



Appendix B8

Contamination CEMP Sub-plan

M6 Stage 1

October 2021

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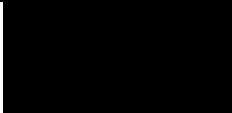


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Document control

Approval and authorisation

Title	Contamination CEMP Sub-plan
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Signed	
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Approved on behalf of TfNSW by	
Signed	
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Distribution of controlled copies

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Copy number	Issued to	Version

Glossary / Abbreviations

Abbreviations	Expanded text
ACM	Asbestos Containing Material
ASS	Acid Sulfate Soil
BTEXN	Benzene, Toluene, Ethyl-Benzene, Xylenes and Naphthalene
CEMP	Construction Environmental Management Plan
CGU	CPB Contractors, Ghella, UGL Engineering Joint Venture
CoA	Conditions of Approval
DSI	Detailed Site Investigation
DPIE	Department of Planning, Industry and Environment
EES	NSW Department of Environment, Energy and Science
EIS	Environmental Impact Statement for M6 Stage 1
EPA	NSW Environment Protection Authority
PASS	Potential Acid Sulfate Soils
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Poly Chlorinated Biphenyls
RAP	Remediation Action Plan
SAR	Site Audit Report
SAS	Site Audit Statement
TfNSW	Transport for New South Wales
TRH	Total Recoverable Hydrocarbons

1 Introduction

1.1 Context

This Contamination CEMP Sub-plan forms part of the Construction Environmental Management Plan (CEMP) for the M6 Stage 1 (the Project). The Contamination CEMP Sub-plan has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the Environmental Management Measures (EMM) listed in the M6 Stage 1 Environmental Impact Statement (EIS) as amended by the Submissions and Preferred Infrastructure Report (PIR) and applicable legislation. This Sub-plan also addresses requirements outlined in TfNSW Specification G36 Environmental Protection, Clause 4.2.

1.2 Background and project description

The Project comprises a new twin motorway tunnel (approximately four kilometres in length) between the M8 Motorway at Arncliffe and President Avenue at Kogarah with a tunnel portal for entry and exit ramps connecting the tunnels to the surface (refer Figure 1). Works will include a connection to the M8 Motorway, line marking of additional travel lanes between the St Peters interchange to the M6 Stage 1 tunnels, an intersection with President Avenue (including widening and raising of President Avenue), and intersection improvements at the President Avenue/Princes Highway intersection. Mainline tunnel stubs would be constructed to allow for connections to future stages of the M6 Extension.

The Project was declared as a Critical State Significant Infrastructure (CSSI) and was approved by the Minister for Planning and Public Spaces on 18 December 2019.

Key features of the Project include:

- Mainline tunnels approximately 3.0km in length, sized for three lanes of traffic and line marked for two lanes on opening of the motorway;
- Entry and exit ramp tunnels approximately 1.5km in length and a tunnel portal connecting the tunnels to a surface intersection with President Avenue;
- Provision of a new intersection at President Avenue including the widening and raising of President Avenue at this location;
- Upgrade of the President Avenue and Princes Highway intersection to improve capacity and network integration;
- Provision of a new shared cycle and pedestrian pathways;
- Mainline tunnel stubs for a future connection to extend the Project to the south;
- Two motorway operation complexes (MOCs) as follows:
 - Arncliffe: including mechanical and electrical fit-out of the ventilation facility built by the New M5 Motorway project, and provision of a new water treatment plant and substation.
 - Rockdale (south): including a ventilation building, Disaster Recover Site (DRS), substation and power supply, deluge tanks.
- A tunnel ventilation system, including ventilation facilities located at Marsh Street, Arncliffe and West Botany Street, Rockdale, and in-tunnel ventilation systems (jet fans and ventilation ducts);
- New Utility Services, and modifications and connections to existing Utility Services;
- A permanent power supply connection to the Rockdale Ventilation Facility Site MOC from Ausgrid's Canterbury Sub-Transmission Substation;
- Emergency access and evacuation facilities, including pedestrian and vehicular cross, long passages, fire and safety systems;

- Ancillary infrastructure for motorway operations including operations management and control systems, permanent power supply, communications, lighting, electronic toll collection system, toll gantries and traffic control and signage (both fixed and variable signage);
- Drainage infrastructure to collect surface water and groundwater inflows for treatment;
- Reinstatement of Bicentennial Park and recreation facilities;
- Reinstatement and rehabilitation of construction leased areas within the Arncliffe Site;
- Minor adjustments to local roads in the Project area;
- Development and implementation of systems integration and operating procedures with WestConnex Motorways to ensure safe operation of the interfaces between the Project and the WestConnex Motorways; and
- Any other works as required to complete the Project within the scope of the Environmental Impact Statement (EIS), Preferred Infrastructure Report (PIR), Submissions report (including EMMs) and CoA requirements.

The following six surface compounds will facilitate construction of the Project:

- Arncliffe construction ancillary facility (C1), an existing construction site which was used for the construction of the M8 Motorway;
- Rockdale construction ancillary facility (C2), within an existing TfNSW depot;
- President Avenue construction ancillary facility (C3) at Rockdale, within Rockdale Bicentennial Park and an industrial area west of West Botany Street;
- Construction ancillary facilities (C4 and C5) near Muddy Creek to support construction of the Active Transport Corridor; and
- Princes Highway construction ancillary facility (C6) on the corner of Princes Highway and President Avenue, Kogarah to support the intersection surface works.

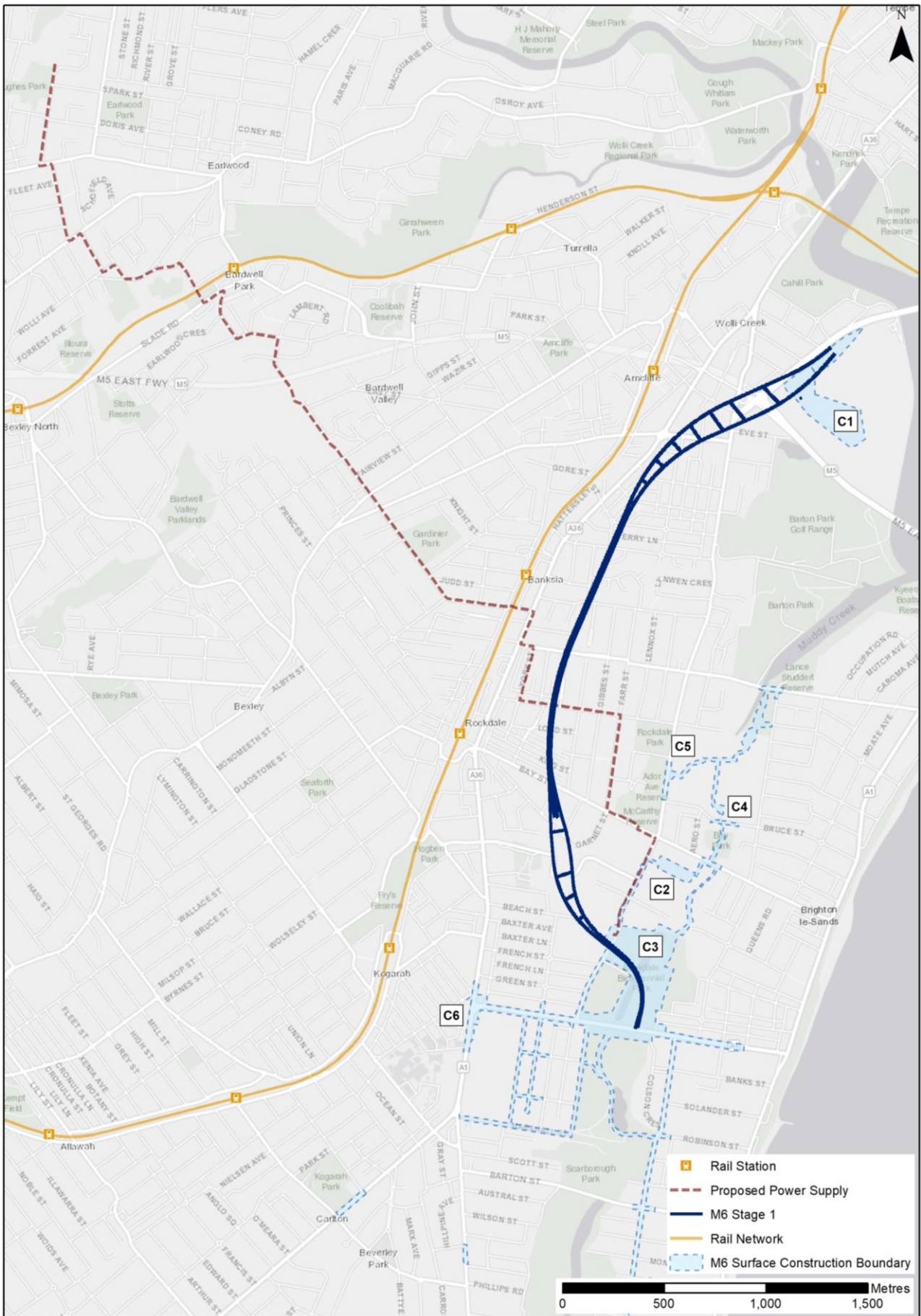


Figure 1 Project overview

1.3 Scope of Contamination CEMP Sub-plan

The scope of this Contamination CEMP Sub-plan is to describe how the CPB Contractors, Ghella, UGL Engineering (CGU) joint venture proposes to manage contamination impacts during construction of the Project. Construction activities related to this Sub-plan are outlined in Section 5.1.

Specifically, the scope of this Contamination CEMP is to provide an underlying strategy to:

- List details of construction activities and their locations which have the potential to expose areas known to contain, or potentially contain, contaminated soils and/or materials;
- Identify measures for the handling, treatment (for PASS/ASS only) and management of hazardous and contaminated soils and materials including measures to manage and/or minimise worker and public health and safety with regards to exposure to contamination; and
- Describe how the effectiveness of the actions and measures for managing contamination impacts would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, and how the results of the monitoring would be recorded and reported.

Environmental management systems overview

The environmental management system is based on CPB Contractors Environmental Management System (EMS). An overview of the EMS is described in Section 1.5 of the overarching CEMP.

1.4 Consultation for preparation of Contamination CEMP Sub-plan

The Contamination CEMP Sub-plan has been prepared in consultation with Bayside Council, Canterbury Bankstown Council and Georges River Council. Key matters raised by the stakeholders during this process are featured in Table 1. These matters have subsequently been addressed in this document.

Table 1: Summary of consultation

Relevant Public Authority	Query	Action
Canterbury Bankstown Council	Landowner to be notified of contaminated land and where remediation works are required to be undertaken.	Section 4.2.2 has been updated to provide clarity

This Sub-plan has been updated to address the matter raised by Canterbury Bankstown Council and was reviewed by an EPA accredited Site Auditor in accordance with CoA C6. An interim advice letter was issued by the Site Auditor confirming that this Contamination CEMP Sub-plan was reviewed and is considered satisfactory.

2 Purpose and objectives

2.1 Purpose

The purpose of this Sub-plan is to describe how CGU proposes to manage contamination that may be encountered during construction of the Project.

2.2 Objectives

Key objectives of the Contamination CEMP Sub-plan are to ensure all CoA, EMM and licence/permit requirements relevant to contaminated land are described, scheduled and assigned responsibility as outlined in:

- The Environmental Assessment prepared for M6 Stage 1 Project, including the EIS, the Response to Submissions on the EIS, the PIR and Response to Submissions on the PIR;
- Infrastructure Approval CoA (SSI 8931);
- TfNSW specifications G36, G38 and G40;
- The Project Environment Protection Licence (EPL); and
- All other relevant legislation and other requirements included in Appendix A1 of the CEMP.

