Appendix B3 Construction Contaminated Land Management Sub-plan

M12 Motorway West

Project number:	N81151
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Revision:	02

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

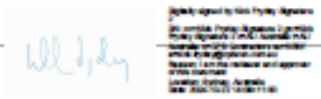
Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Rev	Date	Reviewed By	Details
A	18/02/2022	S. Keomongkhoun	First Draft
B	20/05/2022	G. Bolton	2nd draft following TfNSW/Arcadis review and comment
C	22/06/2022	G. Bolton	3rd draft following TfNSW/Arcadis review and comment
D	19/07/2022	A. Zvirzdinas	4th draft following TfNSW/Arcadis/ER review and comment on Rev C
00	27/07/2022	A. Zvirzdinas	First Controlled Issue
E	31/01/2023	K. Purkiss	6-Monthly review and additional design changes updates
01	18/04/2023	J. Ibrahim	Second Controlled Issue
02	22/10/2024	A. Brajlih	Annual Review

Document Review

Position	Name	Signature	Date
Project Director	Nick Fryday		22/10/2024

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Acronyms and Abbreviations

Term	Expanded text
ACM	Asbestos containing material
AEC	Areas of environmental concern
AEI	Area of Environmental Interest
AMP	Asbestos Management Plan
ARSR	Amendment Report Submissions Report
ASS	Acid Sulfate Soils
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CA	Consistency Assessment
CCLMP	Construction Contaminated Land Management Sub-plan
CEMP	Construction Environmental Management Plan
CEnvP(SC)	Certified Environmental Practitioner (Site Contamination)
CLM Act	*Contaminated Land Management Act 1997*
CLMP	Contaminated Land Management Plan
CoA	Conditions of Approval
Commonwealth CoA	Federal Conditions of Approval under the EPBC Act
Contaminated land	Land with the presence of a substance in, on or under the land at a concentration above that which it is normally found in that locality, such that there presents a risk of harm to human health or to the environment
Contamination high-risk activity	Work within excavations or confined spaces in locations where landfill gas exceedances have been previously identified
CoPC	Contaminants of Potential Concern
CPBGG JV	CPB Contractors and Georgiou Group Joint Venture
CSEP	Community and Stakeholder Engagement Plan
CSSI	Critical State Significant Infrastructure
CSWMP	Construction Soil and Water Management Plan
CWRMP	Construction Waste and Resources Management Plan
DAWE	Former Commonwealth Department of Agriculture, Water and the Environment
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPE	Former NSW Department of Planning and Environment
DPI	Department of Primary Industries
DPIE	Former Department of Planning, Industry and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly NSW DPE which has now been split into NSW DCCEEW and NSW DPHI, with all planning functions falling to DPHI)

Term	Expanded text
EAD	Environmental Assessment Documentation
EIL	Ecological Investigation Levels
EIS	Environmental Impact Statement
EMS	Environmental Management System
Environmental Assessment Documentation	The set of documents that comprise the Division 5.2 Approval: • Roads and Maritime Services (October, 2019) M12 Motorway, Environmental Impact Statement (EIS) • Transport for NSW (October, 2020) M12 Motorway, Submissions Report (the Submissions Report) • Transport for NSW (October, 2020) M12 Motorway, Amendment Report (AR) • Transport for NSW (December, 2020) M12 Motorway, Amendment Report submissions report (ARSR) • Transport for NSW (March, 2021) The M12 Motorway Amendment Report Submissions Report – Amendment (ARSR amendment) • WSP (October, 2021) M12 Motorway – West Package Detailed Design Consistency Assessment • GHD (October, 2021) M12 Motorway – Central Package Detailed Design Consistency Assessment • Arcadis (June, 2022) M12 Motorway – Sydney Water Crossings Consistency Assessment • Arcadis (July, 2022) M12 Motorway – Design Boundary Changes Consistency Assessment • Arcadis (August, 2022) M12 Motorway Minor Consistency Assessment for Proposed Change to the M12 Motorway Project (M12 Central) • Arcadis (September, 2023) M12 Motorway – Devonshire Road Temporary Roundabout Consistency Assessment • WSP (September, 2023) M12 Motorway – Elizabeth Drive Connections Consistency Assessment • TfNSW (September, 2023) M12 Motorway – Minor Consistency Assessment M12 West demolition of structures as 752 Luddenham Road • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East AF9 Power Supply • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East Cecil Road Laydown Area • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East Temporary Construction Signage • Arcadis (December, 2023) M12 Motorway – East Site 48, 50 and 51 Boundary Changes Minor Consistency Assessment • Arcadis (January, 2024) M12 Motorway – Minor Consistency Assessment M12 Central Water Tower Access Road The documents that comprise the EPBC referral: • Submission #3486 – The M12 Motorway Project between the M7 Motorway, Cecil Hills and The Northern Road, Luddenham, NSW Notification of referral decision and designated proponent - controlled action; date of decision 19 October 2018; ID: 2018-8286.
EPA	NSW Environment Protection Authority
EP&A Act	*NSW Environmental Planning and Assessment Act 1979*

Term	Expanded text
EPBC Act	*Environment Protection and Biodiversity Conservation* Act *1999*
EPL	Environmental Protection License
ER	Environmental Representative
ERG	Environmental Review Group
ESM	Environment and Sustainability Manager (TfNSW)
ESL	Ecological Screening Levels
ESR	Environmental Site Representative (CPBGG JV)
EWMS	Environmental Work Method Statement
Federal Approval	Approval (EPBC 2018/8286) for carrying out the M12 Project under Part 8 of the *Environmental Protection and Biodiversity Conservation Act 1999* subject to specific CoA as detailed in Annexure A of the approval.
Final construction footprint	The area shown in the map(s) submitted under Commonwealth CoA 2, determined by TfNSW in accordance with a consistency assessment(s) or a modification assessment under the *NSW Environmental Planning and Assessment Act 1979* where no new significant impacts to protected matters are identified.
GIL	Groundwater Investigation Levels
HBM	Hazardous Building Materials
HSL	Health Screening Level
Hold Point	A point beyond which a work process must not proceed without express written authorisation from Transport for New South Wales
Infrastructure Approval	Approval (SSI 9364) for carrying out of the M12 Project under Section 5.19 of the *Environmental Planning and Assessment Act 1979* subject to specific CoA as detailed in Schedule 2 of the approval.
km	Kilometre
LBP	Lead based paint systems
LCC	Liverpool City Council
LCD	Lead containing dust
LTEMP	Long Term Environmental Management Plan
M7 Motorway (MOD 6 Widening)	Refers to the State Significant Infrastructure project (SSI-663-MOD 6) to construct and operate an additional lane in both directions within the existing median of the M7 Motorway, south of the Kurrajong Road overhead bridge at Prestons to the M7 Motorway bridge at Richmond. This project interacts with the M12 East stage at the M7 interchange.
M7 Widening	Shorthand term for M7 Motorway (MOD 6 Widening)
M7-M12 Integration Project	The M7-M12 Integration project incorporates the following: • M7 Motorway (Mod 6 Widening) (SSI 663 Mod 6) – modification (mod) to the M7 Motorway approved on 17 February 2023 under Division 5.2 of the Environmental Planning and Assessment Act 1979 (EP&A Act) • M12 Motorway (CSSI 9364) – approved on 23 April 2021 under Division 5.2 of the EP&A Act and split into separate stages or packages of

Term	Expanded text
	work (West, Central (main construction), Central (temporary roundabout) and East). The M12 Motorway is also subject to a federal approval under the Environment Protection and Biodiversity Conversation Act 1999. The M7-M12 Integration project incorporates the M12 East package only.
NEPM	*National Environment Protection (Assessment of Site Contamination) Measure (1999)*
NRAR	Natural Resources Access Regulator
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements
Non-conformance	Failure to conform to the requirements of Project system documentation including this OCEMP or supporting documentation
NSW CoA	NSW Conditions of Approval
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water (formerly NSW DPE which has now been split into NSW DCCEEW and NSW DPHI)
OCEMP	Overarching Construction Environmental Management Plan
OCP	Organochlorine Pesticides
OCS	Overarching Communication Strategy
OPP	Organophosphorus Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential Acid Sulfate Soils
PCB	Polychlorinated biphenyls
PCC	Penrith City Council
Planning Secretary	Secretary of the Department of Infrastructure, Planning and Environment, or delegate
POEO Act	*NSW Protection of the Environment Operations Act 1997*
PPE	Personal Protective Equipment
Primary CoA/REMM	CoA/REMM that are specific to the development of this Plan
Project, the	M12 Motorway
RAP	Remedial Action Plan
REMM	Revised Environmental Management Measure as provided in the Amendment Report
Roads and Maritime	Former NSW Roads and Maritime Services. Now Transport for NSW
SAR	Site Audit Report
SAS	Site Audit Statement
SEARs	Secretary's Environmental Assessment Requirements
Secondary CoA/REMM	CoA/REMM that are related to, but not specific to, the development of this Plan
SMART	Specific, Measurable, Achievable, Realistic and Timely

Term	Expanded text
SMF	Synthetic mineral fibres
SWMS	Safe Work Method Statement
TfNSW	Transport for New South Wales
TRH	Total Recoverable Hydrocarbons
UXO	Unexploded ordnance
WHS Act	*Work Health and Safety Act (2011)*
Work	Any physical work to build or facilitate the building of the CSSI, including low impact work, environmental management measures and utility works. However, it does not include activities that inform or enable detailed design of the CSSI and generate noise that is no more than 5 dB(A) above the rating background level at any sensitive receiver.
WSIA	Western Sydney International Airport

1 Introduction

1.1 Context

This Construction Contaminated Land Management Sub-plan (CCLMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the M12 West Motorway (the Project).

An Overarching Construction Environmental Management Plan (OCEMP) and overarching CCLMP has been prepared by TfNSW to address the requirements of the Minister's Conditions of Approval (CoA), the Revised Environmental Management Measures (REMMs) listed in the M12 Motorway Environmental Impact Statement (EIS), Amendment Report, and Amendment Report Submissions report (ARSR), all applicable legislation and Transport for New South Wales (TfNSW) specifications.

TfNSW developed an Overarching CCLMP as part of the Overarching Construction Environmental Management Plan (OCEMP) for the entire M12 Motorway Project. The OCEMP has been approved by the Planning Secretary in accordance with NSW CoA C3 on 21/12/2021.

This CCLMP has been prepared by CPBGG JV for the West stage of the M12 Motorway Project to manage potential contamination impacts and address the relevant requirements of the OCEMP, all relevant TfNSW specifications, EPL conditions and legislation.

1.2 Background

CPBGG JV has been awarded the M12 West package which is a construct only contract between The Northern Road, Luddenham and approximately 250 metres east of Badgerys Creek. The Northern Road and the grade separated interchange is a four-lane narrow median cross section that is expected to form part of the future outer Sydney Orbital westbound carriageway, with no future widening proposed within the median. East of the grade separated interchange is a four-lane dual carriageway motorway with a central median for future six lanes. The topography of the M12 West project comprises of rounded hills with slopes of five to 20 degrees. In terms of catchments it is located in the vicinity of Cosgroves Creek, Badgerys Creek, South Creek and Kemps Creek and soil texture consists of fine to medium-grained sand, silt and clay. Areas of potential contamination are detailed in section 4 and the majority of the potential AEIs identified were assessed as being at a low risk of exposure during construction of the Project, as construction activities are unlikely to be undertaken at these sites.

The Project is subject to an approval under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) as Critical State Significant Infrastructure (CSSI). The Project is also a controlled action under Section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), requiring a separate approval from the Commonwealth Minister for the Environment.

An EIS was prepared to describe and assess the Project and recommend management measures to address impacts.

Additional assessments have since been undertaken:

- M12 West Minor Consistency Assessment for the demolition of structures as 752 Luddenham Road required to address the need for the demolition of structures within Ancillary Facility 11. Whilst this ancillary facility is already located within the construction footprint and was previously assessed in the M12 Motorway Amendment Report, the demolition and disposal of structures in this location required assessment; approved in September 2023.
- M12 West Minor Consistency Assessment for the temporary amendment to the construction footprint to facilitate the construction of Variable Message Sign (VMS) infrastructure scope on The Northern Road (TNR), Luddenham NSW. While the VMS scope had been previously assessed in the M12 Motorway Amendment Report, the works area had not been included as a part of the M12 West construction footprint and required inclusion; approved in August 2024.

The Project must be carried out generally in accordance with the EIS, Submissions Report, AR, ARSR and the ARSR – Amendment, M12 West and Central CA, M12 West Demolition of Structures as 752 Luddenham Road CA. These documents are collectively referred to as the Environmental Assessment Documentation (EAD). The CSSI must also be carried out in accordance with all procedures, commitments, preventative actions, performance outcomes and mitigation measures set out in the EAD as required by NSW CoA A2.

As part of EIS development, a detailed soils and contamination assessment report was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW DPE and the Commonwealth EIS Guidelines issued by the Commonwealth Department of the Water, Agriculture and Environment (DAWE). The Soils and Contamination Assessment Report was included in the EIS as Appendix O.

Further assessment of contamination impacts was undertaken subsequent to exhibition of the EIS and incorporated into the Amendment Report. The additional assessment considered contamination impacts due to refinements in the Project design, including changes in the Project footprint and ancillary facilities. A soils and contamination supplementary technical memorandum was included in the Amendment Report as Appendix K.

REMMs were provided within the Amendment Report and further updated in the Amendment Report Submissions Report (ARSR) Where applicable, the REMMs from the ARSR have been included in this CCLMP. Further, design development has progressed, providing additional environmental assessment, and where relevant, this detail has been included within this CCLMP.

1.3 Scope of the Plan

The scope of this CCLMP is to describe how CPBGG JV propose to manage potential contamination impacts during construction of the Project. The management of acid sulphate soils (ASS), soil salinity, erosion and sediment control around contaminated areas and stockpiles is discussed in the Construction Soil and Water Management Plan (CSWMP) (Appendix B8 of the CEMP).

The note in NSW CoA C4 allows for the combining of the CEMP Sub-plans. This CCLMP has been prepared as a stand-alone Sub-plan only addressing contaminated land management. Soil management will be addressed in the Construction Soil and Water Management Plan (CSWMP) combining NSW CoA C4 (d) and (e).

The SMART (Specific, Measurable, Achievable, Realistic and Timely) principles have been considered in the preparation of this CCLMP.

1.4 Environmental Management Systems overview

The Environmental Management System (EMS) for the Project is described in Section 1.5 of the CEMP. This CCLMP forms part of the environmental management framework for the Project in accordance with the OCEMP and EMS as described in Section 1.5 of the CEMP.

The purpose of these environmental management documents in regard to minimisation and management of contamination and addressing Recommended Environmental Mitigation Measures (REMMs) / Conditions of Approval (CoAs) / Environmental Protection Licence (EPL) requirements and TfNSW specifications is outlined in Section 6 of this CCLMP.

Management measures identified in this CCLMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the EWMS. EWMS will be prepared for the management of materials containing asbestos, and for any other high-risk activities identified in the construction environmental risk workshops.

EWMS will be prepared by the Environmental Site Representative (ESR) and reviewed and endorsed by TfNSW Project Manager and TfNSW Environment and Sustainability Manager (ESM) (or delegate) and independent Environmental Representative (ER) prior to the commencement of the construction activities to which they apply. Construction personnel undertaking a task governed by an EWMS will undertake the activity in accordance with the mitigation and management measures identified in the EWMS.

Used together, the CEMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by TfNSW and CPBGG JV.

The review and document control processes for this CFMP are described in Section 3.12 and 3.13 of the CEMP. TfNSW will review this management plan to confirm consistency with the requirements of this OCEMP and specifications.

1.4.1 CCLMP preparation, endorsement and approval

This CCLMP will be approved by the CPBGG JV Project Director and ESR prior to submission to TfNSW.

The CEMP and Sub-Plans will go through a review and update process as described in section 3.1 of TfNSW Specification G36 to ensure the CEMP and associated documents have been developed in accordance with the OCEMP. TfNSW will provide the CEMP to the ER for approval.

A hold point shall be submitted in accordance with G36 Section 3.1 - Preparation and submission of CEMP. TfNSW shall consider the documents prior to authorising the release of the Hold Point. TfNSW may request additional information for inclusion in the CEMP before authorising the release of the Hold Point. Construction will not commence until release of the this Hold Point.

Construction of the M12W Package did not commence prior to the approval of this Sub-Plan, as part of the M12W CEMP.

1.4.2 Interactions with other management plans

This Plan has the following interrelationships with other management plans and documents:

- The Construction Soil and Water Management Plan (CSWMP) in Appendix B8 of CEMP addresses the management of ASS, salinity and erosion and sedimentation associated with the Project.
- The CSWMP contains a Construction Soil and Water Monitoring Program. Relevant contaminated land information from this overarching CCLMP has been incorporated into the Monitoring Programs to inform the monitoring activities to be undertaken during construction of the Project.
- The Construction Waste and Resources Management Plan (CWRMP) in Appendix B5 of the CEMP provides a framework for waste management and resource recovery.

