NORTHROP

CIVIL ENGINEERING REPORT: SOIL & WATER MANAGEMENT PLAN

Institute of Applied Technology for Construction

2-44 O'Connell Street, Kingswood NSW 2747

PREPARED FOR

ADCO
L2 7-9 West Street
North Sydney NSW 2060

Tel: (02) 8437 5000

Ref: S202025-02-CR01
Rev: 1
Date: 09.12.21

Civil Engineering Report: Soil & Water Management Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
09.12.2021	1	Preliminary	J. Grinsell	J. Gilligan

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1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by ADCO to prepare the Civil Engineering design and documentation in support of a Construction Certificate for the proposed TAFE NSW Institute of Applied Technology for Construction at 2-44 O'Connell Street, Kingswood.

This report covers the works shown as the Northrop Drawing Package required for the development of the site 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:
    - NE-CI-DWG-C01.13 Specification Notes – Sheet 03
    - NE-CI-DWG-C02.01 Sediment and Soil Erosion Control Plan
    - NE-CI-DWG-C02.11 Sediment and Soil Erosion Control Details
2. NSW Department of Housing Manual, "Managing Urban Stormwater Soil & Construction" 2004 (Blue Book)

1.3 The Development

1.3.1 Precinct and Surrounds

The Institute of Applied Technology for Construction is to be located at the TAFE NSW Kingswood Campus, in the suburb of Kingswood within the Penrith Local Government Area (LGA). The site is located at 2-44 O'Connell Street, Kingswood and legally described at Lot 1 in Deposited Plan (DP) 866081. It has an area of approximately 22 hectares (ha) and is bound by the Great Western Highway to the north and O'Connell Street to the west. The site directly abuts two residential properties to the south and the Western Sydney University, Werrington Campus to the east.

Levels in the northeastern portion of the site fall from approx. RL 56.00 AHD to RL 50.00m AHD at an approximate grade of 5-6% where the proposed building location has been identified. This corresponds to approximately 6.0m difference in elevation. Beyond the potential building locations, the surface falls at a similar grade to northwest towards an existing basin with a permanent pond of water at approx. RL 47.00m AHD.

2. Erosion and Sediment Control

The objectives of the erosion and sediment control for the development site will be 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 Penrith City Council requirements prior to discharge.

As part of the works, the erosion and sedimentation control will need to be provided during the construction phase of the development in accordance with Penrith City Councils requirements and the NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book) - prior to any earthworks commencing on site.

2.1 Sediment Basin

A temporary sediment basin has been designed to capture site runoff during construction and has been located towards the north eastern side of the site, in the lowest point. The construction of the basin will be undertaken in stages to enable maximum runoff capture assisted by diversion swales and direct runoff to the basin.

Calculations to determine the concept design basin size have been based on available geotechnical information regarding soil types and through the use of the Soils and Construction Volume 1 Manual.

To ensure the sediment basin is working effectively it will be maintained throughout the construction works. Maintenance includes ensuring adequate settlement times or flocculation and pumping of clean water to reach the minimum storage volume at the lower level of the settling zone. The settling zone will be identified by pegs to clearly show the level at which design storage capacity is available.

The pumped water from the sediment basin can be reused for dust control during construction.

Overflow weirs are to be provided to control overflows for rainfall events in excess of the design criteria which caters for a storm event up to and including the 1% AEP storm event.

The concept sediment basin sizing is summarised in the table below. Detailed sediment basin sizing, configuration and location shall form part of the Construction Certificate application.

The sediment basin has been located for future conversion into the permanent water quality basin.

2.2 Sediment and Erosion Control Measures

Prior to any earthworks commencing on site, sediment and erosion control measure shall be implemented generally in accordance with the engineering drawings and the "Blue Book". The measures 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 may include:

- A temporary site security/safety fence is to be constructed around the site, the site office area, and the proposed sediment basin.
- 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 inlets pits; and
- The construction of a temporary sediment basin as noted above.
- 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 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.

3. Further Commentary

3.1 SSD Conditions

The Minister for Planning and Open Spaces has provided Conditions of Consent for the proposed development at O'Connell Street, Kingswood. Conditions associated with the Construction Soil and Water Management Plan have been provided below with further commentary for consideration by the Certifying Authority.

B14. The 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.

(Northrop) Please refer to the CV of the designer provided in Appendix C. ADCO are to approach Penrith Council to initiate discussions regarding the proposed measures to control soil erosion and sedimentation during construction including proposed methods of discharging stormwater from the site.