2.3 Targets

The following targets have been established to manage contamination on the Project:

- Ensure full compliance with the relevant legislative requirements, CoA, environmental management measures, and TfNSW specifications;
- Minimise or avoid impacts from contaminated land;
- Ensure the environmental values of land, including soils, subsoils and landforms, are protected;
- Manage downstream water quality impacts attributable to the Project (i.e. maintain waterway health by avoiding or minimising the introduction of nutrients, sediment and chemicals); and
- Ensure training regarding contamination is provided to relevant Project personnel.

In addition to these targets, desired performance outcomes from Chapter 24 of the EIS (refer to Table 2) will be addressed in the Sub-plan.

Table 2 Performance outcomes from Chapter 24 of the M6 Stage 1 Environmental Impact Statement

Desired performance outcomes	Project outcome	Document Reference
Soils	Risks arising from the disturbance of soil and groundwater contaminated and acid sulfate soils would be able to be mitigated during construction and operation through further investigation and the implementation of the proposed management measures	Section 4 Section 5 Section 6
	Acid sulfate soils and other contamination will be managed in accordance with good practice measures to protect environmental values and human health	Section 3.1 Section 5 Section 6

3 Environmental Requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this Sub-plan is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Construction activities will be carried out in accordance with an EPL issued by the NSW Environment Protection Authority (EPA).

CoA E112 requires completion and submission of Site Contamination Report/s, Remediation Action Plans, Section A Site Audit Statements and Site Audit Reports where applicable. This condition also requires engagement with the EPA, Contaminated Land Site Auditor/s, local councils and the Department of Planning, Industry and Environment (DPIE) as required.

3.1.3 Guidelines and standards

Guidelines, specifications and policy documents relevant to this CEMP Sub-plan include:

- Acid Sulfate Soils Manual (Acid Sulfate Soil Management Advisory Committee 1998);
- Approved Methods for Sampling and Analysis of Water Pollutants in NSW (EPA 2004);
- Australian/New Zealand Standard 5667.1:1998 Water Quality – Sampling – Part 1: Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples (Standards Australia 1998);
- Australian/New Zealand Standard 5667.11:1998. Water Quality - Sampling - Guidance on Sampling of Groundwaters;
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000);
- Code of Practice How to Manage and Control Asbestos in the Workplace (SafeWork NSW 2016);
- Code of Practice How to Safely Remove Asbestos (SafeWork NSW 2016);
- Department of Environment and Conservation (DEC 2007), Guidelines for the Assessment and Management of Groundwater Contamination;
- NEPM Guidelines for the Assessment of Site Contamination (NEPC 1999 as amended in 2013);
- Roads and Maritime QA Specification G36 – Environmental Protection (M6S1-CGU-NWW-PCQM-SPC-026102 Rev 00);
- Roads and Maritime Guideline for the Management of Contamination, September 2013;
- Environmental Procedure Management of Wastes on Roads and Maritime Services Land (Roads and Maritime 2014);
- Roads & Maritime Services Environmental Incident Classification and Reporting Procedure (2017)
- NSW Environment Protection Authority (EPA) (2014) Waste Classification Guidelines;
- NSW EPA (2015) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997;
- NSW EPA Contaminated Land Management – Guidelines for the NSW Site Auditor Scheme (3rd edition) (2017);

- NSW EPA (2020) Consultants Reporting on Contaminated Land; and
- NSW EPA (2020) Assessment and Management of Hazardous Ground Gases.

3.2 Minister's Conditions of Approval

CoA relevant to this Sub-plan are listed in Table 3. A cross-reference is included to indicate where the condition is addressed in this Sub-plan or other Project management documents.

Table 3: CoA relevant to Contamination CEMP Sub-plan

CoA No.	Condition Requirements	Document Reference						
C4	CEMP Sub-plans must be prepared in consultation with the relevant government agency(s) and council(s) as identified for each CEMP Sub-plan in Table 4. Table 4: CEMP Sub-plan and relevant public authorities (extract)	Section 1.4						
	<table border="1"> <thead> <tr> <th></th> <th>Required CEMP Sub-plan</th> <th>Relevant government agencies and council(s) to be consulted for each CEMP Sub-plan</th> </tr> </thead> <tbody> <tr> <td>(g)</td> <td>Contamination</td> <td>Relevant council(s)</td> </tr> </tbody> </table>			Required CEMP Sub-plan	Relevant government agencies and council(s) to be consulted for each CEMP Sub-plan	(g)	Contamination	Relevant council(s)
			Required CEMP Sub-plan	Relevant government agencies and council(s) to be consulted for each CEMP Sub-plan				
(g)	Contamination	Relevant council(s)						
C5	The CEMP Sub-plans must state how:							
	(a) The environmental performance outcomes identified in the documents listed in Condition A1 as modified by these conditions will be achieved	Section 2.3						
	(b) The mitigation measures identified in the documents listed in Condition A1 as modified by these conditions will be implemented	Section 6, Table 6						
	(c) The relevant terms of this approval will be complied with	Sections 4, 5, 6 and 7 of this Plan						

CoA No.	Condition Requirements	Document Reference
	(d) Issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed	<p>Sections 4.1, 5.1 and 5.3 of this Plan.</p> <p>Section 3.2.1 of CEMP</p> <p>Appendix A2 of CEMP</p> <p>Sections 4.2, 6 and 7</p> <p>Cumulative impacts and how they are identified and managed are addressed in Section 5.3 of this Plan and Sections 2.5 and 3 of the Staging Report</p>
C6	<p>The Contamination CEMP Sub-plan must include, but not be limited to:</p> <p>(a) details of construction activities and their locations which have the potential to expose areas known to contain, or potentially contain, contaminated soils and/or materials;</p> <p>(b) measures for the handling, treatment and management of hazardous and contaminated soils and materials including measures to manage and/or minimise worker and public health and safety with regards to exposure to contamination; and</p> <p>(c) a description of how the effectiveness of the actions and measures for managing contamination impacts would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, and how the results of the monitoring would be recorded and reported.</p>	<p>This Plan</p> <p>Section 5.1 Table 5; Table 6</p> <p>Section 5.3.1</p> <p>Table 7: CLMM05, CLMM06, CLMM27 and CLMM28</p> <p>Section 7.3</p> <p>Section 7.4</p> <p>Section 7.5</p>

CoA No.	Condition Requirements	Document Reference
	<p>The Contamination CEMP Sub-plan must be reviewed and considered satisfactory by an EPA accredited site auditor. The Contamination CEMP Sub-plan and any Interim Audit Advice prepared by the EPA accredited site auditor regarding the Sub-plan must be submitted to the Planning Secretary prior to undertaking any works which may result in the disturbance of contaminated soil, land or materials.</p> <p>Nothing in this condition prevents the Proponent from preparing separate Contamination CEMP Sub-plans for specific areas of work, rather than a single plan which addresses the entire CSSI.</p>	Section 1.5
C10	The CEMP Sub-plans must be endorsed by the ER and then submitted to the Planning Secretary for approval no later than one (1) month prior to the commencement of the construction activities to which they apply.	CEMP Section 2.2
C11	Any of the CEMP Sub-plans may be submitted to the Planning Secretary along with, or subsequent to, the submission of the CEMP.	CEMP Section 2.2
C12	Construction must not commence until the CEMP and all relevant CEMP Sub-plans for such construction activities to which they apply have been approved by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER, must be implemented for the duration of construction. Where construction is staged, construction of a stage must not commence until the relevant CEMP and CEMP Sub-plans for that stage have been endorsed by the ER and approved by the Planning Secretary.	CEMP Section 2.2

CoA No.	Condition Requirements	Document Reference
E112	<p>Prior to the commencement of any works that would result in the disturbance of potential or contaminated land and/or soil, a Site Contamination Report must be prepared by a suitably qualified and experienced person, in accordance with guidelines made or approved under the Contaminated Land Management Act 1997 (NSW). The Site Contamination Report must document the outcomes of Stage 1 and Stage 2 contamination assessments of land upon which the CSSI is to be carried out, or land associated with the CSSI, that is suspected, or known, to be contaminated. The report must identify the nature and extent of any existing remediation (such as impervious surface cappings). The Site Contamination Report must detail, where relevant, whether the land is suitable (for the intended final land use) or can be made suitable through remediation and/or outline the potential contamination risks from the CSSI to human health and receiving waterways.</p> <p>Nothing in this condition prevents the Proponent from preparing individual Site Contamination Reports for separate sites.</p> <p>Measures to identify, handle and manage potential contaminated soils, materials and groundwater must be identified in the Site Contamination Report and incorporated into the Contamination CEMP Sub-plan (prepared under Condition C4), unless otherwise approved by the Planning Secretary.</p> <p>Should remediation be required to make land suitable for the final intended land use, a Remediation Action Plan must be prepared and implemented and submitted to the Planning Secretary for information prior to undertaking remediation. The plan must detail how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil or groundwater.</p> <p>If remediation is required, a Section A Site Audit Statement and Site Audit Report, must be prepared by a Site Auditor accredited by EPA under the Contaminated Land Management Act 1997 (NSW). Nothing in this condition prevents the Proponent from engaging the Site Auditor to prepare Site Audit Statements for individual work sites.</p> <p>A Section A Site Audit Statement and its accompanying Section A Site Audit Report, which state that the contaminated land disturbed by the works has been made suitable for the intended land use, must be submitted to the Planning Secretary and relevant council after remediation.</p> <p>Contaminated land must not be used for the purpose approved under the terms of this approval until a Section A Site Audit Statement is obtained which states that the land is suitable for that purpose and any conditions on the Section A Site Audit Statement have been complied with.</p>	<p>Section 4.1</p> <p>Section 4.2</p>

CoA No.	Condition Requirements	Document Reference
E113	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared prior to the commencement of construction and must be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during construction.	Appendix A
E114	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout construction.	Appendix A

3.3 Environmental Management Measures

Relevant EMM are detailed in Table 4, which also includes reference to required outcomes, timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 4: EMMs relevant to Contamination CEMP Sub-plan

Ref #	Commitment	Timing	Reference
SC1	A Construction Soil and Water Management Plan (CSWMP) will be prepared for the project. The plan will detail the process and measures to manage and monitor soil and water impacts associated with the construction works, including contaminated land. The CSWMP will:	Prior to construction	This Contamination CEMP Sub-plan was developed in accordance with CoA C4 and C6. Some aspects identified in EMM SC1 relate to this Contamination CEMP Sub-plan, while other aspects relate to other CEMP Sub-plans identified in CoA C4. As such, some aspects of SC1 are not detailed within this Contamination CEMP Sub-plan. Refer to Section 5.2, Table 6 for further detail.
	<ul style="list-style-type: none"> Describe measures to minimise and /or manage sediment and erosion within the project footprint, including overland flow, including requirements for Erosion and Sediment Control Plans (ESCP). 	Prior to construction	<p>During Stage 1 Preliminary Construction: Soil and Surface Water Management Procedure (SSWMP) Appendix A Erosion and Sediment Control Procedure</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan</p>
	<ul style="list-style-type: none"> Describe stockpile management measures, including location restrictions, separation of waste types, stabilisation and sediment controls 	Prior to construction	<p>During Stage 1 Preliminary Construction: Soil and Surface Water Management Procedure (SSWMP) Appendix C Stockpile Management Procedure</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan</p>

