

ACN 003 797 911 ABN 99 003 797 911

Sydney Office

583 Darling Street, Rozelle NSW 2039 Telephone: 9555 7230 Email: office@birzulisassociates.com

Newcastle Office

105 Merewether Street, Merewether NSW 2291 Telephone: 4049 4855

Email: office@birzulisassociates.com

CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN OUR REF: 7863

KYEEMAGH PUBLIC SCHOOL JACOBSON AVENUE, KYEEMAGH NSW 2261

PREPARED BY: CAMERON AMRI

DATE: 03/07/2020 REVISION: **A**

DIRECTORS

B Fimmano B.E. (Hons), M.I.E. Aust., C.P.Eng.
M A Grogan B.E., M.Eng., M.I.E. Aust., C.P.Eng.
ASSOCIATE DIRECTOR
P W Grogan B.E. (Hons), M.E.(Struct), M.I.E. Aust., C.P.Eng.
CONSULTANT
A J Birzulis OAM, B.E., M.Eng. Sc., F.I.E. Aust., C.P.Eng.



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| | Name | Signature |
|-------------|----------------|--------------|
| Prepared by | Cameron Amri | Cone on Amni |
| Checked by | Michael Grogan | |
| Issued by | Michael Grogan | |

REPORT DELIVERABLES

This report is to meet condition B17 of the SSD Conditions.

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1 EXECUTIVE SUMMARY

Birzulis Associates have been commissioned by Taylor Constructions to prepare a Construction Soil and water Management Plan (CSWMP) for the proposed stage 1 and stage 2 construction at Kyeemagh Public School. This report addresses the site conditions and the management of such site conditions relevant to soil and water management in accordance with the requirements of the relevant Council DCP/SSD Guidelines.

The aim of this CSWMP is to address all risks associated with the water quality, erosion and sedimentation ensuring these are considered and managed effectively during construction. This reports aims to deliver a best-practice control and procedures to minimise or avoid erosion/sedimentation impacts and potential impacts to water quality.

The CSWMP will address and satisfy the following objectives:

- Relevant environmental legislation as it applies to this project
- Summarise and address potential water quality impacts on the environment from the proposed works on the proposed site
- Document procedures to control these possible and foreseeable environmental impacts.
- Ensure and demonstrate compliance to relevant legislation
- Ensure there are no adverse environmental impacts to the waterways and surrounding environment as a result of the proposed works.
- Address and comply with water quality discharge requirements for the site.
- Prevent pollution of surface water by sedimentation and excessive erosion of the site.
- Ensure staff and relevant construction personnel and procedures and an understanding of what is required to maintain and implement the required water quality elements and controls.
- Document all controls and mitigation for a 1 in 100 year flood event at the site.

Stage 1 of the proposed works involves the demolition of the existing buildings to the North-East of the site and construction of the buildings on that half of the site.

Stage 2 of the proposed works will occur approximately after practical completion (PC) of the stage 1 works and the demolition of the existing buildings to the South-West half of the site.

Both stages of the development will require:

- Demolition of the existing structures and removal of waste.
- Removal of topsoil and vegetation.
- Civil works and stormwater drainage works including connecting to the existing Council trunk drainage system.

- Construction of temporary roadway and turning circle for construction vehicles/equipment withing the envelope of the stage works.
- Remediation of temporary works and construction of hardstand pavements
- Construction of landscaping works

1.1 PLANNING RELEVANCE, LEGISLATION & ACT

The following legislation and regulatory framework relating to construction soil and water management are outlined below.

Immediate SSD Planning Requirement to be satisfied:

• As stipulated in the State Significant Development Conditions of Consent. Condition B17 required prior to the commencement of construction.

Environmental Planning and Assessment Act 1979 & Environmental Planning & Assessment Regulation 2000.

This Act and regulation establishes a system of environmental planning and assessment of development proposals for the State. This project has been assessed and approved under Section 89E of the Environmental Planning and Assessment Act 1979.

Project Relevance; Approval process for a legal Consent to develop and considerations for such.

Protection of the Environment Operations Act 1997

This Act includes all the controls necessary to regulate pollution and reduce degradation of the environment, provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act.

Project Relevance; This Act is of high relevance to the Project as it provides for the issuing of environmental protection notices to control work and activities not covered by licences. Section 148 of the Act requires a pollution incident-causing or threatening material harm to the environment to be notified to the EPA and other authorities immediately.