1.5 Consultation

1.5.1 Consultation for preparation of the CCLMP

This CCLMP has been written in accordance with the TfNSW overarching CCLMP and a number of government agencies were consulted during the development of the TfNSW Plan in accordance with NSW CoA C4(d). The CCLMP will be provided to agencies listed in NSW CoA C4 once approved by ER.

Ongoing consultation during construction between CPBGG JV, TfNSW and stakeholders, the community and relevant agencies regarding the management of contaminated land will be undertaken during the construction of the Project as required. This includes notification to affected resident/s or business owner/s prior to excavation or removal of asbestos or ACM in the vicinity of any occupied residence or business. The process for the consultation will be documented in the Overarching Communication Strategy (OCS) and Community and Stakeholder Engagement Plan (CSEP).

2 Purpose and objectives

2.1 Purpose

The purpose of this CCLMP is to establish a set of best practice procedures to be undertaken by the Project for the identification and management of contaminated land during construction for the Project. This plan has been developed in accordance with relevant guidelines outlined in section 3 and addresses all relevant REMMs / CoAs / EPL requirements and TfNSW specifications.

This CCLMP only provides the management of contaminated land during construction. The CCLMP does not include the management of soil impacts from construction. This information is included in the CSWMP.

2.2 Objectives

The key objective of this CCLMP is to ensure all REMMs and licence/permit requirements relevant to contaminated land are described, scheduled and assigned responsibility as outlined in:

- Environmental Assessment Documentation
- TfNSW Specifications G36 and R44
- All relevant legislation and other requirements described in Section 3.1 of this Plan.

2.3 Targets

Targets for the management of contaminated land during the Project have been established to enable compliance with relevant legislative requirements, CoA and environmental management measures. These targets and how they will be measured are outlined in Table 2-1.

Table 2-1 Targets for the management of contaminated land during construction

Target	Measurement tool
Compliance with the relevant legislative requirements and REMMs	• Compliance Monitoring Program
No degradation to the receiving environment as a result of disturbance of contaminated land	• CPBGG JV register of contaminated sites • Construction Soil and Water Monitoring Program • Register of Environmental Incidents
Notification of any contamination uncovered during construction	• Site notifications
Ensure project personnel are informed via toolbox talks and the Project induction to enable the identification of potentially contaminated land	• Induction and training records
Minimise impacts on, and complaints from, the community and stakeholders.	• Complaints Register

3 Environmental Requirements

3.1 Relevant legislation, guidelines, reports and advice

3.1.1 Legislation and regulatory requirements

Legislation and regulations relevant to this CCLMP includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Contaminated Land Management Act (1997)* (CLM Act)
- *Protection of the Environment Operations Act (1997)* (POEO Act)
- *Protection of the Environment Operations (Waste) Regulation (2014)*
- National Environment Protection (Assessment of Site Contamination) Measure (1999) (NEPM)
- *Environmentally Hazardous Chemicals Act 1985*
- *Environmentally Hazardous Chemicals Regulation 2008*
- *Pesticides Act 1999*
- *Pesticides Regulation 2009*
- *Work Health and Safety Act (2011)* (WHS Act)
- *Work Health and Safety Regulation (2017).*

Relevant provisions of the above legislation are identified in the register of legal requirements included in Appendix A1 of the CEMP.

3.1.2 Guidelines and standards

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

- *Acid Sulfate Soils Assessment Guidelines* (Department of Planning 2008)
- *Acid Sulfate Soil Manual* (Acid Sulfate Soils Management Advisory Committee 1998)
- *Australian Drinking Water Guidelines* (ADWG 2011)
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (ANZECC & ARMCANZ, 2000)
- *Australian and New Zealand Guidelines for Fresh and Marine Water* Quality (ANZG 2018)
- Australian Standard (AS 4482.1-2005) Guide to the sampling and investigation of potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds
- Australian Standard (AS 4482.2-1999) Guide to the sampling and investigation of potentially contaminated soils – Volatile substances
- Australian Standard (AS 2601-2001): The demolition of structures
- *Contaminated Sites: Guidelines for the Assessment and Management of Groundwater Contamination* (Department of Environment and Conservation NSW, 2007)
- *Cooperative Research Centre for Contamination Assessment and Remediation of the Environment: Technical Report No. 10, Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater Part 1: Technical development document, 2011* (CRC Care 2011)
- *Environmental Procedure Management of Wastes on Transport for New South Wales Services Land* (Roads and Maritime 2014)
- *Guidelines for Consultants Reporting on Contaminated Sites* (Office of Environment and Heritage 2000)
- *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (Environment Protection Authority 2015)
- *Guidelines for the Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008* (Department of Environment and Climate Change NSW, 2009)

- *Information for the assessment of former gasworks sites* (Department of Environment and Conservation NSW, 2005)
- *Landslide risk management guidelines presented in Australian Geotechnics Society* (2007)
- *Managing asbestos in or on soil* (SafeWork NSW, 2014)
- *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning & Environment Protection Authority 1998)
- *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) and Volume 2 (A. Installation of Services; B. Waste Landfills; C. Unsealed Roads; D. Main Roads; E. Mines and Quarries) (Department of Environment and Climate Change NSW, 2008)
- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (as revised 2013) (NEPM, 2013)
- *National Health and Medical Research Council, Guidelines for Managing Risks in Recreational Water* (NHMRC 2008)
- Other guidelines made or approved under section 105 of the Contaminated Land Management Act 1997
- *PFAS - National Environmental Management Plan Version 2.0* (HEPA, January 2020)
- Roads and Maritime Environmental Procedure – Management of Wastes on Roads and Maritime Services Land (August 2014)
- *Roads and Maritime Guideline for the Management of Contamination* (September 2013)
- *Soil and Landscape Issues in Environmental Impact Assessment* (Gray, 2000)
- *The NSW EPA (2014b) Best Practice Note: Landfarming*
- *The NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines*
- *The NSW EPA (2017) Contaminated Sites: Guidelines for the NSW Site Auditor Scheme (3rd Edition) (updated from NSW EPA 2006 version)*
- *The NSW EPA (2012) Guidelines for the Assessment and Management of Sites Impacted by Hazardous Ground Gases*
- *The NSW EPA (2015b) Technical Note: Light Non-Aqueous Phase Liquid Assessment and Remediation*
- *The NSW EPA (2014a) Technical Note: Investigation of Service Station Sites*
- *The NSW EPA (2014) Waste Classification Guidelines*
- *The NSW EPA (2014) Addendum to the Waste Classification Guidelines – Part 1: classifying waste*
- TfNSW Environmental Incident Procedure (2021)
- *Urban and regional salinity guidance given in the Local Government Salinity Initiative booklets which includes Site Investigations for Urban Salinity* (DLWC, 2002)
- *Vapour Intrusion: Technical Practice Note* (Department of Environment, Climate Change and Water NSW, 2010)
- *How to manage and control asbestos in the workplace – Code of Practice* (Safe work Australia, July 2020)
- *How to safely remove asbestos – Code of Practice* (Safe work Australia, July 2020)
- TfNSW Non-complying Imported Mulch Alert
- CPB Environmental Direction for Mulch Importation

3.1.3 Reports and advice

The following reports and advice relating to contaminated land have been considered during the preparation of this plan:

- M12 Motorway Central – Detailed Design Landfill Gas Monitoring Report M12CSS-GHDA-ALL-CT-RPT-000014 (GHD, 2021)
- M12 Motorway West – Detailed Design Remedial Action Plan M12WDD-WSPA-ALL-GE-RPT-000008 (WSP, 2021)

- M12 Motorway West – Detailed Design Contamination Investigation Report M12WDD-WSPA-ALL-GE-RPT-000006 (WSP, 2020)
- M12 Motorway – Detailed Design, Hazardous Building Materials Assessment M12CDD-GHDA-ALL-RM-RPT-000002 (GHD, 2021)
- M12 Motorway West – Detailed Design M12WDD-WSPA-ALL-EN-RPT-000008 Hazardous Building Material Survey M12WDD-WSPA-ALL-EN-RPT-000008 (GHD, 2022)
- M12 Motorway–Detailed Design Creek sediment contamination assessment M12CDD-GHDA-ALL-CT-RPT-000015 (GHD, 2021).

3.2 Ministers Conditions of Approval

The primary NSW CoA relevant to the development of this CCLMP are listed in Table 3-1. A cross reference is also included to indicate where the CoA is addressed in this CCLMP or other project management documents.

Table 3-1 Primary NSW CoA

CoA No.	Condition Requirements	Document Reference
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken and submitted to the Planning Secretary, and the terms of this approval require the document, monitoring program or review to be prepared/undertaken in consultation with identified parties, evidence of the consultation must be submitted to the Planning Secretary with the relevant document, monitoring program or review. The evidence must include: (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party; (c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;" (d) outline of the issues raised by the identified party and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 1.5.1
C2	The CEMP must provide:	
	(h) a list of all the CEMP Sub-plans required in respect of construction, as set out in Condition C4. Where staged construction of the CSSI is proposed, the CEMP must also identify which CEMP Sub-plan applies to each of the proposed stages of construction;	Section 1.4
	(k) for periodic review and update of the CEMP and all associated plans and programs; and	Section 8.2
C4	The following **CEMP Sub-plans** must be prepared in consultation with the relevant agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be included in the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies. (d) Soils and contamination - DPE Water, WaterNSW and relevant council(s)	Section 1.5.1
C5	The CEMP Sub-plans must state how:	
	(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;	Section 2.3
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 3.2 Section 3.3
	(c) the relevant terms of this approval will be complied with; and	Section 3.2
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART (Specific, Measurable, Achievable, Realistic and Timely) principles.	Section 1.3

CoA No.	Condition Requirements	Document Reference
C9	Any of the CEMP Sub-plans may be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before the commencement of construction	Section 1.4.1
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved, unless otherwise agreed 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 of the CSSI is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been endorsed by the ER and approved by the Planning Secretary.	Section 1.4.1

3.3 Revised Environmental Management Measures

The primary REMMs relevant to the development of this CCLMP are listed in Table 3-2 below. A cross reference is also included to indicate where the REMM is addressed in this CCLMP or other project management documents.

Table 3-2 Primary REMMs

ID	Revised Environmental Management Measure	Timing	Document Reference
SC03	A Contaminated Land Management Plan (CLMP) will be prepared for the project. The CLMP will include:	Prior to construction	This Plan
	• Control measures to manage identified areas of contamination, including surface soils in the vicinity of TP303, TP304, TP310 and TP311 containing heavy metal and PAH concentrations		Section 4.1.1 Section 6.1.1 Section 6.8
	• Procedures for unexpected contamination		Section 6.6 Appendix A
	• Measures to manage potential ASS (as required based on testing results) within sediments of the creeks in the construction footprint to minimise impacts to the environment		Section 6.1.3 CSWMP
	• Requirements for excavation of unexpected contaminants to be carried out in consultation with project Remedial Actions Plans.		Section 6.2 Section 6.8 (CL7) Appendix A
	• Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014.		Section 6.8 (CL14)
SC04	An Asbestos Management Plan (AMP) will be prepared as part of the CLMP for the project. The AMP will guide the excavation, handling, storage and disposal of management of asbestos discovered during construction, including procedures for any unexpected asbestos. The AMP will also outline requirements for the encapsulation of asbestos to be carried out in accordance with project Remedial Action Plans.	Prior to construction	Section 6.1.2 Appendix A Appendix C

3.4 TfNSW Specifications

The TfNSW Specifications set out the minimum requirements for the detailed outcomes in terms of quality or performance expected in the finished product for construction projects and are relevant to various construction activities on work sites to minimise impacts to the environment. The TfNSW Specifications are Project contract documents and are not publicly accessible.

CPBGG JV will incorporate the appropriate M12 TfNSW Specifications into the stage specific CCLMPs including the requirements from, but are not limited to:

- G36 – Environmental Protection
- R44 – Earthworks.

The specifications set out environmental protection requirements, including Hold Points that must be complied with during construction of the Project. A Hold Point is a point beyond which a work process must not proceed without express written authorisation from TfNSW. Section 3.2.7 of the CEMP includes a register of hold points including the relevant hold points for contamination management.

4 Existing Environment

This section describes the existing environment of the Project specific to contaminated land. This section has been developed based on information from the Environmental Assessment Documentation and ongoing contamination assessments being undertaken during detailed design (refer to Section 3.1.3).

4.1 Summary of Environmental Assessment Documentation

4.1.1 Areas of Environmental Interest

Areas of environmental interest (AEI) are areas that could potentially impact soil and groundwater as a result of historic and/or current activities. Potential AEIs were identified during preparation of the Environmental Assessment Documentation.

Table 4-1 outlines the potential AEIs located in the vicinity of the M12 West Project and their associated risks to environmental receptors, construction limitations, and site users in consideration of the potential for contamination and proposed construction activities.

The majority of the potential AEIs identified were assessed as being at a low risk of exposure during construction of the Project, as construction activities are unlikely to be undertaken at these sites. The locations of the AEIs with moderate to high exposure risk ratings are presented in Figure 4-2. The AEIs are also shown in Figure 4-1 and the Sensitive Area Plans included in Appendix A6 of the CPBGG JV CEMP.

The Environmental Assessment Documentation outlines that heavy metal and polycyclic aromatic hydrocarbons (PAH) contamination has also been detected at concentrations exceeding ecological investigation levels within surface soils at selected locations (TP303 and TP304). Further investigations are required prior to construction to determine the extent and level of contamination around these test pits and appropriate remediation options. Refer to figure 4-3 for the locations of the test pits including TP303 and TP304.

Table 4-1 Areas of environmental interest relevant to the M12 West identified in the Environmental Assessment Documentation

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
1	Caltex Service Station	The Northern Road, Luddenham	M12 West	Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), PAH, heavy metals	Soil, groundwater, soil vapour	Low
C	Luddenham Raceway	821 – 849 Luddenham Road, Luddenham	M12 West	TRH, BTEX, heavy metals	Soil (surface)	Low
12	Luddenham Broiler Farm (Baiada Poultry)	2907 The Northern Road, Luddenham	M12 West	OCP, OPP, herbicides, carbamates, nitrates, heavy metals, nutrients	Soil	Low
14	Blue Sky Mining	2420 Elizabeth Drive, Luddenham	M12 West	Heavy metals, TRH, BTEX, acids, sulphate, cyanide	Soil, groundwater	Low
18	Top Shape Live Christmas Trees	2450 The Northern Road, Luddenham	M12 West	Heavy metals, OCP, OPP, carbamates, TRH, BTEX	Soil	Low
19	Miscellaneous construction activities and stockpiles of building materials[1]	Luddenham Road, Luddenham	M12 West	Heavy metals, BTEX, asbestos, TRH, OCP, OPP, PAH	Soil	High
23	CPB Contractors Pty Limited- Road construction	The Northern Road Upgrade – Stage 5 & 6 Between Eaton Road, Luddenham and Glenmore Parkway, Orchard Hills and The	M12 West	Heavy metals, TRH, BTEX, PAH, OCP, OPP, asbestos	Soil	Low

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
		Northern Road Upgrade – Stage 6 Between Littlefields Road and Eaton Road, Luddenham				
25	Large area of fill placed in stockpiles	2161-2177 Elizabeth Drive, Luddenham	M12 West	Heavy metals, BTEX, asbestos, PAH, OCP, OPP, PCB, TRH associated with stockpiled fill material	Soil	Low
Shown as 'Potential areas of existing fill'	Potential areas of existing fill	Generic AEIs along the project	All	Heavy metals, BTEX, asbestos, PAH, OCP, OPP, PCB, TRH	Soil, groundwater	High
N/A	Historical and current Agricultural land use	Generic AEIs along the project	All	Heavy metals, OCP, OPP, nutrients, BTEX, carbamates, herbicides	Soil (surface)	Low
N/A	Historical uncontrolled Earthworks containing asbestos and buildings/structures containing asbestos previously demolished/degraded	Generic AEIs along the project	All	Asbestos	Soil (surface)	High
29	Buildings within AF11 to be demolished	752 – 810 Luddenham Road, Luddenham	M12 West	Asbestos	Soil (surface), Air	High

