SPECIFIED ON THE DESIGN DRAWINGS OR SPECIFIC APPROVAL HAS BEEN OBTAINED FROM CENTRAL COAST COUNCIL. IN REGARDS TO STANDARD DRAWING SEW-1308-V, COVERS MUST BE METAL, BOLTED DOWN AND WATERTIGHT. ROCKER PIPES (SHORTS) OF 600MM LENGTH WILL BE REQUIRED ON ALL PIPE LINES AT MANHOLES FOR ALL PIPE TYPES.
10. SELECT COMPONENT MAINTENANCE HOLE LENGTHS TO MINIMISE THE NUMBER OF JOINTS. FIRST RISER COMPONENT FROM BASE TO BE BETWEEN 300MM AND 600MM IN HEIGHT. MAXIMUM FOUR (4) RISER SHAFTS TO BE USED FOR MAINTENANCE HOLES UP TO SIX (6) METRES HEIGHT (EXCLUDING TAPER). PRE-CAST MAINTENANCE HOLE JOINTS TO BE SEALED WITH APPROVED PROTECTIVE WRAP OR OTHER APPROVED PRODUCT TO FURTHER ASSIST AGAINST INFILTRATION AND TREE ROOT INTRUSION.
11. IN AREAS SUBJECT TO SURCHARGE, WATER CHARGED GROUND AND FLOODING AND / OR WHERE MHS ARE SPECIFIED, ONLY CAST IN SITU OR POLYPROPELENE MAINTENANCE HOLES SHALL BE USED.
12. MAINTENANCE CHAMBERS (MC) WHERE SHOWN ON THE DESIGN DRAWINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH WSA STANDARD DRAWINGS SEW-1314-V, SEW-1315, SEW-1316-V AND SEW-1317 AND CENTRAL COAST COUNCIL SUPPLEMENT TO THE WSA CODE DOCUMENT . MS'S OR TMS'S SHALL NOT BE USED. NO HIGH LEVEL SEWER IS TO ENTER AN END OF LINE MAINTENANCE CHAMBER.
13. ACCEPTANCE TESTING OF SEWER MAINS SHALL BE ARRANGED BY THE CONTRACTOR. ACCEPTANCE TESTING SHALL BE IN ACCORDANCE WITH WSA-02 PART 3 SECTION 22 AND INCLUDE:
    a. COMPACTION TESTING OF TRENCH FILL
    b. PRESSURE TESTING OR VACUUM TESTING OF PIPELINES
    c. VACUUM TESTING OF MAINTENANCE HOLES
    d. CCTV INSPECTION
    e. DEFLECTION (OVALITY) FOR MAINS >300MM DIAMETER.
    f. PROPERTY SEWER CONNECTION DIAGRAM (LINE SHEET)
14. SURFACE RESTORATION AND PAVEMENT RESTORATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF WSA-02, SECTION 25 RESTORATION.
15. CLARIFICATION OF CONSTRUCTION REQUIREMENTS SHOULD BE OBTAINED FROM COUNCIL'S WATER AND SEWER DEVELOPMENT ENGINEER WHERE REQUIREMENTS ARE NOT CLEAR ON THE APPROVED DESIGN DRAWINGS, THESE NOTES AND/OR THE SYDNEY WATER VERSION OF WSA-02 (VERSION 3) AND/OR CENTRAL COAST COUNCIL SUPPLEMENT TO THE WSA CODE DOCUMENT.
16. WORK AS EXECUTED (WAE) DRAWINGS SHALL BE PREPARED USING THE COUNCIL APPROVED DESIGN DRAWINGS AND IN ACCORDANCE WITH CENTRAL COAST COUNCIL'S WORK AS EXECUTED GUIDELINES (LOCATED ON COUNCIL'S WATER AND SEWER DEVELOPMENT WEBSITE). SUBMITTED PLANS MUST BE IN AUTOCAD DIGITAL FORMAT AND PDF (NO RED PEN MARKUPS). IN ADDITION TO PROVIDING WAE LEVEL INFORMATION, LOCATION AND JUNCTION INFORMATION SHALL BE PROVIDED. WAE PLANS TO BE SUBMITTED TO WATERANDSEWERWORKS@CENTRALCOAST.NSW.GOV.AU MAXIMUM ONE MONTH POST CONSTRUCTION FOR REVIEW.
17. EVIDENCE OF THE CONTRACTOR'S EXPERIENCE AND REFERENCES FROM OTHER WATER AGENCY TYPE ORGANISATIONS IS REQUIRED TO BE PROVIDED TO CENTRAL COAST COUNCIL PRIOR TO A CONTRACTOR BEING ACCEPTED AS SUITABLE TO CONSTRUCT THE REQUIRED SEWERAGE WORKS. ALL CONTRACTORS SHALL CARRY APPROPRIATE LEVELS OF PUBLIC LIABILITY INSURANCE.
18. IN THE EVENT A SHUTDOWN OF A SEWER RISING MAIN IS REQUIRED, CONSULT COUNCIL'S WATER AND SEWER DEVELOPMENT ENGINEER. SPECIAL CONDITIONS WILL APPLY INCLUDING MAXIMUM SHUTDOWN TIME AND DURATION. CONSTRUCTOR WILL BE REQUIRED TO PROVIDE A METHODOLOGY PRIOR TO COMMENCING WORKS. SEWER RISING MAIN VALVES ARE CLOCKWISE CLOSING.

