CROSSRIVERRAIL
Delivery Authority

Construction Environmental Management Plan (CEMP)

Temporary Coach Terminal

November 2018

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Definitions

Table 1: Definitions

Acronym	Definition
All Staff	Means all employees, contractors and sub-contractors of CRRDA involved in the temporary coach terminal works
CBD	Central Business District
CEMP	Construction Environmental Management Plan – temporary coach terminal
CG	Coordinator-General
CGCR	Coordinator-General's Change Report
CGER	Coordinator-General's Evaluation Report
Contractor	The Contractor appointed to construct the temporary coach terminal
Coordinated Project	A project declared as a 'coordinated project' under section 26 of the SDPWO Act
Coordinator-General	The corporation sole constituted under section 8A of the SDPWO Act and preserved continued and constituted under section 8 of the SDPWO Act
CRR	Cross River Rail
CRRDA	The Cross River Rail Delivery Authority, the Proponent for the Project
DES	Department of Environment and Science
Directly Affected Persons	An entity being either the owner or occupant of premises for which predictive modelling or monitoring indicates the Project impacts would be above the performance criteria in the Imposed Conditions
EIS	Environmental Impact Statement
Imposed Condition/s	A condition/s imposed by the Coordinator-General under section 54B of the SDPWO Act for the Project
MRTS51	MRTS51 Environmental Management – DTMR Specification
Predictive Modelling	Means the use of appropriate analytical scenario testing, whether or not by numerical measurements, undertaken prior to the commencement of Project Works
PPE	Personal Protective Equipment

Acronym	Definition
Project	The Cross River Rail Project
Proponent	The Authority
QA	Quality Assurance
Rail Transport Operator	A rail infrastructure manager or rolling stock operator, or a person or organisation which is both
SDPWO Act	*State Development and Public Works Organisation Act* 1971
SEMS	Queensland Rail's Safety and Environment Management System
SEP	Stakeholder Engagement Plan
Significant Project	A project declared (prior to December 2012) as a 'significant project' under section 26 of the SDPWO Act. Projects declared after 21 December 2012 are referred to as 'coordinated projects'
Temporary Coach Terminal works	All works associated with the design, construction and commissioning of the temporary coach terminal
The Delivery Authority	The Cross River Rail Delivery Authority, the Proponent for the Project

1. Introduction

1.1 Background

The Cross River Rail Delivery Authority (the Delivery Authority) is responsible for facilitating the efficient delivery of the Cross River Rail (CRR) Project (the Project).

The Coordinator-General has evaluated an Environmental Impact Statement (EIS) under the *State Development and Public Works Organisation Act 1971 (Qld)* (SDPWO) for the Project as well as a request for project change, releasing a change report in June 2017 (RfPC-1). It was a requirement under the 2017 Coordinator-General Change Report that the Roma Street Coach Terminal be relocated in consultation with coach operators, prior to demolition of the Brisbane Transit Centre (BTC) west tower. The demolition of the BTC is critical for the Project. A Request for Project Change (RfPC-2) was submitted to the Coordinator-General to facilitate relocation of the coach terminal prior to commencing Project Works. A Coordinator-General Change Report – Temporary Roma Street Coach Terminal was released in September 2018.

A temporary solution was proposed for the relocation of the Roma Street Coach Terminal to a site adjacent to Platform 10 of Roma Street Railway Station on Parkland Crescent. The temporary solution comprises a ground level terminal with five coach bays, two mini bus bays, and on-platform ticketing kiosk and amenities. The works also include the provision of a passenger drop-off and pick-up at Parkland Boulevard which is linked to the coach terminal by existing vertical passenger (escalator) access way. The construction is planned to occur over an approximate 38-week period with the coach terminal having a design life of 10 years. This will allow for a permanent solution to be developed as part of broader Roma Street precinct planning.

The Delivery Authority commissioned a number of technical assessments to be undertaken to assess the key potential impact areas. These technical assessments were presented for consideration in the RfPC. A summary of the predicted and potential impacts and mitigation measures to manage these impacts are provided in this Construction Environmental Management Plan (CEMP). This CEMP applies to the construction stage of the temporary coach terminal. The CEMP outlines the environmental management framework and specifically applies to the construction by:

- Establishing the environmental outcomes and performance criteria for the construction works;
- Nominating the Coordinator-General Imposed Conditions to be achieved for the works;
- Defining mitigation measures to be implemented to minimise environmental risks and to achieve the environmental outcomes and performance criteria; and
- Establishing a monitoring and reporting regime to demonstrate achievement of the environmental outcomes.

1.2 Project Summary

The relocation of the current long-distance coach terminal and subsequent demolition of the BTC west tower is required to enable construction of the CRR Roma Street Station. The proposed demolition and excavations are due to occur in early 2020. At the time of RfPC-1, an alternative location for the coach terminal was not known, however, since the release of the Coordinator-Generals Change Report, a suitable relocation site has been determined and assessed by the Coordinator-General.

Figure 1 Coach terminal relocation site

The temporary coach terminal will be a ground level terminal located at Parkland Crescent which includes:

- Five coach bays on a central platform to accommodate 14.5 m length coaches;
- An awning roof structure over the terminal and pedestrian access ways;
- Two mini bus bays;
- On-platform ticketing kiosk;
- Provision for platform amenities;
- Passenger pick up and drop off on Parkland Boulevard; and
- Use of existing council vertical transport for access to parkland.

Refer to the general arrangement for the temporary coach terminal at **Appendix A**.

1.3 Scope of Construction

The construction of the coach terminal is expected to take approximately 38 weeks. Construction will commence in October 2018 and be completed by June 2019. Construction activities will include:

- Site set up including traffic and environmental controls;
- Removal of existing structures and pavement on north side and installation of temporary pavement and line marking for north side access;
- Removal of road and pavement in a staged approach using traffic diversions, minor ground works (levelling of ground not currently asphalted) may be required;
- Installation and connection of underground services, some minor trenching may be required for utilities (e.g. cabling);
- Construction of traffic islands, curbing, placement of asphalt and concrete pavement;

- Concrete pad foundations to be laid in passenger loading and transfer areas where canopies are to be provided for weather protection to patrons;
- Road line marking and signage installation;
- Erect structural steelwork and purlins, installation of cladding, roofing, toilet and kiosk. The structures and buildings will be predominantly pre-fabricated offsite to minimise construction impacts and schedule. Canopies would be quick fix bolt down type modular steel frame with sheet metal cladding attached; and
- Installation of ticketing machines, lighting and digital signage.

The construction of the passenger drop off and pick up is expected to take approximately five to six weeks, with construction anticipated to commence in January 2019 and be completed by March 2019. Construction activities will include:

- Site set up including traffic and environmental controls;
- Removal of existing bollard structures and pavement;
- Reconfiguration of existing carriageway and parking;
- Minor works to raise the road surface to create a shared zone;
- Tree removal for roundabout construction;
- Paving and line marking; and
- Installation of cyclist access and signage.

The general arrangement for the temporary coach terminal is attached in **Appendix A**.

1.4 Purpose

The purpose of this CEMP is to describe how the Delivery Authority in collaboration with the Contractor will manage and control the construction works to ensure that all environmental risks and impacts are addressed. The implementation of this CEMP is the responsibility of the Roma Street Coach Terminal Project Manager and the Construction Project Manager.

1.5 Objectives

The CEMP will seek to achieve the following objectives:

- To provide the Contractor with a framework that ensures construction activities are undertaken in a manner that complies with approval conditions and minimises impacts to the physical and biological environment;
- To summarise predicted and potential environmental risks and prescribe measures to ensure impacts are avoided or minimised during the construction works;
- To ensure that all Project employees and contractors involved in construction are aware of their environmental responsibilities and are proactive in their approach to environmental management;
- To comply with relevant legislation and guideline requirements relevant to environmental management; and
- Identify entities responsible for the achievement of the environmental outcomes.

2. Legislative Requirements

Construction of the temporary coach terminal must comply with the Coordinator-General Imposed Conditions, environmental requirements and outcomes specified in this CEMP and any additional requirements specified in the conditions of approval.

Throughout the project, the Contractor will hold a current copy of applicable legislation, guidelines and standards as well as this CEMP.

2.1 Coordinator-General Conditions

The works covered by this CEMP will be done in accordance with the Imposed Conditions – Temporary Roma Street Coach Terminal Works, Appendix 1 of the Coordinator-General's Change Report – Temporary Roma Street Coach Terminal.

The Imposed Conditions relevant to various environmental elements are captured in each of the sub-sections. The most up-to-date version of the Coordinator-General's Change Report – Temporary Roma Street Coach Terminal can be found on the Coordinator-General's website. Within this document, the various conditions are captured in the section identified in **Table 2** below.

Table 2: Conditions

Condition Number	Addressed
Condition 1: General conditions	CEMP Section 2.1
Condition 2: Construction Environmental Management Plan	CEMP Section 2.1
Condition 3: Compliance	CEMP Section 7.1
Condition 4: Reporting	CEMP Section 7.6
Condition 5: Stakeholder Engagement Plan	CEMP Section 3.11 and Section 12
Condition 6: Hours of Work	CEMP Section 3.1
Condition 7: Construction Noise and Vibration	CEMP Section 3.3
Condition 8: Air Quality	CEMP Section 3.4
Condition 9: Traffic and Transport	CEMP Section 3.6
Condition 10: Water Quality	CEMP Section 3.7
Condition 11: Surface Water	CEMP Section 3.7
Condition 12: Erosion and Sediment Control	CEMP Section 3.8
Condition 13: Cultural Heritage	CEMP Section 3.2

The following Imposed Conditions (General) must be achieved for the temporary coach terminal works.

Condition 1. General conditions

(a) The temporary coach terminal works must be carried out generally in accordance with the Cross River Rail Request for Project Change dated June 2018.

(b) The proponent must notify the Coordinator-General in writing of the commencement of construction of the temporary coach terminal and the commencement of the operational phase at least 20 business days prior to the relevant commencement date.

(c) The temporary coach terminal works must be carried out in accordance with the Imposed Conditions (temporary coach terminal works) in Appendix 1 of the Coordinator-General's change report – Temporary Roma Street Coach Terminal.

The following Imposed Conditions (Temporary Coach Terminal Works) must be achieved for the temporary coach terminal works.

Condition 2. Construction Environmental Management Plan

(a) A Construction Environmental Management Plan must be submitted to the Coordinator-General for approval at least 20 business days prior to the commencement of construction of the temporary coach terminal.

(b) The Construction Environmental Management Plan (temporary coach terminal works) must:

(i) describe the temporary coach terminal works;

(ii) be based on predictive studies and assessments of construction impacts which have regard to the scale, intensity, location and duration of construction works, and impact to Directly Affected Persons;

(iii) incorporate and respond to the Imposed Conditions (temporary coach terminal works);

(iv) demonstrate how the Imposed Conditions (temporary coach terminal works) will be complied with during the construction of the temporary coach terminal;

(v) incorporate the stakeholder engagement plan, including the complaints management process, in accordance with Condition 5 of the Imposed Conditions (Temporary Coach Terminal Works);

(vi) where predictive studies indicate impacts beyond those provided for in the performance criteria, incorporate mitigation measures to achieve the environmental outcomes;

(vii) establish specific mitigation measures and processes for consultation with Directly Affected Persons for temporary coach terminal works under Conditions 5(c), 7(c), and 7(f) of the Imposed Conditions (Temporary Coach Terminal Works);

(viii) contain a program and procedures for ongoing monitoring to identify the effectiveness of mitigation measures in achieving the Imposed Conditions (temporary coach terminal works);

(ix) include a process for regular review and if required updating of the Construction Environmental Management Plan, including a process to review and implement additional or different mitigation measures in response to monitoring results;

(c) The Construction Environmental Management Plan (temporary coach terminal works) must be implemented for the duration of construction of the temporary coach terminal.

(d) Temporary coach terminal work is authorised if it is undertaken in accordance with the approved Construction Environmental Management Plan (temporary coach terminal works).

(e) The Construction Environmental Management Plan (temporary coach terminal works) must be available on the Cross River Rail website for the duration of construction of the temporary coach terminal.

(f) The Construction Environmental Management Plan (coach terminal works) may be developed in stages and/or updated. Any major update or additional stage will be submitted to the Coordinator-General 10 business days prior to issuing for use.

2.2 Commonwealth Legislation

Commonwealth legislation that is relevant to the Temporary Coach Terminal and this CEMP includes:

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984;*
- *Environment Protection and Biodiversity Conservation Act 1999;*
- *Native Title Act 1993; and*
- *National Greenhouse and Energy Reporting Act 2007.*

2.3 State Legislation

State legislation that is relevant to the Temporary Coach Terminal and this CEMP includes:

- *Cross River Rail Delivery Authority Act 2016;*
- *State Development and Public Works Organisation Act 1971;*
- *Environmental Protection Act 1994;*
- *Environmental Protection (Water) Policy 2009;*
- *Environmental Protection (Noise) Policy 2008;*
- *Environmental Protection (Air) Policy 2008.*
- *Aboriginal Cultural Heritage Act 2003;*
- *Acquisition of Land Act 1967;*
- *Building Act 1975;*
- *Biosecurity Act 2014;*
- *City of Brisbane Act 2010;*
- *Coastal Protection and Management Act 1995;*
- *Economic Development Act 2012;*
- *Electricity Act 1994;*
- *Electrical Safety Act 2002;*
- *Explosives Act 1999;*
- *Land Act 1994;*
- *Land Title Act 1994;*
- *Local Government Act 2009;*
- *Nature Conservation Act 1992;*
- *Planning Act 2016;*
- *Plumbing and Drainage Act 2002;*
- *Queensland Heritage Act 1992;*
- *Rail Safety National Law Queensland Act 2017;*
- *Survey and Mapping Infrastructure Act 2003;*
- *Transport Infrastructure Act 1994;*
- *Transport Operations (Passenger Transport) Act 1994;*
- *Transport Operations (Road Use Management) Act 1995;*
- *Transport Planning and Coordination Act 1994;*

- *Transport Security (Counter Terrorism) Act 2008;*
- *Waste Reduction and Recycling Act 2011;*
- *Water Act 2000; and*
- *Work Health and Safety Act 2011.*

2.4 Guidelines and Standards

Design, construction and commissioning of the works must be undertaken in accordance with the specific guidelines nominated in the relevant sub-sections within this management plan. Guidelines and standards related to environmental management that must be met include, but are not limited to:

- TMR standards, including:
  - Technical Manual – Environmental Processes Manual (August 2013)
  - Technical specifications and standards
  - MRTS51 Environmental Management – TMR Specifications
  - MRTS52 Erosion and Sediment Control – TMR Specifications
  - MRTS16 Landscape and Revegetation Works – TMR Specifications
  - DTMR Main Roads Environmental Management Policy and Strategy 2008-2013
  - Queensland Rail Safety and Environment Management System

- Queensland Rail standards, including:
  - Safety and Environment Management System

- TMR (TransLink) standards, including:
  - TransLink Station Signage Manual; and
  - TransLink Public Transport Infrastructure Manual (2015)

- BCC environmental policies and guidelines, including:
  - Urban Stormwater Management Strategy
  - Stormwater Outlets in Parks and Waterways
  - Landscape Design for Water Conservation
  - Guidelines on Identifying and Applying Water Quality Objectives in Brisbane City

- International Erosion Control Association Best Practice Erosion and Sediment Control Guidelines 2008 (IECA Guidelines)

3. Environmental Management Approach

The following sub-sections have been developed to capture environmental elements that may be impacted by the Temporary Coach Terminal Works. They have also been developed to include adequate management and mitigations measures based on the approved works, taking into account level and length of construction among other things.

- Noise and Vibration Management
- Air Quality Management
- Visual Amenity and Lighting
- Traffic Management
- Water Management
- Land Management (including Contaminated Land)
- Aboriginal Cultural Heritage Management
- Non-Indigenous Cultural Heritage Management
- Waste Management
- Stakeholder Management

3.1 General Environmental Management

The following Imposed Conditions must be achieved for the Project:

Condition 6. Hours of work

(a) Construction works for the temporary coach terminal are authorised to be undertaken within the hours of work set out in **Table 3**.

Table 3. Construction hours

Standard hours	Extended work hours
Monday to Saturday, 6.30am - 6.30pm	Monday to Friday, 6:30pm - 10:00pm

(b) Works carried out because of an emergency that:

(i) is endangering the life or health of a person; or

(ii) is endangering the structural safety of a building; or

(iii) is endangering the operation or safety of community infrastructure that is not a building; or

(iv) is required to prevent environmental harm, may be undertaken outside the hours set out in **Table 3**.

(c) The following work may be undertaken during Extended Work Hours as set out in **Table 3**, subject to compliance with specific measures for Extended Work Hours in the Construction Environmental Management Plan (temporary coach terminal works):

(i) Paving, line marking, structural installation;

(ii) Temporary coach terminal works within a road reserve or busway that cannot be undertaken reasonably nor practicably during standard hours due to potential disruptions to peak traffic flows or bus operations;

(iii) Temporary coach terminal works involving the transport, assembly or decommissioning of oversized plant, equipment, components or structures;

(iv) delivery of "in time" materials such as concrete, hazardous materials, large components and machinery;

(v) Temporary coach terminal works that require continuous construction support, such as continuous concrete pours, or other forms of ground support necessary to avoid a failure or construction incident.

3.2 Aboriginal Cultural Heritage Management

3.2.1 Background

The Aboriginal party associated with the Project area is the former registered native title claimants of the former Turrbal Association Inc (Turrbal). The Early Works phase of the Project does not trigger a fully approved Indigenous Cultural Heritage Management Plan (CHMP) as it is outside the scope of the CG's Imposed Conditions. Items and areas of actual or potential cultural heritage significance must be managed in accordance with duty of care obligations under the *Aboriginal Cultural Heritage Act* 2003 (ACHA) and the Early Works Agreement executed by the CRRDA and the Turrbal Association for the works.

3.2.2 Potential Impacts

The current site is highly developed, and the design has limited ground disturbance due to surface engineered footings. Unexpected finds of cultural significant items may be encountered during excavation works required for service relocation and installation.

3.2.3 Coordinator-General Conditions

The following Imposed Condition must be achieved for the temporary coach terminal works:

Condition 13: Cultural Heritage

(a) Temporary coach terminal works that involve excavation, construction or other activities that may cause harm to Aboriginal cultural heritage must not take place without the development and approval of a cultural heritage management plan for the Project in accordance with the *Aboriginal Cultural Heritage Act* 2003.

(b) Temporary coach terminal works that do not have the potential to harm Aboriginal cultural heritage may be carried out without the development and approval of a cultural heritage management plan for the Project, however must be carried out in accordance with the cultural heritage duty of care prescribed under section 23(1) of the *Aboriginal Cultural Heritage Act* 2003.

(c) Temporary coach terminal works that do not constitute Project Works may be carried out for the Project without the development and approval of a cultural heritage management plan for the Project, however must be carried out in accordance with the cultural heritage duty of care prescribed by section 23(1) of the *Aboriginal Cultural Heritage Act* 2003.

3.2.4 Mitigation Measures

- The requirements of the approved Early Works Agreement will be implemented by the contractor(s).
- All obligations relating to monitoring, finds processes and anything else described within the Terms of Reference between CRRDA and the Turrbal Association must be followed during the full construction of the works.
- Pre-clearance, post clearance forms and artefact find forms records to be retained to provide a traceable management approach to demonstrate the Project's Duty of Care within the ACH Act has been met.
- Monitoring and reporting on compliance with these requirements will be the responsibility of the contractor(s), in line with the broader Environmental Management Framework established for the Project.
- Appropriate induction and awareness training will be implemented to ensure obligations and processes are well understood by all Project personnel.

3.3 Noise and Vibration Management

3.3.1 Background

Construction noise and vibration was modelled in the RfPC-1 and subsequently a further qualitative assessment of noise and operational impacts for the Roma Street Coach Terminal was completed as part of RfPC-2. This compared the change of activities at the Roma Street Platform 10 (i.e. from a worksite to use as a coach terminal). This section provides a summary of the baseline conditions and predicted impacts from which the mitigation measures were developed. Refer to EIS Change Report 2018: Section 4.3.3 and Appendix B, for additional information.

Baseline Conditions

The site has high background noise levels reflective of the urban environment close to major connector roads and rail. Background noise levels are generated by rail station operations, local traffic and passenger use of access to platform and public carpark. This location is adjacent to the railway at Roma Street, thus, there is frequent exposure to high noise events.

Adjacent to the site are high rise residential buildings (west), recreational areas (north/east of Parkland Boulevard) and Roma Street Station (south). Sensitive receptors include local residents (above ground level), community members and train passengers entering/leaving the station complex. All of these receptors are currently subject to average daily traffic movements on Parkland Boulevard and Parkland Crescent of about 4,200 and 1,200 respectively.

Ambient noise monitoring was undertaken as part of the CRR Project EIS along Parkland Boulevard. The unattended ambient noise measurements were carried out to determine the Rating Background Levels (RBL) for the daytime (7.00 am to 6.00 pm), evening (6.00 pm to 10.00 pm) and night-time (10.00 pm to 7.00 am) periods. The RBL is the median of the 90th percentile background (L_{A90}) noise levels in each assessment period (day, evening and night) over the duration of the monitoring (as defined in DERM's Ecoaccess Guideline Planning for Noise Control). The RBL measured for Parkland Crescent are presented in **Table 4.** Further detail is found in the CRR Project EIS Technical Report 8 Construction Noise and Vibration.

Table 4. Rating Background Level at Parkland Crescent

	dBLaeq			dBLamax		
	Day	Evening	Night	Day	Evening	Night
Average / Typical	64	62	57	77	75	73
Maximum	75	67	65	80	76	76

It is expected that there would be periods during the year when ambient and background noise levels along the Project could be higher than those shown in **Table 4** due to the presence of insect noise.

Refer to EIS Volume 1 – Chapter 16 – Noise and Vibration and the CG Change Report Section 5.3 for additional background information and the EIS.

Potential Impacts

The temporary coach terminal works will be located approximately 30 m from the nearest façade of the Parkland Crescent residential properties, compared to 150 m for previously approved works. A

comparison between previously approved construction and operational a impacts and coach terminal impacts using relative distance calculations was completed to assess the noise impacts from the Roma Street Coach Terminal relocation.

Noise and vibration impacts will be generated through construction activities and traffic movement undertaken over a 38-week period. Site establishment works are expected to generate the most noise and vibration impacts and all latter stages of construction are expected to generate a considerably lower level of construction noise as much of the material will be pre-fabricated off site and effectively put together on site rather than constructed.

The nearest residential building on Parkland Boulevard is directly overlooking the proposed coach terminal site. It was predicted that with construction plant located at 30 metres of the apartment facade the worst-case unmitigated noise levels generated are likely to be 76 to 82 dB(A) during site establishment, which is above the CRR Project noise goals by approximately 5 dB(A). Careful noise management strategies and mitigation measures are to be implemented during construction to achieve the environmental performance criteria noise goals. No cumulative construction impact will occur from the CRR Roma Street Station as this occurs well after these works.

There will be a need to schedule certain works outside general working hours to minimise the impacts on the traffic networks and operation of adjacent transportation services. As such there is likely to be noise impacts at night on surrounding areas which has the potential to disturb sleep and cause nuisance if not managed.

The proposed operation of the coach terminal has also been compared against DTMR Road Traffic Noise criteria, and traffic volumes would be compliant with noise limits.

3.3.2 Environmental Outcomes

The following environmental outcomes in relation to noise and vibration are to be achieved for the temporary coach terminal works:

- Construction activities are designed, planned and implemented to maintain human health and wellbeing, to the extent reasonable and practicable;
- Construction activities generally are designed, planned and implemented to maintain daily patterns of activity, and to minimise sleep disturbance at night; and
- Construction activities are managed to avoid vibration-related human discomfort and structural damage on all properties and sensitive plant and equipment.

3.3.3 Performance Criteria

The following performance criteria must be achieved throughout construction of the temporary coach terminal:

- Project works are designed, planned and implemented to achieve the noise goals specified in **Table 5** to the extent reasonable and practicable;
- Construction works must be designed, planned and implemented to achieve the vibration goals specified in **Table 6** to the extent reasonable and practicable;
- Potentially Directly Affected Persons must be identified and consulted regarding the potential impacts and the mitigation measures proposed to address the impacts;
- Mitigation measures must be developed in consultation with potentially Directly Affected Persons on a ‘case by case’ basis; and
- Agreed mitigation measures must be included in a mitigation register and implemented prior to undertaking construction works where appropriate.

3.3.4 Coordinator-General Conditions

The following Imposed Condition must be achieved for the temporary coach terminal works:

Condition 7. Construction noise and vibration

(a) Temporary coach terminal works must aim to achieve the project noise goals for human health and well-being presented in **Table 5**.

Table 5. Noise goals (internal) for temporary coach terminal works

	Monday – Saturday 6.30am – 6.30pm	Monday – Friday 6.30pm – 10.00pm
Continuous (LAeq adj)(1hr)	AS 2107 Maximum design level	40 dBA LAeq adj (1hr)
Intermittent (LA10 adj)(15min)	AS 2107 Maximum design level + 10 dBA	50 dBA LA10, adj

Notes 1. All goals are internal noise levels for human health and well-being outcomes.
2. Where internal noise levels are unable to be measured or monitored, the typical noise reductions presented in the relevant State guideline, such as the Guideline Planning for Noise Control, Ecoaccess, DEHP, January 2017 (currently under review).

(b) During construction of temporary coach terminal works monitor and report on noise and vibration in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

(c) Temporary coach terminal works predicted to or monitored as generating noise levels more than 20dBA (LA eq 10min, adj) above the relevant goal in **Table 5** may occur only in accordance with the mitigation measures developed in consultation with and agreed by Directly Affected Persons that are incorporated in the Mitigation Register.

(d) Temporary coach terminal works must aim to achieve the construction vibration goals in **Table 6**.

Table 6. Vibration goals (internal) for Temporary Coach Terminal Works

Receiver type	Cosmetic Damage		Human comfort (mm/s PPV)		Sensitive building contents (mms/PPV)
	Continuous vibration (mm/s PPV)	Transient vibration (mm/s PPV)	Day	Night	
Residential	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670	0.5[2]	
Commercial	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670		0.5[3]
Heritage Structures	2				

Notes: 1. If resonance is present, or if investigation to detect resonance were not able to be undertaken due to a lack of access
2. Residential sleep disturbance
3. Equipment specific vibration criteria are required for highly sensitive equipment (i.e. electron microscopes, MRI systems or similar), as part of future site-specific detailed investigations

(e) Where vibration protection criteria are available for sensitive building contents, predictive modelling must take into account the manufacturer's specifications for tolerance to vibration.

To the extent reasonable and practicable, those specifications apply in lieu of the construction vibration goals in **Table 5**. Where predictive modelling indicates the specified criteria would not be achieved by the temporary coach terminal works, such works may proceed only in accordance with specific mitigation measures agreed with the potentially Directly Affected Persons.

(f) Temporary coach terminal works predicted to or monitored as generating vibration levels more than 2mm/s for continuous vibration and 10mm/s for transient vibration may occur only in accordance with the mitigation measures developed in consultation with and agreed by Directly Affected Persons that are incorporated in the Mitigation Register.

(g) The temporary coach terminal must incorporate dynamic signage and ensure equitable access is provided for visually impaired persons in accordance with relevant Australian Standards and design principles.

3.3.5 Mitigation Measures

Noise

- The design and construction of the terminal will use display screens rather than PA announcements;
- Use of pre-fabricated materials for construction where possible;
- Initiate on-going and early consultations with potentially Directly Affected Persons to notify them of the proposed works and to determine suitable mitigation measures; and implement the CEMP to achieve the outcomes developed in consultation with the potentially Directly Affected Persons;
- Enclose equipment that generates higher levels of noise;
- Provide noise attenuation screens if required;
- Maintain plant and machinery in good working order; and
- Fit engine covers to all plant.
- Fit effective residential class silencers to all engine exhausts;
- Provide CRRDA Stakeholder and Communications team with notification of scheduled high noise construction activities one week prior to allow for pre-notification to Directly Affected Persons;
- During site establishment works where noise goals are predicted to be exceeded:
  - Monitor weather to determine sensitive receptors most likely affected
  - Substitution of noise generating equipment and activities where possible
  - Where possible, schedule operations so that noisy equipment is used separately, rather than concurrently
  - Changes in construction methods or programming, to avoid periods in which the predicted exceedance would impact on the most people.
- Undertake daily inspections to identify any sources of unnecessary or excessive noise for which there are no registered mitigation measures;
- Undertake noise monitoring in accordance with the Monitoring Plan in Section 7.3; and
- Where noise monitoring indicates the noise goals relative to human health and wellbeing would be exceeded, inform and consult the Directly Affected Persons to develop mitigation measures. Any discussions with Directly Affected Persons must involve the community and stakeholder relations team.

Vibration

- Selection of equipment to minimise vibrational impacts, where possible.
- Where the works in a locality have potential to exceed the vibration goals nominated:
  - conduct surveys in the locality to identify residential properties and other places especially sensitive to sleep disturbance (e.g. hospitals, nursing homes and child care centres);
  - conduct surveys in the locality to identify and determine the specifications for building equipment known to be sensitive to vibration, such as computers, microscopes, surgical equipment;

  - conduct pre- and post-construction building condition surveys where potential damage is likely to occur as a consequence of the work (including the existing site retaining wall); and
  - implement practical and reasonable mitigation measures that would achieve the environmental outcomes or achieve alternative outcomes developed in consultation with Directly Affected Persons.
- Ensure ground vibration levels transmitted from operating items of plant in the vicinity of buildings do not exceed levels that are close to the lower level of human perception inside the premises or cause structural damage to the buildings and other structures, through:
  - baseline condition measurements before commencement of the works.
  - progressively monitoring during the works to confirm conformance with approval conditions.
- Where ground-borne vibration monitoring indicates either the vibration goals relative to human health and wellbeing would be exceeded, inform and consult, with the CRRDA Community and Stakeholder Engagement Team, the Directly Affected Persons to develop mitigation measures.

3.4 Air Quality Management

3.4.1 Background

Construction air quality impacts for CRR Project were originally assessed in the EIS in Volume 3, Technical Report 7 – Air Quality. Background air quality information in section 3 is relevant to the temporary coach terminal construction.

A further assessment of air quality impacts specifically for the temporary coach terminal was completed. This assessment used a qualitative approach to determine any potential material changes to the predicted air quality impacts detailed in the 2011 EIS and RfPC-1, for land earmarked for the coach terminal. This section provides a summary of the baseline conditions and predicted impacts from these assessments from which the mitigation measures were developed. Refer to EIS Change Report 2018: Section 4.3.2 and Appendix A, for additional information.

Baseline Conditions

The key sensitive receptors potentially impacted by the works include local residents, transient local community members and train passengers. Each of these receptors are currently subject to existing air emissions, primarily from vehicles along Parkland Crescent and Parkland Boulevard. Planned construction activities are likely to include the removal of existing concrete slabs, minor ground works, laying of some concrete foundations and erecting of new structures including shelters and ticketing machines. Although these works differ from those proposed in the EIS and RfPC-1, they are not major and any additional impacts, primarily in relation to construction dust, would likely be negligible and temporary. Further, the coach terminal construction activities will be undertaken over a 38-week period compared to a five-year period for the previous approved works.

Background air quality information shown in the previously approved RfPC's and summarised in **Table 7** was established based on data from four monitoring stations (Cannon Hill, Brisbane CBD, South Brisbane, Rocklea). The data indicates that with the exception of annual PM2.5, background concentrations are well below their respective air quality goals within the CRR Project Imposed Conditions. Since the CG approval for the coach terminal relocation, baseline air quality monitoring has commenced at the Roma Street area.

