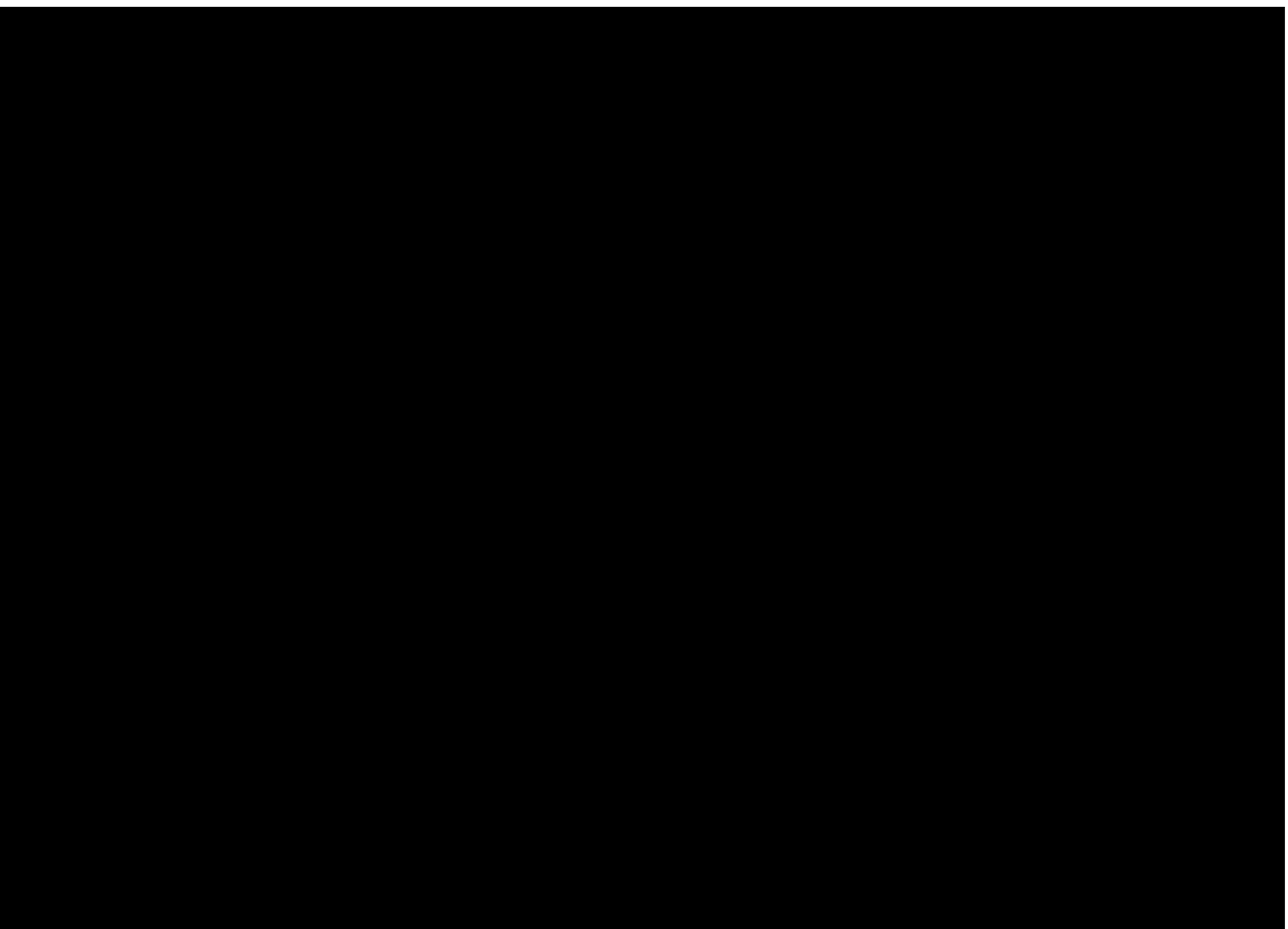


Contaminated Land Management Plan

Cross River Rail Project – Tunnel, Stations and Development Package (TSD)



Document number: CRRTSD-EN-ENMP-CBGU-000010

Revision date: 24/10/2025

Revision: 7

Compliance Matrix

Table 1 Compliance matrix

CRRDA REFERENCE	REQUIREMENT	ADDRESSED IN SECTION
Coordinator-General's change report Section 5.1.2.		
Section 5.1.2.	"Consistent with the evaluated project, any contaminated land that is encountered through construction activities will need to be remediated or disposed at an approved landfill under a DETSI approved soil disposal permit. Contaminated land will be managed in accordance with the OEMP and the Contaminated Land Management sub-plan that I require the proponent to update based on the proposed changes to the project."	This Plan

Details of Revision Amendments

Document Control

The CBGU Project Director is responsible for ensuring that this Plan is reviewed and approved. The Project Environment & Sustainability Manager is responsible for updating this Plan to reflect changes to the Project, legal and other requirements, as required.