EROSION AND SEDIMENT CONTROL NOTES

1. DISTURBED AREAS TO BE KEPT TO A MINIMUM.
2. CONTROL CLEAN WATER FROM ABOVE THE SITE, THROUGH THE SITE OR AROUND THE SITE.
3. KEEP CLEAN WATER SEPARATE FROM DIRTY WATER.
4. CONSERVE ALL TOPSOIL, STOCKPILE AND PROTECT FOR RE-USE ON SITE.
5. PROTECT ALL DISTURBED AREAS FROM EROSION.
6. MINIMISE SEDIMENTATION.
7. MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES UNTIL COMPLETE REHABILITATION IS ACHIEVED.
8. EROSION/SEDIMENT CONTROL MEASURES TO CONFORM WITH EROSION AND SEDIMENT CONTROL PLAN FOR SUBDIVISION WORKS.
9. WARNING
   UNLESS NOTIFIED TO THE CONTRARY IN WRITING, THE APPLICANT SHALL BE HELD RESPONSIBLE FOR ANY BREACHES OF THE PROTECTION OF ENVIRONMENT OPERATIONS ACT 1997. PEASE NOTE: FAILURE TO IMPLEMENT OR MAINTAIN APPROPRIATE EROSION/SEDIMENT CONTROL MEASURES IS A BREACH OF THE ACT. SUCH A BREACH IS LIABLE FOR A ON-THE-SPOT FINE AND/OR PENALTY.

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VERIFIER:
JOB MANAGER: DANIEL HOLLAND
DESIGNED: KARINA BARRETT
DRAWN: JOSHUA FISHER

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PLANS1: 200@A10 2 4 6 8 10m

NORTHROP
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1968 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT: UNIVERSITY OF NEWCASTLE
PROPOSED CENTRAL COAST CAMPUS
305 MANN ST

