CBGU D&C JV

Construction Environmental Management Plan

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

REV	DATE	PREPARED BY NAME & SIGNATURE	REVIEWED BY NAME & SIGNATURE	APPROVED BY NAME & SIGNATURE	REMARKS
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Document number: CRRTSD-EN-MPL-CBGU-000019

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Revision: 7

Details of Revision Amendments

Document Control

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

Amendments

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

Table 1 Document schedule

Time for Submission	Period during which Project Co must provide updates	Update Interval
Prior to Relevant Project Works	From initial submission until the commencement of Relevant Project Works	6-monthly

Revision Details

Table 2 Revision details

Revision	Details
A	Internal Review
0	Updated Revision - Endorsed by IEM (23/08/2019) & Submitted to CG (23/08/2019)
1	For Review
2	For Review
3	Updated Revision - Endorsed by IEM (10/01/2020) & Submitted to CG (13/01/2020)
4	For Review
5	VRS Comments Addressed
6	VRS Comments Addressed – Endorsed by IEM (05/06/2020) & Submitted to CG (05/06/2020)
7	Update to align with CG Imposed Conditions RfPC #7 – Endorsed by IEM (18/09/2020)

Distribution and Authorisation

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

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

Table 3 Distribution List

Recipient	Distribution Method
Cross River Rail Delivery Authority (Delivery Authority)	TeamBinder
Project Independent Certifier (PIC)	TeamBinder
CBGU Project Personnel (including SA and FM)	As per TeamBinder Distribution List
Proof Engineer/Verification Engineer	As per TeamBinder Distribution List

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Referenced Documents

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

Table 4 Referenced Documents

Document Number	Document Name	Location of Controlled Version
Referenced Project Plans include:		
CRRTSD-CS-MPL-CBGU-000010	Construction Management Plan	TeamBinder
CRRTSD-TM-MPL-CBGU-000012	Construction Traffic Management Plan	TeamBinder
CRRTSD-TM-MPL-CBGU-000013	Construction Vehicle Management Plan	TeamBinder
CRRTSD-SH-MPL-CBGU-000003	Occupational Health and Safety Plan	TeamBinder
	Outline Environment Management Plan	TeamBinder
CRRTSD-CP-MPL-CBGU-000008	Training Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000001	Air Quality Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000002	Waste Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000003	Visual Amenity & Lighting Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000004	Social Amenity Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000005	Climate Change & Sustainability Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000006	Spoil Placement Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000007	Hazard & Risk Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000008	Indigenous Cultural Heritage Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000009	Non-Indigenous Heritage Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000010	Contaminated Land Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000011	Acid Sulphate Soils Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000012	Nature Conservation Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000013	Noise & Vibration Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000014	Land Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000015	Asbestos Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000016	Erosion and Sediment Control Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000017	Water Quality Management Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000020	Water Quality Monitoring Plan	TeamBinder
CRRTSD-EN-ENMP-CBGU-000023	Weed and Pest Management Plan	TeamBinder

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

Glossary of Terms

Term	Meaning
µg/m^3	Micrograms per Cubic Meter of Air
2012 CGER	Coordinator-General's evaluation report
AASS	Actual Acid Sulfate Soils
ACH Act	Aboriginal Cultural Heritage Act 2003
ARI	Average Recurrence Interval
ASS	Acid Sulfate Soils
BCC	Brisbane City Council
BTC	Brisbane Transit Centre
CaCO3	Calcium carbonate (Aglime)
CBD	Central Business District
CBGU	Design & Construct Contractor comprising a joint venture with CPB Contractors Pty Ltd, BAM International Australia Pty Ltd, Ghella Pty Ltd and UGL Engineering Pty Ltd
CEMP	Construction Environmental Management Plan
CG	Coordinator-General
CGCR	Coordinator-General change reports
CHMP	Cultural Heritage Management Plans
CLR	Contaminated Land Register
COEMP	Commissioning Environmental Management Plan
CPB CMS	CPB Contractors Management System
CRR	Cross River Rail
CSEP	Communications and Stakeholder Engagement Plan
DATSIP	Department of Aboriginal and Torres Strait Islander Partnerships
dBA	means decibels measured on the 'A' frequency weighting network
DEHP	Department of Environment and Heritage Protection (now DES)
Delivery Authority	Cross River Rail Delivery Authority
DES	Department of Environment and Science
Directly Affected Persons	means 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
DTMR	Department of Transport and Main Roads
ECM	Environmental Constraints Map
EIS	Environmental Impacts Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register

Term	Meaning
EMS	Environmental Management System
EP Act	Environmental Protection Act 1994 (Qld)
EPP (Water)	Environmental Protection (Water) Policy 2009 (Qld)
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Sub-Plan
EWMS	Environmental Work Method Statements
GHG	Greenhouse Gas
INB	Inner Northern Busway
IECA	International Erosion Control Association
LA10 adj	means the A-weighted sound pressure level, adjusted for tonal character or impulsiveness, that is exceeded for 10% of a 1 hour period when measured using time-weighting 'F'
LAeq adj	means an A-weighted sound pressure level of a continuous steady sound, adjusted for tonal character, that within a 1 hour period has the same mean square sound pressure of a sound that varies with time
LCA	Licenced Construction Area
$mg/m^2/day$	Milligrams per Square Meter per Day
mm/s PPV	Millimetres per Second Peak Particle Velocity
NATA	National Association of Testing Authorities
NEPM	National Environmental Protection Measure
PA	Princess Alexandra
PAH	polycyclic aromatic hydrocarbons
PASS	Potential Acid Sulfate Soils
PFAS	per- and poly-fluoroalkyl substances
PM_{10}	Particulate Matter of 10 Microns in diameter or smaller
Project	Cross River Rail Project
PSI	Preliminary Site Investigations
PSTR	Project Scope and Technical Requirements
QLD	Queensland
QR	Queensland Rail
RfPC	EIS Request for Project Change
RNA	Royal National Agriculture and Industrial Association
SDS	Safety Data Sheets
SPL	Sound Pressure Levels
SQP	Suitably Qualified Person
TMR	Transport and Main Roads

Term	Meaning
TRH	Total Recoverable Hydrocarbons
TSP	Total Suspended Particulates

1 Introduction

1.1 Background

The Cross River Rail (CRR) Project is a 10.2 km north-south rail line connecting Dutton Park to Bowen Hills, including a 5.9km tunnel under the Brisbane River and Central Business District (CBD).

The D&C Subcontractor for the CRR Tunnel, Stations and Development (TSD) Package (the Project) is the joint venture comprising of CPB Contractors, BAM International Australia Pty Ltd, Ghella Pty Ltd and UGL Engineering Pty Ltd (CBGU D&C JV).

CBGU JV (CBGU) is responsible for delivering the D&C Activities and Final Acceptance Services for the T&S Works during the D&C Phase and through to the Date of Final Acceptance.

The project includes (see Figure 1);

- A new north–south passenger rail line, extending from Bowen Hills in the north over 10.2 kilometres (km) to Salisbury in the south
- Two 5.9-kilometre-long parallel tunnels, extending from Victoria Park at Spring Hill to Dutton Park via the Brisbane Central Business District (CBD), Woolloongabba and Dutton Park
- New underground railway stations at Roma Street, Albert Street, Woolloongabba, and Boggo Road
- New surface stations at the Royal National Agriculture and Industrial Association (RNA) Exhibition Showgrounds, Dutton Park.

The project also includes construction of four new high-capacity underground stations at Boggo Road, Woolloongabba, Albert Street, Roma Street and redevelopment of the existing over Dutton Park Station. Cross River Rail will integrate with proposed Brisbane Metro services.

The Project is proposed to be delivered under two packages:

- Tunnels, Station & Development (TSD) to be delivered by a Public Private Partnership (PPP)
- Rail Integration Systems (RIS) to be delivered by an Alliance.

