NORTHROP

CIVIL ENGINEERING REPORT: CONSTRUCTION SOIL & WATER MANAGEMENT SUB PLAN

New High School in Edmondson Park

145 Buchan Road, Edmondson Park

SSD - 62028458

PREPARED FOR
Richard Crookes Constructions
Level 3, 4 Broadcast Way,
Artarmon NSW 2064

Ref: EPHS-NR-ZZ-RPT-CC-04
Rev: 4

Date: 2.12.24

Civil Engineering Report: Construction Soil & Water Management Sub - Plan

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
25.10.24	1	Preliminary Issue	N.Sutherland	N.Sutherland
30.10.24	2	Final Issue	N.Sutherland	N.Sutherland
20.11.24	3	Final Issue	N.Sutherland	N.Sutherland
2.12.24	4	Final Issue	N.Sutherland	N.Sutherland

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1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Richard Crookes Constructions to prepare the Civil Engineering design and documentation in support of a Construction Certificate for the New High School at Edmondson Park, NSW. This report addresses the construction soil and water management sub-plan as outlines in SSD 62028458, condition B16 and B13 (iii).

This report covers the works shown on the Northrop Drawing Package required for 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:
   - EPHS-NR-ZZ-GF-DR-C-0001 Specification Notes Sheet 01
   - EPHS-NR-ZZ-GF-DR-C-0101 Legends
   - EPHS-NR-ZZ-GF-DR-C-1001 Sediment and Soil Erosion Control Plan
   - EPHS-NR-ZZ-GF-DR-C-1101 Sediment and Soil Erosion Control Details – Sheet 01
   - EPHS-NR-ZZ-GF-DR-C-1102 Sediment and Soil Erosion Control Details – Sheet 02
2. NSW Department of Housing Manual, “Managing Urban Stormwater Soil & Construction” 2004 (Blue Book)
3. City of Liverpool Council’s DCP.
4. Environmental Management Plan Guidelines: Guideline for Infrastructure Projects (DPIE April 2020)

1.3 SSD Requirements

The table below demonstrates SSD - -62028458 conditions which have been addressed in this report.

Condition	Conditions Requirements	Document/Sub-Plan Reference
B16 - CSWMSP	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) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;	Refer Section 2
	(c) 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 and Construction (4th edition, Landcom 2004) commonly refeered to as the “Blue Book”	Refer Section 3.1

Condition	Conditions Requirements	Document/Sub-Plan Reference
	(d) direct all sediment laden water in overland flow away from the leachate management system and prevent cross contamination of clean and sediment or leachate laden water.	
	(e) provide a plan of how all construction works will be managed in a wet-weather events (ie storage of equipment, stabilization of the site)	Refer Section 2.3
	(f) detail all off-site flows from the Site; and	Refer Section 3.1
	(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 1-year ARI, 1 in 5-year ARI and 1 in 100-year ARI.	Refer Section 3.1
B13 (CEMP)	(iii) management of dust and odour to protect the amenity of the neighbourhood	Refer Section 2.2
C23 (Disposal of Seepage and Stormwater)	Adequate provisions must be made to collect and discharge stormwater drainage during construction. The prior written approval of Council must be obtained to connect or discharge site stormwater to Council's stormwater drainage system or street gutter.	Refer Section 2

1.4 The Development

1.4.1 Precinct and Surrounds

The subject site is located within the suburb of Edmondson Park which is within City of Liverpool Council - Local Government Area (LGA).

The site is located at 145 Buchan Avenue, Edmondson Park. There is a newly constructed Primary School to the West and proposed residential development to the east. The site is a greenfield site with little vegetation other than shrubs and grass. There is an existing dam located within the north - western area of the site. Generally the site falls from the south-western corner (approx..RL70) to the north eastern corner (approx.. RL56).

1.4.2 Proposed Development

The new school consists of the following;

- 40 classrooms including 3 support learning classrooms
- Science Learning Hub
- Physical Education + Fitness Hub
- Performing Arts Hub
- Food + Textile Hub
- Wood Technology Hub
- Staff Study
- Gymnasium
- Canteen
- Library
- Lecture Theatre
- 2 Accessible lifts
- Landscaping and Carpark

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 The Department of Planning, Housing and Infrastructure'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

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.

Refer Appendix B for the concept sediment basin calculations.

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 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, 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, where left exposed for a period of over 2 weeks.
- 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 in Section 2.1;
- Stabilised site access at the construction vehicle entry/exits.
- Wash down bays which are bunded.

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.

2.3 Dam De-watering

De-watering of the existing dam is required during site preparation, which should be undertaken generally in accordance with the following;

- Prior to de-watering, an Ecologist is to be present to conduct the removal of any native fauna
- Pump out ponded water to an approved area
- Prior to discharging the water, assessment is to be undertaken to confirm suitability of the disposal method and approval.
- Strip all vegetation and saturated silt and clay material to expose the underlying stiff clay or rock.
- Remove any embankment filled areas
- Bench the exposed surface to facilitate near horizontal fill placement.
- Test and roll the exposed surface in the presence of geotechnical engineer to determine if over-excavation is required and replace with compacted material.
- Place and compact approved filling in accordance with the Geotechnical Report

The remaining bulk earthworks methodology is to be undertaken in accordance with the Geotechnical report prepared by JK Geotechnics, report number 35730BTrpt1rev1, dated 4th December 2023.

2.4 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 outlines wet weather management through providing stabilised temporary swales, hay bales and sediment basin.

