roberts co

Construction Soil and Water Management Plan

WENTWORTH POINT HIGH SCHOOL

Date: 9/10/2023

Document Details

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Client	Schools Infrastructure NSW
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Roberts Co Project No.	20016
Principal Contractor ABN	68 627 689 418
Project Address	3 Burroway Road, Wentworth Point, NSW, 2127

Document Authorisation

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PROJECT MANAGER	**SITE MANAGER**	**PROJECT HSE MANAGER**
9/10/23	9/10/23	9/10/23
		
Date	**Date**	**Date**

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1 DOCUMENT CONTROL

All changes made to the Construction Soil and Water Management Plan are recorded in the amendment table below. The version number and date of revision for the current document revision are shown in the footer of the document.

1.1 Revision History

Revision	Date	Description of changes	Prepared by	Approved by
01	8/02/23	Update Template	AG	AG
02	22/05/23	Updated to reflect transition onsite from Civil phase to Structure phase	AG	AG
03	24/06/23	Include TTW Resume	AG	AG
04	9/10/23	Included latest Sediment and Erosion Control Plan	AG	AG

2 DEFINITIONS AND ABBREVIATIONS

Term/Abbreviation	Definition
AS/NZS	Australian Standard/New Zealand Standard
Client (Principal)	The party to whom Roberts Co is contracted for a Project
Client's Representative	The person appointed by the Client to perform the duties of the "Superintendent" as defined in the contract
Consultant	The party engaged to perform the design, preparation of detailed 'For Construction' documentation and necessary certification to meet contractual requirements.
D&C	Design and Construct
HSE	Health, Safety and Environment
EPBC Act	Environmental Protection and Biodiversity Conservation Act (Commonwealth) - legislation to protect and manage matters of national environmental significance
EPA	Environment Protection Authority
ESD	Ecologically Sustainable Development
H&S	Health and Safety
HSC	Health and Safety Committee
HSEQ	Health, Safety, Quality and Environment
IMS	Integrated Management System
ITP	Inspection and Test Plan – defines the steps to be taken to check and verify an activity or product
NGER	National Greenhouse and Energy Reporting
OEH	Office of Environment and Heritage
PAP	Principal's Authorised Person
PM	Project Manager
PMP	Project Management Plan
PP	Process Procedure – A work instruction, which details the technical/engineering/safety/quality/environmental methodology for a particular activity
RAP	Remediation Action Plan
RCo	Roberts Co
SDS	Safety data sheet
SWMS	Safe Work Method Statement – a planning process to determine detailed methodology, identification of hazards, risks and control measures, used to break down and analyses individual PRA work elements. Specific risk assessment based on day-to-day tasks, facilitated by supervision and involving consultation with workforce before task is undertaken. Signed off by all people undertaking the task.

Term/Abbreviation	Definition
Subcontractor	Any company, body or person who is contracted to Roberts Co for the purpose of supplying plant and/or services
System Element	The administrative activities that need to be implemented and controlled to ensure that the product or service meets environmental requirements
The Project	Wentworth Point High School

Table 01 – Terms of reference, definitions, and abbreviations.

3 PURPOSE AND APPLICATION

This Construction Soil and Water Management Plan ("**CSWMP**") for the Wentworth Point High School ("**The Project**") outlines the Roberts Co system for managing and minimising the impacts of its activities, meeting its legislative and contractual obligations and providing a means of continually improving performance.

This CSWMP provides a 'road map' for the implementation of the Construction Soil and Water Management Plan, including plans, procedures and forms. It provides directions to the documents required to address Construction Soil and Water Management for the Project. This CSWMP is for use by all Project personnel and subcontractors during the Project:

– Procurement

– Construction

3.1 Construction Soil and Water Management Plan

The CSWMP has been developed in accordance with the requirements of ISO 14001 and the Roberts Co Integrated Management System. It incorporates the requirements of the contract / project scope / tender documents including:

– Legislative and contractual requirements

– Approval conditions

– Processes and procedures that Roberts Co will adopt to identify, manage and control the risks associated with soil and water management on the project.

– Provision of adequate resources and allocation of responsibilities for ensuring the effective implementation of this CSWMP

– Methods for maintaining records and requirements for reporting

– Process for monitoring and reviewing the management performance of the Project to drive continual improvement

This CSWMP has been revised to incorporate all relevant contractual information and obligations.

Project-based Roberts Co personnel are required to sign the CSWMP acknowledgment form in Appendix 02.

3.2 Supplementary Plans

Supplementary Plans may be required by the contract or deemed necessary by the Project Manager. Supplementary plans that are required will be included as annexures to this plan.

Other management plans may include, but not limited to the following:

– TTW Sediment and Erosion Control Plan and Details

– Acid Sulphate Soil Management Plan

– Remediation Action Plan

3.3 Interfacing with Other Plans

This CSWMP should be read in conjunction with the other suite of Project specific management plans:

– Project Management Plan

– Construction Management Plan

– Work Health and Safety Management Plan

3.4 Project Scope

The Wentworth Point High School (previously known as the Sydney Olympic Park new high school) is a new high school for 1530 students.

The project was originally to be developed in 2 stages - Stage 1 a Stream 5 school for 850 students, and Stage 2 upgrade to a Stream 9 school for 1530 students.

Development of the school will be in 2 phases:

- Phase 1 to construct all teaching spaces,
- Phase 2 to complete the multipurpose hall, sports courts, and landscaping (once TfNSW/Landcom's peninsula masterplan is amended and the road relocation approved).

With waterfront views, maritime access and green parkland surrounds, Sydney Olympic Park High School will be a landmark educational facility for SINSW. This future high school has the responsibility to contribute to this growing suburb and be the heart of Wentworth Point's culturally diverse community.

3.5 Receiving Environment

The project site is based in Wentworth Point area. The south-eastern corner of the project is located 100m from the Parramatta River. Burroway Road to the south of the project falls towards Parramatta to the east. Along this Burroway Road street frontage is a number of Stormwater inlets.

4 LEGAL AND OTHER REQUIREMENTS

All personnel associated with the project will comply with all relevant requirements including:

– Laws – Acts, regulations, policies, etc;

– Environment Protection Licence (if applicable) and permits;

– Development consents, and;

– Relevant industry standards / codes.

Compliance conditions shall be incorporated into this CSWMP. Specific details and controls are included in the associated sub-plans.

A copy of relevant Permits, Licences and any development approvals relevant to RCo activities will be kept on site.

5 RESPONSIBILITIES AND AUTHORITIES

Authorities and responsibilities for all positions are defined in this plan below and communicated in job descriptions and other project documentation. Key responsibilities are indicated in the project organisational chart. Key responsibilities and authorities include;

5.1 Construction Manager

- Ensure that independent audits of the system are conducted
- Review audit outcomes and take action as necessary
- Resolve major issues which cannot be resolved by the Project Manager
- Ensure that internal audits of the system are conducted
- Review audit corrective actions and take action as necessary to ensure timely close out of issues

5.2 HSEQ Manager

- Provide support to the project team
- Facilitate internal and external audits

5.3 Project Manager

- Ensure that project responsibilities and authorities are defined and communicated
- Provide adequate resources to meet objectives
- Approve the CSWMP and various sub-plans and ensure effective implementation and maintained
- Allocate appropriate resources and provide support for the implementation of the CSWMP
- Report to senior management on performance, including assurance, incident and/or environmental breaches
- Take action to resolve non-conformances and incidents
- Ensure suppliers and subcontractors comply with requirements;
- Report environmental incidents to the client / local authorities, as required.

5.4 Site Manager

- Supervise all site construction activities and personnel by ensuring that they meet requirements of the plan
- Organise and manage site plant, labour and tCSWMPorary materials
- Ensure that site controls are properly maintained and provide support to the Project HSE Manager/Advisor
- Take action to resolve non-conformances and incidents

5.5 Project HSE Advisor / Manager

– Ensure that the CSWMP is effectively established, implemented and maintained on the project
– Ensure compliance with all relevant statutes, regulations, rules, procedures, standards and policies
– Report to the Project Manager on the performance of the system and improvement opportunities
– Provide support to the project team to enable them to meet their commitments
– Ensure that environmental controls, materials and equipment are maintained

5.6 Contractors

– Comply with all legal and contractual requirements
– Comply with site environmental requirements
– Comply with management / supervisory directions
– Participate in induction and training as directed
– Report all incidents in a timely manner

5.7 All Personnel

– Comply with the relevant Acts, Regulations and Standards
– Comply with the Company's environmental policy and procedures
– Promptly report to management on any non-conformances, environmental incidents and/or breaches of the system
– Report all incidents
– Act in an responsible manner

6 OPERATIONAL CONTROL

6.1 Risk Assessment and Control

Project wide obligations, aspects and impacts, and risks associated with the project shall be identified and assessed prior to the commencement of the project by the Project Manager in consultation with the project team and recorded in either or all of the following risk assessments or documents, as required:

– Project Risk Assessment (PRA) – (refer to WHS Plan-Appendix 04)
– SWMS, Inspection and Test Plans / check sheets (as appropriate)
– Work instructions or procedures (e.g., refuelling and servicing)

6.2 Hold Points

The activities outlined in the table below are not to proceed without objective review and approval by the nominated authority. Proceeding past a specified Hold Point without authorisation is deemed as a system non-conformance.

These activities below are considered hold points.

ITEM	PROCESS HELD	ACCEPTANCE CRITERIA	APPROVAL AUTHORITY
Dewatering	Dewatering / pumping water off the site	Controls in place as per TTW sediment and erosion plan	Site Manager
Sediment and erosion control measures	Construction activities involving ground disturbance	Sediment and Erosion Control Plan has been developed, reviewed, approved and implemented	Project Manager

Table 05 – Control hold points.

6.3 Controls to Be Implemented

1) Measures to Ensure Sediment is Not Tracked onto the Roadway
    a. At both Gate 1 and Gate 2 a ‘cattle grid’ will be set up to remove sediment from site vehicles tires prior to leaving the confines of the site area,
    b. This ‘cattle grid’ area is to have a water available to allow for the washing of any sediment/ mud from tires prior to leaving site,
    c. Where required a street sweeper will be used to clear any debris from the public roads at the site entry,
2) Erosions and Sediment Controls;
    a. To be established as per TTW’s Sediment and Erosion Control Plan and Details included in **Appendix 1**. Generally this includes the following;
        i. Cattle grid,
        ii. Siltration fencing,
        iii. Berms and falls in bulk excavation levels to contain water in site boundary area,
        iv. Sandbag/ ‘coconut log’ sediment traps,
        v. Backfill to retaining wall to Burroway Road site boundary area to be completed with a free draining material. To allow for overland flow water to drain into this area,
    b. Measures in accordance with Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the ‘Blue Book’
3) Contamination of Water
    a. All sediment laden water in overland flow will be directed away from the leachate management system to prevent cross-contamination of clean water with leachate laden water,
4) Management of Off-site Water Flow
    a. All water that gathers in excavations onsite to be managed internally within the site boundary.
    b. All water will be pumped to the north west corner of the site where there are minimal construction activities taking place. This water will be allowed to dissipate into the ground water,
    c. If any water is to be pumped offsite the Permit to Discharge Water is to be completed as included in Appendix 3.
    d. The planned strategy is for all water to be retained inside the site boundary. If this strategy needs to change the runoff water from the site must be captured and held for sufficient time in an appropriately sized basin until sediment and suspended clay or other colloids have settled. This may require flocculation if necessary in the holding pond to achieve this.