Contaminated Land Management Act 1997

This Act provides for a process to investigate and remediate land that has been contaminated and presents a significant risk of harm to human health. Section 60 of the Act is a "Duty to Report Contamination". This duty applied to owners of land and persons who become aware that their activities have contaminated the land.

Project Relevance; The relevance of this Act will be in the event that suspected or potentially contaminated ground is found during construction activities.

Commonwealth Environment Protection and Biodeversity Act 1999

The main purpose of this Act is to provide for the protection of the environment especially those aspects that are of national environmental importance and to promote ecological sustainable development. The Act binds the Crown. Do not take, use, keep or interfere with "nationally significant" cultural and natural resources, protected wildlife and protected plants without approval.

Project Relevance; This Act is of little relevance to this project as it has been determined not to trigger the provisions of the act.

Soil Conservation Act 1938

This Act makes for the provision for the conservation of soil resources, farm water resources and the mitigation of erosion. The Act is binding on the Crown; however, the Crown is not liable for prosecution. The Act provides for notification in the government gazette catchments where erosion is liable to cause degradation of rivers and lakes (i.e. protected land).

Project Relevance; This Act has low relevance as the site is not located within "protected land". Further, such notification has not been given to the owner of the land.

Water Management Act 2000 & Water Management (General) Regulation 2004

This Act and Regulation provide for the protection, conservation and ecologically sustainable development of water sources of the State and in particular to protect, enhance and restore water sources and their associated ecosystems.

Project Relevance; This Act has no direct relevance at this time to the construction work under this contract. The project approval does not trigger the provisions of this Act

Water Act 1912

This Act provides for licences to extract water for construction purposes either from surface or artesian sources. Should construction water be extracted from surface (other than sedimentation ponds) or artesian sources, a licence will be required.

Project Relevance; This Act has no relevance as it is not proposed that construction water will be obtained from surface (for example, creeks, lakes) or artesian sources.

Rivers and Forseshores Improvement Act, 1948

The Rivers and Foreshores Improvement Act, 1948, is administered by DIPNR for regulating operations involving excavation and fill within the immediate vicinity of coastal rivers, lakes and estuaries. Under this Act, a Part 3A Permit is required for the undertaking of works within 40 metres of the bed and banks of a watercourse. By late 2003, the Water Management Act 2000 (WMA) will have repealed the Rivers and Foreshores Improvement Act, 1948 (RFIA). When this occurs, activities that require a Permit under Part 3A Approvals under the RFIA will require Controlled Activity Approvals under the WMA

Project Relevance; Nil as not within 40mof the bed and banks of a watercourse.

2 EXISTING CONDITIONS

2.1 LOCATION

The site is located at 30A Jacobson Avenue, Kyeemagh NSW 2216 is broken up into two lots D.Ps (D.P.120095 & D.P. 335734). The current site is the operating site of Kyeemagh Public School. The site is generally sparsely planted and with minimal hard pavements.

To the North-West the site abuts a previous townhouse villa style development. To the South-East the site abuts Beehag Street. To the South-East the site abuts Jacobson Avenue. To the North-East the site abuts the school childcare centre which operates on the site and is not proposed to be altered. The site falls from the West to the South East at approximately 4%.

The total site area is 10 329m².

The site is shown below represented as Figure 2.1



Figure 2.1.1 – Total D.P. Envelope

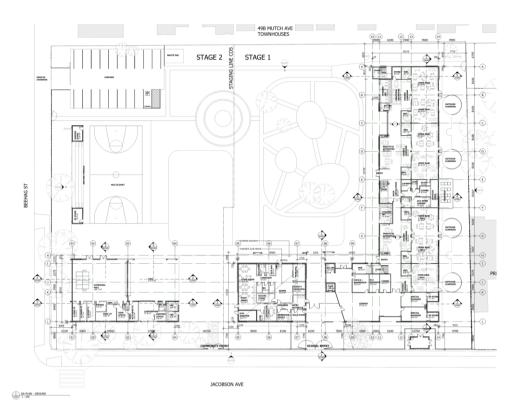


Figure 2.1.2 - Overall Site Plan



Figure 2.1.3 - Aerial View of Kyeemagh Public School (Source: Google Map 2020)

2.2 ACID SULFATE SOILS

A review of the Geotechnical report completed by Cardno showed soil test pH levels from 6.1 to 7.7 which is considered neutral.