Table 7. Baseline air quality

Air quality indicator	Averaging Period	Units	Background Concentration
Total Suspended Particulates (TSP)	1 year	µg/m^3	24
Particulate matter (PM_{10})	24 hours	µg/m^3	17
	1 year	µg/m^3	14.5
TSP	24 hours	µg/m^3	26
Deposited dust	30 days	mg/m^2/day	60

Predicted Impacts

The site is predominantly inset and protected from wind by surrounding buildings, the retaining wall and road infrastructure which provides an existing engineered mitigation from wind impacts. As such dust nuisance and health issues from poor air quality from the terminal construction are anticipated to be temporary and negligible.

The cafe tenant adjacent to the proposed Parkland Boulevard drop off and pick up may incur construction dust nuisance on days with strong southerly to westerly wind directions. Close consultation with the tenant will allow individual property mitigation measures to be tailored with consideration of actual dust measurements and particular construction circumstances at the time. Standard dust mitigation measures are likely to mitigate any potential dust impacts to surrounding sensitive receptors to acceptable levels.

The construction impacts will primarily be dust generation from removal of pavement and pavers, movement of equipment and wheel and wind generated dust from any exposed areas and vehicle emissions. Other impacts to air from construction result from vehicle and plant emissions, approximately two to three hourly vehicle movements are anticipated during the 38-week construction phase.

During the construction period, the following sources have the potential to emit dust and pollutants and impact air quality:

- Worksite establishment and demolition activities;
- Spoil removal and replacement;
- Construction of buildings;
- Wind erosion from disturbed locations;
- Wheel-generated dust from truck movements on unpaved surfaces; and
- Power source emissions from construction equipment, generators and other plant.

3.4.2 Environmental Outcomes

- Nuisance from dust, odour and emissions arising from construction activities is minimised at nearby sensitive receivers;
- Nominate the monitoring and reporting requirements in relation to air quality;
- Manage the impact on the local community and sensitive receptors in terms of air quality from construction works; and
- Monitor the effects of management and mitigation measures.

3.4.3 Performance Criteria

The following performance criteria must be achieved throughout construction of the temporary coach terminal:

- Construction emissions are within the construction air quality goals as set out in the Coordinator-General's Imposed Condition 8: Air Quality;
- Minimise complaints from dust generation; and
- Where construction emissions are predicted to exceed the construction air quality goals, mitigation measures are designed and implemented to mitigate the impacts for nearby sensitive receivers.

3.4.4 Coordinator-General Conditions

The following Imposed Condition must be achieved for the temporary coach terminal works:

Condition 8. Air quality

(a) Construction of the temporary coach terminal works must aim to achieve the goals in **Table 8**.

Table 8. Air quality goals

Criterion	Air quality indicator	Goal	Averaging Period
Human health	Total Suspended Particulates (TSP)	90 µg/m^3	1 year
	Particulate matter (PM_{10})	50 µg/m^3	24 hours
		25 µg/m^3	1 year
Nuisance	TSP	80 µg/m^3	24 hours
	Deposited dust	120 mg/m^2/day	30 days

(b) During construction monitor and report on air quality in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

3.4.5 Mitigation Measures

The following advisory mitigation measures may be implemented to achieve the nominated environmental outcomes and performance criteria. Additional or different mitigation measures may be applied to achieve the environmental outcomes and performance criteria.

- At construction sites, monitor meteorological conditions, particularly wind speed and direction. When adverse meteorological conditions are experienced at worksites, such as dry windy conditions, take measures to avoid impacts of unreasonable dust or odour on adjacent properties. Such measures may include:
  - modification of construction methods;
  - increase in dust suppression measures; and
- When no other reasonable or practical measure is available, cessation of work until the meteorological conditions improve and the environmental outcome can be achieved; and
- If monitoring shows exceedances during construction, additional mitigation measures will be required, such as stopping dust generating activities during dry, windy conditions, undertaking additional audits of dust controls, increasing watering rates during dry periods, and undertaking targeted consultations with affected entities.

Dust

- Ensure appropriate dust controls are used for demolition and construction activities to ensure dust from project works does not move beyond worksite boundaries. Mitigation measures may include:
  - managing dust-creating works according to meteorological conditions;
  - sealing haul routes and heavily trafficked areas within worksites with appropriate binder. Otherwise the roads must be sediment free at all times;
  - water sprays and covering loads of material transported from the worksites; and
  - actively managing spoil handling and stockpiles if loose material is present and exposed to wind.
- Manage the movement and handling, stockpiling and loading of construction spoil to avoid dust nuisance. In the event dust generation exceeds the Air Quality Goals, the handling and loading

of construction spoil must stop until the criteria can be achieved;

- Ensure trucks transporting construction spoil are:
  - covered to prevent wind-blown dust during transport;
  - cleaned down prior to exit from the worksites and the spoil placement site to prevent spills of loose material to roadways; and
  - installation of shake down mats, truck wheel wash stations, or rumble grids as well road sweeping at worksite access and egress points to ensure roads remain dirt and mud free.
- Visually monitor construction vehicle movements on a regular basis to: prevent queuing in streets other than designated haul routes identified in the CTMP; and prevent queuing vehicles idling for periods exceeding five minutes;
- Installation of hoardings or barriers on worksite perimeters, where appropriate, to help mitigate dust impacts by acting as wind breaks;
- Sealing of access roads, as much as is practicable, within the worksites and ensuring sealed access roads into worksites are kept relatively dust free by regular sweeping and washing, wherever needed;
- The site shall be visually monitored daily for excessive dust generation and corrective actions undertaken to minimise dust where possible; and
- Undertake ambient odour inspections for potential odour-generating activities (e.g. excavation of contaminated soils) on a daily basis.

Diesel Exhaust Emissions

- Manage the movement of construction vehicles to avoid queuing near residential receivers;
- Adopt procedures to avoid construction vehicles idling for excessive periods (e.g. more than five minutes) if required to queue to enter the worksite;
- Where feasible, collect and direct exhaust emissions from stationary plant away from sensitive receivers;
- As much as practicable, minimise the use and intensity of use of diesel engines; and
- For stationary plant and equipment, ensure all diesel motors are fitted with emission control measures and that these are regularly maintained to manufacturers' specifications.

Greenhouse Gases

- Maintain construction plant, equipment and haul trucks in good working order to maximise the fuel efficiency of equipment;
- Procure energy efficient construction equipment, when appropriate;
- Use appropriately sized equipment for construction activities;
- Minimise waste from construction by procuring pre-fabricated products; and
- Use mains electricity where practicable to minimise the use of generators.

3.5 Visual Amenity and Lighting Management Plan

3.5.1 Background

As part of the RfPC-2 a visual amenity impact assessment was undertaken. The analysis of character and visual amenity was based on a combination of on-site assessment, desktop analysis and photographic recording of the context. On-site assessment took into account existing roads, footpaths, viewpoints and places where access to the coach terminal is available. Landscape character has been assessed through visual inspection. Lighting impacts primarily assessed the effect on residences above the coach terminal to the west. This section provides a summary of the baseline conditions and predicted impacts from these assessments from which the mitigation measures were developed. Refer to EIS Change Report 2018: Section 4.3.5 and Appendix D, for additional information.

Baseline Conditions

The site is visible to the residents facing east within the Parkland Boulevard apartments, the shared use terrace at Parkland Boulevard and from Platform 10. The first apartment level is approximately 12 metres above the coach deck. The current outlook is to asphalt, line marking and a variable number of cars, with the six-metre retaining wall and the civil structures of elevated roads in the background. There are a number of existing tower street lights which have a minor impact on residents.

From the Parkland Crescent approach, the overhead road structures and an array of covered walkways dominate the current view. The temporary coach terminal will have a minor change for the non-coach traffic. The outlook from Platform 10 is currently restricted by the covered walkways and the awning across the road. The retaining wall is the main element visible, with the parkland planting more visible further from the platform entry.

Predicted Impacts

The temporary coach terminal construction will create visual impacts for a period of 38 weeks on the site vantage points.

The construction of the passenger drop off area will impact significant urban landscape vegetation, as some shrub planting and a small number of trees are required to be removed to provide space for the roundabout. Thus, a reduction of landscape quality may result during construction and until replacement plantings are established, however, given the expanse of green landscaping this impact is minor in nature. The increase in signage, demarcation and vehicles along the shared use zone will diminish the pedestrian character. Sensitive urban design principals will be incorporated into detailed design of the passenger pick up and drop off to ensure the structure and resulting works are consistent with the Parkland Boulevard's character.

The walkway roof across the road will be relocated and the higher coach terminal roof will replace the lower covered walkways. The relocation of the road crossing will open up views to park level from the Platform 10 outlook. The terminal will be designed with urban design objectives and integrated into the surrounding urban environment. Most of the roof will be below park level and will have no adverse impact on sightlines. Integrated landscaping will improve the general site appearance. The operation of the terminal is likely to improve the visual amenity of the site for the duration of the terminal operation. Key views to the parklands will not be impacted as the coach roof will be a similar level to the retaining wall.

The site is visible to the residents facing east within the Parkland Boulevard apartments. Construction activities are required to have enhanced lighting and security systems aligning with the parklands existing lighting and security. Excessive and offensive lighting, as well as unmanaged impacts on local residents and businesses due to construction of the Project have the potential to impact the visual amenity within and around the Project. Construction will be predominantly completed in the standard

hours, thus reducing the volume and hours lighting will be required. The lighting can be managed and incorporated into the design to minimise any impacts.

During the temporary coach terminal's construction period, the following sources have the potential to impact the visual amenity and lighting within and around the Project footprint:

- Worksite establishment and demolition activities;
- Spoil removal and replacement;
- Above ground road and bridge works;
- Construction of buildings; and
- Lighting towers used to illuminate night works.

3.5.2 Environmental Outcomes

The following environmental outcomes in relation to visual amenity and lighting are to be achieved for the Project:

- Construction activities minimise and mitigate impacts on the visual and landscape environment; and
- Surface construction works do not extend beyond designated worksite boundaries.

3.5.3 Performance Criteria

- Revegetation to be designed and constructed with consideration of TMR specification MRTS16 Landscape and Revegetation;
- Impacts of construction works, including the worksite and spoil handling facilities, on existing visual amenity are minimised through the design and siting of screens and barriers, plant and equipment, buildings and other structures, and lighting and telecommunications infrastructure;
- The construction worksite is rehabilitated progressively, and as soon as practicable, following construction works;
- Construction lighting is designed, constructed and operated to comply with the relevant standard such as AS4282-1997: Control of the obtrusive effects of outdoor lighting;
- Avoid nuisance from construction lighting on sensitive receivers and onto nearby roads, pedestrians, cycle paths and parklands; and
- Surface construction works do not extend beyond designated worksite boundaries.

3.5.4 Mitigation Measures

The following advisory mitigation measures may be implemented to achieve the nominated environmental outcomes and performance criteria. Additional or different mitigation measures may be applied to achieve the environmental outcomes and performance criteria.

Visual Amenity

- Integrate urban design objectives with the changes in the precinct, particularly around Parkland Boulevard;
- Traffic management plan for the construction phase to include for safe pedestrian access to Platform 10 from Parkland Boulevard;
- Design roof and select materials which do not produce glare for the residences;
- Careful integration of signage into the precinct and ensure suitable wayfinding to the new coach terminal;
- Ensure that the design and siting of construction worksites considers topography, vegetation, scale, character of construction and construction materials, proximity to surrounding sensitive land uses and the duration of its use;
- Provide noise barriers and hoardings around construction worksites to mitigate the views of construction works. Where appropriate, these are to incorporate landscaping and urban design

measures to minimise the visual impact of the barriers, and are to be regularly maintained. Including:

- Provide a visual hoarding to the Parkland Boulevard, and pedestrian connections to the Platform 10 from lift and escalator would be safely enclosed.
- Provide hoarding to the edge of the terrace area, painted both sides for the duration of the construction.

Lighting

- Where possible, external night time construction activities and traffic movement within the worksites will be minimised;
- The use of existing light poles or small mobile lights will be used during construction, when nightworks are required;
- Ensure all operational lights are located under the roof structure, as far as is practicable, to minimise spill up to the residences;
- Project lighting to be designed in accordance with the relevant standard such as AS 4282-1997: Control of the obtrusive effects of outdoor lighting and the Rail Infrastructure Manager's requirements e.g. Queensland Rail's Lighting Standard for Railway Stations guidelines;
- Construction phase works to minimise night-time impacts of lighting on residential properties where practicable. Place hoarding and visually impermeable barriers around worksites to minimise views of stockpiles and construction activities, particularly where worksites are visible to residential or recreational users;
- Where appropriate, use directionally-controlled, shielded lights that are mounted at a sufficient height to minimise light spill to surrounding properties, maintain safe driving conditions for motorists on adjacent roads and minimise impacts on local fauna; and
- Weekly inspections of lighting during night works are to be conducted to ensure that construction lighting has been installed and operated in accordance with the relevant standard such as AS4282-1997.

Landscape

- Where possible, adopt pruning and selective trimming of mature trees in preference to their removal;
- Where possible, fence and protect trees of particular significance that fall within construction worksites and laydown areas;
- A suitably qualified arborist should be consulted regarding the management of mature vegetation to be retained;
- During worksite establishment and subsequent construction, maintain daily site inspections of protective measures for designated significant trees and vegetation, and temporary visual barriers and hoardings for damage or graffiti;
- Restore, rehabilitate and where appropriate, enhance open space and public areas disturbed or damaged by construction as soon as practicable following construction; and
- Rehabilitation works provide for:
  - where practicable, replacement of cleared mature trees with plantings of advanced individuals;
  - regrading of the surface to facilitate surface runoff without erosion, and to create a landform suitable for use consistent with City Plan designations;
  - reinstatement of paths, including the bicycle path, street or park furniture, signage equipment and lighting;
  - reinstatement of grassed areas and paved surfaces where practicable; and
  - introduction of interpretive signage relating to cultural heritage, historic heritage and way finding measures.

3.6 Traffic Management

3.6.1 Background

As part of the CG approval process a traffic impact assessment was undertaken. The assessment included a:

- Review of traffic volumes added to Parkland Boulevard and Parkland Crescent;
- Intersection assessment of the key Roma Street / Parkland Boulevard intersection; and
- Swept path assessment of coaches along Parkland Crescent and Parkland Boulevard.

This section provides a summary of the baseline conditions and predicted impacts from these assessments from which the mitigation measures were developed. Refer to EIS Change Report 2018: Section 4.3.4 and Appendix C, for additional information.

Baseline Conditions

The current site adjacent to Platform 10 is accessed from Parkland Crescent and contains 32 council car parks and a passenger pick up and drop off outside Platform 10. Construction vehicle access is from Roma Street onto Parkland Boulevard then onto Parkland Crescent.

There are a number of locations which are very constrained for larger construction vehicles, including the Roma Street and Parkland Boulevard roundabout. The Parkland Boulevard / Parkland Crescent (south) is a priority-controlled intersection, with southbound traffic on Parkland Crescent required to stop for southbound through traffic on Parkland Boulevard (travelling down the ramp toward Roma Street). The sight lines at this intersection are limited due to the configuration of the ramp and concrete barriers.

There are a number of pedestrian passages through and within the site including the pedestrian footpath on the southern side of Parkland Crescent and through path from Parkland Boulevard through to Roma Street Station. Parkland Boulevard is also a popular route for cyclists and is identified as a priority cycle route on the South East Queensland Principal Cycle Network Plan (SEQPCNP). Traffic counts indicated over 160 cyclists were recorded travelling down the ramp during the morning peak hour.

Predicted Impacts

It is estimated there will be two to three peak hourly construction vehicle movements over the 38-week construction period. As construction impacts occur prior to the commencement of CRR Project Works at this precinct, cumulative impacts are avoided. As such, the minor construction movements will not pose unacceptable impacts to the local road network or traffic flow.

The relocation of pick-up / drop-off zone to Parkland Boulevard (from Parkland Crescent) may adversely affect the function of the existing shared zone due to an increase in vehicle volumes and movements. Minor construction movements will not pose unacceptable impacts to the local road network or traffic flow.

The Parkland Boulevard / Parkland Crescent (south) intersection is likely to be the most adversely affected, as sight lines are limited due to the configuration of the ramp and concrete barriers. An increase in the volume of vehicles traversing this intersection is expected to increase risk of collision to both vehicles and cyclists.

A swept-path analysis for coach access shows that there are a number of locations which are very constrained, with the vehicle body clearance overhanging the kerb and in places conflicting with

obstructions (e.g. barriers, vegetation, signage) located immediately adjacent to the kerb. Access constraints are required to be considered in logistics management for construction vehicles.

During the construction period there may be cumulative impacts from the CRR Project early works for the demolition of Hotel Jen and Brisbane Transit Centre with site access from Parkland Boulevard. These works are pending CG approval of a RfPC application.

3.6.2 Environmental Outcomes

The following environmental outcomes in relation to construction traffic management are to be achieved for the Project:

- Project construction traffic is managed to avoid or minimise and mitigate adverse impacts on road safety and traffic flow, public transport, pedestrian and cyclist safety, property access, freight rail movements and parking, existing road pavements and railway tracks;
- Workforce parking is provided and managed to avoid or minimise and mitigate adverse impacts on the local community and businesses;
- Traffic access for emergency services to construction worksites and adjoining properties is maintained throughout the construction phase; and
- Access is maintained to properties throughout the construction phase or an acceptable alternative solution is agreed with the property owner prior to closure of any access.

3.6.3 Performance Criteria

- No accidents caused by construction vehicles;
- Minimise increased congestion or reduced level of service caused by construction vehicle movements;
- Sufficient notification to community on road, cycle and pedestrian access changes; and
- No damage caused to road infrastructure from constrained construction vehicle access.

3.6.4 Coordinator-General Conditions

The following Imposed Condition must be achieved for the temporary coach terminal works:

Condition 9. Traffic and transport

(a) Construction traffic associated with the temporary coach terminal works must be managed to avoid or minimise adverse impacts on road safety and traffic flow, public transport, freight rail movements, pedestrian and cyclist safety, and property access.

(b) During temporary coach terminal works, workforce car parking will be provided within the worksite where possible, and parking on local streets is to be avoided.

(c) Access for emergency services to temporary coach terminal worksites and adjoining properties must be maintained throughout the construction phase.

(d) Practicable access is maintained to adjacent properties throughout temporary coach terminal works.

(e) Heavy construction vehicles use only designated routes for spoil haulage and deliveries of major plant, equipment and materials, in accordance with the Construction Environmental Management Plan. The designated haulage routes for each worksite must follow major or arterial roads to the extent practicable.

(f) Construction traffic must operate within the requirements of the Construction Environmental Management Plan (temporary coach terminal works).

(g) Prepare a Construction Traffic Management Plan (temporary coach terminal works) that includes:

(i) the proposed access to worksites, with local or minor roads only used where unavoidable to access a temporary coach terminal worksite;

(ii) a process for advance notice to Directly Affected Persons and local communities within the vicinity of the haulage routes and worksite accesses;

(iii) local traffic management measures developed in consultation with Brisbane City Council for key intersections including the reconfiguration of the intersection between Parkland Boulevard and Parkland Crescent to provide better sight distances and improved safety for road users;

(iv) specific traffic management measures developed in consultation with other key stakeholders, including:

(A) Queensland Rail about maintaining access to railway stations; and

(B) the department administering the Transport Infrastructure Act 1994 and the Brisbane City Council about maintaining operations for bus services along streets affected by the temporary coach terminal works.

(h) Temporary coach terminal works must be designed, planned and implemented to maintain acceptable footpath and cycle paths in areas adjacent to temporary coach terminal worksites in terms of capacity, legibility and pavement condition. The proponent must consult with the Brisbane City Council and Queensland Rail about changes in pedestrian and cycle paths required to facilitate temporary coach terminal works.

3.6.5 Mitigation Measures

The following advisory mitigation measures may be implemented to achieve the nominated environmental outcomes and performance criteria. Additional or different mitigation measures may be applied to achieve the environmental outcomes and performance criteria.

Traffic Network

- Works to be completed in general accordance with the general arrangement attached at **Appendix A**;
- Parkland Boulevard / Parkland Crescent (South) intersection works to improve safety and visibility:
  - Remove existing kerbed island on the northern verge and straighten alignment to free more road space;
  - Remove existing boulders on the southern verge and shift kerb back to straighten alignment and free more road space;
  - Remove existing median island and replace with a narrower painted island to improve manoeuvrability and free more road space; and
  - Move the existing stop line forward approximately 8m to give a clear length of approximately 18m to the retaining wall to improve vehicle visibility.

- Access constraints for construction vehicles to be incorporated into logistics management to ensure suitable sized construction vehicles are used for materials delivery, including delivery of prefabricated materials; and

- Worker parking is provided for the construction worksite where space is available. Where parking is insufficient to meet worksite demands and no commercial parking is available, alternative means of worker transport is provided to avoid adverse impacts on communities near construction worksites. The access of workers' car parking is not via local streets.

Traffic Movement

- Disruptions to the operation of the road network and the public transport network due to construction works are avoided during peak periods, where possible, and managed during off-peak periods;
- Haulage vehicles (i.e. spoil, construction equipment and materials haulage) only travel on designated haulage routes, unless agreed beforehand with the relevant road authority and the Delivery Authority;
- The Contractor has prepared and implement a staged Construction Traffic Management Plan (CTMP) for the worksite in consultation with the TMR, BCC and Emergency Service Authorities. The CTMP will meet requirements in Condition 9.
- Access to properties adjoining or near to the temporary coach terminal works, is maintained. Where changes to property access are required, alternative access arrangements are to be identified in consultation with property owners or occupants;
- Access for delivery vehicles to local businesses and community facilities near Project works is to be maintained. Where changes to access for delivery vehicles are required, alternative access arrangements are to be identified in consultation with local businesses and facilities;
- Truck movements are to be managed to avoid impacts on local streets approved for use such as damage to road pavements, from heavy vehicle traffic;
- Traffic management measures are to be implemented near to Project works to minimise disruption and delays to bus services; and
- In conjunction with TMR, BCC and emergency service providers, identify and implement measures to manage traffic flows and ensure safe traffic movement near construction works;
- Weekly reviews with Brisbane Metropolitan Traffic Management Centre (BMTMC) to identify any congestion issues along haul routes and at major intersections; and
- Review implementation of the CTMP periodically to ensure its effectiveness.

Cyclist and Pedestrian Movements

- Safe and functional access for pedestrians and cyclists is to be maintained near Project works, including for the elderly, children and people with mobility difficulties including vision and hearing impairments. This measure is to consider relevant CPTED principles;
- Safe, alternative access is to be provided for any bikeways disturbed by construction works;
- Where pedestrian and cycle access to community facilities is changed, local access strategies are to be developed. Safe, alternative access is to be provided for bikeways disturbed by construction works; and
- Maintain the pick-up / drop-off zone on Parkland Boulevard during periods of construction on the Parkland Crescent pick-up / drop-off zone, in order to maintain pick-up / drop off functionality of the area.
- Weekly inspections of pedestrian and cycle accesses surrounding worksites to identify any disturbances caused by construction activities. Any damaged or unsafe pedestrian or cycle accesses must be rectified immediately.

Notifications

- Local communities, including residents, businesses, users of community facilities and public transport passengers, are to be notified about changes to access and transport arrangements near construction works; and
- Public notification (Project website and social media) describing the proposed changes, the duration of the changes and possible alternative routes to avoid the impacts of the proposed changes is required at least 10 business days prior to the commencement of relevant construction work.

3.7 Water Management

3.7.1 Background

Baseline groundwater, surface water and flood condition and impacts for CRR Project were originally assessed in the EIS in Volume 3, Technical Report 3 – Groundwater, Technical Report 4 – Surface Water and Technical Report 5 – Flood study. Subsequently, the Delivery Authority has commissioned baseline surface water quality and groundwater monitoring for the CRR Project. Baseline surface and ground water monitoring will be carried out over a 12-month period from August 2018 to August 2019.

Baseline Conditions

Surface Water

The preliminary drainage assessment of the site indicates no visual signs of drainage issues. It appears adequate drainage design has been undertaken in the development of the carpark, however visual inspection during or after a rainfall event would be required to identify any areas of unsatisfactory drainage.

The *Environmental Protection (Water) Policy 2009* (EPP Water, updated 2013) under the *Environmental Protection Act 1994* provides the framework for management of Queensland waters. The Brisbane River and Breakfast Creek Estuary environmental values and water quality objectives (WQ 1431) sets Environmental Values (EVs) to be protected in these catchment waters. Protected Environmental Values (EVs) required to be met at the point of discharge are adopted from the ANZECC 2000 (Maintenance of Ecosystems, 95% protection) and the Brisbane River / Breakfast Creek environmental values and water quality objectives (Estuarine – Moderately disturbed) outlined in **Table 9** below.

Table 9. Surface Water Environmental Values

Analyte	Units	Adopted Published Guidelines – Brisbane River – Middle Esturary	ANZECC 2000 Aquatic Ecosystems Guidelines, Freshwater, Slightly to Moderately Disturbed
pH	pH	7.0 – 8.4	
Dissolved Oxygen	%	85 - 105	
Ammonia as N	mg/L	<0.01	
Organic as N	mg/L	<0.01	
Total Nitrogen	mg/L	<0.28	
Total Phosphorus	mg/L	<0.3	
Turbidity	NTU	<8	
Suspended Solids	mg/L	<20	
Chlorophyll A	mg/L	<4	
Cadmium	mg/L		0.0055
Copper	mg/L		0.0013
Lead	mg/L		0.0044
Mercury	mg/L		0.0004

Analyte	Units	Adopted Published Guidelines – Brisbane River – Middle Esturary	ANZECC 2000 Aquatic Ecosystems Guidelines, Freshwater, Slightly to Moderately Disturbed
Nickel	mg/L		0.07
Zinc	mg/L		0.015
Naphthalene	µg/L		70

A review of surface water monitoring results from August and September 2018 monitoring events indicated the that all surface water locations (Brisbane River and Breakfast Creek) have reported concentrations exceeding the adopted water quality limits for one or more of the following parameters; turbidity, TDS, TSS, ammonia, chloride, total nitrogen, nitrate and nitrite and total phosphorus.

The site is outside the 1 in 100 AEP flood area, however, access routes to the site may be impacted in such an event.

Groundwater

The bedrock strata are anticipated to be relatively low permeability and groundwater flow generally controlled by the discontinuity network and presence/nature of infill to discontinuities (i.e. clay or mineral infill). Borehole records do not identify the occurrence of shallow groundwater flows or strikes.

Elevated groundwater or spring lines have not been identified in previous investigations, however, the occurrence of localised flows from the cut rock face to the north of the site (parallel with Albert Street) is possible due to the increase of elevation and nature of exposed rock. Flows may occur in response to seasonal rainfall and storm events. Localised perched flow of groundwater is expected within the artificial deposits below the pavement construction, above rockhead. Due to the relatively low permeability of the bedrock, negligible infiltration of shallow and surface flows may be expected.

Shallow flows at site are anticipated to follow natural channels in the rockhead and generally flow to the south and southeast. The presence of structures (basements, retaining walls and in ground drainage) will intercept and divert shallow flows. Deeper groundwater flows are anticipated to flow toward the south and southeast towards the Brisbane River (ARUP, 2018).

Potential Impacts

The proposed activities are unlikely to have significant impacts on either groundwater or surface water environmental values. Site disturbance activities are restricted to minor earthworks and excavations and as such, groundwater is unlikely to be intercepted.

During construction and operation there is the potential for sources of pollutants to enter waterways from litter, spills, heavy metals, oils and hydrocarbon and chemicals/ hazardous substances and from surface run-off from tracks, stations and paved surfaces. Intense and/or frequent rainfall may also have the potential to mobilise sediment from expose soil areas which can lead to increased sedimentation of local waterways.

3.7.2 Environmental Outcomes

Surface water

- Construction activities are managed to avoid the transportation of contaminants that might be released to waters; and
- Environmental values of surface waters immediately downstream of the construction worksite are not adversely affected by the temporary coach terminal works during and post construction.

Groundwater

- Groundwater inflow to the construction worksite is minimised;
- Groundwater quality surrounding the temporary coach terminal is generally comparable with pre-construction levels; and
- Discharge of groundwater from the temporary coach terminal works does not adversely impact the environmental values of receiving waters.

Flood management

- The construction worksite is designed to provide for safe evacuation of worksites and to avoid disruption of evacuation routes for adjacent properties in the event of flooding.

3.7.3 Coordinator-General Conditions

The following Imposed Conditions must be achieved for the temporary coach terminal works:

Condition 10. Water quality

(a) Discharge of surface water and groundwater from the construction of the temporary coach terminal works must comply with the Brisbane River Estuary environmental values and water quality objectives (Basin no. 143 - mid-estuary) in the Environmental Protection (Water) Policy 2009.

(b) During construction monitor and report on water quality in accordance with the Construction Environmental Management Plan (temporary coach terminal works).

Condition 11. Surface water

(a) Temporary coach terminal works, and worksites, must be designed and implemented to avoid inundation from stormwater due to a 2-year (6hr) ARI rainfall event and flood waters due to a 5-year ARI rainfall event.

(b) Temporary coach terminal works must be designed and implemented to avoid afflux or cause the redirection of uncontrolled surface water flows, including stormwater flows, outside of worksites.

3.7.4 Mitigation Measures

- Develop and implement storage and handling procedures for fuels, chemicals and other hazardous materials, including procedures to prevent or contain spills;
- Ensure that accidental spills are cleaned up and appropriately remediated to avoid contamination of groundwater seepage;
- Spill kits and SDS registers to be maintained onsite in areas where chemical storage or handling occurs;
- Prior to commencement of construction, develop and implement practices and procedures for waste handling, storage and disposal, and spillages to avoid contamination of groundwater;
- Surface drainage measures are implemented at construction worksites and work areas to effectively manage stormwater runoff;
- Stockpiles are to be located away from drainage areas and flood affected areas;
- During routine daily site inspections and immediately following any rainfall event causing runoff from the worksite, a visual assessment is to be conducted of all drainage areas within and adjacent to the worksite to determine the presence of litter, sediment, chemical plumes or other toxicants;
- Implement erosion and sediment controls outlined in Section 3.8.5;

- Immediately following a rainfall event causing runoff from the worksites, a visual inspection of all erosion and sediment control measures, bunding and water treatment facilities is to be conducted to assess any damage or maintenance requirements and to review effectiveness; and
- Plant risk assessments to be completed for all machinery bought to site to ensure that the machine is functional, free of damage and / or contaminants.

3.8 Land Management

3.8.1 Background

Baseline land conditions for the site were originally assessed in the EIS in Volume 2, Chapter 6 – Soils, Topography and Geomorphology and Chapter 7 – Land Contamination. A desktop contamination assessment report was completed in April 2017, the site is a small portion of the larger lot described as Lot 60 on SP207215, which is listed on the Environmental Management Register (EMR).

Further preliminary contaminated land investigations have subsequently been conducted specifically for the Roma Street area. This investigation provided a preliminary indication of the contamination status of the precinct to facilitate construction/redevelopment works required to be undertaken. A Suitably Qualified Person conducted the investigation and preparation of the Contaminated Land Investigation Document in accordance with the *Environmental Protection Act 1994*, Queensland Auditor Handbook for Contaminated Land. This investigation consisted of historic and desktop information.

Baseline Conditions

The site is generally level, situated at +19 mAHD and beyond the northern and eastern boundaries of the site, ground levels are elevated approximately 6m above site levels and separated by concrete retaining wall structure supporting Parkland Boulevard above. The wall partially extends along the western boundary, to the west a multi-story residential apartment building (3 Parkland Crescent).