6.4 Potential Contaminated Waste

CIVIL AND EXCAVATION PHASE

We have engaged an Environmental Consultant (Geosyntec) to provide a Remediation Action Plan (RAP) and to supervise works during the excavation phase. Due to the past use of the land as light industrial land use there is an expectation that some contaminated fill will be excavated. Roberts Co and Geosyntec undertook sampling and testing prior to the main works commencing to identify the existing conditions onsite. This sampling included the following;

- Excavation of test pits to identify potential fill types and contaminants,
- An assessment on the presence of Asbestos Containing Material,
- Confirmation of groundwater conditions,

The results of this sampling and the strategy to remediate and contaminated waste is detailed in the Remediation Plan included in Appendix 8.

In summary, the measures required to manage contaminated waste/ fill within the site boundary include the following;

- Removal of any Underground Storage Tanks and backfill with clean material,
- All fill excavated from below the existing ground level is to be stockpiled onsite while samples are taken by the Environmental Consultant. 1 sample is to be taken for every 100m3. These samples will be analysed to determine the soil classification and presence of contaminants,
- Once the soil has been classified it will be removed from site and taken to a facility with the applicable license for the classification type,
- Tipping dockets and a register is to be maintained to track contaminated fill removed from site,
- A marking layer will be installed over the existing fill and a minimum 600mm ‘capping layer’ of clean fill will be placed over the entirety of the site,

STRUCTURE AND FITOUT PHASE

Some hazardous substances will be used onsite during construction of Wentworth Point High School (fuel, oil, caulking, membranes etc). The following controls will be in place to control the use of these substances and ensure no environmental impact;

- A hazardous substance risk assessment shall be conducted for hazardous substances prior to use
- Adequate training in the use of chemicals, emergency response and spill containment equipment shall be provided prior to commencing work
- Safety Data Sheets (SDS) shall be available for any hazardous chemical or dangerous good stored and handled at the project / workplace
- A hazardous substance and SDS register is established and maintained
- Any hazardous chemical that is used, handled or stored at the project / workplace is correctly labelled (with exception to conditions specified in the WHS Regulation - Schedule 9)
- Storage of chemicals must be in accordance with the relevant SDS; non-compatible chemicals must not be stored together
- No bulk storage of hazardous substances or refuelling within the zone of influence of any environmentally sensitive areas and/or waterways
- Flammable liquids and gases must only be stored in approved ventilated containers

- Containers of hazardous chemicals including oil and fuel, stored in a bunded area which is sufficient to contain 110% of the largest container and 25% of the second largest container
- Emergency response and spill containment equipment must be available where chemicals and dangerous goods are stored and used,

7 MONITORING AND MEASUREMENT

Key characteristics of the project operations and activities which have a significant impact on the environment will be regularly monitored and measured.

Monitoring / Reporting Aspect	Details
Inspection and Monitoring	The WHS Manager will perform weekly soil and sediment control inspections and monitoring during the site establishment, construction and site demobilisation phases. Project Procedures will be prepared as necessary to specify how monitoring is to be undertaken, including responsibility and frequency. Monitoring results and any corrective actions identified will be recorded in Roberts Co designated electronic database. National Greenhouse and Energy Reporting related information will be collected and uploaded into Roberts Co designated electronic database. Inspection checklists and any corrective actions identified will be recorded in Roberts Co designated electronic database.
Reporting	The following information will be retained for inclusion in the Reports as follows: – HSE Inspections (Project) – HSE Incidents / complaints (Project)

Table 06 – Control hold points.

8 COUNCIL CONSULTATION

Parramatta City Council was consulted for review of the Construction Soil and Water Management Plan as per the below;

- Construction Soil and Water Management Plan issued to Parramatta Council on 21st October 2022,
- No comments, review or approval received from Parramatta City Council,
- Updated revision plan issued to Parramatta Council on 7th March 2023,
- No comments, review or approval received from Parramatta City Council

APPENDICES

Appendix 01 – TTW – Sediment and Erosion Control Plan and Details

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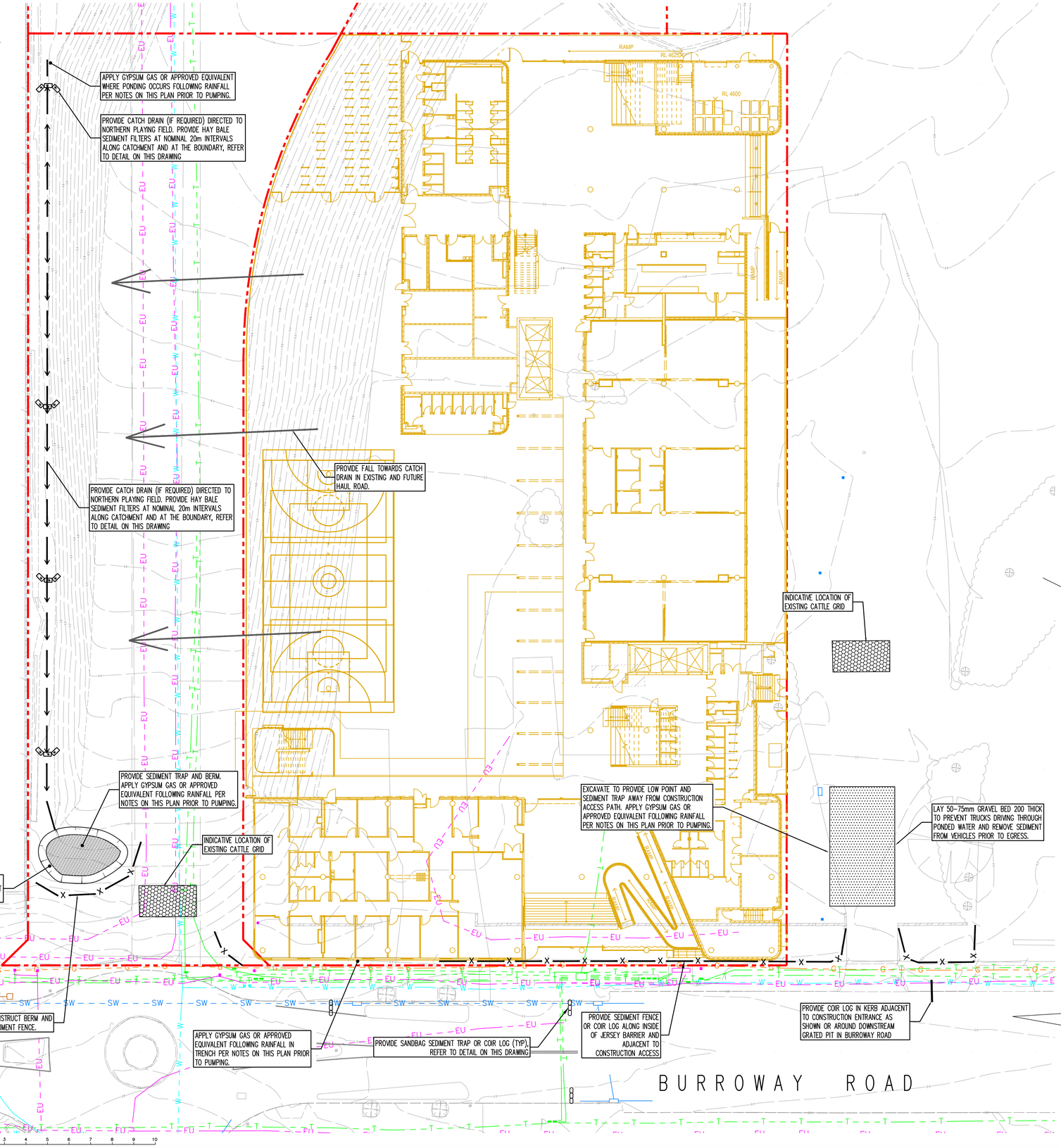
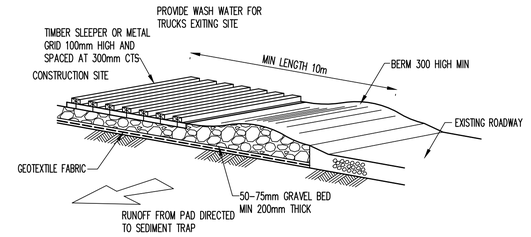
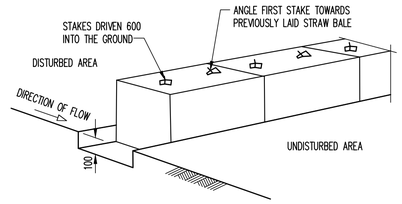
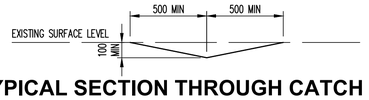




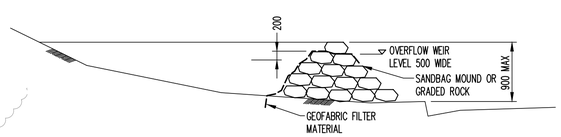
TEMPORARY CONSTRUCTION VEHICLE EXIT
NTS



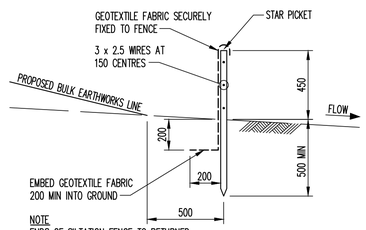
HAY BALE SEDIMENT FILTER
NTS
NOTE: STAKE TO BE EITHER TAR COATED STAR OR 50 x 50 HARDWOOD



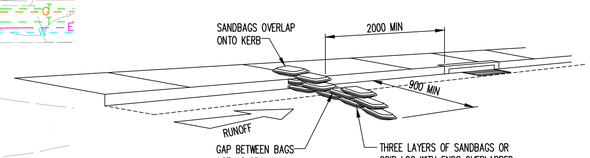
TYPICAL SECTION THROUGH CATCH DRAIN
SCALE 1: 20



SEDIMENTATION TRAP AND BASIN
NTS



SILTATION FENCE DETAIL
SCALE 1: 20



KERB SEDIMENT TRAP
NTS

EROSION AND SEDIMENT CONTROL NOTES

1. All work shall be generally carried out in accordance with
   (A) Local authority requirements,
   (B) EPA – Pollution control manual for urban stormwater,
   (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book").
2. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities.
   The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses.
3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority.
4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits.
5. Minimise the area of site being disturbed at any one time.
6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses.
7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions.
8. Control water from upstream of the site such that it does not enter the disturbed site.
9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit.
10. All vehicles leaving the site shall be cleaned and inspected before leaving.
11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event.
12. Clean out all erosion and sediment control devices after each storm event.