2.3 GROUND WATER PROTECTION

Generally possible sources of ground water contamination can be linked to:

- Industrial effluent and manufacturing wastes
- Leaking underground storage tanks and pipe lines (not stormwater/rainwater)
- Landfill stockpiles or contaminated soil producing leachate '
- Intensive agricultural fertiliser and pesticide use or waste generation
- Contamination from septic tanks and from sewerage and wastewater lagoons
- Mining industry processes and wastes
- Contamination from wells
- Urban stormwater
- Atmospheric fallout
- Inter-aquifer contamination by alteration of flow
- Chemical storage

We assess the operation use of the site is not such as to generate a risk to ground water contamination subject to correct chemical storage in line with MSDS's and safe work guidelines.

2.4 TEMPORARY EROSION AND SEDIMENT CONTROL BASINS

The requirement for sediment basins is carried out using a RUSLE calculation.

A=R K LS C P

Where A = Computed soil loss (tonnes/ha/yr)

R = rainfall erosivity factor = 2075

K = slope erodibility factor

LS = Slope length/gradient factor

C = ground cover factor

P = practice factor

| Variable | Value | Remark |
|-----------------------------------|---|----------------------------|
| Rainfall Erosivity (R) | 3075 From literature rev | |
| Soil erodibility (K) | 0.06 | Figure A3, The Blue Book |
| Site slopes av | Pre- 0.8% post 0.8% | |
| Slope Length (LS) | 0.52 | Table A1, The Blue Book |
| Erosion control practice (P) | 1.3 | Table A2, The Blue Book |
| Ground cover (C) | 1.0 | 50% grass cover as |
| | | construction completed in |
| | | stages Figure A5, The Blue |
| | | Book |
| Potential Erosion Hazard | Low | Figure 4.6, The Blue Book |
| Rainfall Zone | Zone 1 | Figure 4.9, The Blue Book |
| Soil Density (kN/m³) | 19 | From geotechnical report |
| | | |
| Calculation soil loss A (t/ha/yr) | 125 | |
| Soil Loss Class | Soil Loss Class 1 (erosion hazard = very low) Table 4.2, The Blue B | |
| Soil loss (m³/ha/yr) | 96 | |
| Is a sediment basin required | No | |

Where the soil loss from the catchment/s is less than 150m³/ha/yr then a sediment is not required as per Section 6.3.2.d of the Blue Book.

Nil

2.5 EXISTING STORMWATER DISCHARGE POINTS

The site operating as a public school has an existing pit and pipe system with an existing discharge to the Council trunk drainage system on Jacobson Avenue (located in the stage 2 envelope of works). The site also has a small depression within the site which normally would contribute to saturation of the soil however is not considered to do so given the high permeability of the soil (marine sand).

The low point of the site is located at the Eastern corner. The low point of the site is not proposed to be altered from the current condition. The overland flow water that discharges the site from this low point falls to Jacobson Avenue.

The existing stormwater elements from a visual survey undertaken revealed the onsite system to be in poor condition and blocked in many cases. We are proposing to clean the existing system for the construction works to not be surcharged by storm flows during the Stage 1 works.

The indicative external stormwater network is shown in **Error! Reference source not found.** and is the Council trunk drainage system and is believed to be in a satisfactory condition.

3 GENERAL INSTRUCTIONS

This SWMP shall be read in conjunction with the latest engineering plans which have the Sediment and Erosion Control Plan and details, any other reports or design drawings and or any written instructions that concern themselves with water management of the site during construction and during the operational phase of the site.

The Principle Contractor shall ensure that all soil and water management works recommendations are incorporated in works and undertaken in accordance with the Blue Book.