Amendments

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

Distribution and Authorisation

The CBGU Project Director is responsible for the distribution of this Plan. The controlled master version of this document is available for distribution as appropriate and maintained on TeamBinder. All circulated hard copies of this document are deemed to be uncontrolled.

All personnel employed on the Project will perform their duties in accordance with the requirements of this Plan, supporting management plans, and related procedures.

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Referenced Documents

The following provides a list of referenced documents either as a sub-plan to this plan or referenced from.

Table 2 Referenced Documents

Document Number	Document Name	Location of Controlled Version
Referenced Project Plans include:		
CRRTSD-EN-MPL-CBGU-000019	Construction Environment Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000002	Waste Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000001	Air Quality Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000016	Erosion and Sediment Control Plan	TeamBinder
CRRTSD-TM-MPL-CBGU-000012	Construction Traffic Management Plan	TeamBinder
CRRTSD-SH-MPL-CBGU-000003	Occupational Health and Safety Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000006	Spoil Placement Management Plan	TeamBinder
CRRTSD-SH-PLN-CBGU-000005	Asbestos Management Plan – Health and Safety	TeamBinder
	Contaminated Land Management Procedure	TeamBinder
CRRTSD-EN-ENMP-CBGU-000007	Hazardous Goods Management Plan	TeamBinder
	Spill Procedure	TeamBinder

Note: this Management Plan may not contain the current version of the documents listed above. Refer to the 'location of controlled version' for the most current version.

Glossary of Terms

Table 3 Terms

Acronym	Definition
All Staff	Means all employees, Proponents and sub-contractors involved in the Project Works
AQMP	Air Quality Management Plan
CBD	Central Business District
CEMP	The Project's Construction Environmental Management Plan
CG	Coordinator-General
CGCR	Coordinator-General's Change Report
CGER	Coordinator-General's Evaluation Report
CLR	Contaminated Land Register
COEMP	The Project's Commissioning Environmental Management Plan
Contractor	The Contractors appointed to design, construct and commission the Project
Coordinator-General	The corporation sole preserved, continued and constituted under section 8 of the SDPWO
CRR	Cross River Rail
CRRDA	The Cross River Rail Delivery Authority
CSEP	Community and Stakeholder Engagement Plan
CTMP	Construction Traffic Management Plan
DETSI	Department of Environment, Tourism, Science and Innovation
Directly Affected Persons	An entity being either the owner or occupant of premises for which predictive modelling
EIS	Environmental Impact Statement
EMP	Environmental Management Plan (refers to the OEMP, CEMP, COEMP including any
EMS	Environmental Management System
Environmental Monitor	The Environmental Monitor engaged in accordance with Imposed Condition 7
ESCP	Erosion and Sediment Control Plan
GHG	Greenhouse gas
ISCA	Infrastructure Sustainability Council of Australia
Imposed condition/s	A condition/s imposed by the Coordinator-General under section 54B of the SDPWO Act
MRTS51	MRTS51 Environmental Management – DTMR Specification
OEMP	The Project's Outline Environmental Management Plan
Outline CEMP	The Project's Outline Construction Environmental Management Plan
Outline COEMP	The Project's Outline Commissioning Environmental Management Plan
Predictive Modelling	Means the use of appropriate analytical scenario testing, whether or not by numerical

Acronym	Definition
PPE	Personal Protective Equipment
Project	The Cross River Rail Project
Project Works	As defined in the Imposed Conditions
Proponent	The Authority
QA	Quality Assurance
Rail Infrastructure	A person who has effective management and control of rail infrastructure or proposed rail
Rail Transport Operator	A rail infrastructure manager or rolling stock operator, or a person or organisation which
RAP	Remediation Action Plan
SDPWO Act	<i>State Development and Public Works Organisation Act 1971</i>
SEMS	Queensland Rail's Safety and Environment Management System
SMP	Site Management Plan
SPMP	Spoil Placement Management Plan
Sub-plan	Any sub-plan to an EMP
WMP	Waste Management Plan

1 Introduction

1.1 Background

The Design and Construction Joint Venture comprising of CPB Contractors Pty Ltd, BAM International Australia Pty Ltd, Ghella Pty Ltd and UGL Engineering Pty Ltd (CBGU D&C JV or CBGU) is responsible for delivering the Cross River Rail (CRR) Project (the Project) on behalf of the Cross River Rail Delivery Authority (the Delivery Authority).

This Contaminated Land Management Plan should be read in conjunction with the Project's overarching Construction Environment Management Plan (CEMP).

The CEMP provides specific details regarding the background of the Project, the scope of the Project and the staging and timing of key milestones associated with the construction of the Project.