The TSD Package will primarily deliver the underground section of the project. The scope of work will include:

- The tunnel from a southern portal near Dutton Park station, under the Brisbane River and the CBD, to a northern portal beyond Normanby
- Four new underground stations at Boggo Road, Woolloongabba, Albert Street and Roma Street
- The tunnel portals and dive structures
- All associated mechanical, electrical and safety systems, including vertical transportation for passengers at underground stations
- Tunnel track work, traction power systems and selection rail operation and control infrastructure.

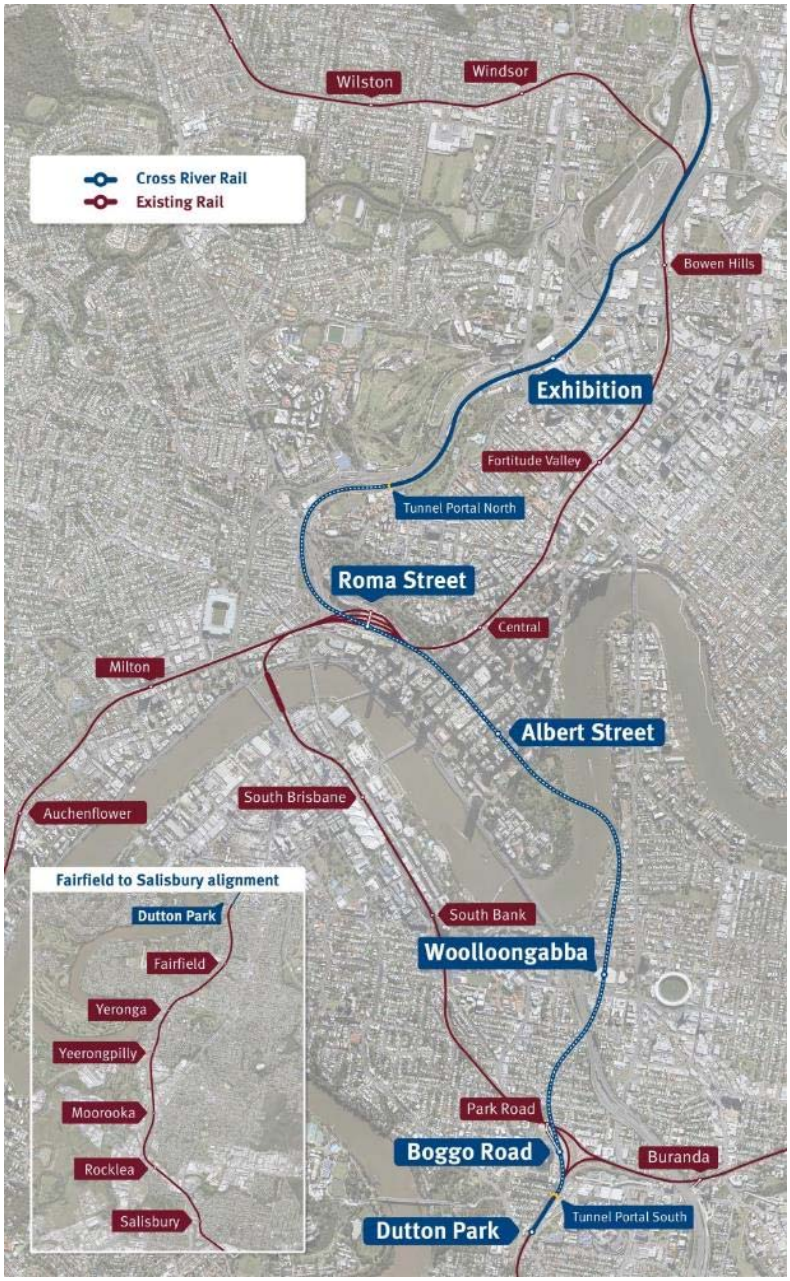


Figure 1 *Cross River Rail Alignment* (https://crossriverrail.qld.gov.au/rail-route/)

1.2 Purpose of the CEMP

The Construction Environmental Management Plan (CEMP) has been developed to:

- Provide a structured high-level approach to the management of environmental issues during the delivery of the Project
- Ensure appropriate environmental management measures and controls are implemented during the construction phase to ensure environmental impacts are minimised or avoided
- Document the environmental outcomes for the construction phase of the Project.

Implementing this CEMP and associated sub-plans effectively will ensure that the project meets regulatory and policy requirements in a systematic manner and continually improves its performance.

2 Project Summary

2.1 Site Investigation Works

The site investigation works may include:

- Geotechnical drilling and excavation
- Utilities (Excavations) investigations across the TSD Licenced Construction Area (LCA) and surrounds.
- Contamination investigations
- Establishment of Monitoring Equipment
- Hazmat Surveys

2.2 Site Establishment Works

The site establishment works (as defined by this section) may include the following activities. Noting that site establishment works may be ongoing throughout the construction period and the list below is not intended to be a definitive list of each specific and discrete activity.

2.2.1 Roma Street

- Utility relocations including but not limited to stormwater, sewage, telecommunications across the TSD Licenced Construction Area (LCA)
- Protection of utilities within site area and access/egress points
- Provision of construction and site services
- Disconnection of services
- Demolition of:
  - BTC East Tower
  - Hotel Jen
  - Pedestrian overpass
- Relocation of pedestrian walkways
- Temporary Platform to be constructed
- Construction of temporary water treatment plant and installation of electrical substation/ generators
- Removal of kerb side assets
- Clearing and pruning of street trees and vegetation
- Installation of Gantries, Hoarding, Fences, Scaffolding
- Minor adjustments to intersections to facilitate truck movements
- Establishment of Site Access/Egress
- Excavation of shaft and adit (Gallipoli Park)

- Ground support via rock bolting and concrete
- Site Access
- Establishment of Site Buildings, Fences, Sheds & Amenities.

2.2.2 Albert Street

- Utility Relocations including but not limited to stormwater, sewage, and telecommunications.
- Protection of utilities within site area and access/egress points
- Provision of construction and site services
- Disconnection of services to Lot 1 and Lot 2 (Lot 1 is East of Albert Street, south of Mary Street, Lot 2 is West of Albert Street, south of Mary Street)
- Demolition Lot 1 and Lot 2
- Relocation of pedestrian access
- Construction of temporary water treatment plant and installation of electrical substation/ generators
- Removal of kerb side assets
- Clearing and pruning of trees
- Installation of Gantries, Hoarding, Fences, Scaffolding
- Adjustments to intersections to facilitate truck movements
- Establishment of Site Access/Egress
- Closure of Albert Street Mary to Charlotte Streets
- Piling
- Site Access
- Establishment of Site Buildings, Sheds & Amenities.

2.2.3 Woolloongabba

- Utility Relocations including but not limited to stormwater, sewage, and telecommunications.
- Provision of construction and site services
- Protection of utilities
- Installation of Hoarding and Fences
- Earthworks
- Establishment of Site Access/Egress
- Site Access
- Establishment of Site Buildings, Sheds & Amenities
- Piling
- Signage

2.2.4 Boggo Road

- Utility Relocations including but not limited to stormwater, sewage, and telecommunications.
- Provision of construction and site services
- Demolition – Southern Portal and Boggo Roundabout
- Relocation of pedestrians, cycle paths & property access
- Clearing and pruning of trees
- Installation of Hoarding, Noise walls, Fences
- Earthworks for access roads, laydown areas, site levelling
- Establishment of Site Access/Egress
- For pilling works, piling pads.
- Piling
- Site Access
- Establishment of Site Buildings, Sheds & Amenities.