Ref #	Commitment	Timing	Reference
	<ul style="list-style-type: none"> Describe measures for managing waste, including spoil classification and handling 	Prior to construction	Refer to the Appendix B9 Waste CEMP Sub-plan
	<ul style="list-style-type: none"> Describe procedures for managing unexpected contamination finds 	Prior to construction	Refer to Appendix A of this Sub-plan
	<ul style="list-style-type: none"> Describe procedures for managing groundwater impacts including treatment requirements 	Prior to construction	During Stage 2 Construction: Groundwater Sub-plan
	<ul style="list-style-type: none"> Describe procedures for dewatering accumulated water on site and within sediment basins, including discharge criteria and sign off 	Prior to construction	<p>During Stage 1 Preliminary Construction: Soil and Surface Water Management Procedure (SSWMP) Appendix B Water Reuse and Discharge Management Procedure</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan</p>
	<ul style="list-style-type: none"> Describe spill management procedures including requirements for locating and maintaining spill response materials such as spill kits 	Prior to construction	<p>During Stage 1 Preliminary Construction: Soil and Surface Water Management Procedure (SSWMP) Appendix D Spill Management Procedure</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan</p>
	<ul style="list-style-type: none"> Detail surface water and groundwater monitoring requirements, including discharge criteria. 	Prior to construction	<p>During Stage 1 Preliminary Construction: pre-construction surface water and groundwater monitoring will continue</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan and Groundwater Monitoring Program</p>

Ref #	Commitment	Timing	Reference
	Measures are to be consistent with the Blue Book (Landcom 2004) and relevant Roads and Maritime guidelines	Prior to construction	<p>During Stage 1 Preliminary Construction: Soil and Surface Water Management Procedure (SSWMP) Appendix C Stockpile Management Procedure</p> <p>During Stage 2 Construction: Soil and Surface Water CEMP Sub-plan</p>
SC2	A Hazardous Building Materials Management Plan will be prepared detailing measures to manage the removal of known and unexpected hazardous building materials, including asbestos within buildings and soil. The plan is to be prepared in accordance with relevant guidelines.	Prior to construction	Table 8: CLMM24 – CLMM28
SC3	<p>Detailed site (contamination) investigations will be undertaken in accordance with the NSW EPA (1995) <i>Sampling Design Guidelines</i> within the following ancillary facilities and construction sites prior to commencement of construction at these sites:</p> <ul style="list-style-type: none"> • Rockdale construction ancillary facility (C2) • President Avenue construction ancillary facility (C3), specifically Bicentennial Park and 427 to 441 West Botany Street • Parts of the Shared cycle and pedestrian pathways where earth works are required within Scarborough Park North, Civic Avenue, Bicentennial Park, Rockdale Women’s Sports Field, Greg Atkins Mini Field, CA Redmond Field and White Oak Reserve • Princes Highway construction ancillary facility (C6), the 7-Eleven service station at 734 Princes Highway, Kogarah • The substation within St George TAFE. <p>Where required, based on the results of the additional investigations, a Remedial Action Plan (RAP) will be prepared prior to construction.</p>	Prior to construction Construction	Section 4.2

Ref #	Commitment	Timing	Reference
SC4	<p>Construction water treatment plants will be established and operated at the Arncliffe Construction Ancillary Facility (C1), Rockdale Construction Ancillary Facility (C2) and President Avenue Construction Ancillary Facility (C3) to treat water from the tunnel works. Discharge from these plants will be managed to achieve the applicable ANZECC criteria.</p> <p>Where feasible, water from the water treatment plants will be reused for construction activities.</p>	Construction	<p>This condition is addressed in the Soil and Surface Water Management Procedure for activities being carried out during Stage 1 Preliminary Construction.</p> <p>During Stage 2 Construction, this condition will be further addressed in the Groundwater CEMP Sub-plan and Soil and Surface Water CEMP Sub-plans.</p> <p>Refer to Section 5.2, Table 6 for further guidance.</p>
SC5	<p>An Acid Sulfate Management Plan will be prepared detailing processes to manage actual and potential acid sulfate soils disturbed during construction</p>	Construction	<p>This condition is addressed in the Soil and Surface Water Management Procedure for activities being carried out during Stage 1 Preliminary Construction. Also refer to Appendix C of this Sub-plan.</p> <p>During Stage 2 Construction, this condition will be addressed by the inclusion of an Acid Sulfate Soil Management Plan as an Appendix to the Soil and Surface Water CEMP Sub-plan.</p> <p>Refer to Section 5.2, Table 6 for further guidance</p> <p>Table 8: CLMM08</p>
SC6	<p>Further detailed investigation and assessment will be undertaken in Bicentennial Park in order to develop a Leachate and Landfill Gas Management Plan. The plans will be implemented to minimise nuisance</p>	Construction	<p>During Stage 2 Construction refer to the Leachate and Landfill Gas CEMP Sub-plan</p>

Ref #	Commitment	Timing	Reference
	odours to the surrounding area during excavation and to contain and treat landfill gas emissions from excavations. The plans will include measures such as excavation staging, leachate and gas management, and gas and odour monitoring.		Table 8: CLMM09
SC8	Prior to ground disturbance in areas of very high potential soil salinity, testing will be carried out to confirm the presence of saline soils. If saline soils are encountered, they will be managed in accordance with Site Investigations for Urban Salinity (DLWC 2002).	Construction	During Stage 2 Construction, this condition will be addressed in the Soil and Surface Water CEMP Sub-plan. Refer to Section 5.2: Table 6 for further guidance Also refer to Section 4.2
AQ2	Demolition activities, including removal of hazardous building materials will be planned and carried out in a manner that minimises the potential for dust generation. Removal of hazardous building materials will be completed prior to the commencement of general demolition works.	Construction	Table 8: CLMM24 – CLMM28 Appendix E of this Sub-plan
HS3	Transport of dangerous goods and hazardous substances will be conducted in accordance with relevant legislation and codes.	Construction Operation	This condition is addressed in the Soil and Surface Water Management Procedure for activities being carried out during Stage 1 Preliminary Construction. During Stage 2 Construction, this condition will be further addressed in the Soil and Surface Water CEMP Sub-plan. Refer to Section 5.2, Table 6 for further guidance
W1	A Construction Waste Management Plan will be prepared for the project prior to construction and will detail appropriate waste management procedures. The CWMP will:	Construction	Appendix B9 Waste CEMP Sub-plan Table 8 CLMM17

Ref #	Commitment	Timing	Reference
	<ul style="list-style-type: none"> • Document expected waste types and volumes for the project • Describe procedures for managing office and project waste materials including separation, treatment and disposal in accordance with relevant guidelines • Detail waste reporting requirements including the implementation of a waste register • Detail the process for identifying waste re-use sites including approval requirements. 		
W4	Suitable areas within project sites will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	Construction	Refer to Appendix B9 Waste CEMP Sub-plan Table 8: CLMM15 and CLMM18
GW10	Potential risks of the project contaminating bore water during construction will be identified. Affected bore users will be notified that the bore water is not suitable for use and the corrective actions being taken by the project. Bore users will be notified again once the bore water is safe for use.	Construction	During Stage 2 Construction, this condition will be further addressed in the Groundwater CEMP Sub-plan. Refer to Section 5.2, Table 6 for further guidance Table 8 CLMM07

4 Existing environment

4.1 Completed investigations

The following contamination investigations have been completed throughout the Project footprint:

- AECOM (2015) F6ES1 – WestConnex – the New M5, Environmental Impact Statement (November 2015);
- AECOM (2018) F6ES1 – New M5 at Arncliffe to President Avenue at Kogarah, Environmental Impact Statement (October 2018);
- Cardno (2019a) Contamination Data Report, F6 Stage 1 Geotechnical Investigation (17 May 2019);
- Cardno (2019b) Contamination Data Report, M6 Stage 1 Contamination Variation (2 December 2019);
- Cardno (2020) Contamination Assessment Report – Indicative Waste Classification, M6 Stage 1 Additional Contamination Investigation (18 May 2020);
- Cardno (2021a) Contamination Data Report, M6 Stage 1 Pre-Award Investigation (14 January 2021); and
- GHD (2021) M6 Stage 1 Project, Hydrogeological Assessment (March 2021).

The investigations followed the recommended approach in Schedule A of NEPM 1999. A summary of contaminants of potential concern from Table 16-10 of the EIS is shown in Table 5.

Table 5: Contamination investigation summary

ID	Investigation results summary	Location
C1	Site was previously a golf course, with reclaimed land in the surrounding area. Soil contamination limited to an asbestos pipe (removed during construction of the M8) and Potential Acid Sulfate Soils (PASS).	19 Marsh Street, Arncliffe
C2	Site was previously used as a market garden and greenhouse, with some filling evident from the 1960s. No exceedances of commercial industrial land use criteria were detected. PASS has been confirmed at the site.	400 – 404 West Botany Street, Rockdale
C3	Site was previously used as a market garden and council landfill. Elevated concentrations of heavy metals, Total Recoverable Hydrocarbons (TRH), Poly Chlorinated Biphenyls (PCBs), Polycyclic Aromatic Hydrocarbons (PAHs), PASS and asbestos were detected in soils. Elevated concentrations of hazardous ground gases including hydrogen sulfide, carbon dioxide and methane were detected in landfill gas bores at the site.	Bicentennial Park, Rockdale

ID	Investigation results summary	Location
C4 and C5	Sites were previously used as market gardens and recreational open space. There is potential for uncontrolled filling in some areas, along with PASS. Elevated concentrations of PAH, heavy metals and asbestos were detected in some samples.	Active Transport Corridor, Brighton Le-Sands
C6	A former 7-Eleven Service Station. Previous investigations at the site have identified contamination to soil and groundwater due to the underground storage of petroleum. The site was recently listed (in 2021) by the EPA to be significantly contaminated under s.11 of the <i>Contaminated Land Management Act 1997</i> (CLM Act) with Petroleum hydrocarbon (mainly diesel products); and Benzene.	734 Princes Highway, Kogarah
Tunnel Alignment	Commercial and industrial land uses are located above and adjacent to the tunnel alignment, particularly through the Rockdale area. There is the historical landfill located at Bicentennial Park and documented historical use of pesticides and herbicides in the market gardens at Arncliffe.	Wolli Creek, Arncliffe and Rockdale areas
Permanent Power Supply Corridor	Sections of the powerline adjacent and route downgradient to current and former dry cleaners (334 Homer Street, Earlwood, 8 Hartill-Law Avenue, Bardwell Park and 262 Wollongong Road, Arncliffe). Documented uncontrolled filling has occurred within parts of Bardwell Valley Golf Course, a former quarry adjacent to Slade Road in Bardwell Park and West Botany Street Rockdale. There are former and existing commercial/industrial properties on Kimpton Street and Princes Highway, Banksia. The surrounding area of Rockdale is industrial (former, current and surrounding industrial properties including chemical manufacturing). Some areas have been identified as having an acid sulfate soil risk.	Earlwood, Bardwell Valley, Banksia, Rockdale and surrounding areas

4.2 Further investigations

To satisfy CoA and EMM requirements, further investigations are required and will include the reporting of findings in Site Contamination Report/s. In accordance with EMM3 investigations are required prior to the commencement of construction at: Rockdale construction ancillary facility (C2), President Avenue construction ancillary facility (C3), specifically Bicentennial Park and 427 to 441 West Botany Street; parts of the shared cycle and pedestrian pathways where earth works are required within Scarborough Park North, Civic Avenue, Bicentennial Park, Rockdale Women's Sports Field, Greg Atkins Mini Field, CA Redmond Field and White Oak Reserve; Princes Highway construction ancillary facility (C6), the 7-Eleven service station at 734 Princes Highway, Kogarah; and the substation within St George TAFE.