3. Further Commentary

3.1 SSD Conditions

The Department of Planning, Housing and Infrastructure has provided Conditions of Consent for the new Edmondson Park High School, 145 Buchan Avenue, Edmondson Park. Conditions associated with the Construction Soil and Water Management Sub- Plan have been provided below with further commentary for consideration by School Infrastructure NSW and the Certifying Authority.

B16. The Construction Soil and Water Management Plan Sub-Plan (CSWMSP) must address, but not be limited to the following:

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

(b) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;

(c) 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';

(d) direct all sediment laden water in overland flow away from the leachate management system and prevent cross contamination of clean and sediment or leachate laden water;

(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);

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

(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 and 1 in 100-year ARI.

B13. (CEMP) (iii) management of dust and odour to protect the amenity of the neighbourhood

C23 - Disposal of Seepage and Stormwater
Adequate provisions must be made to collect and discharge stormwater drainage during construction. The prior written approval of Council must be obtained to connect or discharge site stormwater to Council's stormwater drainage system or street gutter.

Northrop Commentary

The following comments have been provided with respect to Condition B16 for consideration by School Infrastructure NSW and the Certifying Authority.

Northrop Commentary

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

(b) Please refer Section 2 of this report and associated civil engineering drawings in Appendix A. Specifically, our drawings include a temporary site access with cattle grids (in accordance with 'the Blue Book") and a section of sealed hardstand, plus wheel washing before vehicles exiting the site to facilitate cleaning of any remaining silt.

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

- EPHS-NR-ZZ-GF-DR-C-0001 Specification Notes Sheet 01
- EPHS-NR-ZZ-GF-DR-C-0101 Legends
- EPHS-NR-ZZ-GF-DR-C-1001 Sediment and Soil Erosion Control Plan
- EPHS-NR-ZZ-GF-DR-C-1101 Sediment and Soil Erosion Control Details – Sheet 01
- EPHS-NR-ZZ-GF-DR-C-1102 Sediment and Soil Erosion Control Details – Sheet 02

(d) Please refer to Section 2.2 and the associated Civil Engineering drawings which show temporary swales to divert the site stormwater runoff to a sediment basin proposed to be located at the lowest point of the site.

(e) Please refer to section 2.4 of the report. Specifically our sediment and erosion control plan includes measures such as the following;

- Treatment for stockpile
- Diversion of runoff through temporary swales and hay bales to flow into the sediment basin
- De-watering of excess pooling of water

(f) 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. From here, clean water is conveyed in the Council owned stormwater infrastructure away from the site. Mitigation of off-site flows are provided such as hay bales, filters over stormwater pits and sediment basin sized in accordance with 'The Blue Book'

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

- EPHS-NR-ZZ-GF-DR-C-0001 Specification Notes Sheet 01
- EPHS-NR-ZZ-GF-DR-C-0101 Legends
- EPHS-NR-ZZ-GF-DR-C-1001 Sediment and Soil Erosion Control Plan
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- EPHS-NR-ZZ-GF-DR-C-1102 Sediment and Soil Erosion Control Details – Sheet 02

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) and Blacktown City Council's Engineering Design Specifications. Measures include a sediment basin, stormwater pit filters, hay bales, temporary swales and temporary site access.

Surface flows generated during storm events up to the 1 in 10-year storm event are directed overland via temporary swales to the temporary sediment basin. Stormwater runoff that has accumulated in the basin is to be flocculated prior to discharge to the existing

stormwater system. This procedure is to be implemented after each major rainfall event.

Storm events greater than the 1 in 10 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 City of Liverpool Council's requirements. The temporary sediment basin level is to be constructed above the 1% AEP flood level to ensure inundation does not occur on site. Stormwater will likely overtop the basin and spill to areas downstream of the works within the broader site area.

B13 (iii) Please refer to Section 2.2 and associated drawings. Dust control measures including covering stockpiles, installing fence hessian and watering exposed areas, where left exposed for a period of over 2 weeks. These are measures to be implemented to manage the dust and odours to protect the amenity to the neighbourhood.

C23 Adequate provisions have been designed to collect and discharge stormwater drainage during construction. This includes temporary swales to a sediment basin. After flocculation, the clean water is then discharged appropriately. Council's approval will be obtained prior to discharging to their kerb and gutter or stormwater infrastructure.

Appendix A – Soil & Water Management Plans

SURVEY

1. SURVEY SUPPLIED BY: VINCE MORGAN (SURVEYORS) PTY LTD
   - 1.1. REF. NUMBER: 23056-T3
   - 1.2. DRAWING TITLE: DETAIL & CONTOUR SURVEY
   - 1.3. REVISION DATE: 09.09.2022
   - 1.4. REVISION: C
   - 1.3. GEOCENTRIC DATUM OF AUSTRALIA: MGA56; GDA94
   - 1.4. SURVEYOR: M. PERKINS
   - 1.5. APPROVED: M. PERKINS
2. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
3. NORTHROP TAKE NO RESPONSIBILITY FOR THE ACCURACY AND/OR USE OF THIS SURVEY AND ITS CONTENTS.

TREE PROTECTION

1. REFER TO LANDSCAPE / ARCHITECTS PLAN FOR TREES TO BE RETAINED AND PROTECTED.
2. ANY EXISTING/PROPOSED TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN SHALL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY;
   - 2.1. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.
   - 2.2. ENSURING THAT NOTHING IS NAILED TO ANY PART OF THE TREE.
   - 2.3. CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY. COUNCILS AND/OR INDEPENDENT ARBORISTS TO BE CONSULTED WHERE TREE ROOTS ARE TO BE REMOVED AND/OR CUT.

