



Transport
Roads & Maritime
Services

APPENDIX B8

Contaminated Land Management Plan

*The Northern Road Upgrade - Stage 3
North Project*

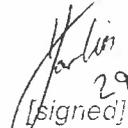
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Glossary / Abbreviations

CEMP	Construction Environmental Management Plan
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
CLM Act	<i>Contaminated Land Management Act 1997</i>
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
EWMS	Environmental Work Method Statements
CLMP	Contaminated Land Management Plan
PAH	Poly-aromatic Hydrocarbon
PCB	Poly-chlorinated Biphenyl
TPH	Total Petroleum Hydrocarbon
ACM	Asbestos Containing Material
Project, the	The Northern Road Upgrade Stage 3 North
REF	Review of Environmental Factors
RMS	Roads and Maritime Services
EMS	Environmental Management System
ESR	Environmental Site Representative

1 Introduction

1.1 Context

This Contaminated Land Management Plan (CLMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Northern Road Upgrade Stage 3 North (the Project).

This CLMP has been prepared to address the requirements of the Review of Environmental Factors (REF), G36, the Lendlease EMS and all applicable legislation.

1.2 Background

The REF assessed the impacts of construction and operation of the Project on areas of potential contaminated land along the proposal alignment.

1.3 Environmental management systems overview

The overall Environmental Management System for the Project is described in the Construction Environmental Management Plan (CEMP).

The CLMP is part of the Lendlease environmental management framework for the Project, as described in *Section 4.1 of the CEMP*. Management measures identified in this Plan will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

Where required, EWMS will be developed and signed off by environment and management representatives prior to associated works and construction personnel will be required to undertake works in accordance with the identified mitigation and management measures.

Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by Lendlease personnel and contractors.

The review and document control processes for this Plan are described in *Chapter 10 of the CEMP*.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how contaminated land will be managed during construction of the Project.

2.2 Objectives

The key objective of the CLMP is to ensure that contaminated land is managed appropriately throughout the delivery of the Project. To achieve this objective, the following will be undertaken:

- Areas identified as medium risk contaminated sites within the REF will be investigated prior to the commencement of construction, with Remedial Action Plans developed and implemented where required;
- All known and unexpected contaminated soils and/or groundwater will be identified, signposted and segregated from site activity by the erection of physical barriers until it is managed and/or removed from site;
- Ensure appropriate controls and procedures are implemented to protect the public, Project staff and the environment from areas of contaminated materials, in accordance with the Environmental Safeguards detailed within the REF (Table 3.2); and
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in *Section 3.1* of this Plan.

2.3 Targets

The following targets have been established for the management of contaminated land during the Project:

- Ensure full compliance with the relevant legislative requirements;
- Minimise or avoid impacts on contaminated land;
- Follow correct procedure and ensure notification of any contamination uncovered during construction; and
- Ensure Project staff are informed via tool box talks and the Project induction to enable the identification of potentially contaminated land.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

Legislation relevant to contaminated land management includes:

- *Contaminated Land Management Act (1997)*;
- *Protection of the Environment Operations Act (1997)* and *Waste Regulation (2014, 2016)*; and
- *The Work Health and Safety Act (2011)*.

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in *Appendix A1* of the CEMP.

3.1.2 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

- *RMS QA Specification G36 – Environmental Protection (Management System)*;
- *EPA Waste Classification Guidelines 2014*;
- *National Environmental Protection Measure (NEPM) 1999*;
- *RMS Contaminated Land Management Guidelines*;
- *RMS Environmental Incident Classification and Reporting Procedure*; and
- *Stockpile Site Management Guideline, RMS 2011*.

3.2 REF Environmental Safeguards

The REF Environmental Safeguards relevant to this Plan are listed Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this plan or other Project management documents.

Table 3-1 REF Environmental Safeguards relevant to the CLMP

REF Environmental Safeguard.	Condition Requirements	Document Reference
C1	<p><i>A Contaminated Land Management Plan will be prepared in accordance with the Guideline for the Management of Contamination (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:</i></p> <ul style="list-style-type: none"> <i>• capture and management of any surface runoff contaminated by exposure to the contaminated land;</i> <i>• further investigations required to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2); and</i> <i>• management of the remediation and subsequent validation of the contaminated land, including any certification required measures to ensure the safety of site personnel and local communities during construction.</i> 	<i>This document</i>
C2	<i>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.</i>	<i>Section 7 of this CLMP</i>
C3	<i>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers).</i>	<i>Appendix A7 of CEMP</i>
C4	<i>Soil within proposed construction footprints adjacent to sites identified as moderate Areas of Environmental Interest (AEIs) during the Phase 1 contamination assessment will be sampled and tested to the maximum depth of excavation planned within these areas. Results of investigations will be incorporated into the Contaminated Land Management Plan.</i>	<i>Section 7 of this CLMP</i>