Site Contamination Reports will be prepared by a suitably qualified and experienced person and completed in accordance with CoA E112 and the CLM Act requirements following the NSW EPA (1995) *Sampling Design Guidelines*.

The Site Contamination Reports will identify the nature and extent of any existing remediation areas including existing impervious surface capping.

Detailed investigations have been undertaken in Bicentennial Park in order to develop the Project Leachate and Landfill Gas Management Plan. The plan will be implemented to minimise nuisance odours to the surrounding area during excavation and to contain and treat landfill gas emissions from excavations.

In the event saline soils are encountered during ongoing investigations or excavation activities, they will be managed in accordance with Site Investigations for Urban Salinity (DLWC 2002).

4.2.1 Contamination register

A Contamination Register will be developed prior to soil disturbance activities associated with the Project and maintained throughout the life of the Project. It will consist of:

- A list and plan identifying each area of land within the Project where contamination has been identified prior to (Section 4.1 and 4.2) and during the Project (including unexpected finds of contaminated land);
- The proposed future land uses of each land included on the Register (in accordance with the Site Access Schedule);
- The outcome of a Baseline Assessment of each area included on the Register;
- Where additional land is placed under the control of the Project, the land must be subject of a Baseline Assessment.

The purposes of the Baseline Assessment are to:

- a. Confirm the presence and delineation of known contamination;
- b. Identify and delineate any contamination that is not known contamination but of which the Project becomes aware of; and
- c. Informs the development and implementation of this Sub-plan and the Remediation Action Plans.

4.2.2 Remediation Action Plan

If Site Contamination Report/s identify that remediation is required to make land suitable for the final intended land use, a Remediation Action Plan (RAP) will be prepared and submitted to the TfNSW and Planning Secretary for information prior to undertaking remediation. Where a RAP is required, the landowner will be notified of the remediation works which need to take place. Any RAP/s prepared by the Project will be done so in accordance with EPA guidelines and TfNSW G36. At a minimum, the RAP/s will detail:

- A description of the land and the remediation standard applicable to that land;
- The proposed remediation work which is to be carried out;
- The testing requirements for any contaminated material requiring off-site disposal;
- The environmental and human health risks which are to be managed during the disturbance of the contaminated material;
- A validation plan including the area in the immediate vicinity of the contaminated land;
- The final state of the remediated land including filling, drainage arrangements and revegetation;
- Compaction of any area that is being proposed to be filled;
- Implications (if any) of the validation results on the waste classification for material that may be excavated in the vicinity of the contamination; and
- Sign off of the completion of the RAP/s by the TfNSW Representative and an accredited Site Auditor (under the *Contaminated Land management Act 1997* NSW).

Under Clause 4.2.6 of G36, where a RAP/s is required a hold-point release must be obtained from the TfNSW Representative. The RAP/s must be submitted 5 days in advance of remediation works commencing.

On the completion of the RAP/s, the landowner will be notified of its completion and an acceptance notice from the EPA will be forwarded onto the landowner.

4.2.3 Section A Site Audit Statement and Site Audit Report

If remediation is required and a RAP/s is implemented, a Section A Site Audit Statement and accompanying Site Audit Report, will be prepared by an EPA accredited Site Auditor (under the *Contaminated Land Management Act 1997* (NSW)). A Section A Site Audit Statement and its accompanying Site Audit Report, will be prepared to confirm that the contaminated land disturbed by the Project has been made suitable for the intended land use and that any conditions in the Section A Site Audit Statement can be complied with. Both documents will be submitted to the Planning Secretary and relevant council following remediation.

4.2.4 Duty to report contamination

If the levels of contamination exceed criteria presented in the NSW EPA (2017) Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* (NSW), CGU will inform the TfNSW Representative of the requirement to notify the EPA and assist TfNSW to fulfill reporting requirements.

4.2.5 In-situ waste classification

Where possible, sampling for detailed site investigations will be tailored and enhanced to provide sufficient sampling results to enable in-situ waste classifications for material associated with bulk excavation of shafts, cut and cover excavations and construction ancillary facilities C2 and C3. This pre-classification will enable the determination of disposal, reuse and recycling options prior to physical excavation and handling.

Where the material is required to be disposed off-site, pre-classification will eliminate the requirement for double-handling (for testing) and the final disposal site can be determined prior to excavation. Refer to the CEMP Appendix B9 Waste CEMP Sub-plan for further information on the management, handling, transport and disposal of waste.

5 Environmental aspects and impacts

5.1 Construction activities

CGU has adopted a staged approach to construction, with Stage 1 generally aligning to site establishment and enabling work activities and Stage 2 generally aligning to construction of the project, including operation of ancillary construction facilities. Aspects of the Project that may result in disturbance to contamination or potentially contaminated materials during Stage 1 (Preliminary construction) include:

- Ground disturbance for site fencing and security measures
- Piled footings for noise walls and site facilities (if design mandates);
- Property adjustments:
 - Disconnection of services to existing buildings
 - Connections of potable water, power and sewer to facilities
 - Removal of redundant services for safety purposes
- Vegetation removal (soil caught in root systems of trees);
- Construction of footings for noise walls, hoarding and chain link fencing; and
- Building demolition.

Aspects of the Project that may result in disturbance to contamination or potentially contaminated materials during Stage 2 (Construction) include:

- Earthworks related to road construction;
- Installation of the permanent power supply and active transport corridor
- Bulk excavation of shafts, cut and cover and other civil infrastructure;
- Building demolition;
- Vegetation removal (soil caught in root systems of trees);
- Removal and replacement of utilities and stormwater drainage; and/or
- Spoil and material handling, storage, treatment (of ASS/PASS as required) and disposal.

Landfill and leachate will be managed in accordance with the Leachate and Landfill Gas CEMP Sub-plan and is not included in the scope of this Sub-plan. During Stage 1 Preliminary Construction, no leachate and landfill gas will be intercepted by Project works. At commencement of Stage 2 Construction inclusive of bulk excavation works landfill and leachate aspects will be covered by the Leachate and Landfill Gas CEMP Sub-plan. Locations of known and potentially contaminated land are shown in Figure 2 and Figure 3 below. For further detail on risks relating to contamination refer to the CEMP Appendix A2 Aspects and Impacts Register.



Figure 2 Confirmed and potential areas of contamination

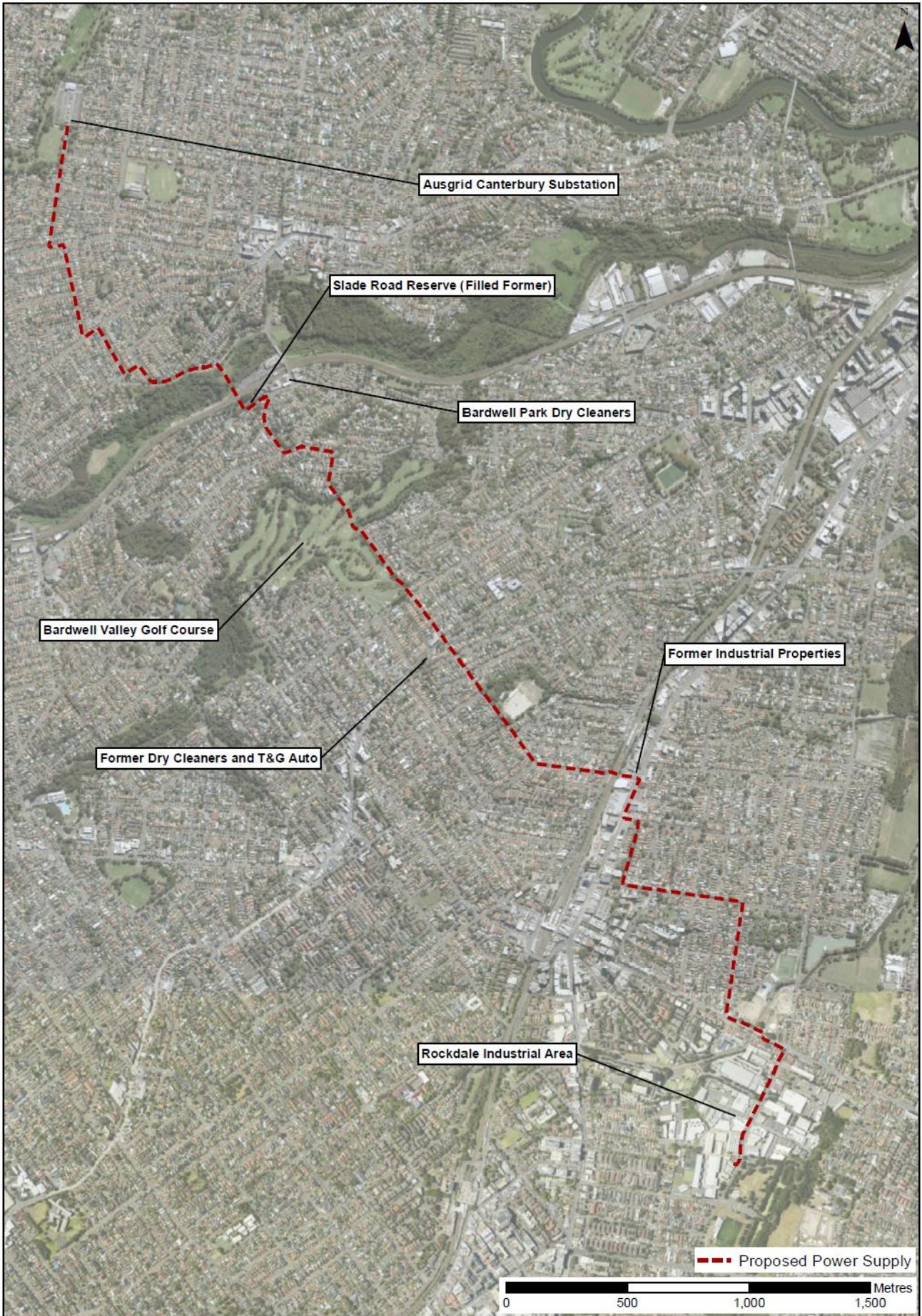


Figure 3 Permanent Power Supply alignment showing areas of potential contamination

5.2 Interface with other management plans

The management of contamination interfaces with the management of other environmental aspects (e.g. soil and surface water, groundwater). To minimise duplication and repetition, Table 6 identifies aspects relating to contamination (such as groundwater) which are addressed in other management documents in accordance with the scope outline in CoA C4.