1.2 Context

This Construction Contaminated Land Management Plan (CLMP) forms part of the Construction Environmental Management Plan (CEMP) developed for the construction of the Project. The CLMP describes how CBGU will manage contaminated land and minimise impacts during construction of the Project.

1.3 Objectives

The objectives of this CLMP are to achieve the environmental outcomes stated in the CEMP through the implementation of site-specific mitigation measures. It will also:

- nominate the Project's monitoring and reporting requirements in relation to contaminated land
- ensure controls and procedures are implemented during construction activities to avoid, minimise or manage potential adverse impacts to the surrounding environment due to contaminated land
- manage the impact on the environment and public health as a result of contaminated soil, groundwater and soil gas, including undertaking any necessary investigations
- monitor the effects of management and mitigation measures.

1.4 Legislative Framework

Delivery and implementation of the Project must comply with the environmental legislation, guidelines and standards specified CEMP (as updated to reflect any changes current at commencement of each Project phase) and any additional requirements specified in the conditions of approval.

1.4.1 Commonwealth Legislation

Commonwealth legislation that is likely to be relevant to the Project and this CLMP includes:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure.*

1.4.2 State Legislation

State legislation that is likely to be relevant to the Project and this CLMP includes:

- *Cross River Rail Delivery Authority Act 2016*
- *Environmental Protection Act 1994*
- *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*
- *Biosecurity Act 2014*
- *City of Brisbane Act 2010*
- *Explosives Act 1999*
- *Local Government Act 2009*
- *Plumbing and Drainage Act 2018*
- *Vegetation Management Act 1999*
- *Waste Reduction and Recycling Act 2011*
- *Water Supply (Safety and Reliability) Act 2008*
- *Work Health and Safety Act 2011*
- *Environmental Protection (Water) Policy 2009*
- *Transport Operations (Road Use Management) Act 1995*

1.4.3 Approvals, Permits and Licences

CBGU will obtain licences, permits and approvals as required by law and maintain them as required throughout the delivery phase of the project. No condition of the Infrastructure Approval removes the obligation for CBGU to obtain, renew or comply with such necessary licences, permits or approvals.

Approvals expected to be required for the Project, that relate to management of contaminated land are identified in Table 4 below.

Table 4 Environmental approvals, permits and licences

Approval / Permit / Licence	Regulatory Authority	Responsibility / Timeframe	Items approved
Contaminated Soil-Disposal Permit (\$739)	Department of Environment and Science	CBGU <u>Preparation Timeframes:</u> up to 2 days <u>Approval Timeframes:</u> Up to 10 days	
Permit for approval of exempt waste levy	Department of Environment and Science	CBGU <u>Preparation Timeframes:</u> 1 week <u>Approval Timeframes:</u> 30 days	
Permits allowing import of clean material to various sites – Brisbane Airport	Commonwealth Department of Infrastructure, Regional Development and Cities & the Commonwealth Department Environment & Energy	CBGU – via haulage sub-contractor <u>Approval Timeframes:</u> Minimum 50 Business days for Approval (assuming no EPBC referral)	These may already be in place
Permits allowing import of clean material to various sites – Port of Brisbane	Port of Brisbane & the Commonwealth Department Environment & Energy	CBGU – via haulage sub-contractor <u>Approval Timeframes:</u> Minimum of 20 Business days for Port of Brisbane Approval, Minimum of 20 Business days for EPBC Referral (if triggered)	These may already be in place
Permits allowing import of clean material to various sites – Swanbank Enterprise Park	Ipswich City Council and the Department of Environment & Heritage Protection	CBGU – via haulage sub-contractor <u>Approval Timeframes:</u> Up to 80 Business Days (16 weeks), assuming no RFI request.	These may already be in place
Permits allowing import of clean material to various sites – Pine Mountain	Brisbane City Council	CBGU – via haulage sub-contractor <u>Approval Timeframes:</u> Minimum of 80 Business Days (16 weeks), subject to Overlay Controls & assuming no RFI request.	These may already be in place

Approval / Permit / Licence	Regulatory Authority	Responsibility / Timeframe	Items approved
(Quarry) & Larapinta (Sand Quarry)			
Development Permit (MCU) of Premises on Contaminated Land	Brisbane City Council & Department of Environment and Science	CBGU <u>Preparation Timeframes:</u> Assume up to 40 Business days negotiation & preparation. <u>Approval Timeframes:</u> Minimum of 50 Business Days (10 weeks), assuming no requests for further information (RFI).	