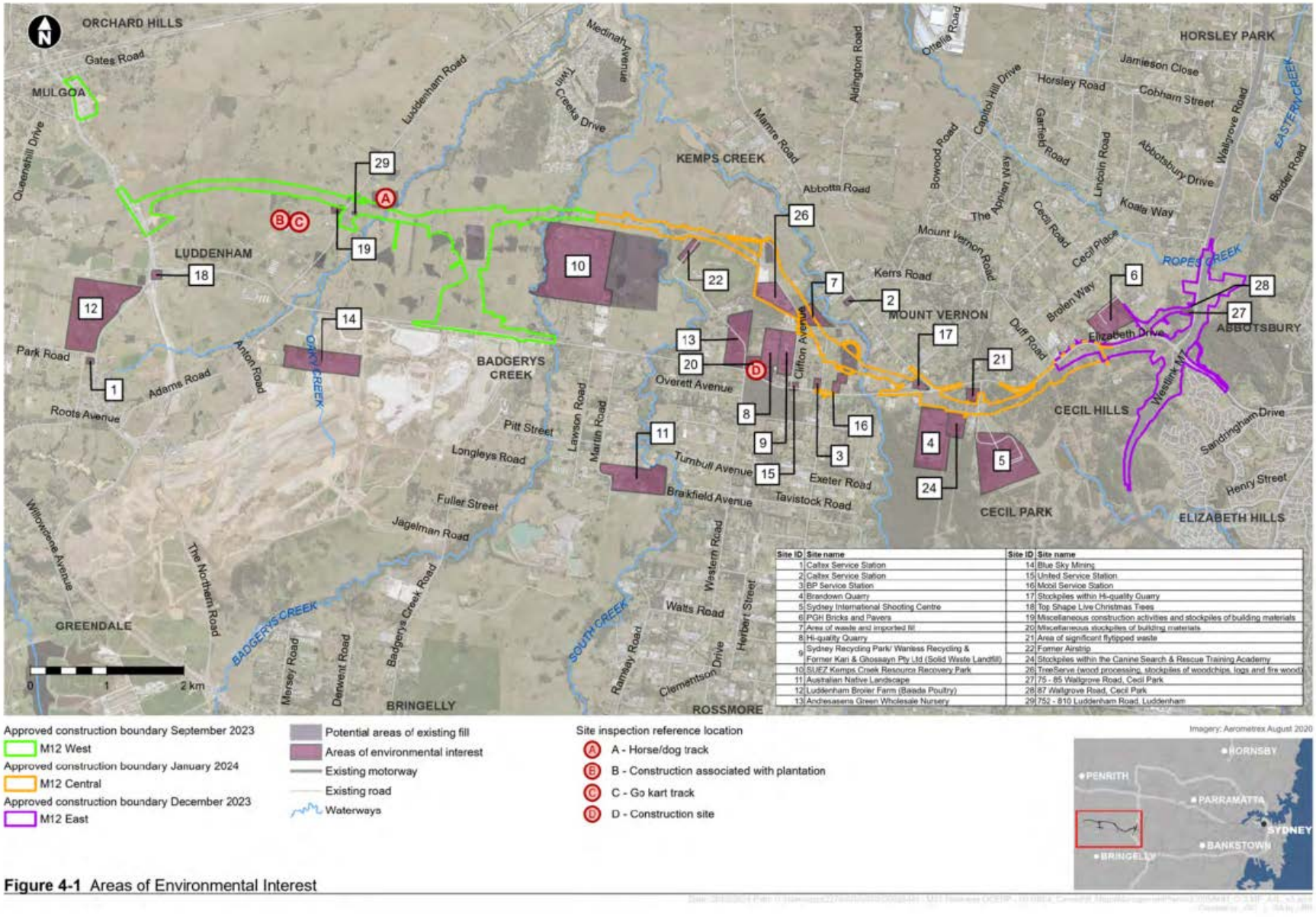

Figure 4-1 Areas of Environmental Interest

Figure 4-1 Areas of Environmental Interest (West package – Green section)

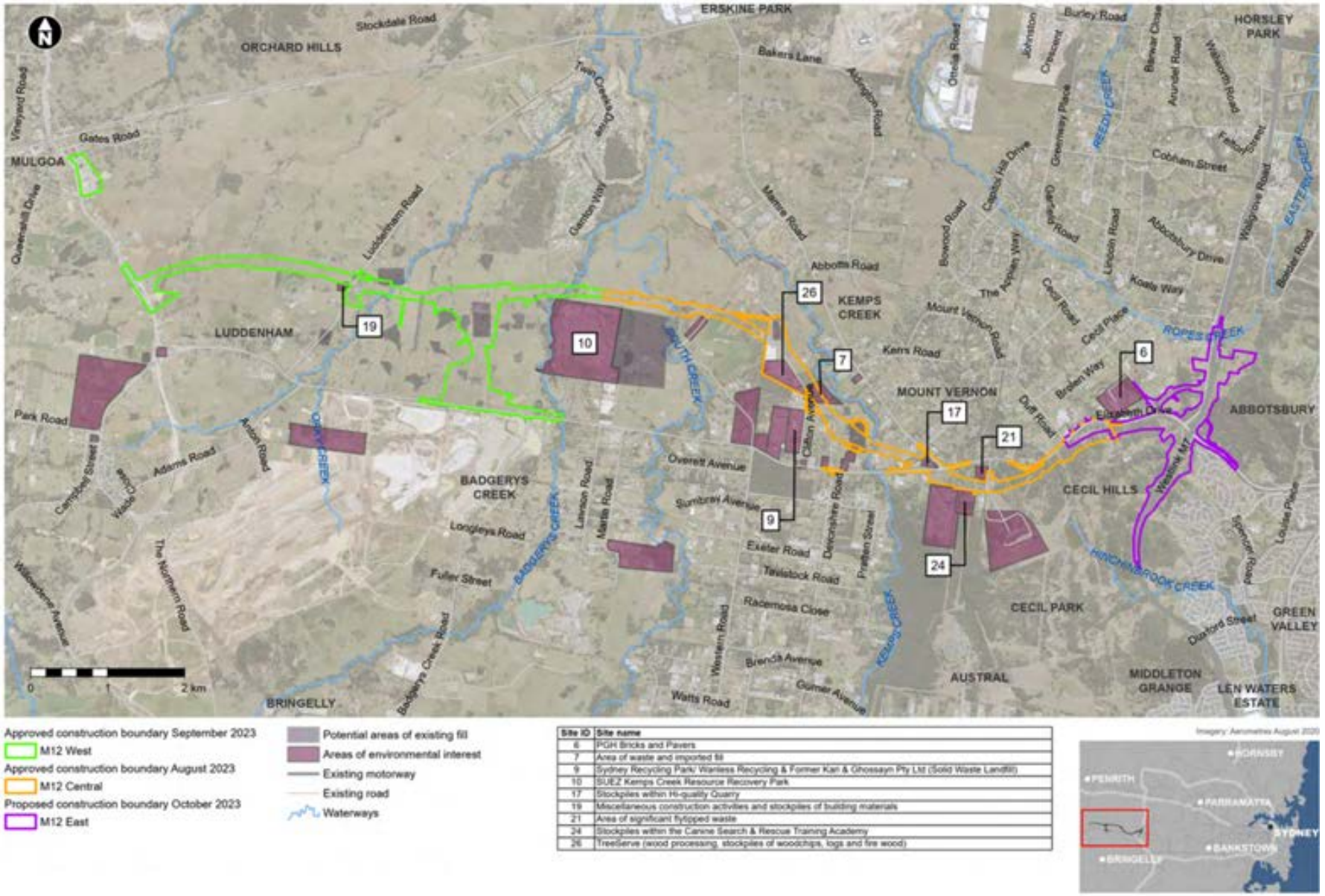

Figure 4-2 Areas of Environmental Interest with moderate to high risk rating (West package – Green section)

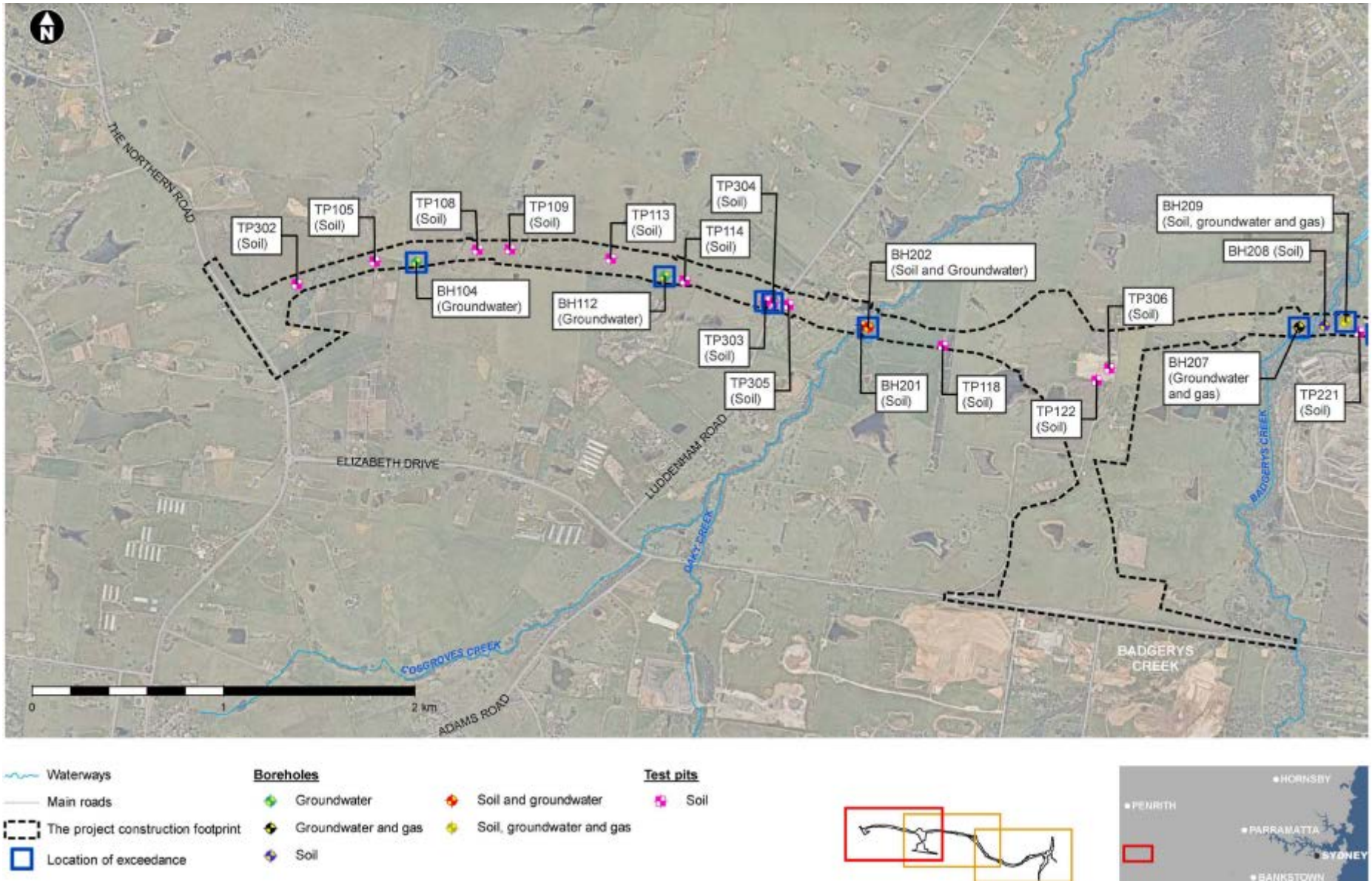

Figure 4-3 Location of test pits - M12 West

4.2 M12 West Detailed Design Progression

The below sections outline the detailed design progression and investigations related to contamination which are associated with M12 West only.

4.2.1 Contamination Assessment

Site investigations were completed in 2021 by WSP during a programme of geotechnical investigations for the detailed design phase of the Project. These investigations were undertaken at selected locations such as areas of proposed earthworks, bridge and drainage structures, and retaining walls along the alignment to inform detailed design. Additional contamination data was also collected opportunistically during geotechnical investigations. A summary of the contamination assessment is provided below:

- The results for chemical analysis from all soil samples analysed were reported to be below the site assessment criteria for a recreational/open space land use
- Elevated concentration of the CoPC were identified in sediment samples collected from the base of Farm Dams 1, 2, 6, 8 and 9 including concentrations of PAH exceeding the site assessment criteria
- Concentrations of all heavy metals in all groundwater samples analysed were below the Groundwater Investigation Levels (GILs) with the exception of the following which exceeded the freshwater ecological criterion:
  - Copper in samples BH117, P1-BH414, P1-BH421
  - Nickel in all samples analysed
  - Zinc in samples BH117, P1-BH204, P1-BH209, P1-BH414 and P1-BH421
  - Cadmium in BH117
- The heavy metal concentrations detected within groundwater samples were considered to be attributable to background conditions within the aquifer as there was no indication of a point source on site
- Ammonia concentrations at two groundwater monitoring locations (BH204 and P1-BH414) exceeded the freshwater ecological criterion within the construction footprint
- ACM was identified in shallow soil during test pitting at one location (P1-TP453) and therefore exceeded HSL criteria
- Approximately 39 soil samples were analysed for PFAS generally targeting locations near Cosgroves Creek, Badgerys Creek and adjacent to farm dams. PFAS were detected in approximately half of the soil samples analysed, concentrations were below the site assessment criteria for human health and ecological soil exposure for public open space and commercial /industrial land use.

As per the requirements of REMM SC05, further soil investigations associated with the M12 Motorway Central package have been undertaken within AEI10 SUEZ Kemps Creek Resource Recovery Park.

The recommendations from this contamination assessment have been adopted within the environmental mitigation and management measures in Section 6.

4.2.2 Hazardous building material audits

WSP completed an Hazardous Building Materials (HBM) survey assessment (WSP, 2021) and compiled an HBM Register for selected properties located within the Project. These properties were located off The Northern Road and Luddenham Road in Luddenham and Elizabeth Drive in Badgerys Creek, NSW. Buildings that do not have an audit completed, will be completed in accordance with Australian Standard (AS 2601-2001): The demolition of structures.

A number of HBM were identified including ACM, LBP, PCBs and SMF. A register containing details of HBM identified at the each of the surveyed properties was also completed (refer to Appendix C of the Hazardous Building Material Survey – M12 Transport Links to Badgerys Creek (WSP, 2021)).

CPBGG JV will develop a Hazardous Building Materials Management Plan before demolishing structures and/or buildings. The Plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities.

Minor Consistency Assessment M12 West - demolition of structures at 752 Luddenham Road (TfNSW, 2023) identified additional structures, known to contain asbestos, to be demolished that were not assessed in the EAD. Demolition will be undertaken in accordance with the *Work, Health and Safety Act*

2011 and Work, Health Safety Regulations 2017, and all relevant SafeWork NSW Codes of Practice. A hazardous materials survey will also be undertaken to identify any other hazardous materials prior to demolition.

4.2.3 Landfill gas monitoring

The SUEZ Kemps Creek Resource Recovery Park (AEI10) carries out site activities around 60 metres south of the M12 West construction boundary. WSP site investigations did not indicate the presence of contaminants attributable to AEI10 within the Project boundary. Notwithstanding, the WSP Contamination Investigation Report recommends further assessment of potential migration of contamination from the SUEZ Waste Management Facility.

Four rounds of gas monitoring were completed from August 2020 to May 2021 (GHD, 2021) within the construction footprint adjacent to AEI10. The monitoring results indicate that:

- No methane, carbon monoxide or hydrogen sulphide concentrations exceeding the nominated assessment criteria were identified in any of the monitored wells over the four monitoring rounds. This indicates that at the times of monitoring, risks associated with these gases were likely to be relatively low in the vicinity of the project area
- Carbon dioxide concentrations exceeding the nominated assessment criterion were identified in a number of wells on several occasions. This indicates that at the time of monitoring, risks of potential concern associated with carbon dioxide in the ground and/or groundwater existed in the vicinity of the project area. It is currently unknown if the detected carbon dioxide is derived from the nearby landfill sites / fill areas or from other sources (for example the natural geology).
- Flow rates were relatively low at all monitored wells across all four monitoring rounds. This indicates that at the times of monitoring, significant pressure driven sub-surface gas flow was not occurring in the vicinity of the project area.

See Section 6.1.4 for further soil gas investigations required.

4.2.4 Creek sediment contamination assessment

A sediment contamination assessment was completed across all stages of the Project by the overarching surface water quality consultant (GHD,2021). The works included sampling from five creeks which three (Kemps Creek, South Creek, and Badgerys Creek,) intersect with the construction footprint, where sediment will likely be disturbed during the construction.

Based on the analytical results, the potential human health risks from exposure to the sediment within the Project footprint is considered to be low.

4.2.5 RAPs

A Draft Remedial Action Plan (RAP) was completed in August 2021 by WSP. The Draft RAP identifies three areas of concern based on the findings of the Contamination Investigation Report:

- Area 1: Located within the M12 WSIA interchange
- Area 2: Corresponds with the location of AEI 19 identified in the Environmental Assessment Documentation
- Area 3: Comprises numerous stockpiles located at a laydown yard at 1953-2109 Elizabeth Drive, Badgerys Creek

Table 4-2 provides an outline of the recommendations of the Draft RAP.

Table 4-2 Draft RAP recommendations

Area	Recommendation
Area 1	The preferred remedial approach to the removal of asbestos at Area 1 is the removal and offsite disposal of impacted material. Based on the existing investigation data it is likely that the bonded ACM contamination at Area 1 represents a small area which will be suitable for excavation and offsite disposal.
Area 2 and 3	A remedial approach for existing stockpiled soils is excavation and encapsulation with subsequent emu-picking across the former stockpile footprints.

The validation works described in the Draft RAP will allow for the effective implementation of the RAP in accordance with the remediation objectives.

Refer to Section 6.2 for further detail on preparation of RAP(s).

5 Environmental Aspects and Impacts

5.1 Construction Activities

Key aspects of the Project that could result in contaminated land disturbance and impacts include:

- Pre-construction activities including utility adjustment, site access provisions, property adjustments
- Clearing of vegetation
- Initial removal of topsoil
- General earthworks particularly during site establishment
- Building demolition
- Construction of site compounds and spoil / mulch and / or equipment stockpile areas
- Temporary access roads during construction
- Bulk earthworks
- Material stockpiling
- Trenching, utilities and drainage works.