Table 6 Contamination aspects addressed in other management documents

Aspect	Potential Impacts	Management Tool
Acid Sulfate Soils including Potential and Actual Acid Sulfate Soils	During Stage 1 (Preliminary construction), interception of ASS and PASS is not anticipated (refer to Appendix A2 Aspects and Impacts Register).	Appendix A Unexpected Contaminated Land and Asbestos Finds Procedure Appendix B4 Soil and Surface Water Management Procedure: <ul style="list-style-type: none"> • Stockpile Management Procedure
	During Stage 2 (Construction), ASS and PASS will be encountered in bulk excavations at C2 and C3, and may be encountered during civil works for the ATC, utility or road works.	Appendix B4 Soil and Surface Water CEMP Sub-plan: <ul style="list-style-type: none"> • Appendix C Acid Sulfate Soil Management Plan
Soil salinity	During Stage 1 (Preliminary construction), interception of saline soils is not anticipated (refer to Appendix A2 Aspects and Impacts Register).	Appendix A Unexpected Contaminated Land and Asbestos Finds Procedure
	During Stage 2 (Construction), saline soils may be disturbed during bulk excavation	Appendix B4 Soil and Surface Water CEMP Sub-plan
Spills and leaks of hydrocarbons and hazardous chemicals, transportation of dangerous goods and hazardous substances	During Stage 1 (Preliminary construction), spills and leaks may occur from plant and equipment associated with site establishment.	Appendix B4 Soil and Surface Water Management Procedure: <ul style="list-style-type: none"> • Spill Management Procedure CEMP Appendix A4 Site Establishment Management Plan

Aspect	Potential Impacts	Management Tool
	During Stage 2 (Construction), spills or leaks may occur from plant and equipment or haulage vehicles. The transportation of dangerous goods and hazardous substances will also be required.	Appendix B4 Soil and Surface Water CEMP Sub-plan
Landfill, Landfill Gas and Leachate	During Stage 1 (Preliminary Construction), interception of landfill, landfill gas and leachate is not anticipated (refer to Appendix A2 Aspects and Impacts Register).	
	During Stage 2 (Construction), works at construction ancillary facility C3 will intercept landfill and leachate in bulk excavations.	Appendix B10 Leachate and Landfill CEMP Sub-plan <ul style="list-style-type: none"> Leachate and Landfill Gas Monitoring Program
Groundwater	During Stage 1 (Preliminary Construction), interception of groundwater will be limited to the existing inflows at C1 (refer to Appendix A2 Aspects and Impacts Register).	Appendix B4 Soil and Surface Water Management Procedure: <ul style="list-style-type: none"> Reuse and Dewater Management Procedure Project Environmental Protection Licence Permit to Dewater
	During Stage 2 Construction, Groundwater will be intercepted by bulk excavations and tunnelling.	Appendix B5 Groundwater CEMP Sub-plan
Waste	During both construction stages, waste will be generated, handled and stored and will require management.	Appendix B9 Waste CEMP Sub-plan.

5.3 Impacts

Potential for contamination disturbance and related impacts are dependent on several factors. Impacts will depend on the nature, extent and magnitude of existing contamination and the interaction of construction activities on these known and potential contaminated land sources.

Relevant aspects and impacts relating to contamination are listed in Appendix A2 of the CEMP. Potential impacts relating to contamination are included in Table 7 with reference to proposed environmental control measures. Section 6 outlines management and mitigation measures, including the proposed environmental control measures for these impacts, that will be implemented to avoid or minimise these potential impacts.

Cumulative impacts associated contamination management are not anticipated during construction of the Project. Where unexpected cumulative impacts are identified during works, they will be

managed through compliance with relevant CoAs, coordination with external stakeholders including utility providers, and implementation of EMMs related to key environmental impacts. The mechanism for identifying any potential unexpected cumulative impacts will be through monitoring, inspections, reporting and auditing.

Table 7 Impacts related to contamination

Aspect	Impact	Proposed Environmental Control Measure
Demolition activities	Mobilisation of contaminants during demolition activities, particularly asbestos containing material (ACM) and lead paint which could be absorbed, inhaled or ingested by workers and/or members of the public.	Table 8: CLMM24 – CLMM28
	Cross-contamination of materials from the incorrect handling, storage (including stockpiling) and/or disposal of materials.	Table 8: CLMM15
Disturbance of contaminated material	Cross-contamination of materials from the incorrect handling, storage (including stockpiling) and/or disposal of materials and spoil.	Table 8: CLMM15
	Exposure of contaminated soil (following ground disturbance activities) which could result in workers and/or the general public absorbing, inhaling and/or ingesting contaminated material.	Table 8: CLMM10, CLMM27 and CLMM28
	Disturbance of ASS and/or PASS which may impact in-situ soil and/or water quality.	Table 8: CLMM08 and CLMM10 Section 5.2: Table 6
	Disturbance of, and/or exposure to hazardous ground gases during works.	Table 8: CLMM09 and CLMM10 Section 5.2: Table 6
Leaks and spills from plant and equipment used during construction activities	Contamination of land or water.	Section 5.2: Table 6
Air quality	Generation of dust from contaminated soils, with potential for workers and general public to inhale, absorb and/or ingest contaminated material.	Table 8: CLMM06, CLMM10 and CLMM28

Aspect	Impact	Proposed Environmental Control Measure
Unexpected find of contamination including asbestos	Disturbance of unknown contamination.	Table 8: CLMM04, CLMM05 and CLMM19

5.3.1 Construction planning and the development of Work Packs for managing contamination

Where construction is required on potential or known areas of contaminated land, risks to human health and the environment may arise. In accordance with G36, Clause 4.2.5, Work Packs (including a step-by-step process) will be prepared in relation to the activity taking place impacting contaminated land.

Work packs will be developed based on the CEMP Sub-plans and contamination investigation findings. Sub-plan. The process to develop Work Packs for specific works (per site, scope and activity) is a key contamination mitigation measure and ensures that specific, tailored methods, mitigations and monitoring requirements are detailed prior to any specific activity commencing

Work Packs will contain:

- The delineation and characterisation of the content of, nature of, extent of and risks presented by the contamination;
- Measures to ensure that the extent of and risks posed by the contamination are not exacerbated during Project activities;
- Where necessary, measures for containment, remediation and/or removal of contamination;
- Where necessary, measures for disposal of contaminants and contaminated materials;
- Control measures to ensure surface runoff is diverted away from the contamination, and that any surface runoff which is contaminated by exposure to the contamination is captured and properly treated prior to being reused on site or released to the environment;
- Precautions and actions to ensure the safety of persons working in the vicinity of the contamination;
- Monitoring requirements to ensure the appropriate implementation of the Work Pack;
- Reporting requirements for any monitoring results; and
- Record keeping requirements relating to contamination and implementation of the Work Pack.

Project works being undertaken on contaminated land will be carried out in accordance with the Work Pack. No works will be undertaken on specified contaminated land (excluding investigative works necessary to prepare the Work Pack), until the RAP/s and associated procedures have been submitted to the TfNSW Representative and the hold point released. A request to release the hold point is required 5 days prior to activities taking place (refer to Section 4.2.2 of this Sub-plan).

6 Environmental control measures

Environmental control measures applicable to all Project sites the subject of this Contamination CEMP Sub-plan (refer Table 5) are detailed in Table 8.

Table 8: Contamination environmental control measures

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
General						
CLMM01	If the Site Contamination Report/s (prepared in accordance with E112) identify that unacceptable residual contamination exposure risks exist within the project construction areas, a Remediation Action Plan (RAP) will be prepared. The plan will detail points outlined in Section 4.2.2.	Suitably qualified and experienced environmental consultant	Prior to soil disturbance occurring	Construction Manager Environmental and Sustainability Manager	CoA C6 & E112 Appendix B of this Sub-plan CGU Manage Contaminated Land	Site Contamination Reports RAP Construction Area Plan Risk Assessment Work Pack
CLMM02	If a RAP has been identified for a designated area, the RAP must be submitted to the TfNSW Representative for a Hold Point Release 5 days prior to ground disturbance occurring within the area.		Prior to soil disturbance occurring	Environmental and Sustainability Manager	G36 Section 4.2.6	RAP Transmittal of Hold Point Release Inspection Test Point form

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
CLMM03	If remediation is required, a Section A Site Audit Statement/ Site Audit Report, will be prepared by a NSW EPA accredited Site Auditor to confirm that the contaminated land disturbed by the works has been made suitable for the intended land use.	NSW EPA accredited Site Auditor	Prior to operation	Construction Manager Environmental and Sustainability Manager	CoA E112 G36	Section A Site Audit Statement Minutes from coordination meetings
CLMM04	A Contamination Register will be developed prior to soil disturbance activities associated with the Project and maintained throughout the life of the Project. It will contain points outlined in Section 4.2.1. Where unexpected, contaminated land is identified throughout the project, this land will be added to the Contamination Register.		Ongoing	Environmental and Sustainability Manager	G36 4.2.3	Contamination Register Minutes from coordination meetings
CLMM05	If additional land is acquired by the Project, it will be subjected to a Baseline Assessment as outlined in 4.2.1.		Construction	Environmental and Sustainability Manager	G36 4.2.3	Contamination Register Minutes from coordination meetings
CLMM06	A Work Pack for activities within contaminated land (including remediation and validation activities) will be developed prior to works commencing in the area and detail points outlined in Section 5.2.1.		Construction	Construction Manager	G36 4.2.5 Appendix C of this Sub-plan CGU Manage Acid Sulfate Soils	Construction Area Plan Construction Area Plan Risk Assessment Work Pack

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
						Safe Work Method Statement (SWMS)
CLMM07	<p>Potential risks of the project contaminating bore water during construction will be identified in the Groundwater CEMP Sub-plan and monitored via the Groundwater Monitoring Program.</p> <p>In the unlikely event a bore is contaminated due to construction activities, users will be notified that the bore water is not suitable for use and the corrective actions being taken by the Project. Bore users will be notified again once the bore water is safe for use.</p>		Construction	<p>Tunnel Design Manager</p> <p>Environmental and Sustainability Manager</p> <p>Stakeholder and Community Relations Manager</p>	EMM GW10	Groundwater CEMP Sub-plan and Groundwater Monitoring Program
CLMM08	<p>During Stage 1 Preliminary construction, if potentially contaminated land, ASS or PASS is encountered refer to the management and mitigation measures in:</p> <ul style="list-style-type: none"> Appendix A Unexpected Contaminated Land and Asbestos Finds Procedure CEMP Appendix B4 Soil and Surface Water Management Procedure Stockpile Management Procedure <p>During Stage 2 Construction, if ASS or PASS is encountered refer to the management and mitigation measures in Appendix B4 Soil and Surface Water CEMP Sub-plan and the Acid</p>		Construction	Environmental and Sustainability Manager	<p>Appendix C of this Sub-plan</p> <p>CGU Manage Acid Sulfate Soils Procedure</p> <p>EMM SC5</p>	<p>Appendix B4 Soil and Surface Water Management Procedure</p> <p>Appendix A4 Site Establishment Management Plan</p> <p>Acid Sulfate Management Plan</p>

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
	Sulfate Soil Management Plan (ASSMP) (attached to Sub-plan).					(Appendix C of the Soil and Surface Water CEMP Sub-plan) Construction Area Plan Work Pack Inspection Checklist
CLMM09	Management of landfill, landfill gas and leachate will be in accordance with the Leachate and Landfill CEMP Sub-plan and Leachate and Landfill Gas Monitoring Program.		Construction	Environmental and Sustainability Manager		Appendix B10 Leachate and Landfill CEMP Sub-plan Leachate and Landfill Gas Monitoring Program
On site						
CLMM10	In the first instance, wherever feasible and practicable, the disturbance of contaminated material will be avoided. Where design mandates the need to disturb areas of known contamination, construction methodology will consider options to minimise the disturbance footprint.		Prior to construction	Design Manager Temporary Works Designer Construction Manager	Best Practice	Construction Area Plan Construction Area Plan Risk Assessment Work Pack