1.4.4 Guidelines and Standards

The following guidelines and standards are relevant to the management of contaminated land for the Project:

- Department of Environment and Science (2018). Queensland Auditor Handbook for Contaminated Land: Module 6: Content requirements for contaminated land investigation documents, certification and audit reports
- National Environment Protection Council (NEPC) (1999). National Environment Protection (Assessment of Site Contamination) Measure (as amended on 16 May 2013)
- Standards Australia (1998). Water Quality Sampling–Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples
- Standards Australia (1999). Guide to the investigation and sampling of sites with potentially contaminated soil Part 2: Volatile substances (AS4482.1)
- Standards Australia (2005). Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds (AS4482.1)
- Standards Australia (2004). Storage and Handling of Flammable and Combustible Liquids (AS1940)
- Standards Australia (2008). The Storage and Handling of Corrosive Substances 2008 (AS3780)
- ANZG (2018). Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia
- Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009). Department of Health and Department of Environment and Conservation
- PFAS National Environmental Management Plan, January 2018 (NEMP).
- EHP (July 2013) Queensland Water Quality Guidelines 2009, Version 3.
- Code of Practice for the Management and Control of Asbestos in Workplaces [NOHSC: 2018 (2005)]
- Code of Practice for the Safe Removal of Asbestos [NOHSC: 2002 (2005)].
- Workplace Health and Safety Queensland (WHSQ) 2011, How to Safely Remove Asbestos Code of Practice.
- Workplace WHSQ 2011, How to Manage and Control Asbestos in the Workplace Code of Practice.

2 Required Outcomes

The following environmental outcomes must be achieved throughout construction of the Project. The environmental outcomes may be achieved by meeting the performance criteria in this CLMP.

2.1 Coordinator-General Conditions

There are no specific Conditions provided in the Coordinator-General's Report On Project Change that are relevant to contaminated land; however, contaminated land encountered during the Project will be managed in accordance with the stipulations included in the Coordinator-General's Report On Project Change – Section 5.1.2. For all sites containing contaminated land, provisions relevant to contaminated land include the following:

- *Any contaminated land encountered through construction activities will be remediated or disposed of at an approved landfill under a DETSI approved soil disposal permit. Contaminated land will be managed in accordance with the OEMP and the CLMP.*

Note: Soil disposal permits are only required for sites listed on the Department of Environment, Tourism, Science and Innovation (DETSI) Environmental Management Register (EMR) / Contaminated Land Register (CLR).

This report fulfils the requirement to prepare a CLMP and includes provisions to obtain a DETSI approved soil disposal permit and manage contaminated land.

2.2 Environmental Outcomes

The following environmental outcome is to be achieved for the Project:

- Construction activities avoid, or minimise the environmental and public health risks from contaminated soil, groundwater or soil gas intercepted during Project Works.

2.3 Performance Criteria

The following performance criteria must be achieved throughout construction of the Project:

- Works are conducted in accordance with the *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1)* (the NEPM) (National Environment Protection Council 2013) and the *Queensland Auditor Handbook for Contaminated Land 2018*
- Works are conducted in accordance with the requirements of the *Environmental Protection Act 1994* (EP Act) and subordinate legislation
- Any Site Management Plan must be prepared by a Suitably Qualified Person (SPQ), certified by a Contaminated Land Auditor and approved by the DETSI
- Site investigations for contaminated sites inform detailed design and work planning, and are completed prior to construction
- Site Management Plans, including any required RAPs, are prepared in conjunction with detailed design. Project Works are conducted in accordance with the Site Management Plans. These Plans shall be prepared by a Suitably Qualified Person (SQP) and certified by Contaminated Land Auditor
- Construction activities involving the disturbance of contaminated land do not cause contamination of previously uncontaminated sites or adjoining land

- Handling of asbestos occurs in accordance with the *EP Act* and the *Work Health and Safety regulation 2011*, and relevant *Queensland Codes of Practice*
- The storage, handing and transport of hazardous materials does not cause contamination of land or waters, or if contamination does occur, remediation of the contaminated land or waters occurs in accordance with the relevant legislation, standards and procedures
- Investigations for potentially contaminated sites will be generally undertaken in accordance with the relevant legislation and guidelines listed within Section 1.4.

3 Impacts and Mitigation Measures

With a majority of the alignment within an urban environment, the risk of encountering contaminants is high, especially in the areas of the precincts that contain surface works. Works have been contained within the existing rail corridor where possible to minimise wider project impacts; however, contaminated material may be encountered within the existing rail corridor. In areas where the tunnel intersects contaminated sites on the surface, the risk of encountering contaminated material whilst excavating the tunnels is considered to be very low.

A range of environmental management measures and requirements to address potential impacts from contaminated materials are outlined below.