The site is within the Moggill Creek soil landscape, consisting of sandy and clayey alluvium creek flats; however, the area is likely to have fill overlaid to support the current infrastructure. This soil landscape is generally comprised of gleyed podzolic soils, with minor prairie and alluvial soils. The terminal site is relatively flat with minimal erosion risk due to the impervious surfaces. Along the Parkland Boulevard slopes may be encountered increasing the risk for sediment loss off site.

Geotechnical investigations have determined that there are artificial deposits (rock fill and sub-grade/road base fill to the current pavements/slab) present directly overlying weathered bedrock (ARUP, 2018).

The Australian Soil Resource Information System (ASRIS) Acid Sulphate Soil (ASS) map indicates the site and its surroundings have an ASS classification of C4, indicating a provisional classification of extremely low probability of encountering ASS on site.

The site occupies the site of the former Roma Street rail yards. The rail yard was remediated during redevelopment although the land parcels remain on the EMR. The investigation found that a Site Management Plan for Lot 22 on RP903100 (portion of current Lot 60 SP207215) reported historical contamination including Polyaromatic Hydrocarbons (PAH) and metals associated with a discontinuous layer of ash/coke material and an area of 'oily ooze'. Remediation is understood to have been completed at the site as part of redevelopment associated with the south-western portion of the Roma Street Parklands (Lot 60 on SP207215). A containment cell is reported to be located in the central portion of Lot 60 on SP207215 (north of the lake), with the remediated area located adjacent to the Roma Street Platform 10 development area.

Historical information available for the site indicates fill depths up to 7m, with limited environmental assessment reporting elevated concentrations of PAH and Total Reportable Hydrocarbons (TRH) in soils along with elevated concentrations of TRH in groundwater monitoring well CRR716.

Asbestos material is also identified on Platform 10 within the existing structures, there is a risk that previous removal or demolition of buildings may have caused asbestos contamination of the underlying soils.

Potential Impacts

Loss of sediment offsite into waterways may occur during excavation and stockpiling of soil materials. The site is drained through council stormwater and release of sediment laden waters could see impacts to the Brisbane River where the stormwater is discharged.

An historic imagery review shows the construction site has previously used for railway activities and contained rail sheds which have since been demolished to construct the car park. Thus, this site has potential soil contamination resulting from historical land use and the presence of fill. Disturbance of such soils can mobilise contaminates.

While the risk is low, ASS may be present in localised zones (ARUP, 2018)., ASS disturbance could result from a number of construction-related activities including:

- Excavation of ASS material;
- Sediment movement into waterways and overland flow paths;
- Downward loading pressure on unconsolidated sediments from stockpiles, placement of fill material and the placement of structures such as footings, piers, piles and road and rail infrastructure construction;
- Groundwater drawdown; and
- Changes for surface and subsurface flow regimes and pathways.

3.8.2 Environmental Outcomes

- Construction activities minimise soil erosion and sedimentation and avoid adverse impacts on the environmental values of receiving waters;
- Construction activities minimise the impacts of ground settlement from construction works;
- Construction activities avoid or minimise environmental and public health risks associated with disturbance of potential ASS encountered during construction works; and
- Construction activities do not impact on the environmental values of the Brisbane River and other waterways.

3.8.3 Performance Criteria

- The Project does not result in the mobilisation of soil or water contaminants, including sediment movement beyond the boundaries of the worksite. Soil erosion within the worksite is to be rectified as soon as practicable after a rainfall event to prevent the release of sediment offsite; Runoff from the worksite complies with the environmental objectives established in the *Environmental Protection (Water) Policy 2009* (EPP (Water)); and
- ASS is avoided, or if intercepted, is managed to avoid adverse impact to environmental values, infrastructure, construction equipment, construction personnel or the public.

3.8.4 Coordinator-General Conditions

The following Imposed Conditions must be achieved for the Project:

Condition 12: Erosion and sediment control

(a) An erosion and sediment control sub-plan that is consistent with the Guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and the Department of Transport and Main Roads' Technical Standard MRTS51 – Environmental Management must be submitted as part of the Construction Environmental Management Plan (temporary coach terminal works). Refer to **Appendix B** for Erosion & Sediment Control Plan.

3.8.5 Mitigation Measures

Erosion and Sediment

- To inform detailed design and construction planning, undertake soil sampling at worksites as part of further geotechnical investigations, to identify and characterise vulnerable soils in areas of surface works. Characteristics of interest include confirmation of soil landscapes, soil depth, presence of fill and soil chemical properties;
- Implement the site Erosion and Sediment Control Plan (ESCP) provided in **Appendix B**;
- Manage ESC's in accordance with the guidelines for Best Practice Erosion and Sediment Control (International Erosion Control Association, 2008) and TMR's Technical Standard MRTS52 Erosion and Sediment Control;
- Contractor to reduce the risk of erosion during construction by:
  - Avoiding disturbance of vulnerable surface and subsurface soils;
  - Minimising construction worksite clearing and the extent and duration of soil exposure;
  - Identifying proposed spoil storage locations at construction worksites;
  - Installing spoil enclosure sheds at construction worksites, where required;
  - Diverting clean waters around disturbed surfaces and spoil storage locations;
  - Monitoring the effectiveness of installed control measures; and
  - Progressive stabilisation and revegetation of disturbed areas, using stored topsoil where practicable.
- Any damaged erosion and sediment control measures will be repaired or replaced following rainfall events;
- Stockpiles located away from drainage areas and flood affected areas. Locate spoil placement sites away from creek banks and provide adequate bunding to prevent sediment run-off into waterways or stormwater drains or inundation in a 1 in 5-year flood event;
- Erosion and sediment control measures must be maintained in good working order, with any damaged or ineffective measures repaired or replaced following rainfall events or otherwise as required;

Acid Sulphate Soils

- Characterisation of the ground in areas of potential disturbance is essential to quantify the quantity of sulfides and the neutralisation required in order to mitigate risk of Actual Acid Sulfate Soils (AASS) production.

Contaminated Land

- Design to minimise and limit ground disturbance by surface engineered footings;
- During the first disturbance of potentially odorous soils, implement reasonable and practicable measures to avoid or mitigate and manage impacts of odours on adjacent properties. Such measures may include:
  - ensuring clean cover materials (e.g. clean fill) is on hand to immediately cover odorous spoil materials that are resulting in off-site impacts;
  - identifying and determining the potential for odour impacts at off-site sensitive receivers based on preliminary information on the scale and nature of any known contamination, the distance from the contamination area to sensitive receivers, and the prevailing meteorological conditions;
  - conducting works with odorous soils when wind directions are unlikely to affect sensitive receivers; and
  - covering odorous, excavated soil stockpiled on a construction site or a spoil placement site to reduce odour impacts.
- Observations during any soil disturbance for the presence of fill or soil staining. If suspect material is encountered, sampling is to be undertaken to verify any contamination. Suspect material to be stored in sealed container or covered stockpile, flagged as a no go area;

- Any surplus soil or fill material required to be removed from site, must have verification soil testing completed prior to removal. Where soils are contaminated, obtain a Soil disposal permit prior to removal off site; and
- Implement measures to minimise the exposure of humans and the environment to potentially contaminated soils during excavation activities.

3.9 Non-Indigenous Cultural Heritage Management Plan

3.9.1 Background

The Delivery Authority, commissioned Niche Environment and Heritage consultants to undertake an assessment of heritage values at the Roma Street precinct to identify potential impacts to current values and recommend mitigation actions to inform detailed design. The assessment undertaken in September 2018 included a desktop review of existing studies and heritage register entries and a day of field survey.

Baseline Conditions

Four heritage classifications and associated registers apply to the area around Roma Street. These include the Queensland Heritage Register (QHR), Brisbane Heritage Register (BHR), Register of the National Estate (RNE) and Commonwealth Heritage List (CHL). It is important to note that a place can be listed on more than one of these registers. The direct work site does not contain any buildings or structures of cultural significance, however, there are seventeen of the listed places as well as the three potential heritage places found either totally or partially within the broader Roma Street Precinct boundary. The boundaries of the Precinct roughly align with Wickham Terrace (north), Petrie Terrace (west), Wickham Terrace and Ann Street to the east, and North Quay, Makerston Street and a section of Roma Street (south). A large portion of the area comprises the Roma Street railway station and yards and the Roma Street Parklands.

The most relevant entries for this study were: Roma Street Railway Station (QHR 601208), Brisbane Dental Hospital and College (QHR 601909), Albert Park (North) air raid shelter (QHR 602473), Albert Park (South) Air Raid Shelter (QHR 602474), Wickham Park Air Raid Shelters (QHR 602476), Monier Ventilation Shaft 1 (Spring Hill) (QHR 601995), Petrie Terrace Police Depot (former) (QHR 601894), Brisbane City Hall (QHR 600065).

Potential Impacts

Whilst the site has undergone significant modification in the preceding 70 years or more with the presence of rail yards and subsequent earthworks for the Roma Street Parklands, there remains the potential (low risk) for heritage artefacts to be encountered during excavation in natural ground below sub-grade.

Potential impacts possible to non-indigenous cultural heritage include:

- Destruction/ uncovering an unexpected find of culturally important site/artefact; and
- Loss of evidence of past occupation of an area.

Impacts can be cause by an increase in vibration associated with works, earthworks, excavation or vibratory rolling.

3.9.2 Environmental Outcomes

- The following environmental outcomes in relation to non-indigenous cultural heritage are to be achieved for the Project:
  - Construction activities are managed to maintain cultural heritage values of identified places of historical value, within and adjacent to the construction worksites.
  - Construction activities are managed to maintain scientific values of any archaeological places uncovered during Project works.
  - New infrastructure is sympathetic in design to the aesthetic significance of cultural heritage places in the vicinity.

3.9.3 Performance Criteria

- Construction activities do not adversely impact on places of historical heritage value directly, or indirectly though excessive dust deposition, vibration, or settlement;
- A Heritage Management Plan is prepared and approved for all places of State or local historical heritage significance likely to be impacted by works prior to these works commencing. An overarching management plan is prepared in respect of places of local heritage value; and
- Any archaeological places newly discovered and uncovered are appropriately managed.

3.9.4 Mitigation Measures

General recommendations for all heritage places are:

- Ensure that any impacts to the properties are avoided or minimised through design solutions during detailed design;
- Depending on proximity to and nature of works, building condition survey, vibration and noise testing and monitoring may be necessary;
- Archival (photographic) recording before any accepted impacts occur; and
- Where required, temporary fencing or other barricading during construction works to minimise risk of inadvertent impacts.

Specific measures for heritage sites near to the works and potentially subject to vibrational impacts:

- Prepare a Heritage Management Plan for places of historical cultural heritage value likely to be impacted by construction works to guide and manage construction and to ensure the identified values of such places are maintained;
- Cultural heritage awareness training to be included in employee induction processes, to ensure workers are aware of heritage places in the vicinity of works and the management procedures;
- Archaeological test pitting is not required to be conducted unless there is an unexpected archaeological find. A specific works procedure is to be implemented for unexpected archaeological finds;
- To protect places of historical heritage from excessive dust deposition, vibration and settlement, construction works are to implement Noise and Air Quality Management Measures;
- Routine daily site inspections are to include assessment of effectiveness of any exclusion fencing or signage protecting cultural heritage values.

3.10 Waste Management Plan

3.10.1 Background

The site is located in Brisbane Metro area where there are numerous waste collection and recycling opportunities available for construction waste management.

Potential Impacts

- The works are not expected to generate significant waste products and any associated impacts would generally occur through poor waste management actions. The primary impacts include:
  - dust generation from inappropriate handling and disposal of excavated material;
  - soil and water contamination from material spills during handling and haulage;
  - soil and water contamination from inappropriate handling of solid and liquid waste and material separated for recycling, re-use and recovery;
  - increased prevalence of vermin, insects and pests; and
  - inefficient use of resources and inappropriate procurement of resources.

3.10.2 Environmental Outcomes

- Construction activities, including demolition, are designed planned and implemented to minimise the generation of waste materials;
- Storage, handling, transportation and disposal of waste materials generated during construction are carried out to avoid breach of environmental legislation, cause potential environmental harm and or adverse impacts on communities; and
- Reuse and recycling of construction waste materials generated by construction activities is optimised.

3.10.3 Performance Criteria

- Construction activities are conducted in accordance with the following:
  - waste management principles (avoid, reduce, reuse and recycle) and sustainable disposal strategies are implemented;
  - targets to recover and re-use construction waste, including demolition waste for all classes or categories of waste; and
  - taking all reasonable and practicable steps to minimise the impacts of handling and disposal of construction waste at the worksites, and at the disposal sites.
- Hazardous waste is handled and disposed of in accordance with the approved disposal methods by Workplace Health and Safety Queensland;
- Waste generated is managed in accordance with the requirements and recovery targets set out in the Queensland Governments Waste - Everyone's Responsibility Queensland Waste Avoidance and Resource Productivity Strategy (2014- 2024); and
- Regulated and contaminated waste to be disposed of in accordance with the *Environmental Protection Act* 1994.

3.10.4 Mitigation Measures

- Train staff to identify opportunities for reuse, where practicable;
- Consider using materials and products that have a recycled content wherever cost/performance competitive, and where environmentally preferable to the non-recycled alternative;

- Identify and implement strategies for the reuse of waste products generated during construction. Where reasonable and practicable, provide for the re-use of excavated or salvaged materials in construction material including:
  - segregated and labelled bins for different waste streams;
  - Transfer kerb and pavement materials (concrete, asphalt) to crushing and recycling plants;
  - chip and mulch vegetation cleared for the Project and re-use mulched material for landscaping purposes when feasible; and
  - collect empty oil and fuel drums and other containers for return to licensed recycling facilities by a licensed contractor.
- Waste unable to be re-used, recycled or recovered must be disposed of in appropriately licensed commercial landfill sites and sewage treatment systems;
- Investigate the availability of treated wastewater, stormwater runoff or groundwater inflow for site activities such as dust mitigation, wash-down uses or watering landscape works;
- Ensure that sufficient loading / unloading space is provided at the construction worksite to allow waste materials to be sorted for recycling and reuse;
- Treatment of solid waste must not be undertaken on site during construction. All commercial forms of treatment must be undertaken at approved, offsite facilities;
- Ensure the movement of hazardous materials and regulated wastes occurs at non-peak times to minimise the possibility of traffic conflicts and associated risks;
- Transportation of hazardous wastes, regulated wastes and contaminated soils must be undertaken by a suitably licensed waste contractor and in accordance with relevant Australian standards, legislative requirements and guidelines;
- Safety Data Sheets (SDS) are required to be kept at the storage location of all waste hazardous materials and dangerous goods;
- Prepare and implement spill response measures in relation to waste hazardous materials and dangerous goods;
- Any waste materials suspected of containing asbestos will be disposed to an appropriately licensed landfill by a certified asbestos waste contractor;
- Ensure provision of bins at worksite common areas, fitted with lids and serviced prior to being filled to capacity; and
- Routine daily site inspections are to include monitoring capacity of waste storage facilities and arranging collections as required, monitoring for the presence of vermin or odours in association with waste storage or handling and monitoring for the presence of litter and general worksite tidiness.

4. Roles and Responsibilities

The organisational responsibilities and accountabilities in relation to environmental management throughout construction of the temporary coach terminal are outlined in **Table 10** below.

Table 10. Project roles and responsibilities

Project responsibilities
Coordinator-General
• Administers the *State Development and Public Works Organisation Act 1971*
The Authority
• Oversee the Contractor's detailed design process to achieve the environmental outcomes. • Ensure there is adequate and accurate identification and reporting of any exceedances of quantitative performance criteria, failure to achieve qualitative performance criteria, and failure to implement mitigation measures during construction. • Auditing of contractor works to ensure compliance. • In consultation with the Contractor, ensure corrective actions arising from exceedances or failures are implemented as soon as possible. • Establish and maintain a Project website for the purpose of informing people about work activities. • Establish and maintain a process for receiving, recording and responding to in a timely way, validated complaints about construction issues. • CRRDA will manage the consultation and will have PENSAR provide input.
Contractor

• Manage the detailed design process to achieve the environmental outcomes.
• Develop a detailed CEMP to supplement this CEMP.
• Implement the CEMP for the duration of the works.
• Maintain at the Project office and at each worksite:
  – a current copy of the endorsed CEMP containing a record of all revisions and updates, the completion of planned actions, monitoring records, and reports which are made available.
  – a schedule of all necessary approvals, including development approvals, environmental licenses, workplace health and safety and all other construction-related approvals necessary to undertake the works.
• Establish an environmental management register of construction mitigation measures developed in consultation with Directly Affected Persons.
• Ensure that construction mitigation measures are implemented in accordance with the CEMP.
• Undertake regular monitoring in relation to environmental performance criteria and mitigation measures to ensure the environmental outcomes are being achieved. Validated monitoring results must be reported each month in the monthly environmental reports for the duration of construction. This will inform the basis for the reporting of monitoring results on the Project website each month.
• Ensure there is adequate and accurate identification and reporting of any exceedances of performance criteria, failure to achieve performance criteria, and failure to implement mitigation measures during construction.
• Implement corrective actions arising from such exceedances or failures as soon as possible and in accordance with the CEMP. Non-compliances must be resolved in consultation with Directly Affected Persons. Corrective actions must be reported in the monthly environmental report.
• Establish and maintain open and effective communications, in consultation with the Delivery Authority, with people living or working near the Project worksites, people relying on the public transport or road transport

Project responsibilities
network likely to be affected by Project construction traffic, and relevant stakeholders affected by the Project Works about: – the construction programme; – the intended scale, timing and duration, and nature of proposed work; and – proposed mitigation measures and monitoring of impacts, for the duration of the construction phase. • Ensure the Project is carried out in accordance with relevant environmental legislation, policies and guidelines. • Ensure all site personnel are inducted in and are aware of their environmental and cultural heritage responsibilities and obligations under relevant legislation and the requirements of the CEMP. • Appoint competent personnel to implement and manage the application of the CEMP.

4.1 Subcontractor Management

Though the Contractor may delegate environmental requirements and responsibilities to subcontractors, the Contractor will remain responsible for the compliance with the endorsed CEMP.

All subcontractors are required to attend the General Site Induction where the requirements and obligations of the CEMP are to be communicated at a site and delivery level.

5. Training

5.1 Environmental Induction

All staff, contractors, sub-contractors and visitors to construction worksites must attend general induction training that covers general environmental management requirements, site-wide controls and site-specific and work specific risks and mitigation measures. At a minimum, the inductions should cover the below information:

- Relevant legislation;
- Environmental management requirements;
- General environmental duty;
- Cultural heritage & cultural heritage duty of care;
- Non-Indigenous cultural heritage;
- Duty to notify;
- Key sensitive areas;
- Environmental No Go Areas;
- Water quality requirements;
- Air, noise and vibration requirements;
- Erosion and sediment control;
- Nature conservation;
- Contaminated land and hazardous substances;
- Spill management procedure;
- Waste removal;
- Incidents including definition, management and reporting requirements;
- Requirements of other agencies; and
- Staff code of conduct and behaviour.

The site induction should also include general duties under contractual requirements and measures established in the CEMP.

An induction register must be maintained by the Contractor to record induction attendance for all staff, Contractors, sub-contractors and visitors.

5.2 Environmental Training

To assist with managing environmental risks associated with the works, a training plan must be developed, identifying training requirements for each role within the Project. The Contractor will develop specific environmental and cultural heritage training required for various roles and personnel as part of their CEMP.

A training register is to be maintained by the Contractor to record attendees at the training sessions.

5.2.1 Toolbox Talks

Toolbox talks should be used as a method of raising awareness and educating personnel on issues related to all aspects of construction including environmental issues. Toolbox talks can be used to ensure environmental awareness continues throughout the construction phase of the temporary coach terminal.

6. Incidents & Emergencies

The Project has requirements under the *Environmental Protection Act* 1994 (Qld) (EP Act) to notify the Chief Executive, Department of Environment and Science (DES) of incidents that cause or threaten unlawful 'material or serious environmental harm' as defined by the EP Act. Notification must be made to DES within 24 hours. The Project also has obligations to other Regulatory Agencies, DTMR, QR and other stakeholders depending on the scale and type of incident.

Incidents that may occur during the Project include a non-conformance with the CEMP, a validated complaint from stakeholders of an environmental nature that is not authorised in the CEMP, or an incident that causes or threatens unlawful material or serious environmental harm.

All Project and subcontractor personnel will report all environmental incidents and near misses to their supervisor and notify the Contractor's Environmental Team who, in consultation with the Delivery Authority will complete all reporting requirements for the CG, DES and any other regulatory agencies who require notification. The Contractor will also notify the Delivery Authority. The incident or near miss will be recorded using processes outlined in the CEMP.

6.1 Incident Types

Incidents include, but are not limited to:

- Any potential breach of the legislation or an approval or permit condition;
- Unauthorised harm or desecration to Aboriginal objects or Aboriginal places;
- Unauthorised damage or interference to threatened species, endangered ecological communities or critical habitat;
- Unauthorised damage or destruction to any State or locally significant relic or Heritage item;
- Unauthorised discharge from sediment basins or other containment devices;
- Unauthorised clearing or clearing beyond the extent of the Project footprint;
- Unauthorised habitat damage;
- Inadequate installation and subsequent failure of temporary ESC;
- Potential contamination of waterways or land;
- Potential impact to level or contamination of groundwater;
- Accidental or unauthorised intentional starting of fire;
- Unauthorised dumping of waste; and
- Spills of fuel, oil chemical or other hazardous material.

6.2 Incident Classification, Procedure and Reporting

In addition to the requirements under the CEMP, all Project, Contractor and subcontractor personnel will report all environmental incidents and near misses in accordance with processes agreed between the Contractor and the Delivery Authority prior to the commencement of Project Works.

6.3 Incident Prevention Management

Key effective incident prevention is undertaken by continual environmental inspections and monitoring for the duration of commissioning. During construction the following preventative strategies will be implemented:

- Daily informal visual inspections of active work sites;
- Completion of the Project's Environmental Checklist which is to be developed as part of the Contractor's CEMP;
- Timely close out of corrective actions as identified in the Project's Environmental Checklist;
- Prompt maintenance and repairs identified by daily visual checks of corrective actions as identified in the Project's Environmental Checklist;
- Environmental training identified in the CEMP as being required; and
- Environmental audits as identified in the CEMP.

Preventative or corrective actions will be identified in response to an environmental incident, during daily visual inspections or through the Project's Environmental Checklist.

6.4 Incident Investigation

Where an incident has occurred, an incident investigation must be undertaken by the Contractor, with the following elements to be included as a minimum:

- Identify the extent and cause of the incident;
- Identify the immediate corrective actions taken to prevent the impact from continuing including the personnel responsible for undertaking these actions;
- Identify corrective actions to remediate the impacted area including the personnel responsible for undertaking these actions;
- Undertake a root cause analysis;
- Assess risk of reoccurrence;
- Identify procedural deficiencies;
- Implement investigation recommendations from root cause analysis or procedure deficiencies;
- Report findings to the Delivery Authority; and
- Where appropriate, provide any training that may assist staff and subcontractors in preventing reoccurrence of an event of a similar nature in future.

7. Compliance

This section outlines the compliance processes that must be adopted by the Contractor to ensure compliance with the Coordinator-General Conditions and any other legislative requirements. It is the responsibility of the Contractor to ensure that compliance with any relevant conditions or other legislative requirements, whether obtained by the Delivery Authority or not, is achieved.

7.1 Coordinator-General Conditions

The following Coordinator-General condition must be achieved for the temporary coach terminal work.

Condition 3. Compliance

(a) The Delivery Authority must notify the Coordinator-General in writing, within 48 hours after becoming aware of a non-compliance incident (incident) with the Imposed Conditions (temporary coach terminal works).

(b) The notification must include:

(i) a description of the incident, including details of the location, date and time of the Incident;

(ii) the name and contact details of a designated contact person;

(iii) an outline of actions that have been or will be taken to respond to the incident.

(c) Within 14 days following the notification of an Incident, written advice detailing the following information must be provided to the Coordinator-General:

(i) a description of the incident, including details of the location, date and time of the Incident;

(ii) the name and contact details of a designated contact person;

(iii) the circumstances in which the Incident occurred;

(iv) details of any complaint in relation to the incident;

(v) the cause of the incident;

(vi) a description of the environmental effects of the incident;

(vii) the results of any sampling or monitoring performed in relation to the Incident;

(viii) actions taken to mitigate the environmental effects of the incident;

(ix) proposed actions to prevent a recurrence of the Incident, including timing and responsibility for implementation.

(d) The incident report must be made available on the project website and remain available for the duration of the construction phase of the temporary coach terminal.

7.2 Environmental Inspections

The Contractor will undertake environmental inspections to develop and evaluate the effectiveness of environmental controls.

The following inspections will be undertaken for the duration of the temporary coach terminal works.

Table 11. Project Environmental Inspection Requirements

Type of Inspection	Frequency	Form of Record
Informal inspection of active work areas	Daily	Daily diary
Formal inspection of active work areas	Weekly	Project Environmental Checklist
'Serious Environmental Harm', 'Material Environmental Harm' as defined by the *Environmental Protection Act 1994* (Qld).	Incident	Incident Report
Non-conformance	Event	Non-conformance Report (to be developed by Contractor)

7.3 Environmental Monitoring

7.3.1 Baseline Monitoring

The initial baseline assessment documented in the EIS is based on previous assessments, and the EIS phase desktop and selected field studies. The additional baseline assessment will provide additional up to date for use in determining project-specific performance criteria and an indication of the likelihood of achieving compliance with the existing environment conditions.

To obtain adequate baseline data, monitoring is being carried out for at least twelve (12) months (where practical) commencing in August 2018. Five months of baseline data will be available to the early works contractors, in addition this baseline monitoring will continue, where not impacted by the Temporary Coach Terminal construction activities, and will be used to also monitor performance.

Baseline studies for flora, fauna & weeds has been completed for the Roma Street precinct. The following baseline monitoring has commenced and will continue during the Early Works period which will lead up to the commencement of Project Works.

- Surface and Groundwater Monitoring; and
- Air Quality, Noise and Vibration Monitoring.

The Delivery Authority has engaged suitably qualified and experienced environmental consultants to conduct baseline monitoring for the CRR Project. Baseline monitoring data will be analysed and used to inform the construction phase environmental management including mitigation measures related to the various environmental aspects.

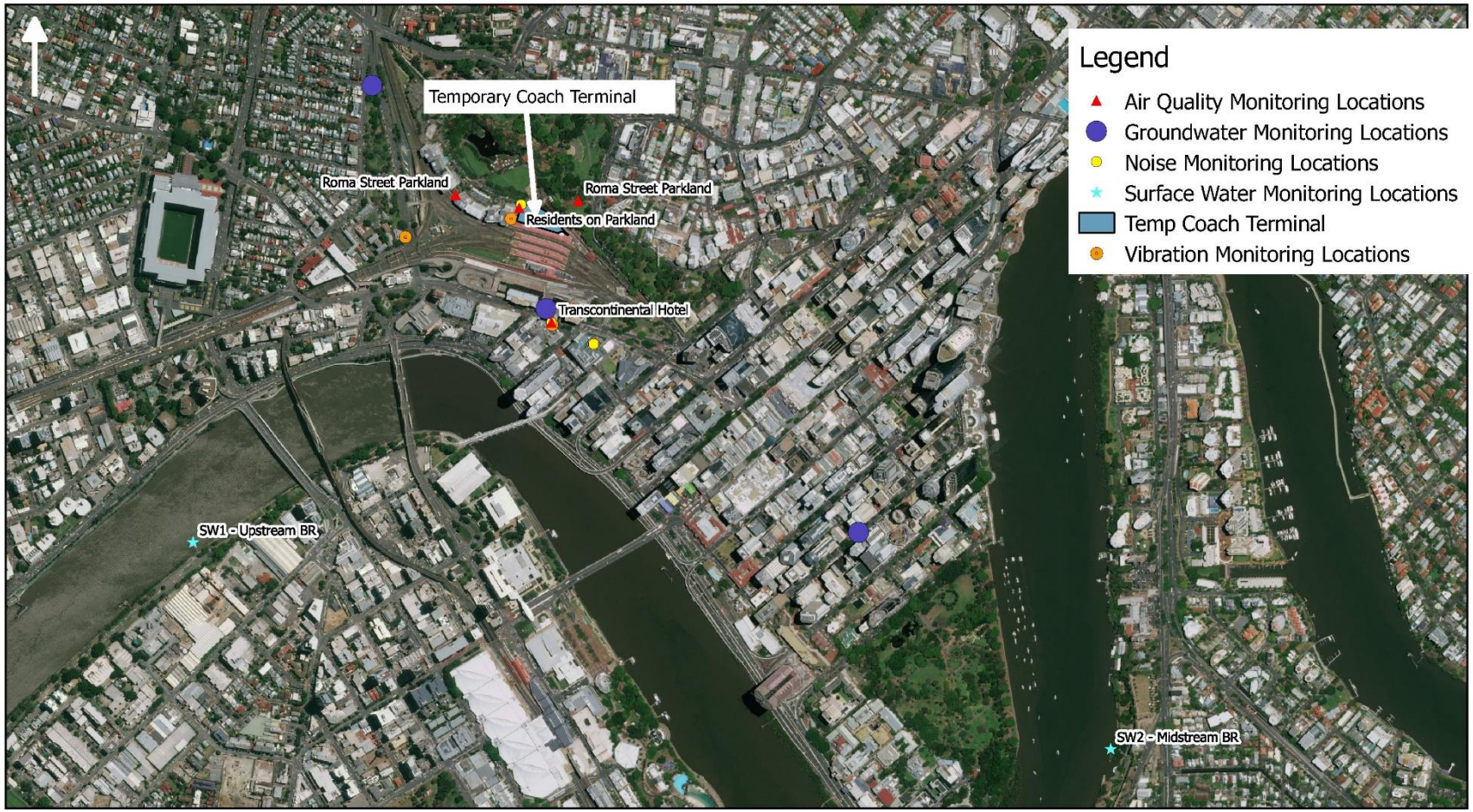


Figure 2 Baseline Monitoring Locations

7.3.2 Performance Monitoring

Environmental performance must be monitored by the Contractor for each environmental element throughout the construction phase. Monitoring must address performance in relation to the environmental outcomes, performance criteria and Coordinator-General's Imposed Conditions, and implementation of the mitigation measures needed to achieve the environmental outcomes.

The specific monitoring actions for each environmental element are outlined in **Table 12** below.

Table 12. Performance Monitoring Requirements

Aspect	Monitoring Requirements
Noise	• During site establishment works and high noise generating activities undertake noise monitoring at key sensitive receptors to verify predicted noise levels and compare against Project noise goals. • Undertake noise monitoring in response to complaints about construction noise. • Noise monitoring shall be undertaken in accordance with the construction program and the methods referred to the Noise Management Manual (DEHP, Version 4, 2013).
Vibration	• Baseline condition measurements before commencement of the works. • Progressively monitoring during the works to confirm conformance with Project vibrational goals. • Undertake continuous monitoring during high vibrational impact work which has potential to cause damage to buildings or surrounding infrastructure. • Vibration monitoring shall be conducted in accordance with the requirements identified in section 5.2 vibration measurement of the *Transport Noise Management Code of Practice; Volume 2 - Construction Noise and Vibration* (TMR, March 2016).
Dust and Odour	• Monitor meteorological conditions particularly wind speed and direction; • A dust deposition monitor will be installed adjacent to the Parklands residential complex at Roma Street Station during temporary coach terminal works. • Undertake weekly monitoring of ambient air quality (TSP, PM10 and deposited dust) against the air quality goals. • Monitoring must be conducted in response to complaints and monitoring locations must be down-wind of the worksites; and • Air quality monitoring conducted in response to a complaint will be conducted in accordance with Chapters 6 and 7 of the *DTMR Road Traffic Air Quality Management Manual.*

During the construction phase, monitoring must include, as a minimum:

- All monitoring is to be performed by a suitably qualified person in accordance with the QLD Air Quality Sampling Manual (1997), and in accordance with the relevant Australian Standards. All laboratory analyses are to be performed by a NATA-accredited laboratory;
- Collection, measurement and analysis of specified data at the locations and frequencies required by the CEMP according to recognised and accepted scientific methods by suitably qualified people;
- Daily visual environmental site inspection at each work area, including inspections of environmental control measures and environmental impacts of construction activities; and
- Targeted monitoring of key parameters in response to an incident or failure to comply with the Imposed Conditions or the CEMP.