DRAWING TITLE: INTERNAL CIVIL WORKS
SEWER DIVERSION PLAN

JOB NUMBER: MB221453
DRAWING NUMBER: C_GOA_DWG_SEW2.1
REVISION: 5
DRAWING SHEET SIZE = A1

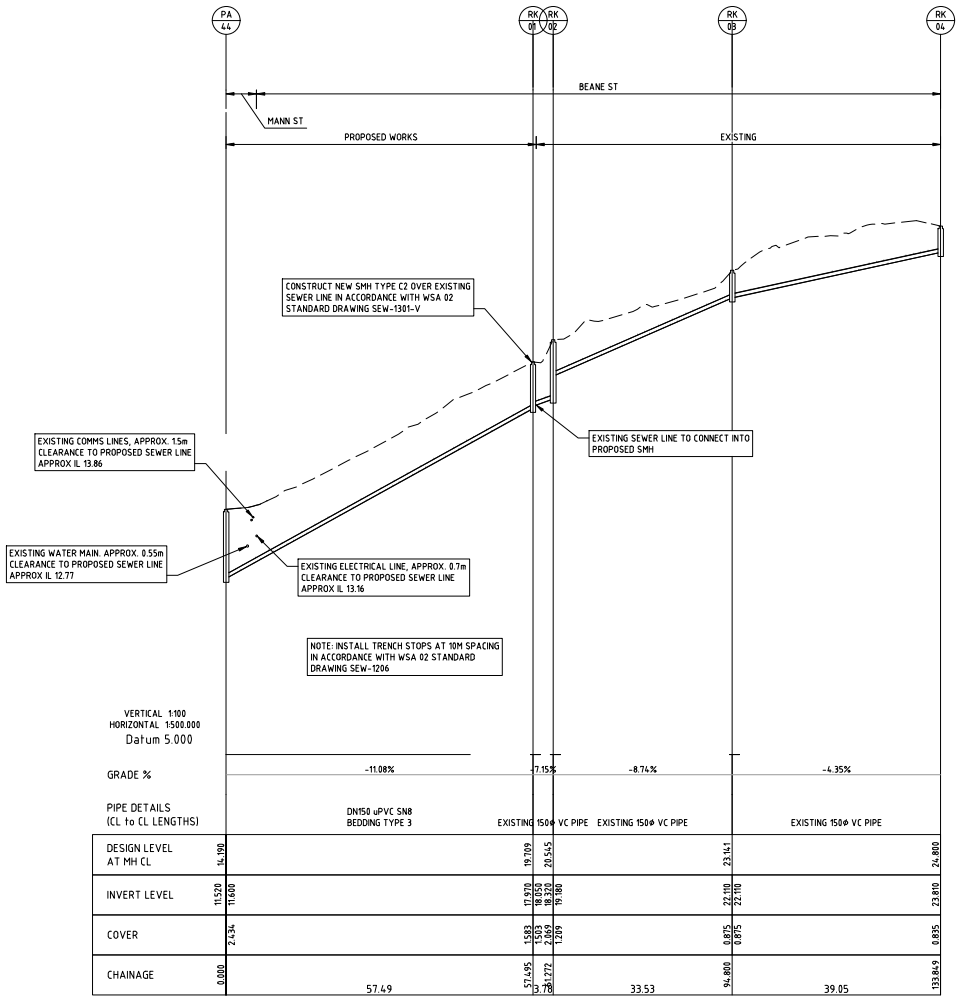
CENTRAL COAST COUNCIL

Water Authority Approval for

Sewer Works

WMA/244/2023

19/12/2023



SEW01 LONG SECTION

NOTE: ALL LEVELS ARE TO AHD DATUM, INFORMATION OBTAINED BY SITE SURVEY AND COUNCIL RECORDS. ALL VALUES TO BE CONFIRMED PRIOR TO CONSTRUCTION

SEWER PIPE DATA								
PROPOSED						ABANDONED		
PIPE SIZE (mm)	PIPE TYPE	LENGTH (m)	NUMBER OF			PIPE SIZE (mm)	PIPE TYPE	LENGTH (m)
			MH	MC	TMC			
150	SN8	57.490	1	-	-	150	VCP	110.950

SEWER SETOUT						
PIT NAME	PIT TYPE	EASTING (m)	NORTHING (m)	SURFACE LEVEL (m)	INVERT LEVEL (m)	DEPTH (m)
A/01	C2	346007.34	6300797.18	19.709	17.970	1.739

CLEARANCES BETWEEN SEWERS AND OTHER UNDERGROUND SERVICES

UTILITY (EXISTING SERVICE)	MINIMUM HORIZONTAL CLEARANCE (mm) NEW SEWER SIZE		MINIMUM VERTICAL CLEARANCE [1] (mm)
	≤DN300	>DN300	
SEWERS ≤DN300	300	600	150 [2] / 300
SEWERS >300	600	600	300
GAS MAINS	300 [3]	600	150 [2] / 300
TELECOMMUNICATIONS CONDUITS AND CABLES	300 [3]	600	150 [2] / 300
ELECTRICITY CONDUITS AND CABLES	500	1000	225 [2] / 300
STORMWATER DRAINS [4]	300 [3]	600	150 [2 AND 5] / 300 [5]
WATER MAINS	1000 [6] / 600	1000 [6] / 600	500 [5]
KERBS	150 [7]	600 [7]	N/A

CLEARANCE NOTES:

1. VERTICAL CLEARANCES APPLY WHEN SEWERS CROSS ONE ANOTHER, EXCEPT IN THE CASE OF WATER MAINS WHEN A VERTICAL SEPARATION SHALL ALWAYS BE MAINTAINED, EVEN WHEN THE SEWER AND WATER MAIN ARE PARALLEL. THE SEWER SHOULD ALWAYS BE LOCATED BELOW THE WATER MAIN TO MINIMISE THE POSSIBILITY OF BACKFLOW CONTAMINATION IN THE EVENT OF A MAIN BREAK.
2. A MINIMUM VERTICAL CLEARANCE OF 300mm APPLIES IF THE SIZE OF EITHER THE EXISTING SERVICE OR PROPOSED SEWER IS >DN300.
3. CLEARANCES CAN BE FURTHER REDUCED TO 150mm FOR DISTANCES UP TO 2m WHEN PASSING INSTALLATIONS SUCH AS POLES, PITS AND SMALL STRUCTURES, PROVIDING THE STRUCTURE IS NOT DESTABILISED IN THE PROCESS.
4. A SEWER TO BE CONSTRUCTED UNDER AN EXISTING OR PROPOSED STORMWATER PIPE OR CHANNEL ≥DN375 MAY BE CONCRETE ENCASED. CONCRETE ENCASE SEWERS CROSSING UNDER BRICK BARREL DRAINS OR UNLINED OPEN DRAIN OR CHANNEL. THE CONCRETE ENCASEMENT SHALL EXTEND AT LEAST 1m EACH SIDE OF THE STORMWATER PIPE OR CHANNEL. CLEARANCES BETWEEN THE SEWER AND OTHER SERVICES SHALL BE MEASURED FROM THE OUTER SURFACE OF THE CONCRETE ENCASEMENT. (REFER TO DRAWING SEW-1205 CONCRETE AND STABILISED SUPPORTS).
5. SEWERS SHOULD ALWAYS CROSS UNDER WATER MAINS AND STORMWATER DRAINS. IF THIS REQUIREMENT CANNOT BE MET, CONSULT THE WATER AGENCY IN RESPECT OF ALTERNATIVES SUCH AS ADJUSTING THE WATER MAIN OR STORMWATER DRAIN. WHERE A SEWER CROSSES A WATER MAIN AT OR CLOSE TO 90°, THE VERTICAL CLEARANCE MAY BE REDUCED SUBJECT TO WATER AGENCY REQUIREMENTS.
6. WHEN THE SEWER IS AT THE MINIMUM VERTICAL CLEARANCE BELOW THE WATER MAIN (500mm) MAINTAIN A MINIMUM HORIZONTAL CLEARANCE OF 1000 MM. THIS MINIMUM HORIZONTAL CLEARANCE CAN BE PROGRESSIVELY REDUCED TO 600mm AS THE VERTICAL CLEARANCE INCREASES TO 750mm.
7. CLEARANCE FROM KERBS SHALL BE MEASURED FROM THE NEAREST POINT OF THE KERB.