EXISTING SERVICES

1. ALL UTILITY SERVICES INDICATED ON THE DRAWINGS ORIGINATE FROM SUPPLIED DATA OR DIAL BEFORE YOU DIG SEARCHES, THEREFORE THEIR ACCURACY AND COMPLETENESS IS NOT GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE AND CONFIRM THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY. NOTE SERVICE AUTHORITY REQUIREMENTS FOR LOCATING OF SERVICES PRIOR TO COMMENCEMENT OF WORKS.
2. CARE TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATION, GAS OR ELECTRICAL SERVICES. HAND EXCAVATION ONLY IN THESE AREAS.
3. THE CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING SERVICES THAT ARE TO BE RETAINED IN THE VICINITY OF THE PROPOSED WORKS. ANY AND ALL DAMAGE TO THESE SERVICES AS A RESULT OF THESE WORKS SHALL BE REPAIRED BY THE CONTRACTOR UNDER THE DIRECTION OF THE SUPERINTENDENT AT THE CONTRACTORS EXPENSE.
4. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE ADJUSTMENT (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS.
5. THE CONTRACTOR SHALL ALLOW IN THE PROGRAM FOR THE CAPPING OFF, EXCAVATION AND REMOVAL (IF REQUIRED) OF EXISTING SERVICES IN AREAS AFFECTED BY WORKS UNLESS DIRECTED OTHERWISE ON THE DRAWINGS OR BY THE SUPERINTENDENT.
6. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS ARE NOT AFFECTED BY THE WORKS AND ARE MAINTAINED AND NOT DISRUPTED.
7. PRIOR TO COMMENCEMENT OF ANY WORKS THE CONTRACTOR SHALL GAIN APPROVAL OF THE PROGRAM FOR THE RELOCATION AND/OR CONSTRUCTION OF TEMPORARY SERVICES AND FOR ANY ASSOCIATED INTERRUPTION OF SUPPLY.
8. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT.
9. THE CONTRACTOR IS TO ALLOW TO POTHOLE ANY SERVICES WITHIN A PUBLIC RESERVE WITHIN THE EXTENT OF WORKS (E.G. STORMWATER CROSSINGS).

ACCESS AND SAFETY

1. THE CONTRACTOR SHALL COMPLY WITH ALL STATUTORY AND INDUSTRIAL REQUIREMENTS FOR PROVISION OF A SAFE WORKING ENVIRONMENT INCLUDING TRAFFIC CONTROL.
2. THE CONTRACTOR SHALL PROVIDE TRAFFIC MANAGEMENT PLANS FOR THE PROPOSED WORKS COMPLETED BY A SUITABLY QUALIFIED PERSON AND APPROVED BY COUNCIL / REGULATORY AUTHORITY. WORK IS NOT TO COMMENCE ON SITE PRIOR TO APPROVAL OF TRAFFIC MANAGEMENT SCHEME.
3. THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES ACCESS TO BUILDINGS ADJACENT THE WORKS IS NOT DISRUPTED.
4. WHERE NECESSARY THE CONTRACTOR SHALL PROVIDE SAFE PASSAGE OF VEHICLES AND/OR PEDESTRIANS THROUGH OR BY THE SITE.
5. THE CONTRACTOR SHALL ENSURE PUBLIC ACCESS EXTERNAL TO THE SITE IS IN ACCORDANCE WITH COUNCILS / AUTHORITY / SITE MANAGERS REQUIREMENTS.

SEDIMENT AND SOIL EROSION

1. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCILS AND OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE PAYMENT OF ALL FEES.
2. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY LANDCOM AND COUNCILS POLICIES. THESE MEASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
3. THE CONTRACTOR SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS AND ADHERE TO ALL REGULATORY AUTHORITY REQUIREMENTS.
4. THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSTREAM LANDS AND WATERWAYS.
5. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE;
   - 5.1. CONSTRUCT TEMPORARY STABILISED SITE ACCESS INCLUSIVE OF SHAKE DOWN / WASH PAD.
   - 5.2. INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ADJACENT EACH OTHER, THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE.
   - 5.3. INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.
6. UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
7. AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE UNPROTECTED AREAS WILL BE STABILISED / KEPT MOIST (NOT WET) TO KEEP DUST UNDER CONTROL ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT BEEN FILTERED OUT.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
11. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING RAIN EVENTS.
12. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. CONTRACTOR TO PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.
13. IF A TEMPORARY SEDIMENT BASIN IS REQUIRED, ENSURE SAFE BATTER SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MAINTAIN ADEQUATE STORAGE VOLUME IN ACCORDANCE WITH PLANS. TEMPORARY PUMP 'CLEAN FLOCCULATED' WATER TO AUTHORITIES STORMWATER SYSTEM. ENSURE WHOLE DISTURBED SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

SEDIMENT BASIN MANAGEMENT

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 DEWATERED 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.

LANDSCAPING

1. REFER TO DRAWINGS BY OTHERS FOR DETAILS OF PROPOSED LANDSCAPING TREATMENT.
2. IF NO LANDSCAPING PLANS EXIST OR PLANS DO NOT SPECIFY GENERAL SURFACE STABILISATION THEN ALL DISTURBED SURFACE TO BE TEMPORARILY STABILISED WITH HYDROMULCH UPON COMPLETION OF WORKS.

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.