Sequence Of Works

1. Prior to commencement of excavation the following soil management devices must be installed.
1.1. Construct silt fences below the site and across all potential runoff sites.
1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems.
1.3. Construct measures to divert upstream flows into existing stormwater system.
1.4. Construct sedimentation traps/basin including outlet control and overflow.
1.5. Construct swales.
1.6. Provide sandbag sediment traps upstream of existing pits.
2. Construct geotextile filter pit surround around all proposed pits as they are constructed.
3. On completion of pavement provide sand bag kerb inlet sediment traps around pits.

WATER QUALITY TESTING REQUIREMENTS

Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following:

- Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000)
- If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system.This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.

EROSION AN SEDIMENT CONTROL PUMP OUT NOTES

Any accumulated water contaminated with sediment, from a sediment basin or excavation pit, is to be flocculated or filtered in order to lower the suspended solid load to less than 50mg per litre, gypsum gas or other approved flocculant should be applied within 24 hours of the end of the storm event. The gypsum must be spread evenly over the entire water surface. Pumping is not to occur for at least 36 hours and preferably 48 hours after application. Clean water is to be discharged to the water table via a hale bail sediment filter in a way that does not pick up sediment that has dropped to the bottom.
Note: gypsum is a hydrated form of calcium sulphate and is available at many swimming pool shops and hardware stores.

EROSION AND SEDIMENT CONTROL LEGEND

- Siltation fence
- Catch drain
- Hay bale barriers
- Sandbag sediment trap

0 2.5 5 7.5 10 12.5 15 17.5 20m
1:250 A1 1:500 A3

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FOR CROWN CERTIFICATE

REV	DESCRIPTION	CHK DR	DATE
B	ISSUE FOR CC3	SF	AW 26.06.23
A	ISSUE FOR 100% DETAIL DESIGN	SF	AW 23.06.23

ARCHITECT:
WOODS BAGOT
LEVEL 2
60 CARRINGTON STREET
SYDNEY NSW 2000
PO BOX N19
GROSVENOR PLACE NSW 1220

ENGINEER:

PROJECT:
SYDNEY OLYMPIC PARK HIGH SCHOOL (SOPHS)
7-9 BURROWAY ROAD,
WENTWORTH POINT NSW 2127

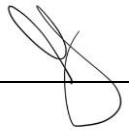
DRAWING NAME:
SEDIMENT AND EROSION CONTROL PLAN AND DETAILS
PHASE 1

TTW JOB No: 211266

SCALE : A1 AS NOTED
DRAWN BY LA
AUTHORISED BY SB
DRAWING No SOPHS-TTW-CV-L0-10003
REVISION B
Plot File Created: Jun 26, 2023 - 11:49am

Appendix 02 – CSWMP Plan Sign Off

I have read and understand the requirements of the role, processes, responsibilities and accountabilities as outlined within this Construction Soil and Water Management Plan.

NAME	POSITION	DATE REVIEWED	SIGNATURE
Gerhard Nelson	HSE Manager	23/05/2023	

Appendix 03 – Roberts Co Permit to Discharge Water

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PERMIT TO DISCHARGE WATER

Project:			
Permit No.:			
Permit Issue Date:		**Permit Expiry Date:**	

This Permit to Discharge Stormwater is to be completed to ensure any worker and/or subcontractor who are required to discharge water (ground or storm water) from the project / workplace are required to record and/or treat the water prior. The Permit must be completed by the Works Supervisor and issued to the nominated Roberts Co representative for approval to proceed.

PART 01: Permit Application (To be completed by the supervisor responsible for the works)

Applicant Name:			
Company / Employer:			
Position / Role:		**Contact Number:**	
Proposed Start Date:		**Proposed Start Time:**	
Proposed Completion Date:		**Proposed End Time:**	
Specific Location of Water:			
Description / Scope of work:			
Proposed Method of Discharge:			

PART 02: Water Quality Results (To be completed by the supervisor responsible for the works)

Test Type	Time Tested	Criteria	Test Record	Acceptable?		Actions
pH		pH 6.5-8.5		☐ Yes	☐ No	
NTU				☐ Yes	☐ No	
Oil/Grease		No visible signs		☐ Yes	☐ No	
Total Suspended Solids		<50mg/L		☐ Yes	☐ No	
Conductivity				☐ Yes	☐ No	

PART 03: Summary of Water Treatment (To be completed by the supervisor responsible for the works)

Approximate total volume of water to be discharged:				
Gypsum	☐ Yes	☐ No	Quantity:	
pH increaser	☐ Yes	☐ No	Quantity:	
pH decreaser	☐ Yes	☐ No	Quantity:	
Other:	☐ Yes	☐ No	Quantity:	
Comments:				

PART 04: Permit Holder (Works Supervisor)			
Works Supervisor – I accept this permit and agree to be bound by the conditions above and the associated procedures and accept the responsibility as the person directly in charge of the work.			
Name:			
Signature:		**Date:**	
PART 05: Permit Authorisation / Approval (Roberts Co)			
Permit Authority – I authorise this Permit to Discharge subject to the conditions and precautions as indicated on this permit.			
Name:			
Signature:		**Date:**	
PART 06: Permit Completion (Discharge works are completed)			
Name:			
Signature:		**Date:**	

Appendix 04 – Operational Control Procedures – Construction Soil and Water Management Risk Action Plans

Water Quality, Site Drainage and Erosion and Sediment Control	
Objective	– To comply with contractual and legislative requirements and ensure that water discharged off-site from construction and erosion and sediment control (ESC) activities does not cause environmental nuisance / harm
Targets	– No sediment impacts to the surrounding environment and waterways as a result of the works – Prevent water quality impacts off site as a result of erosion and sedimentation.
Legal, Contractual and Other Requirements	– See Appendix 3 for list of applicable legislative requirements
Site specific planning / approval conditions / licence conditions	– Planning consent conditions requirements

Controls
(means and resources)
	– Erosion and sediment control plans (ESCPs) will be developed and implemented prior to the commencement of topsoil stripping and earthworks
	– The development of ESCPs will be guided by the Blue Book and other guidelines where required
	– Particular attention will be paid to the design criteria for sediment fences, straw bales, catch drains, diversion drains, sandbags and similar controls
	– Permanent drainage to be installed as early in the program as possible
	– All water to be discharged in accordance with legislation and only after RCo approval
	– Discharge quality must comply with:
	  – TSS: ≤ 50mg/lt (~Turbidy 30NTU). If this cannot be achieved though natural settling, then the trapped sediment laden water is to be flocculated with gypsum applied at a rate of approx. 40kg/100m3
	  – pH: Between 6.5 and 8.5
	– Provide shaker grids or rumble strip at site egress points. Note where aggregate is used, minimum size is 150mm

Water Quality, Site Drainage and Erosion and Sediment Control	
	– Top-soil / mulch stockpiles to be not greater than 2.0m in height. All stockpiles will be located clear of watercourses and drainage works – Wastewater management facilities shall only be provided through connection to existing sewer or proprietary storage and pump out systems are permitted – Wastewater storage and pump out systems shall be procured, installed and operated, including the provision of automatic cut off valves for inflows and high level alarms – All disturbed surfaces will be revegetated within 1 month of final land forming and in compliance with the landscaping plans – ESC devices are to be maintained when their capacity has been reduced by 25% – Under no circumstances will tCSWMPorary stockpiles be placed within 5m of the site boundary or in position where it could impact adjacent property – Toolbox talks will be conducted for CSWMPloyees and subcontractors on the requirements of the ESC Plan – The ESC Plan is to be maintained and up to date for the current site conditions – Use sandbag check dams to protect stormwater drains as required – All ESC works will be removed immediately prior to final completion and all surfaces will be returned to pre-existing condition
Responsibilities	– All staff to ensure adequate ESC devices are installed and maintained – The PER will undertake “at least weekly” inspections of on-site ESC devices, plus prior to expected rainfall and after rainfall – The Site Manager is responsible for the repair / management of any damage or additional ESC devices, as required
Timeframe	– Duration of site works
Monitoring and Reporting	– Visually monitored daily by site supervision – Weekly inspections to be documented on form HSE Inspection – Maintenance activities for ESCPs shall be documented – items that cannot be immediately repaired are to be documented on the project CAR Register – All water quality data including quantity, quality and dates of water release will be maintained the project records

Appendix 05 – Acid Sulfate Management Plan

Begins on Next Page

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Acid Sulfate Soil Management Plan – Wentworth Point new High School

7 Burroway Road, Wentworth Point, NSW 2127

RobertsCo
21 October 2022

AU122229 CEMP App J

Geosyntec consultants

Quality Management

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This report was prepared in accordance with the scope of services set out in the contract between Geosyntec Consultants Pty Ltd (ABN 23 154 745 525) and the client.

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Terminology

AASS	Actual acid sulfate soil
ASS	Acid sulfate soil
ASSMAC	Acid Sulfate Soil Management Advisory Council
CEMP	Construction environmental management plan
EPA	Environment Protection Authority
mAHD	metres Australian Height Datum
mBGL	Metres below ground level
NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)
PASS	Potential acid sulfate soil
POEO	Act Protection of the Environment Operations Act 1997 (NSW)
PPE	Personal protective equipment
SPOCAS	Suspension peroxide oxidation combined acidity and sulfate
SPOS	Peroxide-oxidisable sulfur
SWL	Standing water level
SWMS	Safe work method statement
TAA	Total actual acidity
TPA	Titratable peroxide acidity
TSA	Titratable sulfidic acidity
VENM	Virgin excavated natural material
WHS	Work health and safety

the ASSMAC (1998) action criteria. It was concluded that 'PASS are likely to exist below the water table (i.e. 1.5 m BGL and below), in the darker coloured material observed'.

1.4 Objectives

This ASSMP forms part of the Construction Environmental Management Plan.

The objectives of this ASSMP is to provide guidance on the environmental management of ASS during the remediation, excavation and construction works to be followed by the Principal Contractor and their sub-contractors, and provide appropriate mechanisms to reduce the potential on-site and off-site environmental impacts and mitigate the risks associated with the disturbance of PASS.

The following issues are addressed in the ASSMP:

- strategies for the management of PASS during development
- implementation of a soil and groundwater monitoring program; and
- contingency procedures to be implemented in the event of the failure of management strategies

This document has been prepared to give guidance on management of ASS, in accordance with the NSW Acid Sulfate Soils Management Advisory Committee's ASSMAC (1998) Acid Sulfate Soil (ASS) Assessment Guidelines.

1.5 Review and Approval

This ASSMP is to be reviewed and endorsed by the Site Auditor. Once endorsed by the Site Auditor, the ASSMP is to be submitted to Council and the NSW EPA before the certification of the works.

2 Site Information

2.1 Site Identification

A summary of Site identification details is provided below.