2.3 Construction Activities

The CEMP has been prepared to manage all construction activities for the duration of the project. Activities may include but are not limited to those in listed sections 2.1 & 2.2 and below:

- Mechanical & Electrical works;
- Railway works;
- Road and busway works;
- Civil works;
- Piling;
- Demolition;
- Tunnel works, including but not limited to: TBM assembly; all related tunnel, shaft and station box excavation and ancillary activities; operation & demobilisation; mined tunnelling; drill and blast; fit-out; and finishings;
- Installation of permanent tunnel and cavern lining including all associated works;
- Permanent structures within stations, cross passages and tunnels;
- Stations and insitu structures;
- Utility relocation and installations;
- Structural works;
- Building works;
- Water treatment and management;

- Spoil removal and cartage;
- Contaminated spoil removal and cartage;
- Temporary works;
- Vegetation management and landscaping;
- Demobilisation and site rehabilitation; and
- Finishing works.

A summarised list of activities for each precinct is provided below. Each list is indicative of the nature of the remaining works on the Project, noting the purpose of the CEMP is to cover all remaining construction activities through to project completion, as per the construction program detailed in Figure 2. Additional information is also provided in Appendix F which should be read in conjunction with sections 21, 2.2 and 2.3 and are also intended to outline the work activities covered by this CEMP. Also note that the site layout drawings are indicative only and may not be the most current version. Please Refer to the 'controlled versions' for the most current version.

2.3.1 Northern Portal

- Site investigation
- Site establishment and access (establishment of Site Buildings, Sheds & Amenities)
- Installation of Hoarding and Fences
- Earthworks
- Utility Relocations
- Piling
- Excavation
- Construction;
    - Structures and building works
    - Traffic diversions
    - Drill and blast
    - Tunnel Excavation
    - Spoil management
    - Earthworks
    - Noise Treatments
    - Construction of new track alignment
    - TBM extraction and demobilisation
    - Concrete works
    - Excavation
    - Tunnelling Infrastructure Assembly
    - Utilities
    - Water treatment/management
    - Drainage
    - Street works
    - Construction of CRR Dive structures
    - Landscaping and hardscaping

2.3.2 Roma Street

- Demolition

- Construction;
  - Structures and building works
  - Excavation of shaft/s, cavern, tunnels
  - Closure of railway platforms
  - Mined Tunnel Excavation
  - Spoil management
  - Earthworks
  - Noise Treatments
  - Busway works
  - Construct temporary platforms
  - Concrete works
  - Drill and blast
  - Tunnelling Infrastructure Assembly within Shaft
  - Utilities
  - Water treatment/management
  - Drainage
  - Street works
  - Piling
  - General surface support operations

2.3.3 Albert Street

- Demolition
- Construction;
  - Structures and building works
  - Excavation of shaft/s, cavern, tunnels
  - Tunnelling Infrastructure Assembly within Shaft
  - Utilities
  - Water treatment/management
  - Drainage
  - Street works
  - Concrete works
  - Drill and blast
  - Mined Tunnel Excavation
  - Spoil management
  - Earthworks
  - Noise Treatments

2.3.4 Woolloongabba

- Construction;
  - Structures and building works
  - Excavation of shaft/s, box, decline & cavern
  - Tunnelling Infrastructure Assembly within Shaft
  - Utilities
  - Water treatment/management
  - Drainage
  - Street works
  - Concrete works
  - Drill and blast
  - Mined Tunnel Excavation
  - Spoil management
  - Earthworks
  - Noise Treatments

2.3.5 Boggo Road / Dutton Park / Southern Portal

- Demolition

- Construction;
  - Structures and building works
  - Traffic diversion
  - Drill and blast
  - Mined Tunnel Excavation
  - Spoil management
  - Earthworks
  - Noise Treatments
  - Construction of CRR Dive structures
  - Install new and upgrade existing rail infrastructure
  - Concrete works
  - Excavation of piles, shaft/s, cavern and box
  - Tunnelling Infrastructure Assembly within Shaft
  - Utilities
  - Water treatment/management
  - Drainage
  - Street works
  - Construction of new track alignments
  - Construction of new pedestrian bridge/s

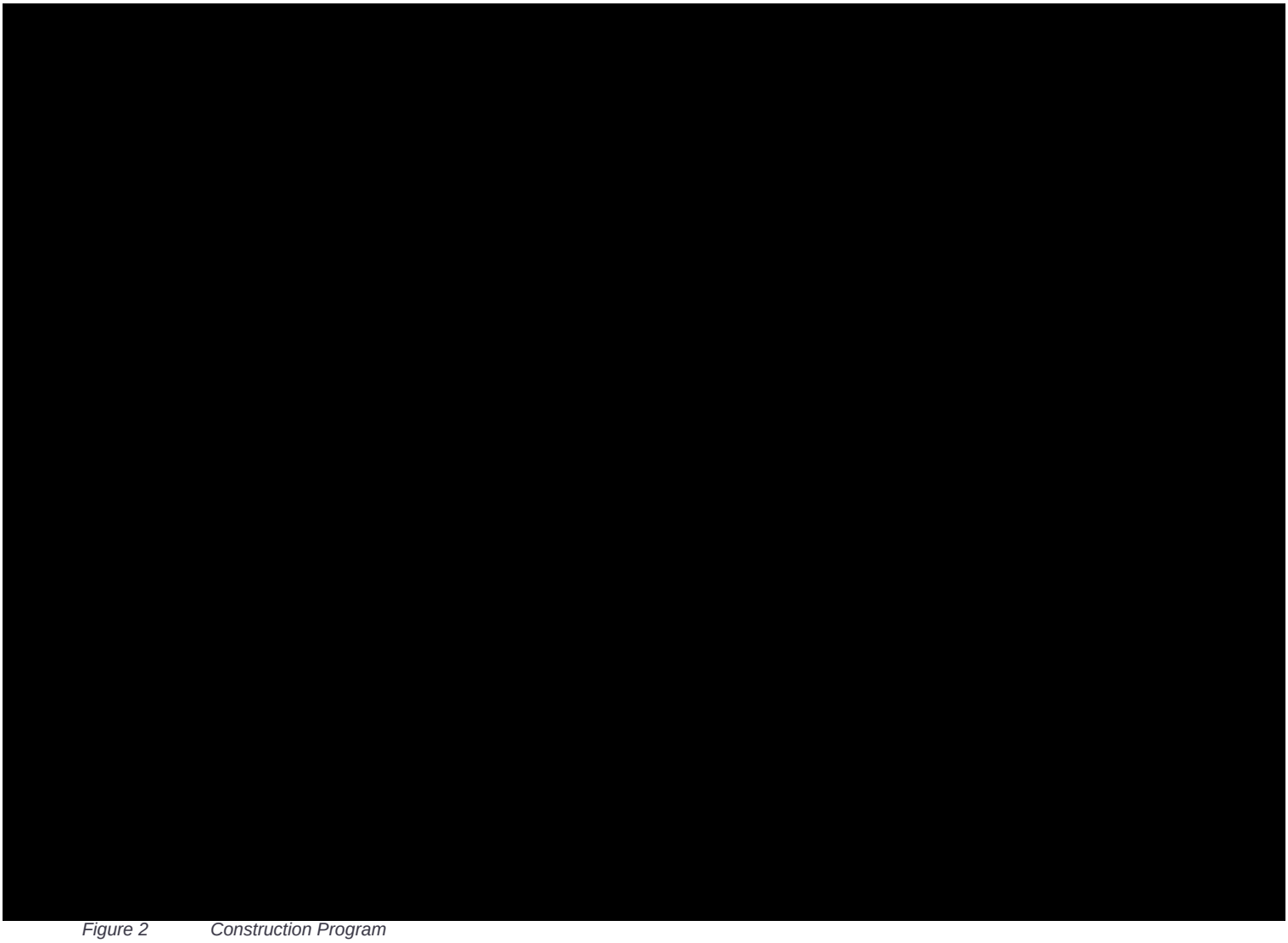


Figure 2 Construction Program

See Appendix H for larger version of this figure.