DRAWN: W. DODIC DESIGNED: N. SUTHERLAND JOB MANAGER: N. SUTHERLAND VERIFIER:

NOT FOR CONSTRUCTION

REV	DESCRIPTION	ISS'D	VER'D	APP'D	DATE
01	ISSUED FOR APPROVAL	WD		NS	25.10.24

ARCHITECT

NBRS

BUILDER

RICHARD CROOKES CONSTRUCTIONS

CLIENT

NSW GOVERNMENT Education School Infrastructure

PROJECT

EDMONDSON PARK HIGH SCHOOL

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

NOT TO SCALE

DRAWING TITLE

CIVIL ENGINEERING PACKAGE SPECIFICATION NOTES - SHEET 01

JOB NUMBER

SY241208

DRAWING SHEET SIZE = A1

DRAWING NO

EPHS-NRE-00-GF-DR-C-0001

REV

01

SEDIMENT AND SOIL EROSION CONTROL

LEGEND

- PROPOSED BOUNDARY ADJUSTMENT
- EXISTING BOUNDARY LINE
- EASEMENT LINE
- REDUNDANT BOUNDARY LINE
- BUILDING OUTLINE
- EXISTING CONTOURS
- EXISTING STORMWATER
- SEDIMENT FENCE
- SECURITY FENCE
- SITE ACCESS - LOCKABLE CHAINWIRE GATE TO BE INSTALLED TO ALL SITE ACCESS WAY. TYPICAL.
- WIRE MESH AND GRAVEL SEDIMENT FILTER
- STRAW BALE FILTER
- GEOTEXTILE INLET FILTER TRAP
- DRAINAGE SWALE
- STABILISED SITE ACCESS
- STOCKPILE
- SEDIMENT BASIN
- WHEEL WASH STATION WITH BUND

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. ALL PITS OPEN TO ATMOSPHERE TO BE PROTECTED IN ACCORDANCE WITH THE 'BLUE BOOK'

DRAWN: W. DODIC DESIGNED: N. SULTHERLAND JOB MANAGER: N. SUTHERLAND VERIFIER:

NOT FOR CONSTRUCTION

REV	DESCRIPTION	ISS'D	VER'D	APP'D	DATE
01	ISSUED FOR APPROVAL	WD		NS	25.10.24

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RICHARD CROOKES CONSTRUCTIONS

CLIENT
NSW GOVERNMENT Education School Infrastructure

PROJECT
EDMONDSON PARK HIGH SCHOOL

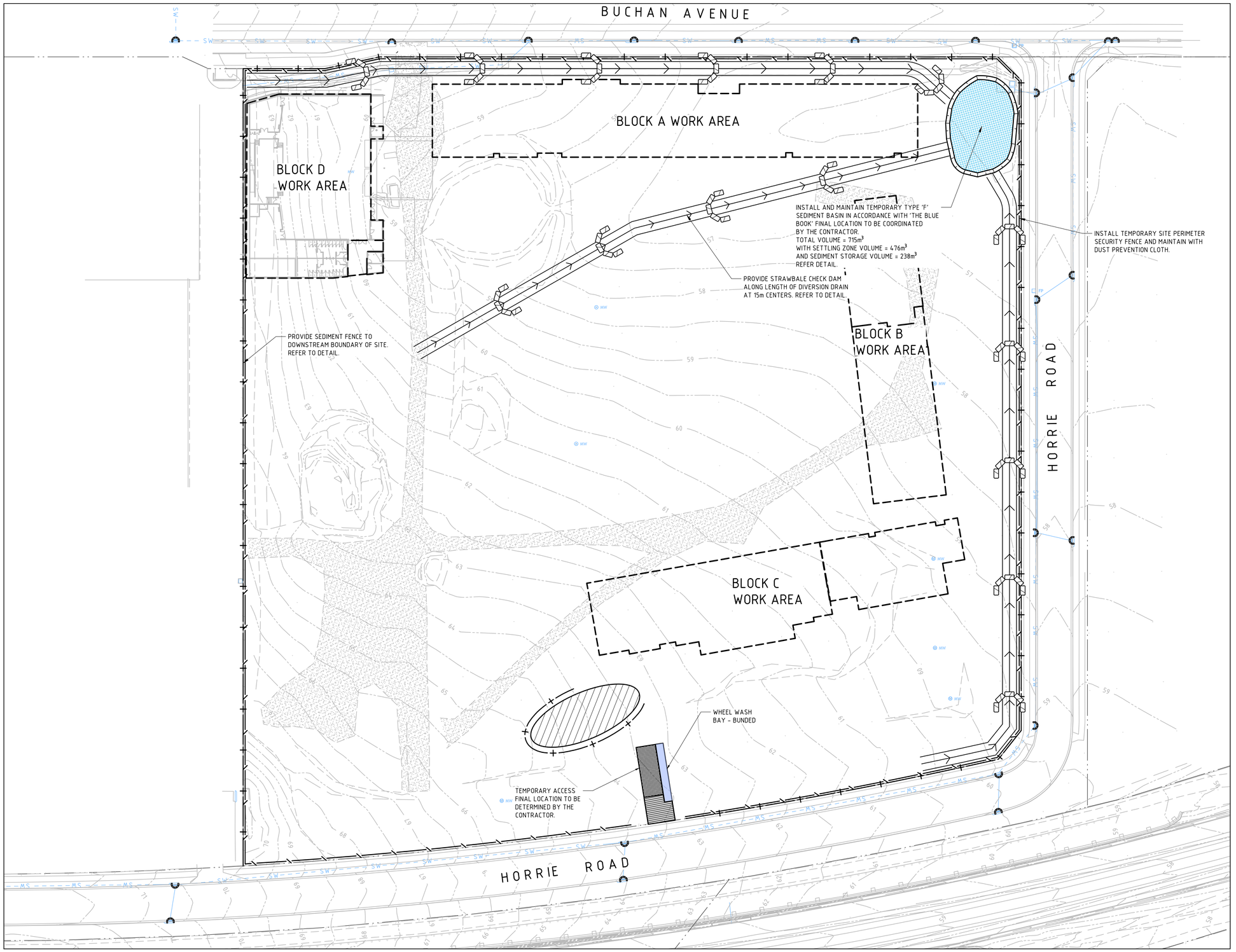
NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