Table 2.1: Site Identification

Title	Details
Street Address:	7 Burroway Road, Wentworth Point, NSW (formerly 3 Burroway Road)
Property Description:	Lot 1 in Deposited Plan 1276305 (formerly Lot 202 DP1216628,Lot 204 D P 1216628 and Lot 204 DP1216628)
Current Site Ownership:	Roads and Maritime Services (RMS)
Property Size:	0.7 hecatre
Local Government Area:	City of Parramatta Council
Zoning – Existing:	B1 Neighbourhood Centre and R4 High Density Residential (Auburn LEP (2010))

2.2 Local Environmental Plan

A review of the Auburn Local Environmental Plan 2010 (ASS Map – Sheet ASS_009), which at the time of writing had not been consolidated to a new City of Parramatta Council Local Environmental Plan, indicates that the Site is located in an ASS risk Class 2 area.

2.3 Acid Sulfate Soil Risk Map

A review of the Prospect/Parramatta River 1:25,000 Acid Sulfate Soils Risk Map indicates that the Site is classified as 'Disturbed Terrain' that includes filled areas that occur during the reclamation of low-lying swamps for urban development. Other activities that result in the classification of a disturbed terrain include dredging, heavy ground disturbance through urban development and/or construction of dams or levees.

2.4 Site Conditions

The site condition reports are summarised below in Table 2.2.

Table 2.2: General Site Conditions

Title	Details
Topography:	The Site is relatively level at an elevation of less than 10 metres Australian Height Datum (mAHD) and has been subjected to historical filling associated with land reclamation which has altered the original topography.
Superficial Geology:	Based on the Sydney Geological Series Sheet 9130, the Site is underlain by man-made fill comprising dredged sand and mud, demolition rubble and/or industrial and household waste (up to 2.4 mBGL). The fill is underlain by Quaternary Age alluvial deposits (1–4.8 mBGL). Ferruginous and humic cementation may occur in places and shell layers are common. Highly weathered, grey sandstone was encountered at one borehole location at 4.4–4.8 mBGL.
Depth to Groundwater:	Depth to groundwater ranges between 0.6 mBGL to 3.7 mBGL, and standing water levels (SWL) ranged between 0.5 mAHD and 2.7 mAHD.
Flow Direction:	Groundwater flows northwest and northeast towards the Parramatta River and Homebush Bay respectively.

2.5 Previous ASS Investigations

The Site, as a portion of Wentworth Point Peninsula Park Project, has been subject to a number of historical ASS investigations. A list of most relevant reports is provided below:

- WSP 2009a, Acid Sulfate Soil Management Plan Harbour Radio Pty Limited (2GB) Burroway Road, Homebush Bay, NSW.
- WSP 2009b, Environmental Site Assessment Harbour Radio Pty Limited (2GB), Burroway Road, Homebush Bay, NSW.
- GHD, 2012, Additional Contamination Assessment – Stage 1 Area, incorporates results from the 2010 detailed site investigation.
- Parsons Brinckerhoff (PB) 2014, Proposed management of acid sulfate soils prepared for the Wentworth Point Development.
- WSP 2014, Soil Contamination Assessment Burroway and Hill Road, Wentworth Point Development, HomebushBay, NSW 2127.
- Parsons Brinckerhoff (PB) 2015, Detailed Remediation Action Plan – Infrastructure Delivery, Wentworth Point Development.

3 Extent of Management

3.1 Proposed Redevelopment

The proposed works will include the removal and remediation of surrounding soil of several USTs approximately 3m bgl. It will also include excavation, pile soil and inground service trenching.

Site layout for the site is provided as Appendix A, which indicate the areas requiring excavation.

The proposed remediation works for the infrastructure delivery include the bulk excavation of specific cut-to-fill areas to depths that may extend up to 3.0 mBGL (WSP, 2015). Based on the proposed excavation depth, indicative volumes of soil to be disturbed, and the Site located in an area of high occurrence of ASS materials at or near the ground surface, any materials that are excavated and suspected of containing PASS and/or ASS should be assessed and managed according to management measures and mitigation strategies discussed in the following sections.

3.2 Assessment Criteria

The following assessment criteria for field and laboratory testing have been developed with reference to the ASSMAC guidelines (1998).

ASS are usually found in estuarine environments up to 10 mAHD and generally consist of clays and sands containing pyritic material. The field indicators of ASS include:

- iron staining on any drain surfaces
- unusually clear or milky green water discharging from the site
- jarosite horizons or mottling due to iron in the subsurface
- corrosion of concrete or steel structures
- presence of any sulfurous odours.

Analytical results are assessed against the following criteria taken from ASSMAC (1998). Action criteria are based on texture and clay content of the soil being analysed and the total volume of soil to be disturbed. For the purpose of this plan the adopted action criteria is conservatively applied for coarse texture soils, based on the natural soils encountered including clay, sand and sandy clay. As the potential amount of ASS requiring excavation is unknown both the criteria for 1 to 1,000 tonnes disturbed and for >1,000 tonnes disturbed have been considered; for coarse soils the criteria are the same for both categories. Table 3.2 outlines the assessment criteria.

Table 3.1: Adopted Action Criteria

Analyte	Units	Action Criteria (Coarse Soils)	
		1 to 1,000 tonnes disturbed	>1,000 tonnes disturbed
S_{POS}	%	0.03	0.03
TTA + TPA	mol H^+/T	18	18
TSA	mol H^+/T	18	18

S_{POS} – Peroxide-oxidisable sulfur
TAA – Total actual acidity
TPA – Titratable peroxide acidity
TSA – Titratable sulfidic acidity

4 ASS Management Strategy

The following sections outline management measures and mitigation strategies to be undertaken to manage areas where potential or actual ASS materials are present at the Site.

General construction environmental management for the proposed works is presented in the CEMP. This ASSMP provides specific information for the management of ASS at the site and is a sub-plan to the CEMP.

4.1 ASS General Management Strategies

There are a range of control and management measures available when dealing with the possible disturbance of ASS. Such measures can be implemented individually or jointly as part of a combined approach.

PB (2014) summarises the following general strategies as outlined in ASSMAC (1998):

- Avoidance – where ASS areas are avoided altogether (total avoidance) or development activities are adjusted so that the more severe areas are left undisturbed (partial avoidance).
- Oxidation prevention – ASS are innocuous if they are not allowed to oxidise. Oxidation can be prevented by avoidance, water table control, in situ capping, or removal and burial below the water table.
- Acid neutralisation – acid present or produced by oxidation in the soil can be controlled by the addition of alkaline agents such as agricultural lime for example.
- Leachate treatment – where the sulfidic content of the soil is very low (quantity), deliberate oxidation with leachate collection and treatment might be appropriate. This method is generally only applicable to sands, given the lengthy drying times for clay, and would require pilot trials prior to implementation.
- Disposal to landfill – the ASS may be removed and disposed of at an appropriate landfill facility. Untreated ASS would require treatment as a contaminated soil for the purpose of transport and disposal.

It is considered that avoidance of PASS/ASS is not viable as the proposed excavation is anticipated to extend to a depth greater than 1.5mbgl.

Therefore, the most feasible management strategies are summarised as follows:

- For PASS generated from the landward section of the launching channel, the material can be treated by addition of an alkaline agent such as agricultural lime. The treated PASS can then be reused in other parts of the site or the wider Wentworth Point redevelopment (where possible). The treated PASS can only be placed beneath the proposed capping layer to be constructed as part of the overall Wentworth Point development. No treated PASS can be placed below the water table.
- Dewatering associated with the works to be undertaken within the cofferdam and the excavation required as part of the launching channel construction may result in the exposure of PASS.

5 Testing and Management Procedures for Acid Sulfate Soils

As part of the development works will involve the excavation of PASS/ASS, the management strategy to be adopted for the site during the excavation and construction works in order to mitigate the impacts of PASS/ASS on the surrounding environment will include the following steps:

- Appoint a suitably qualified person to manage the acid sulfate soil issues during the earthworks
- Minimise the amount of PASS/ASS required to be excavated
- Excavate and stockpile spoil in separate layers based on geological units and moisture content (i.e., saturated or dry) and reinstate spoil in the same order to ensure that PASS remain saturated.
- Reinstate PASS/ASS under the water table with 16 hours of excavation works (where possible)
- Undertake monitoring and laboratory testing of excavated soils (mainly based on visual assessment, field testing and laboratory testing) to assess the potential presence of acid generating potential during excavation activities and establish liming rates
- Excavated PASS/ASS can be managed through either offsite disposal or on-site treatment
- Manage and monitor dewatering activities to minimise the ingress of groundwater into the excavation and to maintain the groundwater table in the area.

In the case of the exposed sediments within the cofferdam, the material will undergo in-situ cement-lime mixing to increase the geotechnical specification of the sediments. This should reduce the potential for acid generation. Further testing is required to be undertaken to assess whether additional liming is required prior to onsite reuse or offsite disposal.

5.1 Training and Responsibilities

The Principal Contractor should appoint a suitably qualified person who will be responsible for managing ASS at the site during the proposed remediation, excavation and construction works. It is expected that daily attendance to the site will be required to facilitate soil sampling required under this ASSMP.

The appointed person should be familiar with:

- This ASSMP
- Council and other relevant statutory requirements
- Recognition of PASS and ASS
- ASS testing and treatment procedures
- Onsite management of ASS activities
- The NSW ASSMAC Guideline

The classification of ASS/PASS during excavation should be carried out by personnel trained in the identification of ASS and be based on visual classification and the field peroxide test. If required, a suitably qualified environmental consultant should be engaged to assist or train the Principal Contractor in the identification of acid sulfate soils and sampling and analysis.

5.2 Screening of Soils During Excavation

The following procedures are recommended for the Principal Contractor for the sampling and stockpiling of excavated materials. This should be carried out by personnel trained in identifying and testing ASS in the field. Depending on site constraints, other equivalent procedures may be adopted by the Principal Contractor:

- Site excavations will be observed and logged by personnel trained in identifying and testing PASS/ASS in the field
- Excavated soils from depth greater than 1.5m below ground level or excavated sediments from Homebush Bay are considered as PASS/ASS and will be required to be field tested as per Section 5.4
- Based on the field classification tests, soils/sediments suspected as being PASS/ASS will be stockpiled separately to materials assessed as not PASS/ASS. Temporary stockpiling of such materials should be carried out as per Section 5.6.
- Soils/sediments assessed as having a low risk of ASS will be stockpiled in accordance with the Construction Environmental Management Plan (CEMP) with the objective to reduce water ponding, and to control surface erosion and sediment transport outside the stockpiled areas. These soils can be reused within the wider redevelopment area beneath the proposed capping layer. Any surplus soil or sediments generated from Homebush Bay will require to be classified under Parts 1 and 4 of the NSW EPA (2014) Waste Classification Guidelines for offsite disposal.

5.3 Visual Classification

A preliminary visual check by personnel trained in the identification of PASS will be based on material type, colour and consistency:

- PASS are generally grey in colour. Soils may start turning a brown colour when acid is being generated.
- Soils may have a sulfurous (rotten egg) odour. Caution is urged as the low lying terrain may mean that peat could be present, which can have a similar type of odour.
- There may be some bubbling occurring in soils when exposed to air and acidification is occurring. This only happens if acidification takes place relatively quickly.