3 Legislative Requirements

3.1 Coordinator-General Conditions

This CEMP, the associated sub-plans and the construction works will be managed in accordance with the Coordinator Generals conditions.

The most up-to-date version of the Coordinator-General's Change Report and the Imposed Conditions can be found on the Coordinator-General's website (http://www.dsdmip.qld.gov.au/coordinator-general/assessments-and-approvals/coordinated-projects/completed-projects/cross-river-rail-project.html). Table 5 below identifies where each relevant condition has been addressed by the project's documentation.

Table 5 Coordinator-General Imposed Conditions

Condition Number	Entity with Jurisdiction	Addressed
Condition 1: General Conditions	Coordinator-General	Section 3.1
Condition 2: Outline Environmental Management Plan	Coordinator-General	Has been developed and will be complied with through this plan.
Condition 3. Design	Chief Executive, TMR	Not relevant to construction phase
Condition 4: Construction Environmental Management Plan	Chief Executive, TMR	This Plan
Condition 5: Compliance	Chief Executive, TMR	Section 6
Condition 6: Reporting	Chief Executive, TMR	Section 7.5
Condition 7: Environmental Monitor	Chief Executive, TMR	Section 4.4
Condition 8: Community Relations Monitor	Chief Executive, TMR	Section 4.4
Condition 9: Community Engagement Plan	Chief Executive, TMR	Sections 4.4 and 6.6
Condition 10: Hours of Work	Chief Executive, TMR	Section 4.5
Condition 11: Noise and Vibration	Chief Executive, TMR	Noise and Vibration Management Plan
Condition 12: Property Damage	Chief Executive, TMR	Noise and Vibration Management Plan Land Management Plan
Condition 13: Air Quality	Chief Executive, TMR	Air Quality Management Plan
Condition 14: Traffic and Transport	Chief Executive, TMR	Construction Area Plans Construction Traffic Management Plan Construction Vehicle Management Plan
Condition 15: Water Quality	Chief Executive, TMR	Water Quality Management Plan
Condition 16: Water Resources	Chief Executive, TMR	Water Quality Management Plan
Condition 17: Surface Water	Chief Executive, TMR	Water Quality Management Plan
Condition 18: Erosion and Sediment Control	Chief Executive, TMR	Erosion and Sediment Control Plan
Condition 19: Acid Sulfate Soils	Chief Executive, TMR	Acid Sulfate Soils Management Plan
Condition 20: Landscape and Open Space	Chief Executive, TMR	Visual Amenity and Lighting Management Plan
Condition 21: Worksite Rehabilitation	Chief Executive, TMR	Nature Conservation Management Plan Weed and Pest Management Plan
Condition 22: Environmental Design Requirements	Chief Executive, TMR	Not applicable to construction works
Condition 23: Commissioning	Chief Executive, TMR	Not applicable to construction works

3.2 Commonwealth Legislation

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Disability Discrimination Act 1992*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Greenhouse and Energy Reporting Act 2007.*

3.3 State Legislation

- *Biosecurity Act 2014*
- *Cross River Rail Delivery Authority Act 2016*
- *Environmental Protection Act 1994*
- *Environmental Protection (Water and Biodiversity) Policy 2019*
- *Environmental Protection (Noise) Policy 2019*
- *Environmental Protection (Air) Policy 2019*
- *Aboriginal Cultural Heritage Act 2003*
- *Acquisition of Land Act 1967*
- *Building Act 1975*
- *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*
- *Fisheries Act 1994*
- *Forestry Act 1959*
- *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*
- *State Development and Public Works Organisation Act 1971*
- *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*
- *Vegetation Management Act 1999*
- *Waste Reduction and Recycling Act 2011*
- *Water Act 2000*
- *Work Health and Safety Act 2011*
- *Nature Conservation Act 1992*

3.4 Approvals, Permits and Licences

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

A range of approvals, permits and licences apply to all stages of the project. The Approvals Register has been provided here as Appendix B.

3.5 Guidelines and Standards

The various sub-plans associated with this CEMP specify relevant guidelines and standards that must be adhered to during construction of the project. Overarching guidelines and standards that are of relevance to environmental management during construction of the project may include:

TMR standards, including:

- Technical Manual – Environmental Processes Manual (August 2013)
- Technical specifications and standards
- MRTS51 Environmental Management – TMR Specifications

Queensland Rail standards, including:

- Safety and Environment Management System

TMR (TransLink) standards, including:

- TransLink Station Signage Manual
- TransLink Public Transport Infrastructure Manual (2015)

BCC environmental policies and guidelines, including:

- Urban Stormwater Management Strategy
- Erosion Treatments for Urban Creeks
- Stormwater Outlets in Parks and Waterways
- Landscape Design for Water Conservation
- Guidelines on Identifying and Applying Water Quality Objectives in Brisbane CityS190 Landscaping Standard
- International Erosion Control Association Best Practice Erosion and Sediment Control Guidelines 2008 (IECA Guidelines)

4 Implementation

4.1 Environmental Management System Overview

CBGU will use an Environmental Management System (EMS) that is based on the CPB EMS, which has been adapted to address project and joint venture requirements. This CEMP provides the system to manage and control the environmental aspects of the Project during construction. It also provides the overall framework for the system and procedures to ensure environmental impacts are minimised, and legislative and other requirements are fulfilled. The CEMP establishes the system for implementation, monitoring and continuous improvement to minimise impacts from the Project on the environment. The CBGU EMS:

- Is generally in accordance with the principles of AS/NZS ISO 14000 Environmental Management Standards Set
- Complies with the Environmental Documents.

The EMS consists of the following key components:

- Governance documentation: The Coordinator General Conditions and Legislative requirements
- CEMP and sub-plans: This CEMP describes how CBGU will achieve the environmental outcomes on the project. Sub-plans identify requirements and processes applicable to specific impacts of the project's activities
- Procedures and tools: Procedures and tools provide additional detail to support the CEMP and sub-plans or are used in the implementation of the CEMP
- Continuous improvement: Continual improvement is achieved through constant measures and evaluation (including monitoring, inspections), audit and review of the effectiveness of the CEMP and adjustment and improvement of the CEMP, project environmental outcomes and the EMS
- Performance targets: Objectives and targets have been developed as a means of assessing environmental performance during construction of the project
- Integration with other management plans: The CEMP is a functional plan in the integrated set of project management plans.

4.1.1 Environmental Aspects and Impacts

CBGU will use a risk management approach during all stages of the project to identify, assess, control and review environmental risks and harness opportunities. The environmental risk assessment undertaken during the development of the EIS has been used as a basis to further develop the project's environmental risks and opportunities. Environmental risks and opportunities are considered through:

- The risk assessment undertaken during the development of the environmental impact statement
- The Principal Risk Assessment conducted at bid stage for major tangible risks

- Safety -in-design workshops conducted throughout the project, which will include environmental considerations, where appropriate
- Construction Area Plan (CAP) risk assessment
- Work Pack risk assessments
- Project pre-start meetings.

The objectives of risk assessment are to:

- Identify activities/aspects, events or outcomes that have the potential to adversely affect the local environment and/or human health/property
- Qualitatively evaluate and categorise each risk item
- Assess whether risk issues can be managed by environmental protection measures
- Qualitatively evaluate residual risk with implementation of measures.

Risk assessments for the project consider *AS/NZS ISO 31000:2009: Risk management – Principles and guidelines*.

The Environment and Sustainability Manager (or delegate) is generally involved in, or has approval authorities, for most risk assessment types listed above to ensure environmental risks and opportunities are adequately raised and addressed. Issue-specific management plans also include a section that identifies key aspects and potential impacts relevant to that issue. Mitigation and management measures are then identified to minimise the risk associated with those aspects and potential impacts.

The current environmental risk assessment for the Project has been provided as Appendix C. The risk assessment is subject to period review and update via risk assessment workshops, convened by the Environment and Sustainability Manager and incorporating relevant stakeholders.