All monitoring equipment is to be calibrated regularly and the results of the calibrations recorded. All monitoring and sampling undertaken is to be in accordance with applicable guidelines or Australian Standards. All analytical testing performed is to be undertaken in accordance with National Association of Testing Authorities (NATA) approved procedures or if this is unavailable, be performed to the most relevant standard. New technologies or materials may be used provided standards and outcomes are equal to or exceed current recognised standards.

7.4 Auditing

Auditing will be undertaken to verify compliance with the CEMP and Coordinator-General's Imposed Conditions. The audits will include review of any prior audits and the impacts of associated corrective actions. The auditing requirements for the Project include, at a minimum, the below:

Table 13. Temporary Coach Terminal Auditing Requirements

Description	Frequency	Parties Involved	Reporting Requirements
CEMP	Monthly	Internal	Contractor and Delivery Authority

Auditing will be undertaken by a suitably qualified person in accordance with ISO19011:2003 – Guidelines for Quality and or Environmental Management Systems Auditing.

The Contractor must maintain appropriate audit records, and these are to be reported on in the Monthly Report to the Delivery Authority.

7.5 Corrective Actions

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 works that do not achieve the environmental outcomes or meet the Imposed Conditions must cease until the corrective actions have been developed and implemented.

Corrective actions must be developed by the Contractor in consultation with the Delivery Authority and Directly Affected Persons where deemed necessary. These corrective actions will be developed using a root cause analysis approach to ensure the underlying causes area addressed and not just the presenting causes.

Corrective actions must be initiated by the Contractor as soon as practicable after it becomes evident, through monitoring or validated complaints, that the environmental outcomes for the relevant works are not being achieved.

The Contractor must maintain a register of corrective actions. The Contractor must also demonstrate that the corrective actions have been implemented and appropriately communicated within their organisation (and supply chain, if relevant) to prevent reoccurrence.

7.6 Reporting

Monthly Report

The ensure compliance with Coordinator-General Condition 4 the contractor must prepare and submit a monthly report by the end of each month to the Delivery Authority which includes the following information:

- the programme of works and progress made in the reporting period;
- the scope and character of works to be undertaken in the next reporting period;
- monitoring data required by the Imposed Conditions (temporary coach terminal works) or CEMP undertaken for the period and, where required, an interpretation of the results;
- monitoring results for key parameters (e.g. construction traffic flows, air quality, water quality, noise and vibration, settlement, waste disposal, soil erosion and sediment control) with such data to be validated according to accepted scientific standards and industry practices;
- reporting of complaints received and addressed, including the number of complaints, description of issues, responses, timing of responses and corrective actions.
- an evaluation of compliance in relation to the CEMP, including instances of non-compliance with the CG's conditions and the CEMP, any corrective actions required to address non-compliance;
- community engagement activities and performance in relation to the community engagement plan.
- details of any incident, including a description of the incident, resulting effects, corrective actions, revised construction practices to prevent a recurrence, responsibility and timing during the reporting period;
- a summary of any incidents during the previous reporting period, with details of site remediation activities, corrective actions taken or to be taken and revised practices implemented or to be implemented (as relevant).

The Delivery Authority is required to provide this Monthly Report to the Coordinator-General and publish is on the project website within four weeks of the end of the month to which the report relates. The monthly report will continue to be available on the project website for the duration of the construction phase of the temporary coach terminal.

Greenhouse Gas Emissions Reporting

Record the following consumption data to enable GHG emissions to be accurately calculated and reported for the Project:

- Diesel, petrol, LPG use by vehicles and machinery;
- Electricity use;
- Consumption of oils and greases; and
- Number of units and size of any refrigeration units on site.

7.7 CEMP Review

Revisions to this CEMP may be required during the project to reflect changing circumstances or identified deficiencies. Revisions may result from:

- Management Review
- Audit (either internal or by external parties)
- Complaints or non-conformance reports
- Changes to the Company's standard system.

Revisions shall be reviewed and approved prior to issue. Updates to this Plan are numbered consecutively and issued to holders of controlled copies.

8. Documentation & Communication

8.1 Environmental Records

Environmental Records

The Contractor is responsible for maintaining all environmental management documents and records associated with conditions as outlined in the CEMP. Types of records will include, but are not limited to:

- Monitoring, inspection and compliance reports/records.
- Correspondence with regulatory agencies.
- Correspondence with the public and stakeholders.
- Induction and training records.
- Reports on environmental incidents, other environmental non-conformances, complaints and follow-up action.
- Community engagement information.
- Records of the following waste and regulated waste tracking, as a minimum, are to be kept throughout the construction phase:
  - resource use and waste generated from construction works;
  - waste recovered and re-used;
  - waste disposed to landfill; and
  - waste transporter or contractor details (including company name, licensed operator name and license number).
- Document all contaminated material during transport operations (including the descriptions of processes, personnel and organisations involved in the removal, transportation and placement of contaminated material);
- Keep documented records of contaminated material movement and disposal; and
- Soil disposal permits are to be maintained on register.
- Archival recording should be carried out in accordance the Department of Environment and Science Protection's guideline on Archival Recording of Heritage Places.

8.2 Document Control

A register must be retained of all licenses, permits, approvals and any other agreements pertaining to the works.

Project documents, including the monthly environmental reports and incident reports, are to be maintained and are to be made available for inspection on request by the Delivery Authority and by any agency with relevant regulatory responsibilities. All monthly environmental reports and incident reports must be kept for a minimum of at least five years after completion of construction or otherwise in accordance with applicable legislation or the regulator's requirements.

A system must be established for registering all in-coming and out-going correspondence regarding environmental matters during the design, construction and commissioning phases of the temporary coach terminal. The document management system must also include:

- all environmental documents and plans, including all versions of the CEMP, monitoring results, and environmental reports;
- all approvals, permits and licenses necessary to conduct the works;
- technical investigations and studies;
- photographic and other visual records;
- complaints and responses; and
- general correspondence.

The Contractor will coordinate the preparation, review and distribution as appropriate, of the environmental documents. All environmental management documents are subject to ongoing review and continual improvement.

The Contractor will implement a document control procedure to control the flow of documents within and between Contractor, Regulatory Agencies, the Delivery Authority and relevant stakeholders and subcontractors.

8.3 Communication

All internal and external communication with all stakeholders including the public, Coordinator-General, government agencies and the Delivery Authority must be done in accordance with the Stakeholder Engagement Plan.

Appendix A – Stakeholder Engagement Plan – Temporary Coach Terminal Works

CROSSRIVERRAIL
Delivery Authority

Stakeholder Engagement Plan (SEP)

Temporary Coach Terminal

November 2018

Table of Contents

1. Introduction

1.1 Introduction

This Stakeholder Engagement Plan (SEP) sets out the requirements for community engagement during construction of the temporary coach terminal and forms part of the Construction Environmental Management Plan (CEMP) (Coach Terminal Relocation Works).

1.2 Coordinator-General Outcomes

This SEP responds to the below Coordinator-General Condition (CG) Imposed Condition:

Condition 5. Stakeholder engagement plan:

(a) The Delivery Authority must develop a stakeholder engagement plan as part of the Construction Environmental Management Plan (temporary coach terminal works).

(b) The stakeholder engagement plan must provide for:
  (i) Directly Affected Persons to be consulted prior to commencement of temporary coach terminal works and for the duration of the temporary coach terminal works;
  (ii) Directly Affected Persons to be consulted about predicted impacts and possible mitigation measures;
  (iii) local communities near temporary coach terminal works to be informed about the nature of construction, including the timing, duration and predicted impacts of the temporary coach terminal works in advance of their commencement;
  (iv) information to be provided to public transport, road users, pedestrians and cyclists about the predicted effects of temporary coach terminal works on road, rail and pedestrian and cycle network operations, in advance of their commencement;
  (v) specific community consultation plans for identified key stakeholders;
  (vi) a process for advance notification to local communities of temporary coach terminal works, including the timing, duration, predicted impacts and mitigation measures, which is available on the project website and through other media.

(c) The stakeholder engagement plan must incorporate a complaints management system developed specifically for the temporary coach terminal works, which is established prior to the commencement of temporary coach terminal works.

(d) The complaints management system must deliver a prompt response to community concerns with relevant information, action where required, and reporting of incidents.

(e) As a minimum, the complaints management system must include the following elements:
  (i) a procedure for receiving complaints on a 24 hour, seven days a week basis, during temporary coach terminal works;
  (ii) a mechanism for notifying the community of the complaints procedure and how it may be accessed;
  (iii) a process for registering and handling complaints received, including a database for tracking of complaints and actions taken in response;
  (iv) a procedure for verifying complaints through monitoring and detailed investigation, and escalating and resolving verified complaints;
  (v) regular reporting via the monthly environmental report, to the community of complaints and corrective actions, maintaining appropriate confidentiality.

(f) All information regarding complaints must be made available to the Coordinator-General on request.

2. Engagement Approach and Methods

2.1 Engagement Approach

The Delivery Authority is committed to a proactive engagement approach based on the values established by the internationally recognised *International Association for Public Participation* (IAP2).

The guiding principle of the Delivery Authority's approach is to undertake engagement at the right time and in the right manner, with a focus on early engagement to establish positive relationships with stakeholders and the community.

Purpose	Inform	Consult	Involve	Collaborate
Outcome	Establish relationships that deliver accurate, relevant and appropriate information to stakeholders and the community.	Establish relationships to seek and receive the views of stakeholders and the community about issues, programs and opportunities that directly affect them, or in which they may have a significant interest.	Achieve collaborative relationships with stakeholders who can participate in shaping policy, program options and precinct activation.	Demonstrate leadership and innovation in the way in which we engage with stakeholders who can shape the Project and its future service options.

2.2 Communication Channels

The following communication channels will be used prior to and throughout construction to provide information about the proposed works, advance notification of construction activity and to update overall project progress.

Channels	Purpose
Information sessions	Information sessions will be undertaken by the Delivery Authority to present information on the temporary coach terminal design and construction timeframe. Directly affected residents and surrounding businesses will be invited to attend these sessions via a letterbox dropped invitation. The Delivery Authority will offer the opportunity to register for regular project updates. Contact cards will be provided describing how to contact the project team and where further information on the project can be found.
Letter	A letter will be provided to properties located between Countess Street, Roma Street, Turbot Street, Berry Street and Boundary Street during project planning to advise of the project and again prior to construction to advise of construction commencement, timeframes, potential impacts, and proposed mitigation measures. Letters will include information on how to register for regular updates, how to make an enquiry or a complaint, and how to find out more about the project.
Door knocking	Directly affected residents and surrounding businesses will be doorknocked during project planning to advise of the project, and again prior to construction commencing to provide information about the upcoming works, potential impacts, duration and proposed mitigation or minimisation measures.

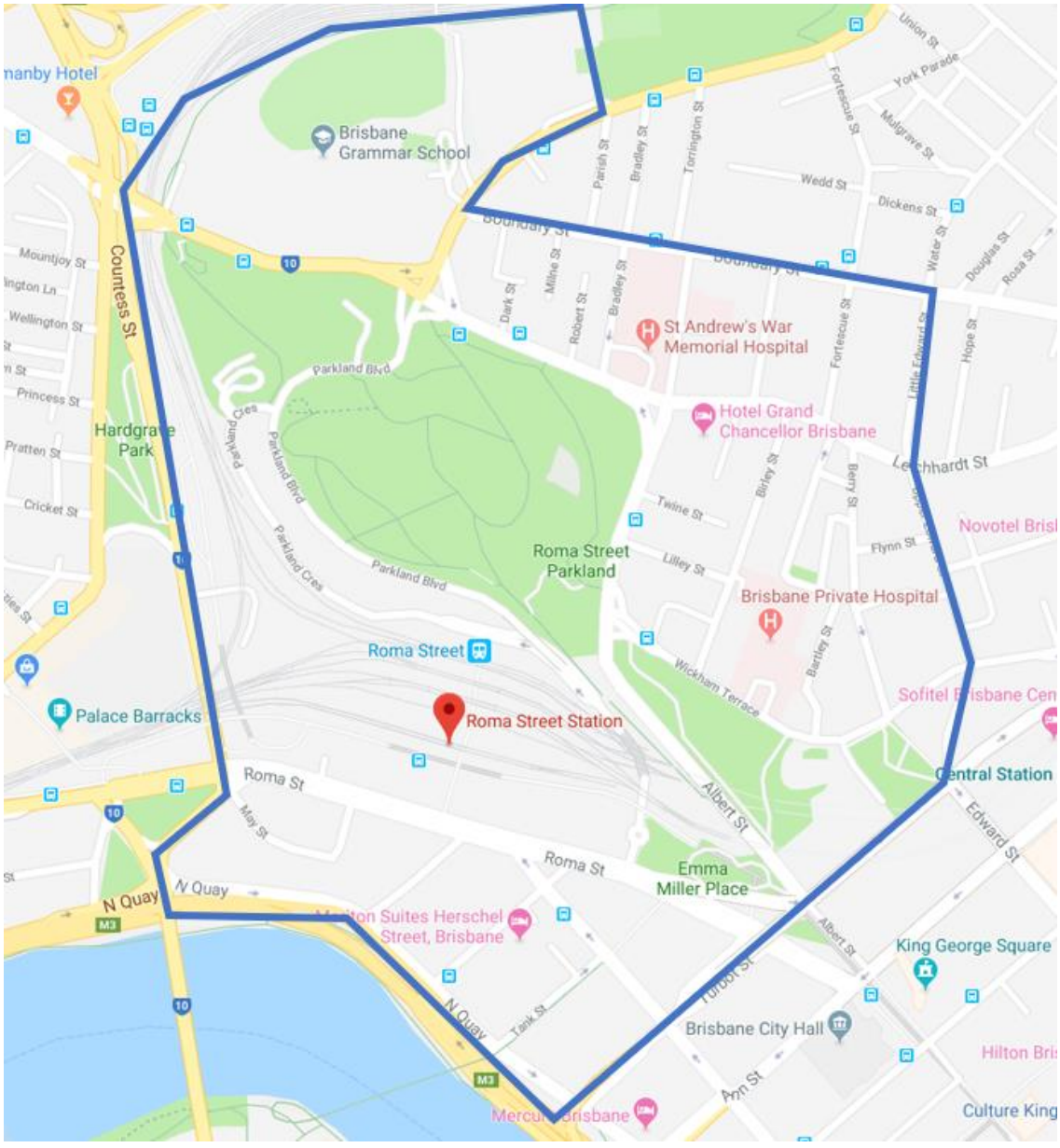
Channels	Purpose
	During the doorknock, the Delivery Authority will offer residents and businesses the opportunity to register for regular project updates. Contact cards will be provided describing how to contact the project team and where further information on the project can be found.
Brisbane Metropolitan Transport Management Centre (BMTMC)	Traffic alerts will be provided to BTMC to enable advanced notification to transport operators and road-users of traffic changes including road or lane closures and detours.
Signage	Signage will be used to notify of project works and advise of impacts. Where conditions on and around site are expected to change, signage will be used to inform of these changes. For example, if some carparks will no longer be available to for use by the public, signage will be erected in advance to notify users. Signage will advise how to contact the project team and how to find out more about the project.
VMS boards	Electronic variable message signs (VMS) will be installed to provide information on upcoming works or current traffic changes to road users, pedestrians and cyclists.
Meetings with directly affected stakeholders	The Delivery Authority will continue to consult with directly affected residents, businesses, special interest groups and schools prior to and during construction. The focus of these meetings will include provision of construction information, discussion of mitigation measures and updates at key milestones.
Meetings with individuals or groups	The Delivery Authority will continue to meet with individuals or groups as required or requested to discuss the overall project, upcoming works, works in progress and predicted impacts. Meetings may be triggered by stakeholder interest/contact or emerging project requirements.
Check-in phone calls/meetings	The Delivery Authority will initiate check-in phone calls and meetings with individuals or stakeholders who have ongoing questions and/or concerns related to the works, or a certain type of construction activity.
Monthly update email	A monthly update email will be sent to surrounding businesses/residents/stakeholders who have registered to receive regular updates. These emails will include information on upcoming works activity, how to contact the project team and how to find out more information specific to these works.
Enquiry management	The Delivery Authority has an established 1800 enquiry number and project email address for community contact to raise questions, make a complaint or to report incidents. The 1800 enquiry number will operate 24-hours a day, seven days a week during construction.
Website updates	The Delivery Authority will regularly update the project website with information about works activity and project progress. The website includes contact details to find out more about the project and an option to register for regular project updates.
Social media	The Delivery Authority will provide advanced notification of works activity, potential impacts and updates on milestones achieved through its social media channels.
Media	The Delivery Authority will make media announcements and distribute media releases about project milestones as appropriate.
Building condition surveys	The Delivery Authority will undertake building condition surveys to understand the current condition of nearby structures (including some residential properties) prior to construction starting.

3. Implementation

Engagement will be undertaken with the following stakeholder and community groups:

Stakeholder group	Affected stakeholders
Elected representatives	• Member for Brisbane (Federal) • Member for McConnel (State) • Councillor for Central Ward (Local)
Emergency services	• Queensland Police • Queensland Fire and Emergency Services • Queensland Ambulance
Public Utility Providers	• Telstra • Optus • Energex • Ergon • Urban Utilities • NBN Co
Directly affected residents/businesses/ stakeholders	• Queensland Rail • City Parklands • Parkland Apartments • Cornerstone Parking • Brisbane Transit Centre • Businesses on Parkland Boulevard and Parkland Crescent
Surrounding residents/businesses/ stakeholders	• Refer to distribution area on following page
Special interest groups	• Bicycle Queensland • Brisbane North BUG, Brisbane West BUG, Space4Cycling • Taxi Council • Accessibility Reference Group
Schools	• Brisbane Grammar School • Brisbane Girls Grammar School • St Joseph's College
Road and public transport users	• Pedestrians • Cyclists • Public transport users • Long distance train users
Other interest parties	• Any interested party that contacts the Delivery Authority

Coach terminal works: surrounding residents/businesses/stakeholders



Please see below details for implementation.

Action	Comments	Stakeholder group
August – September 2018 – initial engagement		
Meetings and briefings	• Meetings to introduce project design and construction timeframes. • Follow-up meetings will be arranged as required. • Offer to sign-up for monthly email • Fortnightly meetings with body corporates.	• Schools • Special interest groups • Directly affected residents/businesses/stakeholders

Action	Comments	Stakeholder group
Doorknock	• Doorknock of local businesses to introduce project design and construction timeframes. • Offer to sign-up for monthly email.	• Surrounding businesses.
Letter	• Project update letter and invitation to information sessions.	• Directly affected residents/businesses/ stakeholders. • Surrounding residents/businesses/ stakeholders.
Email	• Project update email and invitation to information sessions.	• Schools. • Special interest groups. • Directly affected stakeholders. • Elected representatives. • Emergency Services. • Public Utility Providers.
Project information sessions	• Drop in session to advise of design, timing and mitigation measures.	• Directly affected and surrounding residents/businesses/stakeholders. • Public transport users.
Enquiry management	• Ongoing responses to enquiries via 1800 number and project email.	• All groups.
October 2018 – prior to construction		
Meetings and briefings	• Meetings to present works program and construction impact mitigation plans. • Fortnightly meetings with body corporates.	• Directly affected residents/businesses/ stakeholders. • Surrounding residents/businesses/ stakeholders as required.
Letter	• Start of construction letter including timeframes, potential impacts, mitigation measures, project contact information.	• Directly affected residents/businesses/ stakeholders. • Surrounding residents/businesses/ stakeholders.
Email	• Start of construction email including timeframes, potential impacts, mitigation measures, project contact information.	• Schools. • Special interest groups. • Directly affected stakeholders. • Elected representatives. • Emergency Services. • Public Utility Providers.
Doorknock	• Follow-up doorknock of local businesses to discuss construction activity and mitigation measures.	• Surrounding businesses.
BMTMC update	• Start of construction notification. • BMTMC updates as required by traffic management protocols.	• Road and public transport users.
Signage	• Signage to be erected on site to advise of project works, closure of public access areas, changes to access.	• Road users. • Public transport users. • Pedestrians and cyclists.
Building Condition Surveys	• Building Condition Surveys as required.	• Directly affected residents/businesses.
Website updates	• Overview of works added to Early Works page of the project website.	• All groups.
Social media	• Social media posts as required.	• All groups.

Action	Comments	Stakeholder group
Media statement	• Media statement regarding start of works.	• All groups.
Enquiry management	• Ongoing responses to enquiries via 1800 number and project email.	• All groups.
1 – 3 days prior to construction		
Variable message signage	• Changed traffic conditions signage as per approved traffic management plan.	• All groups.
Social media updates	• Social media posts to advise of works commencement.	• All groups.
During construction		
Monthly emails	• Upcoming works and project progress update.	• Surrounding residents/businesses/ stakeholders who subscribe to updates. • Road and public transport users who subscribe to updates.
Meetings	• Meetings as required by construction activity or stakeholder contact.	• Schools. • Special interest groups. • Directly affected residents/businesses/ stakeholders.
Letter	• Distributed 1-3 days in advance as required to inform of changed construction activity, out of hours work or disruptive activity.	• Directly affected and surrounding residents/businesses/ stakeholders. • Schools. • Special interest groups. • Elected representatives. • Emergency Services. • Public Utility Providers.
Check in calls/meetings	• Telephone and face-to-face contact with directly affected residents and businesses to proactively identify any concerns around construction management.	• Directly affected residents/businesses/ stakeholders. • Special interest groups.
Social media updates	• Upcoming works and project progress updates.	• All groups.
Website updates	• Information on current works activity, progress updates, images and videos on the Early Works page.	• All groups.
Media opportunities	• Media opportunities at project milestones as identified.	• All groups.
Enquiry management	• Ongoing responses to enquiries and complaints via 1800 number and project email.	• All groups.

4. Communications Management

4.1 Contacting Cross River Rail Delivery Authority

There are various avenues through which the community can contact and engage with the Delivery Authority including by phone, email and post as per the details listed below.

- 1800 010 875 (24 hours, seven days a week)
- info@crossriverrail.qld.gov.au
- PO Box 15476, Brisbane City East, QLD 4002

Stakeholder and the community can also stay informed of project updates through the project's social media channels on Facebook, Twitter and LinkedIn at the below addresses.


/CrossRiverRail


@CrossRiverRail


/company/crossriverrail

The Delivery Authority will respond to enquiries and complaints as outlined below:

Enquiry source	Initial response time	Resolution time
Project hotline	Four hours	Three working days
Email	24 hours	Five working days
Social media	Four hours	24 hours
Written correspondence	Two working days	Five - 10 working days

4.2 Issues and Complaints management

The Delivery Authority has engaged with stakeholders about the temporary coach terminal works between June and September 2018. The key issues that have been raised to date and relate to construction impacts are outlined in the table below, including the response and the supporting communication channel/s. This will continue to be reviewed and updated throughout construction.

Potential issue	Management response & mitigations	Supporting communication channel/s
Accessible access	• Two accessible drop-off bays will remain available on Parkland Crescent. • Two accessible parking bays will be reallocated to an area on Parkland Boulevard.	• Letter • BMTMC • Signage • VMS boards • Meetings with representative groups • 1800 number and email • Website updates

Potential issue	Management response & mitigations	Supporting communication channel/s
	• Delivery Authority will continue to proactively engage with accessibility sector.	
Air quality	• As per the Construction Environmental Management Plan, air quality monitoring and reporting will be undertaken throughout construction. • Stakeholder engagement team will work with the construction team to mitigate any air quality issues raised by stakeholders. • If works will be undertaken that exceed air quality goals stipulated by the Coordinator-General, the Delivery Authority will consult with directly affected residents and businesses, and notify surrounding residents and businesses. • Refer to Section 3.4 of the CEMP for further details about how construction activities will minimise air quality impacts.	• Meetings with directly affected stakeholders • Meetings with individuals or groups • 1800 number and email
Cyclist safety	• Cyclist access will be clearly defined through the construction site. • Delivery Authority will continue to proactively engage with bicycle user groups.	• BMTMC • Signage • VMS boards • Meetings with representative groups • 1800 number and email • Website updates
Lighting	• Refer to Section 3.5 of the CEMP for further details about how construction activities will minimise lighting impacts.	• 1800 number and email
Loss of parking	• Parking will remain available at parking facilities nearby, such as Cornerstone Parking, College Close Car Park and parking on Parkland Boulevard. • Delivery Authority will include information about alternative car parking options in its communication collateral and on signage.	• Signage • VMS boards • 1800 number and email • Website updates • Social media
Noise and vibration	• As per the Construction Environmental Management Plan, noise and vibration monitoring and reporting will be undertaken throughout construction. • Stakeholder engagement team will work with the construction team to mitigate any noise and vibration issues raised by stakeholders. • If works will be undertaken that exceed noise and vibration goals stipulated by the Coordinator-General, the Delivery Authority will consult with directly affected residents and businesses, and notify surrounding residents and businesses. • Refer to Section 3.3 of the CEMP for further details about how construction activities will minimise noise and vibration impacts.	• Meetings with directly affected stakeholders • Meetings with individuals or groups • 1800 number and email

Potential issue	Management response & mitigations	Supporting communication channel/s
Pedestrian safety	• Defined pedestrian pathways will be utilised during construction. • A pedestrian study has been completed for the coach terminal to assist with pedestrian management during construction and operations. • Delivery Authority will continue to proactively engage with nearby schools and has offered to provide briefings and information about safety around construction sites.	• Signage • VMS boards • Meetings with representative groups • 1800 number and email • Website updates • Social media
Taxi access changes	• Taxi drop-off will remain available on Parkland Boulevard. • Delivery Authority will continue to proactively engage with taxi companies and representative groups.	• Signage • VMS boards • Meetings with representative groups • 1800 number and email • Website updates • Social media
Traffic impacts	• Access will be maintained through the construction worksite. If this is not possible, the Delivery Authority will consult with directly affected residents and businesses, and notify surrounding residents and businesses. • Delivery Authority will notify of significant changes to access 10 business days prior. • Delivery Authority will continue to proactively engage with Brisbane City Council, Queensland Rail and City Parklands to manage traffic impacts during construction. • Refer to Section 3.6 of the CEMP for further details about how construction activities will manage traffic impacts.	• Letter • Doorknocking • BMTMC • Signage • VMS boards • Meetings with directly affected stakeholders • Meetings with individuals or groups • Monthly update email • 1800 number and email • Website updates • Social media • Media
Workforce parking	• Construction staff will park within the construction site or will arrange paid parking access with nearby providers. • If construction staff park outside of the site, it will be addressed with the construction contractor.	• Meetings with representative groups • 1800 number and email

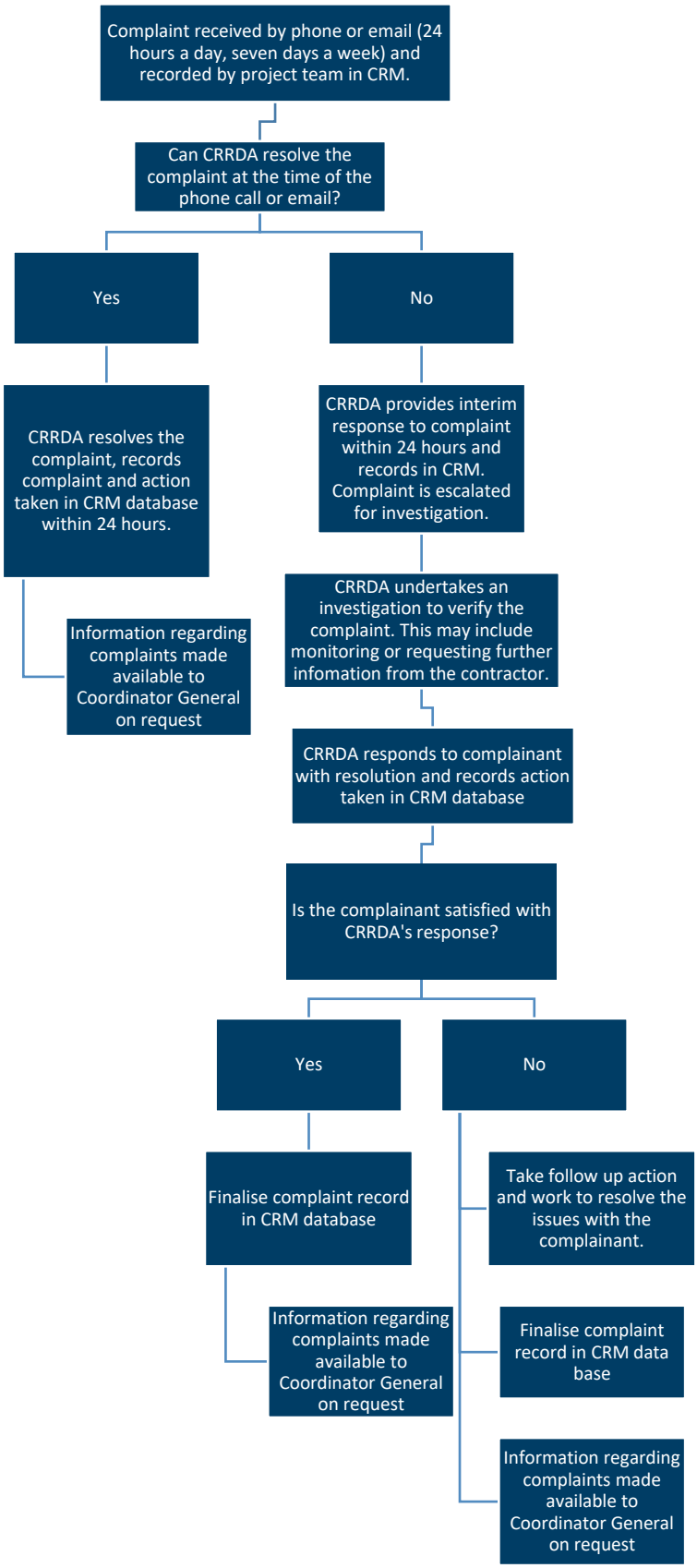
4.3 Making a Complaint

The Delivery Authority will notify stakeholders via the start of construction letter of the 1800 enquiry number, which will operate 24-hours a day, seven days a week during construction. There will be a direct link from the Delivery Authority's website to the Coordinator-General's website and the complaints procedure contained within this Plan.

The Delivery Authority's complaint management system (further outlined in Figure 1) aims to ensure complaints are responded to and resolved in a timely manner. If a complaint requires further investigation and monitoring, the Delivery Authority will provide an interim response to the complainant until the investigation is completed. There is also an avenue for complaints to be escalated as required.

Regular reporting of complaints will be undertaken via the monthly environmental report.