5.4 Field Test Classification

Section 6.5 in the WSP/PB (2017) has specified the soil sampling frequency for PASS/ASS:

Field pH measurements will be need to be undertaken at a frequency of 1 sample per 25m3 of excavated soils from below 1.5m below ground level. Field pH readings of 4 or less than 5.5 will indicate that the soils are acid and may be the result of limited oxidation of sulfides. Field screening should be carried out by personnel trained in the identification of PASS/ASS and based on the protocols presented in the NSW Acid Sulfate Soil Manual (second edition, March 1998).

5.5 Laboratory Testing for Assessing Liming Rate

Based on the results of the visual classification and field testing, samples will be collected by personnel trained in the identification of ASS and submitted for laboratory analysis using the chromium reducible sulfur suite (Scr) method to confirm the results of the field test and determine the required liming rate.

Sample will be submitted for Sc analysis at a minimum rate of 10% of the total number of field screened samples, or at a minimum 1 sample per treatment batch.

5.6 Temporary Stockpiling

Where stockpiling exceeds two days, excavated soils will be bunded and covered with plastic to help slow the oxidation process. Where extended periods of stockpiling occur (i.e. greater than two weeks) soils will be removed to a treatment pad and lime applied. Normal stormwater and sediment controls should be in place. Extended periods of stockpiling will require leachate collection and monitoring. Where monitoring of the leachate indicates low pH, the addition of lime will be required prior to discharge to stormwater. It should be noted that discharge to stormwater requires approval from Council, and will be subject to other criteria such as the presence of contaminants, pH and suspended solids.

5.7 Bulk Earthworks

Given the heterogeneity and chemical composition of fill soils, highly variable nature of the Quaternary alluvium beneath the Site, and the nature of the proposed site works, avoidance of ASS materials is not considered viable. Staged excavation works should be implemented in the areas PASS/ASS have been identified. Care should be taken during the bulk earthworks to minimise disturbance of groundwater and prevent oxidation of soils below groundwater table.

- Where potential or actual ASS is required to be excavated, the following considerations should be taken into account (ASSMAC, 1998):
- Where the sulfidic layer is <0.5 m deep, these areas should ideally be left undrained with minimal disturbance (i.e. generally these areas are best left waterlogged).
- Where the sulfidic layer is between 0.5 and 2.0 m deep, drainage and excavation should only be attempted in accordance with a properly designed management plan:
  - if the sulfidic layer is 0.5 to 1 mBGL, excavation should be limited to areas less than 0.3 mBGL
  - if the sulfidic layer is 1 to 1.5 mBGL, excavation should be limited to areas less than 0.5 mBGL
  - if the sulfidic layer is more than 1.5 mBGL, excavation should be limited to areas no greater than 1 mBGL.
- Where areas are 'scalded' or degraded and devoid of vegetation, no further drainage or excavation should be undertaken. Remediation strategies should be developed.

Prior to excavation works, the following controls and management measures should be implemented to manage the PASS/ASS at the Site.

Table 5.1: Management of ASS materials prior to excavation works

Title	Details
Wash Bays	Wash bays should be installed at the site to minimise off-site tracking of contaminated materials by machinery. Wash bays should be used prior to trucks/machinery leaving the Site or when moving from an excavation area to a clean area of the Site. Leachate controls should be employed around wash bays to minimise the spread of contamination. These should include collection of runoff.
Staged Excavation Planning	Staged excavation works should be implemented in the areas PASS/ASS have been identified by laboratory analysis of soil samples or are suspected, to minimise the risks posed to the environment and to minimise oxidation of in situ materials. To achieve this, the excavation area should be excavated systematically as a series of smaller 'cells' rather than one large area.

Title	Details
	Where ASS materials are left in situ as the uppermost layer and exposed (i.e. not saturated), areas should be either capped with clean virgin excavated natural material (VENM) or concrete as soon as possible prior to moving to the next area. Ideally, the optimum 'cell' size should be calculated based on the area that can be completed (including capping works) in a single day. Prior to commencement, a works schedule should be prepared indicating when each area will be excavated and capped. Areas should be marked out prior to the excavation works taking place.

5.8 Management Options for ASS/PASS

Where PASS is excavated, excavated PASS materials may be managed by one (or a combination) of the following methods:

- neutralisation of PASS materials where reuse on-site above the water table is required (Option A)
- reburial of excavated PASS materials below the water table (Option B) and
- disposal of excess treated/untreated PASS material to a licensed off-site facility where it cannot be reused on-site (Option C).

Management options for ASS/PASS have been outlined and evaluated in the following table.

Table 5.2 Management options for ASS/PASS

Option	Details	Evaluation of Applicability
Option A: Treatment of PASS and on-site reuse	PASS is excavated and neutralised with lime. The treated material will be re-used on site above the water table with adequate capping.	This option is suitable for PASS materials excavated above/below water table to be used for raising the levels for the development.
Option B: Reburial of excavated PASS materials below the water table	Excavated PASS materials may be re-used on-site by burying the materials in an area of the site located below the water table.	This option is suitable for saturated PASS materials (below water table) and not suitable for fill materials.
Option C: Disposal of excess treated/untreated PASS material to licences off-site facility	A waste classification is assigned for the off-site disposal of PASS to a licensed offsite facility.	Potential option for situations of limited spatial area for treatment or volume of excavation larger than treatment / reburial capacity.

5.9 Preferred Option for Management of ASS/PASS

As outlined in the table above, the most viable and therefore the preferred option for managing ASS/PASS during the proposed site works is Option A (Treatment of PASS and on-site reuse) in coupled with Option B (Reburial of excavated PASS materials below the water table). The management procedure for both options is outlined below.

5.9.1 Treatment of PASS and on-site reuse (Option A)

During bulk earthworks, where PASS materials are to be reused on-site in areas not saturated or more than 16 hours after excavation, these materials must be treated prior to reuse.

The procedures outlined in the following table should be implemented for this option:

Table 5.3: Management procedures for Option A – Treatment and on-site reuse

Procedure	Details
Step 1: Lime Selection and Liming Rate Adoption	The most common material used to neutralise acidic sediments is agricultural lime (aglime as CaCO3). Aglime (pH 8.2) is the safest and cheapest neutralising agent (Manual, 1998). Based on the results from the assessment undertaken along Burroway Road (WSP, 2014), the liming rate would be between 0.04 tonnes of lime per tonne of disturbed soil and 0.12 tonnes of lime per tonnes of soil. These rates are based on the average and maximum Peroxide-oxidisable sulfur (SPOS) from the assessment. Appendix B provides the neutralising calculations worksheet from ASSMAC (1998) which can be used to determine the appropriate dosing rates based on laboratory data from any ASS identified during the works. When estimating lime requirements in accordance with ASSMAC (1998) guidelines, a safety factor of at least 1.5 to 2 times the weight/volume should be applied to allow for inefficient mixing of the lime and its low reactivity. In addition, the purity and effective neutralising values also needs to be included in the estimation of lime requirement, as specified in ASSMAC (1998).
Step 2: Set up Treatment Area/s	Treatment must be undertaken on a developed hardstand area or suitable engineered pad or limed pad. The hardstand area would require appropriate drainage controls to ensure that any runoff is collected. The limed pad should be at least 100mm thick and this thickness should be maintained for the duration of treatment works. The purpose of this guard layer is to minimise the risk of acidic water leaching from the base of the treatment area into the groundwater. Dependent upon the rate of spoil generation, several bunded treatment areas may be necessary for stockpiling and treatment. An earthworks strategy should be prepared to ensure that sufficient space is available on site to accommodate treatment of the PASS.
Step 3: Spoil Management	Stockpiles containing PASS materials should be placed to minimise environmental impact from any leachate. ASSMAC (1998) indicates that the design of stockpile(s) should include the following controls: • all stockpiles to be bunded to retain any water run-off from the treated materials • establish leachate collection and treatment systems including an impervious pad on which to place the stockpile • if an impervious pad has not been established under the stockpile, as a precautionary measure, an apron of fine lime should be applied below the stockpile when stockpiling materials for any length of time • minimise the surface area exposed to oxidation – consider using some form of artificial capping if storage is for longer than a few weeks • minimise the amount of water infiltration – consider using some form of artificial capping • establish diversion banks upslope to prevent run-on water • establish sediment control structures to ensure sulfidic material is not eroded – consider using some form of capping. To manage spoil effectively and meet the above requirements, excavated materials should be stored in a designated area at each site and reused or disposed of off-site as soon as possible following excavation with appropriate management procedures.
Step 4: Excavation & Handling	PASS disturbed during development works should be immediately transferred to the designated treatment area and spread out in 150 mm to 300 mm thick layers. If possible the layers should be allowed to dry in order to aid the mixing process. The layers should then be interspersed with the appropriate amount of lime to aid in the effective mixing of lime and soil. Lime should be applied to the excavated material within the treatment area as soon as possible. If circumstances prevent the spreading and treatment of the material, the surface area of the stockpile should be minimised by forming a relatively high coned shape and avoiding 'spreading-out' of the stockpile. This will limit the surface area exposed to oxidation. Water infiltration should be minimised by covering the stockpile during wet weather. This will limit the formation and transport of acid leachate due to rainfall. The stockpile should be bunded to prevent erosion of the PASS and any movement of potentially acid leachate. Upstream surface runoff water should also be diverted around the stockpile.
Step 5a: Lime Treatment	An excavator or other suitable equipment (as deemed appropriate by the excavation contractor) should be used to thoroughly mix the lime through the soil. Alternatively use of a pug mill may be considered dependent upon the volume of soil to be treated in a timely fashion. Monitoring should be undertaken by qualified personnel to ensure the mixing is undertaken to a suitable extent as neutralisation success relies on effective mixing of the neutralising agents and soil.
Step 5b: Lime Buffer	Establishing a 'lime buffer' at the face of any recent excavation which exposes ASS by sandbagging the face and incorporating lime under and in the sandbags so that the acid leachate flows through the sandbags; backfilling the face with clean fill mixed with lime/sand mix; and excavating a trench behind the face and incorporating a lime/sand mix or barrier so that the acid leachate/water must pass through. Insoluble coatings and preferred pathways may limit the effectiveness of lime buffers.