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DRAWN: JOSHUA FISHER DESIGNED: KARINA BARRETT JOB MANAGER: DANIEL HOLLAND VERIFIER:

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VERT 1:100@A1 0 1 2 3 4 5m

HORIZ 1:500@A1 0 5 10 15 20 25m

NORTHROP
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1668 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT: UNIVERSITY OF NEWCASTLE PROPOSED CENTRAL COAST CAMPUS 305 MANN ST

DRAWING TITLE: INTERNAL CIVIL WORKS SEWER DIVERSION LONGITUDINAL SECTION

JOB NUMBER: MB221453

DRAWING NUMBER: C_GOA_DWG_SEW3.1

REVISION: 5

DRAWING SHEET SIZE = A1

NORTHROP

CIVIL ENGINEERING REPORT: CONSTRUCTION SOIL & WATER MANAGEMENT PLAN

University of Newcastle Central Coast Campus

305 Mann Street, Gosford

PREPARED FOR
Hansen Yuncken Pty Ltd
Suite 12/125 Bull Street,
Newcastle West NSW 2302
PO Box 2200, Dangar NSW 2309

Ref: MB221453-CSWMSP
Rev: 1

Date: 15.09.23

Civil Engineering Report: Construction Soil & Water Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
15.09.23	1	Draft	J.Carraro	D.Holland

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250

02 4365 1668 | centralcoast@northrop.com.au | www.northrop.com.au

Table of Contents

1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Hansen Yuncken to prepare the Civil Engineering design and documentation in support of a Construction Certificate for the proposed University of Newcastle Central Coast Campus, 305 Mann Street, Gosford.

This report covers the works shown on the Northrop Drawing Package required for pre-construction, in relation to soil and water management for the site, in particular including:

- Erosion and Sediment control.

1.2 Related Reports and Documents

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

1. Detailed Design Phase Civil Documentation prepared by Northrop:
   - C_GOA_DWG_C31.1[6] Soil & Water Management Plan
   - C_GOA_DWG_C31.2[5] Soil & Water Management Details
2. NSW Department of Planning and Environment, "Managing Urban Stormwater Soil & Construction" 2004 (Blue Book)
3. Central Coast Council's Engineering Design Specifications

1.3 SSD Requirements

The project has obtained development approval through an SSDA. The table below demonstrates SSDA conditions which have been addressed in this report.

Condition	Conditions Requirements	Document/Sub-Plan Reference
B27	The Applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) and the plan must address, but not be limited to the following:	
	(a) be prepared by a suitably qualified expert, in consultation with Council;	Refer Appendix C
	(b) describe all erosion and sediment controls to be implemented during construction, as a minimum, in accordance with *Managing Urban Stormwater: Soils & Construction* (4th edition, Landcom 2004), commonly referred to as the 'Blue Book';	Refer Section 2
	(c) include an Acid Sulfate Soils Management Plan, if required, including measures for the management, handling, treatment and disposal of acid sulfate soils, including monitoring of water quality at acid sulfate soils treatment areas;	Refer Section 3.1
	(d) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);	Refer Section 2.3

Condition	Conditions Requirements	Document/Sub-Plan Reference
	(e) details of all off-Site flows from the Site; and	Refer Section 3.1
	(f) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to 1 in 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI [flood prone sites]).	Refer Section 3.1

1.4 The Development

The subject site is located within the suburb of Gosford in the Central Coast Council Local Government Area (LGA).

The subject site is contained within lots 1, 2, 4, 29, 30, 31 and 32 DP 1591 along with lot 1 DP 911163 and lot 1 DP 911164. The site is bound by two existing commercial lots to the North, Hill Street to the east, Beane Street to the South and Mann Street to the west.

Figure 1 shows the development extent as well as the locality of the site in its current state.

Figure 1: Aerial Image (SIX Maps)

The total site area is 4,672 m^2 with topography falling from southeast to northwest with surface levels that range between RL14.13m to RL22.26m AHD and slopes in the range of 8%.

Based on geotechnical investigations performed on the site, the soil profile consists of a layer fill material over silty clays over rock.

The lot in its current state is an existing commercial development (Mitre 10) that consists of a building, carpark, and small landscape areas.

2. Erosion and Sediment Control

The objectives of the erosion and sediment control for the development site are to ensure:

- Adequate erosion and sediment control measures are applied prior to the commencement of construction and are maintained throughout construction; and
- Construction site runoff is appropriately treated in accordance with Central Coast Council's requirements.