5.2 Impacts

The potential for contaminated land disturbance and impacts will depend on a number of factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with known and potential contaminated land sources. Potential impacts attributable to construction might include:

- Inappropriate handling or disposal of contaminated or hazardous excavated materials
- Exposure of contaminated soils and/or groundwater to sensitive human receptors (construction personnel, Project team, or nearby communities)
- Mobilisation of surface and subsurface contaminants
- Migration of contaminants into the surrounding area via leaching, overland flow and/or subsurface flow
- Mobilisation of groundwater and/or surface water contamination
- Exposure of contaminants to sensitive ecological receptors (local water bodies, flora and fauna)
- Maintenance of onsite plant or unexpected release of potential contaminants
- Cross contamination within working areas and of contaminated materials
- Release of asbestos
- Release of odours from contaminated materials.

Relevant aspects and the potential for related impacts have been considered in an initial risk assessment which is found in Appendix A2 of the CPBGG JV CEMP. Section 6 of the CCLMP provide a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

5.3 Cumulative impacts

The concurrent construction of various projects within the vicinity of the M12 Project gives rise to the potential for cumulative contamination impacts. Projects within the vicinity of the M12 Project include, but are not limited to:

- M7 Widening
- Western Sydney International Airport
- Sydney Metro – Western Sydney Airport
- The Northern Road upgrade
- Western Sydney Aerotropolis
- Other potential road projects such as Elizabeth Drive upgrade, Mamre Road upgrade and Outer Sydney Orbital

- Development land releases such as Southwest Growth Area and Western Sydney Employment Area.

It is noted that the scale of impact is dependent upon timing, location and type of construction activities. Although impacts are likely to be associated with soil erosion, soil management, salinity waterway contamination and spills, it is anticipated that these impacts will be short-term and minor as they will be limited to the construction phase and will be minimised through the implementation of management measures identified in Section 6.8.

Interagency communication between government departments undertaking work in the area is required to manage cumulative impacts with the aim of combining messages when possible and minimising impacts to the local community.

Consultation will be undertaken with neighbouring properties and with personnel who will be undertaking work on other projects within the vicinity of the M12 Motorway construction to ensure they are aware of any exclusion zones or sensitive areas identified for the Project.

6 Environmental mitigation and management measures

6.1 Further investigations

6.1.1 Detailed Site Investigation

In accordance with NSW CoA E85, E86 and REMM SC05, prior to the commencement of any Work that would result in the disturbance of potential or contaminated soils, materials, groundwater or sediments, Detailed Site Investigations will be undertaken.

At a minimum, the Detailed Site Investigations will be conducted within one AEIs identified in REMM SC05 as part of the West package, to confirm the presence of contamination before the start of construction at these locations:

- AEI 19: the area of miscellaneous construction activities and stockpiles of building materials along Luddenham Road (Lot 1, DP228498)

The investigations will be carried out in accordance with the NSW EPA (1995) *Sampling Design Guidelines* and other NSW EPA endorsed guidance, including the NEPM (2013) guidelines to confirm the presence of contamination. CPBGG JV has reviewed the investigation reports developed by WSP during detailed design and additional investigations will be undertaken by CPBGG JV in areas of;

- Additional cut around the airport interchange northern cut and airport interchange southern cut
- Potential areas of existing fill within the construction footprint.

The Detailed Site Investigation Report(s) will include the following, in accordance with NSW CoA E86:

- Primary sources of contamination, for example potentially contaminating activities, infrastructure (such as underground storage tanks, fuel line, sumps or sewer lines) or site practices
- Contaminant dispersal in air, hazardous ground gases, surface water, groundwater, soil vapour, separate phase contaminants, sediments, infrastructure (e.g. concrete), biota, soil and dust
- Contaminant characterisation and behaviour (volatility, leachability, speciation, degradation products and physical and chemical conditions on-site which may affect how contaminants behave)
- Potential effects of contaminants on human health, including the health of occupants of built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils) and the environment
- Potential and actual contaminant migration routes including potential preferential pathways
- Adequacy and completeness of all information available for use in the assessment of risk and for making decisions on management requirements, including an assessment of uncertainty
- Review and update of the conceptual site model from the preliminary and detailed site investigations
- Nature and extent of any existing remediation (such as impervious surface cappings) and/or
- Whether the land is suitable (for the intended final land use) or can be made suitable through remediation.

The Detailed Site Investigation Report will be prepared in accordance with guidelines made or approved under section 105 of the CLM Act and/or reviewed and approved by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.

The Detailed site investigations will be completed 7 days prior to works that would result in the disturbance of potentially contaminated or contaminated soils, materials, groundwater or sediments and submitted to TfNSW. Contamination will be monitored throughout the works and if required or instructed by TfNSW the detailed investigation reports will be revised.

6.1.2 Asbestos

In accordance with REMM SC06, further intrusive asbestos investigations throughout the construction footprint will be carried out prior to the commencement of construction by a qualified licensed asbestos assessor. The investigations are to include visual assessments and ground truthing along the length of the Project. The investigations will occur in accordance with TfNSW R44 specification and include the

tining of each topsoil lot (in 100 mm depth increments) to allow the Occupational Hygienist to assess the topsoil prior to commencing topsoil removal. Additional depth tining may be instructed by the Occupational Hygienist to determine the extent of any contamination.

CPBGG JV will maintain an Asbestos Register that documents all identified or potential asbestos-containing material in the Project area. The Asbestos Register will contain the following information:

- Identification of any potential or asbestos-containing material
- Location, type and condition of the asbestos-containing material
- Date when the asbestos was identified
- Labelling of the asbestos
- Maps, photographs or diagrams detailing the location of the asbestos within the Project area.

The Asbestos Register will be made available to the TfNSW ESM (or delegate) on request for inclusion in Project Monthly Reports.

Encapsulation of ACM is a method of management that is proposed on the project as it minimises the need to dispose of the material off site. The requirement to encapsulate ACM on site will be determined by the CPBGG JV Geotechnical Engineer and ESR. Construction of any encapsulation will be completed under a Remedial Action Plan (RAP) prepared by a certified Contaminated Land Specialist. Completion of the remediation work and validation of the work is required to be in accordance with the RAP.

Prior to on site encapsulation of ACM, the CPBGG JV will prepare a Long-Term Environmental Management Plan (LTEMP) for the encapsulation, in consultation with relevant statutory authorities and agencies. The LTEMP will be approved by the NSW EPA accredited site auditor.

The Asbestos Management Plan (AMP) in Appendix B will guide the excavation, handling, storage and disposal of management of asbestos discovered during construction, including procedures for any unexpected asbestos. The Asbestos Management Plan (AMP) in Appendix B also outlines requirements for the encapsulation of asbestos to be carried out in accordance with RAP

6.1.3 Salinity and acid sulphate soils

In accordance with REMM SC02, CPBGG JV will undertake salinity and ASS sampling to confirm the presence of saline soils in areas of high salinity potential and to confirm the presence of ASS around creeks prior to disturbance.

If the investigations identify the presence of ASS it will be managed in accordance with the *Acid Sulphate Soil Manual* (ASSMAC 1998). Should disposal of ASS be required, it will be done so in accordance with the *Waste Classification Guidelines: Part 4 Acid Sulfate Soils* (NSW EPA, 2014).

If the investigations identify the presence of saline soils, it will be managed in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook

Management measures relevant to salinity and ASS are presented in the CSWMP.

6.1.4 Soil gas contamination

In accordance with REMM SC10, detailed investigations were carried out by TfNSW within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas (see Section 4.2.3).

These investigations were carried out in accordance (where applicable) with the Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (NSW EPA 2012) and Assessing Risks Posed by Hazardous Ground Gases to Buildings Report (C665) (Wilson et al. 2007).

Section 4.2.3 outlines the results of the landfill gas monitoring already undertaken for the Project. Based on the conclusions of the landfill gas monitoring, ground gas monitoring during construction is recommended to be undertaken prior to the commencement of high risk activities (i.e. work within excavations or confined spaces in locations where landfill gas exceedances have been previously identified). Exceedances were identified in one Borehole within the M12 West footprint (BH 301), this is an earthworks fill area that extends from Badgerys Creek east to the interface of M12 Central stage. It will not require any deep excavation other than topsoil strip for fill placement and will not require gas monitoring.

The Workplace Health and Safety Plan also identifies landfill gas monitoring due to the Occupational Health and Safety issue associated with the monitoring.

6.1.5 Land condition assessments

Prior to the use of land for locating site facilities, including areas for construction materials storage and stockpiling, a pre-construction land condition assessment will be prepared and submitted to TfNSW. The assessment will be undertaken in accordance with TfNSW Environmental Procedure on *'Management of Wastes on Roads and Maritime Services Land'* (2014).

The purpose of the pre-construction land condition assessment will be to identify any existing waste or stored materials on the land prior to the area being occupied. Where the site facilities are no longer required, a post-construction land condition assessment will be prepared and submitted to TfNSW with a contamination report (in accordance with NEPM guidelines, EPA guidelines and TfNSW requirements) verifying that no residual contamination remains on site. Any identified contamination or unauthorised waste attributable to the construction activities will be rectified in accordance with the post-construction land condition assessment report and TfNSW Specification G36.

When vacating each area of land that has been leased or purchased by the Principal, CPBGG JV will restore it to equivalent pre-existing conditions (including removing temporary construction fencing), to the Principal's satisfaction, in accordance with TfNSW G36 Clause 4.16. A joint inspection will be conducted with the Principal to demonstrate that there is no contamination of the ground and that the pre-existing ground surface levels have been restored, as appropriate.

6.2 Remedial Action Plan, Interim Audit Advice and Site Audit Statement

If Detailed Site Investigations conclude that the specified land is unsuitable for the final intended use, a RAP will be prepared by a suitably qualified and experienced person. CPBGG JV will use the Draft RAP prepared by WSP for the subject land as a guide to prepare the CPBGG JV RAP for remediation of that land. The RAP will be completed in accordance with all guidelines under the CLM Act 1997 and the relevant TfNSW Specifications.

Prior to commencing with remediation, the RAP and an Interim Audit Advice or a Section B Site Audit Statement from a NSW EPA accredited Site Auditor that certifies that the RAP is appropriate and that the site can be made suitable for the proposed use, will be submitted to the Planning Secretary for information. Both the RAP and Site Audit Statement will need to be submitted to TfNSW under the G36 cl 4.2.4 Hold point. See section 3.2.7 of the CEMP.

The Remediation Action Plan must be implemented and any changes to the Remediation Action Plan must be endorsed in writing by the EPA-accredited Site Auditor.

The land to which any RAP applies will not be used for the Project until a Section A1 or Section A2 Site Audit Statement has been obtained that states that the land is suitable for the intended use. A copy of the Site Audit Statement and the associated Site Audit Report will be submitted to the Planning Secretary and the relevant Council for information no later than one month before the commencement of operation.

CPBGG JV will maintain a register of contaminated sites for the Project and will update the register in response to the findings of any site contamination assessments. The register will also be used to track the ongoing management of the sites.

6.3 Asbestos containing material management

Areas of potential fill, stockpiles and historical uncontrolled earthworks and buildings/ structures containing asbestos previously demolished/ degraded have been identified as having moderate to high potential for containing asbestos (refer to Table 4-1). As detailed in Section 6.1.2 prior to the commencement of construction, further intrusive asbestos investigations will be carried out to assess asbestos risks.

An Asbestos Management Plan (AMP) is provided in Appendix B, in accordance with REMM SC04. The AMP will guide the excavation, handling, storage and disposal of asbestos identified during construction, including procedures for any unexpected asbestos. The AMP will be implemented in the event that potential asbestos containing material (ACM) or actual asbestos is uncovered during construction of the

Project. The AMP outlines requirements for the encapsulation of asbestos to be carried out in accordance with RAP.

An Environmental Work Method Statement (EWMS) will be prepared for the management of materials containing asbestos when encountered and the management measures identified in the AMP will be incorporated into the site specific EWMS.

6.4 Hazardous building materials

In accordance with REMM SC07, CPBGG JV will develop a Hazardous Building Materials Management Plan before demolishing structures and/or buildings. The Plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities.

As discussed in Section 4.2.2, hazardous building material audits have been conducted by TfNSW. for buildings planned for demolition (WSP Hazardous Building Materials Survey June 2021). Buildings that do not have an audit completed, will be completed in accordance with Australian Standard (AS 2601-2001): The demolition of structures. Where hazardous building materials are present, they will be managed to reduce the potential for contamination in accordance with the POEO Act and the *Protection of the Environment Operations (Waste) Regulation* (2014).

6.5 Disposal of waste

Potential spoil disposal and reuse options were assessed in the Environmental Assessment Documentation. The selection of waste disposal and recovery facilities will be dependent on the nature and volume of waste streams generated and the capacity of the receiving facilities at the time of the waste generation.

All waste generated by the Project will be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes. Waste management will be completed in accordance with the CWRMP. Refer to the CWRMP on how to manage potential impacts related to the management and transport of spoil generated during construction of the Project.

For disposal of contaminated waste, this will be completed in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014.

It is noted that the contamination assessment undertaken by WSP for the M12 Motorway Package (2020) also provided preliminary waste classification for specific areas which including soil classifications of VENM, ENM and GSW across the site. Prior to any transport of soil offsite to a non-licenced facility, sampling and testing of the soil must occur to identify contamination e.g. PFAS or other contamination and to determine whether the soil meets an EPA resource recovery exemption for reuse offsite. Further details on this process are detailed in the CWRMP.

Stockpiling of contaminated material will be undertaken in accordance with Stockpile Management Protocol (Appendix A of the CSWMP)

6.6 Areas of unexpected contamination

Where earthworks and ground disturbing activities are required, there is potential to expose unexpected forms of contamination within the surface and subsurface. In such instances, action is required to mitigate potential contaminated soil/material encountered during excavation or construction activities.

If potentially contaminated material is encountered, the Unexpected Contaminated Land Finds Procedure (Appendix A) will be followed. The Unexpected Contaminated Land Finds Procedure has been prepared in accordance with NSW CoA E89 and E90.

Works in the vicinity will be stopped or modified and will not recommence until the material has been analysed and management measures developed. TfNSW will be notified of unexpected areas of contamination as reportable events in accordance with the TfNSW Incident Classification and Reporting Procedure.

6.7 Contamination caused by CPBGG JV

Contamination resulting from Works under the Contract will be assessed and remediated in accordance with relevant legislation including NEPM guidelines, the TfNSW Guideline for the Management of

Contamination, and contaminated land management guidelines made or approved by the EPA. Costs associated with the management of such contaminated land, including the engagement of specialist environmental consultants (including site auditors) and offsite disposal costs where necessary, will be covered by CPBGG JV.

6.8 Environmental control measures

A range of environmental requirements and management measures are identified in the Environmental Assessment Documentation, and relevant TfNSW documents. Specific measures and requirements to address contamination impacts are outlined in Table 6-1.