3.1 Impacts

3.1.1 General Impacts

The potential impacts arising from construction of the Project associated with contamination of land and/or water (prior to mitigations being implemented) includes:

- Contamination (both on and offsite) of surrounding soils and/or waters impacting local ecology
- Migration of contamination via groundwater and/or soil gas from potentially contaminated sites located adjacent to the construction footprint
- Delays in construction program and increased costs
- Mobilisation of contaminated soil and/or water
- Risk to human health through direct exposure
- Direct impacts on soil organisms and vegetation
- Complaints from the public relating to odours which could be released during ground disturbance or remediation
- Negative public relations associated with pollution and prosecution
- Fines or penalties from incorrect disposal of contaminated material
- Potential temporary increase in groundwater drawdown between Boggo Road Station and Woolloongabba Station due to tunnelling technique (mined) and depth of the alignment. Construction at this location may result in an increased potential for discharge of potentially contaminated groundwater from worksites to surface water and restrictions on the utilisation and disposal of contaminated groundwater arising from dewatering of the below ground works
- There is also potential for vapour or gas produced (soil gas) to be present where contamination or putrescible (decaying) material in soil and/or groundwater produces gas or is of a volatile nature. Soil gas has the potential to migrate into and accumulate in underground infrastructure (i.e. tunnels, stations and shafts).

Some of the potential areas of contamination identified within the EIS include:

- Presence of above and below ground flammable or combustible liquids – noting that underground storage tanks are considered to pose a higher risk of land contamination

- Likely contamination of current and historical rail corridor land due to past land management activities including, disposal of ash material, maintenance activities involving chemicals and petroleum based products, leaks and spills from locomotives and use of herbicides and pesticides.

3.1.2 Site-Specific Impacts

3.1.2.1 Southern Portal

- All sites involved with the Southern Portal (located in the Queensland Rail (QR) rail corridor land north of Dutton Park Station) are listed on the EMR for 'hazardous contamination' – with possible high arsenic levels. The Notifiable Activity for this land is hazardous contaminants. As such, there is the potential for contaminated soil to be intercepted at the construction worksites, including:
 - The Princess Alexandra (PA) Hospital (adjacent to the construction worksite), listed on the EMR as a Notifiable Activity for petroleum and oil storage
 - An automotive business and two service stations are adjacent to the rail corridor at Dutton Park in the vicinity of Annerley Road
 - Dutton Park Station and the Southern Portal which may contain asbestos materials. Asbestos materials identified on the Asbestos Register have been identified for the QR buildings or structures near the Southern Portal
 - Likely linkage pathway receptor potential surficial contamination
 - Likely pathways to on-site workers and ecological terrestrial receptors from potential contamination in fill materials and storage of materials on-site
 - Likely linkage pathway receptor from potential groundwater contamination (if present)
 - Potential source of groundwater contamination by existing leaking fuel storage or electrical transformers outside the project boundary
 - Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.2 Boggo Road Station

- A site within the Boggo Road Station is listed on the EMR for 'hazardous contamination' – with possible high arsenic levels along the rail corridor, with the remaining two sites not listed on the EMR. The Notifiable Activity for this land is rail yards
- Exposure to contaminants of potential concern, such as: TRH, BTEXN, PAH, VOC, OC/OP Pesticides, PCB, ACM and heavy metals, as these contaminants are typical of rail corridors
- Potential temporary increase in groundwater drawdown between Boggo Road Station and Woolloongabba Station with tunnelling technique (mined) and depth
- Increased potential for discharge of potentially contaminated groundwater from worksites to surface water and restrictions on the utilisation and disposal of contaminated groundwater arising from dewatering of the below ground works
- Demolition of building may uncover asbestos material
- The tunnel will pass under low risk land parcels - the possible Notifiable Activity is landfill Land use identified from the BCC 1965 Land Use Plan 'as bricks'
- Likely linkage pathway receptor from potential groundwater contamination (if present)

- Potential source of groundwater contamination by leaking fuel storage or electrical transformers
- Likely pathways to on-site workers and ecological terrestrial receptors from potential contamination in fill material and storage of materials on-site
- Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.3 Woolloongabba Station

- Lot 61 SP188566 historically comprised a portion of the former Woolloongabba Train Yard and associated activities, before redevelopment as the South Brisbane Dental Hospital. Investigations undertaken at the site reported fill material to approximately 4.5m depth, with ash fill and waste materials (including glass fragments), reported to depths up to 3.5m. Fill material has been identified to be contaminated with polycyclic aromatic hydrocarbons (PAHs) and heavy metals.
- Lot 63 SP312152 comprised a portion of the former Woolloongabba Train Yard and associated activities, before redevelopment as the Goprint and Landcenter buildings. Investigations undertaken at the site indicated the majority of fill material was contaminated, with ash fill and waste materials observed across the site. Fill material was identified to be contaminated with polycyclic aromatic hydrocarbons (PAHs) and heavy metals, with localised hydrocarbon, asbestos and per- and polyfluoroalkyl substances (PFAS)
- Remediation of Lot 63 SP312152 was undertaken between January 2019 and July 2019 which included removal of identified contaminated soil from within Area A (Lot 63 on SP312152). Partial remediation of Area B (Lot 64 on SP312152) has been completed, with remaining disturbed areas capped with a layer of geofabric membrane (A19) and at least 300mm of compacted fill material. Remediation was not completed within Area C (Lot 65 on SP312152), with existing asphalt hardstands retained as capping
- Possible Notifiable Activities for wood treatment or preservation identified, from the BCC 1965 Land Use Plan, an adjacent historic timber yard and sawmill listed on the EMR
- Likely pathways to on-site workers and ecological terrestrial receptors from potential contamination in fill material and past activities on site
- Likely linkage pathway receptor from potential groundwater contamination (if present)
- Potential identified source of groundwater contamination by leaking fuel storage
- Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.4 Albert Street Station