4 LAND DISTURBANCE CONDITIONS

Where practical, the soil erosion onsite will be as recommended below so the hazard will be as low as reasonably possible.

| Land Use | Scope | Remarks | |
|--------------------|-------------------------------|----------------------------------|--|
| Construction areas | Disturbance to be no greater | Barrier fencing and sediment | |
| | than within 5m from the edge | fencing or similar fencing to be | |
| | of any essential construction | used so all workers can clearly | |
| | activity shown on the plans | identify these zones were | |
| | | appropriate. | |
| Access areas | Maximum 6m in width | Site manager to define the | |
| | | zones onsite and all workers to | |
| | | clearly be able to identify | |
| | | these zones | |
| Remaining Lands | Fenced off | Identified by barrier fencing | |

5 ASPECTS, IMPACTS AND RISKS

5.1 STORMWATER QUANTITY

Normally the removal of existing stormwater eleemtns during construction increases the surface flow volumes and velocities on a site. This can then increase movement of debris silt and scouring of water channels.

DRAINS software was used to generate runoff modelling that represents the existing and post development stormwater conditions. A summary of peak flows is shown below.

As the site discharge in located in stage 2 this is advantageous. There should be no significant change to the site runoff during construction as the envelope of the buildings being demolished in stage 1 is comparatively small. The intent is to maintain the existing stormwater pipe discharge from the site for the majority of the buildings (which are in the stage 2 envelope) while the stage 1 works are constructed. As part of the stage 1 works a new stormwater discharge is to be constructed and a stage 1 infiltration system. Based on storm events up to the 50 year storm the infiltration tank will not overflow to the new connection. As such we consider stormwater quantity to be reduced post construction and during construction.

5.2 **STORMWATER QUALITY**

Bulk earth works, vegetation clearing activities during construction phases, if not managed adequately, can lead to increased soil displacement. This element is considered adequately managed in the Sediment and Erosion Control Plan and relevant details.

The post construction stormwater quality runoff for the relevant catchments are required to meed requirements for Council compliance and for GreenStar Compliance.

The construction is proposing to meet a 2 point targer under Credit 26 Stormwater for this project which places the pollution reduction target as per Colum B shown below.

| Aim of Credit | To reward projects that minimise peak storm water outflows from the site and reduce pollutants entering the public stormwater infrastructure or other water bodies. | | | | |
|---------------------|---|---|---|----|--|
| Compliance Criteria | | | ite must meet the Pollution Reduction minimum of the following table: | | |
| | Pollutants | Reduction Target (% of the typical urban annual load) | | | |
| | | Α | В | С | |
| | Total Suspended Solids (TSS)1 | 80 | 80 | 90 | |
| | Gross Pollutants | 85 | 90 | 95 | |
| | Total Nitrogen (TN)2 | 30 | 45 | 60 | |
| | Total Phosphorus (TP)2 | 30 | 60 | 70 | |
| | Total Petroleum Hydrocarbons3 | 60 | 90 | 90 | |
| | Free Oils3 | 90 | 90 | 98 | |

5.3 **FLOODING**

Construction works can sometimes generate additional site runoff contributing to flooding of adjacent or downstream sites during significant rainfall events or in the absence of relevant flood protection measures such as temporary water containment.

This has been provided for this site using the two infiltration tanks. As such the construction stormwater runoff will be less than the current site runoff.

The site flood level is RL 2.65m for the 100 year ARI storm event which places the site above this level meaning the site material stockpile locations will be safe from significant migration during this event.

6 CONSTRUCTION IMPACTS

6.1 EROSION CONTROL

Erosion control is primary to a erosion and sediment control strategy. This can be achieved through:

- Limiting the area of disturbance and only disturbing what is required. Also limiting the time period of disturbance.
- Integrating elements that reduce or control the volume of water moving over surfaces. This
 includes, diversion through swales and table drains, and piped or lined channels to stabilised
 outlets.
- Measures the slow the velocity of water over exposed surfaces within the construction area such as hay bail barriers, introducing roughness, flow check measures, textiles, binding compounds or exposed surface protections. Binding products and surface protection can be spray on stabilisers, mulches, blankets, temporary vegetation and permanent progressive landscape construction.

The above is achieved using the correct implementation of the Erosion and Sediment Control Plan shown on the engineering drawings and any other recommendations in this report.

To achieve the requirements of not concentrating water flows which can lead to transportation of sediment off site it is recommended the swales on the stormwater design drawings be constructed as soon as practicable to divert upstream water around the site.

6.2 <u>SEDIMENT MANAGEMENT</u>

This is secondary to erosion control in minimising water pollution as a result of construction. Where required sediment basins are generally located at the low points of site discharges.

