Appendix B5

Construction Contaminated Land Management Sub-plan

M12 Motorway – Central

January 2025

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Document control

File Name	M12 Central CEMP: Appendix B5
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Approval and authorisation

Plan reviewed by:	Plan reviewed by:
[redacted] Seymour Whyte Environmental Site Representative	[redacted] Seymour Whyte Project Manager
18/01/2025	18/01/2025
	

Revision history

Revision	Date	Description
A	18/02/2022	First draft for TfNSW review
B	29/04/2022	Updated in response to TfNSW review
C	20/06/2022	Updated in response to TfNSW review
D	27/07/2022	Update in response to TfNSW and ER review
E	14/08/2023	Updated in response to OCEMP review
F	18/01/2025	Updated in response to OCEMP review

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Glossary / Abbreviations

Term	Expanded text
ACM	Asbestos containing material
AEC	Areas of environmental concern
AEI	Area of Environmental Interest
AMP	Asbestos Management Plan
AR	Amendment Report
ARSR	Amendment Report Submissions Report
ASS	Acid Sulfate Soils
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CA	Consistency Assessment
CCLMP	Construction Contaminated Land Management Sub-plan
CCS	Community Communication Strategy
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	Condition of approval
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
Construction	Includes all activities required to construct the CSSI as described in the documents listed in Condition A1, including commissioning trials of equipment and temporary use of any part of the CSSI, but excluding Low Impact Work which is carried out to complete prior to the approval of the OCEMP, works approved under a Site Establishment Management Plan, demolition of acquired residential houses, structures and sheds, and works specified in Appendix B of the Infrastructure Approval and approved under an environmental management plan(s) in accordance with Condition A24.
Commonwealth CoA	Federal Conditions of Approval under the EPBC Act

Term	Expanded text
CoPC	Contaminants of Potential Concern
CPSS CSAM	Certified Professional Soil Scientist Contaminated Site Assessment and Management
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
DPI	Department of Primary Industries
DPE	Former Department of Planning and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly NSW DPE which has now been split into NSW DCCEEW and NSW DPHI)
Detailed Site Investigations	Has the same meaning as Stage 2 Site Contamination Assessment
EAD	Environmental Assessment Documentation
EIL	Ecological Investigation Levels
EIS	Environmental Impact Statement
EMS	Environmental Management System

Term	Expanded text
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 Change 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*
EPBC Act	*Environment Protection and Biodiversity Conservation* Act *1999*
EPL	Environmental Protection License
ER	Environmental Representative
ERG	Environmental Review Group
ESL	Ecological Screening Levels
ESM	TfNSW Environment and Sustainability Manager
ESR	Environmental Site Representative (Seymour Whyte)
EWMS	Environmental Work Method Statement
FCC	Fairfield City Council

Term	Expanded text
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.
LBP	Lead based paint systems
LCC	Liverpool City Council
LCD	Lead containing dust
LTEMP	Long Term Environmental Management Plan
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 the 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
OCCLMP	Overarching Construction Contaminated Land Management Sub-plan
OCSWMP	Overarching Construction Soil and Water Management Sub-plan

Term	Expanded text
OCWRMP	Overarching Construction Waste and Resources Management Sub-plan
OCP	Organochlorine Pesticides
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	The CSSI as approved by Minister for Planning and Public Spaces on the 23 April 2021 (SSI 9364)
QA	Quality assurance
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
SMF	Synthetic mineral fibres
SWMS	Safe Work Method Statement
TfNSW	Transport for New South Wales
TRH	Total Recoverable Hydrocarbons
UXO	Unexploded ordnance

Term	Expanded text
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 Motorway - Central Package.

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

1.2 Background

1.2.1 M12 Motorway (the Project)

Transport for New South Wales (TfNSW) is planning to construct and operate the M12 Motorway (the Project) to provide direct access between the Western Sydney International Airport (WSIA) at Badgerys Creek and Sydney's motorway network. The M12 Motorway will run between the M7 Motorway at Cecil Hills and The Northern Road at Luddenham for about 16 kilometres (km) and is expected to be opened to traffic prior to opening of the WSIA.

Key features of the Project include:

- An east-west 16 km motorway between the M7 Motorway, Cecil Hills and The Northern Road, Luddenham
- A motorway built for four lanes (with provision for up to six lanes) with a median to separate opposing traffic flows
- A direct connection to Western Sydney International Airport
- A new connection to The Northern Road with traffic lights
- A motorway-to-motorway interchange at the M7 Motorway
- Provision for a future interchange connecting Mamre Road and Devonshire Road at the M12 Motorway.

A detailed Project description is provided in Section 2.1 of the CEMP.

1.2.2 Statutory Context

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 Australian Minister for the Environment.

The Project was assessed as part of an EIS, Submission Report, Amendment Report, ARSR and ARSR Amendment Report which are herein referred to as the Environmental Assessment Documentation. REMMs are nominated in these assessments to manage the identified impacts.

Approval for the Project under the EP&A Act was granted by the Minister for Planning on 23 April 2021 (CSSI 9364). Approval for the Project under the EPBC Act was granted by the Australian Minister for the Environment on 3 June 2021 (EPBC 2018/8286).

The following additional assessments have since been undertaken:

- Two Consistency Assessments (CA) for M12 West and Central addressing detailed design changes for the Project construction boundary approved in October 2021
- Sydney Water Consistency Assessment related to construction boundary extensions associated with Sydney Water utility crossings; approved in June 2022
- Design Boundary Change Consistency Assessment related to design boundary changes within the M12 alignment. This required an extension of the construction footprint and operational footprint, property adjustments and the demolition of Building No.1 at McMasters Field Station; approved in July 2022. Threatened Species Surveys were also undertaken along the M12 alignment between September and December 2021 to satisfy the NSW Conditions of Approval (CoA) E4, E5 and E6; the outcomes of which captured within the Design CA.
- Minor Consistency Assessment required amendments to the construction footprint as a result of utility adjustments and tie in works, property adjustments for flood alleviation and improvements to ancillary facility access due to safety concerns, temporary widening of Elizabeth Drive and signage installation; approved in August 2022.
- M12 Central Water Tower Access Road Minor Consistency Assessment addressed changes to the construction boundary to facilitate the construction of concrete slabs over the Sydney Water main, the construction of a temporary access road to the existing water town and radar tower, and the subsequent reinstatement of this temporary access road to pre-construction conditions; approved in January 2024.

1.2.3 M12 Motorway Delivery Strategy

The Project will be constructed in three separate stages under separate construction contracts:

- **M12 West**– between The Northern Road, Luddenham and about 250 metres east of Badgerys Creek
- **M12 Central** (the subject of this Plan) – between about 500 metres west of South Creek and the Western Sydney Parklands at Duff Road, Cecil Park
- **M12 Central (Temporary Roundabout)** – temporary roundabout installation at Elizabeth Drive and Devonshire Road, Kemps Creek
- **M12 East** – (as part of the M7/M12 Integration Project)
  - Elizabeth Drive Connections (EDC) – a two-kilometre section from Duff Road to about 300 metres east of the M7 Motorway
  - M7/M12 Interchange – –An interchange between the M12 Motorway and M7 Motorway and tie-in works for approximately four kilometres on the M7 Motorway

Each package of work is to be delivered under separate contracts on behalf of the proponent TfNSW. While the packages will commence at different times there will be periods during which the packages works will overlap. Co-ordination between the contractors will be required to manage cumulative impacts.

1.3 M12 Central

Seymour Whyte has been engaged to deliver the M12 Central package. Construction of the M12 Central package involves building 7.5 km of motorway from west of Badgerys Creek to the Water Tower Access Road within Western Sydney Parklands.

The M12 Central package will provide a dual carriageway with a wide median to allow for future widening to six lanes. Safety barriers will be provided along the length of the package. Emergency stopping bays and emergency crossovers will also be provided at regular intervals. A shared user path with lighting will provide an active transport link along the motorway and eastward to the M7.

The M12 Central package includes the following bridges:

- Twin bridges over South Creek
- A bridge for Clifton Avenue over the M12 Motorway
- Twin bridges over Kemps Creek
- Twin bridges over Elizabeth Drive near Mamre Road
- Twin Bridges over Range Road
- A bridge for the Water Tower Access Road over the M12 Motorway
- A private property access bridge in University of Sydney land.

Retaining walls will be provided around Range Road to help limit Project impacts on Range Road. Adjustments will be made to local roads including Clifton Avenue and Salisbury Road.

The M12 Central package also requires relocation of utility services including electricity, water, gas and telecommunications. Urban design features of this package include Aboriginal artwork on bridges, rest areas on shared user paths, interpretive signage and landscape planting.

A detailed description of the M12 Central package is provided in Section 2.3 of the CEMP.

1.4 Scope of the plan

The scope of this CCLMP is to describe how the potential contamination impacts will be managed during construction of the M12 Central package. This Plan has been prepared under and consistent with the OCEMP, and in particular the Overarching Construction Contaminated Land Management Sub-Plan (OCCLMP) considering the exiting contamination and construction activities, the overarching Unexpected Contaminated Land Finds Procedure and the overarching Asbestos Management Plan. In the preparation and ongoing implementation of this Plan, SMART (Specific, Measurable, Achievable, Realistic and Timely) principles are to be considered and applied.

In accordance with the OCCLMP, this Plan 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). It is noted that management of acid sulphate soils (ASS) and soil salinity is discussed in the CSWMP.

This Plan is applicable to all activities during construction of the M12 Central package, including all areas where physical works will occur or areas that may be otherwise impacted by the construction works, and under the control of Seymour Whyte. All Seymour Whyte staff and sub-contractors are

required to operate fully under the requirements of this Plan and related environmental management plans, over the full duration of the construction program.

A copy of this CCLMP will be kept on the premises for the duration of construction.

Operational contamination impacts and operation measures do not fall within the scope of this CCLMP and are therefore not included within the processes contained within the CCLMP.

1.5 Environmental Management Systems overview

The Environmental Management System (EMS) for the M12 Central package is described in Section 3 of the CEMP. The EMS is consistent with the overarching EMS described in Section 3 of the OCEMP.

To achieve the intended environmental performance outcomes, Seymour Whyte have established, implemented, maintained and continually improved an EMS in accordance with the requirements of ISO14001:2015. The Seymour Whyte EMS will be adopted as the guiding environmental management framework for the M12 Central package.

The EMS consists of governance documentation, incorporating environmental management plans, policies, procedures and tools including:

- **M12 Central Environment and Sustainability Policy**. Outlines the commitments and intentions established by Seymour Whyte to ensure environmental performance and sustainability objectives and targets are achieved (Appendix A3 of the CEMP)
- **CEMP**. Details the processes and procedures to be implemented during the M12 Central package to comply with applicable CoA, REMMs, Environment Protection Licence (EPL), legislative obligations and contractual requirements. The relevant compliance obligations are detailed in Appendix A1, with a cross reference to where they are met in this Plan
- **Environmental Management Sub-plans**. These documents describe procedures and controls for specific environmental aspects requiring more rigorous management strategies
- **Monitoring Programs**. Details the monitoring regime to be implemented during construction to compare the actual performance of construction against the objectives outlined in the relevant Plan, including setting specific triggers and associated responses
- **Sensitive Area Plans (SAPs)**. A series of maps providing key features of the alignment and relevant environmental constraints. Features include waterways, heritage, biodiversity contamination and sensitive receivers amongst other site relevant features.
- **Environmental Work Method Statements (EWMS)**. Management measures identified in this Plan 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 incorporate appropriate mitigation measures and controls and identify key procedures to be used concurrently with the EWMS. Construction personnel undertaking a task governed by an EWMS must undertake the activity in accordance with the mitigation and management measures identified in the EWMS. See Section 3.3.3 of the CEMP for details of the EWMS preparation and approval requirements
- **Procedures, strategies and protocols**. Detailed procedures for inclusion in work packs.

Management measures identified in this Plan 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 CSWMP and ESCPs.

EWMS will be prepared for the following activities relating to contaminated land management:

- Topsoil stripping including temporary stockpiling and disposal of excavated material and protocols for the management of materials containing asbestos
- Management of materials containing asbestos
- Any other high risk activities identified in the Seymour Whyte's environmental risk workshops.

EWMS must be submitted to TfNSW for approval prior to the commencement of the nominated works in accordance with TfNSW QA Specification G36 Hold Point 3.2.4 (refer to Section 7.4). A register of EWMS will be maintained in Appendix A5 of the CEMP. A template EWMS is provided in Appendix A8 of the CEMP.

1.5.1 CCLMP preparation, endorsement and approval

The OCCLMP has been prepared to satisfy the NSW CoA in relation to contaminated land during construction of the Project, particularly NSW CoA C4(d) and subsequently approved by the Planning Secretary. This stage-specific CCLMP for the M12 Central package has been developed under and consistent with the approved OCCLMP.

This CCLMP was be reviewed by the TfNSW Environment and Sustainability Manager (ESM) (or delegate) and the independent Environmental Representative (ER) to confirm they are consistent with, and incorporate, all relevant elements of the approved OCEMP, prior to submission to the Planning Secretary for information. Construction of the M12 Central package was not commenced until the CCLMP were accepted by the ER and provided to the Planning Secretary for information.

1.5.2 Interactions with other management plans

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

- Site Establishment Management Plan (SEMP), which identifies adjacent residential and other receivers. The SEMP includes details of site-specific soil and water management requirements
- M12 Central Communication and Stakeholder Engagement Strategy which has been developed under the Overarching Communication Strategy (OCS), which details procedures and processes for community notification, consultation and complaints management
- The Construction Soil and Water Management Plan (CSWMP), which addresses the management of acid sulphate soils, 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), which provides a framework for waste management.
- Safety Management Plan, which addresses safety risk management including safety of construction workers when working with hazardous substances / contamination / contaminated land
- M12 Central Sustainability Management Plan which has been developed under the overarching Project Sustainability Strategy which sets out a framework covering energy management, workforce travel, resource use and procurement.

1.6 Consultation

The OCCLMP has been prepared in consultation with the following government agencies and stakeholders in accordance with NSW CoA C4(d): DPI Water; Water NSW; Penrith City Council; Liverpool City Council; and Fairfield City Council.

Key matters raised by stakeholders and how they have been addressed are outlined in the OCCLMP including consultation evidence in accordance with NSW CoA C4 and A5. This stage-specific CCLMP has been prepared under and consistent with the OCCLMP and therefore no further consultation is required as part of the preparation of this Plan.

Ongoing consultation between TfNSW, Seymour Whyte, neighbouring Project packages, other construction projects, stakeholders, the community and relevant agencies regarding the management of impacts on contaminated land will be undertaken during the construction of the M12 Central package 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 the M12 Central Communication and Stakeholder Engagement Strategy.