NOT TO SCALE

DRAWING TITLE
CIVIL ENGINEERING PACKAGE LEGENDS

JOB NUMBER
SY241208
DRAWING SHEET SIZE = A1

DRAWING NO
EPHS-NRE-00-GF-DR-C-0101
REV
01



DESIGNED: N. SUTHERLAND
DRAWN: W. DODIC
JOB MANAGER: N. SUTHERLAND
VERIFIER:

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01	ISSUED FOR APPROVAL	WD		NS	25.10.24

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

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

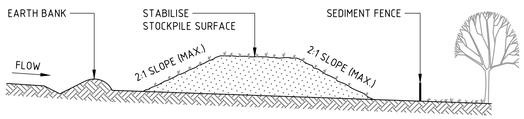
DRAWING TITLE
CIVIL ENGINEERING PACKAGE SEDIMENT AND SOIL EROSION CONTROL PLAN

JOB NUMBER
SY241208
DRAWING SHEET SIZE = A1

DRAWING NO
EPHS-NRE-00-GF-DR-C-1001

REV
01

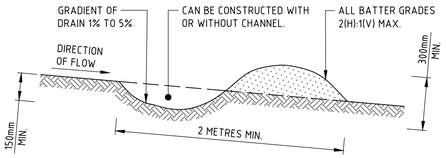
Plotted: 1:250 PM July 24 Projects\sydney\2024 Jobs\SY241208 - Edmondson Park High School\Drawings\Civil\C3D\SHEETS\EPHS-NRE-00-GF-DR-C-1001.dwg



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

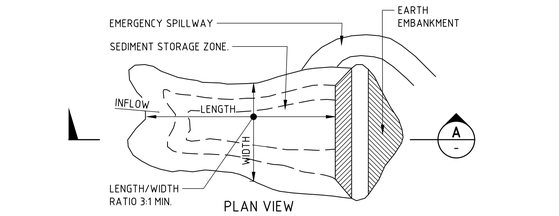


CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 AND 5 PERCENT.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

NOTE: ONLY TO BE USED AS TEMPORARY BANK
WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

DRAINAGE SWALE - LOW FLOW

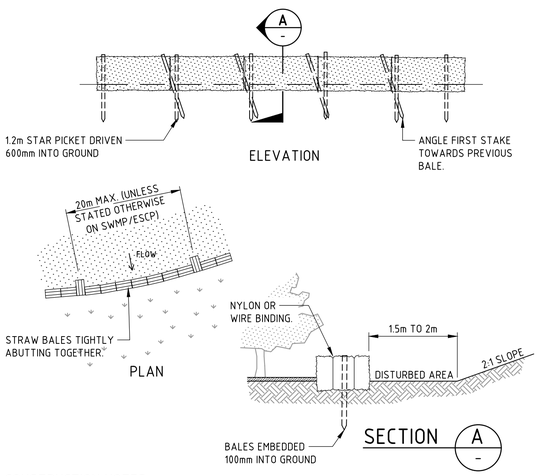


CONSTRUCTION NOTES

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)

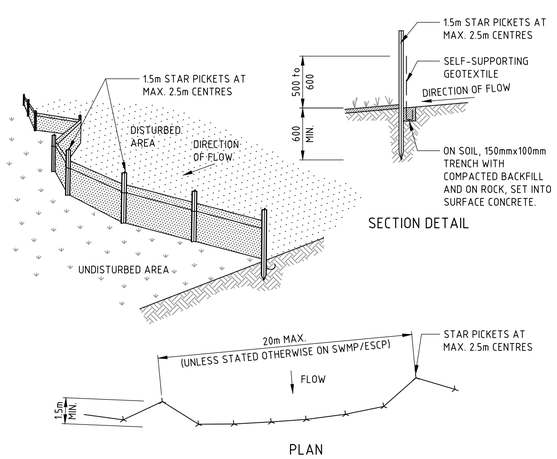
EARTH SEDIMENT BASIN - WET



CONSTRUCTION NOTES

1. CONSTRUCT THE STRAW BALE FILTER AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE.
2. PLACE BALES LENGTHWISE IN A ROW WITH ENDS TIGHTLY ABUTTING. USE STRAW TO FILL ANY GAPS BETWEEN BALES. STRAWS ARE TO BE PLACED PARALLEL TO GROUND.
3. ENSURE THAT THE MAXIMUM HEIGHT OF THE FILTER IS ONE BALE.
4. EMBED EACH BALE IN THE GROUND 75mm TO 100mm AND ANCHOR WITH TWO 1.2 METRE STAR PICKETS OR STAKES. ANGLE THE FIRST STAR PICKET OR STAKE IN EACH BALE TOWARDS THE PREVIOUSLY LAID BALE. DRIVE THEM 600mm INTO THE GROUND AND, IF POSSIBLE, FLUSH WITH THE TOP OF THE BALES. WHERE STAR PICKETS ARE USED AND THEY PROTRUDE ABOVE THE BALES, ENSURE THEY ARE FITTED WITH SAFETY CAPS.
5. WHERE A STRAW BALE FILTER IS CONSTRUCTED DOWNSLOPE FROM A DISTURBED BATTER, ENSURE THE BALES ARE PLACED 1 TO 2 METRES DOWNSLOPE FROM THE TOE.
6. ESTABLISH A MAINTENANCE PROGRAM THAT ENSURES THE INTEGRITY OF THE BALES IS RETAINED - THEY COULD REQUIRE REPLACEMENT EACH TWO TO FOUR MONTHS.