(b) Incorporate the management and mitigation measures contained within the 'Salinity Assessment and Management Plan (Rev A)' prepared by JBS&G Australia and dated 5 February 2021.

(Northrop) Findings from the JBS&G Report are to be adopted by ADCO on site during the works.

(c) Measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site.

(Northrop) A stabilised site access is to be provided with washdown facilities for vehicle access and egress within the development site and at O'Connell Street Gate 2.

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

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

- NE-CI-DWG-C01.13 Specification Notes – Sheet 03
- NE-CI-DWG-C02.01 Sediment and Soil Erosion Control Plan
- NE-CI-DWG-C02.11 Sediment and Soil Erosion Control Details

(e) 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).

Please refer to section 2.3 of the report.

(f) detail all off-Site flows from the Site; and

Once stormwater is collected in the sediment basins and flocculated, clean water is to be discharged to existing site stormwater infrastructure within the development site and / or overland.

(g) 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.

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

- NE-CI-DWG-C01.13 Specification Notes – Sheet 03
- NE-CI-DWG-C02.01 Sediment and Soil Erosion Control Plan
- NE-CI-DWG-C02.11 Sediment and Soil Erosion Control Details

The erosion and sediment control plans have been designed in accordance with the requirements of NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book).

Surface flows generated during storm events up to the 1 in 5-year storm event are directed over land or within the constructed pit and pipe network to the sediment basin. Stormwater runoff that has accumulated in the basin is to be flocculated prior to discharge to the existing stormwater system.

Storm events greater than the 1 in 5 year will still experience flows being directed to the sediment basin however the site will likely become overwhelmed as temporary control measures are not typically sized to cater for such events both in the Blue Book and Council’s requirements. Stormwater will likely overtop the basin and spill to open areas downstream of the works.

Appendix A – Soil & Water Management Plans

NOTE: ALL CIVIL ENGINEERING CONSTRUCTION WORKS TO BE CARRIED OUT IN ACCORDANCE WITH PENRITH CITY COUNCIL DEVELOPMENT GUIDELINES .THE AFOREMENTIONED GUIDELINES INCLUSIVE OF ALL SPECIFICATIONS TAKE PRECEDENCE OVER NOTES PROVIDED BELOW.

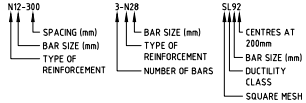
CONCRETE (cont)

17. REINFORCEMENT GRADE AND NOTATION:

SYMBOL	BAR SHAPE	STRENGTH GRADE (MPa)	DUCTILITY CLASS	TO COMPLY WITH AUST. STANDARD
N	DEFORMED RIB BAR	500	NORMAL	AS4671
R	PLAIN ROUND BAR	250	NORMAL	AS4671
RL	RECTANGULAR MESH OF DEFORMED RIB BAR	500	LOW	AS4671
SL	SQUARE MESH OF DEFORMED RIB BAR	500	LOW	AS4671
L-TM	TRENCH MESH	500	LOW	AS4671

ALL REINFORCING BARS SHALL BE GRADE D500N TO AS4671 AND ALL MESH SHALL BE GRADE 500L TO AS4671 U.N.O. CLASS L REINFORCEMENT SHALL NOT BE USED U.N.O.

REINFORCEMENT LABELS:



18. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, AND NOT NECESSARILY IN TRUE PROJECTION. BARS SHOWN ARE INDICATIVE ONLY AND LENGTHS MAY VARY. BEAM ELEVATIONS TAKE PRECEDENCE OVER SECTIONS. SLAB PLANS TAKE PRECEDENCE OVER SECTIONS. REFER TO SECTIONS FOR EXTRA BARS THAT MAY BE REQUIRED.
19. USE ONLY ALL PLASTIC OR CONCRETE CHAIRS AT EXTERNAL SURFACES.
20. SITE BENDING OF REINFORCEMENT BARS SHALL BE DONE WITHOUT HEATING USING A RE-BENDING TOOL. THE BARS SHALL BE RE-BENT AGAINST A FLAT SURFACE OR A PIN WITH A DIAMETER NOT LESS THAN THE MINIMUM PIN SIZE PRESCRIBED IN AS3600-2001.
21. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN POSITIONS SHOWN ON THE STRUCTURAL DRAWINGS OR IN POSITIONS OTHERWISE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER. LAPS SHALL BE IN ACCORDANCE WITH AS3600 SECTION 13 AND NOT LESS THAN THE DEVELOPMENT LENGTH FOR EACH BAR.
22. FOR LAPS IN MESH REFER TO SLAB ON GROUND NOTES.
23. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER
24. AT EXTERNALLY EXPOSED SURFACES NO METALLIC ITEMS INCLUDING FORM BOLTS, FORM SPACERS, METALLIC BAR CHAIRS AND TIE WIRE ARE TO BE PLACED IN THE COVER ZONE.
25. ALL REINFORCEMENT, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION AND INSPECTED BY THE STRUCTURAL ENGINEER PRIOR TO PLACING CONCRETE.
26. HOLD DOWN BOLTS SHALL BE HOT DIPPED GALVANISED.
27. U.N.O, ALL MASONRY ANCHORS INTO CONCRETE SHALL BE RAMSET TRUBOLTS (LONGEST VERSION) OR APPROVED EQUIVALENT. BOLTS SHALL BE GALVANISED WHERE THEY ARE ADJOINING NON FERROUS OR PREPAINTED MEMBERS. PROVIDE STAINLESS STEEL BOLTS FOR ALL EXTERNAL CONDITIONS, OR WHERE EXPOSED TO THE WEATHER.

SAFETY IN DESIGN

THE FOLLOWING ITEMS HAVE BEEN IDENTIFIED AS SAFETY RISKS

- S01 INTERCEPTION OF EXISTING SERVICES
- S02 FALL DURING CONSTRUCTION
- S03 VEHICULAR TRAFFIC
- S04 DEEP TRENCHES

SCOUR PROTECTION ROCK

1. ROCK USED IN THE SCOUR PROTECTION SHALL CONSIST OF MATERIAL WHICH COMPLIES WITH THESE NOTES AND THE DRAWINGS. THIS REQUIREMENT APPLIES TO BOTH IMPORTED ROCK AND IN-SITU ROCK WHICH IS RE-USED.
2. INDIVIDUAL ROCKS SHALL BE FREE FROM CRACKS, CLEAVAGE PLANES, SEAMS AND DEFECTS WHICH WOULD RESULT IN THE BREAKDOWN OF THE ROCK IN SERVICE.
3. ROCK UNITS SHALL BE EITHER SEDIMENTARY RACK ONLY OR IGNEOUS ROCK ONLY AND AS A MINIMUM, SHALL SATISFY THE FOLLOWING CRITERIA:
   - ROCK SHALL BE ROUGH AND ANGULAR
   - ROCK SHALL HAVE A MINIMUM DRY DENSITY OF 2200 kg/m
   - IGNEOUS ROCK SHALL HAVE NO MORE THAN 10% (BY VOLUME) OLIVINE MATERIAL AND SHALL EXHIBIT NO ZONES OF SECONDARY ALTERATION SUCH AS CHLORITISATION. SEDIMENTARY ROCK SHALL HAVE A MINIMUM SODIUM SULPHATE SOUNDNESS WEIGHT LOSS NOT EXCEEDING 25%
   - ROCK SHALL HAVE A SATURATED POINT LOAD STRENGTH INDEX (IS50) NO LESS THAN 5.0 MPa FOR IGNEOUS ROCK AND 1.5 MPa FOR SEDIMENTARY ROCK
   - THE RATIO OF THE MAXIMUM DIMENSION TO THE MINIMUM DIMENSION, MEASURED AT RIGHT ANGLES TO THE MAXIMUM DIMENSION SHALL NOT EXCEED 2.5
4. THE ROCK UNITS SHALL BE PLACED SUCH THAT THE SPECIFIED REQUIREMENTS FOR SIZE, FINISHED SIDE SLOPES, TOP AND TOE LEVELS AND DENSITY REQUIREMENTS, ARE SATISFIED. IN ADDITION, ROCKS SHALL BE WEDGED AND LOCKED TOGETHER SUCH THAT THEY ARE NOT FREE TO MOVE. ROCK UNITS SHALL NOT BE ROLLED OR DROPPED INTO POSITION, THEY SHALL BE PLACED.
5. THE METHOD OF ROCK PLACEMENT SHALL BE SUCH AS TO MINIMISE ITS BREAKDOWN ON HANDLING AND THE PRODUCTION OF FINES.
6. A NON-WOVEN GEOTEXTILE (BIDIM A64 OR EQUIVALENT) SHALL BE PLACED UNDERNEATH AND BEHIND ALL ROCK ARMOUR AND EXTEND 0.5m ABOVE THE EXTENT OF THE WORKS OR AS OTHERWISE SHOWN ON THE DRAWINGS. THE GEOTEXTILE IS TO BE LAID ON A NEATLY TRIMMED BATTER THAT IS FREE OF HOLLOWS OR SHARP OBJECTS.
7. GEOTEXTILE LAYERS SHALL EITHER OVERLAP ON ANOTHER BY 1000mm OR BE SEWN TOGETHER (WITH A NON-BIODEGRADABLE THREAD) WITH AN OVERLAP OF 100mm.
8. ROCK SUB-ARMOUR SHALL BE PLACED UPON THE GEOTEXTILE IN A LAYER NO LESS THAN 150mm THICK UNLESS NOTED OTHERWISE ON DRAWINGS.
9. ROCK ARMOUR SHALL BE SELECTIVELY HAND PLACED UPON THE SUB-ARMOUR TO ENSURE A SNUG FIT SUCH THAT INDIVIDUAL ROCKS ARE NOT TO MOVE. THE PLACING OF ANY ARMOUR ROCK SHALL BE COMPLETED IN SUCH A MANNER TO MINIMISE THE DISTURBANCE OR DISLODGEMENT OF THE SUB-ARMOUR.
10. THE ROCK ARMOUR SHALL BE NO LESS THAN 375mm THICK UNLESS NOTED OTHERWISE ON THE DRAWINGS.
11. THE ARMOUR ROCK AND SUB-ARMOUR ROCK SHALL BE PLACED TO THE CONSTRUCTION TOLERANCES SHOWN ON THE DRAWINGS.
12. AT LEAST FOURTEEN (14) DAYS PRIOR TO THE SUPPLY OF ANY ROCK, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION TO DEMONSTRATE THAT THE ROCK TO BE SUPPLIED COMPLIES WITH THE REQUIREMENTS OF THE SPECIFICATION.