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 Seymour Whyte for the identification and management of contaminated land during construction for the M12 Central package.

This CCLMP only provides the management of contaminated land during construction. Nonetheless, Seymour Whyte is responsible to complete the construction works in a manner that prevents contamination of land resulting from construction activities. The CSWMP provides information is relating to the prevention of land contamination resulting from the M12 Central construction works.

2.2 Objectives

The key objective of this CCLMP is to prevent pollution of soil and water resources resulting from contaminated land during construction of the M12 Central package. To aid in achieving this objective all CoA, REMMs and licence/permit requirements relevant to contaminated land are described, scheduled and assigned responsibility as outlined in:

- Environmental Assessment Documentation
- Infrastructure Approval CoA (SSI 9364)
- Environment Protection Licence
- TfNSW Quality Assurance (QA) Specifications
- TfNSW Sustainability Strategy 2019-2023
- 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	Seymour Whyte's register of contaminated sites Register of Environmental Incidents Construction Soil and Water Monitoring Program (CSWMP Appendix B)
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

In accordance with NSW CoA A7, references in the terms of this Plan to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of the Infrastructure Approval (CSSI-9364).

3.1 Relevant legislation, guidelines,

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:

- *A Framework for Assessing the Sustainability of Soil and Groundwater Remediation* (SuRF 2009)
- *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)
- Environmental Procedure "Management of Wastes on Roads and Maritime Services Land" (TfNSW 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)

- *TfNSW Environmental Incident Procedure (EMF-13-PC-0001) (2021)*
- *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*
- *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).

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 Central - Detailed Design Remedial Action Plan M12CDD-GHDA-ALL-CT-RPT-000013 (GHD, 2021)
- M12 Motorway Central - Detailed Design Contamination Investigation Report M12CDD-GHDA-ALL-CT-RPT-000010 (GHD, 2021)
- M12 Motorway Central – Detailed Design Acid Sulphate Soils And Salinity Management Plan M12CDD-GHDA-ALL-GE-PLN-000011 (GHD, 2021)
- M12 Motorway Central – Detailed Design Hazardous Building Material Survey M12CDD-GHDA-ALL-RM-RPT-000002 (GHD, 2021)
- Department of Primary Industries advice regarding Residual risks associated with Salmonella Enteritidis on the portion of land acquired by Transport NSW at 146B Clifton Avenue, Kemps Creek 2178 (ref: CM9OUT21/10535), dated 3 August 2021
- M12 Motorway – Detailed Design, Hazardous Building Materials Assessment M12CDD-GHDA-ALL-RM-RPT-000002 (GHD, 2021)
- M12 Motorway–Detailed Design Creek sediment contamination assessment M12CDD-GHDA-ALL-CT-RPT-000015 (GHD, 2021)

- M12 central portion landfill gas monitoring report (Document number M12CDD-GHDA-ALL-CT-RPT-000014)
- All specific contamination reports prepared by TfNSW and issued during the RFT phase.

3.2 Sustainable remediation criteria

'*Sustainable remediation*' refers to a remediation solution selected through the use of a balanced decision-making process that demonstrates, in terms of environmental, economic and social indicators, that the benefit of undertaking remediation is greater than any adverse effects. A Framework for Assessing the Sustainability of Soil and Groundwater Remediation (SuRF 2009) incorporates sustainable development criteria in soil and groundwater remediation decisions.

A range of techniques are available to undertake a sustainability assessment in accordance with the SuRF (2009) from simple qualitative approaches to semi-quantitative multi-criteria analysis and monetised cost-benefit analysis. The assessment methods measure the benefits and disbenefits in to identify:

- Whether the overall benefits (of remediation) exceed the overall costs of doing the work
- For those methods where the overall benefits exceed the overall costs, the method or methods that offer the maximum overall benefit.

For the contamination that has been considered in the M12 Central package, the following qualitative sustainability hierarchy will be applied:

1. If practicable, on-site treatment of the contamination so that it is destroyed, or the associated risk is reduced to an acceptable level
2. Off-site treatment of excavated soil, so that the contamination is destroyed, or the associated risk is reduced to an acceptable level, after which soil is returned to the site
3. Consolidation and isolation of the soil on site by containment with a properly designed barrier
4. Removal of contaminated material to an approved site or facility, followed, where necessary, by replacement with appropriate material
5. Where remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

Options 1 to 3 apply to material be managed through a Remediation Action Plan (RAP) and the appraisal of these options will be addressed in the development of the RAP (refer to Section 6.2). Option 4 and 5 would apply to other contaminated material that is not managed through the RAP based on the following decision framework:

1. Does the material meet the Health Investigation Levels (HIL's), Health Screening Levels (HSL's), Ecological Investigation Levels (EIL's) and Ecological Screening Levels (ESL's) in accordance with NEPM 2013 for the intended land use (e.g. HIL-D commercial / industrial land)?
    (a) No – If the contamination levels exceed the levels for the intended land use, it is unsafe for potential receptors (people or the environment) and must not be used on site without remediation - Option 4 would be adopted.
    (b) Yes - If the contamination levels meet the intended land use refer to Question 2.
2. Is the material surplus spoil that cannot be reused on the site?
    (c) All soil that is surplus following the projects activates (i.e. spoil) will be disposed of to an approved site or facility subject to NSW Waste Classification - Option 4 would be adopted.

(d) Soil that is not surplus, and meets the intended land use levels, may be reused on site without remediation or containment - Option 5 would be adopted.

3.3 Ministers Conditions of Approval

The primary NSW CoA relevant to the development of this CCLMP are listed in Table 3-1. Secondary CoA relevant to this CCLMP have been listed in Appendix B. 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
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 - DPIE Water, WaterNSW and relevant council(s)	OCCLMP Section 1.5.1 Section 1.6
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 3.3 and 3.4 Appendix A
	(c) the relevant terms of this approval will be complied with; and	Section 3.3 Appendix A

CoA No.	Condition Requirements	Document Reference
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART (Specific, Measurable, Achievable, Realistic and Timely) principles.	Section 1.4 includes a commitment to applying SMART principles. Section 5 identifies the environmental aspects and issues that require management during construction. How the issues will be managed is in Section 6 and 7. The process for ongoing environmental risk analysis is described in the CEMP Section 4.1.2. Cumulative impacts and how they are identified and managed are addressed in Section 5.3 of this Plan.

3.4 Revised Environmental Management Measures

The primary REMMs relevant to the development of this CCLMP are listed in Table 3-2. Secondary REMMs relevant to this CCLMP are listed in Appendix B. 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	OCCLMP 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 polycyclic aromatic hydrocarbons (PAH) concentrations		Section 4.1.1 Section 6.1.1 Section 6.9 (Nb. TP303 and TB304 are located outside of the M12 Central Construction Footprint)
	• Procedures for unexpected contamination		Section 6.8 Appendix B
	• 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		CSWMP Section 6.1.4
	• Requirements for excavation of unexpected contaminants to be carried out in consultation with project Remedial Actions Plans.		Section 6.2 Section 6.9, CL9

ID	Revised Environmental Management Measure	Timing	Document Reference
	• Requirements for the disposal of contaminated waste in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014.		Section 6.9, CL18
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 6.1.3 Section 6.5 Appendix C

3.5 Environment Protection Licence

The M12 Central package is subject to an EPL as a Scheduled Activity for 'road construction'. Management and protection of contaminated land is not typically addressed in Environment Protection Licence however compliance with the obligations of the EPL assist in avoiding indirect impacts through pollution or other disturbances. The M12 Central package will be constructed so as to meet requirements identified in the EPL.

3.6 TfNSW QA Specifications

The TfNSW QA 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.

This CCLMP incorporates the relevant requirements to contaminated land management from the TfNSW QA Specifications prepared for the *M12 Motorway (Central), Construction between Badgerys Creek and the Water Tower Access Road, Cecil Hills* including:

- G36 – Environmental Protection
- R44 – Earthworks.

The specifications set out environmental protection requirements, including Hold Points and Witness Points that must be complied with during construction of the M12 Central package. A Hold Point is a point beyond which a work process must not proceed without express written authorisation from TfNSW. Witness Points are an identified point in the process where TfNSW request to, review, witness, inspect method and/or process of work. The activities, however, may proceed. For processes under the CEMP, the request for release of Hold Points and Witness Points is to be made through the TfNSW ESM (or delegate).

Details of the Hold Points and Witness Points relevant to this Plan are outlined in Section 7.4.

Cross references are included in Appendix A, to indicate where the relevant TfNSW QA specifications have been addressed in this Plan or other Project documents.

3.7 Infrastructure Sustainability Council

The M12 Central package will implement an integrated approach to sustainability to ensure effective implementation and tracking of initiatives. This approach includes the identification of requirements in Plans for clarity of objectives and transparency in implementation. While the M12 Central Sustainability Management Plan details the overall requirements and targets for the M12 Central package. Table 3-3 summarises the sustainability requirements for contamination and remediation specific aspects to demonstrate compliance with Infrastructure Sustainability Council (ISC) Infrastructure Sustainability (IS) Version 1.2 Rating Tool credit benchmarks.

Table 3-3: Contamination sustainability targets

ISC Reference	Requirement	Project Target
Lan-3	Site assessment follows the recommended approach in Schedule A 'Recommended general process for assessment of site contamination' of National Environment Protection (Assessment of Site Contamination) Measure 1999.	The detailed site investigations will include the development of a conceptual site model (CSM). Refer to Appendix D for the recommended general process for assessment of site contamination.
	Remediation options are identified and selected using a sustainability hierarchy.	Remediation options are selected in accordance with the sustainability hierarchy outlined in Section 3.2.
	Sustainability appraisal of remediation options is undertaken against the sustainability indicators in Table 1 of 'A Framework for Assessing the Sustainability of Soil and Groundwater Remediation'.	The Remediation Action Plan (RAP) prepared for the M12 Central Package will include the appraisal of the remediation options against the sustainability indicators in Table 1 of 'A Framework for Assessing the Sustainability of Soil and Groundwater Remediation'.
	The effectiveness and durability of the remedial solution, and maintenance and monitoring, have been considered over the lifetime of the infrastructure and beyond.	The RAP and Long Term Environmental Management Plan will be developed for remediated sites with assess the effectiveness and durability over the lifetime of the infrastructure and beyond.

More details on sustainability initiatives and implementation for the M12 Central package is provided in the M12 Central Sustainability Management Plan. Overarching sustainability objectives for the Project are provided in the overarching Project Sustainability Strategy.

4 Existing Environment

This section describes the existing contaminated land issues identified within and adjacent to the M12 Central package, based on information contained in 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 Central package 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 M12 Central package, as construction activities are unlikely to be undertaken at these sites. The AEIs are also shown in Figure 4-1.

Refer to Section 6.1 for a summary of the further contamination assessments completed since the Environmental Assessment Documentation.

Table 4-1: Areas of environmental interest identified in the Environmental Assessment Documentation

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
2	Caltex Service Station	1163 Mamre Road, Kemps Creek	M12 Central	TRH, BTEX, PAH, heavy metals	Soil, groundwater, soil vapour	Low
3	BP Service Station	Corner of Elizabeth Drive and Salisbury Avenue	M12 Central	TRH, BTEX, PAH, heavy metals	Soil, groundwater, soil vapour	Low
4	Brandown Quarry	Lot 90 Elizabeth Drive, Kemps Creek	M12 Central	Heavy metals, TRH, BTEX, acids, sulphate, cyanide	Soil, groundwater	Low
5	Sydney International Shooting Centre	Range Road, Kemps Creek	M12 Central	Lead, unexploded ordnance (UXO)	Soil	Low
7	Area of waste and imported fill	Lot 17 Clifton Avenue, Kemps Creek	M12 Central	TRH, BTEX, PAH, heavy metals, Organophosphorus Pesticides (OPP), Organochlorine Pesticides (OCP), Polychlorinated biphenyls (PCB) and asbestos	Soil, groundwater	Moderate
8	Hi-quality Quarry	1503 – 1509 Elizabeth Drive, Kemps Creek	M12 Central	Heavy metals, TRH, BTEX, acids, sulphate, cyanide	Soil, groundwater	Low
9	Sydney Recycling Park/Wanless Recycling & Former Kari &	16-23 Clifton Avenue, Kemps Creek	M12 Central	TRH, BTEX, ammonia, PAH, heavy metals, OCP,	Soil, groundwater, gas	Moderate

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
	Ghossayn Pty Ltd (Solid Waste Landfill)			OPP, PCB, nutrients, asbestos		
10	SUEZ Kemps Creek Resource Recovery Park	1725 Elizabeth Drive, Kemps Creek	M12 Central	TRH, BTEX, ammonia, PAH, heavy metals, OCP, OPP, PCB, nutrients, asbestos	Soil, groundwater, gas	Moderate
11	Australian Native Landscapes (ANL)	210 Martin Road, Badgerys Creek	M12 Central	TRH, BTEX, OCP, OPP, heavy metals, carbamates	Soil	Low
13	Andreasens Green Wholesale Nursery	1543 Elizabeth Drive, Kemps Creek	M12 Central	Heavy metals, OCP, OPP, carbamates, TRH, BTEX	Soil	Low
15	United Service Station	Corner Elizabeth Drive and Clifton Avenue	M12 Central	TRH, BTEX, PAH, heavy metals	Soil, groundwater, soil vapour	Low
16	Mobil Service Station	Lot A Elizabeth Drive, Kemps Creek	M12 Central	TRH, BTEX, PAH, heavy metals	Soil, groundwater, soil vapour	Low
17	Stockpiles within Hi-quality Quarry Group Head Office	Corner Elizabeth Drive and Mamre Road, Kemps Creek	M12 Central	Heavy metals, TRH, BTEX, acids, sulphate, cyanide	Soil	Moderate
20	Miscellaneous stockpiles of building materials	1521 Elizabeth Drive, Kemps Creek	M12 Central	Heavy metals, BTEX, asbestos, TRH, OCP, OPP, PAH	Soil	Low

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
21	Area of illegally dumped material	Corner of Elizabeth Drive and Range Road, Kemps Creek	M12 Central	Heavy metals, BTEX, asbestos, PAH, OCP, OPP, PCB, TRH	Soil	High
22	Former airstrip	Western Road, Kemps Creek	M12 Central	Heavy metals, BTEX, PAH, TRH	Soil	Low
24	Stockpiles within the OzSource property	Range Road, Cecil Park	M12 Central	Heavy metals, BTEX, asbestos, PAH, OCP, OPP, PCB, TRH associated with stockpiled material	Soil	Moderate
26	TreeServe (wood processing, stockpiles of woodchips, logs and fire wood)	90 Clifton Avenue, Kemps Creek	M12 Central	Heavy metals, BTEX, PAH, TRH, VOC associated with the onsite, processing of wood products (i.e. woodchips, large logs and firewood) and machinery/plant used to handle and process the wood.	Soil	Moderate
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