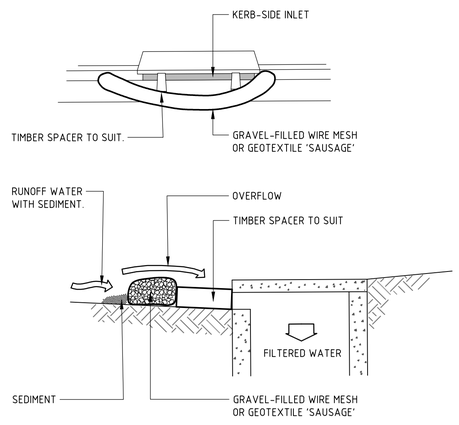
STRAW BALE FILTER



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



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.

WIRE MESH AND GRAVEL SEDIMENT FILTER

DESIGNED: N. SUTHERLAND DRAWN: W. DODIC JOB MANAGER: N. SUTHERLAND VERIFIER:

NOT FOR CONSTRUCTION

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RICHARD CROOKES CONSTRUCTIONS

CLIENT
NSW GOVERNMENT Education School Infrastructure

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NORTHROP
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Email sydney@northrop.com.au ABN 81 094 433 100

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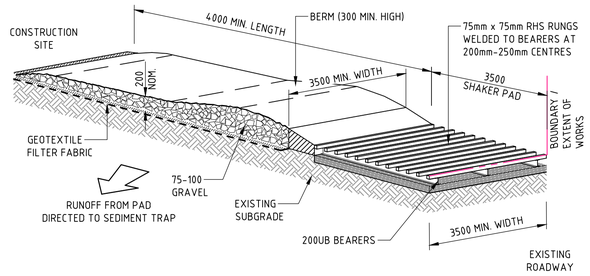
DRAWING TITLE
CIVIL ENGINEERING PACKAGE SEDIMENT AND SOIL EROSION CONTROL DETAILS - SHEET 01

JOB NUMBER
SY241208
DRAWING SHEET SIZE = A1

DRAWING NO
EPHS-NRE-00-GF-DR-C-1101

REV
01



CONSTRUCTION NOTES

1. THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY,
   - THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT,
2. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.
3. INSTALL BARRIER ON EITHER SIDE OF SHAKER PAD. TO ENSURE VEHICLES ARE GUIDED ON TO THE PAD.
4. INVERT OF SHAKER PAD TO BE DRAINED VIA AGRICULTURAL PIPE WRAPPED IN GEOTEXTILE FABRIC.

STABILISED SITE ACCESS

NOT FOR CONSTRUCTION

DRAWN: W. DODIC DESIGNED: N. SULTHERLAND JOB MANAGER: N. SUTHERLAND VERIFIER:

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NSW GOVERNMENT Education School Infrastructure

PROJECT

EDMONDSON PARK HIGH SCHOOL

NORTHROP
Sydney
Level 11 345 George Street, Sydney NSW 2000
Ph (02) 9241 4188 Fax (02) 9241 4324
Email sydney@northrop.com.au ABN 81 094 433 100

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DRAWING TITLE

CIVIL ENGINEERING PACKAGE SEDIMENT AND SOIL EROSION CONTROL DETAILS - SHEET 02

JOB NUMBER

SY241208

DRAWING SHEET SIZE = A1

DRAWING NO

EPHS-NRE-00-GF-DR-C-1102

REV

01

Appendix B – Sediment Basin Calculations

Note: These "Standard Calculation" spreadsheets relate only to low erosion hazard lands as identified in figure 4.6 where the designer chooses to not use the RUSLE to size sediment basins. The more "Detailed Calculation" spreadsheets should be used on high erosion hazard lands as identified by figure 4.6 or where the designer chooses to run the RUSLE in calculations.

1. Site Data Sheet

Site name: 241208- Edmonson Park High School Early Works DA

Site location: Edmonson Park

Precinct:

Description of site: Infrastructure Early Works DA - Bulk Earthworks

Site area	Site						Remarks
	EPHS						
Total catchment area (ha)	3.903						
Disturbed catchment area (ha)	3.903						

Soil analysis

Soil landscape							DIPNR mapping (if relevant)
Soil Texture Group	D						Sections 6.3.3(c), (d) and (e)

Rainfall data

Design rainfall depth (days)	5						See Sections 6.3.4 (d) and (e)
Design rainfall depth (percentile)	80						See Sections 6.3.4 (f) and (g)
x-day, y-percentile rainfall event	24.4						See Section 6.3.4 (h)
Rainfall intensity: 2-year, 6-hour storm	7.95						See IFD chart for the site
Rainfall erosivity (R-factor)	1520						Automatic calculation from above data

4. Volume of Sediment Basins, *Type D* and *Type F* Soils

Basin volume = settling zone volume + sediment storage zone volume

Settling Zone Volume

The settling zone volume for *Type F* and *Type D* soils is calculated to provide capacity to contain all runoff expected from up to the y-percentile rainfall event. The volume of the basin's settling zone (V) can be determined as a function of the basin's surface area and depth to allow for particles to settle and can be determined by the following equation:

$$V = 10 \times C_v \times A \times R_{y\text{-}\%ile,\ x\text{-}day} \ (m^3)$$

where:

10 = a unit conversion factor

C_v = the volumetric runoff coefficient defined as that portion of rainfall that runs off as stormwater over the x-day period

R = is the x-day total rainfall depth (mm) that is not exceeded in y percent of rainfall events. (See Sections 6.3.4(d), (e), (f), (g) and (h)).