3D INFORMATION DISCLAIMER

PLEASE BE ADVISED 12D DESIGN FILE, IF SUPPLIED, IS DEEMED TO BE AN ACCURATE REFLECTION OF NORTHROP'S DESIGN AT THE TIME OF FINAL DESIGN DEVELOPMENT AND MAY NOT FULLY REFLECT THE DESIGN SURFACE AS PRESENTED. HOWEVER THIS INFORMATION SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO INCORPORATION IN THE CONSTRUCTION WORKS.

YOU ARE FURTHER ADVISED THAT ISSUED HARDCOPY/PDF PLANS AND DOCUMENTS TAKE PRECEDENCE OVER THE SUPPLIED ELECTRONIC INFORMATION AND ANY INCONSTANCIES SHOULD IMMEDIATELY BE REPORTED TO NORTHROP CONSULTING ENGINEERS FOR VERIFICATION PRIOR TO THEIR INCORPORATION IN THE WORKS.

NORTHROP CONSULTING ENGINEERS TAKES NO RESPONSIBILITY FOR USE OF NON-VERIFIED 3D DESIGN INFORMATION USED IN THE WORKS.

THE USE OF THE 3D MODEL INFORMATION SHALL CONSTITUTE ACKNOWLEDGMENT AND ACCEPTANCE OF THE ABOVE STATEMENTS BY THE RECIPIENT.

SOIL & WATER MANAGEMENT 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'). THIS SOIL AND WATER MANAGEMENT PLAN DETAILS THE ACTIONS TO BE TAKEN FOR THE MANAGEMENT AND DEWATERING OF STORMWATER DURING CONSTRUCTION OF THE PROPOSED BUILDING.
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.
14. GROUNDWATER SEEPAGE RATES AND QUALITY TO BE MONITORED AND TREATED IF REQUIRED DURING CONSTRUCTION IN ACCORDANCE WITH REQUIREMENTS OF SUPERVISING GEOTECHNICAL ENGINEER.