Figure Ref	AEI	Location	Project Section	Potential contaminants of concern	Potential contamination distribution	Risk Rating
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

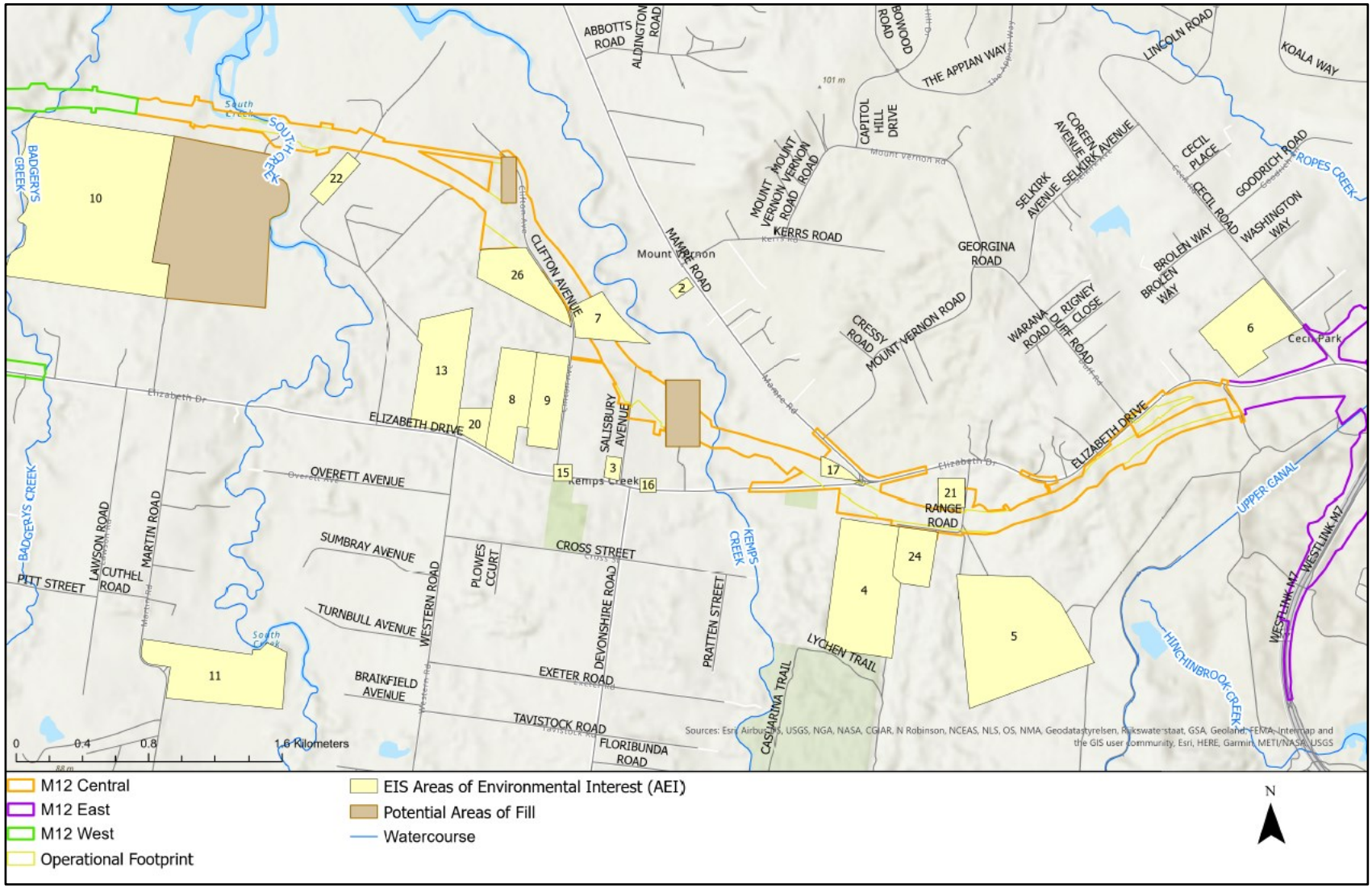


Figure 4-1: EIS Areas of Environmental Interest (AEI)

The Environmental Assessment Documentation, outlines that heavy metal and polycyclic aromatic hydrocarbons (PAH) contamination has also been detected at concentrations exceeding the ecological investigation levels and health screening criteria for low density residential land use in stockpiles within the former Hi-quality Quarry group head office - Cnr of Elizabeth Dr and Mamre Road, Kemps creek (construction ancillary facility AF5) (TP310 and TP311).

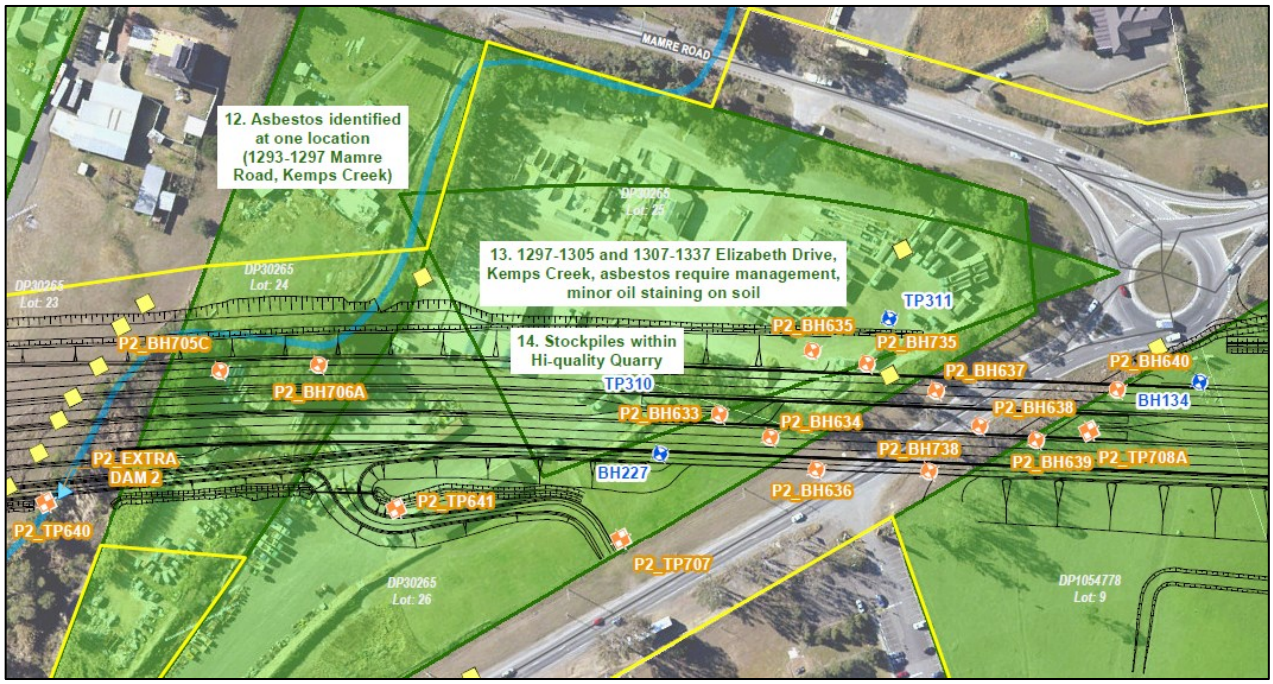


Figure 4-2: Location of TP310 and TP311 at former Hi-quality Quarry group head office

4.2 M12 Central Detailed Design Progression

This section outlines the detailed design progression and investigations related to contamination which are associated with M12 Central package.

4.2.1 Contamination Assessment

Site investigations were completed in 2021 by GHD for the purposes of due diligence for property and land acquisition. Additional contamination data was also collected opportunistically during geotechnical investigations. A summary of the contamination assessment within the construction boundary is summarised below:

- Twenty Areas of Environmental Concern (AECs) were identified within the M12 Central construction boundary, some of which correspond with the AEIs identified in the Environmental Assessment Documentation. Fourteen of these AECs require further assessment. The location of these AECs are provided in Appendix A of the M12 Motorway - Central Package Detailed Design: Contamination Investigation Report (GHD, 2021)
- Concentrations of contaminants of potential concern (CoPC) in all analysed soil, farm dam sediment and soil bund samples were reported below the adopted health screening criteria. Asbestos was not detected as presence/absence in any soil or sediment samples
- Concentrations of CoPC were generally reported below the generic Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for a commercial/industrial land use, with the exception of zinc in various samples and nickel
- Analytical results suggest that the majority of sampling locations these exceedances are likely to represent the naturally occurring conditions in these soils and not considered to

represent a potential risk to the ecology of the area under the proposed future commercial/ industrial land uses

- Analytical results for groundwater samples were within the adopted health screening criteria for the vapour inhalation pathway (commercial / industrial)
- Asbestos containing material (ACM) and petroleum hydrocarbons were present within the construction footprint
- Metal concentrations detected in groundwater samples were representative of background groundwater quality. However, ammonia concentrations at four monitoring locations (BH219, BH222, BH742 and BH901) exceeded the freshwater ecological criterion within the construction footprint
- A potential biological health risk (related to salmonella contamination) was identified at a property on Clifton Avenue in Kemps Creek, however consultation with the Department of Primary Industries (DPI) found that the residual health risk to Seymour Whyte personnel and other visitors is considered to be extremely low.
- Metal concentrations in farm dam samples exceeded the adopted freshwater ecological criteria.

As per the requirements of REMM SC05, further soil investigations have been undertaken within:

- AEI6: PGH Bricks and Pavers
- AEI9: Sydney Recycling Park/ Wanless Recycling and Former Kari & Ghossayn Pty Ltd (Solid Waste Landfill)
- AEI10: SUEZ Kemps Creek Resource Recovery Park.

Concentrations of CoPC were reported below the generic EILs and ESLs for a commercial/industrial land use for soil samples collected within the construction footprint adjacent AEI6 except for one sample with marginal exceedances of zinc concentrations (TP905).

Investigations pertinent to AEI9 and AEI10 are discussed in Section 4.2.2.

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

4.2.2 Landfill gas monitoring

Four rounds of gas monitoring were completed from August 2020 to May 2021 (GHD, 2021) within the construction footprint adjacent to AEC 1 (formerly AEI 10) and at AEC 2 west of Kemps Creek (refer to Figure 4-3). 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.

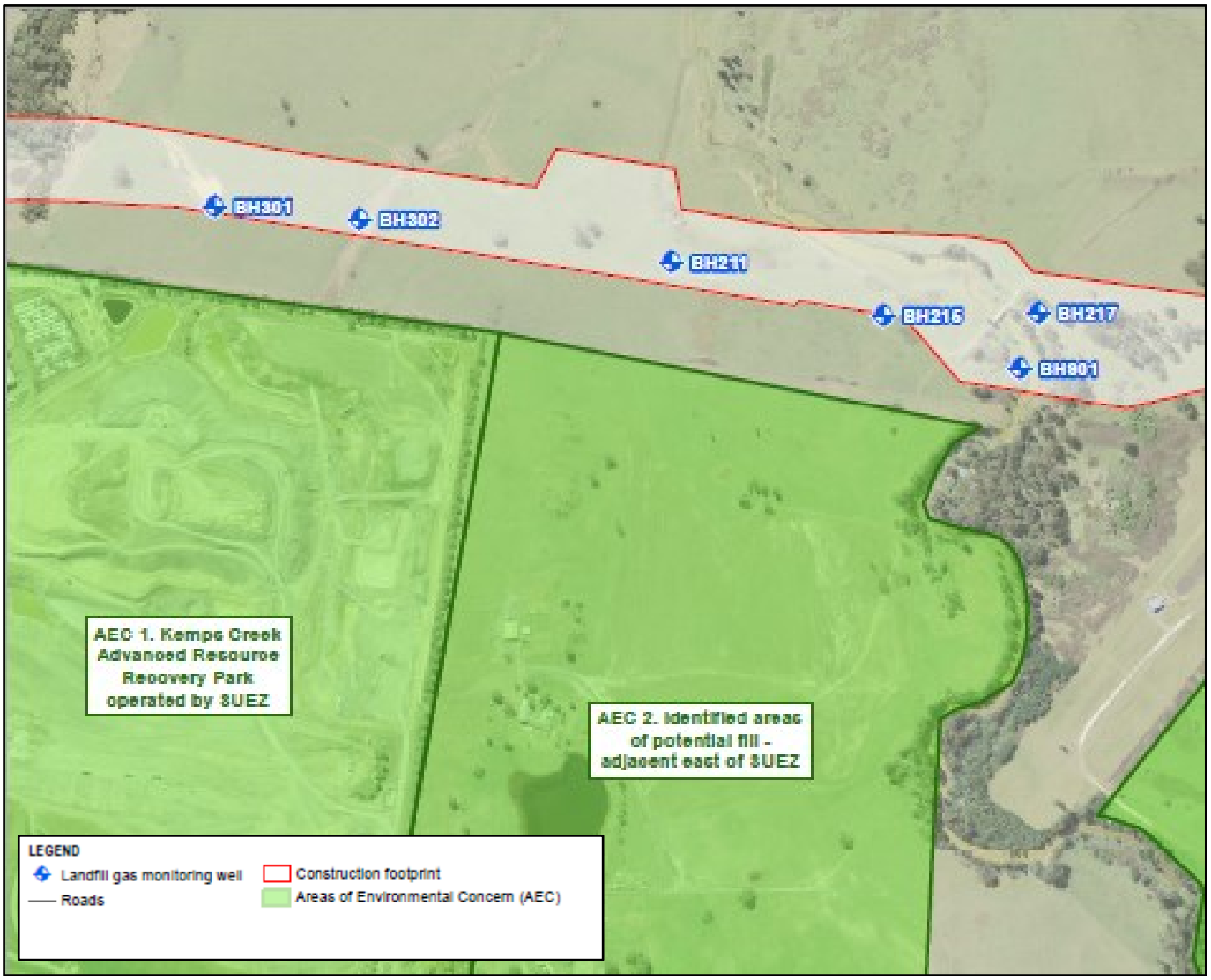


Figure 4-3: Landfill gas monitoring well locations (source: GHD 2021)

The GHD (2021) did not make any reference to odour and given the nearest sensitive receivers to this area is over 350m to the north east, it is unlikely odour will be an issue.

See Section 6.1.5 for further soil gas investigations required including monitoring 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).

4.2.3 Hazardous building material audits

GHD completed a Hazardous Building Materials (HBM) assessment (GHD, 2021) and compiled a HBM Register for selected properties located within the Project. These properties were located off Salisbury Avenue and Clifton Avenue in Kemps Creek, NSW.