Requirements for sediment control basins are in accordance with Section 6.3.2.d of the Managing Urban Stormwater: Soils and Construction (the Blue Book). The soil loss from the catchment is led than that required for a sediment basin and as such one is not required.

6.3 STOCKPILE STABILISATION

As there is significant volumes of fill being proposed for the site it is foreseeable that material stockpiles will be required unless can be demonstrated as other by the Builder Taylor Constructions. Stockpiles within the site which will be in effect for more than 10 days should be stabalised. As per the Erosion and Sediment Control Plan all stockpiles are to have sediment fences on the downstream

slopes and generally should be located a minimum of 5m from overland flow swales. If unused for 10 days then stockpiles shall also be stabalised in accordance with the below relative to the relevant material in the stockpile:

- Coarse grained stockpiles
 - o Downstream perimeter rock armouring.
- Less coarse grained stockpiles
 - Polymer binder application
 - Application of hydro-seed or hydromulch.

6.4 HAZARDOUS MATERIALS

Hazardous material can often be transported to the site for construction purposes or from the site in the form of asbestos removal during demolition works. This will be addressed in accordance with the Construction Waste Management Sub-Plan (CWMSP) condition B16 prepared by others.

6.5 MANAGEMENT MEASURES

6.5.1 Topsoil management

As part of works topsoil is to be stripped and stockpiled for use later in the project. Stopsoil stockpiles shall be treated as per the requirements of stockpiles noted above.

6.5.2 Wind Erosion Management

At a minimum, exposed areas will be watered regularly to minimise dust and water carts to be readily available as this is an ongoing process. Additional watering may be required on windy days.

6.5.3 Site Drainage

As noted above, the swales are to be constructed as soon as practicable and treated in accordance with the above. This will prevent external catchment runoff penetrating the site. A bentonite impregnated geotextile liner will be used (Bentofix or equivalent) in unsealed sections of the working areas. This will form a suitable barrier to prevent contaminants from working areas entering the ground water or contaminating the soil of the site.

6.5.4 Revegetation Earthworks

Areas where earthworks have been completed are to be stabalised within ten days in accordance with the above recommendations. All erosion and sediment control are to remain inplace until stabilisation or revegetation is established. All stabalised areas are to be free of vehicle traffic to prevent disturbance.

Stabalisation of earthworks include, but are not limited to the following:

- Mulch covers
- Latex tape sprays
- o Bitumen emulsion sprays
- Tarp cover
- Grass seeding

For areas stabalised with seeding, regular watering is required until an effective ground cover has been established. Re-seeding may be required in areas if inadequate coverage.

6.5.5 Maintenance Controls

Erosion and sediment control measures should be inspected and maintained regularly, generally daily and within 24 hours of each rainfall event. The site supervisor should be responsible for this to be undertaken. It is recommended the daily inspection be recorded including the following relevant information:

- o Condition of each element noted on the Erosion and Sediment Control Plan
- o Any maintenance requirements of each element
- Volume of sediment removed and if the location of the element is appropriate.
 Disposal method of site trapped sediment.
- Condition of site entry and gravel rip/rap
- o Condition of stockpile protection if relevant
- Site stormwater disposal location conditions
- o Drains checked to ensure adequate site runoff and for signs of erosion
- Any sediment erosion control linings
- o Condition of revegetation works if relevant.

It is recommended these are sent to the Superintendent weekly.

6.5.6 Auditing

Auditing of the above and importing of soil material and controlled fill shall be monitored and tracked in accordance with the CEMP condition B13 of the CoC.

6.5.7 Responsibility

The Contractor is deemed to have the following responsibilities in relation to Soil and Water Management of this site:

- To ensure all works noted above are undertaken as instructed and generally in accordance with the Blue Book (Managing Urban Stormwater – Soils and Construction, Landcom 2004.
- All sub-contractors are made aware of their responsibilities in this area and made
 accountable
- o Checks are completed in accordance with the above Maintenance Controls (6.5.5)

7 REFERENCES

Geotechncial report by Cardno reference 5017190151 dated 23 January 2019

Schematic Design Report – Civil prepared by Birzulis Associates Pty Ltd dated 24 June 2020 revision C