Figure 1 – Complaints management system for Coach Terminal Relocation Works



Appendix B – General Arrangement

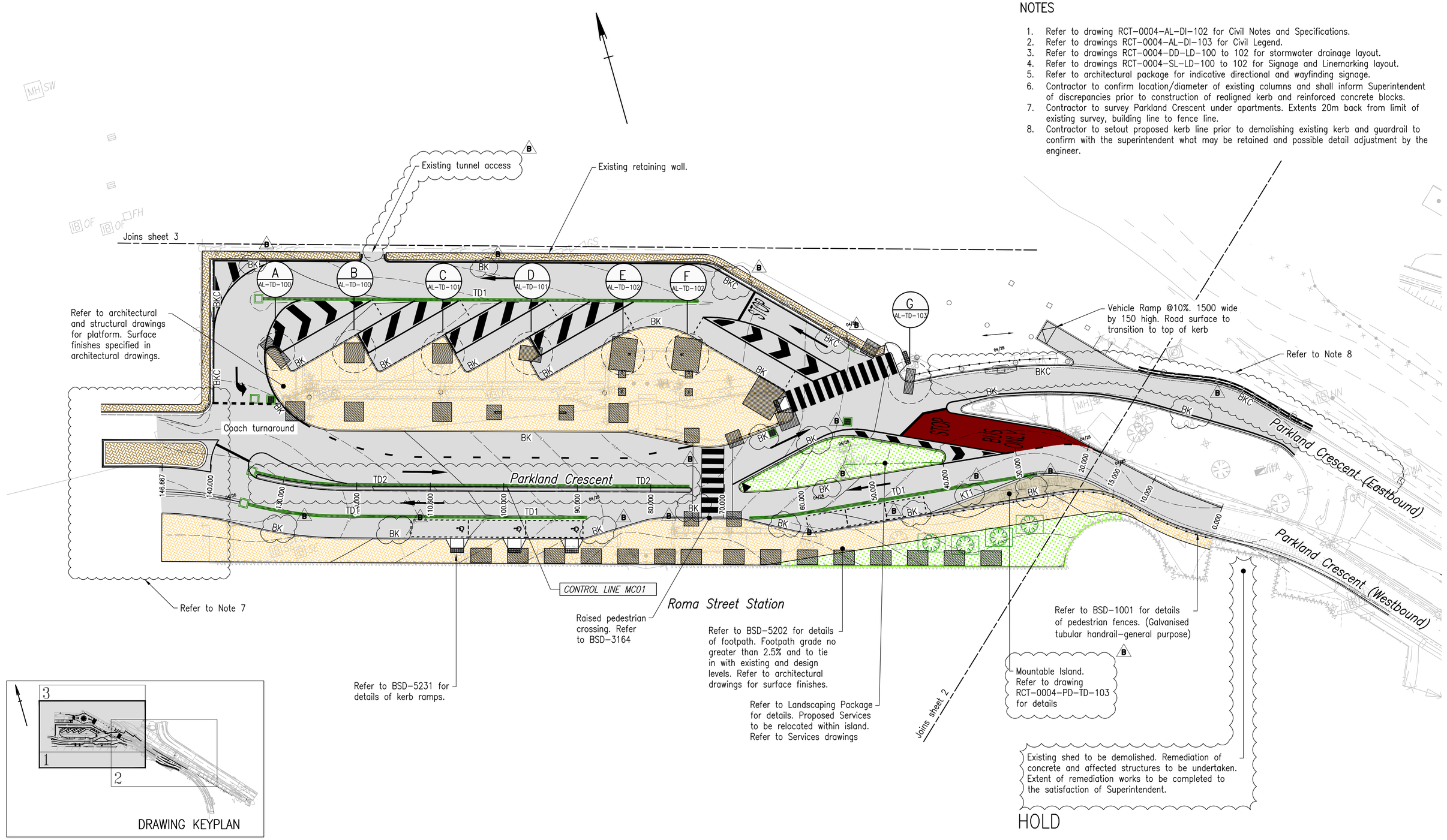
Department of Transport and Main Roads

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-AL-GA-100

NOTES

1. Refer to drawing RCT-0004-AL-DI-102 for Civil Notes and Specifications.
2. Refer to drawings RCT-0004-AL-DI-103 for Civil Legend.
3. Refer to drawings RCT-0004-DD-LD-100 to 102 for stormwater drainage layout.
4. Refer to drawings RCT-0004-SL-LD-100 to 102 for Signage and Linemarking layout.
5. Refer to architectural package for indicative directional and wayfinding signage.
6. Contractor to confirm location/diameter of existing columns and shall inform Superintendent of discrepancies prior to construction of realigned kerb and reinforced concrete blocks.
7. Contractor to survey Parkland Crescent under apartments. Extents 20m back from limit of existing survey, building line to fence line.
8. Contractor to setout proposed kerb line prior to demolishing existing kerb and guardrail to confirm with the superintendent what may be retained and possible detail adjustment by the engineer.



B	Issued For Construction	MMG	22/10/18	
A	Issued For Construction			
	Revisions/Descriptions	Certification	Date	Microfiled

CAD FILES C:\projectwise\Exports\CRR - Coach Terminal\Set\RCT-0004-AL-GA-100.dwg

Associated Job Nos

Auxiliary Drg Nos

Survey Data
Datum BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
A1 / A3 1:250 / 1:500
0 2 4 6 8 10m
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
GENERAL ARRANGEMENT
SHEET 1 – LOWER LEVEL

Drawn KC
Designed NA

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.	
Contract. No.	
Drawing No.	B
Series Number	of

MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 - 8:30am
XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-C-RMA-DCON.dwg ; X-CRR-C-RMA-DROA-HATCH.dwg ; X-CRR-RMA-CTRL_LOWER.dwg ; X-DSHT-KEYPLAN.dwg ; X-CRR-C-RMA-SSUR-CAD.dwg

Department of Transport and Main Roads

ARUP
Drawing Number
RCT-0004-AL-GA-101

Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Joins sheet 1 and 3

CONTROL LINE MC01

Parkland Crescent (Eastbound)

Parkland Boulevard

Parkland Crescent (Westbound)

Albert Street

End Retaining Wall

10

Existing Stop Line

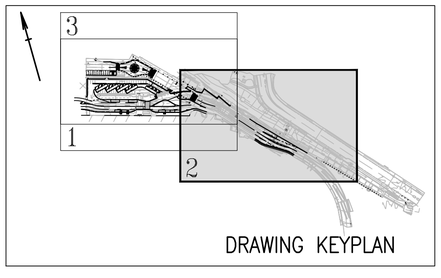
8

Proposed Stop Line

Proposed footpath to tie in before existing sewer main daylights

HOLD

Existing shed to be demolished. Remediation of concrete and affected structures to be undertaken. Extent of remediation works to be completed to the satisfaction of Superintendent.



DRAWING KEYPLAN

B	Issued For Construction	MMG	22/10/18	
A	Issued For Construction			
	Revisions/Descriptions	Certification	Date	Microfiled

CAD FILES | C:\projectwise\Exports\CRR – Coach Terminal\Set\RCT-0004-AL-GA-101.dwg

Associated Job Nos	Survey Data	
	Datum	BCSG02
Auxiliary Drg Nos	Horiz. Grid	
	Height Origin	
	Survey Books	

Scales

A1 / A3 1:250 / 1:500 0 2 4 6 8 10m

Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT

TEMPORARY COACH TERMINAL

CTL CHGE

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
GENERAL ARRANGEMENT
SHEET 2 – LOWER LEVEL

Drawn KC

Designed NA

ENGINEERING CERTIFICATION (RPEQ)				
ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.	
Contract. No.	
Drawing No.	B
Series Number	of

MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 – 8:30am

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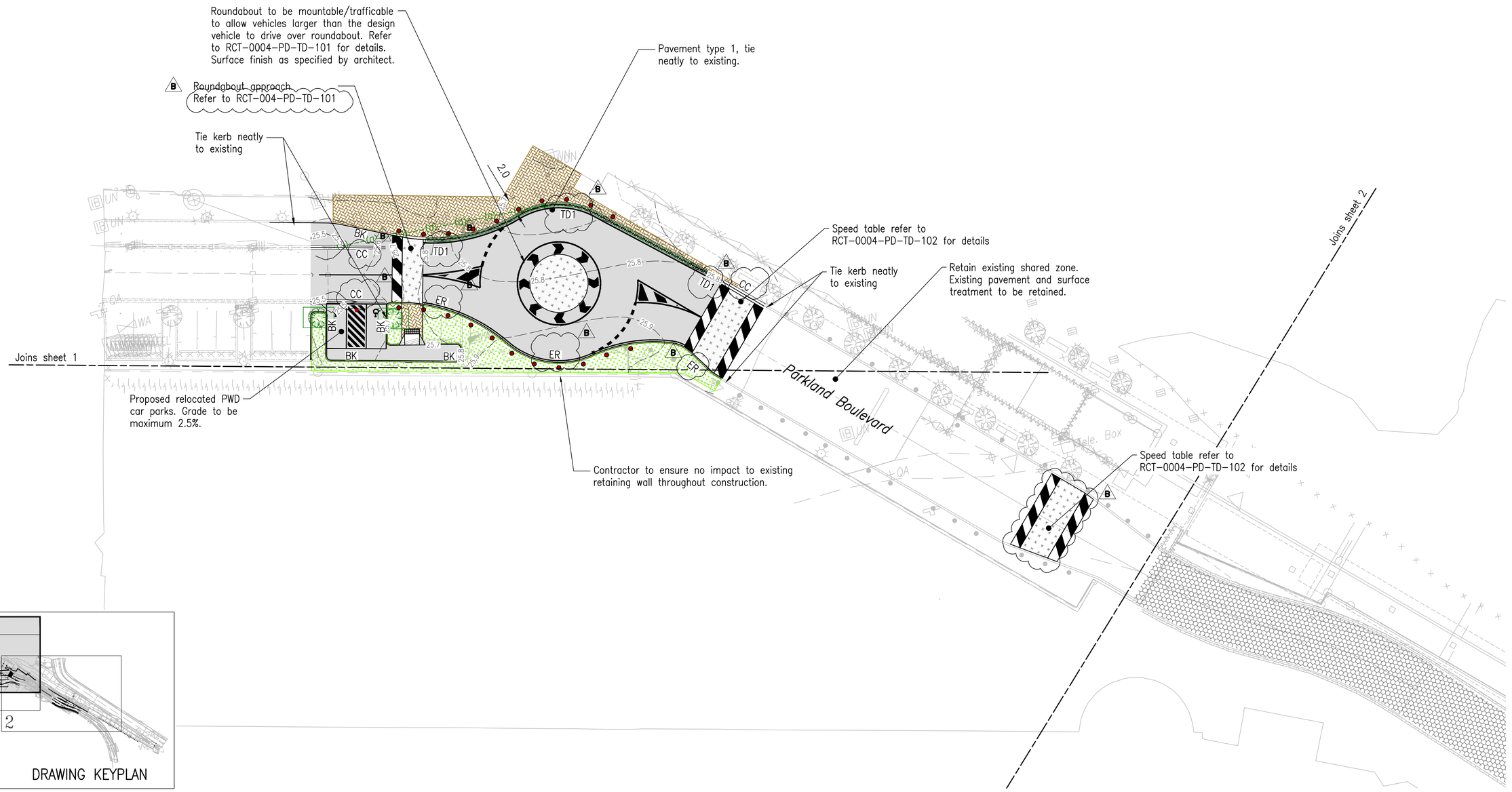
Department of Transport and Main Roads

ARUP
Drawing Number
RCT-0004-AL-GA-102

Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

NOTES

1. Refer to drawing RCT-0004-AL-DI-102 for Civil Notes and Specifications.
2. Refer to drawings RCT-0004-AL-DI-103 for Civil Legend.
3. Refer to drawings RCT-0004-DD-LD-100 to 102 for stormwater drainage layout.
4. Refer to drawings RCT-0004-SL-LD-100 to 102 for Signage and Linemarking layout.
5. Refer to architectural package for indicative directional and wayfinding signage.



B	Issued For Construction	MMG	22/10/18	
A	Issued For Construction			
	Revisions/Descriptions	Certification	Date	Microfiled

CAD FILES C:\projectwise\Exports\CRR - Coach Terminal\Set\RCT-0004-AL-GA-102.dwg

Associated Job Nos

Auxiliary Drg Nos

Survey Data
Datum BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
A1 / A3 1:250 / 1:500 0 2 4 6 8 10m
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
GENERAL ARRANGEMENT
SHEET 3 – UPPER LEVEL

Drawn KC
Designed NA

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.	
Contract. No.	
Drawing No.	B
Series Number	of

MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 - 8:31am XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-C-RMA-DROA-UPPER.dwg ; X-CRR-C-RMA-SSUR-CAD.dwg ; X-CRR-C-RMA-CTRL-UPPER.dwg ; X-CRR-C-RMA-DROA-ANNO-UPPER.dwg ; X-CRR-C-RMA-DROA-MATCH.dwg ; X-CRR-RMA-SHT.dwg ; X-CRR-C-RMA-DCON-UPPER.dwg ; X-DSHT-KEYPLAN.dwg ; X-CRR-C-RMA-CTRL-UPPER.dwg ; X-CRR-C-R

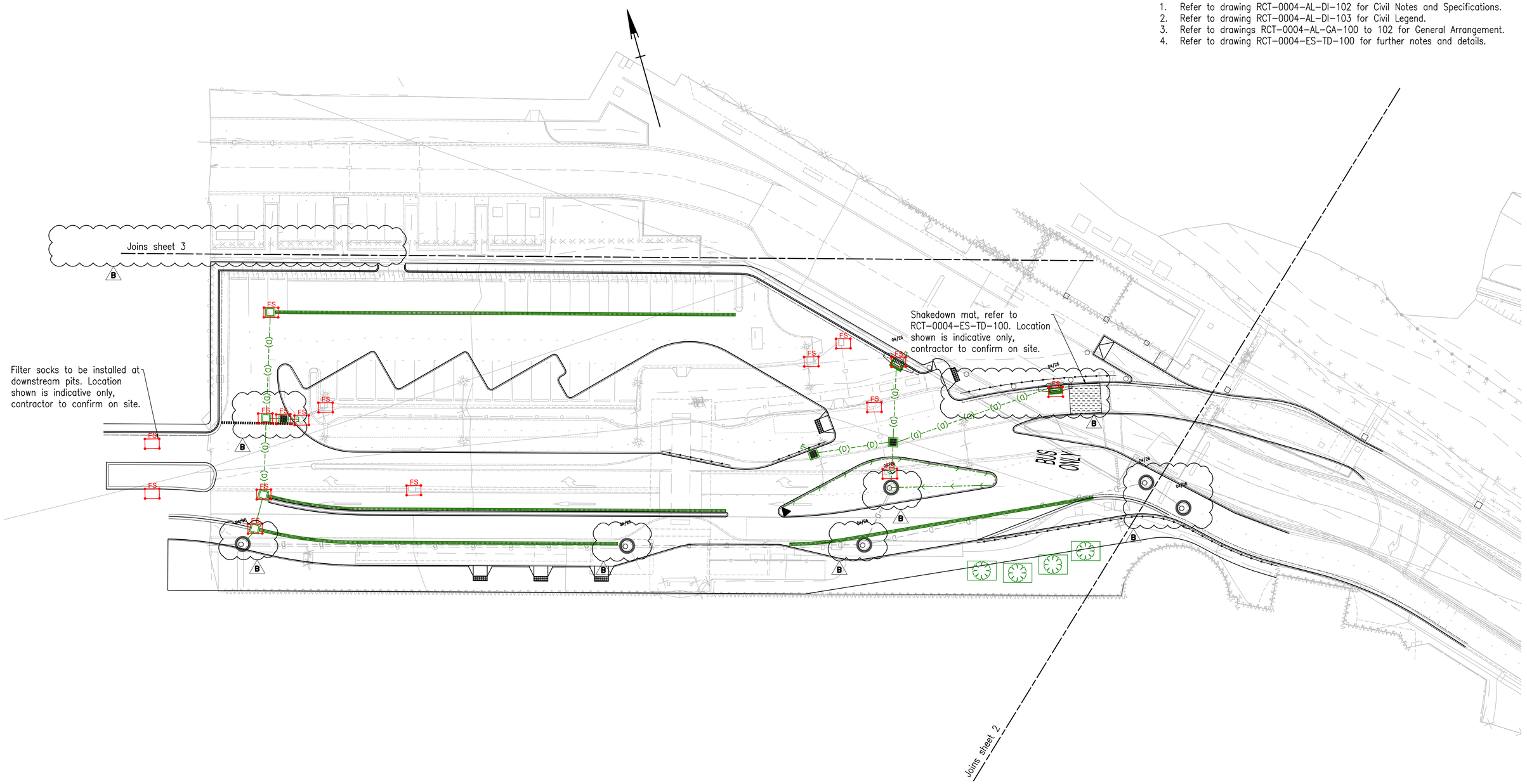
Appendix C – Erosion & Sediment Control Plan

Department of Transport and Main Roads

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-100

NOTES:
1. Refer to drawing RCT-0004-AL-DI-102 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-103 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-100 for further notes and details.



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A	Issued For Construction			
	Revisions/Descriptions	Certification	Date	Microfiled

CAD FILES C:\projectwise\Exports\CRR - Coach Terminal\Set\RCT-0004-ES-LD-100.dwg

Associated Job Nos

Auxiliary Drg Nos

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Horiz. Grid	
Height Origin	
Survey Books	

Scales
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Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points				
Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT CONTROL B
SHEET 1 – LOWER LEVEL

Drawn KC
Designed NR

ENGINEERING CERTIFICATION (RPEQ)				
ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.	
Contract. No.	
Drawing No.	B
Series Number	of

MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 - 8:42am XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RMA-SHT.dwg ; X-CRR-RMA-DESC.dwg ; X-CRR-C-RMA-DDRA-LOWER.dwg ; X-CRR-C-RMA-DROA-LOWER.dwg ; X-CRR-C-RMA-SSUR-CAD.dwg

Department of Transport and Main Roads

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-101

NOTES:
1. Refer to drawing RCT-0004-AL-DI-102 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-103 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-100 for further notes and details.

	Revisions/Descriptions	Certification	Date	Microfiled
B	Issued For Construction	MMG	22/10/18	
A	Issued For Construction			

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Associated Job Nos

Auxiliary Drg Nos

Survey Data
Datum: BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
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Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT CONTROL (B)
SHEET 2 – LOWER LEVEL

Drawn: KC
Designed: NR

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

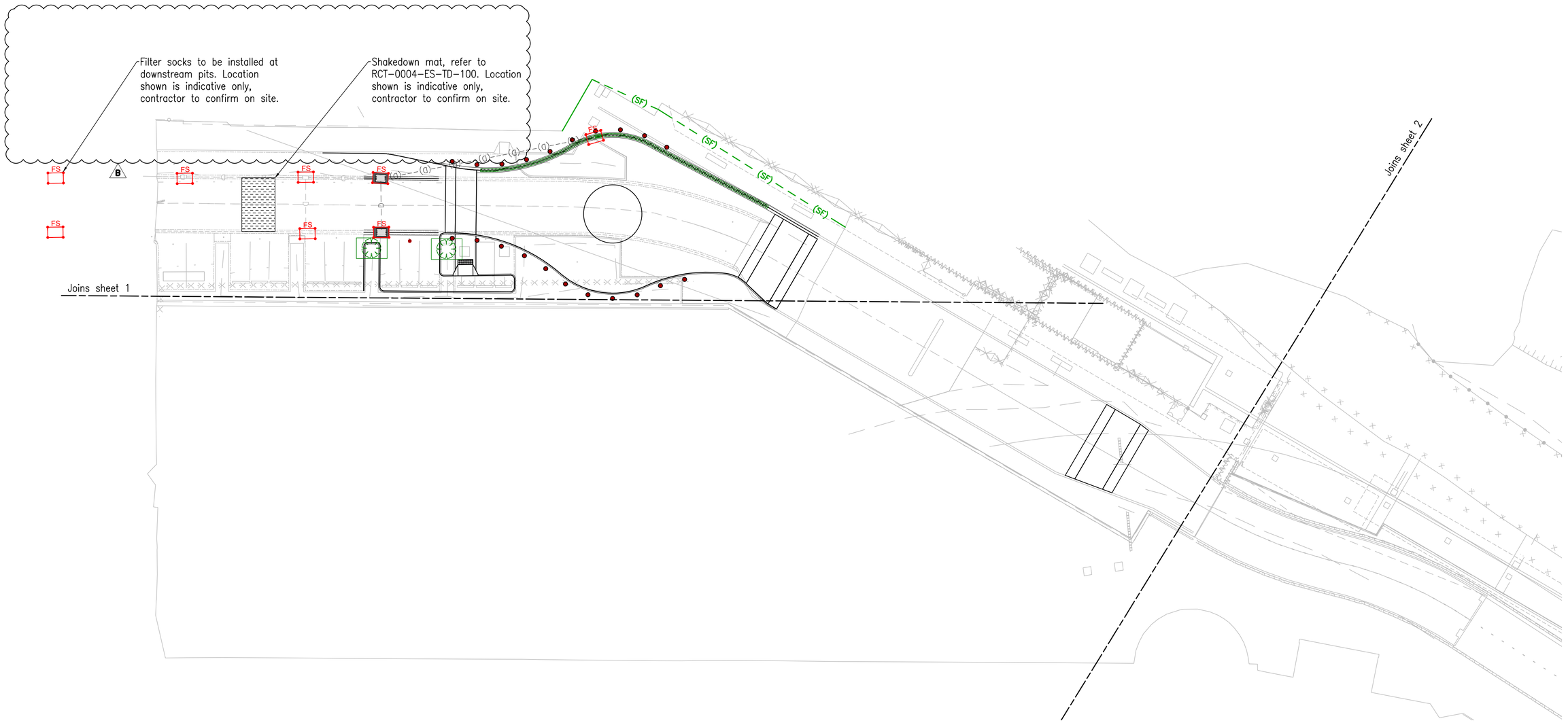
Job No.
Contract. No.
Drawing No. B
Series Number
of
MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 - 8:42am XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RWA-SHT.dwg ; X-CRR-C-RWA-DDRA-LOWER.dwg ; X-CRR-C-RWA-DROA-LOWER.dwg ; X-CRR-RMA-DESC.dwg ; X-CRR-C-RMA-SSUR-CAD.dwg

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-102

NOTES:
1. Refer to drawing RCT-0004-AL-DI-102 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-103 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-100 for further notes and details.



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A	Issued For Construction			
	Revisions/Descriptions	Certification	Date	Microfiled

CAD FILES C:\projectwise\Exports\CRR – Coach Terminal\Set\RCT-0004-ES-LD-102.dwg

Associated Job Nos

Auxiliary Drg Nos

Survey Data
Datum BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
A1 / A3 1:250 / 1:500 0 2 4 6 8 10m
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT CONTROL (B)
SHEET 3 – UPPER LEVEL

Drawn KC
Designed NR

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.	
Contract. No.	
Drawing No.	B
Series Number	of

MRR_Detail (02/14)

Last Modified :- Oct 23, 2018 – 8:42am XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RWA-SHT.dwg ; X-CRR-C-RWA-DDRA-UPPER.dwg ; X-CRR-C-RWA-DROA-UPPER.dwg ; X-CRR-RMA-DESC.dwg ; X-CRR-C-RMA-SSUR-CAD.dwg

Appendix D – Contractor Construction Environmental Management Plan

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

For

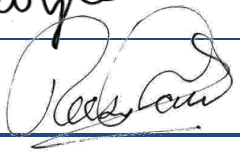
Project Number: M18-210

Project Name: Roma St Coach Terminal Relocation

Pensar Civil Pty Ltd **ABN: 70 120 834 675**

8 Hockings Street, South Brisbane QLD 4101

PRINCIPAL CONTRACTOR: Pensar Civil Pty Ltd

Position	Name	Signature	Date
Prepared By: Project Engineer	**Adam Bruschi**		**29/10/2018**
Systems & Compliance Coordinator	**Samantha Samuels**		**29/10/2018**
Reviewed By: HSEQ Manager	**Daryl Curran**		**29/10/2018**
Approved By: Director/GM	**Reese Deaves**		**30/10/2018**

bsi. ISO 14001:2015 Environmental Management

Table of Contents

List of Appendices

EMP Review Process

The Environmental Management Plan (EMP) must be reviewed after any of the following:

- Changes to the scope of works or if there are any:
- Changes to the design that create additional safety risks;
- Changes to relevant legislation, Codes of Practice or industry standards;
- Changes to the Client's Environmental Systems;
- Environmental alerts from external bodies that are relevant to the scope of works;
- After Environmental incidents, not limited to the project, where internal system changes are implemented.

Any additional risks must be documented on the project risk assessment (**WHS-RA-003**), which is filed with the WHSMP.

The **Project Manager (PM)** is responsible for ensuring that any changes to the EMP are communicated to the members of the Project Management Team (PMT) and relevant workers and subcontractors.

This communication is to be recorded on the toolbox meeting record (**WHS-FRM-014**) and kept in: Folder 9: Minutes (Refer to PMP, Section 1.3 Folder Structure: Site Office")

EMP REVIEW							
Rev No.	Date	Reason for Review	Changes made (if applicable)	Changes Reviewed			Status
				Project Mgt. Team Y / N	Relevant workers and sub-contractor Y / N	By whom	
0	15/10/18	Initial Draft		Y	N	AB	Complete
1	30/10/18	Feedback from CRRDA		Y	N	AB	Complete

Environment Policy

OBJECTIVES

We believe excellence in environmental performance is essential to our business success and is compatible with balancing the economic, social and environmental needs of sustainable development.

We aspire to be the company of choice because of our environmental performance.

We seek to reduce our environmental footprint in line with our productivity while delivering value to our clients.

Setting compliance with our legal obligations as the minimum standards for our performance, we conduct all of our activities with the aim of Preventing Pollution and causing no significant impact on the environment.

STRATEGY

Pensar achieves these objectives by:

- Complying with all relevant laws and regulations and our standards, and applying responsible standards where laws do not exist.
- Preventing pollution and the cumulative environmental impact of our activities at a local, regional and global level.
- Seeking to reduce waste and improve resource use efficiency in our operations.
- Monitoring the effects of our activities and changing our practices to minimise our footprint.
- Setting internal targets that drive us to continually improve our environmental performance.
- Learning from our performance to continuously improve our processes, work practices and behaviours and sharing our lessons learned with others.
- Reporting our environmental performance openly and transparently.
- Striving to meet community expectations by listening to and addressing concerns.
- Being aware of and accountable for our individual contribution to environmental performance, and encouraging every employee day by day to respect our environment.
- Engaging subcontractors and suppliers who share our values and working with them to consistently meet our environmental expectations.
- Creating and sustaining a culture that empowers and rewards our workforce to act in accordance with this policy.

APPLICATION

The Senior Management Team is accountable for ensuring this policy is implemented.

This Policy applies to all personnel, sub-contractors and suppliers engaged in activities under our operational control.

This Policy will be reviewed every three (3) years.

Date: 12/07/2017 **Signed:** *(Group CEO)*

The Infrastructure People

1. Introduction

1.1 Purpose of this Plan

This plan is a component of the Integrated Management System (IMS) for The Roma Street Coach Terminal Relocation and defines the manner in which Pensar will manage its environmental obligations for the duration of the project. As a component of the IMS, the plan should be read in conjunction with the Project Management Plan (PMP), WHS Management Plan (WHSMP), and the Quality Management Plan (QMP) where applicable.

This EMP is also to be read in conjunction with the Cross River Rail Delivery Authority (CRRDA) Construction Environmental Plan (CEMP), and will be reviewed as required when new revisions of the CEMP are issued.

The plan addresses the statutory and other requirements listed at section 1.4 below.

1.2 Pensar Environmental Management System Requirements

The Environmental Management Procedure (ENV-PRO-001) defines the role of this EMP in the company's Environmental Management System, and in particular how this is to be implemented on all projects.

Environmental objectives for this project and management controls to be implemented are defined in this EMP.

The Environmental Management Procedure is located in Appendix A.

1.3 Control of Copies

This document is the only copy prepared and approved. It is for use on the project site. The Foreman is responsible for maintaining the PMP folders (including this EMP) in good condition, and for addition of readily retrievable records as the project proceeds.

Uncontrolled copies of this document will be prepared as warranted (e.g. for reference by clients or their representatives). Such copies will not include project records.

Revisions of this EMP will be prepared as warranted by project circumstances. As necessary, parties who have been provided with copies of the original/previous version will be informed of changes to the EMP Constraints and Risk Analysis

1.4 Abbreviations and Definitions

CGCR	Coordinator-General's Change Report – Temporary Roma Street Coach Terminal
CRRDA	Cross River Rail Delivery Authority
CRR-EN-CEMP-PLN	CRRDA Construction Environmental Management Plan (CEMP) Temporary Coach Terminal October 2018

1.5 Statutory Requirements

This plan addresses the requirements of the following references:

Environmental Protection Act 1994 (QLD)	Environment Protection & Biodiversity Conservation Regulations 2000
Waste Reduction and Recycling Act 2011	Environment Protection & Biodiversity Conservation Act 1999
Nature Conservation Act 1992	Noise Conservation (Administration) Regulation 2006
Aboriginal Cultural Heritage Act 2003	Queensland Heritage Act 1992

Vegetation Management Regulation 2012	Queensland Heritage Regulation 2015
Vegetation Management Act 1999	Soil Conservation Act 1986
Nature Conservation (Wildlife Management) Regulations 2006	Biosecurity Regulation 2016
Natural Assets Local Law 2003	Vegetation Management Act 1999
Public Land and Council Assets Local Law 2014	Vegetation Management Regulation 2012
Environmental Protection Regulation 2008	AS14001: 2004 'Environmental Management Systems'
Environmental Protection (Air) Policy 2008	Queensland's Waste Reduction and Recycling Strategy 2010-2020
Environmental Protection (Noise) Policy 2008	Environmental Protection (Water) Policy 2009
Biosecurity Act 2014	Water Act 2000
National Greenhouse and Energy Reporting Act 2007	Water Regulation 2016

In addition to the above requirements, the following references have also been addressed in development of this plan:

- Pensar Integrated Management System Manual (IMS Manual).
- Industry Codes of Practice
- Advisory Standards / Codes of Practice (e.g. 'Best Practice Erosion & Sediment Control for building & construction sites' Nov 2008 – International Erosion Control Association of Australasia)
- Local government specific laws
- Client contract and/or site-specific requirements.
- Pensar aspects and impacts table

- As Principal Contractor, Pensar is responsible for ensuring that all persons on site maintain at all times a responsible attitude towards environmental management and always act in a manner that strives to prevent significant environmental impact, and should environmental harm occur, minimizes the potential for environmental impact – this includes all Pensar employees, employees of subcontractors and suppliers, and visitors.

1.6 Project Scope

The project scope is defined in the Project Management Plan (PMP), section 2.1

- Construction of Coach Terminal, including demolition of existing terminal carpark and structure.
    - Setup and maintain traffic and environmental controls
    - Demolition of existing structures and pavement
    - Removal of road pavement
    - Installation/ connection of underground services
    - Construction of traffic islands and kerb and channel
    - Construction of concrete pad foundations (TBC, design yet to be received)
    - Construction of new pavement (concrete pavements and asphalt pavements)
    - Pavement delineation/ marking

- Construction of Passenger Drop off/ Pickup zone:
    - Setup and maintain traffic and environmental controls
    - Removal and disposal of existing bollards/ pavement
    - Tree removal to accommodate construction
    - Pavement works to reconfigure existing carriageway to new alignment, including raising the road surface to create a shared zone
    - Pavement delineation/ marking
    - Installation of cyclist access/ signage

1.7 Project Environmental Objectives

To establish a framework that ensures construction activities are undertaken in a manner that complies with approval conditions and minimises impacts to the physical and biological environment.

To prescribe measures to ensure impacts are avoided or minimised during construction works

To comply with relevant environmental legislation and guideline requirements

To ensure consistence with Coordinator-General's imposed conditions, as noted within the Cross-River Rail Delivery Authority Construction Environmental Management Plan for Temporary Coach Terminal, Date October 2018.