Table 6-1 Contaminated land management and mitigation measures – West package

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
Disturbance of contaminated or potentially contaminated land					
CL1	Prior to the commencement of any work that would result in the disturbance of potential or contaminated land and/or soil, a Detailed Site Investigation Report will be prepared by a suitably qualified Contaminated Site Specialist. The report will be prepared in accordance with the *CLM Act 1997, NSW EPA (1995) Sampling Design Guidelines* and NEPM (2013).	Pre-construction	Construction Manager Contaminated Site Specialist	NSW CoA E85 and E86 REMM SC05	Detailed Site Investigation Report
CL2	Testing will be carried out to confirm the presence of saline soils in areas of high salinity potential and to confirm the presence of ASS around creeks prior to disturbance.	Pre-construction Construction	Construction Manager Contaminated Site Specialist	REMM SC02	Testing results
CL3	The CPBGG JV will notify TfNSW at least 24 hours prior to excavation of the contaminated material, and removal of any contaminated material from the site, and provide details of the proposed method and location of disposal.	Pre-construction Construction	Construction Manager Contaminated Site Specialist	TfNSW Specification	Transmittal
CL4	Further intrusive asbestos investigations throughout the construction footprint will be carried out to assess asbestos risks before the start of construction. The investigations are to include visual assessments and ground truthing along the length of the project.	Pre-construction	Construction Manager Contaminated Site Specialist	REMM SC06	Asbestos Investigation Report
CL5	The AMP will be implemented throughout construction to guide the excavation, handling, storage and disposal of management of asbestos discovered during construction, including procedures for any unexpected asbestos	Construction	Construction Manager Environmental Site Representative	REMM SC04	This Plan Stage-specific CCLMP
CL6	A Hazardous Building Materials Management Plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities. Before demolishing structures and/or buildings, a hazardous building materials audit will need to be completed for structures/buildings that have not been demolished. The audit will be carried out in accordance with Australian Standard (AS 2601-2001) The demolition of structures will be supervised by appropriately qualified contamination specialist and avoid contamination of soil. A SafeWork NSW accredited asbestos assessor will ensure the surface is cleared for asbestos containing material post-demolition. Where any other hazardous building materials are present, they will be managed to reduce the potential for contamination in accordance with the	Pre-construction	Construction Manager Contaminated Site Specialist SafeWork NSW Accredited Asbestos Assessor	REMM SC07	Hazardous Building Materials Management Plan Hazardous Building Materials Audit

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
	POEO Act and the *Protection of the Environment Operations (Waste) Regulation (2014).*				
CL6a	If at any time suspect hazardous building materials are encountered that are not identified within the hazardous building materials audit, then works should immediately cease, the area made safe and advice sought from a suitably qualified person.	Construction	Construction Manager Contaminated Site Specialist	GHD, 2021	Hazardous Building Materials Management Plan Hazardous Building Materials Audit
Remediation					
CL7	A Remedial Action Plan (RAP) will be prepared if remediation is required to make land suitable for the final intended land use. The RAP will be endorsed in writing by a NSW EPA accredited Site Auditor. The RAP will be submitted to the Planning Secretary for information prior to commencing the remediation.	Prior to remediation	Construction Manager Contaminated Site Specialist	NSW CoA E87	RAP Validation Report
CL7a	Contamination resulting from Works Under the Contract must be assessed and remediated in accordance with relevant legislation including NEPM, the TfNSW Guideline for the Management of Contamination, and contaminated land management guidelines made or approved by the EPA. Costs associated with the management of such contaminated land, including the engagement of specialist environmental consultants (including site auditors) where necessary, will be covered by CPBGG JV	Construction	Construction Manager ESR Contaminated Site Specialist	TfNSW G36 spec	Site inspections Incident reports RAP
CL8	A Section A1 or Section A2 Site Audit Statement and the accompanying Site Audit Report, which state that the contaminated land disturbed by the works has been made suitable for the intended land use, will be submitted to the Planning Secretary and council after remediation and no later than one month before operation.	Construction	Construction Manager Contaminated Site Specialist	NSW CoA E88	Section A Site Audit Statement and Site Audit Report
CL9	Contaminated land will not be used for the purpose approved under the terms of this approval until a Section A Site Audit Statement is obtained.	Post Remediation	Construction Manager Contaminated Site Specialist	NSW CoA E88	Section A Site Audit Statement and Site Audit Report
CL10	A Section B Site Audit statement will be prepared for the asbestos encapsulation and for sites where intrusive investigations confirm highly complex contamination issues.	Prior to construction	Construction Manager Contaminated Site Specialist	REMM SC09	Section B Site Audit Statement
CL10a	Daily air monitoring should be conducted for the duration of all works prior to the laying of the geofabric marker layer and cap with daily reports made available to TfNSW.	During remedial works	Construction Manager Contaminated Site Specialist Licenced Asbestos Assessor	RAP (WSP, 2021)	Section B Site Audit Statement

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
Soil gas contamination					
CL11	The outcomes of the detailed investigation will within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas will be implemented including but not limited to ongoing ground gas monitoring from specifically designed and installed ground gas monitoring wells including investigations to understand the source(s) of the carbon dioxide.	Pre-Construction	Construction Manager Contaminated Site Specialist	REMM SC10	Report Work Health Safety Plan
CL12	Undertake risk assessments and safe work method statements to adequately consider and address landfill gas. Potential actions may include: • Monitoring landfill gas during intrusive construction works in proximity of landfill sites / fill areas and intrusive maintenance works of operational phases • Prohibiting entry into excavations • Managing hot works with consideration of the potential presence of landfill gas.	Construction	Construction Manager Contaminated Site Specialist	REMM SC10	SWMS Landfill gas monitoring results
CL13	If gas concentrations remain elevated near the project footprint, gas monitoring will be carried out during construction within the construction footprint next to the SUEZ Kemps Creek Resource Recovery Park. If excavations are to be carried out within enclosed structures, gas accumulation monitoring will be carried out before and during construction. On site gas monitoring will be carried out in accordance with the *NSW EPA (2016) Environmental Guidelines: Solid Waste Landfills.*	Construction	Construction Manager Contaminated Site Specialist	REMM SC11	Monitoring results
Disposal of contaminated waste					
CL14	All wastes, including contaminated wastes will be identified and classified with the NSW EPA's *Waste Classification Guidelines*, with appropriate records and disposal dockets retained for audit purposes. Disposal of contaminated waste will be completed in accordance with the POEO Act, *Protection of the Environment Operations (Waste) Regulation 2014* and the Construction Waste and Resource Management Sub-Plan. CPBGG JV will review the investigation assessment undertaken M12 Motorway Package 1 - West Contamination Investigation Report (M12WDD-WSPA-ALL-GE-RPT-000006) prepared by WSP	Pre-construction Construction	Construction Manager Environmental Site Representative	NSW CoA E101 to 103 REMM SC03	Waste Classification Reports CWRMP

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
Unexpected discovery of contamination					
CL15	An Unexpected Contaminated Land Finds Procedure will be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during construction. The Unexpected Contaminated Land Finds Procedure will be implemented throughout the duration of work.	Pre-construction Construction	Construction Manager Environmental Site Representative	NSW CoA E89 and 90 Appendix A Appendix B	Unexpected Contaminated Land Finds Procedure
CL16	The requirements for excavation of unexpected contaminants (as outlined in the Unexpected Contaminated Lands Procedure) will be carried out in consultation with the RAPs.	Construction	Construction Manager Environmental Site Representative	SC03	Unexpected Contaminated Land Finds Procedure Consultation records
Use of contaminated material					
CL17	Surface material from TP303, TP304, TP310 and TP311 cannot be reused within landscaped areas or in areas within and/or adjacent to sensitive environmental receptors. Impacted material will require either appropriate off-site disposal or managed appropriately (i.e.. buried, capped and managed) within the Project footprint.	Construction	Construction Manager Environmental Site Representative	SC03	Waste classification reports
Odour					
CL18	Odorous materials from contaminated land will be excavated in a staged process. The exposed areas of odorous material will be kept to a minimum to reduce the total emissions from the site where feasible.	Construction	CPBGG JV Construction Manager Environmental Site Representative	AQ03	Site inspections
CL19	In the event that unexpected odours are encountered during construction, work in the area will cease, and the finds will be managed in accordance with the Unexpected Contaminated Lands Procedure.	Construction	Construction Manager Environmental Site Representative	Best practice	Site inspections
CL20	Use of appropriate covering techniques may be implemented to control odour during remediation works: • Use of plastic sheeting to cover excavation faces or stockpiles • Use of fine mist sprays • Use of a hydrocarbon mitigating agent on the impacted areas/materials • Adequate maintenance of equipment and machinery to minimise exhaust emissions.	Construction	Construction Manager Environmental Site Representative	RAP (GHD, 2021)	Site records

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
Groundwater and surface water					
CL21	To minimise the mobilisation of groundwater and surface water contamination, refer to the Blue Book guidelines (Landcom, 2004) and TfNSW Specifications.	Construction	Construction Manager Environmental Site Representative	Blue Book guidelines (Landcom, 2004) TfNSW Specifications	Site inspections
Detailed Site Investigations					
CL22	The contamination assessment and investigations undertaken during detailed design will be reviewed by the CPBGG JV who will then determine the requirement for any additional investigations to be undertaken.	Construction	Construction Manager Environmental Site Representative	Section 6.1	Detailed Site Investigation Report Site inspections

7 Compliance management

7.1 Roles and responsibilities

The Project's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this CCLMP. Roles relevant to contamination management are described in Section 6 of this Plan.

7.1.1 Site Auditor

A NSW EPA accredited Site Auditor will be engaged as early in the assessment and remediation process as possible. TfNSW will provide a hold point release under TfNSW clause 4.2.4 G36 Specification for the nominated NSW EPA accredited Site Auditor CV and accreditation five days prior to preparation of RAP.

Prior to commencing with the remediation, the RAP and an Interim Audit Advice or a Section B Site Audit Statement from a NSW EPA accredited Site Auditor (that certifies that the RAP is appropriate and that the site can be made suitable for the proposed use) will be submitted to the Planning Secretary for information only by TfNSW. The NSW EPA accredited Site Auditor will endorse the RAP in writing. If there are any changes to the RAP, the changes will be endorsed in writing by the NSW EPA accredited Site Auditor.

7.1.2 Contaminated Site Specialist

A suitably qualified Contaminated Site Specialist provide support and guidance for the implementation of the environmental controls relating to contaminated land for the Project. The Contaminated Site Specialist will be responsible for the preparation of the Detailed Site Investigation Report, as outlined in NSW CoA E85.

7.2 Training

To ensure that this CCLMP is implemented effectively, all site personnel (including sub-contractors) will undergo site induction training relating to contaminated land management issues prior to construction commencing. The induction training will address elements related to contaminated land management, including:

- Existence and requirements of this CCLMP and all plans and procedures prepared under the CCLMPs
- Relevant legislation, regulations and EPL requirements (where applicable)
- Environmental and occupational health and safety and workplace health and safety risks associated with contaminated materials
- Personal Protective Equipment (PPE) requirements
- Incident response, management and reporting
- Roles and responsibilities for contaminated land management
- Location of identified potential contaminated land sites
- Contamination management and protection measures
- Signs of contaminated soil
- Visual asbestos identification protocols
- Procedure to follow in the event of unexpected contaminated land findings during construction works (refer to Appendix A)
- Procedure to follow in the event of uncovering asbestos during construction works (refer to Appendix B).

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in contaminated land management or those undertaking an activity with a high risk of environmental impact. Site personnel will undergo refresher training at not less than six monthly intervals.

Daily pre-start meetings conducted by the Foreman / Site Supervisor will inform the site workforce of any environmental issues relevant to contaminated land that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

7.3 Monitoring and Inspections

7.3.1 Monitoring

The Construction Soil and Water Monitoring Program has been prepared in accordance with NSW CoA C11(b) and NSW CoA C11(c) and is provided in the CSWMP (Appendix B8 of the CEMP).

Monitoring for contamination will include, but not be limited to:

- Monitoring / testing of asbestos containing soil
- Monitoring of quantities of contaminated material or asbestos containing soil
- Monitoring of topsoil stripping activities (pre and during) by Occupational Hygienist in accordance with TfNSW QA specification R44
- If required under the AMP (Appendix B), asbestos fibre monitoring and personal exposure asbestos fibre air monitoring for workers in accordance with *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition* [NOHSC: 3003(2005)] (National Occupational Health and Safety Commission, 2005) and *How to Safely Remove Asbestos Code of Practice* (Safe Work Australia, 2011)
- Monitoring of gas during prior to and during high risk construction activities, in accordance with REMM SC11 within the area next to the SUEZ Kemps Creek Resource Recovery Park as required by REMM SC10 (refer to Section 6.1.4)
- Sampling of excess soil material prior to removal of soil material from construction sites in accordance with the Waste Classification Guidelines (EPA, 2014)
- Sampling of material during and at the completion of demolition works, prior to commencement of construction at that site, in accordance with AS 2601 – 2001: The Demolition of Structures
- Prior to disturbance or removal of the topsoil in any area monitoring/inspection of topsoil removal activities.

Further details of monitoring requirements for the Project are presented in Section 3.9 of the CEMP.

7.3.2 Inspections

Regular inspections of sensitive areas and activities with the potential to uncover or disturb contaminated land will occur for the duration of the Project. CPBGG JV ESR will carry out weekly site inspections. TfNSW will also conduct independent inspections to confirm CPBGG JV are compliance with contaminated land management requirements.

Weekly and other routine inspections by the TfNSW ESM (or delegate), Environmental Review Group (ERG) representatives and the ER will occur throughout construction. Detail on the nature and frequency of these inspections are documented in Section 3.9 and Appendix A8 of the CEMP.

In addition, CPBGG JV will engage a suitably qualified Occupational Hygienist to be onsite and undertake the following inspections:

- During advance contamination assessments;
- Whenever topsoil operations are underway; and
- At other times required within TfNSW QA specification R44.

Proposed inspections to be carried out relevant to contaminated land are contained in Table 7-1.

Table 7-1 Contaminated land inspections

Inspection	Responsibility	Frequency
Contamination inspections during topsoil stripping in accordance with TfNSW R44 spec	CPBGG JV Occupational Hygienist	Advance of and during removal of topsoil

Inspection	Responsibility	Frequency
Contamination management inspections (where contamination is found)	ESR TfNSW Environment and Sustainability Manager (or delegate)	Weekly, as required
Inspection of managed bunded areas, erosion and sediment controls as part of the weekly environmental inspection	ESR TfNSW Environment and Sustainability Manager (or delegate) Nominated Soil Conservationist TfNSW Soil Conservationist	Weekly
Assessment of suspected and potential contaminated sites	Construction Manager Project nominated or TfNSW Contamination Specialist TfNSW Environment and Sustainability Manager (or delegate) / TfNSW Project Manager	As required

7.4 Incident planning and response

Response to incidents will be undertaken as described in Section 3.8 of the CEMP and in accordance with the Environmental Incident Classification and Reporting Procedure (refer to Appendix A7 of the CEMP).

7.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of contaminated land management measures, compliance with this CCLMP, and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.6 Reporting and identified records

General reporting requirements and responsibilities are documented in Section 3.9 and 3.11 of the CEMP. Reporting requirements relevant to contamination are summarised in Table 7-2.

CPBGG JV will maintain accurate records substantiating all construction activities associated with the Project, including measures taken to implement this CCLMP.

Table 7-2 Reporting requirements relevant to contamination

Report	Frequency	Recipient	Responsibility	Reference
Site Contamination Report	Prior to the commencement of any work that would result in the disturbance of potential or contaminated land and/or soil	Planning Secretary (for information)	Suitably qualified and experienced person under the CLM Act	Section 6.1.1
Remedial Action Plan	If investigations conclude that the specified land is contaminated such that it is and will remain unsuitable for the Project	Planning Secretary (for information) EPA Accredited Site Auditor	Suitably qualified and experienced person under the CLM Act	Section 6.2
Section A1 or Section A2 Site Audit Statement and Site Audit Report	No later than one month before the commencement of Operation	Planning Secretary (for information) Relevant Councils	Suitably qualified and experienced person under the CLM Act	Section 6.2
Unexpected contaminated land finds register	Made available on request for inclusion in the Monthly Reports	TfNSW	ESR	Appendix A
Asbestos Register	Made available on request for inclusion in the Monthly Reports	TfNSW	ESR	Appendix B
Monthly Environmental Reporting	Monthly	TfNSW	ESR	TfNSW specification G36

Incident and Non-compliance Reports	At each occurrence	Appropriate authority dependant on nature of the incident (e.g. EPA, DPHI, NSW DCCEEW)	ESR	NSW CoA A44, A45 and A46 Commonwealth COA 11 and 12

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

- In accordance with the Environmental Incident Classification and Reporting Procedure (Appendix A7 of the CEMP) , the unexpected discovery of contaminated land is classed as a 'Reportable Event', as such finds of this nature will be reported to TfNSW in accordance with the guidelines
- Where it is deemed that the contamination has been, or could have been caused or changed by the Project, the EPA will be notified in accordance with Section 60 of the CLM Act.

8 Review and Improvement

8.1 Continuous Improvement

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

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of contaminated land management and performance of environmental controls
- Identify environmental risks not already included in the risk register
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

The Project environmental risks are identified and included in the risk register and appropriate mitigation measures will be implemented throughout the construction of the Project, as part of the continuous improvement process.

The process for continuous identification and analysis of new risks associated with contamination that may arise during construction will be facilitated by:

- Construction Monitoring Programs
- Regular inspections of sensitive areas and activities and observations by site personnel (refer to Section 7.3.2)
- Revision of this Plan and the CCLMP and/or contamination management measures as required in response to community complaints or requests from regulatory agencies, the ER or the Planning Secretary.

This continuous risk analysis approach will ensure prompt identification of new risks and ensure efficient mitigation through implementation of appropriate management measures, as outlined in Section 6.

8.2 Update and amendment

The processes described in Section 3.8, 3.10 and 3.12 of the CEMP may result in the need to update or revise this CCLMP. Review of the CCLMP would also occur against DSI findings / site audit statements developed under Appendix A.

Any revisions to this CCLMP will be in accordance with the process outlined in Section 3.12 of the CEMP.