Procedure	Details
Step 5c: Capping	To minimise the generation of acids, open excavations where the uppermost exposed layer contains PASS materials should be capped as soon as possible or left saturated. If capping is necessary, one (or a combination) of the following capping options should be used: • cap with clean, imported VENM (tested to ensure it meets the appropriate criteria for imported VENM materials) • cap with re-used soil from on-site (tested to ensure it is within the adopted site assessment criteria and does not contain ASS) • cap with concrete. Capping should occur within 16 hours to minimise the environmental risks associated with acid generation. Where concrete or other building materials are to be placed directly in contact with PASS or AASS, appropriate materials should be chosen that are resistant to the long-term effects of sulfate and sulfuric acid which may be produced by the soils.
Step 6: pH Testing and Monitoring	The pH of the soil should be checked using the test method(s) outlined in the ASS Manual 1998 (Methods 21A and or 21Af) to confirm that PASS have been neutralised by lime addition. If required, additional lime should be added to the soil and additional mixing undertaken. Following treatment with lime the pH of the soil should be in the 5.5 to 8.5 range.
Step 7: Re-use on Site	Following treatment and validation, treated PASS materials could be re-used on site above groundwater table for raising the ground level. Treated PASS should not be spread over sensitive areas (e.g. mangroves) or directly adjacent to waterways. The area where the treated PASS is going to be placed should be cleared. The area should be dusted with lime. The neutralised PASS should then be spread across the placement area in layers. Care should be taken not to disturb the underlying soil. On completion, the surface of the neutralised PASS should be dusted with additional lime prior to capping. A suitable capping layer should be placed over the neutralised PASS. The finished surface should be turfed or paved to minimise the potential for erosion.

5.9.2 Reburial of excavated PASS materials below the water table (option B)

The procedures outlined in the following table should be implemented for this option:

Table 5.4: Management procedures for Option B – Reburial below the water table

Procedure	Details
Step 1: Excavation & Reburial	This mitigation strategy may involve reburial of the excavated PASS materials as quickly as possible prior to acid generation by over-excavation (in a staged approach) to provide capacity for disposal of the PASS materials at the bottom of a constructed void preferable below a permanent water table. Cut and fill budget should be prepared to ensure that there is adequate capacity to maintain the PASS materials in anaerobic conditions in the void. This must be done within 16 hours of excavation works to avoid acid generation. If the material is to remain exposed at the surface, it should be capped (refer Table 4.3). If the material is required to be stored for longer than 16 hours, then it must either be: • placed in a temporary holding area where it remains saturated (either below the water table in another area of the site or in an artificial saturated area filled with water). As a safety measure, some lime should usually be added and the water needs to be monitored and treated if the pH drops below 6.5. • treated as per Option A.
Step 2: Treatment (subject to duration of PASS materials exposed to oxygen)	As per Table 4.3.

5.10 Alternative Management Option for ASS/PASS

Option C – Disposal of excess treated/untreated PASS material to a licensed off-site facility is considered as an optional management strategy for situations of limited spatial area for treatment or volume of excavation larger than treatment/reburial capacity encountered.

5.10.1 Disposal at a Licensed Landfill (Option C)

If excavated PASS materials cannot be re-used on site, they should be disposed of at a suitably licensed waste facility. Excavated soils containing ASS should be disposed of in accordance with the NSW EPA (2014) waste classification guidelines, as follows:

- For VENM containing PASS (pH of 5.5 or more):
  - the materials must be kept wet at all times during excavation and subsequent handling, transport and storage
  - the receiving landfill must be licensed by the NSW EPA to dispose of PASS below the water table
  - the materials must be received at the receiving landfill within 16 hours of being dug up.
- For Actual ASS (AASS, pH of 5.5 or less) or PASS that has dried out, undergone any oxidation of its sulfidic minerals or is not VENM:
  - the materials must be treated (neutralised) on-site through liming, mixing and testing to ensure that the mixing of lime materials is successful. Monitoring of pH should be carried out regularly during and after the neutralisation procedure to establish the effectiveness of the treatment
  - following neutralisation, testing should be undertaken to classify the treated material in accordance with the NSW EPA (2014) Waste Classification Guidelines - Part 1: Classifying Waste (2014) and Waste Classification Guidelines Part 4: Acid Sulfate Soils (2014), and the excess treated materials should be disposed to an NSW EPA licensed landfill facility.

The receiving landfill must be licensed by the EPA to accept the class of waste as per the classification. The landfill should be informed prior to receiving the waste that the material contained ASS and was treated in accordance with the neutralising techniques outlined in ASSMAC (1998).

Information should be recorded/filed for each batch of material tested and disposed of off-site. This should include the origin of material, the volume, a description of the materials, laboratory results and disposal certificates.

The costs associated with the off-site disposal can be significant and should be assessed at an early stage of the project to avoid significant future unexpected additional costs.

The procedures outlined in the following table should be implemented for this option:

Table 5.5: Management procedures for Option C – Disposal at a Licenced Landfill

Procedure	Details
Step 1: Contact Landfill	Prior to commencement of excavation works, the landfill should be contacted and the necessary approvals should be obtained for disposal.
Step 2: Excavation & Handling	Natural soil classed as PASS should be excavated/disturbed in stages. PASS must be kept wet at all times during excavation and subsequent handling, transport and storage until they can be disposed of safely.
Step 3: pH Testing	The pH of the soil should be checked using the test method(s) outlined in the ASS Manual 1998 (Methods 21A and or 21Af). The pH of each load and the time of extraction should be recorded and forwarded to the landfill. If the pH is less than 5.5 then the material is not suitable for disposal and Option A should be implemented.
Step 4: Transport for VENM containing PASS (pH of 5.5 or more) **OR**	Provided that the pH of the excavated PASS is not less than 5.5, PASS material can be loaded onto trucks and transported immediately to the landfill. Prior to burial the landfill will check the pH of each load. Any loads that do not meet the acceptance pH criteria will be turned away.
Step 4: Treatment for AASS/PASS (pH of 5.5 or less)	As per Table 4.3.

Procedure	Details
Step 5: Waste Classification and Disposal	Following neutralisation, testing should be undertaken to classify the treated material in accordance with the NSW EPA (2014) Waste Classification Guidelines and the excess treated materials should be disposed to a NSW EPA licensed landfill facility.

6 Groundwater Management

Some dewatering may be required given the proposed remediation works for the infrastructure delivery include the bulk excavation of specific cut-to-fill areas to depths that may extend up to 3.0 mBGL (WSP, 2015).

The procedure for managing groundwater seepage and dewatering during development works is outlined in the following table:

Table 6.1: Management procedure for dewatering

Procedure	Details
Step 1: Minimise the depth of dewatering	Where possible the depth of dewatering should be minimised to reduce the generation of ASS and/or acidic conditions. Excavation and dewatering works should be staged over short durations to reduce the time and volume of PASS exposed to oxidation.
Step 2: Approvals for Groundwater Disposal	Reference should be made to the local council, NSW Office of Water/WaterNSW, Sydney Water and other relevant authority's approval requirements for further information in relation to disposal of water to either the sewer or stormwater systems.
Step 3: pH Testing and Neutralisation	Water pumped from the excavation should be placed in a portable tank, or appropriate holding facility, where samples can be obtained for testing. The water should be in the pH range of 6.5 to 8.5 (NSW Government, 2009). If the pH is outside of this range, treatment will be necessary prior to disposal. Based on the disposal option chosen for the development, additional screening for contaminants may be required by the relevant authorities prior to disposal.
Step 3: On-going groundwater monitoring	In the event that extended pumping of water is necessary during the construction period, the level and quality of the groundwater should be monitored on a regular basis over the entire construction period. The pH should be measured and recorded on a regular basis. Immediate advice is to be sought from an experienced consultant if the pH at any location is not within 10% of the initial pH at the commencement of pumping. If required, corrective action should be taken as soon as possible. Laboratory analysis will be required on water samples as part of the corrective action to assess the quantity of neutralising agents required if treatment is necessary. The groundwater monitoring program refer to Section 7.

7 Monitoring Program

The overall objective of monitoring is to measure the effectiveness of the proposed strategies in achieving the desired outcomes. Monitoring will assist in identifying and addressing any non-conformances and providing information for implementing corrective actions within an appropriate timeframe. Table 6.1 outlines the monitoring program during the works.

Table 7.1: Monitoring Program

Procedure	Details
General	Monitoring of ASS control/management procedures including excavation methods, spoil management measures, and dewatering and groundwater management should be undertaken. ASS pollution incident response investigations, including management and/or remediation measures, should be prepared as required.
Soil Monitoring Program	The following will constitute the soil monitoring program during the works: • Field pH measurements of all materials excavated should be taken and logged to provide broad coverage of the excavated material types encountered. One sample should be collected per 25 m^3 of excavated soil materials for on-site pH testing. • Field pH readings of 4 or less will indicate that ASS are present with oxidising sulfides, readings of greater than 4 but less than 5.5 indicate that the soils are acidic and may be the result of limited oxidation of sulfides. • Where soils are required to be limed, materials should be tested to ensure that the neutralisation process has been successful. Field testing should be undertaken at a rate of one per 50 m3, if changes in liming rates or material are observed additional samples should be collected. Laboratory testing (SPOCAS or chromium suite) should be undertaken at a rate of 25% of field samples to confirm the results. • For waste disposal: - material is pre-classified as PASS material as per the NSW EPA (2014) waste classification guidelines providing it is delivered to the receiving waste facility within 16 hours of excavation - if soil is not delivered to the waste facility within 16 hours it will require liming and testing to ensure that the material has been successfully neutralised and to classify the material as per the NSW EPA (2014) waste classification guidelines. Information should be recorded and filed for each batch of soil tested. Information should include the origin of the material, the volume, a description of the materials, laboratory results and disposal certificates (where appropriate).
Water Monitoring Program	The following will constitute the water monitoring program during the works: • Any pumped water from the excavations and runoff collected will be stored in retention basins or fully contained tanks on-site. • Water samples should be representative of the stored water and may require sampling from different depths, particularly if the water has been stored long enough to allow it to settle. • Water stored in basins/tanks should be tested for metals (aluminium, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel and zinc) and cations and anions to characterise the water quality. In addition, the water should be tested for physical parameters on-site including dissolved oxygen, electrical conductivity, pH, reduction/oxidation potential, temperature and turbidity. • If runoff is stored separately to any pumped water, the requirement for site runoff can be met via the following water quality criteria being tested for and met prior to off-site discharge of collected runoff: - total suspended solids not greater than 1,500 mg/L - pH between 6.5 and 9.0 - iron not greater than 500 µg/L - aluminium not greater than 5 µg/L for pH <6.5, not greater than 100 µg/L for pH >6.5 - no visible oil or grease film. ASSMAC (1998) provides water quality performance criteria to be met for the discharge of water into the environment are summarised, as summarised below.

Procedure	Details		
	Water Quality Indicator	**Fresh water**	**Marine Water**
	pH	6.5-9.0	<0.2 pH unit change
	Iron (total)	500 µg/L	Not applicable
	Total dissolved solids	<1500mg/L	>1500mg/L
	Aluminium	5 µg/L for pH <6.5	Not applicable

8 Contingency Plan

8.1 Incident and Emergency Response

There is a potential for incidents and emergency response requirements relating to ASS issues, particularly pollution/contamination of surrounding areas and waterways from acid contamination. The contractor is to have appropriate incident reporting mechanisms (including near miss reporting) and these are incorporated into the Site work health and safety (WHS) plans and CEMP. Some issues that may arise unexpectedly include:

- interception of existing unknown AASS and/or PASS identified through field inspections/measurements or observed adverse reactions with flora and/or fauna (including site workers and public)
- inclement weather or incorrect management practices causing erosion and transportation of AASS and/or PASS materials off-site from stockpiles and active construction excavations.