All personnel on the project site at any time (including employees of subcontractors and suppliers) are fully inducted and adequately briefed on company and site-specific environmental requirements.

All relevant environmental aspects are identified, their potential for causing environmental harm is assessed, and control measures that minimise the potential for environmental harm are defined and effectively implemented.

Daily pre-start briefing sessions provide specific instruction on control measures applicable to each day's work activities and reminders of Pensar requirements for responsible environmental management.

Tool box meetings are conducted regularly, including whenever changed circumstances or new risks arise.

All incidents (including breaches) are reported and discussed – causes identified so that preventive measures can be put in place; i.e. no repetitive incidents.

1.8 Project Environmental Targets

Project environmental targets are:

- All site personnel are inducted and adequately briefed on site environmental aspects – before commencing work on the site.
- All personnel involved in work activities are fully briefed on activity specific environmental aspects and control measures – before commencement of each work activity.
- No significant environmental impact.
- Environmental incidents or breaches are reported – as soon as they are detected.
- Causes of environmental incidents or breaches are identified and acted upon within 5 working days of an incident or breach arising (and where appropriate, before the relevant work activity is recommenced).

1.9 Environmental Aspect Identification & Risk Assessment

The Risk Management Procedure (**WHS-PRO-003**) defines the process to be used for identifying the environmental aspects involved with all work activities in a project and for assessing the level of risk and potential for environmental harm associated with each environmental aspect, so as to facilitate definition and implementation of appropriate control measures for every component of each work activity.

The Risk Management Procedure also defines the processes used for involvement of all relevant personnel (including sub-contractors) in definition and implementation of control measures, and for monitoring and review to ensure effective implementation of them.

The following tools have been used in accordance with this procedure to identify high risk construction activities and significant environmental aspects and to define all necessary control measures for this project:

Hazard Identification & Risk Assessment – Projects Form (**WHS-FRM-015**)

Risk Assessment (**WHS-RA-004**) Risk Assessment - Projects and the Risk Assessment Calculator in it.

The completed forms are filed as per "Folder Structure: Site Office" (Section 1.3) of the Project Management Plan

The significant environmental aspects with potential for causing environmental harm on this project are also listed in Appendix B in a table that summarises for each aspect:

- Risks (and potential for environmental harm);
- Objectives;
- Strategy (including reference to relevant control measures, Safe Work Method Statement (SWMS) or Work Procedure);
- Responsibilities;
- Pensar does not communicate externally its significant environmental aspects unless directed by the Client or an Authority.

2. Project Specific Data

2.1 Measuring Equipment

The equipment listed below may be used on this project for measuring environmental parameters in accordance with the relevant control measures:

- Air quality (and gas monitoring) meter.
- Sound level meter.
- Vibration Monitoring

Measuring equipment is to be used and calibrated in accordance with the principles defined in the Management of Plant and Equipment Procedure (**PLT-PRO-001**) and in accordance with the manufacturer's instructions. Specialist equipment calibration agents are engaged as required for calibration of this measuring equipment.

3. Site Environmental Management Requirements

3.1 Environmental Control Measures

Work procedures are defined for all high-risk construction activities on this project (including those activities with potential for causing environmental harm)

These work procedures are documented SWMS of the processes to be used, and/or project specific work procedures. They may include control measures and responsibilities for specific work activities, including involvement of subcontractors, equipment, machinery and materials; and are intended to ensure orderly, efficient, environmentally responsible and safe execution of the relevant work activities.

The following environmental work procedures apply to this project:

SWMS – Safe Work Method Statements that have been customised for project specific circumstances.

Project Specific Work Procedures

SWMS supplied by sub-contractors and which complement Pensar documentation

These work procedures contain all of the control measures defined following environmental aspect identification and risk assessment processes addressed in section 1.8 above.

Where sub-contractors are involved in a work activity, relevant Pensar /project SWMS and/or work procedures incorporate or complement the sub-contractors' own SWMS. (Sub-contractor Safe Work

Method Statements are maintained in section 3.7 'Project Documents' of the PMP with the relevant Pensar/project work procedures.)

3.2 Fire Ant Management Procedures

Fire ant controls and procedures are the responsibility of all Pensar personnel and sub-contractors under the control of Pensar. The regulations are enforced by Biosecurity Queensland a department of Department of Agriculture, fisheries and Forestry, Queensland. All controls and / or queries relating to the management of Fire Ants in Queensland can be found on the website – www.daff.qld.gov.au/fireants

Pensar has an approved Biosecurity Instrument Permit for Fire Ants.
The registration number is: BIP-RIFA-16013.

The Pensar Fire Ant Inspection Checklist (**WHS-FRM-022**) must be completed for all projects that a Pensar business division is classed as the Principle Contractor, even if the project is located in a fire ant free zone. The fire ant management procedures are contained in the project EMP which must be followed at all times.

At the beginning of any job situated inside a fire ant zone (High risk or low risk) a pre-works inspection must be carried out by a qualified and competent person. This initial check is to be documented on form **WHS-FRM-022.** Any sign of fire ant presence is to be recorded and the proper authorities notified. (Biosecurity Queensland – 13 25 23)

The following activities are mandatory and form part of Pensar's risk management plan.

Restricted areas: Queensland has been separated into different zones in relation to fire ants. High risk areas, medium risk areas, and fire ant free zones, you must obtain a map of the different zones and identify which zone your work site is situated in.

Monitoring: To find fire ants visual surveillance must be undertaken throughout the work site. First check is prior to the commencement of **ANY** works and following that at a minimum of 28-day inspections. Any sightings or suspicions **MUST** be reported to Biosecurity Queensland – 13 25 23.

Staff training on detection of fire ants: Monitoring needs to be conducted by a person or persons competent in the identification and detection of fire ants and their nests. Training is conducted by Biosecurity Queensland free of charge. Course details can be found on the website - www.daff.qld.gov.au/fireants

Purchase of restricted items: When you are purchasing materials – (soil, bark, mulch, gravel, manure, hay, pot plants, potting media, turf, sleepers or logs) sourced from within the restricted area you **MUST** ensure that the supplier holds a current Bio-Security Instrument Permit for the product in question. Retain all purchase records and inspect goods upon receipt.

Machinery clean-down: All machinery must be cleaned whenever it is moved between restricted zones. Check all machinery you receive is clean and free of restricted materials and clean all machinery prior to moving it from your site.

Recording: It is important that all your site checks are recorded. These should be recorded on Fire Ant Inspection Checklist (**WHS-FRM-022**)

3.3 Consultation with other Stakeholders

The Cross-River Rail Delivery Authority (CRRDA) is responsible for ensuring that adjoining landholders and/ or other parties are consulted and/ or informed as necessary in definition of work procedures and control measures. Consultation will be completed in accordance with CRRDA *Stakeholder Engagement Plan (SEP)*, dated October 2018.

Pensar will assist with the implementation of the SEP through the following:

- Assistance with and/ or Completion of communication as per the communication channels identified in Section 10.2 of the SEP. These include:
    - Information Sessions, including Contractor attendance and participation
    - Install and maintain signage/ VMS boards as required
    - Attend Stakeholder meetings

- Provide CRRDA business cards with contact details including the 1800 number operated by CRRDA and information email address.

Any complaints made by stakeholders are to be managed in accordance with the CRRDA complaint management system, as detailed within the CRRDA *Stakeholder Engagement Plan* (SEP) Figure 1. Pensar representatives will provide the contact details for the CRRDA 1800 hotline and email to any complainants, and record details of any conversation/ complaint made within a stakeholder correspondence register.

When a complaint is made directly to Pensar they will inform the CRRDA of the nature of the complaint in as much detail as possible within 24 hours of receipt. The complaint will also be outlined to the CRRDA during progress/ construction meetings.

3.4 Hazardous Substances

The project management team are responsible for managing the SDS system on their projects. This process is administered using the ChemWatch system and is detailed in the Hazardous Substances Procedure (WHS-PRO-012). This is located in Appendix F of the WHSMP.

Note:

- Guidance on safe and environmentally responsible disposal of hazardous substances is provided in the SDS for each substance
- A Risk Assessment for each substance must be completed on form: Project SDS Risk Assessment (**WHS-RA-002**)
- As necessary, additional procedures and/or control measures must be defined for site specific circumstances.

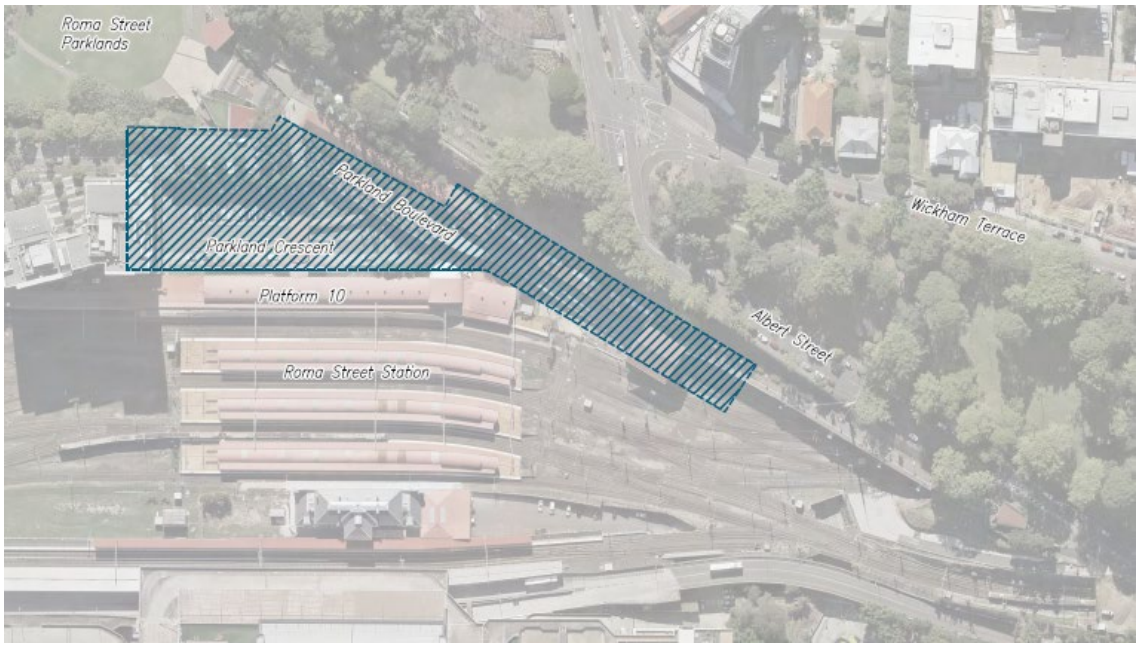
3.5 Training

Environmental training requirements may be identified in a number of ways e.g.:

- During site induction
- In Activity and/or Pre-start Briefings
- In Tool Box meetings
- While observing work practices
- Through investigation of incidents
- Project/activity reviews and audits.

Any employee who identifies any such training requirement (either for himself or another employee) is required to advise the Foreman or HSEQ Manager who then collaborate in determining the content, format and priority for the necessary training in the light of particular employee/project circumstances.

3.6 Site Access



Locality Plan showing work area

Site Compound to be located on the gravel hardstand area, west of the project work area, located at the intersection of Parkland Crescent and College Close (refer to below locality plan).

Signs are to be erected at the project entry points to inform all visitors of the defined site access requirements. Temporary fencing and/or barricades will be constructed to ensure that access is controlled.

Only one main access route to and from the site is to be used if possible to restrict unauthorised access and to cause as little disruption as possible. Only one access route to a stockpile site is to be used (if applicable).

Shake down pits or other approved facilities are to be used at site entry points to minimise the transfer of waste and dust from the site to other roads.

Boundary signage is to be erected at regular intervals for the perimeter of the project site – 'Danger Construction Site do not enter' as a minimum. Barrier fences or bunting is to be placed around the boundary of the site when portable fencing is not practical.

Walkways are to be closed and appropriately signed when any activity on or near them imposes an unacceptable risk to the public.

All workers on site are to direct any visitors to the site office or the Foreman. All site visitors are to be addressed in a polite and professional manner.

Complaints are to be addressed in a timely manner by the Foreman and/or the Project Engineer. Any worker or subcontractor confronted by a complaint is to be courteous and let the complainant know that they will pass the concern onto the Foreman / Project Engineer.

Complaints are to be managed in accordance with the CRRDA complaint management system, as detailed within the CRRDA *Stakeholder Engagement Plan* (SEP) Figure 1. Pensar representatives will provide the contact details for the CRRDA 1800 hotline and email to any complainants, and record details of any conversation/ complaint made within a stakeholder correspondence register, to be provided to CRRDA during progress/ construction meetings.

Where continual unauthorised access is occurring, the Local Police are to be informed of the occurrence and details of the dangers are to be conveyed. This is to be done by telephone in the first instance then followed up by a letter.

Vandalism and graffiti will be reported to the Police.

3.7 Erosion and Sediment Control Plans

Refer to Appendix C for Erosion and Sediment Control Plans (ESCP) for the project.

Specific staging plans for ESC management will be developed and updated within Appendix C. This will be completed progressively throughout the project.

The following will be adhered to:

- All plans will be prepared and certified by a CPESC
- The ESCP will be based on IECA (International Erosion Control Association) Guidelines
- Identified controls will be substantiated with back-up calculations (provided by the CPESC)
- With reference to Condition 12 of the CGCR the ESCP will be consistent with the Department of Transport and Main Roads' Technical Standard MRTS51 – Environmental Management

This EMP will be re-submitted to the CRRDA for approval after the inclusion of the ESC Plans

3.8 Water Quality Management

The sources of water that have been considered in this plan and will be managed are:

- Rainwater
- Groundwater
- Potable water (from main)

In the event of a significant rain event, discharge of surface water and ground water from the construction of the temporary coach terminal works will comply with the Environmental Protection (Water) Policy 2009: Brisbane River Estuary environmental values and water quality objectives (Basin no.143 – mid-estuary) in

the Environmental Protection (Water) Policy 2009. (Refer to Condition 10 of the Imposed Conditions in the Coordinator-General's Change Report – Temporary Roma Street Coach Terminal)

Specifically, the following conditions shall apply: Prior to the discharge of water it will be tested to ensure it meets the water quality objectives to protect aquatic ecosystem for mid estuary waters. The following levels are not to be exceeded:

- Turbidity: < NTU
- Suspended Solids: <20mg/L
- Chlorophyll a: <4 µg/L
- Total Nitrogen: <300 µg/L
- Oxidised N: < 10µg/L
- Ammonia N:< 10µg/L
- Organic N: < 280µg/L
- Total Phosphorus: < 25µg/L
- Filterable Reactive Phosphorus (FRP): 6µg/L
- Dissolved Oxygen: 85-105% saturation
- pH: 7.0 – 8.4

Where a sub-contractor is engaged to remove the water, testing will be conducted by the sub-contractor.

3.9 Noise and Vibration Management

Air-borne Noise and Vibration shall be managed in accordance with Section 3.3 of the CRRDA CEMP. This includes taking measures to mitigate the disturbance caused by noise and vibration during construction activities, in particular to minimise sleep disturbance at night.

Project works are to be coordinated such that noise goals specified in Table 4 of the CRRDA CEMP Section 3.3.3 are achieved. (shown below)

	Monday – Saturday 6.30am – 6.30pm	Monday – Friday 6.30pm – 10.00pm
Continuous (LAeq adj)(1hr)	AS 2107 Maximum design level	40 dBA LAeq adj (1hr)
Intermittent (LA10 adj)(15min)	AS 2107 Maximum design level + 10 dBA	50 dBA LA10, adj

Project works are to be coordinated such that vibration goals specified in Table 5 of the CRRDA CEMP Section 3.3.3 are achieved.(shown below)

Receiver type	Cosmetic Damage		Human comfort (mm/s PPV)		Sensitive building contents (mms/PPV)
	Continuous vibration (mm/s PPV)	Transient vibration (mm/s PPV)	Day	Night	

Residential	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670	0.5[2]	
Commercial	According to BS7385 reduced by 50%[1]	According to BS7385	According to AS2670		0.5[3]
Heritage Structures	2				

Pensar will establish noise and vibration monitoring to evaluate against the performance criteria.

Ongoing Requirements:

Daily Inspections by Pensar supervisor to identify and mitigate unnecessary sources of noise and/ or vibration.

Monitoring and reporting to be completed on a weekly basis as a minimum, and during significant noise/vibration generating works. Site specific monitoring may be required in response to complaints.

Reporting to CRRDA Communications team with notification of any schedule high noise activities a minimum one week prior to allow for pre-notification to directly affected Stakeholders

Incidents (including exceedances) will be included in the monthly report. Additionally, Pensar will notify the Delivery Authority in writing within 24 hours after becoming aware of a non-compliance incident (incident) with the Imposed Conditions (temporary coach terminal works) to allow the Delivery Authority to notify the Coordinator-General in writing within 48 hours of the incident as per Condition 3 of the Imposed Conditions.

3.10 Air Quality

Air Quality shall be managed in accordance with Section 3.4 of the CRRDA CEMP.

Nuisance from dust, odour and emissions arising from construction activities is to be minimised. The project is not considered to have an especially high degree of dust-producing activities.

Any construction activities which are likely to produce dust are to be monitored on site by the foreman.

Pensar will establish air quality monitoring to monitor and report on air quality during construction. Works will be planned to achieve the Air Quality Goals identified in Table 6 (of the CRRDA CEMP Section 3.4.3).

Pensar is to include details of inspection and any exceedance in the monthly report

Ongoing Requirements:

Daily visual monitoring for excessive dust generation and corrective actions employed. To include wind speed and direction. Daily reports will be produced.

During surface works, dust deposition monitoring to be conducted. Monitoring of Total Suspended Particles, Particular Matter and Deposited Dust to be conducted during these periods.

Pensar will engage an independent Air Monitoring Company to ensure the above measures are complied with. There will be 4 separate monitoring stages set up for the duration of surface works with readings undertaken twice daily. The results will be reviewed / benchmarked against air quality readings prior to works being undertaken; and will be included in the monthly report.
Pensar will notify the CRRDA in writing within 24 hours after becoming aware of a non-compliance incident (incident) with the Imposed Conditions (temporary coach terminal works) to allow the CRRDA to notify the Coordinator-General in writing within 48 hours of the incident as per Condition 3 of the Imposed Conditions.

3.10.1 Monitoring and Reporting – Monthly Reports

Monthly reports will be provided to CRRDA in accordance with the Construction Environmental Management Plan (CRR-EN-CEMP-PLN) and will report on items 3.8 - 3.10 above (Water Quality, Noise and Vibration, and Air Quality).

3.11 Aboriginal and Cultural Heritage Management

Aboriginal Cultural Heritage is anything that is-

(a) a significant Aboriginal area in Queensland; or

(b) a significant Aboriginal object; or

(c) evidence, of archaeological or historic significance, of Aboriginal occupation of an area of Queensland.

(Aboriginal Cultural Heritage Act 2003).

In accordance with Project Requirements, Pensar is to ensure all personnel are trained (inducted) in their responsibilities regarding cultural heritage, and are made aware of any sites/ areas which must be avoided. Any such sites are to be marked up on a site map and made available to all relevant personnel during the works.

CRRDA will engage an Aboriginal Monitor to verify (or otherwise) the existence of items of cultural significance. It is assumed that Monitors will hold cultural heritage knowledge of the location and have the authority to act in this capacity (Guidelines for the Engagement of Aboriginal Heritage Monitors)

Condition 13 (b) of the CGCR outlines the requirement of a 'Cultural Heritage Management Plan" (in accordance with the Aboriginal Cultural Heritage Act (2003) for all coach terminal works involving excavation or construction that may cause harm to Aboriginal cultural heritage. The CEMP submitted by the CRRDA states a "Heritage Management Plan" will be prepared for places of historical cultural heritage value (CRR-EN-CEMP-PLN, 3.9.5 Mitigation Measures). The plan will be prepared in accordance with the cultural heritage duty of care prescribed under section 23(1) of the Aboriginal Cultural Heritage Act 2003.

This EMP will adhere to the requirements set out in the CRRDA CEMP relating to

If any item is encountered that is suspected to be an artefact of heritage value, relic or material which is Aboriginal or belonging to an early settlement, notice is to be provided to the Superintendent's Representative.

Any construction work that might affect the item is to be stopped, and the item protected from damage/ disturbance until direction is received regarding its treatment.

In accordance with project drawings, Pensar will not undertake excavations below the natural ground ("No Dig Line"), to the level identified by CRRDA. Note this level is still to be clarified (as of 16/10/18).

3.12 Hours of Work

In accordance with CRRDA CEMP Section 3.1, working hours are limited to:

6:30AM-6:30PM Monday to Saturday.

Extended working hours are:

6:30PM – 10:00PM Monday to Friday.

Extended working hours can only be used in the following circumstances (as per Condition 6 of the CGCR):

(i) Paving, line marking, structural installation;

(ii) Temporary coach terminal works within a road reserve or busway that cannot be undertaken reasonably nor practicably during standard hours due to potential disruptions to peak traffic flows or bus operations;

(iii) Temporary coach terminal works involving the transport, assembly or decommissioning of oversized plant, equipment, components or structures;

(iv) delivery of "in time" materials such as concrete, hazardous materials, large components and machinery;

(v) Temporary coach terminal works that require continuous construction support, such as continuous concrete pours, or other forms of ground support necessary to avoid a failure or construction incident.

Where night works are required (e.g. for traffic management purposes), Pensar will notify the CRRDA 3 (three) weeks in advance of the works, to identify any noise/ vibration or other environmental risks to be mitigated, and to allow adequate time to inform the Coordinator-General and for the Stakeholder team to provide information to key stakeholders.

3.13 Traffic and Transport

Traffic Management to be maintained in accordance with the Traffic Management Plan (WHS-PLN-002-M18-210). The traffic management plan has been developed to meet the requirements of Section 3.6 (Traffic Management) of the CRRDA CEMP.

Reporting

The following reporting shall be implemented throughout construction or as required:

Included in the monthly report:

- Noise, vibration, air quality and water quality monitoring results as required.
- Record of daily inspections for noise, vibration, air quality and water quality monitoring.
- Greenhouse gas emissions reporting. To include diesel/ petrol/ LPG used, electricity used, consumption of oils and greases, and number/size of refrigeration units on site.

4. Monitoring and Review

Risk Management Procedure (**WHS-PRO-003**) defines the scope of monitoring and review activities to be undertaken on all Pensar projects.

- A systematic process is to be used to ensure the implementation and effective operation of this Site Environmental Management Plan, including all relevant procedures and those of sub-contractors.
- The following review mechanisms are to be routinely undertaken:
- All workers look out for each other – ensure environmentally responsible work practices at all times.
- Daily Site Safety & Environmental Inspections by the Foreman recorded on form: Weekly Site Safety & Environmental Inspection Record (**WHS-FRM-013**)
- Regular check of SWMS implementation – use SWMS checklists.
- Regular Environment Audits by the HSEQ Manager/General Manager/Director: Monthly Project Compliance Audit (**Q-FRM-011**)
- Periodic inspections by the Project Engineer and/or a client appointed environmental representative.
- Internal audits.

Environmental Management Audits will be undertaken as warranted – e.g. to assess:

- Application and effectiveness of SWMs
- Compliance with this EMP and/or IMS procedures
- Compliance with client project environmental management requirements.

Environmental Management Audits shall be filed in “Folder 8 – “Quality” as per section 1.3 of the PMP.

5. Incident and Emergency Management

5.1 Incident Reporting and Investigation

Procedures and responsibilities for reporting and investigating incidents (including environmental breaches) are defined in the following procedures:

- Environmental Management Procedure (ENV-PRO-001) (Section 12)
- Incident Reporting Procedure (**WHS-PRO-001**)

Original Incident Reports (on form WHS-FRM-027A) are to be forwarded to the HSEQ Manager as defined in Incident Reporting Procedure Copies of Incident Reports are to be maintained (together with an appropriate Incident Register) in Folder 8 (as detailed in Section 1.3 of the Project Management Plan)

All Environmental incidents to be reported to the Superintendent's Representative and the CRRDA Project Management team (for forwarding onto the Environmental team as required).

ENVIRONMENTAL MANAGEMENT PROCEDURE

ENV-PRO-001

REV: 4

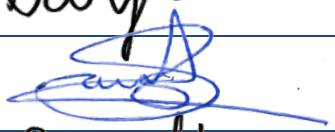
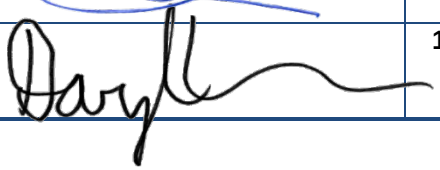
Position	Name	Signature	Date
Prepared By:	**Daryl Curran**		**18/09/2018**
Reviewed By:	**Samantha Samuels**		**18/09/2018**
Approved By:	**Daryl Curran**		**18/09/2018**

Table of Contents

1. Introduction

Pensar has engaged this procedure to ensure that our business and our project sites are operated in an environmentally responsible manner in accordance with the requirements of the Environmental Protection Act 1994 (QLD). We aim to prevent the occurrence of any significant environmental impact.

The potential for significant environmental impact is identified for each project and for all other operations of the company – and:

- Impacts of each significant aspect are identified
- Control measures that minimise environmental impacts are defined, including actions to remediate the effects of any such impacts, and
- Appropriate action is taken to implement and assess the effectiveness of these control measures.

2. Environmental Obligations and Policy

The Environmental Protection Act places an obligation on Pensar to ensure that its operations are conducted in an ecologically sustainable manner that encompasses:

- Defining environmental objectives
- Developing effective environmental strategies
- Implementing its environmental strategies integral with efficient resource management, and
- Ensuring that no significant environmental impact is caused.

These obligations are addressed as follows:

- Defining an environmental protection policy – refer Environment Policy
- Identifying environmental aspects of company operations and defining controls that minimize the potential for causing environmental harm
- Determining those aspects that have or can have significant impact on the environment.
- Setting objectives and targets to fulfil the commitments established in the Environment Policy and in the defined control measures.
- Establish waste management and materials recycling arrangements, including minimization of waste creation, recycling of used materials as far as possible and responsible disposal of waste.
- Promote responsible environmental practices by all employees (including other project personnel – suppliers, sub-contractors, etc.)

3. Appreciation of Legal and Other Requirements

The General Managers / Directors and the HSEQ Manager are responsible for ensuring that an adequate appreciation is maintained of the following reference materials:

- Legislation and regulations (national, state and local governments).
- Codes of Practice and guidelines (government and services authorities).
- Client requirements.

The scope of and means for obtaining the necessary information are defined in the procedure: Maintaining Appreciation of Legal and Other Requirements (GRP-PRO-005)

4. Environmental Management Framework

This procedure defines the framework for implementation of the company's Environment Policy and objectives. It is based on:

AS/NZS 14001: 2016 Environmental Management Systems – Requirements with Guidance for Use' and defines processes and responsibilities for:

- Identification of significant environmental aspects associated with any of the company operations and definition of controls that minimise their potential impacts
- Development of project site environmental management plans and work method statements

- Induction and training
- Incident reporting and emergency processes
- Management review of environment policy and objectives, including the effectiveness of defined procedures and control measures.

Overall the company's environmental goals and objectives are defined in the context of guiding principles in the Environmental Policy. The GM's / Directors and the Construction Manager are responsible for defining specific operational and project environmental objectives, performance targets and dates for their achievement.

Regular reports on progress towards achievement of environmental objectives and targets are prepared by the HSEQ Manager for consideration at Board and Management Review meetings.

5. Consultation, Communication & Reporting

The General Managers / Directors are responsible for ensuring that effective processes for consultation, communication and reporting are maintained throughout the company.

5.1 Consultation

Mechanisms for consultation with employees, including sub-contractors, on environmental matters include:

- Discussion with employees regarding feedback on environmental aspects, including consideration of findings from review of the effectiveness of measures defined / implemented for minimisation of environmental impacts
- Interactive discussions in toolbox sessions on project sites and other employee briefing sessions
- Involvement of employees (as necessary) in the process of customising generic Work Method Statements (WMS) and Work Procedures (WPs) as part of project and activity planning, and
- Interactive discussions on the effectiveness of defined procedures and control measures (e.g. in IMS training sessions).

5.2 Communication

The processes used for communication of environmental matters include:

- Face-to-face interaction between all levels of management and employees
- Inductions and activity briefing sessions
- IMS Bulletins

5.3 External Stakeholders

The Project Manager / Project Engineer is responsible for ensuring (as necessary) adequate interaction with external stakeholders about project environmental aspects and how they are to be managed, generally by consultation and communication about the following:

- Any potential for significant environmental impact during or as a consequence of the project
- Control measures to be implemented in order to avoid significant environmental impacts and/or to minimize the frequency and/or severity of those impacts.

Pensar does not communicate externally its significant environmental aspects unless directed by the Client or an Authority

5.4 Reporting

Records for each of the above communication processes are prepared by the employee(s) responsible for the respective activities. Various reviews of environmental management are also recorded:

- Daily Supervisor Sheet (GRP-FRM-002)
- Weekly Site Safety & Environmental Inspection Record (WHS-FRM-013)
- Weekly Site Safety & Environment Inspection Record – Building (WHS-FRM-033)
- Incident Report - Part A (WHS-FRM-027A)

- Monthly Project Compliance Audit (Q-FRM-004)
- Minutes of meetings, correspondence with client, authority and/or community representatives and/or diary notes as necessary.

6. Identify Environmental Aspects of Company Operations

The General Manager/Director is responsible for review of the operations of the company as well as any relevant regulatory requirements and for identifying any environmental aspects that have potential to cause environmental harm.

The Construction Manager or Project Manager is responsible for all project operations and for ensuring that any environmental aspects that have potential to cause environmental harm in accordance with clause 7 below are identified. Employees, suppliers and sub-contractors are included in these assessments as necessary.

The Director / General Manager and HSEQ Manager are responsible for identification of any environmental aspects pertaining to all non-project operations of the company and for definition and implementation of control measures for minimising the potential for environmental harm from these operations.

7. Assessment of Risk & Potential Environmental Impacts – Projects

The Construction Manager / Project Manager is responsible for ensuring that any employee given the task of identifying environmental aspects and their potential for causing environmental harm is competent and experienced in identifying them. The list of environmental aspects while prepared prior to the commencement of works can be added to at any time during the works following suggestions from staff or employees (e.g. following toolbox meetings, as a result of a regular site inspection, client/representative instructions). These assessments also consider any relevant regulatory requirements.

If the project or site circumstances warrant, the Project Manager / Engineer shall engage e xpert assistance in identifying environmental aspects and assessment of their potential for causing environmental harm.

Initial identification of environmental aspects and potential for causing environmental harm on projects sites is the responsibility of the Estimator – determination of environmentally responsible working methods is a key requirement in the process used to determine the tender price (for individual work items and for the overall project); this includes approval as warranted by the General Manager/Director or the Construction Manager.

The Project Manager and/or the Project Engineer are responsible for ensuring that all projects are reviewed for possible environmental issues prior to commencement. This review forms part of project planning and is recorded in the Pre-start Checklist (WHS-FRM-004). This task may be delegated to an outside consultant if necessary.

Risk Management Procedure (WHS-PRO-003) defines the approach taken for risk management in planning and execution of all projects. In particular, the Project Manager and/or the project engineer is responsible for identification of environmental aspects and potential for causing environmental harm, and for determination of control measures for minimising environmental harms well as activities for ensuring their effective implementation.