Rockdale LEP 2011 – Part 6.1 Acid sulphate soils

Rockdale DCP 2011

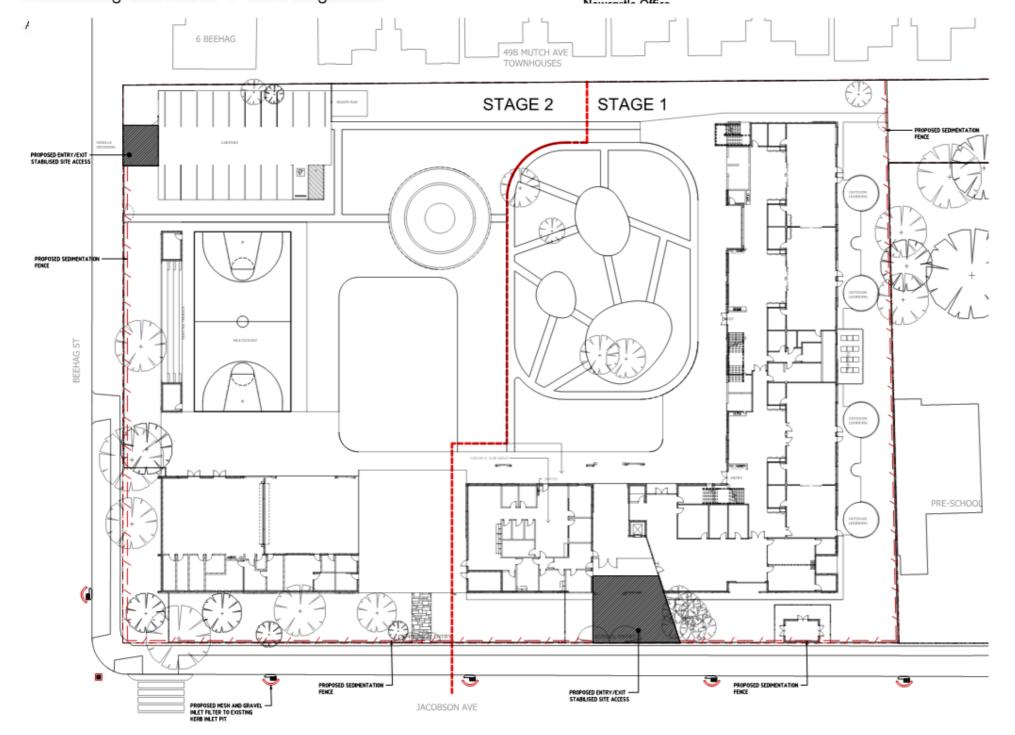
Landcom (2004) Managing Urban Stormwater: Soils and Construction known as the Blue Book

8 APPENDIX A – Erosion and Sediment Control design drawings

Drawings prepared by Birzulis Associates Pty Ltd. The latest version of each of these documents and this report should be used at all stages during the construction.

BIRZULIS ASSOCIATES Pty Ltd Consulting Structural + Civil Engineers

Sydney Office 583 Darling Street, Rozelle NSW 2039 Telephone: 9555 7230 Email: office@birzulisassociates.com



DIRECTORS

B Fimmano B.E. (Hons), M.I.E. Aust., C.P.Eng. M A Grogan B.E., M.Eng., M.I.E. Aust., C.P.Eng. ASSOCIATE DIRECTOR P W Grogan B.E. (Hons), M.E.(Struct), M.I.E. Aust., C.P.Eng. A J Birzulis OAM, B.E., M.Eng. Sc., F.I.E. Aust., C.P.Eng.



GENERAL NOTES.

I. THIS PLAN IS A CONCEPT PLAN ONLY FOR STORMWATER DISPOSAL & EROSKIN CONTROL. IT IS NOT SUITABLE FOR CONSTRUCTION. THIS PLAN SHOULD BE ADAPTED BY THE BUILDER DURNS DEPOLLITION, EXCAVATION B. CONSTRUCTION PHASES TO ENSURE ADEQUATE PRESENDANCE.