REF Environmental Safeguard.	Condition Requirements	Document Reference
C5	<p><i>An Asbestos Management Plan will be developed and implemented. The plan will include:</i></p> <ul style="list-style-type: none"> <i>- identification of potential asbestos on site;</i> <i>- procedures to manage and handle any asbestos;</i> <i>- mitigation measures if asbestos is encountered during construction; and</i> <i>- procedures for disposal of asbestos in accordance with NSW EPA guidelines, Australian Standards and relevant industry codes of practice.</i> 	<p><i>AMP in Safety Management System</i></p>
C6	<p><i>If potentially contaminated materials are suspected and/or encountered during construction, these will be managed by an unexpected finds protocol incorporated in the CEMP.</i></p>	<p><i>Appendix A of this CLMP</i></p>

4 Existing environment

The following sections summarise what is known about contaminated land within and adjacent to the Project corridor.

The key reference document is the REF.

4.1 Potential areas of contaminated land

The REF identified three areas with moderate risk of contamination by performing a Stage 1 contamination assessment. The Stage 1 assessment was undertaken in accordance with NSW EPA guidelines and did not include any ground investigations, sampling or testing of soils. The following information summarises the three Areas of Environmental Interest (AEIs):

1. The service station located at Aspen Street, South Penrith represents a potential source of contamination associated with leaks and spills from fuel storage infrastructure (that is, hydrocarbons and heavy metals). The location of the service station near the construction poses an increased risk of exposure to contamination (if present) especially associated with deeper excavations
2. The abutments of the on- and off-ramps from the M4 Motorway to The Northern Road appear to have been filled to facilitate construction of the existing interchange. The quality of the fill material used in the abutments is unknown and it is likely that some of this fill material would be exposed during the construction of the upgrade
3. The stockpiles located at the corner of Wentworth Road and The Northern Road, Orchard Hills are located close to the current road verge and could be disturbed during construction. The quality of the material within the stockpiles is unknown.

During the completion of Early Works at Penrith Christian School, an unexpected find of Asbestos Containing Material occurred, as such it is now identified as a AEI.

No high risk AEIs were identified and the moderate risks are not considered to present a material constraint to the proposal. Further investigation and assessment will be required prior to construction in these areas to implement appropriate risk management measures. The location of the three moderate AEIs as well as other potential contamination sites outside the project boundary are depicted below in Figure 5-1.

4.1.1 Further investigations

In accordance with the requirements of the REF, further soil contamination investigations will be undertaken in the areas identified as medium priority prior to the commencement of construction within those areas. These investigations would include the sampling of soil to the depth of proposed excavations and the preparation and implementation of a Remedial Action Plan (RAP) as required.

The project will maintain a register of contaminated sites that will be updated/modified in response to the findings of site contamination assessments. The register will also be used to track the ongoing management of the sites.