The emergency response procedures will include:

- immediate containment of acid runoff from stockpiles or areas of excavation by bunding
- communication between the project manager, site managers, supervisors and contractors detailing the pollution incident requiring response/action
- site inspection to assess extent of severity of the emergency/incident
- based on the assessed severity of the incident by Roads and Maritime, the project manager will determine the need to notify regulators potentially including the NSW EPA; notifications should detail the type and extent of potential impacts and remediation requirements
- monitoring and/or management of incidents which may include soil or groundwater sampling and analysis, spill clean-up, investigation materials, correction of erosion control measures and remediation of affected area (if required)
- incident reporting detailing all investigation and remediation actions taken and remediation results carried out
- environmental incidents will be reported immediately to the site supervisor who will contact the project manager. All incidences will be investigated and the appropriate course of action will be taken to address the issues. Serious environmental incidents will be reported to the NSW EPA.

8.2 Non-Conformance Preventative and Corrective Action

In the event of a non-conformance, the source and nature of the event will be investigated, the effectiveness of the existing controls reviewed and modified where practical, and necessary strategies will be implemented to minimise further impacts.

Prior to undertaking any remediation or excavation, a safe work method statement (SWMS) will be prepared that defines safe procedures to protect the health and safety of personnel. The SWMS will include the following:

- all workers will wear personal protective equipment (PPE) that may include breathing apparatus, protective overalls, gloves, safety boots and hard hat
- decontamination facilities made available to ensure workers are free of any contamination prior to leaving the workplace
- ASS areas are separated from the remaining activities by appropriate fencing and signage. Access to the site is restricted only to personnel directly involved in the works.

9 References

ASSMAC 1998, Acid Sulfate Soil Manual.

Browns Smart Consulting 2014, Road Bulk Earthworks Plan

Department of Science, Information Technology, Innovation and the Arts (DSITIA), Queensland Government 2014,

Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.

National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).

NSW EPA 2017, Guidelines for the NSW Site Auditor Scheme (3rd edition).

NSW EPA 2014, Waste Classification Guidelines, Part 1: Classifying waste.

NSW EPA 2014, Waste Classification Guidelines, Part 4: Acid Sulfate Soils.

NSW EPA 1995, Sampling Design Guidelines.

NSW EPA 1997, Guidelines for Consultants Reporting on Contaminated Sites.

Parsons Brinckerhoff (PB) (2015) Proposed Management of Acid Sulfate Soils prepared for the Wentworth Point development, Ref: 2207004B-CLM-LTR-002 RevB.

Parsons Brinckerhoff (PB) 2015, Detailed Remediation Action Plan – Infrastructure Delivery, Wentworth Point Development, Ref: 2207004B-RES-REP-001 Rev C.
Stone, Y., Ahern, C. R., and Blunden, B. 1998, Acid Sulfate Soils Manual 1998. Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia

Thiess Pty Ltd (2014) Environmental Management Plan Homebush Bay Sediments, 6 November 2014. Final

WSP 2009a, Acid Sulfate Soil Management Plan Harbour Radio Pty Limited (2GB) Burroway Road, Homebush Bay, NSW.

WSP 2009b, Environmental Site Assessment Harbour Radio Pty Limited (2GB), Burroway Road, Homebush Bay, NSW.

WSP 2014a, Soil Contamination Assessment Burroway and Hill Road, Wentworth Point Development, Homebush Bay, NSW 2127.

WSP 2014b, Proposed management of acid sulfate soils.

WSP 2015, Detailed Remediation Action Plan – Infrastructure Delivery, Wentworth Point Development.

10 Limitations

This report has been prepared by Geosyntec Consultants Pty Ltd ("Geosyntec") for use by the Client who commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the Client and other parties. The findings of this report are based on the scope of work outlined in Section 1. The report has been prepared specifically for the Client for the purposes of the commission, and use by any explicitly nominated third party in the agreement between Geosyntec and the Client. No warranties, express or implied, are offered to any third parties and no liability will be accepted for use or interpretation of this report by any third party (other than where specifically nominated in an agreement with the Client).

This report relates to only this project and all results, conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose. This report should not be reproduced without prior approval by the Client, or amended in any way without prior written approval by Geosyntec.

Geosyntec's assessment was limited strictly to identifying environmental conditions associated with the subject property area as identified in the scope of work and does not include evaluation of any other issues.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigation.

This report does not comment on any regulatory obligations based on the findings. This report relates only to the objectives stated and does not relate to any other work conducted for the Client.

The absence of any identified hazardous or toxic materials on the site should not be interpreted as a guarantee that such materials do not exist on the site.

All conclusions regarding the site are the professional opinions of the Geosyntec personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Geosyntec has not independently verified and assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Geosyntec, or developments resulting from situations outside the scope of this project.

Geosyntec is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The Client acknowledges that this report is for its exclusive use.

Attachment A Figures

LEGEND

Site Boundary

This product has been created to support the main report and is not suitable for other purposes. Image courtesy of Nearmaps

Approx. 50 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 1: Site Layout Plan

Site Address: 7 Burroway Road, Wentworth Point, NSW 2127

Client: RobertsCo

Job Number: AU122229

Date: 16 September 2022

Geosyntec

LEGEND

Site Boundary

Acid Sulfate Soils

- NA
- Class 1
- Classes 2 & 2a
- Class 2b
- Class 3
- Class 4
- Class 5

This product has been created to support the main report and is not suitable for other purposes. Image courtesy of SEED NSW

Approx. 50 m

Datum: GDA 1994 MGA Zone 56 - AHD

Figure 2: Acid Sulfate Soil Risk Map

Site Address: 7 Burroway Road, Wentworth Point, NSW 2127

Client: RobertsCo

Job Number: AU122229

Date: 16 September 2022

Geosyntec

Attachment B Liming Rate Table

TABLE 4.5 Treatment categories and lime required to treat a weight of disturbed acid sulfate soils – based on soil analysis

The tonnes (t) of pure fine lime required to fully treat the total weight/volume of ASS can be read from the table at the intersection of the weight of disturbed soil (row) with the soil sulfur analysis (column). Where the exact weight or soil analysis figure does not appear in the heading of the row or column, use the next highest value (or calculate values exactly using factors from Table 4.6).

Disturbed soil	**Soil Analysis - Oxidisable Sulfur (S %)** or equivalent TPA/TAA													
(tonnes)	***0.03***	***0.06***	***0.1***	***0.2***	***0.4***	***0.6***	***0.8***	***1***	***1.5***	***2***	***2.5***	***3***	***4***	***5***
1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.1	0.2	0.2
5	0.05	0.05	0.05	0.05	0.1	0.1	0.2	0.2	0.4	0.5	0.6	0.7	0.9	1.2
10	0.05	0.05	0.05	0.1	0.2	0.3	0.4	0.5	0.7	0.9	1.2	1.4	1.9	2.3
15	0.05	0.05	0.1	0.1	0.3	0.4	0.6	0.7	1.1	1.4	1.8	2.1	2.8	3.5
20	0.05	0.1	0.1	0.2	0.4	0.6	0.7	0.9	1.4	1.9	2.3	2.8	3.7	4.7
25	0.05	0.1	0.1	0.2	0.5	0.7	0.9	1.2	1.8	2.3	2.9	3.5	4.7	5.9
35	0.05	0.1	0.2	0.3	0.7	1.0	1.3	1.6	2.5	3.3	4.1	4.9	6.6	8.2
50	0.1	0.1	0.2	0.5	0.9	1.4	1.9	2.3	3.5	4.7	5.9	7.0	9.4	11.7
75	0.1	0.2	0.4	0.7	1.4	2.1	2.8	3.5	5.3	7.0	8.8	10.5	14.0	17.6
100	0.1	0.3	0.5	0.9	1.9	2.8	3.7	4.7	7.0	9.4	11.7	14.0	18.7	23.4
200	0.3	0.6	0.9	1.9	3.7	5.6	7.5	9.4	14.0	18.7	23.4	28.1	37.5	46.8
500	0.7	1.4	2.3	4.7	9.4	14.0	18.7	23.4	35.1	46.8	58.5	70.2	93.6	117.1
750	1.1	2.1	3.5	7.0	14.0	21.1	28.1	35.1	52.7	70.2	87.8	105.3	140.5	175.6
1,000	1.4	2.8	4.7	9.4	18.7	28.1	37.5	46.8	70.2	93.6	117.1	140.5	187.3	234.1
2,000	2.8	5.6	9.4	18.7	37.5	56.2	74.9	93.6	140.5	187.3	234.1	280.9	374.6	468.2
5,000	7.0	14.0	23.4	46.8	93.6	140.5	187.3	234.1	351.2	468.2	585.3	702.3	936.4	1170.5
10,000	14.0	28.1	46.8	93.6	187.3	280.9	374.6	468.2	702.3	936.4	1170.5	1404.6	1872.8	2341.0

L	**Low treatment**: (<0.1 t lime). Apply 0.05 t (1 bag) or 0.1 t (2 bags) of lime to prevent some soil acidity from the ASS disturbance.
M	**Medium treatment:** (>0.1 to 1 t lime).
H	**High treatment**:(>1 to 5 t lime).
VH	**Very High treatment:** (>5 tonne lime).

A detailed management plan is required if disturbing > 1,000 tonnes of ASS (oxidisable S ≥0.03 %S or equivalent TPA or TAA.)
Lime rates are for pure fine $CaCO_3$ using a safety factor of 1.5. A factor that accounts for Effective Neutralising Value is needed for commercial grade lime (see Management Guidelines).
An approximate volume (cubic m) can be obtained by dividing weight (tonne) by bulk density (t/m^3).

Appendix 06 – Emergency Preparedness and Response

The types of Soil and Water emergencies that could occur on this site are tabulated below.

Note: This plan is designed to supplement both the Roberts Co Project Emergency Response Plan and the Client's site emergency response plan/s, where available.