2. ALL DRAINAGE LAYOUT & DETAILS ARE DIAGRAPHATIC & INDICATIVE ONLY. ACTUAL LOCATION, SIZES, LEVELS & GRADES MAY LATER WHEN DETAIL DESIGN WORKS ARE DOCUMENT

CLAY SOILS

A SYSTEM SHALL BE INSTALLED TO EITHER

2. TREAT THE STORMMATER RUNOFF WITH SUSPENCED SOLDS SO THE DESCHARGE WATER OWNLITY TO COUNCE, STORMMATER FRANKAGE SYSTEM HAS A MAXIMUM CONCENTRATION OF SUSPENCED SOLDS THAT DOES NOT EXCED SO HULLIFRANS PER LITRE IN ACCORDANCE WITH THE PROTECTION OF THE ENVIRONMENT OPERATION ACT SPOCE 1997) AND SHALL BE APPROVED BY THE LOCAL COUNCE.

EROSION & SEDIMENTATION

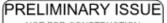
CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE SEDWENT PENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE OF THE WORKS. THE SEDMENT SEND MATERIAL TO CYCLONE WINE SECURITY FENCE. SEDMENT CONTROL FARR SHALL BE AN APPROVED MATERIAL, BC, MURES PROPER SILT STOP! STANDERS SEME ABOVE GROUND & EXTENDED SEME SEME MEDICAL GROUND.

2. EXISTING DRAINS LOCATED WITHIN THE SITE SHALL ALSO BE ISOLATED BY SECREDIT FENCING MATERIAL.

NO PARKING OR STOCKPRING OF MATERIAL IS PERMITTED ON THE LOWE SIDE OF THE SEDIMENT FENCE.

S. CONSTRUCTION ENTRY/EXIT SHALL BE VIA THE LOCATION NOTED ON THE DRAWNOL CONTRACTOR SHALL ENSURE ALL DROPPABLE SOIL & SCIPMENT IS REMOVED PROSE TO CONSTRUCTION TRAFFIC EXITING STIT. CONTRACTOR SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING L LEAVING THE SITE DO SO IN A FORWARD DIRECTION.



NOT FOR CONSTRUCTION







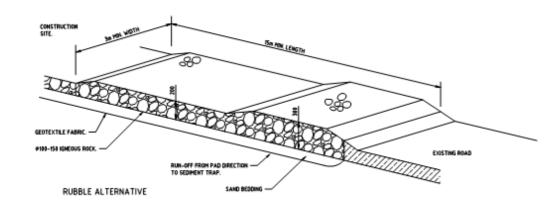
KYEEMAGH PUBLIC SHOOL

JACOBSON AVE, KYEEMAGH

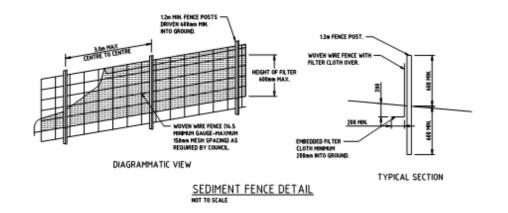
SOIL EROSION AND SEDIMENT CONTROL PLAN

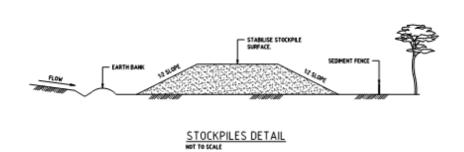
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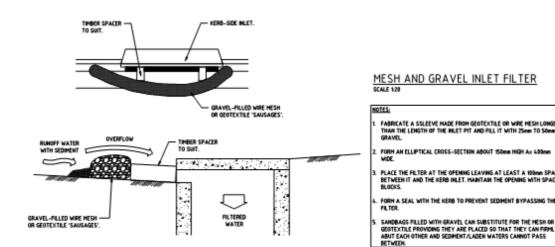


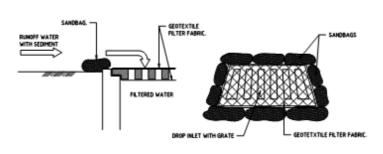


TEMPORARY CONSTRUCTION EXIT HOT TO SCALE









GEOTEXTILE FILTER FABRIC DROP INLET SEDIMENT TRAP



(PRELIMINARY ISSUE)







KYEEMAGH PUBLIC SHOOL JACOBSON AVE, KYEEMAGH

TYPICAL DETAILS - SOIL EROSION AND SEDIMENT CONTROL

| SCALES 8 | scales as noted @ A1 | | | | | |
|----------|---|---------|-------------|----------|--|--|
| DRAWN | DESIGN CA/MG | VERNIED | | APPROVED | | |
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