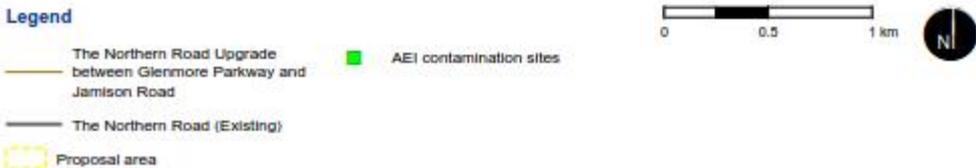
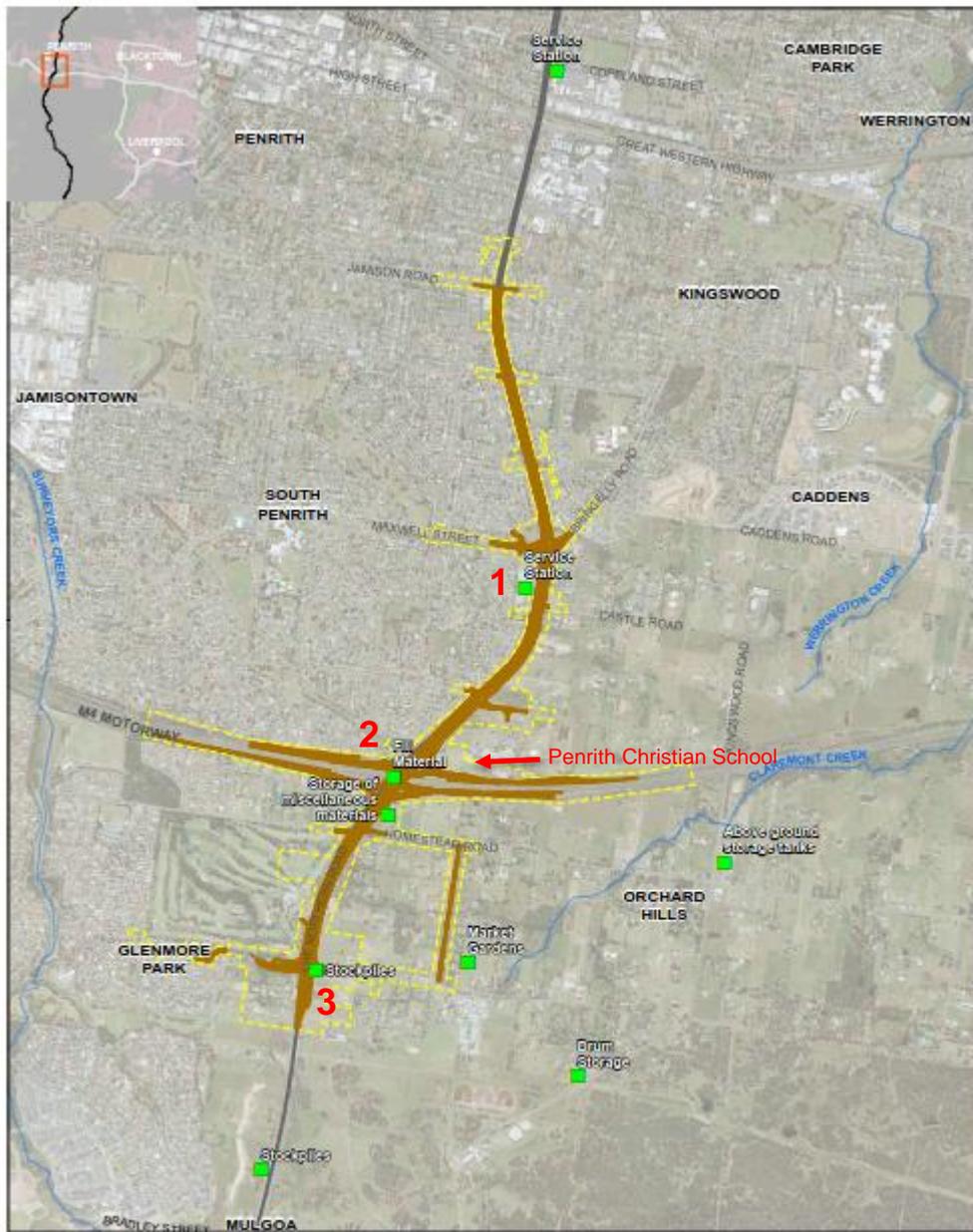


Figure 5-1 Areas of Environmental Interest (AEI) - Contamination

5 Environmental aspects and impacts

5.1 Construction activities

Key aspects of the Project that could result in the discovery of contaminated land include:

- Early works including non-substantial construction activities such as services relocations;
- Initial clearing and/or grubbing of vegetation;
- Initial removal of topsoil;
- Service relocation works around the perimeter of the works area;
- Demolition;
- Construction of site compounds and spoil / mulch and / or equipment stockpile areas; and
- Temporary access roads during construction.

Refer to *Appendix A2 of the CEMP – Aspects and Impacts Register*.

Potential impacts attributable to construction might include:

- Detriment to surrounding environment from contaminated land runoff;
- Increase in the volume of contaminated material through inappropriate management of impacted soil;
- Illegal disposal of contaminated material at unlicensed waste facilities; and
- Disturbance of unidentified contaminated land e.g. Areas of Environmental Interest (AEI's) from the REF and subsequent generation of contaminated runoff.

6 Environmental mitigation and management measures

A range of environmental requirements and control measures are identified in the various environmental documents, including the REF and other RMS documents. Specific measures and requirements to address impacts on contaminated land are outlined in Table 6-1.

Where contamination of site is encountered or is required to be managed, site methodology and risk controls will be developed in relation to the nature of the find in accordance with the relevant legislative requirements and guidelines as detailed in Section 3. This will include but not be limited to:

- WHS requirements;
- Community notification (where required);
- Identification of contamination extent;
- Appropriate controls for on-site material management and or off-site disposal; and
- Site validation etc.