The Hazard Identification Form (WHS-FRM-015) & Risk Assessment – Projects Form (WHS-RA-004) are used to assist with identification of all work activities that warrant implementation of control measures including the list of WMS and WPs to be applied. This form facilitates a planned approach to determination of the applicable WMS and WPs for all relevant work activities in a project, and is utilised in a manner that progressively shows the status of “sign-off” for each, including –

- Applicable Pensar and/or subcontractor WMS/WPs
- Any project specific WMS/WPs to be prepared
- Additional controls that are to be applied (usually forms/checklists in the Pensar IMS) – e.g. Sub-Contractor SWMS Compliance Review (WHS-FRM-040), Sub-contractor SWMS checklist (WHS-FRM-012), Permit to Excavate (WHS-FRM-010)

- The Risk Assessment – Projects form (WHS-RA-004) and the Risk Assessment Calculator in it for each work activity added to the above list for specific projects, and for work activities where it is necessary to assess whether or not standard control measures (e.g. Work Method Statements, Work Procedures) are adequate for the project circumstances.

The Project Manager and/or the project engineer consult as necessary with the estimator and/or the construction manager in the above assessment and in preparation of the Site Environmental Management Plan (EMP),or Minor Works Combined Management Plan (MWCMP), to ensure that all provisions for management of environmental aspects included in the derivation of the tender price are correctly interpreted and accommodated in the EMP / MWCMP.

Project/activity specific work method statements are defined by the project manager and/or the project engineer and incorporated in the Site Environmental Management Plan / MWCMP. The company standard Safe Work Method Statements are adapted as necessary. This is undertaken in consultation (as warranted) with:

- Supervisors, foremen, Leading Hands, plant operators and workmen, sub-contractors and suppliers.
- Other relevant parties (e.g. Energex, QR, Main Roads, Local Authority).

In the event that the client provides specific requirements for control of environmental aspects (e.g. in the form of erosion & sedimentation control plans), the project engineer and foreman shall incorporate these in the above considerations.

8. Environmental Control Measures

Control measures are defined as the output from the environmental risk assessment processes defined in clause 7 above to ensure that the potential for project/operational activities to cause environmental harm are minimized – these shall generally be in the form of:

- Work Method Statements (WMS)
- Work Procedures (WPs); or
- Specific instructions.

Control measures include as necessary:

- documented procedures, instructions or work activity methods;
- identification of acceptable operating criteria;
- processes for regular monitoring of environmental aspects and implementation of control measures;
- employee briefing (e.g. induction or training sessions);
- Client instructions (e.g. erosion & sedimentation control plans).

If warranted, requirements for monitoring the implementation of environmental control measures will be defined in a Monitoring Plan. In particular, Safe Work Method Statements (SWMS) include definition of requirements for continuously monitoring implementation of the various control measures defined in them. Each SWMS incorporates a checklist for use in recording periodic assessment by the construction management team of compliance with those control measures.

9. Site Environmental Management Plan

Note: A Minor Works Combined Management Plan (MWCMP) may be used for projects with a duration of less than 6 months and/or a contract value of < $1M; and as approved by the business division General Manager/Director. A MWCMP is issued in place of a Site Safety Plan, Environmental Management Plan, Quality Management Plan and Project Management Plan. A MWCMP will contain, as necessary, all items listed below.

The Project Manager and/or the Project Engineer consult as necessary with the HSEQ Manager and the Construction Manager in preparation of the Environmental Management Plan (EMP) or MWCMP.

The EMP / MWCMP shall generally be prepared in the format of the EMP template and includes as necessary:

- Project details and/or cross references to the Project Management Plan, Traffic Management Plans, and the Site Safety Plan, including relevant dates and / or work programs.
- Responsibilities for environmental management & the project organization chart, including relevant company details.
- Hazard Identification Form (WHS-FRM-015) & Risk Assessment – Projects Form (WHS-RA-004)
- Work Method Statements, Work Procedures and Project Specific Work Procedures.
- Site specific emergency procedures and contacts.
- Site rules and induction requirements.
- Incident reporting requirements.
- Monitoring/inspection procedure and timetable.
- Training requirements.
- Daily Pre-Starts and work activity briefings.
- Toolbox meeting and work activity briefing arrangements.

Day-to-day works activities are planned, and control of their implementation executed by the project manager/engineer and the foreman in accordance with the Project Management Plan (PMP), the Site Safety Plan (SSP) and the EMP with specific reference to the control measures defined in Work Method Statements and Work Procedures. Where a MWCMP has been developed this will operate in place of the SSP, EMP and the PMP.

All employees and all workers on a workplace are obliged to ensure that any departure from defined control measures, or additional environmental aspects they observe, are reported to the foreman and/or the safety manager.

The construction management team and the HSEQ Manager are responsible for ensuring that the EMP / MWCMP requirements are implemented. The Project Engineer is responsible for ensuring that sufficient resources and staff are available to carry out the plan.

The Project Manager and/or the Project Engineer define arrangements for briefing supervisors, foremen, operators, workers, sub-contractors and suppliers on site environmental aspects and their potential for causing environmental harm, and on the implementation of the EMP / MWCMP. Records of all such briefings are documented on the relevant forms as Job Inductions, pre-start and works activity briefings and/or as Toolbox meeting records.

10. Monitor & Supervise Environmental Control Measures

Day-to-day works activities are planned and control of their implementation executed by the Project Manager Engineer and Supervisor / Foreman in accordance with the Project Management Plan, the Site Safety Plan, the Site Environmental Management Plan, Work Method Statements and Work Procedures. Alternatively, these can be defined by the Minor Works Combined Management Plan (MWCMP).

Work Method Statements (WMS) include definition of requirements for continuously monitoring implementation of the various control measures defined in them. Each WMS incorporates a checklist for use in recording periodic assessment by project management staff of compliance with those control measures.

All employees and all workers on a workplace are obliged to ensure that any departure from defined control measures, or additional hazards they observe, are reported to the Foreman, Supervisor, and /or the HSEQ Manager.

As necessary, the Project Engineer shall define a Monitoring Plan (as part of the EMP / MWCMP) that includes measures by which all of the environmental aspects (and their potential for causing environmental harm) that have been identified are to be monitored with a view to their effective implementation.

The Project Manager / Engineer, Supervisor and Foreman are responsible for oversight of implementation of all work method statements and for implementation of the Monitoring Plan, including monitoring of environmental aspects and control measures in accordance with the Monitoring Plan. Monitoring inspections shall include verification of work practices, plant maintenance & operation, and as warranted:

- Visual inspection of silt traps, fences, water courses, drains, etc.
- Measurement of noise levels, water quality, air quality, etc.
- Auditing of the Monitoring Plan (especially if environmental aspects, potential for environmental harm, and project duration necessitate this).

Records of monitoring must be maintained in accordance with the monitoring section of the EMP / MWCMP:

- By Supervisors and Foremen – on the Weekly Site Safety & Environment Inspection Record - form (WHS-FRM-013) (Civil projects) or form (WHS-FRM-033) (Building projects)

In addition to routine inspections for environmental issues or hazards on work-sites, including issues relating to operation of plant and equipment, the Project Engineer, Supervisor and Foreman are responsible for carrying out additional inspections whenever significant changes in site circumstances arise (e.g. new phase of project, heavy rain) or in the event of an incident.

All monitoring reports and associated test results must be filed in accordance with procedures for control of project records defined in procedure 'Controlling Documents Plans & Data' (Q-PRO-001) and any project specific requirements defined in the PMP.

Non-conformances detected in relation to implementation of work instructions (WMS and WPs) or activity specific work method statements are recorded on an Incident Report (WHS-FRM-027A) and processed in accordance with procedure "Incident Reporting Procedure" (WHS-PRO-001)

When all necessary investigations and improvement decisions are made, inspection and other relevant forms are filed as defined in procedure Controlling Documents, Plans and Data (Q-PRO-001)

11. Environmental Training for a Specific Project

Responsibilities and processors are defined in the procedures listed below:

- Site specific inductions
- Managing Construction Procedure (GRP-PRO-001)
- Project Site Induction Procedure (WHS-PRO-005).

The Environmental Management Plan, the Site Safety Plan and/or the Project Management Plan define any project specific training in addition to the above (e.g. in relation to management of nominated environmental aspects), including any training specified or to be provided by the client and any additional or specialist training requirements.

Any environmental training of a particular employee, supplier or sub-contractor that is warranted by site circumstances or client requirements shall be identified in the Project Management Plan or Environmental Management Plan as the case may be.

The Project Manager/Engineer, Supervisor/Foreman and HSEQ Manager are responsible for ensuring all the prescribed project-based training is carried out and for maintaining evidence of those trained, including sub-contractors.

The Project Engineer may call on specialists if necessary to provide any project specific environmental training.

The HSEQ Manager is responsible for ensuring that any environmental training necessary in relation to non-project operations is conducted at the appropriate time, and for maintaining relevant records.

12. Incident Reporting and Environmental Breaches

Procedures for reporting of incidents are defined in the Incident Reporting Procedure (WHS-PRO-001). Employees are required to report to a member of the Construction Management Team or company management any potential environmental breach and / or Incident or environmental breach.

12.1 Project Incidents or Breaches

The Foreman is responsible for notifying the Project Engineer if incidents or breaches arise that involve failure to comply with defined control measures or inadequacy of control measures is suspected.

The Project Engineer determines action(s) to be carried out immediately to mitigate the impact of each incident or breach.

All incidents/breaches are recorded on the Incident Report Form-Part A (WHS-FRM-027A)

Depending on the severity or nature of an incident or breach, the Project Engineer will notify the client's representative of the breach. All other parties involved with the project will be advised and informed as necessary.

The Project Engineer and the Foreman are responsible for notifying the HSEQ Manager of all incidents/breaches and actions in hand to process the Incident Report.

The HSEQ Manager is responsible for ensuring that all notifiable incidents are reported in the prescribed format to the Environment & Resource Management Department, Queensland. The HSEQ Manager maintains the Incident Register to facilitate monitoring of follow-up and eventual close-out of all incidents.

The Construction Manager / Project Engineer is responsible for ensuring that all reported incidents are adequately investigated and that any necessary training and/or improvements to systems or work procedures are implemented promptly.

12.2 Non-Project Incidents or Breaches

The Project Manager and the HSEQ Manager are responsible for ensuring that any non-project incidents or environmental breaches are reported, adequately investigated and recorded.

13. Emergency Preparedness

Emergency procedures are defined in:

- Emergency Procedure: Project Sites (WHS-PRO-008)
- Emergency Procedure: Office (WHS-PRO-009)

Where the probability and level of risk to the environment are considered high or where legislation requires, the project and/or other operation environmental assessment and control measures shall define in addition to the above procedures the steps to be taken in the event of an Environmental Incident occurring.

Project Managers / Engineers, Foremen and HSEQ Manager are responsible for ensuring that all personnel are adequately briefed on these procedures, including conduct of rehearsals of the above procedures at regular intervals. Appropriate records of rehearsals, de-briefings and any subsequent training shall be maintained by the responsible officer.

14. Evaluation of Effectiveness – Environmental Assessment & Control Measures

The Construction Management Team (for projects) and company management (for other operations) are responsible for reviewing the application of defined procedures and control measures following each emergency, incident or environmental breach in order to identify any requirements or opportunities for improvement. The Project Engineer / HSEQ Manager is responsible for ensuring that post-incident reviews are adequately and promptly undertaken.

The effectiveness of the processes for environmental aspect identification, risk assessment and definition of control methods is evaluated through the following activities:

- Daily / Weekly checks – Foreman.
- HSEQ Board Report - HSEQ Manager
- Toolbox Meetings – Employees, Foremen, Project Engineers.
- Review of Incident Reports.
- Internal audits.
- Management Review.

15. Assessment of Compliance with Environmental Obligations

On completion of projects and at other times during projects, compliance with environmental obligations is assessed by the HSEQ Manager, generally as part of site safety and environmental audit assessments and recorded on the Monthly Project Compliance Audit (Q-FRM-004)or on the Weekly Site Safety & Environment Inspection Record - form (WHS-FRM-013) (Civil projects) or form (WHS-FRM-033) (Building projects)

The HSEQ Manager is responsible for ensuring that adequate evidence of compliance with environmental obligations is recorded as part of project on-maintenance actions and in accordance with requirements for compilation of the Project Completion Review (GRP-FRM-007) as defined in the Managing Construction Procedure (GRP-PRO-001)

16. Reference Documents

Document No.	Document Name
ISO 14001:2004	Environmental Management Systems
	Environment Policy
GRP-PRO-005	Maintaining Appreciation of Legal and Other Requirements
GRP-FRM-002	Daily Supervisor Sheet
WHS-FRM-013	Weekly Site Safety & Environment Record
WHS-FRM-033	Weekly Site Safety & Environment Inspection Record - Building
Q-FRM-004	Monthly Compliance Audit
WHS-FRM-027A	Incident Report – Part A
WHS-FRM-004	Project Pre-Start Checklist
WHS-PRO-003	Risk Management Procedure
WHS-FRM-012	Subcontractor SWMS Checklist
WHS-RA-004	Risk Assessment - Projects
WHS-FRM-010	Permit to Excavate
WHS-PRO-005	Project Site Induction Procedure
WHS-PRO-008	Emergency Procedure – Project Sites
WHS-PRO-009	Emergency Procedure -Office

Document Control

Reviewed By:		
Name	**Position**	**Date Reviewed**
Sam Samuels	Systems and Compliance Coordinator	18/09/2018

Document Approval			
Name:	Daryl Curran	**Position:**	HSEQ Manager
Signature:		**Date:**	18th September 2018

Revision Record

Version	Date	Description	Amended by	Approved by
0	October '17	Initial Upload	S Samuels	D Curran
1	December '17	Re-Brand	S Samuels	D Curran
2	August '18	Updated to include references to MWCMP	S Samuels	D Curran
3	August '18	Added Cover Page	S Samuels	D Curran
4	September '18	Additional References to MWCMP	S Samuels	D Curran

Individual sections of this environmental aspect and impact risk assessment must be completed before the defined works commence on site. This environmental aspect and impact risk assessment must be reviewed every month or when significant changes are made to the works or the design. This environmental aspect and impact risk assessment and subsequent reviews must be completed by the Project Manager / Engineer and Foreman as a minimum. Any significant changes or additions must be reviewed with all relevant workers. This review must be documented on a toolbox record (WHS-FRM-014) A copy of this environmental aspect and impact risk assessment must be kept in the EMP. The risk matrix below must be used to determine the risk score and the hierarchy of control must be used when determining controls. The defined controls are suggestions only and additional controls can be documented.

Project: Roma St Coach Terminal	**Project Number: M18-210**	**Client: Building and Asset Services**	**Project start date: 05/11/2018**
Type of Contract: Lump Sum	**Scope of works: Civil works for new temporary coach terminal**		

Design and control	Yes / No / NA	Comments
Has the client provided any project specific environmental constraints or requirements?	Y	Refer CRRDA CEMP, reflected in Pensar EMP
Have the provided environmental drawings and other relevant information been reviewed during the development of this risk assessment?	Y	
Can all the controls outlined in the Sediment and Erosion Control plan be put in place as per the drawing?	Y	Updated ERSC Plans will be required as staging progresses
If NO, has the client been advised of any changes and / or modifications to the proposed Environmental controls?	N/A	
If in a fire ant zone, have all the preliminary checks been conducted on site and recorded accordingly?	N/A	
Are there any environmental sensitive areas or vegetation that will require additional protection?	Y	Trees to protect
Are there any heritage or culturally significant sights or artefacts present on this project?	N	None that are known, however No-Dig Cultural Heritage Line exists
If YES have appropriate controls and / or protections been put in place to manage the risks associated with these items?	Y	Ongoing

Environmental Aspects and Impacts Project Review									
Date review completed	Reason for review?	Has there been any design changes that create additional risks not previously identified and controlled in the EMP or Sediment and / or Erosion control plan?	Have there been any variations or site instructions that create additional risks to the environment not previously identified and controlled in the EMP and / or Sediment and Erosion control plan?	Addition interface issues with Clients, other sub-contractors, locals businesses or members of the public?	Any substances or material s found on site during the month that requires health monitoring as per schedule 14 of the Work Health and Safety Regulation 2011?	Has any contaminated land been identified since the last review of this risk assessment? Has asbestos been identified on the project?	Has there been any procurement that has safety, environmental or quality impacts?	Have there been any incidents that have required the implementation of additional controls.	Name of persons conducting the review
16/10/18	Initial Review	Y	Y	Y	N	N	Y	N	Adam Bruschi

ALL PERSONS INVOLVED IN THE WORKS MUST BE INDUCTED INTO THE SAFE WORK METHOD STATEMENT EXPLAINED TO THEM PRIOR TO START OF WORKS

LIKELIHOOD: How likely could it happen? What is the chance of injury, illness, and damage or environmental harm occurring? How frequently might injury, illness, damage or environmental harm occur?	**CONSEQUENCES:** How severely could it hurt someone; could it cause damage or environmental harm?			
	EXTREME: **PERSONNEL** - Death, permanent disability or injury. **ENV / OTHER** – Detrimental, long term impact on the community, facilities, environment and/or business.	**MAJOR:** **PERSONNEL** - Serious injury requiring medical treatment or hospitalisation. **ENV / OTHER** - Detrimental impact on the community, facilities, environment and/or business.	**MODERATE:** **PERSONNEL** - Casualty treatment. **ENV / OTHER** - Adverse impact to the community, facilities, environment and/or business in some instance.	**MINOR:** **PERSONNEL** - First aid only, no lost time. **ENV / OTHER** - Short term adverse community impact in particular locations; minor damage to facilities, short term local environmental and/or business issue.
VERY LIKELY could happen frequently	**HIGH (16)**	**HIGH (15)**	**HIGH (14)**	**MEDIUM HIGH (10)**
LIKELY could happen occasionally	**HIGH (13)**	**MEDIUM HIGH (12)**	**MEDIUM HIGH (9)**	**MEDIUM LOW (8)**
UNLIKELY could happen, but rare	**MEDIUM HIGH (11)**	**MEDIUM LOW (7)**	**MEDIUM LOW (5)**	**LOW (4)**
VERY UNLIKELY could happen, but probably never will	**MEDIUM LOW (6)**	**LOW (3)**	**LOW (2)**	**LOW (1)**

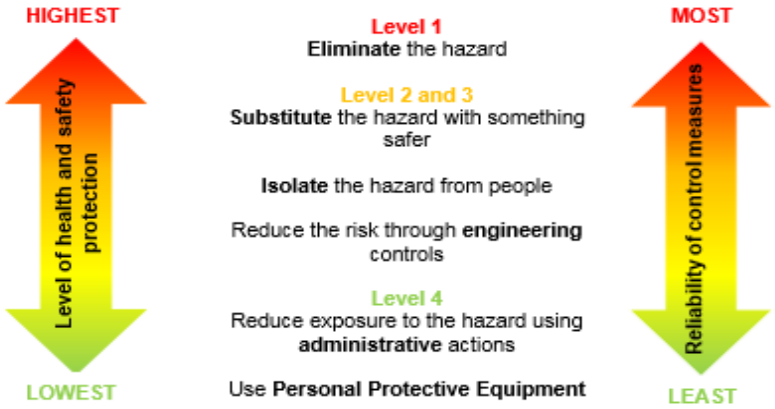
RESIDUAL RISK PRIORITISATION SCHEDULE

Once the initial risks of an activity has been identified, controls are to be applied to reduce the risks involved. The below table assists in determining when and what actions are to be taken to implement further residual risk controls should they not be sufficient. It is a Pensar requirement that all activities are performed at a Medium Low residual risk level or below.

RESIDUAL RISK LEVEL	ACTION PRIORITY	RESIDUAL RISK LEVEL	ACTION PRIORITY
HIGH (13-16 scores)	Stop the activity. Do not proceed without Safety Managers approval.	**MEDIUM LOW (5-8 scores)**	Risk requires specific ongoing monitoring and review to ensure level of risk does not increase. Otherwise manage through routine procedures.
MEDIUM HIGH (9-12 scores)	Unacceptable risk, this needs to be reviewed and further controls need to be implemented as per the HIRAC.	**LOW (1-4 scores)**	These hazards may not need immediate attention. Continue to monitor while undertaking the activity with the existing controls in place.

HIERARCHY OF RISK CONTROL (HIRAC)

The ways of controlling risks are ranked from the highest level of protection and reliability to the lowest as shown below. This ranking is known as the Hierarchy of Risk Control.



ELIMINATION: remove the hazard completely from the workplace or activity.

SUBSTITUTION: replace a hazard with a less dangerous one (e.g. less hazardous chemicals).

ENGINEERING: making a machine or work process safer (e.g. raise a bench to reduce bending).

ISOLATION: separate people from the hazard (e.g. safety barrier).

ADMINISTRATION: putting rules, signage or training in place to make a workplace safer (e.g. induction training, highlighting trip hazards).

PERSONAL PROTECTIVE EQUIPMENT (PPE): Protective clothing and equipment (e.g. gloves, hats).

APPLICABLE LEGISLATION, CODES OF PRACTICE	**LEGISLATION**
	Nature Conservation Act 1992, Queensland Government Recycling Policy 2009, Environmental Protection (Air) Policy 2008, Model WH&S Regulations 2010, Environmental Protection Act 1994 (QLD), Environmental Protection Regulation 2008 (QLD), Environmental Protection (Waste Management) regulation 2000 (QLD), Vegetation Management Act 1999 (Qld), Water Act 2007 (QLD), Queensland Heritage Act 1992, Queensland Heritage Regulation 2003 (Qld), Queensland Environmental Protection Policy (Noise) 2008, Building Fire Safety Regulation 2008, Environmental Protection (Water) Policy 2009, Environment Protection & Biodiversity Conservation Act 1999, Environment Protection & Biodiversity Conservation Regulations 2000, Fire Ants Movement Control Regulations (Mar 2004) – Qld, Noise Conservation Act 1992, Noise Conservation (Administration) Regulation 2006, Soil Conservation Act 1986, Soil Conservation Regulation 1998
	CODES OF PRACTICE
	Traffic Management for Construction or Maintenance Work – COP 2008, Manual of Uniform Traffic Control Devices Part 3, Hazardous Chemicals COP 2003, How to Manage and Control Asbestos in the Workplace COP 2011, How to Manage Work Health and Safety Risks COP 2011, How to Safely Remove Asbestos COP 2011, Labelling of Workplace Hazardous Chemicals COP 2011, Managing Noise and Preventing Hearing Loss at Work COP 2011, Managing the Work Environment and Facilities COP 2011, Traffic Management for Construction or Maintenance Work COP 2008, Tunnelling COP 2007, Work Health and Safety Consultation, Co-operation and Co-ordination 2011,
Abbreviations/ Initials	*AT – Andrew Thomson – Pensar Project Manager* *MB – Mathew Brereton – Pensar Project Supervisor* *AB – Adam Bruschi – Pensar Project Engineer* *DC – Daryl Curran – Pensar WHSQ Manager*

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
PART A - PROCUREMENT						
Plant and Equipment	- Fuel use - Chemical use - Exhaust - Noise - Vibration - Earthworks operations	- Contamination of soils - Pollution of waterways - Air pollution - Disturbance to local community - Erosion	**MED HIGH (11)**	Ensure that all plant and equipment bought to site is in good condition and well maintained with a current service history.	**LOW (1)**	MB
				Plant risk assessments to be completed for all machinery bought to site to ensure that the machine is functional, free of damage and / or contaminants.		MB
Requirements	Land pollution Water pollution Air pollution Land degradation			Define arrangements for on-site servicing & refuelling of equipment, including provision of nominated areas for these activities as necessary.		MB
Labour	- Manual labour - Fuel use - Chemical use - Earthworks operation - Vegetation disturbance	- Erosion - Sediment runoff - Pollution of waterways - Air pollution - Damage or loss of culturally significant sites, property, objects or artefacts. - Excessive waste generated - Damage of Flora and Fauna	**HIGH (13)**	Induction, training and on-going education of all project staff to ensure adequate knowledge of environmental issues on-site, as well as the appropriate use and maintenance of environmental controls.	**LOW (1)**	MB
				Chemical use on site restricted to qualified and competent personnel.		MB
Requirements	Land degradation Water pollution Air pollution Heritage preservation			Complete all environmental protections as per the Environmental Management Plan.		AT/AB/MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
	Waste management (non-trackable waste) Flora & fauna			Fence off and exclude any cultural or heritage artefacts identified on site.		AB/MB
				Recycle any suitable materials on site.		MB
Sub-Contractors	- Manual labour - Fuel use - Chemical use - Earthworks operations - Vegetation disturbance	- Erosion - Sediment runoff - Pollution of waterways - Air pollution - Damage or loss of culturally significant sites, property, objects or artefacts. - Excessive waste generated - Damage of Flora and Fauna	**HIGH (13)**	Induction, training and on-going education of all project sub-contractors to ensure adequate knowledge of environmental issues on-site, as well as the appropriate use and maintenance of environmental controls.	**LOW (1)**	MB
Requirements	Land degradation Water pollution Air pollution Heritage preservation Waste management (trackable waste) Waste management (non-trackable waste) Flora & fauna			Sub-contractors to provide spill kits and SDS registers for all works carried out on site.		AB
				Sub-contractor SWMS to be checked to ensure they align with Pensar requirements, policies and procedures.		AB
				Plant risk assessments to be completed for all machinery bought to site to ensure that the machine is functional, free of damage and / or contaminants.		MB
Materials	- Importation of materials onto the work site. - Export of materials from the work site to another location.	- Foreign weeds and seeds imported to site - Damage of Flora and Fauna	**MED HIGH (9)**	All materials imported to site to be procured from registered and authorised source.	**LOW (1)**	AT/ AB
				All materials should be certified as weed and fire ant free prior to acceptance on-site (as warranted).		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Pests & weeds Flora & fauna Biodiversity conservation Spills & containment Hazardous materials & environment Water pollution	- Importation of fire ants to uncontaminated area - Water contamination by chemicals and / or fuels		Regular site inspections to ensure that no contamination of the area is occurring from any source.		AB/ MB
				Any materials with the potential to impact on the environment must be stored in compliance with the applicable licences, SDS, standards and EMP.		MB
Site facilities	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species - Air quality - Soil quality	- Damage of Flora and Fauna - Excessive waste generated - Pollution of waterways - Disturbance to local community	**MED HIGH (11)**	Consideration will be given to the location of the site set up, and site entry and exit locations.	**LOW (1)**	AT/ AB/ MB
				Traffic Management plan to incorporate the site entry and exit locations.		AT/ AB
				Car parking to be included to allow for all site vehicles to be parked off the road for the duration of the project.		MB
Requirements	Flora & fauna Waste management (trackable waste) Waste management (non-trackable waste) Water pollution			Site management to ensure that there are adequate waste bins for the site area.		MB
				Waste materials to be separated on site and recycled wherever possible.		MB
				Site toilets to be installed and plumbed by competent personnel		AB/ MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Licences, Permits & Approvals	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species	- Damage of Flora and Fauna - Erosion - Sediment runoff - Disturbance to local community	**MED HIGH (9)**	All licence, permits and approval conditions are incorporated into the EMP, SWMS and work activity plans.	**LOW (1)**	AT/ AB
				Review implementation of all licence and permit conditions at appropriate stages to ensure they are effective and suitable for the works.		AT/ AB/ MB/ DC
Requirements	Flora & fauna Land degradation					
PART B - CONSTRUCTION						
Site access & traffic management	- Plant and equipment procured to site. - Site personnel vehicles	- Disturbance to local community - Noise - Air pollution	**MED HIGH (9)**	Locate site access and internal traffic routes so as to minimise potential for environmental harm.	**LOW (1)**	MB
				Review implementation of the TMP periodically to ensure its effectiveness.		AT/ AB
			MED HIGH (9)	Define site access & internal traffic arrangements that: - Restrict the number of access points (Preferably no more than two per site); and - Minimise traffic movements. Car parking to be included to allow for all site vehicles to be parked off the road for the duration of the project.	**LOW (1)**	AT/ AB/ MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Construction/demolition Noise pollution Air pollution		**MED HIGH (9)**	Define & implement a traffic management plan (TMP) for internal traffic movements, including: - Control measures that minimise potential for environmental harm; and - Arrangements for monitoring implementation of the TMP and for maintenance of internal traffic routes (e.g. dust suppression, prevent erosion and silt movement).	**LOW (1)**	AT/ AB
Vegetation management	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species	- Damage of Flora and Fauna - Erosion - Sediment runoff - Damage or loss of culturally significant sites, property, objects or artefacts	**MED HIGH (11)**	Clearly define the area that needs to be cleared. Mark it out so that it is clearly identifiable to any person involved in the clearing and grubbing process.	**LOW (1)**	AT/ AB/ MB
				Clear only the areas that are required for the works. Give consideration to clearing in stages to prevent erosion or sediment runoff for larger projects.		MB
				Identify any protected trees and / or vegetation on the work site and make suitable of arrangements for their protection.		AB/ MB
Requirements	Flora & fauna Land degradation Heritage preservation			Fence off and exclude any cultural or heritage artefacts identified on site. Report to appropriate authority.		AT/ AB/ MB
				Arrange for chipping, mulching and responsible disposal of cleared trees and vegetation. Use material on site wherever possible.		AB/ AT
				Select appropriate clearing machinery, ensure it is no larger than what is required for the task.		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Flora and fauna	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species	- Damage of Flora and Fauna - Injury / death of endangered / protected species - Contamination of waterways - Removal of habitats for local wildlife - Site contamination from noxious weeds and / or species	**HIGH (16)**	Identify all existing flora species and fauna habitats on the project site.	**MED LOW (6)**	AB/ AT/ DC
				Establish barriers and / or exclusion zones around protected flora species and fauna habitats.		MB
				Brief / Induct all project personnel (including sub-contractors) on site specific flora and fauna protection requirements, including provide any necessary training and follow up.		MB
				Minimise the loss of terrestrial and wetland flora, fauna (and habitat) and ecological communities during construction within the project area – seek specialist assistance/ advice where necessary.		AT/ DC
				Utilise specialist personnel to rescue and relocate fauna disturbed and / or injured due to work activities.		MB
				Provide replacement flora and / or fauna habitat as necessary (e.g. logs, rock or other shelters).		AT/ AB/ MB
				Any materials with the potential to impact on the environment must be stored in compliance with the applicable licences, SDS, standards and EMP.		MB
				All materials to be procured from registered and authorised source.		AB
				All materials should be certified as weed and fire ant free prior to acceptance on-site (as warranted).		AB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Flora & fauna Water pollution Pests & weeds		**HIGH (16)**	Regular site inspections to ensure that no contamination of the area is occurring from any source.	**MED (6)**	AB/ MB
Water/soil erosion and sediment control	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species	- Damage of Flora and Fauna - Injury / death of endangered / protected species - Contamination of waterways - Disturbance to local community - Air Pollution	**HIGH (15)**	Define an Erosion and Sediment Control Plan (ESCP), including specific arrangements for all stages of the project.	**LOW (3)**	AT/ AB
				Brief all project personnel (including sub-contractors) on ESCP provisions, including provide any necessary training and follow up.		MB
				Install suitable facilities to minimise erosion and / or flow of sedimentation from the site.		MB
				Maintain water quality at an ''acceptable level'' in waterways during construction by using appropriate controls.		MB
				Review the ESCP periodically to ensure effectiveness for current and future project stages.		AB/ MB
				Regular monitoring and recording of the effectiveness of sediment controls such as silt fences, mulch bunds and rock checks.		MB
Requirements	Flora & fauna Land degradation Water pollution Air pollution			Define arrangements for on-going review of ESCP aspects and facilities during the on-maintenance period, including ensuring the relevant facilities are adequately protected and maintained throughout this period.		AT