4.2 Environmental Management Documentation

The overall structure of the Environmental Management Documentation for the project, and the relationship between the documents has been presented in Figure 3.

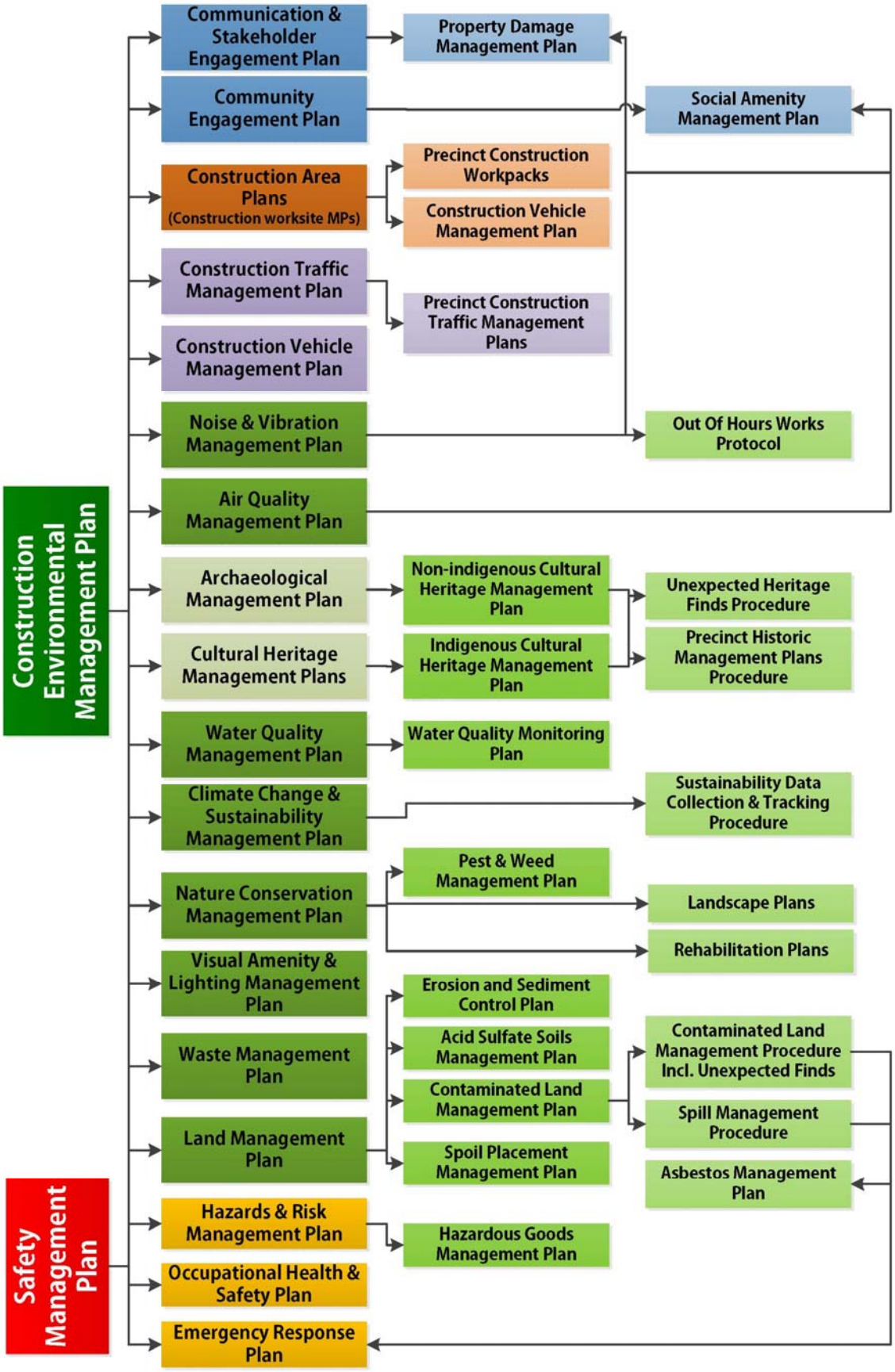


Figure 3 *Environmental Management Document Hierarchy*

4.2.1 Construction Environmental Management Plan

This CEMP outlines the environmental management practices and procedures that are to be followed during the construction of this project. It provides the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative and other requirements are fulfilled. The implementation of this CEMP is supported by the remainder of the environmental management system.

The environmental management measures defined in this CEMP have been developed with consideration of the Coordinator General's Conditions. This CEMP is consistent with AS/NZS ISO 14001:2015 requirements.

4.2.2 Construction Environmental Management Subplans

A number of construction environmental management sub plans support the CEMP, as per Figure 3. This information has been prepared to identify requirements and processes applicable to specific impacts or aspects of the project's activities. The sub plans address the OEMP and Coordinator General Conditions.

4.2.3 Sub-plan structure

Each relevant sub-plan will follow the basic structure outlined below, to ensure that the Imposed Conditions, environmental outcomes and performance criteria are achieved.

Table 6 Sub-plan Structure

EMP component	Description	Effect
Environmental element	Aspect of project implementation to be managed as it affects environmental values.	Must be addressed.
Environmental outcome(s)	Required outcomes of the project for an environmental element.	Must be achieved.
Performance criteria	Measurable goals or indicators of the environmental outcome for an environmental element.	Must be achieved. If performance criteria cannot be achieved, this serves as a trigger for mitigation measures to be implemented.
Mitigation measures	Mitigation measures are either: – measures to satisfy the performance criteria (and in turn achieve the environmental outcomes) – actions developed in consultation with Directly Affected Persons in accordance with the *Community Engagement Plan* (CEP) and/or *Communications and Stakeholder Engagement Management Plan* to achieve the environmental outcome for the element. The mitigation measures provided in the OEMP, Outline CEMP, Outline COEMP and any of its sub-plans are advisory only and may be revised through detailed design and construction planning. Additional or different mitigation measures may be applied to achieve the environmental outcome.	The mitigation measures to achieve the environmental outcomes must be developed in response to: – the predicted scale, intensity and duration of Project impacts – in consultation with Directly Affected Persons in accordance with the *Community Engagement Plan* (CEP) and/or *Communications and Stakeholder Engagement Management Plan*. The mitigation measures developed in consultation with Directly Affected Persons (in accordance with the *Community Engagement Plan* (CEP) and/or *Communications and Stakeholder Engagement Management Plan*) must be entered into the register

EMP component	Description	Effect
		of mitigation measures to be maintained by the Environmental Monitor before relevant Project Works can commence. Once registered, the mitigation measures become the measure for future monitoring and compliance
Monitoring	Monitoring is to be undertaken to determine: – satisfaction of the performance criteria – implementation and effectiveness of mitigation measures. A monitoring programme for a particular environmental element must be designed and included in each individual sub-plan prior to the commencement of construction.	Mandatory Monitoring must be conducted by suitably accredited and qualified personnel. Monitoring results will be reviewed by the Environmental Monitor.
Reporting	Purpose and frequency of reporting to demonstrate achievement of the environmental outcomes and satisfaction of the performance criteria or mitigation measures. Reporting must be in accordance with Conditions 5 and 6 of the Imposed Conditions.	Mandatory
Corrective actions	Actions to be developed and implemented in response to an exceedance of the relevant performance criteria, or failure to implement a mitigation measure.	Mandatory

4.2.4 Construction Area Plan

Construction Area Plans (CAP) outline the planning process and construction methodology for the project areas to ensure effective and efficient execution of work, this is part of the overall Construction planning process as detailed in Figure 4 below. A key component of this process is to Undertake Construction Area Risk Review. The CAP will also include relevant approvals which are required to undertake the task. Additionally, the IEM will be provided the CAP prior to works commencing. If changes are made to the works, the updated CAP will be provided to the IEM.