These will be developed in consultation with the project contamination specialist.

Table 6-1 Contamination management and mitigation measures

ID	Measure / Requirement	Resources needed	When to implement	Responsibility	Reference
C1	<p><i>A Contaminated Land Management Plan will be prepared in accordance with the Guideline for the Management of Contamination (Roads and Maritime, 2013) and implemented as part of the CEMP. The plan will include, but not be limited to:</i></p> <ul style="list-style-type: none"> <i>• capture and management of any surface runoff contaminated by exposure to the contaminated land;</i> <i>• further investigations required to determine the extent, concentration and type of contamination, as identified in the detailed site investigation (Phase 2); and</i> <i>• management of the remediation and subsequent validation of the contaminated land, including any certification required measures to ensure the safety of site personnel and local communities during construction.</i> 	<i>This Plan</i>	<i>Pre-construction Construction</i>	<i>Environment Manager/ESR</i>	<i>REF C1</i>
C2	<p><i>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.</i></p>	<i>Appendix A of CLMP</i>	<i>Construction</i>	<i>All personnel and subcontractors</i>	<i>REF C2</i>
C3	<p><i>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers).</i></p>	<p><i>Appendix A7 of main CEMP</i></p> <p><i>PRIMP (EPL)</i></p>	<i>Pre-construction Construction</i>	<i>Environment Manager/ESR</i>	<i>REF C3</i>

ID	Measure / Requirement	Resources needed	When to implement	Responsibility	Reference
C4	Soil within proposed construction footprints adjacent to sites identified as moderate Areas of Environmental Interest (AEIs) during the Phase 1 contamination assessment will be sampled and tested to the maximum depth of excavation planned within these areas. Results of investigations will be incorporated into the Contaminated Land Management Plan.	Contaminated land consultant	Pre-construction Construction	Environment Manager/ESR	REF C4
C5	An Asbestos Management Plan will be developed and implemented. The plan will include: - identification of potential asbestos on site; - procedures to manage and handle any asbestos; - mitigation measures if asbestos is encountered during construction; and - procedures for disposal of asbestos in accordance with NSW EPA guidelines, Australian Standards and relevant industry codes of practice.	AMP	Pre-construction Construction	Foreman Superintendent Environmental Manager/ESR	REF C5
C6	If potentially contaminated materials are suspected and/or encountered during construction, these will be managed by an unexpected finds protocol incorporated in the CEMP. Works will cease until a competent person determines the contamination status or risk.	Appendix A of CLMP	Construction	Environment Manager/ESR	REF C6
C7	If a Remedial Action Plan is not provided by the RMS Representative, prepare a Remediation Action Plan for remediating the known areas of contamination or an unexpected contamination find, and areas of potential contamination in their immediate vicinity.	RAP where required	Construction	Environment Manager/ESR	G36
C8	Any known contaminated soils or groundwater on the site likely to cause risk to health, safety or the environment must be identified, signposted and segregated from site activities by the erection of physical barriers to prevent unauthorised entry, exposure and/or cross contamination.	Sect 5.1	Pre-construction Construction	Environment Manager/ESR	LLE713

ID	Measure / Requirement	Resources needed	When to implement	Responsibility	Reference
C9	<i>Unexpected contaminated material will be segregated, secure and signposted when awaiting treatment, disposal or reuse. Contaminated materials will be stored in an impervious bunded area and covered to avoid the risk of leachate, odours or contaminated dust.</i>	<i>Appendix A of CLMP</i>	<i>Construction</i>	<i>Environment Manager/ESR</i>	<i>LLE713</i>
C10	<i>Odorous and hazardous materials will be covered or enclosed when transported to and from site.</i>		<i>Construction</i>	<i>Foreman Superintendent Environmental Manager/ESR</i>	<i>LLE713</i>
C11	<i>Offsite transport of contaminated materials will be tracked in accordance with the relevant EPA waste legislation Including transport of waste inter-state. Details of contaminated waste types, volumes and destinations are to be recorded in the project Waste Management Register.</i>	<i>WRMP Appendix B</i>	<i>Construction</i>	<i>Environment Manager/ESR</i>	<i>LLE713</i>
C12	<i>Any recycled crushed material delivered onsite will be spot checked for potentially contaminated material before use. If suspected contaminated material is encountered, works will be ceased and the Unexpected Finds of Contaminated Material procedure implemented.</i>	<i>Spotter Appendix A of CLMP</i>	<i>Construction</i>	<i>Foreman Superintendent Environmental Manager/ESR</i>	<i>Good Practice</i>

7 Compliance management

7.1 Roles and responsibilities

The Lendlease Project team's organisational structure and overall roles and responsibilities are outlined in *Section 4.2 of the CEMP*. Specific responsibilities for the implementation of environmental controls are detailed in *Table 6-1 above*.