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Waste management	- Protected / endangered species (*Flora and Fauna*) - Waterways - Native / local wildlife species	- Damage of Flora and Fauna - Injury / death of endangered / protected species - Contamination of waterways - Disturbance to local community	**MED HIGH (12)**	Allocate sufficient waste storage for the entire worksite.	**LOW (3)**	MB
				Ensure that site materials and food scraps are stored separately. Food scrap bin must have a solid plastic lid that can be closed and secured.		MB
				Arrange for regular removal and clearing of the skip bins. Ensure that all recyclable materials are recycled whenever possible.		MB
				Reduce waste on site by ensuring correct quantities and materials are being ordered.		MB
				Ensure all materials ordered to site are checked to ensure correct quality and quantity.		MB
				Ensure that waste management is aligned with the project EMP.		MB
Requirements	Flora & fauna Water pollution Waste management (trackable waste) Waste management (non-trackable waste)			Recycle and reuse site materials wherever possible; i.e. silt fencing, star pickets, caps and flagging.		MB
				Inductions to cover site rubbish disposal. No rubbish to be left / dumped on site by sub-contractors.		MB
Fuel and oil spills	- Soil quality - Waterways	- Contamination of waterways - Ground contamination - Damage and / or destruction of local flora and fauna	**HIGH (16)**	Provide a designated and bunded zone for refuelling and plant servicing wherever possible.	**MED LOW (6)**	MB
				Ensure that a spill kit is available whenever refuelling operations are being conducted.		MB
				Define spill response arrangements – brief relevant personnel (ensure capability to implement when required).		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Water pollution Land pollution Flora & fauna		**HIGH (16)**	Plant and equipment maintained in good operating condition and services carried out as per manufacturers recommendations.	**MED LOW (6)**	MB
Air Quality	- Air quality - Local Communities	- Dust - Air pollution - Disturbance to local community	**MED HIGH (10)**	Operate and maintain equipment in an efficient manner – minimise emission of fumes and odours.	**LOW (1)**	MB
				Refuelling and servicing of equipment to be undertaken where emission of fumes and odours will not impact on neighbouring properties.		MB
				Cover stockpiles and loads being transported where practicable.		MB
				Earthworks operations and haul roads watered to minimise creation of dust pollution.		MB
Requirements	Dust Air pollution			Minimise earthworks operations during extremely dry or windy conditions to minimise creation of dust pollution.		MB
				Monitor air quality at all times during the project to ensure that minimal dust, fumes or odours are being emitted. Shut down operations if the issues cannot be resolved adequately.		AB
Noise and vibration	- Native / local wildlife species - Local Communities	- Erosion - Sediment runoff - Disturbance to local community - Damage or destruction of local flora and fauna	**MED HIGH (10)**	Ensure plant and equipment is well maintained and fitted with effective exhaust systems (where appropriate).	**LOW (1)**	MB
				Equipment is shut down when not in use.		MB
				Restrict working hours as necessary – do not work outside normal hours without satisfying approval/ notification requirements		AT/ AB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Noise pollution Land degradation Flora & fauna		MED HIGH (10)	Erect noise barriers (where warranted) to minimise impact on neighbouring properties.	LOW (1)	MB
				Measure noise and vibration parameters periodically to ensure acceptable levels are not exceeded.		AT/ AB
				Carry out works on site with consideration given to local activities being conducted.		MB
				Regular maintenance of plant and equipment according to manufactures specifications.		MB
Water quality	- Water quality - Native / local wildlife species - Local Communities	- Water pollution - Damage or destruction of water based wildlife habitats - Damage and / or destruction of local flora and fauna	HIGH (13)	Clearly identify all waterways with potential to be effected by site works.	LOW (3)	AT/ AB/ MB
				Implement all environmental controls as outline in the EMP and site sediment and erosion control plans.		AB/ MB
				All water to be on site must be tested for pH, turbidity and approvals obtained (*where required*) before it is pumped off site.		AB/ MB
				Reuse / recycle any water stored on site whenever possible on the work site. (*water trucks*)		MB
Requirements	Water pollution Flora & fauna			Induct / brief all sub-contractors on the requirements relating to the maintenance of sediment and erosion controls and the approval process for pumping water off site.		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Cultural Heritage including Aboriginal artefacts	- Cultural heritage sites - Aboriginal artefacts	- Damage or loss of culturally significant sites, property, objects or artefacts	**HIGH (13)**	Obtain Local Authority Cultural Heritage Management Plan for the area in which the project site is located (*if available*).	**MED LOW (6)**	
				Arrange inductions and / or briefings for all project personnel on identified (*or likely to be encountered*) cultural heritage assets, artefacts and values – before any on-site work activity is commenced.		MB
				Engage specialised personnel to assist project personnel throughout the project with protection of cultural heritage assets, artefacts and values and identification of artefacts during project works activities.		AB/ AT
				Establish exclusion zones around identified and / or potential areas, assets and artefacts to minimise inadvertent impact or harm to those features.		MB
Requirements	Heritage preservation			Stop work immediately if a potential cultural heritage asset or artefact is found - contact the Client's Superintendent to determine appropriate action.		MB
Contaminated ground and unsuitable materials	- Water quality - Soil quality - Waterways	- Soil contamination - Water pollution - Damage and / or destruction of local flora and fauna - Damage or destruction of water based wildlife habitats	**HIGH (13)**	Determine the location and extent of known contaminants, or of any contaminants subsequently exposed as a result of project works activities.	**MED LOW (6)**	MB
				Identify the nature, physical and chemical composition of any contaminants, the acceptable working processes and control measures including acceptable remediation of disposal methods.		AT/ AB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Land pollution Water pollution Flora & fauna		HIGH (13)	Ascertain specific requirements for working with the various contaminates, including statutory requirements, EPA guidelines, Local Authority and client requirements.	MED LOW (6)	AT/ AB
				Ascertain specific requirements for working with the various contaminates, including statutory requirements, EPA guidelines, Local Authority and client requirements.		AT/ AB
				Provide personal protective equipment and washing facilities.		MB
				Brief all project personnel (including sub-contractors) on the nature and extent of contaminants and the procedures to be followed during relevant work activities.		MB
				Train personnel in safe and responsible processes for working with the various contaminants – engage specialist trainers if available. (Alternatively – sub-let to suitably qualified and experienced sub-contractors all activities associated with & disposal of contaminants.)		MB
				Monitor all processes for working with and disposal of contaminants to ensure that defined procedures and control measures are effectively implemented.		MB
				Wherever possible create exclusion zone around and contaminated area located.		MB
				Provide adequate protections around or over the contaminated area to protect it from spreading in various weather conditions.		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Acid Sulphate Soils (ASS)	- Water quality - Soil quality - Waterways	- Soil contamination - Water pollution - Damage and / or destruction of local flora and fauna - Damage or destruction of water based wildlife habitats	**MED HIGH (12)**	Engage a suitable qualified specialist to assess all potential sources of ASS on or in the vicinity of the project site – examine client data, investigation reports and site surveys.	**LOW (3)**	AT/ AB
				Construct suitable settling ponds or bunds to trap water/leachate from ASS sites and potential ASS sites.		MB
				Clearly mark Acid Sulphate Soil sites and ensure all site personnel are aware of the location.		MB
Requirements	Land pollution Water pollution Flora & fauna			Set up exclusion zones around the site of Acid Sulphate Soils wherever possible.		MB
				Never stockpile Acid Sulphate Soils near waterways or drains unless no other alternative is available.		MB
Herbicides & other contaminants *(excepting those addressed under "Contaminated ground & unsuitable materials")*	- Water quality - Soil quality - Waterways - Native / local wildlife species - Protected / endangered species (*Flora and Fauna*)	- Soil contamination - Water pollution - Damage and / or destruction of local flora and fauna - Destruction of endangered / protected species - Disturbance to local community	**HIGH (13)**	All chemicals stored or used on site must be kept in a secure, bunded and ventilated area.	**MED LOW (6)**	MB
				All chemicals must have the relevant SDS data and a completed Pensar Risk Assessment with them in the storage location.		AB/ MB
				Site management to determine maximum quantities allowed being stored on site. (*Store only what you can use at one time if possible*)		AT/ MB/ AB
				Any chemicals used on site must be used by a competent person.		MB
Requirements	Agricultural & veterinary chemicals Land pollution Water pollution Flora & fauna			Brief all relevant personnel (including sub-contractors) on the above details, provide any necessary training and follow up actions.		MB
				Herbicides and other contaminants being sprayed on site not to be used in windy conditions or any conditions where there is a risk of spray drift.		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Fire Ants	- Native / local wildlife species - Soil Quality - Local Communities	- Damage and / or destruction of local flora and fauna - Disturbance to local community	**HIGH (16)**	All sites in the fire ant zones to be inspected prior to any works being conducted on site. Checks to continue every 28 days and the results recorded using the prescribed form.	**MED LOW (6)**	AT/ AB/ MB
				All materials imported to site to be procured from registered and authorised source.		MB
Requirements	Pests & weeds Flora & fauna			All materials should be certified as fire ant free prior to acceptance on-site (as warranted).		MB
Fire precautions	- Native / local wildlife species - Protected / endangered species (*Flora and Fauna*) - Air Quality - Local Communities	- Damage and / or destruction of local flora and fauna - Destruction of endangered / protected species - Air pollution (*smoke*) - Disturbance to local community	**HIGH (16)**	Follow all controls as defined in Emergency procedures.	**MED LOW (6)**	MB
				Induction of all project personnel to include Emergency procedures, no smoking conditions and prohibition of lighting fires. Provide any necessary training and follow up.		MB
				Conducting on site emergency drills.		MB
Requirements	Fire-prevention Flora & fauna Air pollution			Adequate fire extinguishers to be stored on site wherever there may be a risk of fires and in central accessible locations.		MB
PART C – SITE RESTORATION						
Remove waste materials	- Native / local wildlife species - Soil Quality - Local Communities	- Damage and / or destruction of local flora and fauna - Soil contamination - Water pollution - Disturbance to local community	**MED HIGH (11)**	Waste materials disposed of in acceptable manner and location in accordance with all legislation and local body rules and regulations.	**LOW (3)**	MB
				Any recyclable materials to be sent for recycling whenever possible.		MB

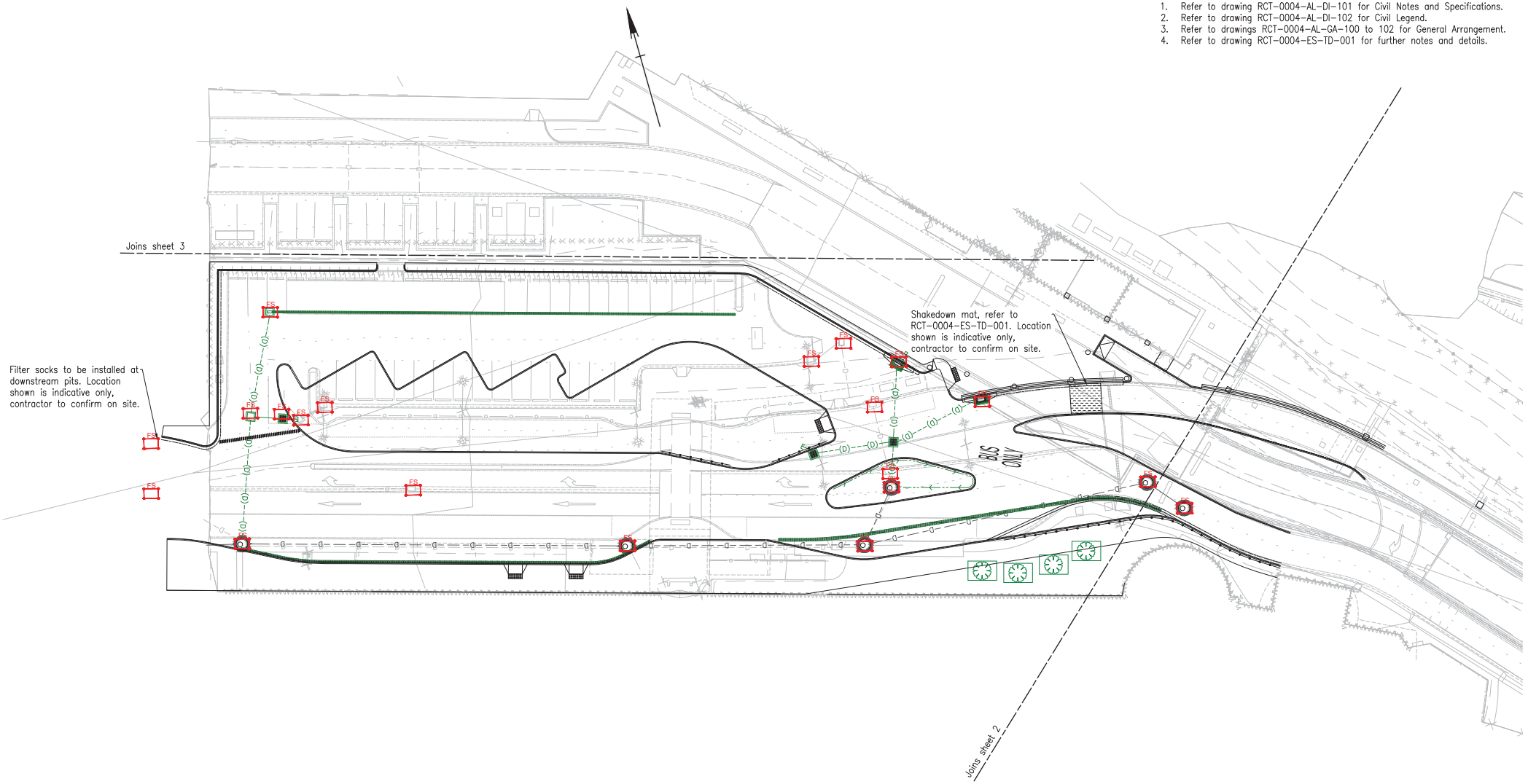
Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Requirements	Flora & fauna Land pollution Water pollution Waste management (trackable waste) Waste management (non-trackable waste)		**MED HIGH (11)**	Any materials that can be reused to be sent to another Pensar site for use on that site.	**LOW (3)**	AT/ AB
Restore vegetation	- Native / local wildlife species - Protected / endangered species (*Flora and Fauna*)	- Damage and / or destruction of local flora and fauna - Damage or destruction of wildlife habitat	**MED HIGH (11)**	Vegetation restored in accordance with the Environmental Management Plan (EMP), including client and/or Local Authority requirements.	**LOW (3)**	AT/ AB
Requirements	Flora & fauna					
Remove equipment, fencing, gates & other facilities	- Native / local wildlife species - Protected / endangered species (*Flora and Fauna*) - Local Communities	- Damage and / or destruction of local flora and fauna - Damage or destruction of wildlife habitat - Disturbance to local community	**MED HIGH (11)**	All materials that can be reused returned to supplier for refund or transported to another site for reuse.	**LOW (3)**	MB
				All waste disposed of and removed from site. Recycled wherever possible.		MB
Requirements	Flora & fauna			Fencing and other hire materials returned to supplier as required.		MB

Activity / Task	Environmental Aspects	Environmental Impacts	Risk Score	Strategies / Controls	Residual Risk score	Responsibility
Clean up the site	- Native / local wildlife species - Protected / endangered species (*Flora and Fauna*) - Local Communities	- Damage and / or destruction of local flora and fauna - Damage or destruction of wildlife habitat - Disturbance to local community	**MED HIGH (11)**	Remove all waste and/or unnecessary equipment and facilities.	**LOW (3)**	MB
				Restore any protected areas to original state, removed protections and signage as required.		MB
Requirements	Flora & fauna			Verify with client and/or Local Authority that the site is restored to an acceptable condition.		AT/ AB

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-100

NOTES:
1. Refer to drawing RCT-0004-AL-DI-101 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-102 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-001 for further notes and details.



A	Issued For Construction		
	Revisions/Descriptions	Certification	Date	Microfiled

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Associated Job Nos
Auxiliary Drg Nos

Survey Data
Datum: BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
A1 / A3 1:250 / 1:500 0 2 4 6 8 10m
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL EROSION AND SEDIMENT SHEET 1 – LOWER LEVEL

Drawn: KC
Designed: NR

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

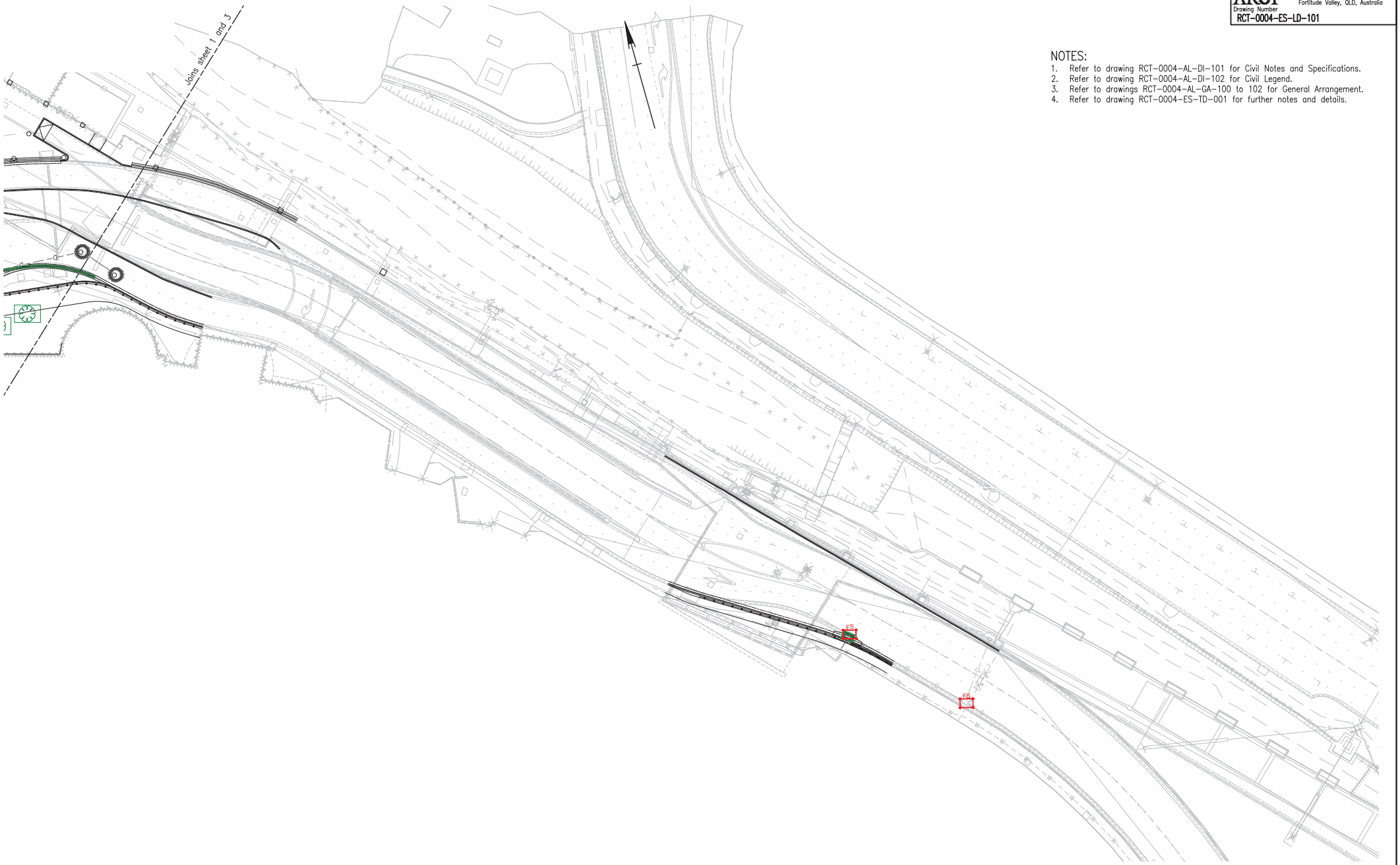
Job No.
Contract. No.
Drawing No. A
Series Number
of
MRR_Detail (02/14)

Last Modified :- Oct 08, 2018 - 2:55pm XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RWA-SHT.dwg ; X-CRR-RWA-DESC.dwg ; X-CRR-C-RWA-DDRA-LOWER.dwg ; X-CRR-C-RWA-DRDA-LOWER.dwg ; X-CRR-C-RWA-SSUR-CAD.dwg

Department of Transport and Main Roads

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-101



NOTES:
1. Refer to drawing RCT-0004-AL-DI-101 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-102 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-001 for further notes and details.

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	Revisions/Descriptions	Certification	Date	Microfiled

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Associated Job Nos

Auxiliary Drg Nos

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Height Origin:
Survey Books:

Scales
A1 / A3 1:250 / 1:500 0 2 4 6 8 10m
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT
SHEET 2 – LOWER LEVEL

Drawn: KC
Designed: NR

ENGINEERING CERTIFICATION (RPEQ)				
ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

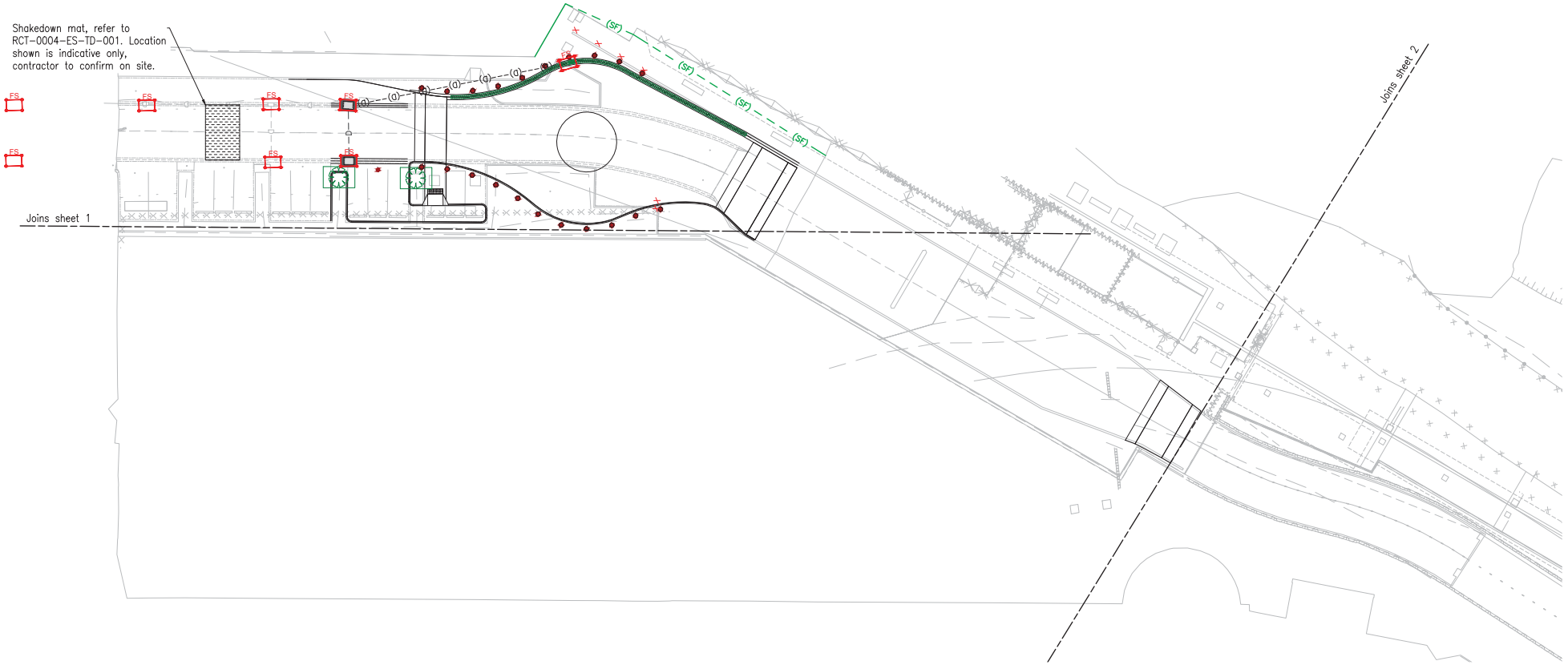
Job No.
Contract. No.
Drawing No. A
Series Number
of
MRR_Detail (02/14)

Last Modified :- Oct 08, 2018 - 2:56pm
XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RWA-SHT.dwg ; X-CRR-C-RWA-DDRA-LOWER.dwg ; X-CRR-C-RWA-DRDA-LOWER.dwg ; X-CRR-RWA-DESC.dwg ; X-CRR-C-RWA-SSUR-CAD.dwg

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-LD-102

NOTES:
1. Refer to drawing RCT-0004-AL-DI-101 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-102 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Refer to drawing RCT-0004-ES-TD-001 for further notes and details.



A	Issued For Construction		
	Revisions/Descriptions	Certification	Date	Microfiled

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Associated Job Nos
Auxiliary Drg Nos

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Horiz. Grid
Height Origin
Survey Books

Scales
A1 / A3 1:250 / 1:500
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Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT
SHEET 3 – UPPER LEVEL

Drawn: KC
Designed: NR

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

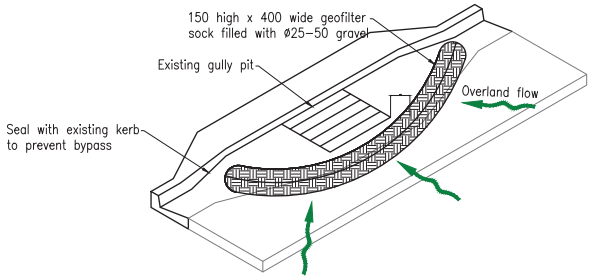
Queensland Government

Job No.
Contract. No.
Drawing No. A
Series Number of
MRR_Detail (02/14)

Last Modified :- Oct 08, 2018 - 2:56pm XREFS :- MRR_DETAIL_A1_Ref.dwg ; X-CRR-RWA-SHT.dwg ; X-CRR-C-RWA-DGRA-UPPER.dwg ; X-CRR-C-RWA-DGTA-UPPER.dwg ; X-CRR-RWA-DESC.dwg ; X-CRR-C-RWA-SSUR-CAD.dwg

ARUP
Level 4, 108 Wickham Street
Fortitude Valley, QLD, Australia

Drawing Number
RCT-0004-ES-TD-001



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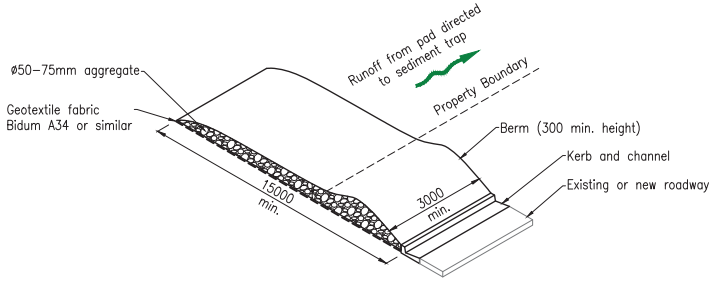

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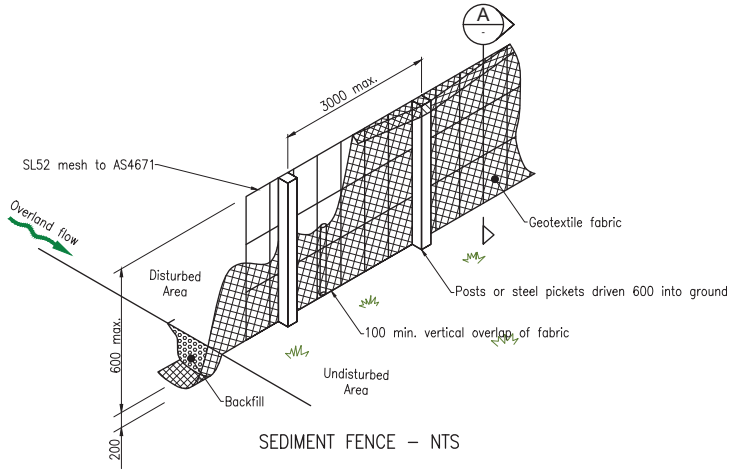

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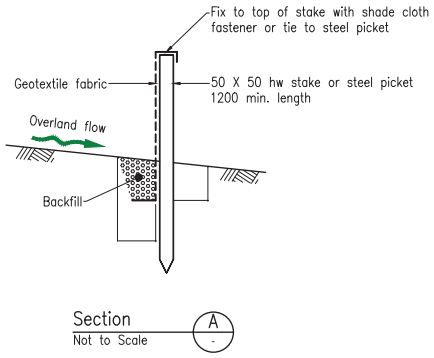

Section A
Not to Scale

NOTES:

1. Refer to drawing RCT-0004-AL-DI-101 for Civil Notes and Specifications.
2. Refer to drawing RCT-0004-AL-DI-102 for Civil Legend.
3. Refer to drawings RCT-0004-AL-GA-100 to 102 for General Arrangement.
4. Dewatering and ASS management to be conducted by others.
5. A conceptual erosion and sediment control plan (ESCP) is shown on the drawings. The contractor shall develop this into a detailed ESCP for construction. The detailed ESCP shall be in accordance with the requirements below (based on the Queensland State Planning Policy, 2017), and all local planning requirements.
6. The contractor shall determine and apply as appropriate temporary drainage works for the following design storms:
   - Disturbed area open for <12 months – 1 in 2-year ARI event.
3. The ESCP shall meet the following erosion control objectives:
   - Minimise exposure of disturbed soils at any time e.g. Soil stockpiles and unfinished earthworks to be suitably stabilised if disturbance is expected to be suspended for a period exceeding 5 days.
   - Divert water run-off from undisturbed areas around disturbed areas;
   - Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods;
   - Implement erosion control methods corresponding to identified erosion risk rating .
4. The ESCP shall meet the following sediment control objectives:
   - Determine appropriate sediment control measures using either the potential soil loss rate, monthly erosivity, or average monthly rainfall;
   - Collect and drain stormwater from disturbed soils to sediment basin for design storm event: The design storm for sediment basin sizing is 80th% five-day event or similar;
   - Site discharge during sediment basin dewatering shall have TSS < 50 mg/L TSS, Turbidity not >10% receiving waters turbidity, and pH 6.5-8.5.
5. The ESCP shall meet the following additional water quality objectives:
   - Avoid wind-blown litter; remove gross pollutants;
   - Ensure there is no visible oil or grease sheen on released waters;
   - Dispose of waste containing contaminants at authorised facilities.
6. The ESCP shall meet the following discharge rates into the receiving stormwater network or waterway:
   - For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.
7. Sediment basin is not shown on drawings, contractor to determine location for construction.
8. The contractor shall ensure that erosion and sediment controls are maintained and in good working order at all times. The contractor shall visually inspect ESC controls on a daily basis, and maintain records of these checks.
9. All surfaces of excavations and filling shall be formed to provide adequate drainage falls at all times.

A	Issued For Construction		
	Revisions/Descriptions	Certification	Date	Microfiled

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Associated Job Nos
Auxiliary Drg Nos

Survey Data
Datum: BCSG02
Horiz. Grid
Height Origin
Survey Books

Scales
NOT TO SCALE
Dimensions shown in except where shown otherwise

CROSS RIVER RAIL PROJECT
TEMPORARY COACH TERMINAL
CTL CHGE

Reference Points

Preceding RP	Dist. to start of job (km)	From start to end of job	From end to Following RP	Following RP

Through Chainage from

TEMPORARY COACH TERMINAL
EROSION AND SEDIMENT
TYPICAL DETAILS

Drawn: KM
Designed: KM

ENGINEERING CERTIFICATION (RPEQ)

ENG. AREA	NAME	SIGNATURE	NO.	DATE
CIVIL	M.Moore-Gordon		21125	08/10/18

Queensland Government

Job No.
Contract. No.
Drawing No. A
Series Number
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