Emergency	Preparation	Response	Responsibility
Flooding	Monitor meteorological conditions – develop contingency strategy for rainfall > 100mm in 24hours or potential for > 1in 5 ARI All chemicals, fuels and other hazardous substances to be in secured containers and stored within a sealable shipping container Remove plant and equipment from low lying areas Secure plant that cannot be removed Review site drainage flow paths: Redirect site drainage to prevent flooding of residential/business premises. Ensure site drainage does not concentrate surface flow. Review and address the potential for excess water entering the site. Review and maintain erosion and sedimentation controls.	Recover materials washed from site including sediment and other waste. Check effectiveness of erosion and sedimentation devices and other flood controls, maintain where required and safe to do so.	Site Manger / Foreman / Supervisor Project HSE Advisor / Manager
Temporary erosion and sediment controls are damaged during rainfall.	Plan controls to be suitable for expected conditions.	A review of the site to be undertaken by HSEQ Advisor / Manager and Site Manger / Foreman / Supervisor. Controls to be repaired or replaced within 24 hours of detection, immediately if inclement weather current.	Project HSE Advisor / Manager

Emergency	Preparation	Response	Responsibility
	Ensure sufficient materials, labour and plant are available for additional controls.		Site Manger / Foreman / Supervisor
Damage to sediment basin	Check basins for suitability to project requirements; size, treatment type, etc. Basin outlet to be designed to remain functional in 1 in 20 ARI event. Ensure basin construction is in accordance with QA requirements including relevant ITPs.	Water in damaged basin to be pumped to another secure basin or discharged if it meets the site criteria. Damage to be repaired as soon as practical. Repairs to be monitored when basin brought back online.	Project HSE Advisor / Manager Site Manger / Foreman / Supervisor

Appendix 07 – Evidence of Consultation with Parramatta Council

Begins on Next Page

Copy of correspondence where initial TTW Plan was issued to Parramatta City Council

Gavin Finlayson

From: Gavin Finlayson
Sent: Friday, 21 October 2022 2:18 PM
To: BMills@cityofparramatta.nsw.gov.au; council@cityofparramatta.nsw.gov.au
Cc: Marco.Amorelli@au.ey.com; David McDonnell; sherwin.rasquinha1@det.nsw.edu.au; Sandra.Lim@au.ey.com; Adam Greentree
Subject: RE: Construction Soil and Water Management Sub-Plan - Wentworth Point New High School, 7 Burroway Road, Wentworth Point.

Bruce,

I understand that you have spoken to Marco about this project and, further to my previous correspondence, we would appreciate if you could provide any comments on the Construction Soil and Water Management Sub-Plan and Pre-Construction Dilapidation Report by the 26th October 2022.

Regards,

Gavin Finlayson
Contracts Manager

roberts co

Roberts Co
Level 9
60 Castlereagh St
Sydney NSW 2000
M +61 437 267 600

From: Gavin Finlayson
Sent: Friday, 21 October 2022 1:59 PM
To: BMills@cityofparramatta.nsw.gov.au; mpark@cityofparramatta.nsw.gov.au; council@cityofparramatta.nsw.gov.au
Cc: Marco.Amorelli@au.ey.com; David McDonnell <david.mcdonnell@au.roberts.co>; sherwin.rasquinha1@det.nsw.edu.au; Sandra.Lim@au.ey.com; Adam Greentree <adam.greentree@au.roberts.co>
Subject: Construction Soil and Water Management Sub-Plan - Wentworth Point New High School, 7 Burroway Road, Wentworth Point.

To Whom It May Concern,

RE:APPLICATION NO. SSD-11802230

As a requirement of the applicable conditions of consent, a Construction Soil and Water Management Sub-Plan was required to be prepared as a subplan of the Construction Environment Management Plan for this project.

In accordance with Condition B18 (a), please find Construction Soil and Water Management Sub-Plan prepared by TTW attached for the new Wentworth Point High School, 7 Burroway Road, Wentworth Point.

Please contact me should you require any further information.

Gavin Finlayson
Contracts Manager

roberts co

Copy of correspondence where Rev 01 Construction Soil and Water Management Plan was issued to Parramatta City Council

Adam Greentree

From: Adam Greentree
Sent: Tuesday, 7 March 2023 3:41 PM
To: bmills@cityofparramatta.nsw.gov.au; council@cityofparramatta.nsw.gov.au
Cc: Marco Amorelli; Gavin Finlayson; Nicky Choi
Subject: Wentworth Point High School - Review of Soil and Water Management Plan
Attachments: CSWMP Sub-Plan Consultation To Council.pdf; Construction Soil and Water Management Plan.pdf

Good Afternoon Bruce,

Previously we issued a copy of the Construction Soil and Water Management Plan for review for the Wentworth Point High School Project (see attached). This was in accordance with condition B18 of our conditions of consent. We have now made some amendments to this plan. Please find attached a copy of the revised management plan.

Please let me know if you have any questions or comments.

Regards,

Adam Greentree
Project Manager

roberts co

Roberts Co
Level 9
60 Castlereagh Street
Sydney NSW 2000
M 0447 237 186

We're still us. Now 100% Australian owned

Appendix 08 – Qualification of Engineer Responsible for Sediment and Erosion Control Plan

Begins on Next Page

Nemesio Biason

Associate Director

BE CPEng, NER

nemesio.biasonjr@ttw.com.au

Experience

2019 – Current
Associate Director, TTW

2013 – 2019
Associate, TTW

2004 – 2013
Senior Civil Engineer, TTW

2003 – 2004
Design Engineer,
BMD Consulting Pty Ltd

2002 – 2003
Civil Design Engineer,
Cardno Willing Pty Ltd

2001 – 2002
QA/Design Engineer,
Cootamundra Shire Council

Associate Director, Nemesio Biason joined TTW in 2004 as a highly technical civil engineer. He has detailed knowledge of construction projects which spans across commercial, retail, residential, industrial, educational, healthcare and public buildings. Including experience with legal expert witness, water sensitive urban design, stormwater design, flood study, earthworks, pavement and masterplanning.
He brings a practical and adaptive approach to his work, understanding that every project is unique and requires a responsive and collaborative solution. He has a strong network of clients and works cohesively with architect, client and contractors.

Accommodation

Iglu Redfern
233 Johnston Street, Annandale
Block G, Wentworth Point
7-9 Kent Road, Mascot
ILU, Croydon
7 Cremorne Point Road, Cremorne
Trades Hall, Sydney
Zenith Apartments, Kings Cross
7-9 Kent Road, Mascot

Commercial

Balikpapan, Indonesia – Stormwater Design
100 Pacific Highway, North Sydney – Civil Design
16-40 Mount Street, North Sydney – Civil and Public Domain Design for the 5 Green Star Project
Dubai Airport Roof Drainage
7-9 Kent Road, Mascot

Retail

Fairy meadow Shopping Centre Development – Civil Design
Hobart Parliament Square
Charlestown Square North Piazza

Sports + Leisure

Australian Rugby Development Centre, Moore Park – Civil Design
Strathfield Golf Course – Civil Design
Wollongong Leisure Commercial Development – Civil Design
Aerial Rope Park, St Mary's
Moorebank Sports Club extension and Car Park

Art + Culture

Orange Regional Museum – Civil Design (Winner of NSW AIA – NSW Premier's Prize and Sulman Medal)
Anzac Memorial Education and Interpretation Centre – Civil Design ($40m)
Rooty Hill Performing Arts Centre
NSW Art Gallery Storage Facility, Lilyfield – Civil Design
Burelli St, Wollongong (Salvation Army Site) – Civil Design

Education

Macquarie Library, Macquarie University
LEES1 Project, University of Sydney – Civil Design
Wallace Wurth Redevelopment, UNSW – Civil Design
Macquarie University – South Precincts
Danebank Anglican Girls School
North Sydney TAFE, Westbourne Street Entrance
Hurlstone Hawkesbury High School
UNSW Electrical Engineering Building Capital Renewal & modernization Project
St Marks, Stanhope Gardens
Wenona School, North Sydney
Glenfield Agriculture High School
Building Education Revolution (BER) Schools – Leonay, Wyoming, James Erskine, Blaxland, Pymble, Llandlo, Cambridge Park, Ellison, Luddenham and Werrington County Public Schools
Glenfield High School
Danebank School Redevelopment

Healthcare + Research + Aged Care

Sir Moses Montefiore Jewish Home, Randwick
Graythwaite Rehabilitation Centre, Ryde Hospital
Blue Haven Community Centre
Condobolin Retirement Village
Prince of Wales – Neuroscience Research Precinct Stage 2A
BUPA Sutherland
Northshore Private Hospital

TTW

Your Partner in Engineering

Nemesio Biason

What is it about the industry that motivates you?

It motivates me to see the engineering and construction industry thriving in its ability to meet client and community expectations despite working in highly-constrained time and financial parameters, and yet still delivering high-end and innovative projects.

Government + Public

Wynyard Walk, Sydney (Winner of NSW CIA Excellence in Infrastructure Projects)
80 Alfred Street, Milsons Point – Public Domain Works Design

5-11 Meriton Street, Gladesville – Public Domain Works Design

15 Strathford, Cammeray – Public Domain Works Design

Block 8, Central Park – Public Domain Works Design

207-211 Darlinghurst Road, Darlinghurst – Public Domain Works Design

20 Alfred Street, Milson's Point

Willoughby Council Kerb and Gutter and Drainage Design, Castle Cove

Civil

Accessways + Car Parks

Westpoint Shopping Centre, Blacktown – Alpha Street New Carpark Entry/Exit Design

Macquarie University – Gumnut Childcare Car Park – Design and Project Management

Flood Mitigation

Superlot 5, Little Bay – Stormwater, Civil, and Flood Assessment

Merrylands City Central Project – Civil Design and Flood Advice

Bass Hill Plaza – Flood Damage Investigation (Peer Review)

Wynyard Walk, Sydney – Stormwater Expert Witness

434-444 Elizabeth Street, Surry Hills

Roads + Stormwater

Echuca RSL Club – Stormwater Analysis

Stage 1, St. Mary's Leagues Club - Civil and Stormwater Design

18a Bradleys Head Road, Mosman – Stormwater Design

Phoenix Theatre Gallery, Chippendale – Stormwater and Public Domain Works Design

Rooty Hill RSL, Rooty Hill – Civil Design and Flood Study

Civil Continued

Flood Mitigation (Cont'd)

176-184 George Street, Concord – Flood Management

10-20 McEvoy Street, Waterloo – Flood Study

Macquarie Park Cemetery – Stormwater, Prioritisation Analysis 37 ha Catchment

Emirates 6-star Resort Development, Wolgan Valley – Flood Study (18,525ha catchment)

Dunmore Stable, Dunmore – Flood Study (11,500ha catchment)

47& 57 Princes Hwy Albion Park Rail – Flood Study (10,700ha catchment)

Baker Street, Banksmeadow Industrial Development - Flood Study

1 – 3 Dunning Avenue, Roseberry – Flood Study

Railway Parade, Burwood – Stormwater Analysis (11ha catchment)

10-20 McEvoy Street, Waterloo – Flood Expert Witness

New South Head Rd, Double Bay – Flood Study (240ha catchment)

ACT Prison – Catchment and Overland Flowpath Analysis

Jakarta International School – Flood Study (27ha catchment)

Richard Johnson Anglican School – Sites Detention Basin Analysis

Claremont, Nyngan – Flood Analysis

Subdivision + Infrastructure

Berkeley Industrial Subdivision

Burroway Road – Road and Drainage Design

Macquarie University – Campus Wide Infrastructure (Road works, Stormwater, Sewer and Water), Masterplanning for 2031 and Flood Studies

Macquarie University – Balaclava Road Extension and Roundabout Design

697 Anzac Parade, Maroubra – Stormwater Diversion

Blacktown Showground Project – Stormwater Design

Berkeley Road Industrial Subdivision Stage 2, Berkeley – Flood Study (46ha catchment) and Civil Design