Appendix A – Unexpected Contaminated Land Finds Procedure

Appendix B – Asbestos Management Plan

Appendix C – Secondary CoAs and REMMs

CoAs

CoA No.	Condition Requirements	Document Reference
E85	Prior to the commencement of any Work that would result in the disturbance of potential or contaminated soils, materials, groundwater or sediments, a Detailed Site Investigation Report(s) must be prepared, or reviewed and approved, by consultants certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. The Detailed Site Investigation Report(s) must be prepared in accordance with guidelines made or approved under section 105 of the Contaminated Land Management Act 1997. Note: Where Preliminary and Detailed Site Investigations have already been undertaken for contaminated soils, materials, groundwater or sediments they do not need to be undertaken again for the purposes of this condition.	Section 6.1.1
E86	The **Detailed Site Investigation Report(s)** must provide details on: (a) primary sources of contamination, for example potentially contaminating activities, infrastructure (such as underground storage tanks, fuel line, sumps or sewer lines) or site practices; (b) contaminant dispersal in air, hazardous ground gases, surface water, groundwater, soil vapour, separate phase contaminants, sediments, infrastructure (e.g. concrete), biota, soil and dust; (c) contaminant characterisation and behaviour (volatility, leachability, speciation, degradation products and physical and chemical conditions on-site which may affect how contaminants behave); (d) potential effects of contaminants on human health, including the health of occupants of builtstructures (for example arising from risks to service lines from hydrocarbons in groundwater,or risks to concrete from acid sulphate soils) and the environment; (e) potential and actual contaminant migration routes including potential preferential pathways; (f) the adequacy and completeness of all information available for use in the assessment of riskand for making decisions on management requirements, including an assessment of uncertainty; (g) the review and update of the conceptual site model from the preliminary and detailed site investigations; (h) nature and extent of any existing remediation (such as impervious surface cappings); and/or (i) whether the land is suitable (for the intended final land use) or can be made suitable throughremediation.	Section 6.1.1
E87	Should remediation be required to make land suitable for the final intended land use, a Remediation Action Plan must be prepared. Prior to commencing with the remediation, the Proponent must submit to the Planning Secretary for information, the Remediation Action Plan and an Interim Audit Advice or a Section B Site Audit Statement from a NSW EPA accredited Site Auditor that certifies that the Remediation Action Plan is appropriate and that the site can be made suitable for the proposed use. The Remediation Action Plan must be implemented and any changes to the Remediation Action Plan must be endorsed in writing by the EPA-accredited Site Auditor.	Section 6.2

CoA No.	Condition Requirements	Document Reference
	Note: It is strongly recommended that a site auditor is engaged as early in the assessment and remediation process as possible, as early communication between parties improves the efficiency of the audit.	
E88	A Section A1 or Section A2 Site Audit Statement (accompanied by an Environmental Management Plan) and the accompanying Site Audit Report, which states 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(s) for information after remediation and no later than one (1) month before the commencement of operation. Contaminated land must not be used for the purpose approved under the terms of this approval until a Section A1 or Section A2 Site Audit Statement is obtained which states that the land is suitable for that purpose and any conditions on the Section A1 or Section A2 Site Audit Statement have been complied with. Nothing in the conditions prevents the Proponent from obtaining Section A Site Audit Statements for individual parcels of remediated land.	Section 6.2
E89	An Unexpected Contaminated Land and Asbestos Finds Procedure must be prepared before the commencement of Work and must be followed should unexpected contaminated land or asbestos (or suspected contaminated land or asbestos) be excavated or otherwise discovered during Work. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved.	Section 6.6 Appendix A Appendix B
E90	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout the duration of Work.	Section 6.6 Appendix A Appendix B
E101	The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of an EPL for the CSSI, or be done in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, as the case may be.	CWRMP
E102	Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the Protection of the Environment Operations (Waste) Regulation 2014, or to any other place that can lawfully accept such waste, except in accordance with Condition E15.	Section 6.5 CWRMP
E103	All waste generated by Works must be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.	Section 6.5 CWRMP

REMMs

Outcome	Reference #	Requirement	Document Reference
Salinity and acid sulfate soils	SC01	Construction within areas of moderate to high risk saline soils will be managed in accordance with the CSWMP. Specific measures will also include (but not be limited to): • Ongoing groundwater monitoring of salinity as part of the water quality monitoring program • Identification and management of saline discharge sites • Progressive stabilisation and revegetation of exposed areas following disturbance as soon as is practicable • Testing to confirm the presence of saline soils in areas of high salinity potential prior to disturbance • Soil salinity management will also be carried out in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook	Section 6.1.3 CSWMP
Salinity and acid sulfate soils	SC02	Testing will be carried out to confirm the presence of saline soils in areas of high salinity potential and to confirm the presence of ASS around creeks prior to disturbance	Section 6.1.3
Impacts of soil and groundwater contamination	SC05	Detailed site (contamination) investigations will be carried out in accordance with the *NSW EPA (1995) Sampling Design Guidelines* and other NSW EPA endorsed guidance including the NEPM (2013) guidelines within the following AEI locations to confirm the presence of contamination before the start of construction at these locations: • AEI 17: Stockpiles within Hi-quality Quarry Group Head Office • Within AEI 19: the area of miscellaneous construction activities and stockpiles of building materials along Luddenham Road (Lot 1, DP228498) • Within AEI 7: Area of waste and imported fill • Within AEI 21: Area of illegally dumped material along Range Road, Cecil Park	Section 6.1.1

Outcome	Reference #	Requirement	Document Reference
		• Within AEI 24: Stockpiles within the OzSource property • Within AEI 26: TreeServe (wood processing, stockpiles of woodchips, logs and fire wood) • Within the 'potential areas of existing fill' identified in the Soils and contamination assessment report (Appendix K).	
		Further soil investigations will be required in areas of the amended construction footprint located adjacent to the following AEIs to confirm the presence of contamination before the start of construction at these locations: • Within AEI 6: PGH Bricks and Pavers • Within AEI 9: Sydney Recycling Park/ Wanless Recycling and Former Kari & Ghossayn Pty Ltd (Solid Waste Landfill) • AEI 10: SUEZ Kemps Creek Resource Recovery Park.	Section 6.1.1
		Additional soil and groundwater investigations will be required in the areas of additional cut around the airport interchange northern cut and airport interchange southern cut to further assess the potential impacts to the amended project.	Section 6.1.1
		Depending on results of the investigations, or if remediation is deemed required at any site within the amended construction footprint, a Remedial Action Plan will be prepared before the construction.	Section 6.2
	SC06	Further intrusive asbestos investigations throughout the construction footprint will be carried out to assess asbestos risks before the start of construction. The investigations are to include visual assessments and ground truthing along the length of the Project.	Section 6.1.2
Impacts of soil and groundwater contamination	SC07	A Hazardous Building Materials Management Plan will be prepared in accordance with relevant guidelines to manage the removal of known and unexpected hazardous building during demolition activities. Before demolishing structures and/or buildings, a hazardous building materials audit will also be carried out in accordance with Australian Standard (AS 2601-2001) The demolition of structures. Where hazardous building materials are present, they will be managed to reduce the potential for contamination in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation (2014).	Section 4.2.2

Outcome	Reference #	Requirement	Document Reference
	SC08	All waste will be classified in accordance with the NSW EPA's Waste Classification Guidelines (2014), with appropriate records and disposal dockets retained for audit purposes.	Section 6.5 CWRMP
	SC09	A section B site audit statement will be prepared for the asbestos encapsulation and for sites where intrusive investigations confirm highly complex contamination issues.	Section 6.2
Soil gas contamination	SC10	A detailed investigation will be carried out within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas. A report will be prepared to document the outcomes of the investigation and outline measures to manage risks including nuisance odours to the surrounding area during excavation, and prevent the build-up of gases in buildings, basins, and sub-surface trenches and pits, and other enclosed spaces/depressions associated with the project during construction. These investigations will be carried out in accordance (where applicable) with the Guideline for the Assessment and Management of Sites Impacted by Hazardous Ground Gases (NSW EPA 2012) and Assessing Risks Posed by Hazardous Ground Gases to Buildings Report (C665) (Wilson et al. 2007). This will include undertaking gas monitoring.	Section 6.1.4
	SC11	Should the further investigations determine that gas concentrations remain elevated near the project footprint, gas monitoring will be carried out during construction within the construction footprint next to the SUEZ Kemps Creek Resource Recovery Park. If excavations are to be carried out within enclosed structures, gas accumulation monitoring will be carried out before and during construction. On site gas monitoring will be carried out in accordance with the NSW EPA (2016) Environmental Guidelines: Solid Waste Landfills.	Section 6.1.4
Odours during construction	AQ03	Odorous materials identified on site will be excavated in a staged process and exposed areas of odorous material will be kept to a minimum to reduce the total emissions from the site where feasible.	Section 6.8 CL18

Appendix A
Unexpected Contaminated Land Finds Procedure

M12 Motorway West

Project number:	N81150
Document number:	M12WCO-CPBGGJV-ML1-CT-PLN-000001_App A
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Revision:	01

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Rev	Date	Reviewed By	Details
A	18/02/2022	S. Keomongkhoun	First Draft
B	20/05/2022	G. Bolton	Second draft following TfNSW/Arcadis review and comment
C	29/06/2022	A. Zvirzdinas	Third draft following TfNSW/Arcadis review and comment on Rev B
D	14/07/2022	A. Zvirzdinas	Fourth draft following TfNSW/Arcadis/ER review and comment on Rev B, New document number
00	28/07/2020	A. Zvirzdinas	First Controlled Issue
01	22/10/2024	T. Chezzi	Annual review

Document Review

Position	Name	Signature	Date
Project Director	Nick Fryday		22/10/2024

Distribution of controlled copies

Copy no.	Issued to	Version

Table of Contents

Acronyms and Abbreviations

Abbreviation	Expanded Text
ASS	Acid sulfate soil
CCLMP	Construction Contaminated Land Management Sub-plan
CPBGG JV	CPB Contractors and Georgiou Group Joint Venture
CoA	Conditions of Approval
EIS	Environmental Impact Statement
EMS	Environmental management system
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental Assessment Documentation	The set of documents that comprise the Division 5.2 Approval: • Roads and Maritime Services (October, 2019) M12 Motorway, Environmental Impact Statement (EIS) • Transport for NSW (October, 2020) M12 Motorway, Submissions Report (the Submissions Report) • Transport for NSW (October, 2020) M12 Motorway, Amendment Report (AR) • Transport for NSW (December, 2020) M12 Motorway, Amendment Report submissions report (ARSR) • Transport for NSW (March, 2021) The M12 Motorway Amendment Report Submissions Report – Amendment (ARSR amendment) • WSP (October, 2021) M12 Motorway – West Package Detailed Design Consistency Assessment • GHD (October, 2021) M12 Motorway – Central Package Detailed Design Consistency Assessment • Arcadis (June, 2022) M12 Motorway – Sydney Water Crossings Consistency Assessment • Arcadis (July, 2022) M12 Motorway – Design Boundary Changes Consistency Assessment Arcadis (August, 2022) M12 Motorway Minor Consistency Assessment for Proposed Change to the M12 Motorway Project (M12 Central)Arcadis (August, 2022) M12 Motorway – Minor Change Consistency Assessment. • • Arcadis (SeptemberAugust, 2023) M12 Motorway - Devonshire Road Temporary Roundabout Consistency Assessment • WSP (September, 2023) M12 Motorway - Elizabeth Drive Connections Consistency Assessment • TfNSW (September, 2023) M12 Motorway – Minor Consistency Assessment M12 West demolition of structures as 752 Luddenham Road Arcadis (October, 2023) M12 Motorway – East Minor Consistency Assessment • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East AF9 Power Supply • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East Cecil Road Laydown Area • TfNSW (October, 2023) M12 Motorway – Minor Consistency Assessment M12 East Temporary Construction Signage

	• Arcadis (December, 2023) M12 Motorway – East Site 48, 50 and 51 Boundary Changes Minor Consistency Assessment • Arcadis (January, 2024) M12 Motorway – Minor Consistency Assessment M12 Central Water Tower Access Road The documents that comprise the EPBC referral: • Submission #3486 – The M12 Motorway Project between the M7 Motorway, Cecil Hills and The Northern Road, Luddenham, NSW Notification of referral decision and designated proponent - controlled action; date of decision 19 October 2018; ID: 2018-8286.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
ER	Environmental Representative
ESM	Environment and Sustainability Manager (TfNSW)
ESR	Environmental Site Representatives (CPBGG JV)
EWMS	Environmental Work Method Statements
km	Kilometres
OCEMP	Overarching Construction Environmental Management Plan
PASS	Potential acid sulfate soil
PPE	Personal protective equipment
Procedure, this	Unexpected Discovery of Contaminated Land Procedure
RAPs	Remedial Action Plans
SDS	Safety Data Sheet
SWMS	Safe Work Method Statements
TfNSW	Transport for New South Wales
WSIA	Western Sydney International Airport

1 Introduction

1.1 Purpose

This Unexpected Contaminated Land Finds Procedure (this Procedure) details the actions to be taken when potential contaminated soil and/or material is encountered during excavation/construction activities. In the event that hazardous materials are discovered, this Procedure should be implemented.

This Procedure has been prepared in accordance with NSW Conditions of Approval (CoA) E89 and E90. This Procedure has been developed in accordance with best practice NSW Environment Protection Authority (EPA) contamination management guidelines and TfNSW specifications.

1.2 Scope of the program

This Procedure is applicable to all activities conducted by site personnel (including sub-contractors) on the Project that have the potential to uncover/encounter contaminated soil/material. This procedure is not applicable to the identification of soils suspected to be contaminated with plant pathogens. This procedure will be implemented throughout the duration of construction of the M12 Motorway West project.

1.3 Induction and training

Where required, all site personnel (including sub-contractors) are to be inducted on the identification of potential contaminated soil/material along with the requirements of this Procedure during inductions and/or regular toolbox talks. Site personnel should be informed of the potential sources of contamination within the Project and indications of contamination in soil and groundwater, such as:

- Odour.
- Discolouration/staining of soils
- Groundwater or surface water sheen
- Evidence of landfilling/discarded drums.

1.4 Roles and responsibilities

The CPBGG JV Environmental Site Representative (ESR) will ensure that this Procedure is effectively implemented, and all site personnel are aware of the requirements of this Procedure.

The CPBGG JV Superintendent will be responsible for ensuring that in the event that contaminated land is discovered, site personnel are informed immediately and all work in the vicinity of the find ceases. The CPBGG JV Superintendent will be advised of any required actions for the control of discovered contamination on site, such as implementation of exclusion zones and signage, and will be responsible for ensuring the actions are undertaken.

The TfNSW Environment and Sustainability Manager (ESM) (or delegate) will liaise with the relevant authorities (such as EPA and a Contaminated Land Specialist) where required, and will approve the recommencement of works following any remediation undertaken.

1.5 Review

This Procedure will be updated by the CPBGG JV and reviewed by the CPBGG JV's Contamination Specialist (if required) and the TfNSW ESM (or delegate) prior to commencement of construction of the Project.

This Procedure will be updated throughout construction of the Project to include any new identified sites of contamination, if required, and subsequent additional management measures. This Procedure will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of the Construction Contaminated Land Management Sub-plan (CCLMP).

2 Procedure

The steps to be followed in the event that contaminated material is encountered during construction are outlined below. Indicators of contamination in soils include:

- Discolouration of the soil, including staining and horizontal layers of discolouration
- Odours from soil
- Oily sheen on water leaving soils.

Step 1. Potential contaminated soil/material encountered during construction activities

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

- **Cease work** in the immediate/affected area
- The CPBGG JV Foreman / Site Supervisor will immediately notify the TfNSW ESM (or delegate) and the Environmental Representative (ER). TfNSW will notify landowners (e.g. Water NSW) where contamination is identified on their land
- Install environmental controls around the site to contain the contaminated material, including diversion of water to minimise potential spread via surface water runoff
- If it is determined that there is a risk of environmental harm from the potential contamination, the EPA will be notified immediately in accordance with the TfNSW Environmental Incident and Classification Procedure (refer to Appendix A7 of the CEMP)
- If it is determined that the contaminated soil/material may contain asbestos containing material, refer to the Asbestos Management Plan (Appendix B of the CCLMP)
- Recommence works in an alternate area where practicable.

Step 2. Environmental management and work health safety management

Prior to any contamination investigation, management or remediation activities, appropriate Safe Work Method Statements (SWMS) and Environmental Work Method Statements (EWMS) will be prepared by the ESR and reviewed by the TfNSW Project Manager,TfNSW ESM (or delegate) an the ER before commencement of works to which they apply.

Personal protective equipment (PPE) will be worn as per the relevant Safety Data Sheet/s (SDS) (where the SDS are available). This may include, but not be limited, to:

- Protective eye-wear (if not wearing a full face mask)
- Face mask
- Steel – capped rubber-soled work shoes or gumboots with no laces or disposable overshoes that have an anti-slip sole for placement over work shoes
- Single use disposable nitrile or latex gloves
- Disposable asbestos coveralls rated type 5, category 3
- Work clothes (i.e. long sleeve shirt/pants and steel capped boots).

Step 3. Undertake Detailed Site Investigation

The ESR will assess the situation and if considered necessary, commission a suitably qualified contamination specialist to undertake a contamination investigation in the area of the find.

The material will be classified in accordance with the *Waste Classification Guidelines* (EPA, 2014).

If necessary, the ESR will liaise with the relevant authorities to determine the appropriate management options. Should the Detailed Site Investigation confirm contamination an assessment will be made by the suitably qualified contamination specialist whether there is a duty to notify the EPA under the Contaminated Land Management Act 1997. Following receipt of this advice, the ESR will inform TfNSW ESM of the duty to notify. The TfNSW ESM is responsible for any notifications required under the *Contaminated Land Act 1997*.

The ESR (in consultation with TfNSW and specialists) will determine the appropriate management measures to be implemented. This may include leaving contamination undisturbed, capping of contamination, treatment or off-site disposal. Material to be disposed of off-site will be transferred to an appropriately licensed waste facility, as outlined in the CWEMP (refer to Appendix B7 of the OCEMP).