A = total catchment area (ha)

Sediment Storage Zone Volume

In the standard calculation, the sediment storage zone is 50 percent of the setting zone. However, designers can work to capture the 2-month soil loss as calculated by the RUSLE (Section 6.3.4(i)(ii)), in which case the "Detailed Calculation" spreadsheets should be used.

Total Basin Volume

Site	C_v	R x-day y-%ile	Total catchment area (ha)	Settling zone volume (m^3)	Sediment storage volume (m^3)	Total basin volume (m^3)
EPHS	0.50	24.4	3.903	476.166	238	714.249

Appendix C – CV

Nicole Sutherland

Associate | Group Manager | Senior Civil Engineer

BE (Civil) (Hons) MIEAust CPEng NER

Nicole started her engineering career as a Graduate in 2001; and joined Northrop as a young engineer in 2003. Nicole has gained over 18 years of valuable engineering experience at Northrop, providing technical and design expertise for clients externally whilst undertaking key roles internally to support the business. Nicole started working in the Sydney office initially, then relocated to our Wollongong office, and pioneered our flexible working arrangements by working remotely from home.

Nicole enjoys getting involved in the early feasibility stages of a project, and seeing it evolve through the different phases of design development, right to construction. Early engagement, along with her utilisation of client-side thinking provides opportunity to create the best engineering solutions and project outcomes. Nicole is an Associate and a key member of Northrop's Diversity and Inclusion Committee.

Project Experience

Urban Redevelopment

- 318 Annangrove Road, Rouse Hill
- 78 Sutherland Road, Jannali
- Adela Apartments, Burwood
- Epping Road Apartments
- Dalmeny Road Subdivision

Public Domain and Open Spaces

- Belmore Park Upgrade
- Wentworth Golf Club
- Bayside Cycleway
- Jordan Springs Regional Open Space
- Granville Park Stadium
- Shaolin Temple, Nowra
- Blacktown International Centre for Training Excellence
- Green Square Public Domain
- Glebe Foreshore Project
- Caddies Creek Reserve Sportsfields
- Withers Road Reserve, Baulkham Hills

Infrastructure / Utilities Coordination

- Bankstown Airport

Health

- Nepean Private Hospital
- Rouse Hill Hospital
- Cumberland West Mental Health Facility
- Manly Adolescent and Young Adult Hospice

Commercial / Industrial

- Cameron Interstate, Marsden Park
- Storage King, Greenacre
- Sydney Business Park Warehouses, Marsden Park
- Flower Power, Erskine Park
- Gore Hill Data Centre
- Khartoum Road, Macquarie Park

Education

- Chatswood Public School
- St Leonards Public School
- Edmondson Park Public School
- Murrumbateman Public School
- Googong Public School
- Meadowbank TAFE - Multi-Trades and Digital Technology Hub
- Kingswood TAFE – Institute of Applied Technology for Construction
- Kingscliff Primary School and High School
- Catherine Field Public School
- East Leppington Public School
- Estella Public School

Aged Care

- Lutheran Aged Care, Albury
- Anglicare, Liverpool
- ARV Pennant Hills
- Opal Aged Care, Blacktown
- St Basil's Bexley

Nicole Sutherland

From: Guy Vo <VoG@liverpool.nsw.gov.au>
Sent: Thursday, 5 December 2024 4:07 PM
To: Damon Washington
Cc: Charlie Caraballo
Subject: RE: SSD-62028458 - New Highschool in Edmondson Park - Condition B16 / Condition C23

Hi Damon

The proposed Soil and Water Management Plan by Northrop, reference no. EPHS-NR-22-RPT-CC-04, dated 2.12.2024 is acceptable.

Cheers
Guy Vo
Senior Land Development Engineer

LIVERPOOL CITY COUNCIL
02 8711 7513 | 0408 219 716 | VoG@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 50 Scott Street Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

We acknowledge the traditional custodians of the land that now resides within Liverpool City Council's boundaries, the Darug and Dharaw

---

From: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Sent: Thursday, 5 December 2024 3:59 PM
To: Guy Vo <VoG@liverpool.nsw.gov.au>
Subject: FW: SSD-62028458 - New Highschool in Edmondson Park - Condition B16 / Condition C23

See attached Construction Soil and Water Management Plan.

Charlie Caraballo
Coordinator Land Development

LIVERPOOL CITY COUNCIL
02 8711 7475 | 0427 703 451 | CaraballoC@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 50 Scott Street Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

We acknowledge the traditional custodians of the land that now resides within Liverpool City Council's boundaries, the Darug and Dharaw

---

From: Damon Washington <WashingtonD@richardcrookes.com.au>
Sent: Monday, 2 December 2024 2:38 PM

To: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Cc: Guy Vo <VoG@liverpool.nsw.gov.au>
Subject: RE: SSD-62028458 - New Highschool in Edmondson Park - Condition B16 / Condition C23

Hi Charlie/Guy,

Please see attached updated Construction Soil and Water Management sub plan for your review.