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
	Potential impacts from the disturbance of contaminated land and measures to manage and monitor soil and water impacts from disturbing any contaminated material must included through the development of a Work Pack (section 5.3.1)					
CLMM11	Surface water runoff will be diverted away from contaminated land (including ASS/PASS) and contaminated stockpiles where possible. Where run off contacts contaminated materials it will be contained, treated or disposed to ensure there is no pollution of land or waterways		Construction	Environmental and Sustainability Manager Supervisor	Appendix C CGU Manage Acid Sulfate Soils Procedure Appendix B CGU Manage Contaminated Land G36	Pre-construction surface water monitoring Work Pack Environmental Inspection Checklist Appendix B4 Soil and Surface Water Management Procedure: Stockpile Management Procedure Appendix B4 Soil and Surface Water CEMP Sub-plan

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
CLMM12	All workers likely to be involved with the management of contaminated materials (including ASS/PASS) will be trained in the identification and management of the material.		Construction	Support Services Director Construction Manager Environmental and Sustainability Manager	Appendix B CGU Manage Contaminated Land	Induction records Construction Area Plan Risk Assessment Work Pack
CLMM13	All known areas of contamination will be communicated to all workers via: <ul style="list-style-type: none"> • Inductions; • Toolbox talks; • Pre starts; • Work Pack briefings; and • Site Environmental Plans. 		Construction	Construction Manager Environmental and Sustainability Manager	Appendix B CGU Manage Contaminated Land	Induction Records Pre Starts Records Toolbox Records Work Pack and briefing records
CLMM14	The Site Supervisor and/or Environmental Advisor must be immediately notified if there is a spill of contaminated material outside the storage/ treatment areas. Where a spill of contaminated material occurs in proximity to waterways, areas to be inspected for evidence of impacts on waterways.	Designated containment areas for contaminated material	Construction	All Supervisor Environmental Advisor	Best Practice G36	Work Pack Site Environment Plan Incident Record

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
						Environmental Inspection Checklist
CLMM15	<p>Where stockpiling of contaminated materials is required:</p> <ul style="list-style-type: none"> • During Stage 1 (Preliminary construction), the Soil Contamination Report and the Stockpile Management Procedure (found in the Soil and Surface Water Management Procedure) must be followed. • During Stage 2 (Construction), the Soil Contamination Report and Appendix B4 Soil and Surface Water CEMP Sub-plan must be implemented. <p>Controls include:</p> <ul style="list-style-type: none"> • Segregation of stockpiles to avoid cross contamination. • Where applicable, stabilised stockpile areas with guard layers to prevent further contamination. • Where applicable, stockpiles areas will be bunded and sumps installed to capture and run off or leachate, which will be disposed appropriately. • Stockpiles to be clearly identified with signs and communicated to work crews. 	Soil Contamination Report	Construction	All Supervisor Construction Manager Engineer	Best Practice G36	Construction Area Plan Work Pack Site Environment Plan Environmental Inspection Checklist

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
CLMM16	All vehicles, plant and other machinery that have been in contact with contaminated soil (including ASS/PASS) will be decontaminated prior to leaving site.	Wash down facilities	Construction	Construction Manager Mechanical Supervisor	Appendix B CGU Manage Contaminated Land Procedure Appendix C CGU Manage Acid Sulfate Soils Procedure	Off-boarding records of plant and equipment Subcontractor Agreements
CLMM17	Contaminated material will be managed and disposed of in accordance with relevant NSW guidelines and legislation, and Appendix B9 Waste CEMP Sub-plan.		Construction	Construction Manager Spoil Manager	EMM W1	Appendix B9 Waste CEMP Sub-plan Waste Tracking Register Inspection Records
CLMM18	Contingency areas for storage of contaminated soil and materials will be allocated at the project sites. Contingency areas for the purposes of stockpiling will be established and managed in accordance with the Site Contamination Reports to ensure avoid cross contamination and incorrect disposal.		Prior to construction	Construction Manager Supervisor	EMM W4	Appendix B9 Waste CEMP Sub-plan Waste Tracking Register Inspection Records Site Environment Plan

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
CLMM19	<p>If unexpected contaminated land, Acid Sulfate Soils or asbestos is uncovered during construction is encountered, the Unexpected Contaminated Land and Asbestos Finds Procedure must be followed.</p> <p>Any unconfirmed or inaccessible materials with the potential to contain asbestos are to be assumed as asbestos containing.</p> <p>The Project is to notify TfNSW of the unexpected find in accordance with the above Procedure.</p>		Construction	Environmental and Sustainability Manager Supervisor	<p>CoA E113</p> <p>Appendix C of this Sub-plan CGU Manage Acid Sulfate Soils Procedure</p> <p>Appendix D of this Sub-plan CGU Manage Asbestos Procedure</p> <p>G36</p>	Appendix A Unexpected Contaminated Land and Asbestos Finds Procedure
Asbestos management						
CLMM20	If there is a likelihood of asbestos being found in existing structures or buried, a suitably qualified person is to be engaged to identify and/or sample the suspect materials. A report is to be provided specifying the location, type and form of the asbestos, and suitable control measures.	Hazardous materials consultant	Construction	Construction Manager Engineer	Appendix D of this Sub-plan CGU Manage Asbestos Procedure	Asbestos materials inspection reports
CLMM21	If asbestos removal is required, the requirements of Appendix E of this Sub-plan (Manage Work with Asbestos) must be followed. This includes that all workers on the site must be notified that asbestos removal work will be carried out. Air monitoring is to be undertaken during removal works by qualified occupational hygienist. Effective dust suppression must be in place	Occupational hygienist consultant	Construction	Construction Manager Engineer	Appendix D of this Sub-plan CGU Manage Asbestos Procedure	<p>Work Pack</p> <p>Pre-start Records</p> <p>SWMS</p> <p>Site Environment Plan</p>

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
	<p>throughout the asbestos removal process and asbestos must be segregated, covered securely and clearly identified with a sign.</p> <p>All asbestos disposed of or removed from site must be tracked as Special Waste in accordance with the requirements of Appendix B9 Waste CEMP Sub-plan.</p>					
CLMM22	Workers removing asbestos must be appropriately trained and qualified in accordance with SafeWork NSW guidelines. All workers involved in the removal of any asbestos will undergo the required health surveillance / monitoring with reporting to the regulator.	Licensed asbestos removalist	Construction	Construction Manager Engineer	Appendix D of this Sub-plan CGU Manage Asbestos Procedure	Asbestos removal licence
CLMM23	Following the removal of asbestos containing materials from a delineated area, works within this area cannot proceed until the Asbestos Clearance Inspection Certificate has been obtained.	Occupational hygiene consultant	Construction	Construction Manager Project Engineer Supervisor	Appendix D of this Sub-plan CGU Manage Asbestos Procedure	Asbestos Clearance Inspection Certificate Construction Area Plan Risk Assessment Work Pack

Demolition Activities

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
CLMM24	For all buildings identified for demolition, a Hazardous Materials Survey will be undertaken by appropriately qualified consultant prior to demolition activities taking place.	Hazardous materials consultant	Prior to demolition taking place	Construction Manager Project Engineer	EMM SC2 Appendix D of this Sub-plan CGU Manage Asbestos Procedure	Hazardous Material Survey Construction Area Plan Risk Assessment Construction Area Plan Work Pack
CLMM25	A Demolition Plan must be prepared in accordance with the Procedures contained in Appendix D and Appendix E to detail measures to manage the removal of known and unexpected hazardous building materials, including asbestos within buildings and soil. The Hazardous Materials Survey will inform the Demolition Plan of the controls required to remove hazardous materials and the timing of when it is to occur. A Demolition Plan will be developed for each building in accordance with Appendix D and E of this Sub-plan and the outcomes of the Hazardous Materials Survey. This will be made accessible to all workers during construction	Hazardous materials consultant	Prior to demolition taking place Construction	Construction Manager Project Engineer Supervisor	EMM SC2 Appendix D of this Sub-plan Sub-plan CGU Manage Asbestos Procedure Appendix E of this Sub-plan CGU Manage Demolition Works	Demolition Plans Construction Area Plan Risk Assessment Construction Area Plan Work Pack
CLMM26	Demolition activities will be programmed to minimise the duration of work and exposure of risks to workers and the general public.	Licensed demolition contractor	Construction	Construction Manager Project Engineer	EMM AQ2 & SC2 Appendix E of this Sub-plan	Demolition Plan Work Pack

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
				Supervisor Licenced demolition contractor	CGU Manage Demolition Works	Construction Area Plan Subcontractor Pack
Health and Safety						
CLMM27	<p>When excavating, removing, or handling contaminated soils and materials the works will be carried in accordance with the associated Work Pack. The following controls may be required:</p> <ul style="list-style-type: none"> • PPE suitable for the subject contamination following risk assessment. PPE may include respiratory protective equipment, disposable coveralls, gloves and boot covers; • Training and induction of all workers required to work in contaminated areas, detailing risks of the contaminants, potential exposure pathways and management measures; • Decontamination of all personnel, plant and equipment must be undertaken in designated areas to prevent mobilisation of contaminants outside of controlled areas; and 	PPE	Construction	Construction Manager Supervisor	CoA C6 G36 4.2.5	Pre starts Records Safety Inspections Inspection checklists Construction Area Plans Construction Area Plan Risk Assessment Work Packs SWMS

ID	Measure/Requirement	Resources needed	When	Responsibility	Reference	Evidence
	<ul style="list-style-type: none"> Storage of materials in appropriate containers, and stockpile in accordance with SSWMP procedures. 					
CLMM28	<p>To prevent the generation of dust and airborne mobilisation of contaminants, controls will be implemented in accordance with the associated Work Pack. The following dust suppression measures may be undertaken:</p> <ul style="list-style-type: none"> All contaminated stockpiles to be covered with geotextile fabric or similar (where feasible); Works will be programmed to limit stockpiling; and Effective dust control of soils during excavation to minimise dust generation. 		Construction	Construction Manager Supervisor	G36 4.2.5 Best Practice	Pre-starts Records Inspection checklists Construction Area Plans Construction Area Plan Risk Assessment Work Packs

7 Compliance management

7.1 Roles and responsibilities

Environmental roles and responsibilities for Project personnel are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Sub-plan.

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:

- Project obligations including requirements to assess and classify contamination onsite;
- Recognising soil and groundwater contamination conditions and implementing the Unexpected Contaminated Land Finds Procedure (refer Appendix A);
- Responsibilities pertaining to the management of contamination under the Contaminated Land Management Act 1997 and the Protection of the Environment Operations Act 1997;
- Responsibilities under the Guidelines for the Assessment of On-site Containment of Contaminated Soil (ANZECC, 1999) and National Environmental Protection (Assessment of Site Contamination) Amendment Measure 1999 revised 2013 (No. 1) (NEPM, 2013);
- Responsibilities under the Guidelines for the Assessment and Management of Groundwater Contamination (NSW EPA 2007); and
- Responsibilities including tracking of waste under RMS Specification D&C G36.

Targeted training in the form of toolbox talks and specific training will also be provided to personnel with a key role in contamination management. Details regarding staff induction and training are outlined in Section 3.6 of the CEMP.

7.3 Monitoring and inspections

Regular monitoring and inspections will be carried out during construction across all Project sites in accordance with Section 3.9 of the CEMP.

Environmental monitoring is highly specific to the contamination encountered and requires specialist services specific to certain types of activities. The Site Contamination Report will identify monitoring (if required) or will refer to the need for a Remedial Action Plan/s for sites where remediation is required. Environmental Monitoring will be stipulated in the RAPs (refer to Section 4.2.2) and if required, monitoring will be undertaken in accordance with construction planning (refer to Section 5.3.1).