7.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to contaminated land management issues. The induction training will address elements related to contaminated land management including:

- Existence and requirements of this Plan;
- Relevant legislation;
- Roles and responsibilities for contaminated land management;
- Location of identified potential contaminated land sites;
- Contamination management and protection measures;
- Procedure to follow in the event of unexpected contaminated land findings during construction works (*refer Appendix A*); and
- Procedure to follow in the event of uncovering asbestos during construction works (*refer to AMP in Safety Management System*).

Further details regarding staff induction and training are outlined in *Section 5 of the CEMP*.

7.3 Monitoring and inspections

Informal inspections of sensitive areas and activities with the potential to uncover contaminated land will occur for the duration of the Project. Specific monitoring requirements in relation to some items have been documented in *Table 6-1*.

Contaminated land inspections will be undertaken as part of the weekly environmental inspections (*Appendix A8 of CEMP*).

Requirements and responsibilities in relation to monitoring and inspections are documented in *Sections 8.1 and 8.2 of the CEMP*.

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this plan other relevant approvals, licenses and guidelines.

Audit requirements are detailed in *Section 8.3 of the CEMP*.

7.5 Reporting

In the event that suspected contamination is uncovered during delivery of the Project, the following reporting would occur:

- In accordance with the RMS Incident Classification and Reporting Guidelines, the unexpected discovery of contaminated land is classed as a 'Reportable Event', as such finds of this nature would be reported to RMS in accordance with the guidelines; and

- Where it is deemed that the contamination has been, or could have been caused or changed by the operations of Lendlease or its associates the EPA would be notified in accordance with Section 60 of the *Contaminated Land Management Act 1997*.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance;
- Determine the cause or causes of non-conformances and deficiencies;
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

8.2 CLMP update and amendment

The processes described in Section 8 and Section 9 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the CLMP will be in accordance with the process outlined in Section 1.6 of the CEMP.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to *Section 10 of the CEMP*.

Appendix A
RMS Standard Management Procedure –
Unexpected Discovery of Contaminated Land

Unexpected Discovery of Contaminated Land Procedure

Distribution

There are no restrictions on the distribution/circulation of this Procedure within the TNR3N Project (the Project).

Purpose

This Procedure details the actions to be taken when potential contaminated soil/material is encountered during excavation/construction activities.

Induction/Training

Where required, personnel will be trained in the identification of potential contaminated soil/material including the requirements of this Procedure during the Project induction and/or regular toolbox talks.

Scope

This Procedure is applicable to all activities conducted by personnel on the TNR3N Project that have the potential to uncover/encounter contaminated soil/material.

Procedure

1. Potential Contaminated Soil/Material Encountered during Construction Activities

If potential contaminated soil/material is encountered during excavation/construction activities:

- STOP ALL WORK in the immediate/affected area.
- Immediately notify the Environment Manager (EM).
- Recommence works in an alternate area where practicable.

2. Personal Protective Equipment (PPE)

Prior to any contamination investigation/management, appropriate personal protective equipment (PPE) is to be worn as per the relevant Material Safety Data Sheet(s) (MSDS).

This may include, but not be limited to:

- Eye goggles.
- Face mask.
- Rubber boots.
- Rubber gloves.
- Work clothes (ie long sleeve shirt/pants and steel capped boots).

3. Undertake a Site/Area Contamination Investigation

The EM or Environmental Coordinator (EC) is to assess the situation and if considered necessary, commission a suitably qualified contamination specialist to undertake a contamination investigation in the area of the find.

The material is to be classified in accordance with the Waste Classification Guidelines (DECCW, 2009).

If necessary, the EM will liaise with the relevant authorities to determine the appropriate management options.

The EM (in consultation with specialists) will determine the appropriate management measures to be implemented. This may include treatment or offsite disposal. If the material is to be disposed of offsite, ensure the waste facility is appropriately licensed.

If the material is determined to be acid sulfate soil or potential acid sulfate soil, the Acid Sulfate Soil Management Procedure is to be followed.

4. Remedial Action

Remedial actions are to be incorporated into specific Remediation Action Plan.

Implement G36 hold point 4.2.4 - Remediation Action Plan.

5. Recommence Works

Recommence works once remedial works have been implemented. The EM grants approval once hold point is released.