- Some sites surrounding the Albert St precinct are listed on the EMR for the Notifiable Activity 'petroleum storage or oil storage'. Demolition of buildings associated with the Albert Street station may uncover asbestos material
- Exposure to contaminants of potential concern, including: heavy metals, TRH, BTEXN, PAH, VOC, OC/OP, Semi Volatile Organic Compounds (SVOC), and ACM. Groundwater sample collected in 2017 reported concentrations of copper and zinc which exceeded the NEPM Groundwater Investigation Levels (GIL)
- Exposure to contaminants due to the widespread use of uncontrolled fill material is documented throughout the greater Brisbane area
- Likely pathways to on-site works and ecological receptors from potential contamination in fill materials and storage of materials
- Potential source of groundwater contamination by leaking fuel storage

- Likely linkage pathway receptor from potential groundwater contamination (if present)
- Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.5 Roma Street Station

- Potential exposure to land parcels listed on the EMR, including:
 - Roma Street Station - listed on the EMR for the Notifiable Activity 'rail yards'. The Roma Street Parkland occupies the site of the former Roma Street rail yards. The rail yard was remediated during the redevelopment although the land parcels remain on the EMR. Roma Street Parklands is currently managed under a Site Management Plan (SMP). Notably, the presence of asbestos was noted in the Asbestos Register for QR facilities at platform 10
 - The Brisbane Transit Centre (BTC) tower - listed on the EMR for the Notifiable Activity 'petroleum storage or oil storage'. The fuel storage is reported to comprise between 50,000 to 200,000L of fuel in above ground tanks. The BTC is likely to contain asbestos.
- Exposure to contaminants of potential concern, including: BTEXN, PAH, VOC, OC/OP, PCB, solvents, phenols, nitrates, ammonia, PFAS, ACM and heavy metals. A limited investigation undertaken in 2017, identified metals and TRH exceeded the assessment criteria within groundwater
- Additionally, an adjacent property to the surface works is listed on the EMR for the Notifiable Activity 'petroleum storage or oil storage'
- Likely pathways to on-site works and ecological receptors from potential contamination in fill materials and storage of materials
- Potential source of groundwater contamination by leaking fuel storage
- Likely linkage pathway receptor from potential groundwater contamination (if present)
- Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.6 Northern Portal

- The Northern Portal (located in the Queensland Rail (QR) rail corridor) are listed on the EMR for 'hazardous contamination' – with possible high arsenic levels
- There is the potential for soil contaminated to be intercepted at the construction worksites. Rail corridors are likely to contain arsenic residues as a result of herbicide/pesticide spraying during the 1940's and 1950's. The Northern Portal is located within the QR rail corridor. The Notifiable Activity for this land is hazardous contaminants.
- There is limited information available on potential contaminated through Victoria Park, although the widespread use of uncontrolled fill materials throughout the greater Brisbane area is well documented. The presence of asbestos was noted in the Asbestos Register for QR facilities in the vicinity of the Northern Portal
- Likely pathways to on-site works and ecological receptors from potential contamination in fill materials and storage of materials
- Potential source of groundwater contamination by leaking fuel storage
- Likely linkage pathway receptor from potential groundwater contamination (if present)
- Unlikely linkage pathway source to receptor from potential surficial contamination due to depth of clay.

3.1.2.7 Rail Corridor

As previously noted all lots located in the Queensland Rail (QR) rail corridor are listed on the EMR for 'hazardous contamination' – with possible high arsenic levels. Further detailed intrusive investigations are currently being undertaken for all worksites, including the rail corridor to confirm the areas of known contamination within the Project footprint. This CLMP will be updated as these results become available.