4.2.5 Site Environment Plans

Site Environmental Plans (SEPs) are documents that provide a detail of environmental constraints, physical protection measures and other key management measures to minimise impacts from construction activities on the environment. The document also identifies the key controls specific to the construction area. SEPs are prepared to display site specific constraints and key environmental management measures. SEPs will be prepared for all work areas prior to commencing construction activities.

4.2.5.1 Erosion and Sediment Control Plans (ESCPs)

Site-specific ESCPs are updated progressively as site conditions change. ESCPs have been developed in accordance with Best Practice Erosion and Sediment Control Guideline (International Erosion Control Association, 2008). The plans are site specific and will be updated in accordance with IECA on a regular basis

and approved by a Suitably Qualified person in this case a Certified Professional in Erosion and Sediment Control (CPESC).

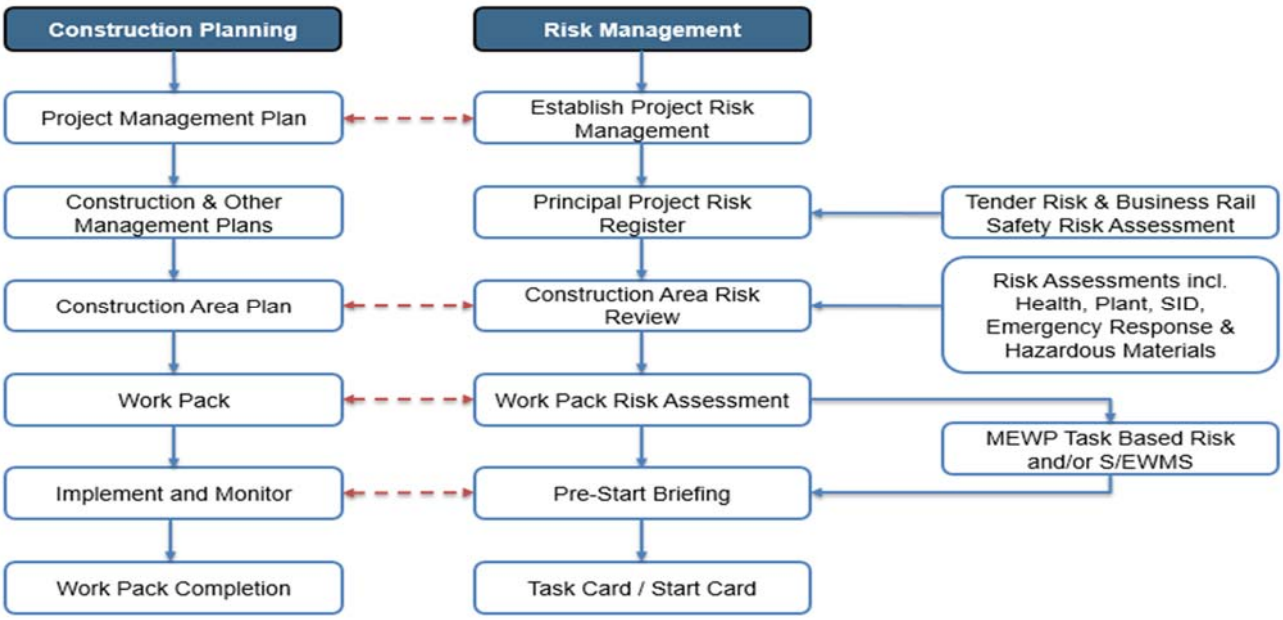


Figure 4 Construction Planning Process

4.2.6 Work Packs

Work Packs (WPs) outline the work sequencing, requirements and approved documents for the Superintendent, Foreman, Supervisor and work crew to reference in order to undertake work effectively and efficiently.

WPs are collections of documents, consistent with the WBS that set out how and where work will be performed. Each WP may include a number of standard operating procedures, as well as details of unique or unusual methods particular to the work to be undertaken. WPs will be prepared, managed and issued by the construction team. Each WP will typically contain sufficient information to enable employees to construct the works, and to document that construction.

Each of these disciplines have their own WMSs, written to describe methodology, resources, plant and equipment, risks and other specific requirements. The Project Director and discipline managers will determine who is charged with allocating responsibility for developing these WMSs. Typically, WMSs will vary in size and content depending on the complexity of the work and the interfaces with other construction activities. Several WPs will be developed to support a WMS.

4.2.6.1 Environmental Constraints Maps

An Environmental Constraints Map (ECM) is a document prepared to assist in the planning and management of specific areas in Work Packs. Environmental and socially sensitive areas including vegetation, heritage, sensitive receivers, waterways, etc. may be included on an ECM (as per Appendix E & Appendix F).

The ECM provides a simple but effective tool to identify key risk areas and to promote ongoing communication to construction personnel throughout the project.

The ECMs will be document controlled separately to this CEMP or other applicable sub plans. Therefore, an update to the ECMs will not require this CEMP or sub plans to be updated.

4.2.6.2 Environmental Work Method Statements

Environmental Work Method Statements (EWMS) will be prepared for activities within or near environmentally sensitive areas and will include protection measures that minimise the risk of impacting the sensitive areas. The requirement for EWMS will be directed by the Environment and Sustainability Manager for those activities deemed to carry an inherent level of environmental risk (e.g. site establishment, demolition of heritage items).

As a minimum, EWMS will include:

- Description of the work activity, including any plant and equipment to be used;
- Outline of the sequence of tasks for the activity, including interfaces with other construction activities;
- Identification of any environmental and/or socially sensitive areas, sites or places;
- Identification of potential environmental risks/impacts due to the work activity;
- Mitigation measures to reduce the identified environmental risk, including assigned responsibilities to site management personnel; and
- Process for assessing the performance of the implemented mitigation measures.

The EWMS will be reviewed by the relevant Construction Manager and / or Project Engineer and then approved by the Environment and Sustainability Manager (or delegate). Relevant conditions of the EWMS will be incorporated into Works Packs as required.

4.3 Provision of Information to the Independent Environmental Monitor (IEM)

CBGU notes that there are a number of site-specific "live documents", meaning they are progressively developed and updated as works progress. Considering the "live" nature of the documents CBGU is willing to provide the information on a routine basis (as defined below). The information offered does not provide the IEM the authority to act as a pre-condition (hold-point) to relevant works commencing. The provision of documentation and general frequency is committed in the table below:

Table 7 Provision of Documentation

Provision of Information to the IEM	
Aspect	**Items of Information**
Noise	Out of Hours Work Permits - provided weekly
	Noise Modelling – provision of noise reports. Updates provided as they occur and requested.
	Noise Monitoring Results - provided in Monthly Reports and further info provided as requested.
Vibration	Vibration Modelling – provision of reports. Updates provided as they occur and as requested.
	Vibration Monitoring Results - provided in Monthly Report and further info provided as requested.
Air Quality	Air Quality Locations – Provided within the Air Quality Management Plan and further info provided as requested.
	Air Quality Monitoring Results - provided in Monthly Report and further info provided as requested.
	Note: Air Quality Modelling for all precincts has been deemed appropriate for all scenarios' barring works at the Woollongabba Precinct associated with change in location of the acoustic enclosure, which will commence installation in August 2020 (All other activities are unchanged

Provision of Information to the IEM	
	and consistent with modelling at Woollongabba). Respective modelling for this scenario will be provided to the IEM prior to commencement of operations within the acoustic enclosure.
Flora & Fauna	Vegetation clearing maps – provision of latest version and provided as requested.
	Fauna & Fauna Reports – provided as requested.
Contamination	Documents including SAQP, CLCPs etc – provision of latest version and provided as requested.
	Contamination Sampling Results - provided as requested.
Heritage	Documents including Archaeological Research Designs, Heritage Exemption Certificates, etc. - provided as requested.
Spoil & Waste	Provide records as requested.
Soil & Water	Documents including ESCPs etc - provided as requested or as they are updated.
	Water Monitoring Results - provided in Monthly Report and further info provided as requested.
Site-related Documents	CAPS/Workpacks - provided as requested or as they are updated.
	SEPs - provided as requested or as they are updated.