BASIN MANAGEMENT NOTES

1. PRIOR TO ANY FORECAST WEATHER EVENT, LIKELY TO RESULT IN SEDIMENT LADEN RUNOFF ON THE SITE, ANY EXISTING DETENTION BASINS/TRAPS SHALL BE DEWATERED TO PROVIDE SUFFICIENT CAPACITY TO CAPTURE SEDIMENT LADEN WATER FROM THE SITE.
2. ANY SEDIMENT LADEN WATER CAPTURED ON-SITE MUST BE TREATED TO ENSURE IT WILL ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES PRIOR TO ITS RELEASE FROM SITE. A SAMPLE OF THE RELEASED TREATED WATER MUST BE KEPT ON-SITE IN A CLEAR CONTAINER WITH THE SAMPLE DATE RECORDED.
3. NO ALUMINIUM BASED PRODUCTS MAY BE USED TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) ON-SITE WITHOUT THE PRIOR WRITTEN PERMISSION FROM AN APPROPRIATE COUNCIL OFFICER. THE APPLICANT MUST HAVE DEMONSTRATED ABILITY TO USE SUCH PRODUCTS CORRECTLY AND WITHOUT ENVIRONMENTAL HARM PRIOR TO ANY APPROVAL.
4. THE CHEMICAL/AGENT (FLOCCULATING/COAGULANTS) USED IN TYPE D AND TYPE F BASINS TO TREAT TURBID WATER CAPTURED IN THE BASIN MUST BE APPLIED IN CONCENTRATIONS SUFFICIENT TO ACHIEVE COUNCIL'S WATER QUALITY OBJECTIVES (TSS < 50mg/L, TURBIDITY < 60 NTU, 6.5 < pH < 8.5) WITHIN THE 5-DAY RAINFALL DEPTH USED TO CALCULATE THE CAPACITY OF THE BASIN, AFTER A RAINFALL EVENT.
5. ALL MANUFACTURERS INSTRUCTIONS MUST BE FOLLOWED FOR THE USE OF ANY CHEMICALS/AGENTS USED ON-SITE, EXCEPT WHERE APPROVED BY THE RESPONSIBLE PERSON OR AN APPROPRIATE COUNCIL OFFICER.
6. SUFFICIENT QUANTITIES OF CHEMICALS/AGENTS TO TREAT TURBID WATER (FLOCCULATING/COAGULANTS) MUST BE PLACED SUCH THAT WATER ENTERING THE BASINS/SEDIMENT TRAP MIXES WITH THE CHEMICALS/AGENTS AND IS CARRIED INTO THE BASIN/TRAP.
7. ANY BASIN MUST BE DEWATERD AS SOON AS PRACTICAL, ONCE WATER CAPTURED IN THE BASIN ACHIEVES COUNCIL'S WATER QUALITY OBJECTIVES.
8. INSPECT THE SEDIMENT BASINS AFTER EACH RAINFALL EVENT AND/OR WEEKLY. ENSURE THAT ALL SEDIMENT IS REMOVED ONCE THE SEDIMENT STORAGE ZONE IS FULL. ENSURE THAT OUTLET AND EMERGENCY SPILLWAY WORKS ARE MAINTAINED IN A FULLY OPERATIONAL CONDITION AT ALL TIMES.

B

DRAWN: C. PASKE
DESIGNED: T. BUGAEV
JOB MANAGER: J. GILLIGAN
VERIFIER: .

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR CROWN DESIGN VERIFICATION CERTIFICATE	JO		JG	18.11.21
B	RE-ISSUED FOR CROWN DESIGN VERIFICATION CERTIFICATE	JO		JG	29.11.21

CLIENT: NSW GOVERNMENT TAFE NSW
DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

BUILDER: ADCO

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.
THIS DRAWING MAY HAVE BEEN PREPARED USING COLOUR, AND MAY BE INCOMPLETE IF COPIED TO BLACK & WHITE