3.2 Mitigation Measures

3.2.1 General Mitigation Measures

Site Investigations (Contaminated Land) are currently being undertaken for the Project, with a focus on sites nominated on the Environmental Management Register (EMR) or Contaminated Land Register (CLR). From this, a Remediation Action Plan (RAP) will be developed for sites that are going to be remediated, or a Site Management Plan (SMP) will be developed for sites that will not be remediated. This will ensure that Project-related impacts on local communities and the environment as a result of contamination can be avoided, or minimised and managed. The following mitigation measures may be implemented to achieve the nominated environmental outcomes and performance criteria:

- Appropriate barriers will be installed to prevent public access to construction areas.
- Management and prevention of dust emissions in accordance with the Air Quality Management Plan (AQMP).
- Appropriate erosion and sediment controls and staging of site activities to minimise the extent of disturbed areas, and hence to minimise the potential run-off of contaminated soils in accordance with the requirements of the Erosion and Sediment Control Plan (ESCP).
- Controls for material haulage, such as covering loads or wetting material to reduce airborne dust emissions in accordance with the AQMP and Construction Traffic Management Plan (CTMP).
- Documentation of all contaminated material during transport operations (including the descriptions of processes, personnel and organisations involved in the removal, transportation and placement of contaminated material).
- Procedures for managing exposure of construction workers to potential contaminants in soil and water are to be implemented. This includes the use of personal protective equipment (PPE) and hygiene controls, and documentation of inspections and workplace health and safety compliance throughout construction and operation and other actions as addressed in the Occupational Health and Safety Plan (OH&S Plan).

3.2.1.1 Investigation of Potential Contamination

- Stage 2 Detailed Site Investigations are currently being undertaken, in accordance with the Contaminated Land Assessment – Interpretative Report, to ascertain the risk posed from disturbance by the Project of potentially contaminated sites. This CLMP will be updated with the results of these investigations once completed.
- Contaminated or spoil material unsuitable for spoil placement will be remediated or disposed of to landfill in accordance with the provisions of the Waste Management Plan (WMP).
- Undertake Project works in accordance with the Contaminated Land Control Plans for potentially contaminated sites.

3.2.1.2 Disturbance, Excavation, Removal and Disposal of Contaminated Soil

- If a site listed on the EMR is intercepted during tunnelling activities and the site includes an SMP, the conditions of the SMP will be complied with.
- Keep documented records of contaminated material movement and disposal
- Off-site disposal of contaminated material must be to a licensed landfill facility under a DETSI issued Disposal Permit and in accordance with the Project's WMP.
- Where unexpected finds of contaminated material is identified (including asbestos and acid sulfate soils), the unexpected finds protocol must be followed.

3.2.1.3 Disturbance and Migration of Contaminated Groundwater

- Targeted groundwater monitoring based on the anticipated source and nature of contamination for each site is currently being undertaken, utilising information provided within the Hydrogeological Interpretative Report (HIR). This CLMP is to be updated with the results and mitigation measures that arise from these investigations.
- Implement the ground water monitoring programme, as outlined in the WQMP, including use of triggers to identify mobilisation of contaminated groundwater both in- situ and at drawdown collection points.

3.2.1.4 Ground Gas Accumulation

- The Stage 2 Detailed Site Investigations of potentially contaminated sites has been completed nil areas of ground potential or actual risk were identified.

3.2.1.5 Provisions for Asbestos

- Adherence to an Asbestos Management Plan, prepared in accordance with relevant guidelines
- Where required, analytical testing is currently being undertaken to confirm the presence or absence of asbestos in previously filled areas and prior to intrusive works.
 - If asbestos is present, management measures for asbestos containing materials would be implemented in accordance with the Project's Asbestos Management Plan.
- Any investigation of asbestos contaminated soil must be undertaken by a suitably qualified person in accordance with the NEPM.

3.2.1.6 Provisions for Hazardous Substances and Construction Management

- A hazardous materials register will be developed for each worksite and is to include:
 - storage location
 - storage requirements
 - information on the proper use
 - handling information
 - disposal procedures.
- A register of Safety Data Sheets (SDS) for all materials and chemicals included in the hazardous materials register are to be stored and maintained with the relevant materials.

- All chemical and fuel storage areas are to be designed to comply with Australian Standards, including AS1940: Storage and Handling of Flammable and Combustible Liquids 2004 and AS3780: The Storage and Handling of Corrosive Substances 2008.
- The OHS Management Plan provides details on incident management including procedures for containing and cleaning-up accidental spillage of fuels and other hazardous materials.
- Spill response equipment commensurate of the type and quantity of hazardous substances being stored is provided at appropriate locations on site, in close proximity to storage and handling areas.
- Clean-up and remediation of spills and leaks as quickly as possible and in accordance with the Spill Management Procedure.
- Undertake refuelling and maintenance activities in appropriately located designated bunded areas to avoid the potential for soil and water contamination. The location of refuelling and maintenance activities have been identified on the General Construction Site Plans for each Site.
- Undertake regular inspections of tanks, bunds and storage areas to ensure the integrity of all facilities.

3.2.2 Site-Specific Contaminated Land Control Plans

Where required, site-specific mitigation measures will be fully developed following the completion of the site investigations currently being undertaken by an SQP.

Where required, site-specific mitigation measures will be referenced within in the site-specific contaminated land control plans. These can be provided on request to the IEM.