An HBM pre-demolition assessment was completed prior to demolition or partial demolition of these structures for all properties except two (refer to Table 4-2). The objective of the HBM pre-demolition assessment was to locate and assess HBM within the building, as far as reasonably practicable, and provide a risk assessment for the purpose of demolition of the nominated structures.

For the purpose of the assessment, HBM have been limited to:

- ACM
- Lead based paint systems (LBP) and lead containing dust (LCD)
- Synthetic mineral fibres (SMF)
- Polychlorinated biphenyls (PCBs).

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 A of the M12 Motorway – Detailed Design Hazardous Building Materials Assessment (GHD, 2021)).

Table 4-2: Hazardous building material assessment

Address	Demolition of Existing Building	Hazardous Building Report Provided
316 Clifton Avenue	Existing Stable Sheds toilets to be demolished Lot 6 DP812284 (CH22730)	Yes
3B Salisbury Avenue	Existing Residential building 1 at DP981721 (CH23600)	Yes
3 Salisbury Avenue	Existing Residential building 2 at DP981721 (CH23650)	Yes
3 Salisbury Avenue	Existing Shed at DP981721 (CH23650)	Yes
3 Salisbury Avenue	**Existing Shed at DP981721 (CH23650)**	**No**
13-23 Salisbury Avenue	Existing Residential building 1 at DP981720 (CH23700)	Yes
13-23 Salisbury Avenue	Existing Sheds x 3 at DP981720 (CH23700)	Yes
13-23 Salisbury Avenue	Polytube Greenhouses x 18 at DP981720 (CH23700)	Yes
2-10 Salisbury Avenue	Existing Residential building 1 at DP736951 (CH23750)	Yes
2-10 Salisbury Avenue	Existing Residential building 2 at DP736951 (CH23750)	Yes
2-10 Salisbury Avenue	**Small Shed/Horse Compound x 2**	**No**
2-10 Salisbury Avenue	Existing Shed 1 at DP736951 (CH23750)	Yes
2-10 Salisbury Avenue	Existing Shed 2 at DP736951 (CH23750)	Yes
12-20 Salisbury Avenue	Existing Residential building 1 at DP736951 - 2 (CH23750) -	Yes
12-20 Salisbury Avenue	Existing Shed at DP736951 - 2 (CH23750)	Yes
12-20 Salisbury Avenue	Existing Shed x 3 at DP736951 - 2 (CH23750)	Yes
26-32 Salisbury Avenue	Existing Shelter at DP736951 - 2 (CH23750)	Yes
1293A Mamre Road	Existing Shed at DP30265 (CH24800)	Yes
1307 - 1337 Elizabeth Drive	Existing industrial building at DP30265 (CH24900)	Yes

Address	Demolition of Existing Building	Hazardous Building Report Provided
1307 - 1337 Elizabeth Drive	Existing shed lot 25 and lot 26 DP30265	Yes

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 (Kemps Creek, South Creek, Badgerys Creek, Cosgrove Creek and Ropes Creek) intersecting 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 M12 Central package footprint is considered to be low.

4.2.5 RAPs

A Draft Remedial Action Plan (RAP) was completed in June 2021 by GHD for the M12 Motorway Central - Detailed Design. The Draft RAP recommended on-site remediation of bonded ACM impacted soil within the road alignment (encapsulation), and offsite disposal of petroleum hydrocarbon impacted soils, with the intention that the contamination identified will be efficiently managed to achieve an environmentally sustainable outcome. The Draft RAP also outlined that the construction footprint can be made suitable for use as a motorway. The validation works described in the Draft RAP will allow for the effective implementation of the RAP in accordance with the remediation objectives.

Seymour Whyte will complete the development of a RAP for the M12 Central package, with consideration to the recommendations included in the Draft RAP prepared during detailed design. Refer to Section 6.2 for further detail on preparation of the RAP(s).

4.2.6 Refined conceptual site model

Based on the findings of the GHD (2021) investigation, a refined conceptual site model (CSM) was developed, and is presented in Table 4-3

The CSM shows the source-pathway-receptors linkages identified and a discussion on where they are likely to be complete. In addition to the completed investigation works summarised in this report, GHD is undertaking ongoing groundwater, surface water and landfill gas monitoring within the construction footprint. The refined CSM present in this report shall be updated with additional data / information when available.

Table 4-3: Refined Conceptual Site Model

Sources	Pathway	Receptor	Potentially complete?
On-site Contaminated soil is not present within GHD investigation locations Presence of asbestos within acquisition properties Presence of benzo(a)pyrene and TRH impacted soil within acquisition properties Presence of salmonella contamination within one structure of an acquisition property	Direct contact with impacted shallow fill soils Ingestion of soils and dust Inhalation of volatile compounds or asbestos fibres Potential migration of surface impacts into subsurface soils	Road construction workers	**Possible** – Although concentrations of COPC were below the adopted health screening criteria at GHD investigation locations, asbestos is present on some acquisition properties and petroleum hydrocarbon impact was identified at one acquisition property.
		Future intrusive maintenance workers.	**Possible** – Although concentrations of COPC were below the adopted health screening criteria at GHD investigation locations, asbestos is present on some acquisition properties and petroleum hydrocarbon impact was identified at one acquisition property. However these identified contamination can be managed / remediated during the construction of M12.
	Direct contact or inhalation of vapours from contaminated groundwater. Vertical and horizontal migration through the unsaturated zone into the saturated zone and horizontal migration within the groundwater.	Road construction workers	**Unlikely** – Concentrations of COPC were below the adopted health screening criteria within this investigation.
		Future intrusive maintenance workers.	**Unlikely** – Concentrations of COPC were below the adopted health screening criteria within this investigation.
		Ecological receptor (groundwater).	**Unlikely** – Concentrations of COPC were considered representative of the regional background groundwater quality.

Sources	Pathway	Receptor	Potentially complete?
On-site continued	Groundwater and farm dam water discharge to natural surface water bodies	Future construction workers and future intrusive maintenance workers.	**Unlikely** – Concentrations of COPC in surface water samples were below the adopted health screening criteria.
		Aquatic ecological receptors.	**Unlikely** – Farm dam water analytical results indicate concentrations of cadmium, Chromium (III+VI), copper, lead, zinc and diazinon exceeded the adopted freshwater ecological criteria. However the quality of farm dam water and groundwater is consistent to the water quality of nearby natural surface water bodies. Therefore the farm dam surface water investigated in this contamination investigation and groundwater generated from construction are considered suitable be discharged into nearly surface water bodies without treatment.
Off site Contamination associate with controlled landfill activities (i.e. SUEZ) including hazardous ground gas Potential PFAS contamination associated with Kemps Creek RFS Potential PFAS contamination associated with Fluers	Direct contact or inhalation of vapour from contaminated groundwater. Vertical and horizontal migration through the unsaturated zone into the saturated zone and horizontal migration within the groundwater.	Future intrusive maintenance workers.	**Unlikely** – For groundwater concentrations of COPC were below the adopted health screening criteria within this investigation. **Possible** – hazardous ground gas monitoring is under the way. **Unlikely** – RFS website stated no offsite impact was identified. EIS report indicated Fluers Aerodrome was not used as an airstrip from 1956 therefore unlikely impacted by PFAS.
		Future construction workers.	

Sources	Pathway	Receptor	Potentially complete?
Aerodrome at 949A Mamre Road, Kemps Creek			

5 Environmental aspects and impacts

5.1 Construction activities

Key aspects of the M12 Central package 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
- Construction of site compounds and stockpile areas
- General earthworks particularly during site establishment
- Building and structure demolition (contaminants may include asbestos)
- Construction of site compounds and spoil / mulch and / or equipment stockpile areas
- Temporary access roads during construction
- Bulk earthworks
- Trenching, utilities and drainage works
- Storage of spoil, drilling mud and hazardous materials.

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
- Release of asbestos
- Release of odours from contaminated materials
- Spills of chemicals to land or water during construction resulting in new contamination issues.

Relevant aspects and the potential for related impacts have been considered in an Initial Risk Register in Appendix A2 of the CEMP. Section 6 provides 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 Central package gives rise to the potential for cumulative contamination impacts.

Projects within the vicinity of the M12 Central package include, but is not limited to:

- M12 Motorway – M12 East, M12 West and other work packages
- Western Sydney International Airport
- Sydney Metro – Western Sydney Airport The Northern Road upgrade
- Western Sydney Aerotropolis
- Sydney Water Treatment Facility and associated infrastructure
- 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.
- M7 Widening

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 contaminated land, it is anticipated that these impacts will be short-term as they will be limited to the construction phase and will be minimised through the implementation of management measures identified in Section 6.7.

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 Central package 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

This section details further investigations required to be carried out by Seymour Whyte for the M12 Central package related to contaminated land. The recommended processes for dealing with site contamination is provided in the NEPM and included in Appendix D.

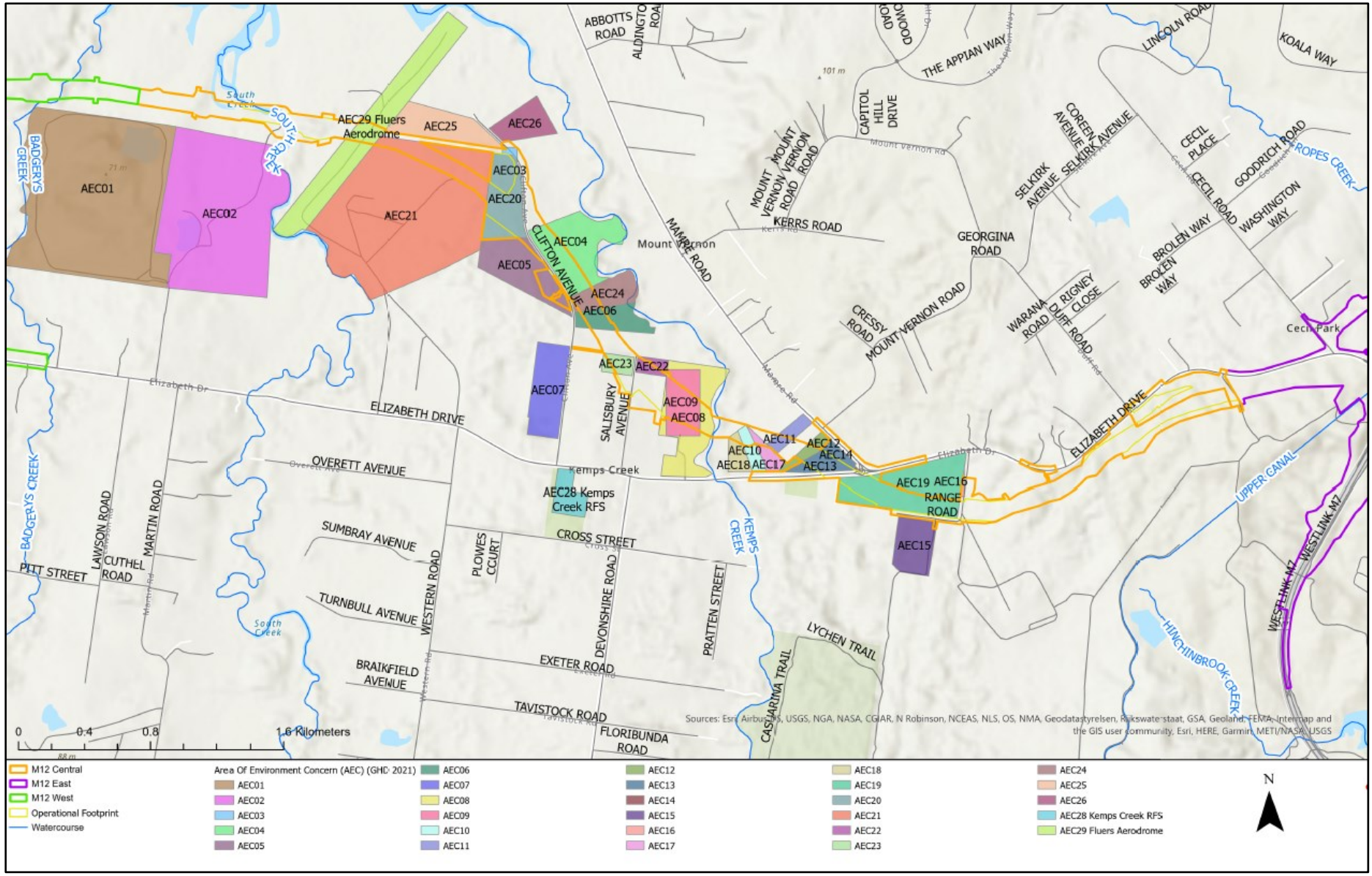
6.1.1 Completed Detailed Site Investigation

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 (also referred to as a Stage 2 Site Contamination Assessment) must be undertaken. The Detailed Site Investigations must 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 the TfNSW. Detailed Site Investigations may also be triggered as a result of unexpected contamination finds (refer to Appendix B).

Detailed site investigations have been completed for the following sites within or adjacent to the M12 Central construction footprint (refer to Figure 4-1 for AEC locations):

- A number of Areas of Environmental Concern (AEC) identified along the project area including the following with moderate to high risks (M12 project area, RMS EIS Report (RMS 2019) and M12 Motorway amendment report (Jacobs and Arcadis 2020):
    - Area of waste and imported fill east of Clifton Avenue (AEC 6 and 24) (formerly[1] AE7)
    - Sydney Recycling Park / Wanless, Recycling & Former, Kari & Ghossayn Pty Ltd (Solid Waste Landfill) - west of Clifton Avenue (AEC 7) (formerly AE9)
    - SUEZ Kemps Creek Resource Recovery Park – 1725 Elizabeth Drive, Kemps Creek (AEC 1) (formerly AE10)
    - Stockpiles within Hi-quality Quarry group head office - Corner of Elizabeth Drive and Mamre Road, Kemps Creek (AEC14) (formerly AE17)
    - Area of significant illegally dumped material - Corner of Elizabeth Drive and Range Road, Kemps creek (AEC 16) (formerly AE21)
    - Stockpiles within the Canine Search & Rescue Training Academy (AE24)
    - TreeServe – west of Clifton Avenue (AEC 5) (formerly AE26)
    - Identified areas of potential fill - adjacent east of SUEZ (AEC 2)
    - Identified areas of potential fill - adjacent waste of Clifton Avenue (AEC 20)
    - Identified area of potential fill - east of Salisbury Avenue
- 1297 – 1305 and 1307 – 1337 Elizabeth Drive, Kemps Creek (GHD 2021) (AEC 13)
- 1349 Elizabeth Drive, Kemps Creek (Coffey 2020f) (AEC 10)

[1] The AEC numbers refer to the numbers allocated in the M12 Motorway - Central Package Detailed Design Contamination Investigation Report (GHD 2021). The former EA numbers refer to the Area of Environmental Interest (AEI) numbering from the Environmental Impact Statement Soils and contamination assessment report (Appendix O) (RMS, 2019).