Noting the independent role of the IEM, CBGU expects the information is not to be distributed to other individuals or entities without CBGU's prior written permission in accordance with the Project requirements.

4.4 Roles and Responsibilities

The organisational responsibilities and accountabilities in relation to environmental management throughout site establishment works are outlined in Table 8 below.

Table 8 Project Roles and Responsibilities

Project Responsibilities
Coordinator-General
Administers the *State Development and Public Works Organisation Act 1971.*
Chief Executive, Department of Transport and Main Roads
Entity with jurisdiction for a number of the Imposed Conditions
Cross River Rail Delivery Authority
• Oversee CBGU's detailed design process to achieve the environmental outcomes. The detailed design process may run progressively and in parallel with the construction programme, to ensure compliance with the Imposed Conditions and the EDRs. • Prepare the OEMP, including the Outline CEMP and the Outline COEMP. These will form the basis of CBGU's CEMP and COEMP. • 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. • In consultation with CBGU, ensure corrective actions arising from exceedances or failures are implemented as soon as possible.

Project Responsibilities
• Establish and maintain during design, construction and commissioning, a Project website for the purpose of informing people about Project activities. • Appoint an independent, suitably skilled and qualified entity as the Environmental Monitor for the Project. • Establish a community advisory group and appoint an independent, suitably skilled entity as the Community Relations Monitor for the Project.

Independent Environmental Monitor

- Monitor compliance with the imposed conditions during the construction of the project.
- Monitor compliance with the Construction Environmental Management Plan and sub-plans.
- Maintain a register of mitigation measures agreed between the Proponent and Directly Affected Persons (Mitigation Register).
- Review the compliance reports required by Condition 5, and the monthly reports and annual reports required by Condition 6, and provide advice to the Coordinator-General and the Proponent on the contents and adequacy of those reports.
- Review the results of monitoring, which may be verified by the Environmental Monitor including by independent monitoring.
- Provide advice to the Proponent about compliance with the Imposed Conditions for construction, including by providing the results of independent monitoring where required.
- Provide advice to the Proponent about issues raised in complaints and the response to complaints, including advice from the Community Relations Monitor.
- Endorse the Construction Environmental Management Plan as consistent with the Outline EMP and complying with the Imposed Conditions (Construction).

Community Relations Monitor - construction

- Communicate with the CBGU and the Environmental Monitor about community consultation strategies.
- Participate in the community advisory groups for the duration of construction at each locality likely to experience impacts during the construction of the Project.
- Disseminate Project information to the community and Directly Affected Persons, in accordance with the CSEP and as agreed with the Authority.
- Inform the Environmental Monitor as soon as practicable of community concerns about construction and commissioning.
- Hold a current copy of the CEMP (including sub-plans), mitigation measures and complaints. This will be maintained by CBGU, who provides it to the Community Relations Monitor.
- To the extent reasonable and practicable, resolve community complaints not resolved by the complaints process where agreed with the Authority.
- Attend each meeting between the Proponent and a Directly Affected Person to consult on mitigation measures, including providing input on standard responses for similar impacts.
- Participate in scheduled meetings to consider and provide feedback to CBGU and the Authority via the Environmental Monitor, about construction matters referred to the community advisory group for comment, construction planning and construction activities, and views received from the wider community.
- Provide timely comments in an advisory role to the Environmental Monitor on the CEMP for the Project as it relates to the CSEP.

Project Responsibilities
• Provide advice to the Environmental Monitor during the construction phase in relation to the community engagement plan. • For the construction phase, review the environmental reports prepared by CBGU and provide feedback to the Environmental Monitor in respect of complaints and community engagement
CPB, BAM, Ghella, UGL (CPBU)
• Responsible for all approvals, the Construction Environmental Management Plan, the monitoring required under this plan and all information relating to complaints, including access to the complaints database. • Oversee the subcontractor's construction works 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 subcontractor works to ensure compliance. • In consultation with the subcontractor, ensure corrective actions arising from exceedances or failures are implemented as soon as possible. • Establish and maintain a process for receiving, recording and responding to in a timely way, validated complaints about environmental issues. • Ensure subcontractors comply with this CEMP for construction works. • Establish an environmental management register of mitigation measures developed in consultation with Directly Affected Persons. • 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 site establishment works. 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, with people living or working near the Project worksites, people relying on the public transport or road transport 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 construction works • 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.
Subcontractor
• Manage the construction works to achieve the environmental outcomes.

Project Responsibilities
• Implement this detailed CEMP for the duration of the works. • Maintain at the Project office and at each worksite: • Maintain 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. • Ensure the Project is carried out in accordance with relevant environmental legislation, policies and guidelines. • Ensure that mitigation measures are implemented in accordance with the CEMP.
Queensland Rail – design and construction
• Statutory authority established under the Queensland Rail Transit Authority Act 2013 (Qld) and reports to the Minister for Transport and Main Roads. • Queensland Rail (QR) discharges its statutory functions through its wholly-owned subsidiary Queensland Rail Limited. Queensland Rail Limited is a Rail Transport Operator (RTO) under the Rail Safety National Law (RSNL) for the south-east Queensland passenger rail network. • QR will act as the RTO in respect of any Project Activities carried out in Queensland Rail Limited's land during the design & construct phase, and Maintenance Phase and also all of the Rail Integration Systems (RIS) Works carried out by the RIS alliance. • Unless the context otherwise requires, QR, together with its subsidiary Queensland Rail Limited, are collectively referred to as "Queensland Rail" for the purposes of the EMP documents
BCC – design and construction
• Liaise with the Authority about: • Project design issues affecting land use planning intentions; • traffic management and pedestrian management during the construction phase, particularly in relation to worksites; • impacts and changes to bus services operated by BCC; and • the relocation of public utilities. • Carry out responsibilities in relation to delegated administration of permitting assessment and management of local law requirements, where applicable. • Liaise with the Authority on relevant matters, such as urban design measures, local management plans and traffic management.
QUU – design and construction
• Liaise with the Authority about: • Project design issues affecting water and wastewater infrastructure • The relocation of public utilities (water and wastewater infrastructure) • Liaise with the Authority on relevant matters.

Where there are roles or responsibilities pertaining to a particular environmental element, they have been detailed within the relevant sub-plan.

4.5 Hours of Work

The Imposed Conditions relating to hours of work for the Project can be found on the Coordinator-General's website (http://www.dsdmip.qld.gov.au/coordinator-general/assessments-and-approvals/coordinated-projects/completed-projects/cross-river-rail-project.html).

4.6 Subcontractor Management

Though CBGU may delegate environmental requirements and responsibilities to subcontractors, CBGU 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 CBGU staff, subcontractors and visitors to 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 cover the information below:

- Relevant legislation
- General environmental duty
- Non-Indigenous cultural heritage
- Key sensitive areas
- Water quality requirements
- Erosion and sediment control
- Contaminated land and hazardous substances
- Waste removal
- Incidents including definition, management and reporting requirements
- Environmental management requirements
- Cultural heritage & cultural heritage duty of care
- Duty to notify
- Environmental No Go Areas
- Air, noise and vibration requirements
- Flora & fauna
- Spill management procedure
- Requirements of other agencies
- 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 is maintained by CBGU to record induction attendance for all staff, subcontractors and visitors.

5.2 Environmental Training

CBGU developed specific environmental and cultural heritage training required for various roles and personnel as part of their CEMP (refer to Training Management Plan). A training register is to be maintained by CBGU to record attendees at the training sessions.

5.2.1 Toolbox talks

Toolbox talks are used as a method of raising awareness and educating personnel on issues related to all aspects of construction works including environmental issues. Toolbox talks are used to ensure environmental awareness continues throughout the construction works and remains relevant to the particular environmental risks and values at each site and stage of construction.