4 Compliance Management

4.1 Roles and Responsibilities

The organisational responsibilities and accountabilities in relation to environmental management throughout Project construction works are outlined in the overarching CEMP.

4.2 Induction and Training

4.2.1 Environmental Induction

Details regarding environmental induction requirements have been outlined in the overarching CEMP.

All CBGU employees, subcontractors, and visitors attending worksites are required to participate in a general induction training session. This training covers general environmental management requirements, site-wide controls, as well as site-specific risks and mitigation measures.

4.2.2 Environmental Training

Details regarding environmental training requirements have been outlined in the overarching CEMP.

Conduct induction and training for construction staff in relation to:

- The management and remediation of contaminated land
- Procedures for the handling, storage and disposal of hazardous materials
- Incident response practices and procedures
- Environmental awareness to encourage good material handling practices, spill management and incident reporting.

4.3 Incidents and Emergencies

The immediate response to all incidents is to make the area safe and undertake measures to prevent further environmental harm. The Environment and Sustainability Manager, Shared Services Director and Project Director should be notified immediately in the event of an environmental incident.

All incidents and emergencies are to be managed according to the process as outlined in the CEMP. This is inclusive of:

- Incident Notification
- Incident Types
- Incident Prevention Management
- Incident Investigation, and
- Complaint Management.

5 Inspections, Monitoring, Auditing and Reporting

This section outlines the compliance processes that have been adopted by CBGU to ensure compliance with the Coordinator-General Conditions and any other legislative requirements. The section below details specific requirements relating to Inspections, monitoring, auditing and reporting requirements have not been outlined in the overarching CEMP.

5.1 Environmental Monitoring

5.1.1 Inspections

CBGU will undertake environmental inspections to develop and evaluate the effectiveness of environmental controls. Site inspections are to be undertaken and documented by CBGU throughout the construction phase and are to include identification of any actual or potential contamination issues or risks. Any spills or other uncontrolled release of contaminants to the environment are to be addressed in accordance with the construction incidents and non-conformance reporting procedure described in the CEMP.

Any identified maintenance or deficiencies in environmental controls, as well as deviations from the standard of environmental performance, must be documented on the Project's Environmental Checklist. A comprehensive register of all required and corrective actions, including due dates, closure dates, descriptions, and assigned responsibilities, will be maintained in a format that allows for easy generation into a register as needed.

Inspections are to be undertaken as nominated in the CEMP.

5.1.2 Monitoring

Monitoring will be undertaken at various sensitive receptors to validate the impacts predicted for the Project and to measure the effectiveness of environmental controls and implementation of this CLMP. The monitoring also helps in addressing any potential Community Complaints that may be made.

Monitoring requirements specific to contaminated land:

- After a defined rainfall event, promptly inspect and conduct necessary maintenance on all bunded chemical, hazardous storage areas and erosion and sediment controls (e.g. sumps, basins, baffles, bunds or ground cover).
- Observe soil/fill during excavations to check for any signs of contamination.
- Ensure that sign-off from a licensed asbestos contractor has been obtained and documented prior to any works involving the removal, transport and offsite disposal of contaminated material.

5.1.3 Auditing

Audits will be undertaken to assess the effectiveness of environmental controls, compliance with the CEMP, compliance with Environmental Design Requirements, and other relevant permits, approvals, and guidelines.

Audits will be undertaken in accordance with the CEMP.

5.1.4 Corrective Actions

The process for developing and implementing Correction Actions has been specified within the overarching CEMP.

Corrective actions must be undertaken where monitoring or validated complaints indicate the environmental outcomes or Imposed Conditions are not achieved in relation to particular works, either because the performance criteria have not been met, or mitigation measures have not been implemented. Where corrective actions become necessary, the specific works that do not achieve the environmental outcomes or meet the Imposed Conditions must cease until the corrective actions have been developed and implemented.

5.2 Reporting

5.2.1 Monthly Report

A report in relation to contaminated land will also be prepared as and when required.

5.2.2 Incidents and Non-Compliance Event Reporting

Details regarding reporting, including provision of interim and detail reports have been provided in the overarching CEMP.

5.3 Documentation and Communication

5.3.1 Environmental Records

The process for managing and collecting environmental records is detailed in the overarching CEMP. All relevant records in relation to contaminated land management must be maintained in accordance with these requirements. Records of the following contaminated land management information, as a minimum, must be kept throughout the construction phase:

- Any contaminated land records required by contaminated land management legislation;
- Transporter or contractor details (including company name, licensed operator name and license number) (Outline WMP p 11).

5.3.2 Document Control

Document control requirements have been specifically addressed within the overarching CEMP.

5.3.3 Review

Review requirements have been specifically addressed within the overarching CEMP.

5.3.4 Communication

All internal and external communication with all stakeholders including the public, Coordinator-General, government agencies and the Delivery Authority must be completed in accordance with the requirements of the overarching CEMP.