AEC01
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AEC22
AEC23
AEC24
AEC25
AEC26
AEC28 Kemps Creek RFS
AEC29 Fluers Aerodrome
ELIZABETH DRIVE
OVERETT AVENUE
SUMBRAY AVENUE
CROSS STREET
TURNBULL AVENUE
BRAIKFIELD AVENUE
EXETER ROAD
TAVISTOCK ROAD
FLORIBUNDA ROAD
PITT STREET
CUTHEL ROAD
LAWSON ROAD
MARTIN ROAD
WESTERN ROAD
PLOWES COURT
DEVONSHIRE ROAD
PRATTEN STREET
SALISBURY AVENUE
CLIFTON AVENUE
MAMRE ROAD
KERRS ROAD
MOUNT VERNON ROAD
CRESSY ROAD
GEORGINA ROAD
RANGE ROAD
LYCHEN TRAIL
CASUARINA TRAIL
KEMPS CREEK
BADGERYS CREEK
SOUTH CREEK
HINCHINBROOK CREEK
UPPER CANAL
WESTLINK M7
ROPES CREEK
ABBOTTS ROAD
THE APPIAN WAY
LINCOLN ROAD
KOALA WAY
CAPITOL HILL DRIVE
COREEN AVENUE
SELKIRK AVENUE
CECIL PLACE
CECIL ROAD
GOODRICH ROAD
WASHINGTON WAY
BROLEN WAY
WARANA ROAD
BIGNEY CLOSE
DUFF ROAD
Cecil Park
0
0.4
0.8
1.6 Kilometers
Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri, HERE, Garmin, METI/NASA, USGS
M12 Central
M12 East
M12 West
Operational Footprint
Watercourse
Area Of Environment Concern (AEC) (GHD 2021)
N

- 1277-1283 Mamre Road (GHD 2020b) (AEC 11)
- 1293-1297 Mamre Road Kemps Creek (JBS&G 2020k) (AEC 12)
- 1383-1411 Elizabeth Drive, Kemps Creek (Coffey 2019) (AEC 8)
- 1400-1480 Elizabeth Drive, Cecil Park (GHD 2021) (AEC 19)
- 146-196 Clifton Avenue, Kemps Creek, NSW, (JBS&G 2020l) (AEC 20)
- 146B Clifton Avenue, Kemps Creek, (JBS&G 2020) (AEC 21)
- 364 – 372 Clifton Avenue, Kemps Creek NSW (JBS&G 2020) (AEC 24).

Refer to the M12 Motorway - Central Package Detailed Design Contamination Investigation Report (M12CDD-GHDA-ALL-CT-RPT-000010) for a summary of the key findings of the Detailed Site investigations for these sites (or reference to previous detailed site investigations).

6.1.2 Detailed Site Investigation to be completed

The Contaminated Site Specialist will review the existing assessments and determine the scope of Detailed Site Investigations to be completed by Seymour Whyte, before the start of construction, at the following properties:

- 1341 Elizabeth Drive, Kemps Creek (AEC 17)
- 2-10 Salisbury Avenue, Kemps Creek (AEC 22)
- 3 Salisbury Avenue, Kemps Creek (AEC 23)
- 949A Mamre Road, Kemps Creek (AEC 29)
- 203-229 Clifton Avenue, Kemps Creek (subject to extent of works in property) (AEC 25)
- 258 Clifton Avenue, Kemps Creek (subject to extent of works in property) (AEC 26)
- 90 Clifton Avenue, Kemps Creek (AEC 5)
- 373-381 Clifton Avenue, Kemps Creek (AEC 65)
- 316 Clifton Avenue, Kemps Creek (AEC 4).

Furthermore, Seymour Whyte will review the contamination assessment and investigations undertaken during detailed design to determine the requirement for any additional investigations to be undertaken.

Further 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 (including Schedule A), to confirm the presence of contamination.

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 Contaminated Site Specialist (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) scheme.

Contamination will be monitored during construction and, if directed by TfNSW, the Site Contamination Assessment Report will be revised.

6.1.3 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 M12 Central package. Further intrusive asbestos investigations may also be triggered as a result of unexpected contamination finds (refer to Appendix B).

A Sampling and Analysis Quality Plan (SAQP) will be developed by the Seymour Whyte engaged Contaminated Site Specialist with reference to the existing contamination assessments including the M12 project area (asbestos investigation) – (Jacobs and Arcadis 2019) and the M12 Motorway - Central Package Detailed Design Contamination Investigation Report (GHD 2021). The SAQP will identify the locations where additional intrusive asbestos investigations will be completed, methods for sample collections and analysis methods.

Notwithstanding the SAQP for asbestos investigation, the Occupational Hygienist (or Geotechnical Engineer) must complete advice inspections of the topsoil ground surface and document the presence/absence of visible contamination at the ground surface (including asbestos and asbestos containing material) including documenting the likelihood of contamination being present. TfNSW must be invited at least 1 working day prior to the inspection (refer to Section 7.4).

Following advance investigation works detailed, the Occupational Hygienist is to observe and inspect all topsoil removal works and provide ongoing direction regarding the appropriate management of topsoil that is identified or considered likely to be contaminated (including the presence of asbestos).

Prior to commencing topsoil removal, the topsoil within each lot must be tined with an excavator (in 100 mm depth increments) to allow the Occupational Hygienist to assess the topsoil. Additional depth tining may be instructed by the Occupational Hygienist to determine the extent of any contamination. The Occupational Hygienist must provide the TfNSW with an asbestos clearance

report for each topsoil lot and observations of the potential presence of contamination other than asbestos that may require additional management.

If asbestos and/or other contamination is identified or considered likely to be present, the Contaminated Site Specialist must be advised to determine management/remediation measures for the identified or suspected contaminant and provide these to the TfNSW prior to disturbance or removal of the topsoil (refer to Section 6.2).

Seymour Whyte will maintain an Asbestos Register that documents all identified or potential asbestos-containing material in the M12 Central package.

Refer to Appendix C Asbestos Management Plan (as described in Section 6.5) for more details on the Asbestos Register. The Asbestos Register will be made available to the TfNSW ESM (or delegate) on request and included in the Monthly Progress Reports.

6.1.4 Salinity and acid sulphate soils

In accordance with REMM SC02, Seymour Whyte 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.

6.1.5 Soil gas contamination

In accordance with REMM SC10, detailed investigations were carried out within the area next to the SUEZ Kemps Creek Resource Recovery Park to assess the extent of high-risk soil gas (see Section 4.2.2).

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 4.2.2 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 and will 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). Risk assessment and safe work method statements for works in this area should 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
- Undertaking additional landfill gas monitoring.

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

6.1.6 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 Pre-construction land condition assessment must be provided to TfNSW in accordance with G36 Hold Point 4.15.2 (refer to Section 7.4).

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. Pre-Construction Land Condition Assessments Reports are not site contamination reports, rather they seek to establish and document whether there are any pre-existing wastes on the site prior to the site being occupied by Seymour Whyte.

When vacating each area of land that has been leased or purchased by TfNSW for the use of the M12 Central package works, Seymour Whyte will restore it to equivalent pre-existing conditions (including removing temporary construction fencing), to the TfNSW's satisfaction, in accordance with TfNSW G36 Clause 4.16. Carry out a joint inspection with the Principal and demonstrate that there is no contamination of the ground and that the pre-existing ground surface levels have been restored, as appropriate.

Where site facilities are no longer required, a post-construction land condition assessment will be prepared and submitted to TfNSW. Any identified unauthorised waste attributable to the M12 Central package or contamination (in accordance with NEPM guidelines) will be rectified in accordance with the post-construction land condition assessment report and TfNSW QA Specification G36.

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. At least 5 working days prior to preparation of the Remedial Action Plan, Seymour Whyte must submit the proposed NSW EPA accredited site auditor, and relevant CV and accreditation, to TfNSW for approval (refer to Section 7.4).

Seymour Whyte will use the Draft RAP for the subject land as a guide to prepare the RAP for remediation of that land within the motorway alignment. The RAP will be completed in accordance with all guidelines under the CLM Act 1997, the relevant TfNSW Specifications, and A Framework for Assessing the Sustainability of Soil and Groundwater Remediation (SuRF 2009).

The RAP and an Asbestos Management Sub-Plan (AMSP) for on-Site Encapsulation of Asbestos Contaminated Material must be submitted to TfNSW for approval at least four weeks prior to on-Site encapsulation of ACM. This Asbestos Management Sub-Plan (AMSP) must include procedures for encapsulation of ACM including consultation with and obtaining the concurrence of relevant Statutory Authorities and Agencies regarding all applicable conditions.

The Asbestos Management Sub-Plan (AMSP) and RAP must ensure that the Site is suitable for its proposed road way / road corridor land-use at the completion of construction and does not pose an unacceptable risk (in regard to contamination) to site users or the surrounding environment.

The RAP will include a sustainability appraisal of the different remediation options, with consideration given to a range of sustainability indicators such as those listed in Table 6-2, including at least one indicator from each of the sustainability dimensions (environmental, social and economic). The RAP must also evaluate the effectiveness and durability of the remedial solution over the lifetime of the infrastructure.

Table 6-1: Sustainability considerations for Remediation Action Plans

Environmental	Social	Economic
Impacts on: • Air (including climate change) • Soil • Water • Ecology	Impacts on human health and safety	Direct economic costs and benefits
	Ethical and equity considerations	Indirect economic costs and benefits
	Impacts on neighbourhoods or regions	Employment and capital gain
Use of natural resources and generation of wastes	Community involvement and satisfaction	Gearing
Intrusiveness	Compliance with policy objectives and strategies	Life-span and 'project risks'
	Uncertainty and evidence.	Project flexibility

Based on Table 1 of 'A Framework for Assessing the Sustainability of Soil and Groundwater Remediation' (SuRF Australia 2011)

Prior to commencing 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 must be submitted to the Planning Secretary for information in accordance with NSW CoA E87.

Following issue of the Interim Audit Advice or a Section B Site Audit Statement, remediation of the contaminated material, or its removal and disposal, must be carried out in accordance with the RAP. Any changes to the RAP must be agreed to by TfNSW and the 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 any conditions on the Section A1 or Section A2 Site Audit Statement have been complied with and 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 in accordance with NSW CoA E87, and the relevant Council, for information no later than one month before the commencement of operation.

6.3 Long term environmental management plan

Where the RAP includes encapsulation of Asbestos-Containing Material (ACM), a long term environmental management plan (LTEMP) will be prepared. The LTEMP will detail the monitoring and/or management strategy including the monitoring parameters, locations and frequency. Reporting requirements will also be defined within the LTEMP.

The LTEMP must be prepared in consultation with and signed off by the NSW EPA accredited site auditor. The content of the LTEMP should be guided by the NSW EPA accredited site auditor and must include (but is not limited to) the following:

- Details regarding final location and capping thickness of the completed ACM encapsulation sites
- As built drawings of the completed ACM encapsulation sites and certification that the encapsulation has been undertaken in accordance with these drawings (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.

The draft LTEMP must be provided to TfNSW 20 days prior to sign off by the NSW EPA accredited site auditor (refer to Section 7.4). Any TfNSW comments must be addressed and closed out prior to sign off by the NSW EPA accredited site auditor.

The LTEMP must be signed off by the NSW EPA accredited auditor prior Completion.

6.4 Register of contaminated sites

Seymour Whyte will maintain a register of contaminated sites for the M12 Central package 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.

6.5 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 6.1.3 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 C which has been prepared under and consistent with the overarching Asbestos Management Plan included in the OCCLMP and 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 M12 Central package. The AMP outlines requirements for the encapsulation of asbestos to be carried out in accordance with RAP(s).

An EWMS will be prepared for the management of materials containing asbestos.

6.6 Hazardous building materials

In accordance with REMM SC07, Seymour Whyte will develop a Hazardous Building Materials Management Plan(s) before demolishing structures and/or buildings. The Plan(s) 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 4.2.3, hazardous building material audits have been conducted for structures to be demolished at the following properties (GHD 2021):

- 316 Clifton Avenue
- 382-393 Clifton Avenue
- 90 Clifton Avenue
- 2-10 Salisbury Avenue
- 12-20 Salisbury Avenue
- 26-32 Salisbury Avenue
- 13-23 Salisbury Avenue.

Hazardous building material audits have not been conducted for the following structures to be demolished at the following properties:

- 3 Salisbury Avenue (Existing Shed at DP981721)
- 2-10 Salisbury Avenue (Small Shed/Horse Compound x 2).

Seymour Whyte will completed hazardous building material audits of these building in accordance with Australian Standard (AS 2601-2001): The demolition of structures including the preparation of the hazardous building material audit.

Where hazardous building materials are present, the removal of hazardous materials will be in accordance with the Hazardous Materials Management Plan and managed to reduce the potential for contamination in accordance with the POEO Act and the *Protection of the Environment Operations (Waste) Regulation (2014).*

6.7 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 M12 Central package 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 M12 Central package.

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 GHD (2021) also provided preliminary waste classification for specific areas within M12 Central. Seymour Whyte will review this assessment to determine requirements for additional waste classification.

6.8 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.

An Unexpected Contaminated Land Finds Procedure is provided in Appendix B which has been prepared under and consistent with the Unexpected Contaminated Land Finds Procedure included in the OCCLMP in accordance with NSW CoA E89 and E90.

If potentially contaminated material is encountered, the Unexpected Contaminated Land Finds Procedure will be followed. Works in the vicinity will be stopped or modified and will not recommence until the material has been analysed and management measures developed.

6.9 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 6-2.

Any contamination resulting from the M12 Central package must be assessed and remediated in accordance with relevant legislation, the TfNSW Guideline for the Management of Contamination, and contaminated land management guidelines made or approved by the EPA.