Environmental inspections are a key aspect of ensuring that actions and measures for managing construction impacts are being implemented in accordance with Construction Area Plans, Work Packs, SWMS and EWMS (refer to Section 7.3).

Monitoring and inspection requirements are outlined in Table 9 to measure and monitoring the effectiveness of controls outlined in Table 8.

Table 9: Monitoring and inspection requirements

Item	Frequency	Standards	Reporting	Responsibility
Inspection				
Asbestos survey	As required, prior to demolition	Inspection to be undertaken by a qualified asbestos surveyor	Reporting as per Demolition Plan	Safety Manager
Site inspections	Weekly	Waste CEMP Sub-plan Contamination CEMP Sub-plan EPA Waste Classification Guidelines RMS Waste Fact Sheets: "Asbestos Waste" and "Waste Sampling"	Environmental Inspection Checklist	Environmental and Sustainability Manager
Monitoring				
Material tracking	Ongoing	Waste CEMP Sub-plan EPA Waste Classification Guidelines	Waste Management Register	Spoil Manager

7.4 Compliance reporting and auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA, EMM's and other relevant approvals, licences and guidelines. Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.5 Reporting

Reporting requirements and responsibilities are documented in Section 3.9.5 of the CEMP. Additional reporting requirements associated with this Sub-plan are featured in Table 10.

Table 10: Reporting requirements

Item	Frequency	Standards	Responsibility
Waste Classification Reports	Prior to offsite spoil disposal	EPA Waste Classification Guidelines	Spoil Manager
Validation Reports	Following remediation of a site	RAP NEPM 2013 NSW EPA 2020	Environmental and Sustainability Manager

Item	Frequency	Standards	Responsibility
Hazardous Materials Reports	Prior to demolition of buildings and structures	Australian Standards NSW SafeWork Codes of Practice Work Health and Safety Regulation 2017	Construction Manager
Site Audit Reports	Prior to operation	NEPM 2013 NSW EPA 2017	Environmental and Sustainability Manager
Unexpected contaminated land or asbestos find	As required	Unexpected contaminated land or asbestos find procedure	Environmental and Sustainability Manager

8 Review and improvement

8.1 Continual improvement

Section 3.2.2 of the CEMP describes the process for the continual improvement of project documents.

Continual improvement of this Contamination CEMP Sub-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 continual improvement process is 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 (refer Section 3.10 of CEMP);
- Verify the effectiveness of the corrective and preventative actions (refer Section 3.12 of the CEMP);
- Document any changes in procedures resulting from process improvement; and
- Make comparisons with objectives and targets.

8.2 Contamination CEMP Sub-plan update and amendment

The process described in Section 3.12 to Section 3.14 of the CEMP describes the process for revising and updating the CEMP and its Sub-plans. This will occur as needed. 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 2 of the CEMP.

**Appendix A Unexpected Contaminated Land and Asbestos
Finds Procedure**

UNEXPECTED CONTAMINATED LAND AND ASBESTOS FINDS PROCEDURE

Unexpected Finds Procedure



INTERNAL HOLD POINT : Evidence of Contamination Observed
If observations indicate presence of potential contamination, then STOP all work in the immediate area and prevent further activity in the area.

- Do not touch or disturb the item/ materials.
- If material is suspected to be asbestos, cover with geofabric and secure.
- Set up appropriate barricades to prevent access to the area.
- Notify the Site Supervisor, Environmental Advisor, Safety Advisor and Construction Manager

Workforce

- Record the following details of the unexpected contamination find:
- Location of the potential contamination
 - Visual appearance
 - Odour (if any)
 - Depth
 - Surrounding material and works being undertaken at the time of discovering the material

Project Engineer Supervisor

As soon as reasonably practicable, Environmental and Sustainability Manager is to notify the TfNSW Representative of unexpected find. Incident Report to be submitted via Teambinder.

Environmental and Sustainability Manager

- If required, Environmental and Sustainability Manager is to obtain assistance from a suitably qualified and experienced contaminated land consultant in identifying the potential hazard to human health or environment.
- Sampling and laboratory analysis of materials may be undertaken in accordance with relevant guidelines.
- Where remediation is required a Remediation Action Plan will be prepared and an associated Work Pack.

Environmental and Sustainability Manager
Suitably Qualified Contamination Specialist
Site Auditor
Project Engineer



EXTERNAL HOLD POINT: G36 Environmental Protection
Activities within the vicinity of actual or suspected contaminated land require a Remediation Action Plan to be submitted to the principal 5 days prior remediation activities taking place

Environmental and Sustainability Manager

EXTERNAL HOLD POINT RELEASE: G36 Environmental Protection

TfNSW Representative

- RAP and associated Work Pack to be implemented.
- If contaminated material requires offsite disposal, refer to Waste CEMP Sub-plan for guidance on management, handling, classification, disposal and tracking requirements.
- Disposal must be in accordance with RAP.
- Unexpected find to be recorded in the Contamination Register

Construction Manager Supervisor
Project Engineer
Environmental and Sustainability Manager

- Construction activities to recommence once validation of contaminated area has been confirmed in accordance with RAP.

Environmental and Sustainability Manager Supervisor
Construction Manager

PROTOCOL

This Unexpected Contaminated Land and Asbestos Finds Procedure must be followed should unexpected contamination or asbestos (or suspected contamination) be excavated or otherwise discovered

For further information on the management of contaminated land and material, refer to the Contamination CEMP Sub-plan.

Likelihood of contamination

The presence of potentially contaminated material can be detected where material is uncovered which displays some or all of these characteristics:

- Unusual odour from soils that are not detected in other similar areas
- Discolouration or staining of soil or rock
- Seepage of unusual liquids from soil or rock
- Unusual odours, sheen or colour on groundwater and/or surface water
- Unusual metal objects
- Unexpected underground storage tanks, buried drums or machinery etc.
- Presence of waste or rubbish above or below ground
- Potential asbestos containing material

Where these factors are identified, the material is considered to be possibly contaminated and the flowchart is to be followed.

Asbestos

An unexpected asbestos find occurs when Asbestos Containing Materials (ACM), not identified in the Asbestos Register, are found on site. In the event of an unexpected asbestos find, the below steps are to be followed along with the flowchart:

- The area is to be delineated, works in the immediate vicinity to cease.
 - Notify the Environmental Advisor, Safety Advisor and Site Supervisor. Site Supervisor to notify workers in the vicinity of find.
 - Ensure the soil and potential asbestos remain damp with dust suppression or securely covered where water cannot be accessed. If material is to be left over night, exposed area is to be securely covered.
 - Project Engineer must arrange for testing of the suspected ACM and arrange for a occupational hygienist to undertake monitoring of the area (if required).
 - A licenced asbestos removalist is to be engaged to provide recommendations to treat the area, as required.
 - A clearance certificate is required from the asbestos removalist to confirm that the area is to be made safe.
- Refer to Table 6 in the Contamination CEMP Sub-plan for further guidance.

Acid Sulfate Soils

It is likely Acid Sulfate Soils will be encountered within the Project footprint. If detailed investigations determine high-risk ASS, then it will be identified on relevant sensitive area plans.

If ASS is encountered management strategies include:

- Modifying the work to avoid the area of ASS.
- Undertaking in situ testing including SPOCAS testing to determine liming rate required to neutralise material.
- Onsite treatment to neutralise the ASS in designated stockpile area in accordance with SPOCAS testing results.
- Delineation, treatment and removal of material to a suitably licenced facility.
- Any material to be removed off-site will be classified in accordance with the NSW EPA Waste Classification requirements.

Appendix B CGU Manage Contaminated Land

Manage Contaminated Land

Purpose

This procedure describes how to manage contaminated land. This refers to land that contains substances that are actually or potentially hazardous to health or the environment, often resulting from commercial, industrial and agricultural activities.

Contaminants may include:

- Hydrocarbons
- Polyaromatic hydrocarbons
- PCBs and pesticides
- Heavy metals such as lead, arsenic, cadmium and mercury
- Radioactive waste
- Unexploded ordnance
- Asbestos
- Biologically pathogenic materials and waste.

Procedure

1 Develop and Monitor Contaminated Land Management Strategy

Accountability: Environment Manager/Representative

- Ensure testing of contaminated land is conducted by a trained and competent person, and a management strategy developed.
- Ensure contaminated land is handled, stockpiled, reused and/or disposed of as per the project's contamination management strategy.

2 Include Controls in Construction Area Plan and Work Pack(s)

Accountability: Senior Project Engineer

- Ensure contaminated land risks are considered as part of the development of Construction Area Plans.
 - Refer to Procedure: Develop Construction Area Plan.
- Ensure Work Packs include relevant environmental control information including a Site Environment Plan where required.
 - Refer to Procedure: Develop Work Pack.

3 Undertake Work

Accountability: Supervisor

- Ensure all movement of contaminated materials is tracked using Tool: Materials Tracking Form.
- Ensure water runoff from contaminated land and stockpiles is contained, treated or disposed to ensure there is no pollution of land or waterways.
- Ensure all vehicles, plant and other machinery that have been in contact with contaminated soil are decontaminated prior to leaving site.
- Stop work whenever unexpected contaminated materials are discovered or suspected until adequate controls are put in place to undertake the work.

Accountability: Worker

- Notify the Supervisor and/or Environment Manage/Representative immediately if unexpected contaminated material is suspected or discovered.

4 Perform Task Observations

Accountability: Line Manager, SH&E Manager or Subcontractor Supervisor

- Conduct task observations as per Project schedule to ensure ongoing effectiveness of environmental control measures.
 - Refer to Procedure: Conduct Task Observation.

Appendix C CGU Manage Acid Sulfate Soils

Manage Acid Sulphate Soils

Purpose

This procedure describes how to manage Acid Sulfate Soils (ASS) and Potential Acid Sulfate Soils (PASS).

ASS and PASS contain iron sulfides which oxidise to produce sulfuric acid leachate. Sulfuric acid leachate can impact on the environment, buildings and infrastructure.

Procedure

1 Develop and Monitor ASS/PASS Management Strategy

Accountability: Environment Manager

- Ensure testing of ASS/PASS material is conducted by a trained and competent person, and a management strategy developed.
- Ensure ASS/PASS is handled, stockpiled, tracked, treated and reused and/or disposed of as per the project's ASS/PASS management strategy.

2 Include Controls in Construction Area Plan and Work Pack(s)

Accountability: Senior Project Engineer

- Ensure all risks posed by ASS/PASS are considered as part of the development of Construction Area Plans.
 - Refer to Procedure: Develop Construction Area Plan.
- Ensure Work Packs include relevant environmental control information including a Site Environment Plan where required.
 - Refer to Procedure: Develop Work Pack.

3 Undertake Work

Accountability: Supervisor

- Ensure all workers likely to be involved with the management of ASS/PASS are trained in the identification and management of the material
- Ensure work ceases whenever unexpected ASS/PASS material is suspected or discovered
- Communicate all known or discovered areas of ASS/PASS to all workers involved via inductions, toolbox talks, pre starts and Site Environmental Plans
- Minimise the disturbance of surface and subsurface soils in potential ASS/PASS areas
- Ensure all movement of ASS/PASS materials is tracked using Tool: Materials Tracking Form.