If the material is determined to be acid sulfate soil (ASS) or potential acid sulfate soil (PASS), refer to the Construction Soil and Water Management Plan for management procedures relating to ASS or PASS.

Step 4. Remedial action

If the Detailed Site Investigations conclude that the specified land is unsuitable for the final intended use, a RAP will be prepared by a suitably qualified and experienced person. TfNSW have prepared Draft RAPs for M12 West and M12 Central. The Draft RAP for the subject land will be used as a guide to prepare the RAP for remediation of that land. The RAP will be completed in accordance with all guidelines under the CLM Act 1997.

Prior to commencing with the remediation, the RAP and an Interim Audit Advice or a Section B Site Audit Statement from a NSW EPA accredited Site Auditor that certifies that the RAP is appropriate and that the site can be made suitable for the proposed use, will be submitted to the Planning Secretary for information only.

Remedial actions will be incorporated into specific Remedial Action Plans (RAPs). RAPs will be prepared by a suitably qualified and experienced person and in accordance with all guidelines under the *Contaminated Land Management Act 1997*. Where available, the Principals Draft RAP for the subject land will be used as a guide to prepare the RAP for remediation of that land.

Relevant EWMS or SWMS will be reviewed and updated when required.

Step 5. Recommence works

Recommence works once remedial works have been implemented and sampling has validated that the remediation strategy has been successful. Following implementation of the RAP, the CPBGG JV will submit a Section A1 or Section A2 Site Audit Statement and the accompanying Site Audit Report from the NSW EPA accredited site auditor, which states that the contaminated land disturbed by the works has been made suitable for the intended land use, to TfNSW, the Planning Secretary and relevant councils in accordance with NSW CoA E88 no later than one month before the commencement of operations. The TfNSW ESM (or delegate) will grant approval for the CPBGG JV to recommence works upon reviewing the documentation provided.

3 Records

CPBGG JV will maintain a register of any unexpected contamination finds, including a map of all contaminated and/or remediated sites. In addition, records will be maintained of all Site Audit statement / Auditor reviews. The register will be made available to the TfNSW ESM (or delegate) on request for inclusion in Project Monthly Reports.

Appendix B
Asbestos Management Plan
M12 West Motorway

Project number:	N81150
Document number:	M12WCO-CPBGGJV-ML1-CT- PLN-000001_App B
Revision date:	22/10/2024
Revision:	01

Details of Revision Amendments

Document Control

The Project Director is responsible for ensuring that this plan is reviewed and approved. The Project Director is responsible for updating this plan to reflect changes to construction, legal and other requirements, as required.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being distributed / implemented.

Revision Details

Rev	Date	Reviewed By	Details
A	18/02/2022	S. Keomongkhoun	First Draft
B	20/05/2022	G. Bolton	Second Draft following TfNSW/Arcadis review and comment
C	29/06/2022	A. Zvirzdinas	Third Draft following TfNSW/Arcadis review and comment on Rev B
D	19/07/2022	A. Zvirzdinas	Fourth Draft following TfNSW/Arcadis/ER review and comment on Rev C
00	28/07/2020	A. Zvirzdinas	First Controlled Issue
01	22/10/2024	A. Brajlih	Annual Review

Document Review

Position	Name	Signature	Date
Project Director	Nick Fryday		22/10/2024

Distribution of controlled copies

Copy no.	Issued to	Version

Table of Contents

Acronyms and Abbreviations

Abbreviation	Expanded Text
ABN	Australian business number
ACM	Asbestos containing material
AMP	Asbestos Management Plan
ARCO	Asbestos Removal Control Plan
CCLMP	Construction Contaminated Land Management Sub-plan
CPBGG JV	CPB Contractors and Georgiou Group Joint Venture
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EMS	Environmental management system
EPA	NSW Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
ER	Environmental Representative
ESM	Environment and Sustainability Manager (TfNSW)
ESR	Environmental Site Representative (CPBGG JV)
EWMS	Environmental Work Method Statements
km	Kilometres
LAA	License Asbestos Assessor
LTEMP	Long-Term Environmental Management Plan
OCEMP	Overarching Construction Environmental Management Plan
OH	Occupational Hygienist
PPE	Personal protective equipment
Procedure, this	Unexpected Discovery of Contaminated Land Procedure
RAPs	Remedial Action Plans
REMM	Revised Environmental Management Measure
SWMS	Safe Work Method Statements
TfNSW	Transport for New South Wales
WSIA	Western Sydney International Airport

1 Introduction

1.1 Purpose

This Asbestos Management Plan (AMP) has been prepared to document the procedure to be undertaken in the event that potential asbestos containing material (ACM) or actual asbestos is uncovered during construction of the Project, in accordance with REMM SC04. Implementation of this Plan will ensure that asbestos is managed in such a way as to avoid harm to site personnel, visitors and the community.

Asbestos / ACM fragments that are remnant from previous activities may be scattered throughout the Project area or present in existing stockpiled material. Asbestos-contaminated ground may be encountered when undertaking excavation for roadworks and/ or property adjustments at unknown locations. It may also be encountered during demolition works or removal of structures. Disturbance of ground and/or pits associated with utilities creates the potential for exposure to airborne asbestos fibres.

This Plan has been developed in accordance with relevant legislation, NSW Environment Protection Authority (EPA) endorsed guidelines (including the waste guidelines), industry codes of practice, TfNSW draft Asbestos in Soils Management Procedure (TfNSW, 2020) and TfNSW Quality Assurance Specifications.

1.2 Scope

Work involving, or likely to involve the disturbance of asbestos is considered a high risk construction activity. Implementation of this AMP does not replace the need for Environmental Work Method Statements (EWMS) and Safe Work Method Statements (SWMS) for the management of materials containing asbestos. Note that EWMS are required for other high risk activities on the project and it may be that asbestos management measures are also included in another EWMS e.g. earthworks. This AMP is to be implemented for the duration of construction of the M12 Motorway West project.

EWMS will be prepared by CPBGG JV ESR (or delegate) and reviewed by the TfNSW Project Manager, TfNSW ESM (or delegate) and ER before commencement of the construction activities to which they apply.

SWMS will be prepared by CPBGG JV Safety Representative and reviewed by the TfNSW Project Manager and TfNSW ESM (or delegate) before commencement of the construction activities to which they apply.

1.3 Objectives

The key objectives of this Plan are to:

- Provide the procedure for assessment of asbestos / ACM in the Project area
- Maintain accurate records of the location of asbestos in an Asbestos Register
- Avoid or minimise asbestos-related risks by implementing environmental control measures
- Ensure control measures are effectively implemented
- Ensure asbestos removal is performed by a licensed asbestos removalist under the direction / recommendation of an accredited occupational hygienist.

1.4 Induction and training

All site personnel (including sub-contractors) will undertake an induction to ensure that they understand the types and location of ACM / potential ACM on site and control measures and safe work methods before they commence work. Site personnel will be adequately trained to recognise the health risks of asbestos, use of the Asbestos Register, processes and safe work procedures to be followed to prevent exposure and correct use of personal protective equipment (PPE).

Prior to commencement of each shift, or change in shift, the Foreman / Site Supervisor will inform all site personnel of any planned asbestos removal work on site.

A copy of this Plan will be kept at the construction work site where the work is being carried out.

1.5 Roles and responsibilities

All site personnel are responsible for ensuring they are familiar with the Asbestos Register and the locations where asbestos / ACM is identified. Any suspected asbestos / ACM finds will be reported to the Foreman and/or Site Supervisor and the ESR.

Removal of asbestos must be undertaken by the holder of a Class A or Class B Asbestos Removal Licence issued by SafeWork NSW, as required.

A Licenced Asbestos Assessor (a consultant certified under either the Environment Institute of Australia and New Zealand's certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM)) will perform any required air monitoring, clearance inspections and clearance certificates during Class A asbestos removal.

An Occupational Hygienist (appropriately degree qualified and 5-year contaminated land/site assessment/remediation experienced individual) will supervise topsoil stripping activities in accordance with TfNSW Specification R44.

1.6 Review

This Plan will be updated, in consultation with the ESR, and reviewed by the TfNSW Senior Environment Officer (or delegate) prior to commencement of construction of the Project.

This Plan will be updated throughout construction of the Project to document the location of any asbestos / ACM discovered on site and any changes to construction methodologies and subsequent additional management measures. This Plan will be reviewed annually, or as required in accordance with the continuous improvement process described in Section 8 of the Construction Contaminated Land Management Sub-plan (CCLMP).

2 Procedure

2.1 Unexpected asbestos finds procedure

In the event that a person on site identifies or disturbs asbestos / ACM that is not already identified in the Asbestos Register, CPBGG JV (and Subcontractors)will follow all reporting and notification requirements in CEMP Appendix A7 TfNSW Environmental Incident Classification and Reporting Procedure, including notifying the ER.

Asbestos management for both friable and non-friable asbestos, will be undertaken as follows:

Step 1 – Cease works in the area potentially impacted by ACM as soon as it is safe to do so and move to the upwind side of the area, or away from the area.

Step 2 – Assess the potential immediate risk to human health posed by the unexpected find and move away from the area if required.

Step 3 – Delineate an exclusion zone around the affected area using fencing and/or appropriate barriers and signage. Keep soil/ACM damp or covered to minimise / prevent the release of fibres to air.

Step 4 – Notify the CPBGG JV ESR and TfNSW ESM to assess the unexpected find and determine what further assessment and/or remediation works are required. Implement the incident reporting procedure. TfNSW will notify landowners (e.g. Water NSW) where contamination is identified on their land.

Step 5 –ESR in consultation with the Environmental Consultant is to implement the RAP.

Step 6 – NSW EPA accredited auditor to confirm remedial actions have been successful and confirm works may proceed.

2.2 Asbestos removal

Asbestos removal will be undertaken by suitably qualified personnel and/ or subcontractors who are licensed by SafeWork NSW.

2.2.1 Asbestos Removal Control Plan (ARCP)

An Asbestos Removal Control Plan (ARCP) is required to be completed in accordance with *Work Health and Safety Regulation 2017* (Regulation 464). The ARCP will be developed prior to undertaking any asbestos removal works by the nominated license asbestos removalist. The aim of the plan is to outline the specific methods and processes that will be used to ensure the removal is safe and effective.

Additionally, Safe Works Method Statements (SWMS) will also be prepared for individual ACM related activities.

2.2.2 Identification

Friable Asbestos

- Requires Class A License
- Any amount of friable asbestos, ACM, asbestos contaminated dust or debris (ACD) or non-friable asbestos.

Licensed Non-friable asbestos

- Requires class B license
- Greater than 10 metres squared of Non-Friable (bonded) asbestos or ACM
- ACD that is associated with removal to 10 square metres or more of non-friable asbestos or ACM.

Unlicensed Asbestos

- No license required
- 10 meters squared or less of Non–Friable (bonded) asbestos or ACM
- ACD that is not more than a minor contamination and is associated with the removal of 10 square meters or less of non-friable asbestos or ACM.

Asbestos Removal from soil

- May require Class A or Class B license depending on type (Friable or Non-Friable) Asbestos-contaminated soil comprising non-attached pieces of asbestos cement products and other material containing asbestos uncovered in soil.

2.2.3 Notification

Prior to the commencement of licensed asbestos removal works, notification to SafeWork NSW is required. SafeWork NSW requires a minimum of five days' notice prior to the removal of any friable asbestos or greater than 10 metres squared of non-friable asbestos and the notification will include:

- Name, registered business name, Australian business number (ABN), license number and business contact details of the licensed asbestos removalist
- Name and business contact details of the Supervisor who will oversee the removal work
- Client name and contact details
- Name, including registered business or corporate name, of the person with management or control of the workplace
- Workplace address, including specific location if a large workplace
- Kind of workplace where removal work will be performed (workplace type and scope of work)
- Date of notification
- Start date of the removal work and an estimation of how long it will take
- Nature of asbestos to be removed – friable or non-friable
- Type of asbestos, e.g. asbestos-contaminated sheeting, vinyl tiles, lagging, gaskets, etc.
- For friable asbestos (not restricted to soils) the mechanism by which the area will be enclosed
- Estimated quantity of asbestos to be removed
- Number of workers who will perform the removal work and details of their competency to carry out the removal work.
- License Asbestos Assessor (LAA) details and license number engaged to undertake asbestos fibre air monitoring and clearances.

2.2.4 Site Establishment and Signage

The boundaries of the 'Asbestos Works Area' and the 'Asbestos Removal Site' will be determined and defined by the nominated Occupational Hygienist (OH) or Licence Asbestos Assessor (LCC). All stakeholders will agree on the asbestos removal boundaries before any asbestos removal work commences. In determining the asbestos removal boundaries, consideration shall be given to:

- The use and suitability of various types of enclosures and asbestos removal methods; and
- The impacts of the asbestos removal work, including potential exposures in the surrounding region. In determining the distance between barriers and the asbestos work area a risk assessment should take account of:
- Whether the ACM are friable or non-friable
- Activity around the asbestos work area (other workers, visitors, neighbours, the public, etc.)
- The methods of ACM removal
- Any existing barriers (walls, doors, etc.)
- The quantity of ACM to be removed
- The type of barrier used (e.g. boarding or tape).

Protective barricades will be installed to delineate the asbestos related area/s and restrict unauthorised persons from entering the asbestos removal work. The asbestos removal site boundary will be clearly and securely delineated to ensure persons do not enter inadvertently or without authority. Signage may also be installed along construction boundaries of sites adjoining the community. Signage will warn persons that asbestos removal work is being carried out, of the dangers of exposure to asbestos and of PPE and other site entry requirements. Stockpiles will also be covered and labelled.

All boundary delineation and warning/danger signs will remain in place until a clearance to re-occupy has been granted. All warning/danger signage will comply with *AS 1319 Safety signs for the occupational environment*. These signs will be weatherproof, constructed of light-weight material and adequately secured.

Signage and barricades will stay in place until all licensed asbestos removal work is complete and a clearance certificate is provided.

In circumstances where the erection of fencing or barricades is not feasible, such as on concrete hard stand or within a building, tape may be used as a barrier to define an asbestos work area (for some types of asbestos removal work of short duration). If a sign is not feasible, tape with the words 'asbestos hazard' repeated along its length may be used instead to delineate and communicate the hazard.

2.2.5 Removal Methods

The asbestos removalist will use techniques to eliminate or minimise the generation of asbestos fibres so far as reasonably practicable. They will choose the method of asbestos removal that is most effective at minimising fibre release at the source. The removal methods are listed in preferred order:

- Wet spray method – asbestos fibres are significantly suppressed; however, they are not entirely eliminated so the use of respiratory and personal protective equipment is essential
- Saturation and water injection method – used during friable removal
- Dry method - can only be used if the wet spray method is not suitable, for example if there are live electrical conductors or if equipment could be permanently damaged or made dangerous by contact with water.

The following table outlines the typical removal techniques that may be used to remove ACM in soils.

Table 2-1 Removal techniques, applications and limitations

Removal Technique	Applicability and Limitations
Hand Picking	• Suitable for non-friable (bonded) ACM in near surface soils only (i.e. <10 cm) • Raking may enhance removal, although only in sandy soils • Not applicable for friable asbestos • Less effective in areas of dense vegetation
Mechanical Excavation	• Physical excavation of soil containing ACM where impact extends beneath surface soils • Generates larger volume of soil that requires further management (i.e. off-site disposal, screening, spreading and handpicking/tilling)

2.2.6 Personal Protective Equipment

All workers undertaking asbestos remediation work at the site shall be responsible for providing their workers with appropriate PPE to minimise risk of exposure to asbestos. The level of PPE required for asbestos related/asbestos work should be determined by a risk assessment and as outlined in the code of practice and regulations. An outline of some of the types of PPE used as a minimum for asbestos related/asbestos work is outlined below.

Asbestos Removal PPE

The following asbestos removal PPE will be required to be worn by the Licensed Asbestos Removal Contractors during the removal works:

- Minimum of a face fitted P2 respirator or full face P3 respirator for friable removals;
- Disposable coveralls rated Type 5/6;
- Dedicated asbestos removal footwear such as steel capped gumboots or boot covers rated Type 5/6; and
- Disposable gloves.

Coveralls and Boot Covers

Disposable coveralls should be utilised to minimise the risk of asbestos fibres contaminating clothing or under garments during asbestos related/asbestos work. Coveralls rated Type 5/6 or Category 3 (EN ISO

13982–1) are of a suitable standard and should be fitted with elastic hoods, cuffs and anklets to reduce the risk of penetration of asbestos fibres.

If laced boots with eyelets are worn by workers, it is advisable that protective boot covers are worn in tandem with coveralls. Boot covers help ensure asbestos fibres do not contaminate footwear which cannot be easily decontaminated.

Coveralls and boot covers should be used for single use only. Once coveralls and boot covers have been used, they should be treated as asbestos contaminated waste.

Respiratory Protective Equipment (RPE)

The selection of suitable RPE depends on the nature of the asbestos work, the probable maximum concentrations of asbestos fibres to be encountered and any personal characteristics of the wearer that may affect the facial fit of the respirator (facial hair and glasses etc.).