As part of the works, the erosion and sedimentation control will be constructed in accordance with Council requirements and "Managing Urban Stormwater Soil & Construction" 2004 (Blue Book) prepared by Landcom, prior to any earthworks commencing on site.

2.1 Sediment Basin

Calculations to determine if a Sediment Basin is required for the development have been based on available geotechnical information regarding soil types and through the use of the Soils and Construction Volume 1 Manual.

Upon completion of the sediment basin calculations based on the Soils and Construction Volume 1 Manual, a basin is not required. Due to the nature of the development further assessment of the site to determine if a basin would be required was conducted. As outlined above in '1.4 The Development' the site slope is minimal, with a consistent natural topography and is relatively small to implement a basin. These reduce the risk of sediment leaving the site, therefore there is no benefit of a sediment basin for this development.

The sediment basin calculations are summarised in the table below.

SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE GOSFORD-LAKE MACQUARIE SOIL LANDSCAPE AND PRIMARILY CONSISTS OF CLAYS, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C17 OF THE 'BLUE BOOK').

SITE PARAMETERS	
CONSTRAINT	VALUE
SEDIMENT TYPE	D
SOIL HYDROLOGY GROUP	D
K = SOIL ERODIBILITY (K-FACTOR)	0.030
R = RAINFALL EROSIVITY (R-FACTOR)	2569
S = 2 YEAR, 6 HOUR STORM INTENSITY	10.87mm/hr (GOSFORD)
LS = SLOPE LENGTH/GRADIENT	2.37 (100m SLOPE @ 8% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (0% GRASS COVER)
A = DISTURBED AREA	0.467 Ha
SOIL LOSS (m^3/yr)	85.35m^3/Yr
SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr)	237 tonnes/Ha/Yr
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	LOW-MODERATE
TOTAL SITE RUN-OFF IS LESS THAN 150m^3/Yr. BASIN/TANKS NOT REQUIRED.	

2.2 Sediment and Erosion Control Measures

Prior to any earthworks commencing on site, sediment and erosion control measures shall be implemented generally in accordance with the Construction Certificate drawings and the “Blue Book”. The measures shown on the drawings are intended to be a minimum treatment only as the contractor will be required to modify and stage the erosion and sedimentation control measures to suit the construction program, sequencing, and techniques. These measures will include:

- A temporary site security/safety fence is to be constructed around the site and the site office area.
- Sediment fencing provided downstream of disturbed areas, including any topsoil stockpiles.
- Dust control measures including covering stockpiles, installing fence hessian and watering exposed areas.
- Placement of hay bales or mesh and gravel inlet filters around and along proposed catch drains and around stormwater inlet pits;
- Stabilised site access at the construction vehicle entry/exits.

Any stockpiled material, including topsoil, shall be located as far away as possible from any associated natural watercourses or temporary overland flow paths. Sediment fences shall be installed to the downstream side of stockpiles and any embankment formation. All stockpiles and embankment formations shall be stabilised by hydroseeding or hydro mulching on formation.

2.3 Wet Weather Management

In circumstances of heavy rain sufficient to affect site access and ground conditions the Site Manager and Site HSE Committee representative should complete a site inspection before work commences. The inspection needs to focus on.

- The suitability of pedestrian access to the amenities and into the construction work areas
- The suitability of access for plant and equipment
- The suitability of ground conditions for plant and equipment to operate
- Nominate the construction zones suitable for work to commence
- Actions to remediate those areas not suitable for work to commence (de-water; prepare ground conditions and access ways etc.)

It is noted that the storage of equipment during wet weather will be placed in areas to not prohibit or disrupt operation of the sediment and soil erosion control measures.

Refer Appendix A, Northrop’s drawings outline wet weather management through providing stabilised temporary site access.

3. Further Commentary

3.1 SSD Conditions

The Department of Planning has provided Conditions of Consent for the proposed development at 305 Mann Street, Gosford. Conditions associated with the Construction Soil and Water Management Plan have been provided below with further commentary for consideration by Central Coast Council and the Certifying Authority.

B27. The Applicant must prepare a Construction Soil and Water Management Plan (CSWMSP) which must address, but not be limited to, the following:

(a) be prepared by a suitably qualified expert, in consultation with Council;

(b) describe all erosion and sediment controls to be implemented during construction, as a minimum, in accordance with *Managing Urban Stormwater: Soils & Construction* (4th edition, Landcom 2004) commonly referred to as the 'Blue Book';

(c) include an Acid Sulfate Soils Management Plan, if required, including measures for the management, handling, treatment and disposal of acid sulfate soils, including monitoring of water quality at acid sulfate soils treatment areas;

(d) provide a plan of how all construction works will be managed in a wet-weather events (i.e. storage of equipment, stabilisation of the Site);

(e) details of all off-site flows from the site; and

(f) describe the measures that must be implemented to manage stormwater and flood flows for small and large sized events, including, but not limited to, 1 in 5-year ARI and 1 in 100-year ARI.