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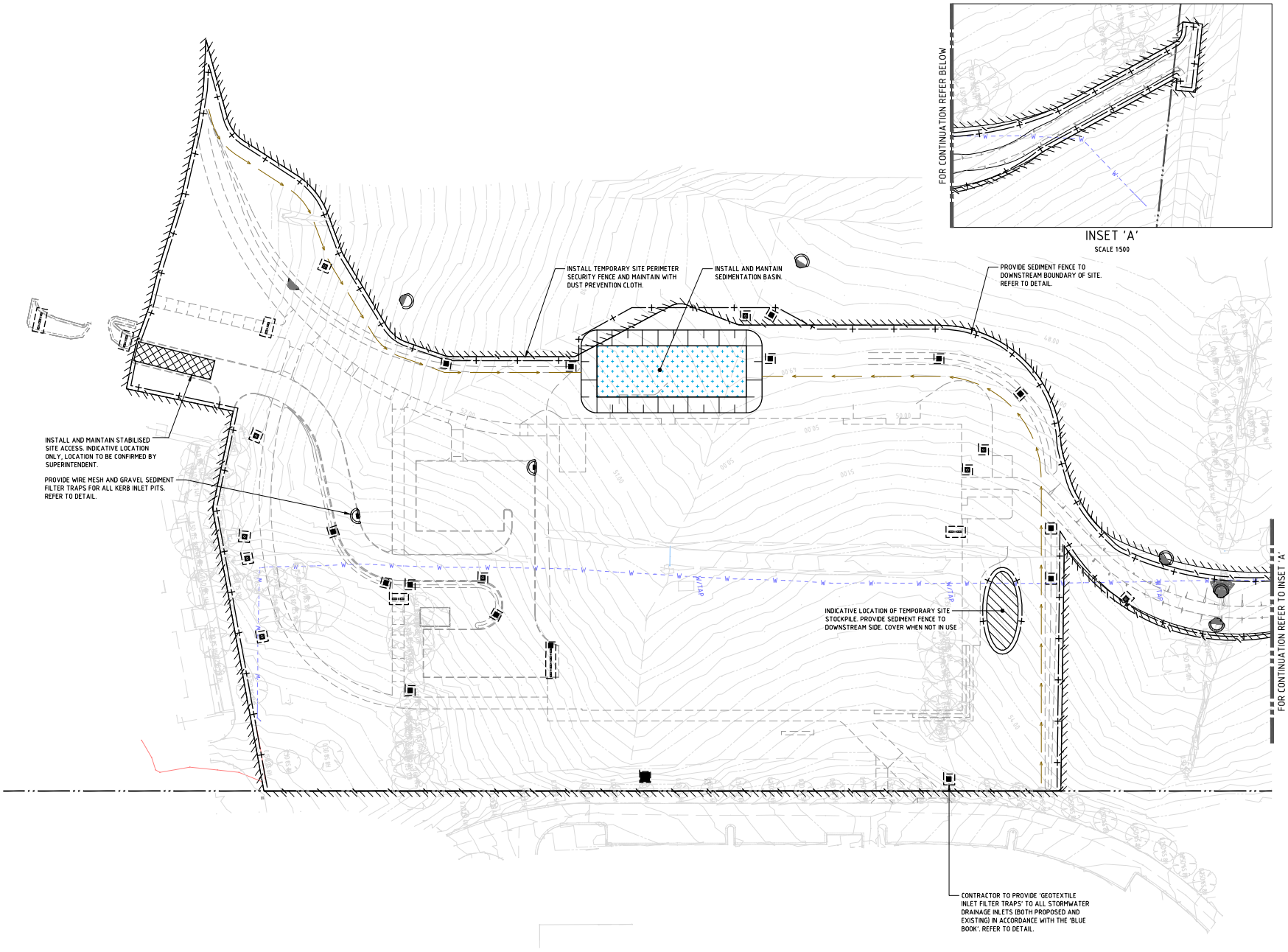
PROJECT: INSTITUTE OF APPLIED TECHNOLOGY FOR CONSTRUCTION
12-44 O'CONNELL ST, KINGSWOOD NSW 2747

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SPECIFICATION NOTES - SHEET 03

DRAWING NUMBER: NE-CI-DWG-C0-01.13
JOB NUMBER: 202025
REVISION: B
DRAWING SHEET SIZE = A1



LEGEND

- PROPOSED BOUNDARY LINE
- LIMIT OF WORKS
- EXISTING CONTOURS
- SEDIMENT FENCE
- SECURITY FENCE
- MESH AND GRAVEL INLET FILTER
- GEOTEXTILE INLET FILTER
- STABILISED SITE ACCESS
- STOCKPILE
- SEDIMENT BASIN
- TEMPORARY SWALE

SITE PARAMETERS

CONSTRAINT	VALUE
TOTAL DISTURBED AREA (Ha)	2.7
SOIL TEXTURE GROUP	F
DESIGN RAINFALL DEPTH (DAYS)	5.0
DESIGN RAINFALL DEPTH (PERCENTILE)	80.0
X-DAY,Y-PERCENTILE RAINFALL EVENT	27.4
Cv	0.4
SETTLING ZONE VOLUME (m^3)	305
SEDIMENT STORAGE VOLUME (m^3)	152
TOTAL BASIN VOLUME (m^2)	457

DRAWN: C. PASKE
DESIGNED: T. BUGAEV
JOB MANAGER: J. GILLIGAN
VERIFIER: .