The level of respiratory protection (or supplied air respirators) should be determined by a competent person and must meet the requirements of AS/NZS 1716:2012 Respiratory Protective Devices or its equivalent.

Fitted respirator masks should be decontaminated and stored in a suitable and clean location between each use.

Any respirators used must be face fitted to the individual and evidence of the quantitative face fit provided with the contractor's safety documentation.

All operatives required to wear respirators must be cleanly shaven to ensure a suitable seal.

Gloves

Disposable latex or nitrile gloves should be worn when handling asbestos or working around asbestos. Gloves should be single use only and disposed of as asbestos waste once used.

General Site PPE

Other site-specific PPE may be required. These are to be outlined within the ARCP induction undertaken prior to asbestos remedial works commencing.

- Hard hat;
- Safety boots;
- Gloves;
- Hi-vis long sleeve shirt and pants;
- Glasses; and
- Anything else as noted in SWMS

2.2.7 Air Monitoring

Asbestos fibre air monitoring and fibre counting must be undertaken by a NATA accredited laboratory in accordance with the NOHSC:3003(2005) and ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories.

All air monitoring will be conducted by licensed asbestos assessor (LAA) in accordance with the requirements outlined. The location and layout of the air monitors will be determined following review of the ARCP, asbestos assessments and stakeholder engagement. Air monitoring requirements will vary depending on the type of asbestos being removed, the location and position of the asbestos. The following rules should be applied when determine if air monitoring is required (extract from *Safe Work Australia – Code of Practice on How to Safely Remove Asbestos* (2019):

- For friable asbestos removal – Air monitoring is mandatory for all friable asbestos removal. This includes prior to dismantling an enclosure and for the purposes of the clearance inspection.
- For more than 10 m² of non-friable asbestos removal – Air monitoring is not required but may be considered to be carried out by an independent licensed asbestos assessor or competent person to ensure compliance with the duty to eliminate or minimize exposure to airborne asbestos and to ensure the exposure standard is not exceeded
- Public Location – Air monitoring should be considered where the asbestos removal work is being undertaken in or next to a public location

- Exposure air monitoring – Air monitoring should be carried out at other times to determine a worker's exposure to airborne asbestos if, based on reasonable grounds, there is uncertainty as to whether the exposure standard may be exceeded and a risk assessment by a competent person indicates it is necessary. Since most uses of asbestos are prohibited, exposure monitoring should not be required frequently.

Air monitoring may be required when:

- It is not clear whether new or existing control measures are effective
- There is evidence (for example, dust deposits are outside the enclosure) the control measures have deteriorated as a result of poor maintenance
- Modifications or changes in safe work methods have occurred that may adversely affect worker exposure
- There has been an uncontrolled disturbance of asbestos at the workplace.

Air monitoring samples must be analysed by a NATA accredited laboratory within 24 hours of the collection of the sample and preferably on the same day. Once air monitoring results have been obtained by the LAA, the results will be communicated to the ESR, TfNSW ESM and the Licensed Asbestos Removal Contractor undertaking the works.

The LAA must be affiliated with a NATA accredited laboratory and competent to conduct sample collection for asbestos fibres. Competent includes formal training on the procedures for collecting samples for asbestos fibres and the implementation of a suitable procedure. Particular attention is made to ensuring volume measurement has been completed in accordance with the requirements.

In accordance with the NSW Code of Practice: How to Safely Remove Asbestos 2019, the current detection limit and clearance standard for airborne fibres is <0.01 fibres/mL (<0.01 f/mL). If results are less than the clearance standard, then the existing control measures will be considered adequate.

Should elevated results be obtained, the actions as set out in Table 2-2 must be followed.

Table 2-2 Exposure standards for asbestos as set out in the National Code of Practice: How to Safely Remove Asbestos

Action level (fibres/mL)	Control/action
Less than 0.01	Continue with current control measures
Greater than and equal to 0.01 and less than or equal to 0.02	Review control measures; investigate the cause and implement controls to eliminate or minimise exposure and prevent further release.
Greater than 0.02	Stop removal work, notify the regulator together with air monitoring results by phone followed by fax or written statement. Investigate the cause by conducting a visual inspection of enclosure (if used) and associated equipment in consultation with all workers involved. Implement controls to eliminate or minimise exposure and prevent further release by extending the isolated/barricaded area around the removal area/enclosure as far as reasonably practicable until fibre levels are at or below 0.01 fibres/ml. Wet wipe and vacuum surrounding area and seal any identified leaks. Smoke test the enclosure until it is satisfactorily sealed. Recommence work once further air monitoring confirms fibre levels are at or below 0.01 fibres/ml.

2.2.8 Clearance

Following removal of asbestos / ACM, the licensed asbestos removalist will arrange for a clearance inspection of the area to facilitate the issue of a clearance certificate and allow construction to recommence in the affected area. The clearance inspection is conducted by:

- An independent licensed asbestos assessor, for work that was carried out by a Class A licensed asbestos removalist
- An independent competent person, for asbestos work that is not required to be carried out by a Class A licensed asbestos removalist.

To be independent, the licensed asbestos assessor must not be involved in the removal of asbestos for that specific job and is not involved in a business or undertaking involved in the removal of the asbestos for that specific job.

A clearance certificate will be issued if the independent licensed asbestos assessor or competent person is satisfied that the asbestos removal area and the immediate area are free from visible asbestos contamination. Entry to the area will be permitted following confirmation of certification.

Note, should the clearance inspection be unsuccessful, meaning that ACM or debris remains, the LAA is to instruct the Class-A Contractor to return and undertaken further remediation until the area can be visually cleared. Decontamination

Decontamination applies to all workers exiting the asbestos work area, all plant, equipment and tools used in the asbestos work area (at the completion of the asbestos work or at their earlier removal from the area) and, at the completion of the asbestos removal work, the asbestos work area itself.

The methods used for decontamination are based on the Code of Practice How to Safely Remove Asbestos 2019.

Decontamination of personnel

Personal decontamination will be undertaken each time workers leave the asbestos work area except in extreme emergencies. Personal decontamination shall be done within the asbestos work area in a location where re-contamination cannot occur. This area should be at the entry/exit interface of the site so that workers have to pass through.

Asbestos-contaminated PPE must not be transported outside the asbestos work area except for disposal purposes, after being appropriately decontaminated.

Respiratory protective equipment must be used until all contaminated disposable coveralls and clothing has been vacuum cleaned and/or removed and bagged for disposal, and personal washing has been completed.

Any PPE used while carrying out asbestos work must not be taken home.

Personal hygiene and careful washing are essential. Particular attention shall be paid to the hands, fingernails, face and head.

All contaminated materials, including cleaning rags, plastic sheeting and PPE etc., must be disposed of as asbestos waste.

Decontamination of re-useable PPE

PPE that is to be re-used for asbestos removal work, e.g. boots, helmets, non-disposable respirators, must be fully dismantled and cleaned in a suitable asbestos work area and placed in sealed containers that are labelled ‘For asbestos removal work only’. Before removal from the asbestos work area the containers must be decontaminated by vacuuming and/or wiping down with wet cloths. This retained PPE must only be used for asbestos removal work.

Decontamination of plant, equipment and tools

Plant, equipment and tools that are engaged to work within asbestos work areas must be clearly identified during the procurement stage. Providers of plant and equipment to be used in the asbestos work area are to be advised in writing that the plant is required to work within this area. Plant requirements in regard to the operator’s cabin air conditioning and air pressurising system filters and other internal combustion engine air filters must be communicated in writing with clear procedures documented on maintenance and decontamination.

After the asbestos removal work is complete, plant equipment and tools must be decontaminated. Any warning tag fitted to plant in respect to the decontamination of air filters must be removed after the contaminated filters have been removed and replaced with new filters for use outside of the asbestos work area.

At the end of the asbestos removal work, all tools should be:

- Decontaminated (i.e. fully dismantled and cleaned) in a suitable asbestos work area; and
- Placed in sealed containers that are labelled ‘For asbestos removal work only’ (and used only for asbestos removal work); or
- Disposed of as asbestos waste.

Procedures for the decontamination of plant and equipment will be outlined in the stage-specific AMP identifying processes that will be implemented onsite. These procedures may include details for the capture and disposal of water should the hosing down of equipment be required and measures to decontaminate tracks and wheels to minimise the potential of cross contamination.

2.2.9 Waste Disposal

Asbestos waste will be disposed of as soon as reasonably practicable. Temporary storage of minor amounts of ACM in a designated bin may be required before disposal can occur. Asbestos waste will be disposed at a waste disposal site in accordance with NSW EPA guidelines (including *Waste Classification Guidelines* (EPA, 2014)) and relevant industry codes of practice. Disposal of ACM will be to an approved asbestos waste facility listed on the NSW EPA website (http://www.epa.nsw.gov.au/waste/asbestos/).

ESR (or delegate) will notify the TfNSW Environment and Sustainability Manager (or delegate) and TfNSW Project Manager at least 24 hours prior to removal of ACM from site and will provide details of the proposed method and location of disposal.

All ACM materials disposed offsite will be recorded on the waste tracking form(s) and documented within the project waste management register. Additionally, asbestos weighing more than 100 kilograms or consisting of more than 10 square metres of asbestos sheeting in one load will be tracked using the NSW EPA Waste locate system.

Asbestos waste transported by trucks

The transportation of asbestos waste by trucks must comply with the following requirements;

- Transporter must have the appropriate EPA license to transport asbestos waste
- Asbestos contaminated soils are wetted down
- Any part of any vehicle in which a person transports asbestos waste is covered, and leak proof during transportation
- Bonded asbestos materials must be securely packaged during transportation
- Friable material is kept in a sealed container during transportation.

2.2.10 Encapsulation

Encapsulation means that ACM is encapsulated under the pavement (kerb to kerb) on the project site.

Encapsulation involves the placement of impermeable barriers below, around and covering the ACM impacted material to isolate it from being a potential pathway of exposure. This barrier is typically comprised of non-woven geotextile and is used to separate ACM-impacted material from the clean materials used to construct the covering layer. Geotextile materials should be of a high visibility colour to provide a warning of underlying ACM contamination. The geotextile selected may also need other properties, depending on its application (e.g. increased tensile strength, permeability, chemically inert etc.).

Encapsulation of ACM minimises the need to dispose of the material off site. Encapsulation of ACM on site will be determined by the Project nominated Geotechnical Engineer and ESR.

Construction of any encapsulation will be completed under a Remedial Action Plan (RAP) prepared by a certified Contaminated Land Specialist. Completion of the remediation work and validation of the work is required to be in accordance with the RAP.

Validation will include, but not limited to:

- Survey of the encapsulation
- Photos to show geofabric layers
- Validation of the thickness and quality of covering layer(s).

The location and method of ACM encapsulation on the Project will:

- Consider the nature of material with ACM e.g. topsoil, general fill, mixed with other materials (asphalt, concrete) and affecting suitability for reuse under the pavement
- Be at a depth of emplacement to minimise risk of pavement failures and impact on underground utilities

- Be in an area free of drainage structures and utilities which will require maintenance
- Be in an area off line to the critical path of road construction
- Be where excavation can be undertaken relatively easily
- Allow easy access for maintenance, inspection and revegetation work
- Avoid additional clearing or impact on threatened species or EECs
- Minimise flood risk
- Not impact on groundwater sources
- Be removed from sensitive receivers.

Prior to on site encapsulation of ACM, a Long-Term Environmental Management Plan (LTEMP) will be prepared to detail the encapsulation, in consultation with relevant statutory authorities and agencies. The LTEMP will be approved by the NSW EPA accredited site auditor. Any required approvals will be obtained. LTEMP will be submitted, including details of consultation undertaken during its development and copies of any applicable statutory documentation, to the TfNSW Environment and Sustainability Manager (or delegate) for approval at least four weeks prior to on site encapsulation of ACM. The TfNSW ESM (or delegate) will assess the proposed encapsulation plan for consistency with TfNSW specifications and other requirements.

The LTEMP will include at minimum:

- Details regarding final location and capping thickness of the completed ACM encapsulation sites. Location details is to include proximity markers from features (e.g. proximity from structures, stormwater, services or other features) to clearly identify the position of the encapsulation on site
- As built drawings of the completed ACM encapsulation sites and certification that the encapsulation has been undertaken in accordance with these drawings. Certification to include signed or stamped works-as-executed drawings or similar
- Procedures associated with maintenance and monitoring (including a maintenance and inspection schedule) of the completed ACM encapsulation sites.

2.2.11 Community notification

Notification to the community for asbestos related works will be consistent with statutory requirements. Adjacent sensitive receivers may be notified based on the risk.

3 Monitoring, reporting and records

3.1 Monitoring

The ESR may recommend that, as a precaution during asbestos removal works, continuous asbestos fibre monitoring be carried out at the perimeter of the area, and if deemed necessary, personal exposure asbestos fibre air monitoring for workers in area.

During the remedial works, air monitoring for respirable fibres may be conducted on each of the project area boundaries (i.e. areas with potential asbestos impact, stockpile site and placement site), to be defined at the commencement of site remediation works, for the duration of the works. Additional downwind monitoring locations will be included in the monitoring program, as required.

Air monitoring will be conducted by a NATA accredited facility in accordance with the requirements of the *National Occupational Health and Safety Commission* (*NOHSC) Asbestos Code of Practice and Guidance Notes, in particular, the Guidance note for the estimation of Airborne Asbestos Fibres* (2nd Edition) [NOHSC 3003 (2005)]. Monitoring will also be undertaken in accordance with *How to Safely Remove Asbestos Code of Practice* (Safe Work Australia, 2019).

3.2 Reporting

Any asbestos finds will be reported by the ESR to the TfNSW ESM (or delegate) and the EPA in accordance with the Environmental Incident Classification and Reporting Procedure (refer Appendix A7 of the CEMP).

3.3 Asbestos register

An Asbestos Register will be maintained to document all identified or potential asbestos-containing material in the Project area. The Asbestos Register will contain the following information:

- Identification of any potential or asbestos-containing material
- Location, type and condition of the asbestos-containing material
- Date when the asbestos was identified
- Labelling of the asbestos
- Maps, photographs or diagrams detailing the location of the asbestos within the Project area.

The Asbestos Register will be made available to the TfNSW ESM (or delegate) on request for inclusion in Project Monthly Reports.

Attachment 1: Asbestos management feasibility screening assessment

This encapsulation screening assessment evaluated whether it is feasible that ACM impacted materials be encapsulated under road structures or other permanent structures on the Project site. If it is feasible to encapsulate ACM, then subsequent cost assessment (Attachment 2) must be completed to assess whether the proposed encapsulation should be approved.

Factors for Consideration	Yes/No	Comments to support response
Is there opportunity to encapsulate ACM under the road pavement structure or another approved structure?		
Is the volume of ACM greater than 1000 m^3? (Encapsulation of less than 1,000 cubic metres of ACM on any Project site is unlikely to be cost effective on a whole-of-life basis)		
Is there sufficient time and opportunity within the Project program and staging to effectively manage ACM in an encapsulation?		
Is the proposed encapsulation location located so that it will not impact or cause concern to external stakeholders (including adjoining landowner/community, local Council or NSW EPA)		
Are concentration of other potential chemicals of concern assessed as suitable for the proposed encapsulation?		
Is the proposed encapsulation above the potential highest level of the groundwater table?		
Is the proposed encapsulation located away from current or future areas of underground services?		
Is the proposed encapsulation located in an area that is not impacted by acid sulfate soils?		

Is the answer to all of the questions 'Yes'?

- Yes If 'Yes' the encapsulation option is considered feasible for this Project. Proceed with the Whole-of-life Cost Assessment (Attachment 2).
- No If 'No', the encapsulation of ACM is not considered an appropriate option for this Project.

Assessment prepared by: CPBGG JV Environmental Site Representative	**Assessment reviewed by: TfNSW Environment and Sustainability Manager**
Name:	**Name:**
Signature:	**Signature:**
Date:	**Date:**

Attachment 2: Asbestos management cost and feasibility assessment

Any proposed ACM encapsulation must be demonstrated to provide whole-of-life cost savings to the NSW Government and the community. To support management option approval cost estimates should be developed to enable a comparison of each option. The table below provides guidance on the elements to be considered for each option.

Cost estimate considerations	
• Initial assessment costs to assess the extent of asbestos impacts (professional fees and laboratory costs) • Plant and labour to excavate, stockpile and haul asbestos • Haulage costs • Disposal costs • Landfill levy • Purchase materials to reinstate remediation excavation (if required) • Labour and plant to reinstate remediation excavations (if required) • Professional services to manage WHS risks (asbestos assessors, air monitoring and reporting).	• Initial assessment costs to assess the extent of asbestos impacts (professional fees and laboratory costs), preparation of containment strategy and approvals, and NSW EPA Site Auditor review • Plant and labour to excavation, and stockpile/segregate materials • Haulage costs • Labour and plant to place asbestos impacted soil in designated area • Purchase materials to cover buries asbestos impacted materials (e.g. clean fill, geotextile, other) • Professional services to manage WHS risks, during works (asbestos assessors, air monitoring and reporting), and prepare validation report/EMP • Site management costs over longer term (e.g. periodic inspection, maintenance of capping layer, etc). Costs to be presented in net present value.