Northrop Commentary

The following comments have been provided with respect to Condition B27 for consideration by Central Coast Council and the Certifying Authority.

Northrop Commentary

(a) Please refer to the CV of the designer and email consultation with Council provided in Appendix B and C.

(b) Please refer to Section 2 of this report and associated Civil Engineering drawings as listed:
- C_GOA_DWG_C31.1[6] Soil & Water Management Plan
- C_GOA_DWG_C31.2[5] Soil & Water Management Details

(c) Based on section 2.7 Acid Sulphate Soils, of Kleinfelder's Geotechnical investigation Report, document number NCA22R147463, rev 2, 9 December 2022, Acid Sulphate Soils are not considered to be an issue for consent.

(d) Please refer to section 2 of the report. Specifically, our sediment and erosion control plan includes measures such as treatment for stockpiles and stabilised site access.

(e) Once stormwater has passed through the sediment and erosion control measures, clean water is to be discharged to existing Council owned stormwater infrastructure and conveyed away from the site. Mitigation of off-site flows are provided such as sandbags and filters over stormwater pits

(f) Please refer to Section 2 of this report and associated Civil Engineering drawings as listed:

- C_GOA_DWG_C31.1[6] Soil & Water Management Plan
- C_GOA_DWG_C31.2[5] Soil & Water Management Details

The erosion and sediment control plans have been designed in accordance with the requirements of NSW Department of Planning and Environment Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) and Central Coast Council’s Engineering Design Specifications. Measures include stormwater pit filters, Sandbags and temporary site access.

Surface flows generated during storm events up to the 1 in 10-year storm event are treated by the sediment and erosion control measures implemented on site. Storm events greater than the 1 in 10 year will overwhelm temporary control measures which are not typically sized to cater for such events in the Blue Book. Flows from larger events will flow to Mann Street.

A review of Central Coast Council’s online mapping system indicates the site is not impacted by flooding for the 1% AEP. Therefore, the site is not flood prone. The site is also bound by local roads on three boundaries, which convey stormwater around the site preventing upstream stormwater from entering the site.

Appendix A – Soil & Water Management Plans

PROVIDE COMBINED SITE/SILT FENCE 'SILTMASTER' OR SIMILAR, INSTALLED IN ACCORDANCE WITH DETAIL SD6-8 OF THE BLUEBOOK.

PROVIDE TEMPORARY CONTRACTORS VEHICULAR ACCESS POINT. CONSTRUCT A STABILIZED SITE ACCESS IN ACCORDANCE WITH DETAIL SD6-14 OF THE BLUE BOOK, OR ALTERNATIVELY PROVIDE A SHAKEDOWN CATTLE GRID' AT THE ENTRANCE POINT TO REDUCE THE LIKELIHOOD OF SEDIMENT BEING TRAFFICKED OFF-SITE.

PROVIDE PIT PROTECTION INSTALLED IN ACCORDANCE WITH DETAILS SD6-11 OR SD6-12 (AS APPROPRIATE) OF THE BLUE BOOK (TYPICAL)

DENOTES SANDBAG or GEOTEXTILE SOCK FILLED WITH NO FINES GRAVEL PLACED IN INVERT OF GUTTER OR ALONG EDGE OF BITUMEN @ 20m CTS

DENOTES INDICATIVE LOCATION OF STOCKPILE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH DETAIL SD4-1 OF THE BLUE BOOK

LEGEND

- DENOTES SITE BOUNDARY LINE
- DENOTES COMBINED SITE/SILT FENCE 'SILTMASTER' OR SIMILAR, INSTALLED IN ACCORDANCE WITH DETAIL SD6-8 OF THE BLUEBOOK.
- DENOTES TEMPORARY CONTRACTORS VEHICULAR ACCESS POINT. CONSTRUCT A STABILISED SITE ACCESS IN ACCORDANCE WITH DETAIL SD6-14 OF THE BLUE BOOK OR PROVIDE A SHAKEDOWN CATTLE GRID AT ENTRANCE POINT TO REDUCE LIKELIHOOD OF SEDIMENT BEING TRAFFICKED OFF-SITE
- DENOTES GEOTEXTILE INLET FILTER INSTALLED IN ACCORDANCE WITH DETAIL SD6-12 OF THE BLUE BOOK
- INDICATES MESH & GRAVEL INLET FILTER INSTALLED IN ACCORDANCE WITH DETAILS SD6-11 OF THE BLUE BOOK
- DENOTES SANDBAG or GEOTEXTILE SOCK FILLED WITH NO FINES GRAVEL PLACED IN INVERT OF GUTTER OR ALONG EDGE OF BITUMEN
- DENOTES INDICATIVE LOCATION OF STOCKPILE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH DETAIL SD4-1 OF THE BLUE BOOK

SEDIMENT & EROSION CONTROL NOTES

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH RELEVANT ORDINANCES AND REGULATIONS; NOTE IN PARTICULAR THE REQUIREMENTS OF LANDCOMS MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION' (THE 'BLUE BOOK').
2. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
3. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
4. INSTALL SEDIMENT FENCING AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT.
5. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
6. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB & GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION. REFER ARCHITECTS PLANS FOR TREES TO BE KEPT.
7. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ONSITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
8. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
9. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
10. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
11. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
12. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION & SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS & SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ ALL MAINTENANCE, CLEANING & BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.