- Ensure all water runoff from ASS/PASS stockpiles is contained, treated or disposed of to ensure there is no pollution of land or waterways.
- Ensure all vehicles, plant and other machinery operating in contact with ASS/PASS is decontaminated prior to leaving site

Accountability: Worker

- Notify the Supervisor and/or Project Environmental Representative immediately if:
 - Unexpected ASS/PASS material is suspected or discovered
 - There is a spill of ASS/PASS material outside the ASS/PASS storage and/or treatment areas
 - There is evidence of impacts on waterways

4 Perform Task Observations

Accountability: Line Manager, Project SH&E Manager or Subcontractor Supervisor

- Conduct task observations as per project schedule to ensure ongoing effectiveness of environmental control measures
 - Refer to Procedure: Conduct Task Observation

Appendix D CGU Manage Work with Asbestos

Manage Work with Asbestos

Purpose

This procedure describes how to manage risk where there is a potential risk of being exposed to Asbestos Containing Materials (ACM).

Any construction task that involves working with asbestos is a Business defined High Risk Construction Work task. A Safe Work Method Statement (SWMS) must be developed and approved and included into the relevant Work Pack/s.

Elimination of the risks to a worker's health and safety must be sought in the first instance. If it is not reasonably practicable to eliminate, all effort must be made to minimise those risks so far as is reasonably practicable.

Procedure

1 Consider Asbestos Risk During Tender

Accountability: General Manager

- Consider the liability for removing and disposing of asbestos as part of a tender.
 - Refer to Knowledge: Asbestos

2 Design to Eliminate Asbestos Risk

Accountability: Project Manager

- Conduct a Safety in Design Review where the Business is accountable or can influence the design and/or the pre-construction review of a design.
 - Refer to Procedure: Manage Safety in Design

3 Identify and Assess Work Conditions or Tasks

Accountability: Project Manager

- Determine if there is a likelihood of asbestos being found in existing structures or buried.
 - If so, engage an appropriately qualified person to positively identify the existence of asbestos and/or arrange for a sample of asbestos to be analysed by either:
 - NATA accredited laboratory
 - Safe Work Australia approved laboratory
 - Regulator-operated laboratory.
- Ensure that all workers involved in the removal of any asbestos, undergo health surveillance / monitoring with reporting to the regulator, in accordance with relevant legislation, codes of practice and Australian Standards.
- Ensure a report is provided that includes:

- Where the asbestos was found
- Type and form of asbestos
- Whether the asbestos was friable or poorly bonded or in an unstable condition
- Potential health risks
- The most suitable control measures.
- Treat any unconfirmed material or inaccessible material as asbestos.
- If removal is to be undertaken, notify all workers on the project, that asbestos removal work will be carried out.

Note: An Asbestos Removal Control Plan including notifications to the regulator, client, workers and other affected parties, is required if removal is undertaken.

4 Identify Training and Competency Requirements

Accountability: Construction Manager

- Identify the training and competency requirements, including any legal or other requirements.
 - Refer to Procedure: Manage Worker Competence
 - Refer to Knowledge: Asbestos

Note: Workers removing asbestos containing materials must be appropriately qualified, regulatory licensed and formally trained in accordance with the relevant legislation, codes of practice and relevant Australian Standards

5 Identify Hazards, Assess Risks and Develop Controls

Accountability: Construction Manager and Senior Project Engineer

- As part of the Construction Area Risk Review identify the hazards associated with the construction methodology and high-level activities being undertaken within the construction area
- Determine controls that must be used, including any minimum mandatory controls
 - Refer to Procedure: Undertake Construction Area Risk Review
 - Refer to Knowledge: Asbestos
- Develop and maintain an Asbestos Management Plan & Register in accordance with legislative requirements, codes of practice and Australian Standards.
- As part of the Work Pack Risk Assessment, incorporate relevant controls from the Construction Area Risk Review, identify additional hazards, assess the risks and further develop controls to eliminate/minimise risks to workers when working with asbestos.
 - Refer to Procedure: Undertake Work Pack Risk Assessment

6 Include Controls in Construction Area Plan, Work Pack/s & SWMS

Accountability: Senior Project Engineer and Project Engineer

- Include controls and training and competency requirements in Construction Area Plans and Work Pack/s
 - Refer to Procedure: Develop Construction Area Plan
 - Refer to Procedure: Develop Work Pack
- Ensure that air monitoring is undertaken by qualified and regulatory licensed workers independent of the removal process;
- Ensure that a Clearance Inspection Certificate is provided, prior to the area being returned to normal use
- Create a SWMS for the tasks identified and obtain approval before commencing work.
 - Refer to Procedure: Create a Safe Work Method Statement

7 Plan Emergency Preparedness and Response

Accountability: Project Engineer

- Refer to the Project Emergency Response Plan to identify the method of rescue in the event of an incident during work with asbestos and include in the Work Pack. Ensure it describes:
 - How the worker(s) will be quickly rescued;
 - Who will carry the rescue out;
 - The equipment required to carry out a rescue out.
- Ensure all necessary rescue equipment is ready at the work face;
- Before work begins, ensure workers are briefed and understand the rescue method and that the nominated worker(s) carrying out the rescue are capable of doing so

8 Notify Workers of Asbestos Removal Activity

Accountability: Project Manager

- Notify all workers on site of asbestos removal work to be carried out.

9 Commence Work

Accountability: Supervisor or Subcontractor Supervisor

- Ensure that all workers understand and have signed onto the relevant SWMS.
- Ensure all in the Work Pack/s and relevant SWMS are in place, before work commences.
- Ensure the Asbestos Management Plan is readily accessible to all workers.
- Conduct a pre-start briefing and ensure all workers sign onto the Pre-Start Briefing Form.
 - Refer to Procedure: Conduct Pre-Start Briefing
- Ensure the Pre-Start Briefing Form, is retained as close as possible to the area where the High Risk Construction Work tasks will be performed.
- Ensure workers understand that where non-compliance to the SWMS is identified, that work is to cease until the SWMS can be complied with.

10 Monitor Work

Accountability: Project SH&E Manager

- Establish a documented system to ensure regular monitoring is conducted on the High Risk Construction Work tasks. Include as a minimum:
 - Daily supervisor inspections
 - Task observations and leadership visits
 - Inspections of plant equipment used for work with asbestos, in accordance with the instructions provided by the manufacturer.

Accountability: Line Managers, Project SH&E Manager or Subcontractor Supervisor

- Conduct task observations to ensure compliance and effectiveness of the control measures.
 - Refer to Procedure: Conduct Task Observations and Workplace Inspections

Appendix E CGU Manage Demolition Works

Manage Demolition Works

Purpose

This procedure describes how to manage the safety and health of workers and members of the public during the demolition of buildings and structures.

Demolition work means to demolish or dismantle a structure or part of a structure that is load-bearing or otherwise related to the physical integrity of the structure, but does not include:

- The dismantling of formwork, falsework, scaffolding or other structures designed or used to provide support, access or containment during construction work, or
- The removal of power, light or telecommunication poles.
- A structure is anything that is constructed, whether fixed or moveable, temporary or permanent, and includes buildings, sheds, towers, chimney stacks, silos, storage tanks.

Any construction task that involves demolition of an element of a structure that is load-bearing or otherwise related to the physical integrity of the structure the works is a Business defined High Risk Construction Work task. A Safe Work Method Statement (SWMS) must be developed and approved and included into the relevant Work Pack/s.

Elimination of the risks to a worker's health and safety must be sought in the first instance. If it is not reasonably practicable to eliminate, all effort must be made to minimise those risks so far as is reasonably practicable.

Procedure

1 Identify and Assess Work Conditions or Tasks

Accountability: Construction Manager

- Identify the work conditions or tasks where there is risk to workers during the demolition process such as unplanned structural collapse or asbestos
- Identify the legislative notifications and licences required to undertake the works;
- Appoint a licenced Demolition Contractor.
 - The selected Licenced Demolition contractor will engage a licenced Asbestos Removalist where required.
- Identify what hazardous materials may be involved in the demolition works;
- Obtain a copy of the asbestos register from the workplace and review
 - Refer to Procedure: Manage Work With Asbestos
- Ensure a hazardous substances audit of the structure or area is undertaken by a competent person.

2 Identify Training and Competency Requirements

Accountability: Construction Manager

- Identify the training and competency requirements, including any legal or other requirements
 - Refer to Procedure: Manage Worker Competence
 - Refer to Knowledge: Demolition Works

3 Identify Hazards, Assess Risks and Develop Controls

Accountability: Construction Manager and Senior Project Engineer

- As part of the Construction Area Risk Review identify the hazards associated with the construction methodology and high-level activities being undertaken within the construction area
- Identify any Temporary works requirements;
 - Refer to Procedure: Design Temporary Works
- Determine controls that must be used, including any minimum mandatory controls
 - Refer to Procedure: Undertake Construction Area Risk Review
 - Refer to Knowledge: Demolition Works
- Ensure the Demolition Contractor creates a Demolition Plan in accordance with relevant legislation, codes of practice and Australian Standards.
- Ensure that the Demolition Plan considers the building structure, adjacent building structures, materials and demolition sequence, prior to starting the demolition.
- As part of the Work Pack Risk Assessment, incorporate relevant controls from the Construction Area Risk Review, identify additional hazards, assess the risks and further develop controls to eliminate/minimise risks to workers during the demolition process.
 - Refer to Procedure: Undertake Work Pack Risk Assessment

4 Include Controls in Construction Area Plan, Work Pack/s & SWMS

Accountability: Senior Project Engineer and Project Engineer

- Include controls and training and competency requirements in Construction Area Plans and Work Pack/s
 - Refer to Procedure: Develop Construction Area Plan
 - Refer to Procedure: Develop Work Pack
- Identify permit requirements and obtain all required Work Permits;
 - Refer to Procedure: Manage Work Permits
- Develop a SWMS for the tasks identified and obtain approval before commencing work.
 - Refer to Procedure: Create a Safe Work Method Statement

5 Plan Emergency Preparedness and Response

Accountability: Project Engineer

- Refer to the Project Emergency Response Plan to identify the method of rescue in the event of an incident during demolition works and include in the Work Pack. Ensure it describes:
 - How the worker(s) will be quickly rescued;
 - Who will carry the rescue out;
 - The equipment required to carry out a rescue out.
- Ensure all necessary rescue equipment is ready at the work face;
- Before work begins, ensure workers are briefed and understand the rescue method and that the nominated worker(s) carrying out the rescue are capable of doing so

6 Commence Work

Accountability: Supervisor or Subcontractor Supervisor

- Ensure that all workers understand and have signed onto the relevant SWMS;
- Ensure all controls identified in the Work Pack/s and relevant SWMS are in place, before work commences;
- Conduct a Pre-Start Briefing and ensure all workers sign onto the Pre-Start Briefing;
 - Refer to Procedure: Conduct Pre-Start Briefing
- Ensure the Pre-Start Briefing, Work Pack/s, relevant SWMS and applicable Work Permits are kept as close as possible to where the work task/s are being performed;
- Ensure workers understand that where non-compliance to the SWMS is identified, that work is to cease until the SWMS can be complied with.

7 Monitor Work

Accountability: Project SHE Manager

- Establish a documented system to ensure regular monitoring is conducted on work tasks. Include as a minimum:
 - Daily supervisor inspections;
 - Task observations and leadership visits;
 - Inspections of plant equipment used in accordance with the instructions provided by the manufacturer.

Accountability: Line Managers, Project SHE Manager or Subcontractor Supervisor

- Conduct task observations to ensure compliance and effectiveness of the control measures.
 - Refer to Procedure: Conduct Task Observations and Workplace Inspections