Please note the Inclusion of Condition C23

C23 (Disposal of Seepage and Stormwater)	Adequate provisions must be made to collect and discharge stormwater drainage during construction. The prior written approval of Council must be obtained to connect or discharge site stormwater to Council's stormwater drainage system or street gutter.	Refer Section 2

We are required to obtain written approval to discharge to council infrastructure.

Can you please confirm acceptance or advise of any changes to the attached Construction Soil and Water Management Plan.

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

From: Damon Washington
Sent: Wednesday, 20 November 2024 3:42 PM
To: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Cc: Guy Vo <VoG@liverpool.nsw.gov.au>
Subject: RE: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Thanks Charlie, appreciate your response.

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

From: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Sent: Wednesday, 20 November 2024 9:38 AM
To: Damon Washington <WashingtonD@richardcrookes.com.au>
Cc: Guy Vo <VoG@liverpool.nsw.gov.au>
Subject: RE: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Hi Damon,

Confirming I have received your emails today.

I will forward the Construction Soil & Water Management Plan to Guy Vo for review.

At first glance it looks satisfactory but Council will advise if we have any other comments.

Kind Regards,

Charlie Caraballo
Coordinator Land Development

LIVERPOOL CITY COUNCIL

02 8711 7475 | 0427 703 451 | CaraballoC@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 50 Scott Street Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

We acknowledge the traditional custodians of the land that now resides within Liverpool City Council's boundaries, the Darug and Dharaw

From: Damon Washington <WashingtonD@richardcrookes.com.au>
Sent: Wednesday, November 20, 2024 7:55 AM
To: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Subject: FW: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Charlie,

Re issuing due to bounce back email – see below.

Let me know if there are any issues

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

From: Damon Washington
Sent: Tuesday, 19 November 2024 4:26 PM
To: vismank@liverpool.nsw.gov.au; caraballoc@liverpool.gov.au
Cc: Antoun Ayoub <ayouba@richardcrookes.com.au>
Subject: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Hi Karen/Charlie,

Following on my recent email regarding Condition B5 and the council submission/consultation requirements (I have separated conditions in different emails for submission purposes)

Regarding the New Highschool in Edmondson Park, SSD-62028458 and located at 145 Buchan Road, Edmondson Park.

The below condition requires the CSWMP is prepared in consultation with Council, as per condition B16a)

Condition B16 – Construction Soil and Water Management Plan.

B16. The Construction Soil and Water Management Sub-Plan (CSWMSP) and must address, but not be limited to the following:

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

(b) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;

(c) 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';

(d) direct all sediment laden water in overland flow away from the leachate management system and prevent cross-contamination of clean and sediment or leachate laden water.

(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);

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

(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 and 1 in 100-year ARI

Please see attached CSWMP to satisfy the above condition, please advise if you have any comments and we will update accordingly.

Let me know if there are any issues.

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

Nicole Sutherland

From: Damon Washington <WashingtonD@richardcrookes.com.au>
Sent: Wednesday, 20 November 2024 1:44 PM
To: Nicole Sutherland
Subject: FW: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES
CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

From: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Sent: Wednesday, 20 November 2024 9:38 AM
To: Damon Washington <WashingtonD@richardcrookes.com.au>
Cc: Guy Vo <VoG@liverpool.nsw.gov.au>
Subject: RE: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Hi Damon,

Confirming I have received your emails today.

I will forward the Construction Soil & Water Management Plan to Guy Vo for review.

At first glance it looks satisfactory but Council will advise if we have any other comments.

Kind Regards,

Charlie Caraballo
Coordinator Land Development

LIVERPOOL CITY COUNCIL
02 8711 7475 | 0427 703 451 | CaraballoC@liverpool.nsw.gov.au
Customer Service: 1300 36 2170 | 50 Scott Street Liverpool, NSW 2170, Australia
www.liverpool.nsw.gov.au

We acknowledge the traditional custodians of the land that now resides within Liverpool City Council's boundaries, the Darug and Dharaw

---

From: Damon Washington <WashingtonD@richardcrookes.com.au>
Sent: Wednesday, November 20, 2024 7:55 AM
To: Charlie Caraballo <CaraballoC@liverpool.nsw.gov.au>
Subject: FW: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Charlie,

Re issuing due to bounce back email – see below.

Let me know if there are any issues

Regards,

Damon Washington, Senior Project Engineer

RICHARD CROOKES CONSTRUCTIONS

Direct 02 9902 4700 | Mobile 0416 332 331
Level 14, 558 Pacific Highway, St Leonards NSW 2065
www.richardcrookes.com.au

From: Damon Washington
Sent: Tuesday, 19 November 2024 4:26 PM
To: vismank@liverpool.nsw.gov.au; caraballoc@liverpool.gov.au
Cc: Antoun Ayoub <ayouba@richardcrookes.com.au>
Subject: SSD-62028458 - New Highschool in Edmondson Park - Condition B16

Hi Karen/Charlie,

Following on my recent email regarding Condition B5 and the council submission/consultation requirements (I have separated conditions in different emails for submission purposes)

Regarding the New Highschool in Edmondson Park, SSD-62028458 and located at 145 Buchan Road, Edmondson Park.

The below condition requires the CSWMP is prepared in consultation with Council, as per condition B16a)

Condition B16 – Construction Soil and Water Management Plan.

B16. The Construction Soil and Water Management Sub-Plan (CSWMSP) and must address, but not be limited to the following:

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

(b) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;

(c) 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';

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Please see attached CSWMP to satisfy the above condition, please advise if you have any comments and we will update accordingly.

Let me know if there are any issues.

Regards,

Damon Washington, Senior Project Engineer

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