Table 6-2: Contaminated land management and mitigation measures

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 ESR Contaminated Site Specialist	NSW CoA E85 and E86 REMM SC05	Detailed Site Investigation Reports
CL2	Testing will be carried out to confirm the presence of saline soils in areas of high salinity potential (areas along Kemps Creek and East of Range Road, refer to the CSWMP Section 4.1.4) and to confirm the presence of ASS around creeks prior to disturbance. In the event that moderate to high-risk saline soils are identified, specialist advice will be sought from the Contractor's Soil Conservationist, or an independent Agronomist, to determine appropriate management actions. If ASS is detected, an EWMS will be prepared in accordance with the NSW Acid Sulfate Soil Manual, ASSMAC 1998 to manage the material in a manner to minimise the generation of acid.	Pre-construction Construction	Construction Manager ESR Contaminated Site Specialist Soil Conservationist, or independent Agronomist	REMM SC02	Testing results
CL3	Seymour Whyte 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	ESR	TfNSW QA 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	ESR Table 4	REMM SC06	Asbestos Investigation Report

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
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 ESR	REMM SC04	This Plan RAP and Asbestos Management Plan
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 POEO Act and the *Protection of the Environment Operations (Waste) Regulation (2014).*	Pre-construction	Construction Manager Contaminated Site Specialist SafeWork NSW Accredited Asbestos Assessor	REMM SC07	Hazardous Building Materials Management Plan Hazardous Building Materials Audit
CL7	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 Competent Person.	Construction	Construction Manager ESR Contaminated Site Specialist	GHD, 2021	Hazardous Building Materials Management Plan Hazardous Building Materials Audit

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
CL8	If dead chickens or other biological waste is found during excavation, routine work health and safety practices will be adopted to protect workers and the material will be disposed of using existing disposal practices.	Construction	Construction Manager ESR Contaminated Site Specialist	GHD, 2021	Site records
Remediation					
CL9	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	ESR Contaminated Site Specialist NSW EPA accredited Site Auditor	NSW CoA E87	RAP Validation Report
CL10	Ongoing management and maintenance of the bonded ACM encapsulation will be undertaken in accordance with the LTEMP to provide surety of the asset into the operational phase of the project. The validation works described in this RAP will ensure the RAP is effectively implemented in accordance with the remediation objectives with sufficient contingency should it be required.	Construction	ESR Contaminated Site Specialist	RAP (GHD, 2021)	RAP Validation Report
CL11	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	ESR Contaminated Site Specialist NSW EPA accredited Site Auditor	NSW CoA E88	Section A Site Audit Statement and Site Audit Report

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
CL12	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	NSW CoA E88	Section A Site Audit Statement and Site Audit Report
CL13	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	ESR Contaminated Site Specialist NSW EPA accredited Site Auditor	REMM SC09	Section B Site Audit Statement
CL14	Air monitoring for respirable fibres will 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.	During remedial works	Construction Manager Safety Manager Contaminated Site Specialist	RAP (GHD, 2021)	Section B Site Audit Statement
Soil gas contamination					
CL15	The outcomes of the detailed investigation 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 ESR Contaminated Site Specialist	REMM SC10	Report Work Health Safety Plan

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
CL16	Undertake risk assessments and prepare 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 ESR Safety Manager Contaminated Site Specialist	REMM SC10 GHD, 2021	SWMS Landfill gas monitoring results
CL17	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 ESR Safety Manager Contaminated Site Specialist	REMM SC11	Monitoring results
Disposal of contaminated waste					
CL18	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. Seymour Whyte will review the investigation	Pre-construction Construction	Construction Manager ESR	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
	assessment undertaken by GHD (2021) for M12 Central to determine requirements for additional waste classification.				
Unexpected discovery of contamination					
CL19	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 ESR	NSW CoA E89 and 90 Appendix B Appendix C	Unexpected Contaminated Land Finds Procedure
CL20	The requirements for excavation of unexpected contaminants (as outlined in the Unexpected Contaminated Lands Procedure) will be carried out in accordance with the RAPs.	Construction	Construction Manager ESR	SC03	Unexpected Contaminated Land Finds Procedure Consultation records
Use of contaminated material					
CL21	Surface material from TP310 and TP311 cannot be reused within landscaped areas or in areas within and/or adjacent to sensitive environmental receptors. Significant quantities of asbestos were observed throughout the new bund, indicating that the bund is not suitable for use on-site. The bund should be either capped and managed through an RAP and EMP, or disposed of off-site at a suitably licensed landfill facility to receive special waste (asbestos).	Construction	Construction Manager ESR	SC03	RAP and Site Audit Statement or Waste classification reports

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
CL22	Within 1297-1305 and 1307-1337 Elizabeth Drive, Kemps Creek (former Hi Quality Site), minor historical oil spills in the area adjacent to fuel AST infrastructure and truck workshop should be managed by scraping and removing surface stained material within this area, if required. TRH impacts do not appear to have migrated through soil profile.	Construction	Contaminated Site Specialist	Phase 2 investigations for 1297-1305 and 1307-1337 Elizabeth Drive, Kemps Creek (Senversa, 2020	Waste classification reports Waste disposal records
CL23	Prevent the mixing of contaminated and uncontaminated materials. Clearly identify areas of contamination and separate stockpiles of different waste classification. Seymour Whyte will be responsible for any material that becomes unsuitable because of inappropriate construction activities, including all costs associated with reworking or replacing/ disposing such unsuitable material. Examples of inappropriate construction activities related to management of contaminated materials includes mixing of contaminated and non-contaminated material.	Construction	Superintendent / Supervisor	TfNSW QA G36	Site Inspections Site Audit Statement
Odour					
CL24	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	Construction Manager ESR	AQ03	Site inspections
CL25	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 ESR	Best practice	Site inspections
CL26	Use of appropriate covering techniques may be implemented to control odour during remediation works:	Construction	Construction Manager	RAP (GHD, 2021)	Site records

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
	• 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.		ESR		
Groundwater and surface water					
CL27	To minimise the mobilisation of groundwater and surface water contamination, refer to the Blue Book guidelines (Landcom, 2004) and TfNSW Specifications.	Construction	Construction Manager ESR	Blue Book guidelines (Landcom, 2004) TfNSW Specifications	Site inspections
CL28	Implement relevant control measures to divert any surface runoff away from areas of contaminated land, and capture and treat any surface runoff contaminated by exposure to the contaminated land.	Construction	Construction Manager ESR	TfNSW Specifications	Site inspections
Detailed Site Investigations					
CL29	The contamination assessment and investigations undertaken during detailed design will be reviewed to determine the requirement for any additional investigations to be undertaken.	Construction	Construction Manager ESR Contaminated Site Specialist	Section 6.1	Detailed Site Investigation Report Site inspections

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
CL30	Further investigations will be undertaken in the following locations: • 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.	Construction	Construction Manager ESR	Section 6.1.1	Detailed Site Investigation Report Site inspections
Contamination caused by the works					
CL31	Contamination that occurs during the construction of the M12 Central Project by Seymour Whyte, of its subcontractors, mut be reported as environmental incidents in accordance with the M12 Environmental Incident Classification and Reporting procedure (refer to CEMP Appendix A7) including requirements for Material Harm pollution events.	Construction	ESR	TfNSW QA G36	Incident reports
CL32	Contamination that occurs during the construction of the M12 Central Project by Seymour Whyte, of its subcontractors, must be assessed and remediated in accordance with relevant legislation, the RMS Guideline for the Management of Contamination, and contaminated land management guidelines made or approved by the EPA.	Construction	ESR Contaminated Site Specialist	TfNSW QA G36	Incident reports Contaminated waste classification reports
CL33	Where disposal of contaminated material is proposed, waste sampling and classification must be completed in accordance with the NSW EPA Waste classification guidelines (2014), and relevant Resource Recovery Orders (refer to CWRMP Section 5.2.1 and 5.5).	Construction	ESR Contaminated Site Specialist	TfNSW QA G36	Contaminated waste classification reports
CL34	Where remediation is proposed, the remediation solution must be in accordance with the RAP (refer to Section 6.2).	Construction	Contaminated Site Specialist	TfNSW QA G36	Site Audit Statement

ID	Management measures	When to implement	Responsibility for implementation	Reference or source	Evidence of implementation
			Site Auditor		

7 Compliance management

7.1 Roles and responsibilities

The organisational structure for the M12 Central package and overall roles and responsibilities are outlined in Section 5.1 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed 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. The Site Auditor must be on the list of NSW EPA accredited Site Auditors and must be approved by TfNSW at least 5 days prior to preparation of the Remedial Action Plan (refer to Section 7.4).

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) must be submitted to the Planning Secretary for information only. 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

Seymour Whyte will engage a Contaminated Site Specialist (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) to carry out a Detailed Site Investigation (Stage 2 Site Contamination Assessment) and intrusive asbestos investigations.

The Contaminated Site Specialist will be responsible, under the direction of Seymour Whyte, for the implementation of the environmental controls relating to contaminated land for the M12 Central package. The Contaminated Site Specialist will also be responsible for the preparation of the Detailed Site Investigation Report, as outlined in NSW CoA E85.

The Contaminated Site Specialist will identify opportunities to improve topsoil productivity of previously disturbed areas which will be incorporated into the M12 Central package as feasible and reasonable.

7.1.3 Occupational Hygienist

Seymour Whyte will engage an Occupational Hygienist that is appropriately degree qualified and have a minimum of 5 years' experience in contaminated land, site assessment and remediation and also having an appropriate accreditation as an occupational hygienist.

The Occupational Hygienist must undertake or arrange for tests, drawings, calculations, reports, assessments, direct and/ or make recommendations by the Occupational Hygienist, where stated in this Plan and the TfNSW Specifications.

You're the Occupational Hygienist must be on Site during the following activities:

- advance contamination assessments
- whenever topsoil operations are underway, and
- at other times required within this Specification and for other Specifications (where demolition, excavation and/ or clearing and grubbing activities are required).

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 OCCLMP, the plans and procedures prepared under the this CCLMP relevant to the M12 Central package
- 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 B)
- Procedure to follow in the event of uncovering asbestos during construction works (refer to Appendix C).

The ER will review and approve the induction and training program prior to the commencement of construction and monitor implementation.

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 (or delegate) 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 5.3 of the CEMP.

7.3 Monitoring and inspections

7.3.1 Monitoring

A Construction Soil and Water Monitoring Program has been prepared under and consistent with the overarching Construction Soil and Water Monitoring Program developed in accordance with NSW CoA C11(b) and NSW CoA C11(c) and is provided in the CSWMP.

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

- Monitoring / testing of asbestos containing soil
- If required under the AMP (Appendix C), 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 construction 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 6.1.5)
- 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.

Monitoring, sampling and classification for contamination must be completed by a suitably qualified professional. Reports for each activity listed above will include details on the monitoring or sampling density and methods used to determine the in accordance with the relevant guidelines and standards relevant.

Monitoring for contamination will be undertaken by a suitably qualified person(s). This will include development of the sampling or monitoring programs to address the above commitments.

Further details of monitoring requirements for the M12 Central package are presented in Section 7.2 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 M12 Central package. Seymour Whyte environmental personnel will carry out weekly site inspections.

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 7.1 of the CEMP.

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

7.4 Hold Points

Hold Points and Witness Points relevant to this Plan are outlined in Table 7-2.

Table 7-2: Hold Points and Witness Points applicable to this Plan

TfNSW QA spec	Clause	Type	Description	Plan reference
G36	3.2.4	Hold Point	Submission of EWMS	Section 1.5.1
G36	4.2	Hold Point	Submission of proposed NSW EPA accredited site auditor	Section 7.1.1
G36	4.2	Hold Point	Submission of Remediation Remedial Action Plan for contaminated land (where the Remedial Action Plan is to be prepared by the Contractor)	Section 6.2
G36	4.2	Hold Point	Submission of Section A Site Audit Statement and accompanying Site Audit Report	Section 6.2
G36	4.2	Hold Point	Submission of Draft Long Term Environmental Management Plan	Section 6.3
G36	4.15.2	Hold Point	Pre-construction land condition assessment report for each area intended used for the construction site facilities, and evidence of any necessary statutory and environmental approvals.	Section 6.1.6
R44	2.5.2	Hold Point	Submission of an Asbestos Management Sub-Plan (AMSP) for On-Site Encapsulation of Asbestos Contaminated Material	Section 6.2
R44	2.5.2.1	Hold Point	At least 24 Hours prior to excavation, submit details of: • Each proposed location and method of encapsulation • Air monitoring and dust suppression methodology • Hydrogeologist report if a borrow pit option is proposed	Section 6.2
R44	2.3	Witness Point	Advance topsoil depth and contamination investigations/ inspections.	Section 7.1.3

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 7.4 of the CEMP.

7.6 Reporting and identified records

Reporting requirements relevant to the management of contaminated land management are identified in Table 7-3. Requirements and responsibilities for reporting are further described in Section 7.5 of the CEMP.

Accurate records will be maintained substantiating all construction activities associated with the M12 Central package or relevant to the conditions of approval, including measures taken to implement this CCLMP.

Table 7-3: Reporting requirements relevant to contamination

Item	Frequency	Standards	External reporting	Responsibility
Incident and non-compliance reports	At each occurrence	Reporting of incidents and non-compliances in accordance with CoA, EPL, PIRMP, G36 and the TfNSW Environmental Incident Procedure (EMF-13-PC-0001) (2021)	Appropriate authority dependant on nature of the incident (e.g. EPA, DPE) (see Section 6 of CEMP)	ESR
Site Contamination Report	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(s) must be prepared in accordance with guidelines made or approved under section 105 of the *Contaminated Land Management Act 1997*. The 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.	Planning Secretary (for information) TfNSW	Contaminated Site Specialist Site Auditor
Remedial Action Plan and Interim Audit Advice/Part B	If investigations conclude that the specified land is contaminated such that it is and will remain unsuitable for the Project	CLM Act 1997, TfNSW Specifications and A Framework for Assessing the Sustainability of Soil and Groundwater Remediation (SuRF 2009).	Planning Secretary (for information) EPA Accredited Site Auditor	Contaminated Site Specialist Site Auditor
Section A1 or Section A2 Site Audit Statement and Site Audit Report	No later than one month before the commencement of Operation	The Site Audit Statement and Site Audit Report must be prepared by a Site Auditor on the list of NSW EPA accredited site auditors.	Planning Secretary (for information) Relevant Councils	Site Auditor

Item	Frequency	Standards	External reporting	Responsibility
Unexpected contaminated land finds register	Made available on request for inclusion in the Monthly Reports	The Unexpected Contaminated Land Finds Register will be prepared in accordance with the Unexpected Finds Procedure (Appendix B) prepared under the approved Unexpected Finds Procedure in the OCCLMP.	TfNSW Where it is deemed that the contamination has been, or could have been caused or changed by the construction of M12 Central package, the EPA will be notified in accordance with Section 60 of the CLM Act.	ESR
Contaminated Land Register	Made available on request for inclusion in the Monthly Reports	The Contaminated Land Register will be prepared in accordance with the CCLMP.	TfNSW	ESR
Asbestos Register	Made available on request for inclusion in the Monthly Reports	The Asbestos Register will be prepared in accordance with the CCLMP.	TfNSW	ESR
Pre-construction land condition assessment report	Prior to taking possession of any area of for construction ancillary facilities	TfNSW Environmental Procedure “Management of Wastes on Roads and Maritime Services Land	TfNSW	ESR
Post-construction land condition assessment report	When construction site facilities are no longer required	TfNSW Environmental Procedure “Management of Wastes on Roads and Maritime Services Land plus Contamination Assessment post-construction should be as per NEPM guidelines	TfNSW	ESR

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 ESR is responsible for ensuring stage-specific environmental risks are identified and included in the M12 Central package risk register and appropriate mitigation measures implemented throughout the construction, as part of the continuous improvement process. The process for ongoing risk identification and management during construction is outlined in Section 4.1.2 of the CEMP.