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

SEDIMENT BASIN SIZING CALCULATION

THE SITE IS LOCATED WITHIN THE GOSFORD-LAKE MACQUARIE SOIL LANDSCAPE AND PRIMARILY CONSISTS OF CLAYS, WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C17 OF THE 'BLUE BOOK').

SITE PARAMETERS	
CONSTRAINT	VALUE
SEDIMENT TYPE	D
SOIL HYDROLOGY GROUP	D
K = SOIL ERODIBILITY (K-FACTOR)	0.030
R = RAINFALL EROSIVITY (R-FACTOR)	2569
S = 2 YEAR, 6 HOUR STORM INTENSITY	10.87mm/hr (GOSFORD)
LS = SLOPE LENGTH/GRADIENT	2.37 (100m SLOPE @ 8% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (0% GRASS COVER)
A = DISTURBED AREA	0.467 Ha
SOIL LOSS (m^3/yr)	85.35m^3/Yr
SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr)	237 tonnes/Ha/Yr
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	LOW-MODERATE
TOTAL SITE RUN-OFF IS LESS THAN 150m^3/Yr. BASIN/TANKS NOT REQUIRED.	

NOTE THAT ORIGINAL DRAWING IS IN COLOUR

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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	FOR INFORMATION DESIGN DEVELOPMENT	KT			31.03.23
2	50% DESIGN DEVELOPMENT	TS			14.04.23
3	90% DESIGN DEVELOPMENT	TS			02.05.23
4	FOR TENDER	TS		DH	12.05.23
5	REVISED FOR TENDER	TS			24.05.23
6	CONSTRUCTION CERTIFICATE	TS		DH	16.06.23

CLIENT: THE UNIVERSITY OF NEWCASTLE AUSTRALIA

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT: lyons

ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK. NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

PLANS 1:200@A1 0 2 4 6 8 10m

NORTHROP
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1668 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT: UNIVERSITY OF NEWCASTLE PROPOSED CENTRAL COAST CAMPUS 305 MANN ST

DRAWING TITLE: INTERNAL CIVIL WORKS SOIL & WATER MANAGEMENT PLAN

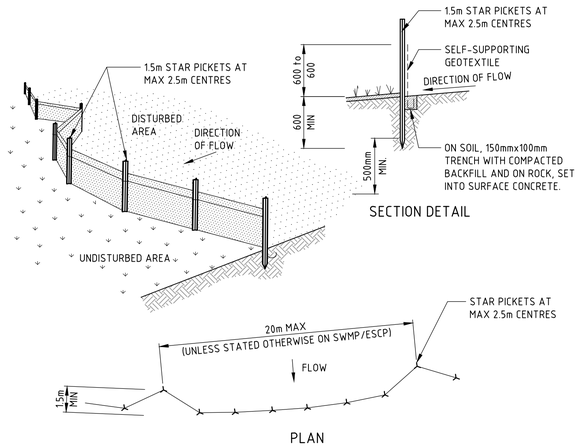
JOB NUMBER: MB221453

DRAWING NUMBER: C_GOA_DWG_ C31.1

REVISION: 6

DRAWING SHEET SIZE = A1

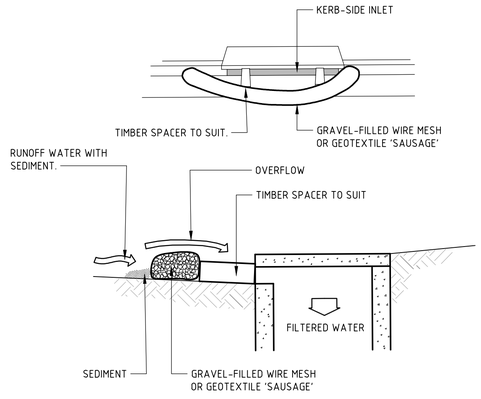
DRAWN: TIMOTHY SMALL | DESIGNED: JAKE CARRARO | JOB MANAGER: DANIEL HOLLAND | VERIFIER



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 (SD 6-8)