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR CROWN DESIGN VERIFICATION CERTIFICATE	JO		JG	18.11.21

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

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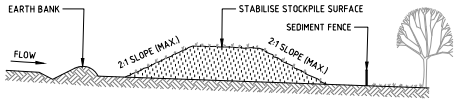
PROJECT: INSTITUTE OF APPLIED TECHNOLOGY FOR CONSTRUCTION
12-44 O'CONNELL ST, KINGSWOOD NSW 2747

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SEDIMENT AND SOIL EROSION CONTROL PLAN

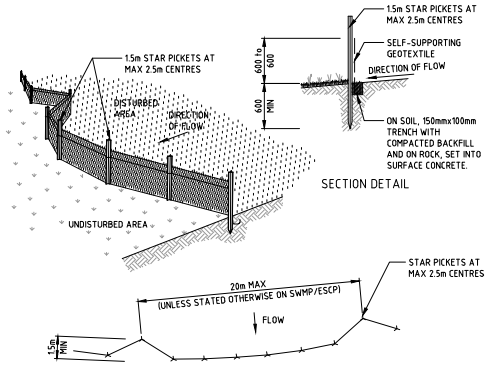
DRAWING NUMBER: NE-CI-DWG-C0-02.01
JOB NUMBER: 202025
REVISION: A
DRAWING SHEET SIZE = A1



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.

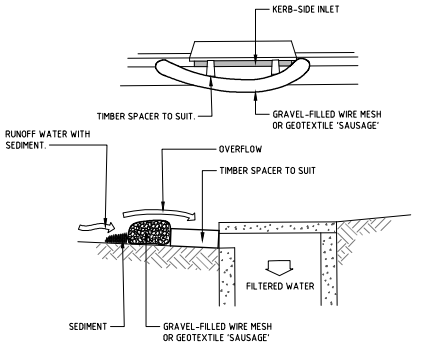
STOCKPILES (SD 4-1)



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)

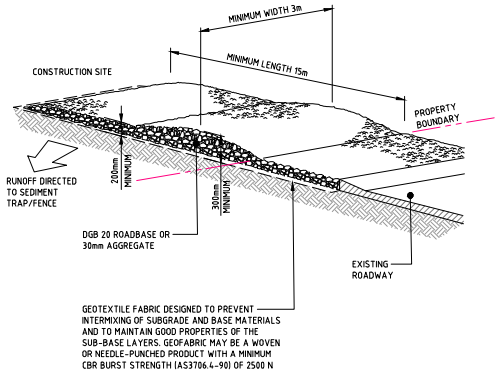


NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN APPROVED SWMP/ESCP.

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.

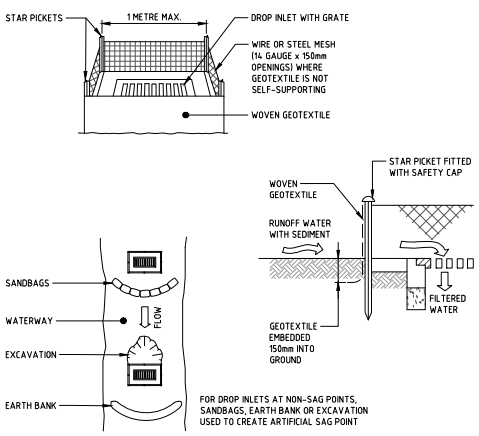
MESH AND GRAVEL INLET FILTER (SD 6-11)



CONSTRUCTION NOTES

1. 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.

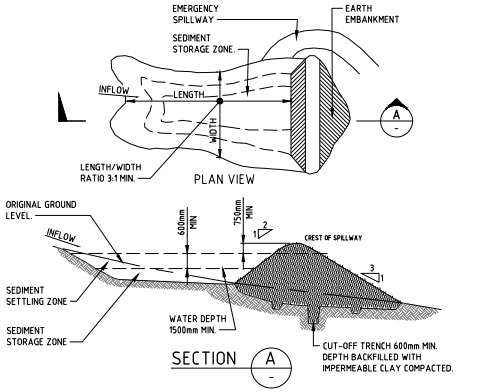
STABILISED SITE ACCESS (SD 6-14)



CONSTRUCTION NOTES

1. 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. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. CONSTRUCT A CUT-OFF TRENCH 500mm DEEP AND 1200mm WIDE ALONG THE CENTRELINE OF THE EMBANKMENT EXTENDING TO A POINT ON THE GULLY WALL LEVEL WITH THE RISER CREST.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL FOLLOWING THE SWMP THAT IS FREE OF ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100mm TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100mm TO 150mm LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. CONSTRUCT THE EMERGENCY SPILLWAY.
8. REHABILITATE THE STRUCTURE FOLLOWING THE SWMP.