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 the OCCLMP Plan, this Plan 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 7.7 of the CEMP may result in the need to update or revise this CCLMP. This will occur as needed. Any revisions to this CCLMP will be in accordance with the process outlined in Section 1.12 of the CEMP.

A copy of the updated CCLMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure (refer to Section 7.6.2 of the CEMP).

Construction Contaminated Land Management Sub-plan

Appendix A – Secondary CoA, Secondary REMMs and TfNSW QA specifications

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Appendix A – Secondary CoA, Secondary REMMs and TfNSW QA Specifications

Secondary requirements that are related, but not specific to, the development of this Plan are outlined in this appendix. Cross references are provided to indicate where the requirements are addressed in this Plan or other Project management documents. This includes:

- Secondary NSW Conditions of Approval (CoA) which are listed in Table A1
- Secondary Revised Environmental Management Measures (REMMs) which are listed in Table A2
- Relevant requirements of the TfNSW QA Specifications which are listed in Table A3.

Table A1: Secondary NSW CoA

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 Section 6.1.2 Section 6.9, CL1
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;	Section 6.1.1 Section 6.1.2

CoA No.	Condition Requirements	Document Reference
	(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 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; (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 6.9, CL1
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. 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.	Section 6.2 Section 6.9, CL9

CoA No.	Condition Requirements	Document Reference
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 Section 6.9, CL11 and CL12
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 6.8 Appendix B Appendix C
E90	The Unexpected Contaminated Land and Asbestos Finds Procedure must be implemented throughout the duration of Work.	Section 6.8 Appendix B Appendix C
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 6.7 CWRMP

CoA No.	Condition Requirements	Document Reference
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 6.7 CWRMP

Table A2: Secondary REMMs

REMM	Requirement	Document Reference
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 6.1.4 CSWMP
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 6.1.4 Section 6.9, CL2 CSWMP
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 • Within AEI 24: Stockpiles within the OzSource property	Section 6.1.1 Section 6.1.2

REMM	Requirement	Document Reference
	• 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.	Not applicable to M12 Central package
	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.	Not applicable to M12 Central package
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 6.1.3 Appendix C
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	Section 4.2.3 Section 6.6 Section 6.9, CL6

REMM	Requirement	Document Reference
	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).	
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.	CWRMP Section 6.7
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
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 6.1.5
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 6.1.5
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 6.9, CL24

Table A3: TfNSW QA specifications

Specification	Clause	Requirement	Document Reference
G36	4.2	Engage 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) to carry out a Stage 2 Site Contamination Assessment in accordance with the M12 Motorway CoA, the findings and recommendations of the Stage 1 Site Contamination Assessment carried out as part of the Environmental Assessment Documentation and detailed design contamination investigation reports and in accordance with the Contaminated Land Management Act Guidelines available at: • https://www.epa.nsw.gov.au/your-environment/contaminated-land/statutory-guidelines The Stage 2 Site Contamination Assessment must 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 the Principal.	Section 6.1.1 Section 7.1.2
		The Stage 2 Site Contamination Assessment Report 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 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; (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 risk and 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	Section 6.1.1

Specification	Clause	Requirement	Document Reference
		(i) whether the land is suitable (for the intended final land use) or can be made suitable through remediation.	
G36	4.2	Monitor contamination during the WUC and, if directed by the Principal, revise the Site Contamination Assessment Report.	Section 6.1.1
G36	4.2.1	Areas of known contamination within the Site are shown in the Environmental Assessment Documents listed in Annexure G36/A3 and within detailed design contamination investigation reports.	Information
G36	4.2.2	Include in your CEMP a Contaminated Land Management Sub-Plan, which must comply with the *Contaminated Land Management Act 1997 (NSW)*, TfNSW publication "Guideline for the Management of Contamination", TfNSW "Environmental Incident Procedure", and EPA guidelines on contaminated land management.	Section 3.1
		The Contaminated Land Management Sub-Plan must include: (i) investigations in the vicinity of moderate risk areas including service stations (operational and non-operational), stockpiles and market gardens;	Section 6.1.1
		(ii) contaminated land legislation and guidelines including any relevant licences and approvals to be obtained;	Section 3.1
		(iii) identification of locations of known or potential contamination, and preparation of a map showing these locations;	Section 4.1.1 Figure 4-1 Figure 6-1
		(iv) identification of rehabilitation requirements, classification, transport and disposal requirements of any contaminated land within the Site;	Section 6.2 Section 6.7
		(v) measures to manage stockpiled potentially contaminated soil in accordance with the requirements of NSW EPA Waste Guidelines;	Section 6.7

Specification	Clause	Requirement	Document Reference
G36	4.2.2	(vi) contamination management measures including waste classification and reuse procedures and unexpected finds procedures for unanticipated discovery of contaminated material during construction;	CWRMP Appendix B
		(vii) asbestos handling and disposal requirements in accordance with NSW EPA guidelines and Clause 4.2.6; and	Appendix C
		(viii) An 'Unexpected Contaminated Land, and Asbestos Finds' procedure for implementation throughout construction. The procedure must identify details of who will be responsible for implementing the procedure and the roles and responsibilities of all parties involved.	Appendix B
G36	4.2.3	Unexpected Contamination Find Promptly notify the Principal of any suspected or potential contamination exposed during construction activities, and cease all work activities within the vicinity of actual or suspected contaminated land. The Principal may at its discretion choose to take over the investigation and management of an unexpected contamination find, and directly appoint an EPA accredited contaminated site auditor.	Section 6.8 Appendix B
G36	4.2.4	Remedial Action Plan A Draft Remedial Action Plan has been provided by the Principal in the Environmental Assessment Documentation. Using the Draft Remedial Action Plan provided as a guide, prepare your Remedial Action Plan for the remediation of the known areas of contamination or an unexpected contamination find, and areas of potential contamination in their immediate vicinity.	Section 6.2
		Engage a NSW EPA accredited site auditor to review the Remedial Action Plan and to certify that the Remedial Action Plan is appropriate for use and to ensure that the site can be made suitable for the proposed use upon completion of any remedial action carried out (via a Section B Site Audit Statement or Interim Audit Advice). The site auditor must be on the list of NSW EPA accredited site auditors and must be approved by the Principal.	Section 6.2 Section 7.1.1

Specification	Clause	Requirement	Document Reference
G36	4.2.4	***HOLD POINT*** ***Process Held:*** ***Use of Remedial Action Plan.*** ***Submission Details:*** ***At least 5 working days prior to preparation of the Remedial Action Plan, submit your proposed NSW EPA accredited site auditor, and relevant CV and accreditation.*** ***Release of Hold Point:*** ***The Principal will consider the submitted documents prior to authorising the release of the Hold Point. The Principal may request additional information in respect of the submitted documents.***	Section 7.4
		The Remediation Remedial Action Plan must be prepared in accordance with EPA guidelines on contaminated land management, and must include the following: (a) testing requirements for any contaminated material prior to its disposal off site; (b) validation plan, which must include the area in the immediate vicinity of (both below and adjacent to) the known contamination; (c) implications of the validation results on the waste classification for material that may be excavated in the vicinity of the known contamination.	Section 6.2
		Identify and select remediation options using a sustainability hierarchy (as outlined under Lan-3 in the ISCA IS TM).	Section 3.2 Section 6.2
		HOLD POINT (Where the Remedial Action Plan is to be prepared by the Contractor) Process Held: Activities within the vicinity of actual or suspected contaminated land. Submission Details: At least 5 working days prior, submit your ~~Remediation~~ ***Remedial*** Action Plan to be prepared by you, and relevant procedures. Release of Hold Point: The Principal will consider the submitted documents prior to authorising the release of the Hold Point. The Principal may request additional information in respect of the submitted documents.	Section 7.4

Specification	Clause	Requirement	Document Reference
		Also submit the final Remedial Action Plan to the Planning Secretary for information prior to commencing remediation.	Section 6.2
G36	4.2.4	Carry out remediation of the contaminated material, or its removal and disposal, in accordance with the Remedial Action Plan. Any changes to the Plan must be agreed to by the Principal.	Section 6.2
		Following implementation of the Remedial Action Plan, 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 the Principal, Planning Secretary and relevant councils. You may submit the Section A Site Audit Statements progressively for individual parcels of remediated land.	Section 6.2
		HOLD POINT ***Process Held:*** ***Completion of implementation of the Remedial Action Plan*** ***Submission Details:*** ***Submission of Section A Site Audit Statement and accompanying Site Audit Report.*** ***Release of Hold Point:*** ***The Principal will consider the submitted documents prior to authorising the release of the Hold Point. The Principal may request additional information for inclusion in the Section A Site Audit Statements and accompanying Site Audit Report from the NSW EPA accredited site auditor.***	Section 7.4
		Where the Remedial Action Plan includes encapsulation of Asbestos-Containing Material (ACM), prepare a long term environmental management plan (LTEMP). The LTEMP must be prepared in consultation with and signed off by the NSW EPA accredited site auditor. The content of the LTEMP should be guided by the NSW EPA accredited site auditor and must include (but is not limited to) the following:	Section 6.3
		(i) 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;	Section 6.3

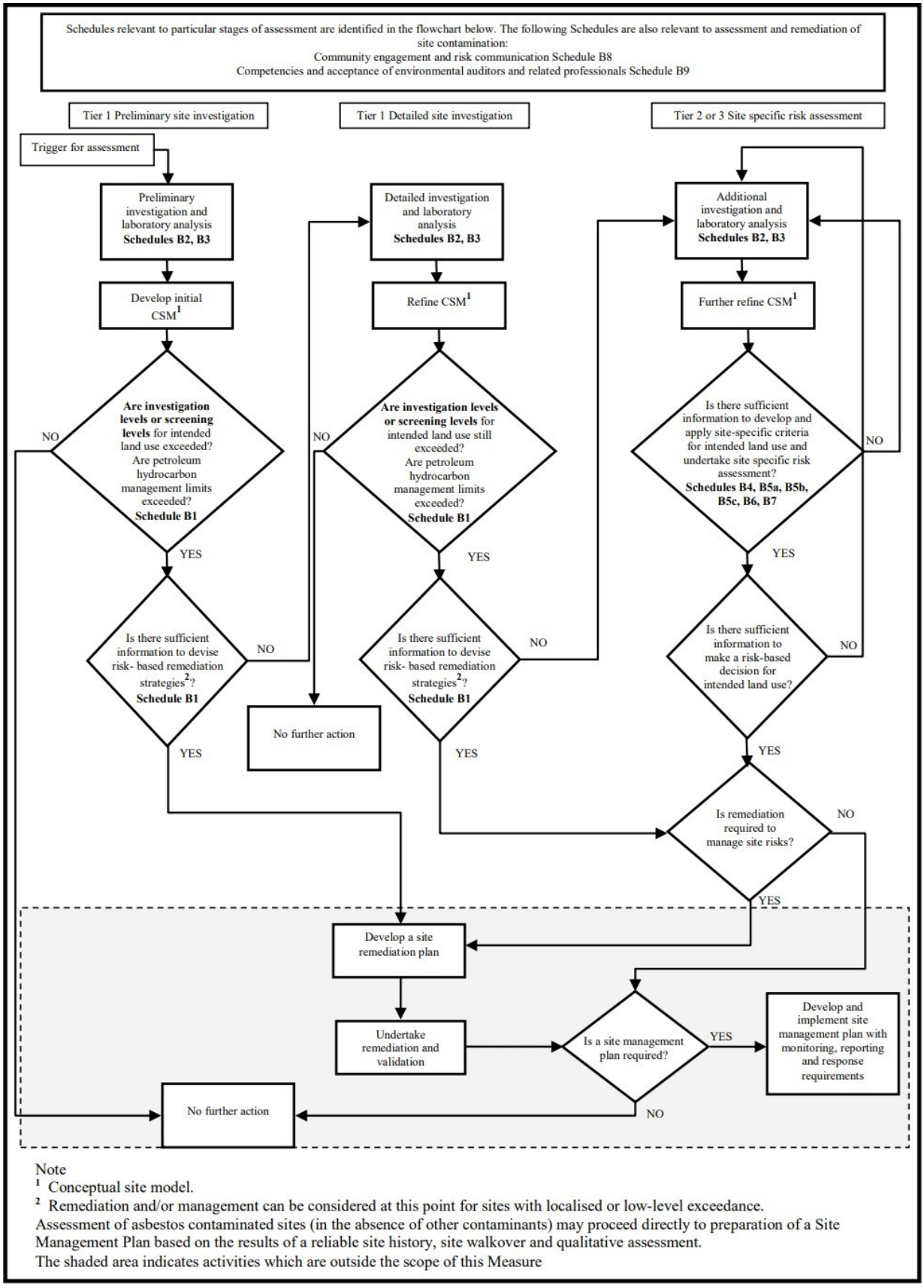
Specification	Clause	Requirement	Document Reference
G36	4.2.4	(ii) As built drawings of the completed ACM encapsulation sites and certification that the encapsulation has been undertaken in accordance with these drawings. Certification to include signed or stamped works-as-executed drawings or similar; and	Section 6.3 Appendix C
		(iii) Procedures associated with maintenance and monitoring (including a maintenance and inspection schedule) of the completed ACM encapsulation sites.	Section 6.3 Appendix C
		Provide the draft LTEMP to the Principal for comment at least 20 days prior to sign off by the NSW EPA accredited site auditor. Address and close out any comments to the Principal's satisfaction prior to sign off by the NSW EPA accredited site auditor. The LTEMP must be signed off by the NSW EPA accredited auditor prior Completion.	Section 6.3
		HOLD POINT ***(Where ACM encapsulation is required by the Remedial Action Plan)*** ***Process Held:*** ***Submission of your LTEMP to the NSW EPA accredited site auditor for approval.*** ***Submission Details:*** ***Submission of Draft LTEMP*** ***Release of Hold Point:*** ***The Principal will consider the submitted documents (and any subsequent required revisions) prior to authorising the release of the Hold Point. The Principal may request additional information/ revisions for inclusion in the LTEMP in respect of the submitted documents.***	Section 7.4
G36	4.2.5	Implement relevant control measures to divert any surface runoff away from the contaminated land, and capture and treat any surface runoff contaminated by exposure to the contaminated land.	Section 6.9, CL28
G36	4.2.6	Prepare an Asbestos Management Sub-Plan (reviewed and approved by a suitably experienced and accredited Environmental Scientist/Engineer) as part of the CEMP. The Asbestos Management Sub-Plan must be completed in accordance with relevant NSW EPA endorsed guidelines (including the waste guidelines) and relevant industry codes of practice and must include:	Appendix C

Specification	Clause	Requirement	Document Reference
G36	4.2.6	(a) Identification of potential asbestos on Site, including advance work options to assess and manage or mitigate the risk prior to commencing other works;	Appendix C
		(b) Measures to remove visible asbestos containing materials prior to disturbance of soils;	Appendix C
		(c) Appropriate measures to characterise in situ soil and fill material for the presence of asbestos prior to and during ground disturbance activities in order to characterise existing ground conditions and minimise the volume of potentially asbestos impacted spoil requiring ongoing management and/or disposal;	Appendix C
		(d) Detailed material handling procedures designed to manage and handle any asbestos including adopting work practises that ensure asbestos is not mixed with non-asbestos materials;	Appendix C
		(e) A draft Asbestos Removal Control Plan including a methodology for the identification, encapsulation and/ or disposal of asbestos containing materials;	Appendix C
		(f) Outline the mitigation measures to be implemented in the event that asbestos containing materials are identified;	Appendix C
		(g) Procedures for disposal of asbestos in accordance with NSW EPA guidelines (including the NSW EPA (2014) Waste Classification Guidelines) and relevant industry codes of practice; and	Appendix C
		(h) A methodology for the clearance of in situ soil following the removal of asbestos containing materials.	Appendix C
G36	4.2.7	Contamination resulting from your Works Under the Contract must be assessed and remediated in accordance with relevant legislation, the RMS Guideline for the Management of Contamination, and contaminated land management guidelines made or approved by the EPA.	Section 6.9

Appendix B – Unexpected Contaminated Land and Asbestos Finds Procedure

Appendix C – Asbestos Management Plan

Appendix D – Process for assessment of site contamination



Recommended general process for assessment of site contamination provided in the NEPM 1999.