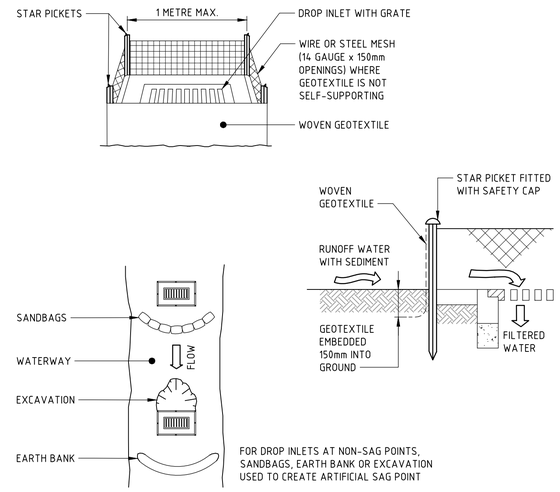


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

CONSTRUCTION NOTES

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

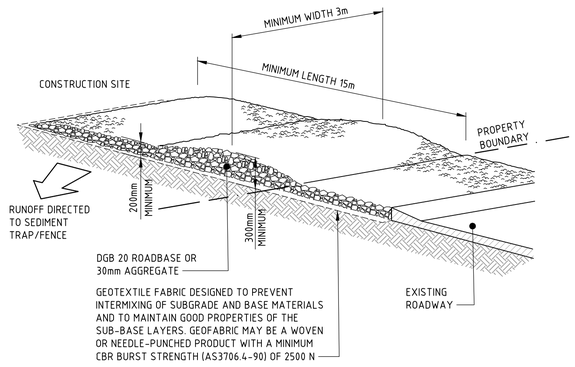
MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

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

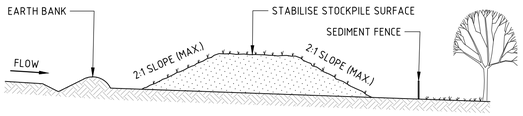
GEOTEXTILE INLET FILTER (SD 6-12)



CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 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 (SD 6-14)



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.

STOCKPILES (SD 4-1)

DRAWN TIMOTHY SMALL DESIGNED JAKE CARRARO JOB MANAGER DANIEL HOLLAND VERIFIER

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NORTHROP
Central Coast
Suite 4, 257-259 Central Coast Hwy, Erina NSW 2250
Ph (02) 4365 1668 Fax (02) 4367 6555
Email centralcoast@northrop.com.au ABN 81 094 433 100

PROJECT: UNIVERSITY OF NEWCASTLE
PROPOSED CENTRAL COAST CAMPUS
305 MANN ST

DRAWING TITLE: INTERNAL CIVIL WORKS
SOIL & WATER MANAGEMENT
DETAILS

JOB NUMBER: MB221453

DRAWING NUMBER: C_GOA_DWG_ C31.2

REVISION: 5

DRAWING SHEET SIZE = A1

Appendix B – COUNCIL CONSULTATION

Appendix C – CV

Daniel Holland
BEng (Civil) Hons, Dip Civil, CPEng, NER

Principal, Civil Engineer

Daniel joined Northrop in 2007 after graduating with honours from the University of Newcastle.

Originally, Daniel worked with Northrop as a structural engineer. Following an opportunity to work on a multi-million-dollar project as a site civil engineer, Daniel focused his attention on starting our Central Coast Civil section; a section that he still manages today and continues to grow and expand with

A Principal of Northrop, Daniel's hands-on experience throughout his career has given him a unique ability to understand a client's needs, navigate the authority requirements, and develop tailored civil engineering solutions to overcome even the most complex of challenges in a cost-effective and practical manner.

Project Experience

Education
- Meadowbank Education Precinct
- Hunter River Community School, Metford
- Lakes Grammar Anglican School
- Gilroy Catholic College
- Rouse Hill Anglican College

Aged Care
- Casurina Grove, Hamlyn Terrace
- Aged Care Community Housing, Wadalba
- Peninsula Village, Umina
- Rosehill Aged Care Facility Redevelopment
- Uniting Aged Care, Bateau Bay

Health
- Gosford Private Hospital Redevelopment
- Gosford Hospital Mental Health Unit
- Tuggerah Lakes Private Hospital
- Jarrett Street Medical Centre
- Brisbane Water Private Hospital

Industrial
- Livpac Lisarow
- 7 Palm Tree Close, Wyong
- Advantage Avenue, Morisset
- Sanitarium Health & Wellbeing

Hospitality/Clubs
- Central Coast Leagues Club
- Gosford RSL Club
- Shelly Beach Golf Club
- Davistown RSL
- Mingara Club

Community/Recreational
- Adcock Park Redevelopment, Gosford
- Mt. Penang Parklands Redevelopment
- Crusaders Group Camp, Lake Macquarie
- Soldiers and Shelly Beach Surf Clubs

Structural Engineering
- Soldiers and Shelly Beach Surf Club
- Bunnings West Gosford
- Morisset Event Space
- Imperial Shopping Centre Gosford
- Council Drainage Culvert Upgrades

Commercial/Offices
- Bunnings Warehouses (various locations).
- Saddles Café/Restaurant
- Various service stations
- Woolworths Woolgoolga, Wadalba, Lisarow
- Coles Lisarow
- Department of Finance Building, Gosford

Residential Houses
- 115 Avoca Drive, Avoca Beach
- Ravello Apartments, Point Frederick
- Bonython Tower, Gosford
- Albany Apartment York St, East Gosford
- Newcastle East End Redevelopment

Sub-Division
- Kings Estate, Terrigal
- Saratoga Road, Davistown
- Reads Road, Wamberal
- Narara Creek Road, Narara
- Tudibaring Parade, Macmasters Beach