(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)

EARTH BASIN - WET

DRAWN: C. PASKE
DESIGNED: T. BUGAEV
JOB MANAGER: J. GILLIGAN
VERIFIER: .

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR CROWN DESIGN VERIFICATION CERTIFICATE	JO		JG	18.11.21

CLIENT: NSW GOVERNMENT, TAFE NSW

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

BUILDER: ADCO

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE COMMENCING WORK.
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NOT TO SCALE

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PROJECT: INSTITUTE OF APPLIED TECHNOLOGY FOR CONSTRUCTION
12-44 O'CONNELL ST, KINGSWOOD NSW 2747

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
SEDIMENT AND SOIL EROSION CONTROL DETAILS

DRAWING NUMBER
JOB NUMBER 202115
REVISION A
DRAWING SHEET SIZE = A1

Appendix B – CV

James Gilligan

Associate | Senior Civil Engineer

BE (Civil) MIEAust CPEng NER

James is a Senior Civil Engineer with over 14 years' experience managing and delivering buildings and complex civil infrastructure projects requiring design from the concept phase through to construction and post construction stages.

James also has particular experience in project management and contract administration. James' technical background includes civil design of utilities, earthworks, stormwater and roads for subdivision and buildings projects across all types of development including Education, Residential, Commercial & Industrial.

Project Experience

Urban Redevelopment

- St Leonards South Precinct
- Frasers Central Park, Broadway
- Tailors Walk, Pemberton Street, Botany
- 150 Epping Road, Lane Cove
- Glebe Affordable Housing Project, Glebe
- Altrove Stage 7 & 9, Schofields
- Airds Subdivision Works, Airds
- Pemulwuy Southern Lands, Pemulwuy
- Stellar Apartments, Ryde
- 10 Hall Street, Bondi
- McEvoy Street, Waterloo

Public Domain and Open Spaces

- Endeavour Energy Southern Carpark, Huntingwood
- Windsor Station Bus Interchange, Windsor
- Waterfall Station Easy Access Upgrade
- New Acton South Carpark, Canberra
- Elara Neighbourhood Centre, Elara
- Hurstville Bus Interchange, Hurstville
- Twin Creeks Golf Club, Luddenham
- Croom Regional Sporting Complex, Croom

Infrastructure / Utilities Coordination

- Southern Sydney Freight Line
- Northwest Rail Link
- Sydney International Airport – Stage 2B

Health

- Manly AYAH
- Bungarribee House Relocation, Blacktown
- Bunya Facility, Blacktown
- Cumberland West Mental Health Facility
- Westmead Mental Health Facility

Commercial / Industrial

- Ingram Micro Warehouse
- Goodyear Warehouse
- 1-5 Interchange Drive, Eastern Creek
- 2-4 Interchange Drive Eastern Creek
- 9-11 Interchange Drive, Eastern Creek
- 17-19 Interchange Drive, Eastern Creek
- 21-23 Interchange Drive, Eastern Creek
- Bunnings Distribution Centre, Eastern Creek
- Basalt Road, Greystanes
- Blum Australia Warehouse, Hoxton Park
- Masters Home Improvement, Penrith
- Masters Home Improvement Wagga Wagga
- AMP Shopping Centre, Glenmore Park
- Kingsford Smith Distribution Centre, Mascot
- Danks Hardware Distribution Centre

Education

- Edmondson Park Primary School
- Galungara Public School
- Jordan Springs Public School
- Catherine Field Public School
- East Leppington Public School
- Estella Public School
- Googong Public School
- Murrumbateman Public School
- Westmead Catholic College
- St Joseph's College, Hunters Hill
- Barker College Junior School and Early Learning Centre
- Kingswood TAFE
- Meadowbank TAFE
- Western Sydney University, Westmead

Appendix C - Consultation Record