Appendix B

Unexpected Contaminated Land Finds Procedure

M12 Motorway - Central

January 2025

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Document control

File Name	**M12 Central CEMP: Appendix B5**
Title	Construction Contaminated Lands Management Sub-plan Appendix B – Unexpected Contaminated Land Finds Procedure
Document Number (Teambinder)	M12CCO-SYW-ALL-EN-PLN-000003

Approval and authorisation

Plan reviewed by:	Plan reviewed by:
[redacted] Seymour Whyte Environmental Site Representative	[redacted] Seymour Whyte Project Manager
18/01/2025	18/01/2025
	

Revision history

Revision	Date	Description
A	18/02/2022	First draft for TfNSW review
B	29/04/2022	Updated in response to TfNSW review
C	20/06/2022	Updated in response to TfNSW review
D	27/07/2022	Updated in response to TfNSW and ER review
E	28/08/2023	Updated in response to OCEMP update.
F	18/01/2025	Updated in response to OCEMP update

Contents

Glossary/Abbreviations

Abbreviation	Expanded Text
ASS	Acid Sulfate Soil
CCLMP	Construction Contaminated Land Management Sub-plan
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	Collective reference to the M12 EIS, Submissions Report and Amendment Report and supplementary reports as detailed in NSW CoA A1.
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	TfNSW Environment and Sustainability Manager
ESR	Environmental Site Representatives
EWMS	Environmental Work Method Statements
km	Kilometres
OCEMP	Overarching Construction Environmental Management Plan
PPE	Personal protective equipment
Project, the	The CSSI as approved by Minister for Planning and Public Spaces on the 23 April 2021 (SSI 9364)
RAPs	Remedial Action Plans
SWMS	Safe Work Method Statements
TfNSW	Transport for New South Wales
WSIA	Western Sydney International Airport

1 Introduction

1.1 Context

This Unexpected Contaminated Land Finds Procedure (this Procedure) is an appendix of the Construction Contaminated Land Management Sub-plan (CCLMP) which forms part of the Construction Environmental Management Plan (CEMP) for the M12 Motorway – Central package.

This Procedure has been prepared under the Overarching Construction Environmental Management Plan (OCEMP) and relevant sub-plans developed for M12 Motorway (the Project), to address the requirements of the Minister's Conditions of Approval (CoA), Revised Environmental Management Measures (REMMs) listed in Environmental Impact Statement (EIS), Submissions Report, Amendment Report, Amendment Report Submissions Report (ARSR), ARSR Amendment Report, all applicable legislation, and Transport for New South Wales (TfNSW) specifications.

1.2 Purpose

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

This Procedure has been prepared under and consistent with the OCEMP and in particular the overarching Unexpected Contaminated Land Finds Procedure, which has been developed 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.

1.3 Scope of the Procedure

The scope of this Procedure is to describe the steps to be taken in the event of an unexpected find of contaminated soil/material during construction. This procedure is not applicable to the identification of soils suspected to be contaminated with plant pathogens.

This Procedure is applicable to all activities during construction of the M12 Central package, including all areas where physical works will occur or areas that may otherwise be impacted by the construction works, and under the control of Seymour Whyte. All Seymour Whyte staff and sub-contractors are required to operate fully under the requirements of this Procedure and CCLMP, over the full duration of the construction program.

A copy of this Procedure will be kept on the premises for the duration of construction.

1.4 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 M12 Central package 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.

1.5 Roles and responsibilities

The 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 area's Supervisor 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 Supervisor 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 ESR (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.

Seymour Whyte will engage a Contaminated Site Specialist (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) to carry out a Detailed Site Investigation (Stage 2 Site Contamination Assessment) and intrusive asbestos investigations.

The, under the direction of Seymour Whyte, for the implementation of the environmental controls relating to contaminated land for the M12 Central package. The Contaminated Site Specialist will also be responsible for the preparation of the Detailed Site Investigation Report, as outlined in NSW CoA E85.

The Contaminated Site Specialist will identify opportunities to improve topsoil productivity of previously disturbed areas which will be incorporated into the M12 Central package as feasible and reasonable.

1.6 Review

This Procedure will be reviewed by the TfNSW ESM (or delegate) and the independent Environmental Representative (ER) to confirm it is consistent with, and incorporates, all relevant elements of the approved OCEMP, prior to submission to the Planning Secretary for information. Construction of the M12 Central package will not commence until this Procedure has been accepted by the ER and provided to the Planning Secretary for information.

This Procedure will be updated throughout construction of the M12 Central package 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 Foreman/ Site Supervisor will immediately notify the ESR
- The ESR 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 C 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/or Safety Manager and reviewed by the TfNSW Project Manager and TfNSW ESM (or delegate).

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, in consultation with TfNSW ESM (or delegate), and if considered necessary, the Contaminated Site 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. The ESR (in consultation with the TfNSW ESM (or delegate) 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 CWRMP (Appendix B9 of the CEMP).

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 (Appendix B4 of the CEMP) 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 Contaminated Site Specialist. TfNSW have prepared Draft RAPs for the 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 TfNSW in accordance with TfNSW QA Specification G36, 4.2 Hold Point. TfNSW will submit the RAP to the Planning Secretary for information only in accordance with CoA E87.

Remedial actions will be incorporated into specific Remedial Action Plans (RAPs). RAPs will be prepared by a suitably qualified and experienced Contaminated Site Specialist 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 ESR 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. TfNSW will submit the Section A1 or Section A2 Site Audit Statement and the accompanying Site Audit Report to 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 Seymour Whyte to recommence works upon reviewing the documentation provided.

3 Records

Seymour Whyte will maintain a register of any unexpected contamination finds, including a map of all contaminated and/or remediated sites. The register will be made available to the TfNSW ESM (or delegate) on request for inclusion in Monthly Reports.

Appendix C

Asbestos Management Plan

M12 Motorway – Central

January 2025

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Document control

File Name	**M12 Central CEMP: Appendix B5**
Title	Construction Contaminated Lands Management Sub-plan Appendix C – Asbestos Management Plan
Document Number (Teambinder)	M12CCO-SYW-ALL-EN-PLN-000003

Approval and authorisation

Plan reviewed by:	Plan reviewed by:
[redacted] Seymour Whyte Environmental Site Representative	[redacted] Seymour Whyte Project Director
18/01/2025	18/01/2025
	

Revision history

Revision	Date	Description
A	18/02/2022	First draft for TfNSW review
B	29/04/2022	Updated in response to TfNSW review
C	20/06/2022	Updated in response to TfNSW review
D	27/07/2022	Updated in response to TfNSW and ER review
E	28/08/2023	Updated in response to OCEMP update
F	18/01/2025	Updated in response to OCEMP update

Contents

Tables

Glossary/Abbreviations

Abbreviation	Expanded Text
ABN	Australian business number
ACD	Asbestos Contaminated dust or debris
ACM	Asbestos containing material
AMP	Asbestos Management Plan
ARCP	Asbestos Removal Control Plan
CCLMP	Construction Contaminated Land Management Sub-plan
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	TfNSW Environment and Sustainability Manager
ESR	Environmental Site Representatives
EWMS	Environmental Work Method Statements
km	Kilometres
LAA	Licensed asbestos assessor
LTEMP	Long-Term Environmental Management Plan
OCEMP	Overarching Construction Environmental Management Plan
OCCLMP	Overarching Construction Contaminated Land Management Sub-plan
PPE	Personal protective equipment
Procedure, this	Unexpected Discovery of Contaminated Land Procedure
Project, the	The CSSI as approved by Minister for Planning and Public Spaces on the 23 April 2021 (SSI 9364)
QA	Quality assurance

Abbreviation	Expanded Text
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 Context

This Asbestos Management Plan (AMP or Plan) is an appendix of the Construction Contaminated Land Management Sub-plan (CCLMP) which forms part of the Construction Environmental Management Plan (CEMP) for the M12 Motorway – Central package.

This Plan has been prepared under the Overarching Construction Environmental Management Plan (OCEMP) and relevant sub-plans developed for M12 Motorway (the Project), to address the requirements of the Minister's Conditions of Approval (CoA), Revised Environmental Management Measures (REMMs) listed in Environmental Impact Statement (EIS), Submissions Report, Amendment Report, Amendment Report Submissions Report (ARSR), ARSR Amendment Report, all applicable legislation, and Transport for New South Wales (TfNSW) specifications.

1.2 Purpose

This Asbestos Management Plan (AMP) has been prepared to outline the procedure to be undertaken in the event that potential asbestos containing material (ACM) or actual asbestos is uncovered during construction of the M12 Central package, 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 construction footprint 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 (QA) Specifications.

1.3 Scope

Work involving, or likely to involve the disturbance of asbestos is considered a high-risk activity. Implementation of this AMP does not replace the need for the preparation of Environmental Work Method Statements (EWMS) and Safe Work Method Statements (SWMS) for the management of materials containing asbestos.

EWMS will be prepared by the Environmental Site Representative (ESR) and reviewed by the TfNSW Project Manager, TfNSW Environment and Sustainability Manager (ESM) (or delegate) and independent Environmental Representative (ER) before commencement of the construction activities to which they apply.

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

1.4 Objectives

The key objectives of this Plan are to:

- Provide the procedure for assessment of asbestos / ACM
- 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.

1.5 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.

1.6 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.

1.7 Review

This Plan will be reviewed by the TfNSW ESM (or delegate) and the independent Environmental Representative (ER) to confirm it is consistent with, and incorporates, all relevant elements of the approved OCEMP, prior to submission to the Planning Secretary for information. Construction of the M12 Central package will not commence until this Plan has been accepted by the ER and provided to the Planning Secretary for information.

This Plan will be updated throughout construction of the M12 Central package 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, Seymour Whyte 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 to minimise / prevent the release of fibres to air
- **Step 4** – Notify the ESR and the Contaminated Site Specialist in, consultation with TfNSW ESM, will 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** – The Contaminated Site Specialist, in consultation with ESR, to implement RAP
- **Step 6** – NSW EPA accredited site 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 under the supervision of a Occupational Hygienist.

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. 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 generated 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, the Occupational Hygienist must provide notification to SafeWork NSW is required. SafeWork NSW requires a minimum of five days' notice prior to the removal of 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 (Occupational Hygienist)
- 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.

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 asbestos removal supervisor. 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 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 1: Removal techniques, applications and limitations

Removal Technique	Applicability and Limitations
Hand Picking	• Suitable for 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
Tilling	• Mechanical tilling to turn over soil followed by hand picking • Suitable for bonded ACM in soils to approx. 30 cm in sandy soils • Not applicable for friable asbestos • Less effective in areas of dense vegetation, or clayey soils
Mechanical Screening	• Suitable for large volumes of soil impacted by Bonded ACM • Susceptible to generate fibres requiring effective dust/fibre control • Not applicable for friable asbestos
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 Air Monitoring

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 detailed within the ARCP. 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* (2016):

- 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 of the asbestos work area will be carried out by the Occupational Hygienist in conjunction with the LAA. Monitors will be placed at several locations by the LAA, prior to the commencement of asbestos work. The results of air monitoring will be made available as soon as possible to all workers on site. The asbestos supervisor will be notified immediately if the fibre count exceeds the recommended level, as set out in Table 2.

Table 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.

2.2.7 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. The clearance certificate may be issued by the Occupational Hygienist.

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.

2.2.8 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 2016.*

Decontamination of personnel

Personnel decontamination will be undertaken each time workers leave the asbestos work area except in extreme emergencies. Personnel 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.

Vehicles and other wheeled/tracked plant must not leave the work area except via a vehicle decontamination point. The decontamination point must include a wheel/track wash and other cleaning facilities to remove any debris picked up in the work area. Bunding will be required to collect waste water and that water will need to be filtered via a high efficiency (minimum 5µm) water filter prior to disposal. Unfiltered water must not be allowed to enter drains, particularly soak-aways as residual asbestos debris could dry out and give rise to airborne fibres.

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/).

Seymour Whyte will notify the TfNSW ESM (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 waste tracking form(s) and documented within the M12 Central package 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 a Geotechnical Engineer and the 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, Seymour Whyte 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. Any required approvals will be obtained by Seymour Whyte. The ESR will submit the LTEMP, including details of consultation undertaken during its development and copies of any applicable statutory documentation, to the TfNSW ESM (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 and/or Safety Manager 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 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, 2011).

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 that documents all identified or potential asbestos-containing material in the M12 Central package. 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 M12 Central package.

The Asbestos Register will be made available to the TfNSW ESM (or delegate) on request for inclusion in 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: Seymour Whyte Environmental Site Representative Name: Signature: Date:	Assessment reviewed by: TfNSW Environment and Sustainability Manager Name: Signature: 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	
Source removal and off-site disposal	**Encapsulate**
• 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.