Toolbox talks will be tailored to specific environmental issues relevant to upcoming works and will address relevant environmental issues including, but not limited to:

- Hours of work, including management strategies to be implemented for out of hours works

- Noise minimisation measures
- Erosion and sediment control
- Emergency and spill response
- Construction traffic and parking
- Cultural heritage
- Weed management
- Dust control
- Flora and fauna and threatened species protection
- Sustainability measures.

Other matters that will be addressed include:

- The day's activities and potential impacts of same on the environment
- Safe work practices
- Environmental protection practices
- Work area restrictions
- Activities that may affect the works
- Hazards or other information that may be relevant to the day's work.

6 Incidents and Emergencies

6.1 Incident Notification

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

All incidents are not considered Non-compliance events. A non-compliance event (NCE) means project works that do not comply with the Imposed Conditions.

All CBGU and subcontractor personnel will report all environmental incidents and near misses to their supervisor and notify CBGU's Environmental Team. If the incident is classed as an NCE, CBGU in consultation with the Delivery Authority will complete all reporting requirements for the CG, DES and any other regulatory agencies who require notification. The incident or near miss will be recorded using processes outlined in this CEMP, the minimum requirements for reporting incidents are in Section 6.1.3. The initial non-conformance report to be used to investigate and describe a non-conformance has been provided as Appendix D.

6.1.1 Notification to DES and other Regulatory Agencies

The Project has obligations 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 of becoming aware of a NCE. The Project also has obligations to other Regulatory Agencies, DTMR, Queensland Rail (QR) and other stakeholders depending on the scale and type of incident.

6.1.2 Notification to CG, Delivery Authority and Environmental Monitor

The Imposed Conditions impose obligations to notify the Environmental Monitor and the CG in writing of a NCE in relation to the Imposed Conditions (including the CEMP or COEMP as relevant). The reporting timeframe for notification to the CG and Environmental Monitor is 48 hours after becoming aware of a non-compliance event. Section 6.1.3 has been developed to detail the minimum requirements for the timely management, classification and reporting of environmental incidents.

6.1.3 Internal Incident Notification

Internal Incident Notification shall occur in accordance with the CPB Contractors Environmental Management System, Manage and Report SHE Incidents Procedure. Where necessary, the Project Director or delegate will also notify the joint venture parent companies, CPB Contractors Pty Ltd, BAM International Australia Pty Ltd, Ghella Pty Ltd and UGL Engineering Pty Ltd

6.2 Incident Types

Incidents include, but are not limited to:

- Non-Compliance Event (NCE) means Project Works that do not comply with the Co-ordinator General Conditions.
- Unauthorised harm or desecration to Aboriginal objects or Aboriginal places

- Unauthorised damage or contrary 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 beyond the approved water criteria from sediment basins or other containment devices
- Unauthorised clearing or clearing beyond the extent of the Project footprint
- Unauthorised habitat damage
- Failure of temporary ESC resulting in downstream impact
- Contamination of waterways or land
- Contamination of groundwater
- Uncontrolled fire
- Unauthorised dumping of waste
- Spills of fuel, oil chemical or other hazardous material (>20 l).

6.3 Incident Classification and Procedure

In addition to the requirements under the OEMP, all CBGU and subcontractor personnel will report all environmental incidents and near misses in accordance with processes in Section 7.5.3 and Figure 6.

The CPB CMS procedure - Synergy Event Classification Matrix is used to classify Safety Health and Environment Incidents, this matrix detailed in Appendix G.

6.4 Incident Prevention Management

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

- Daily informal visual inspections of active work sites
- Completion of the Project's Environmental Checklist 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
- 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 (Appendix D).

6.5 Incident Investigation

Where a significant incident (Appendix G) has occurred, an incident investigation must be undertaken, with the following elements to be considered:

- 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

Where appropriate, provide any training that may assist staff and subcontractors in preventing reoccurrence of an event of a similar nature in future.

6.6 Complaint Management

All complaints are to be dealt with in accordance with the complaints management procedure outlined in the *Community Engagement Plan* (CEP) and/or *Community and Stakeholder Engagement Plan* (CSEP) to ensure complaints received by the community and stakeholders are managed appropriately and consistently, as per the Complaints flow diagram below.

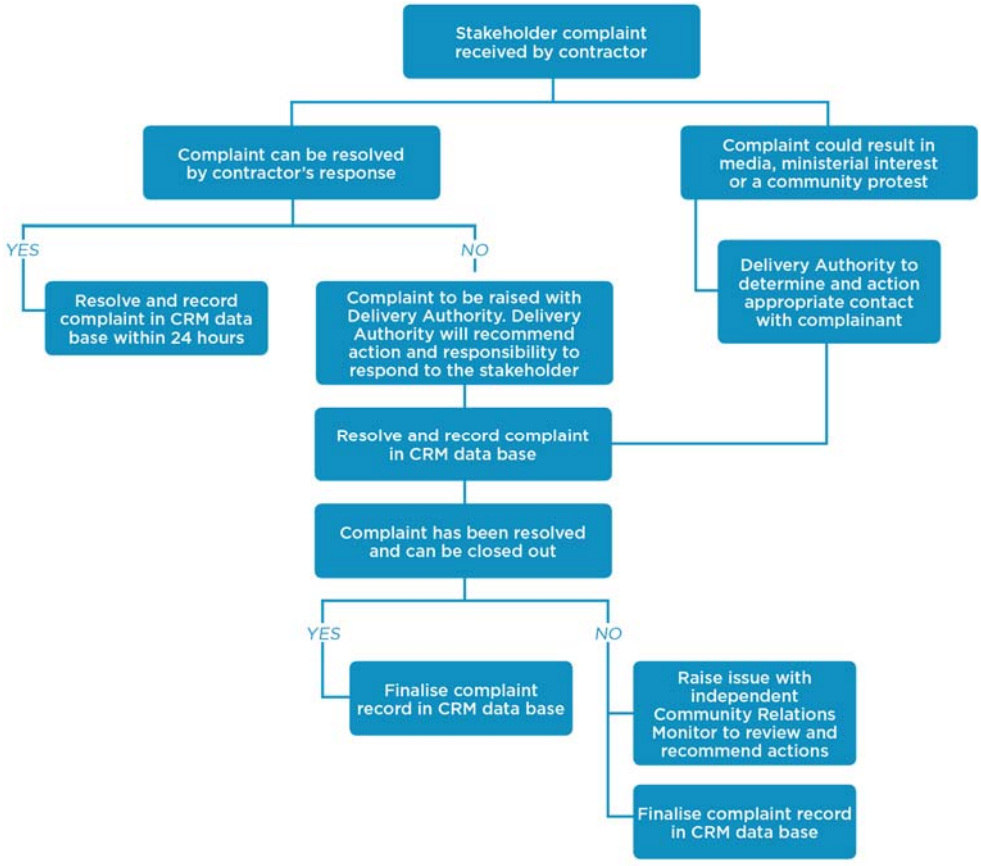


Figure 5 Complaints Management Process

7 Inspections, monitoring and auditing

This section outlines the compliance processes that have been adopted by CBGU to ensure compliance with the Coordinator-General Conditions and any other legislative requirements.

7.1 Environmental Inspections

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

The following inspections will be undertaken for the duration of the construction works.

Table 9 Project Environmental Inspection Requirements

Type of Inspection	Frequency	Form of Record
Informal inspection of active work sites	Daily	Diary Notes
Formal inspection of active work sites	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

The project's Environmental Checklist and Non-conformance report has been provided as Appendix D.

7.2 Environmental Monitoring

Environmental performance will be monitored by CBGU for each environmental element throughout the Project phases. Monitoring will address performance in relation to the environmental outcomes and the performance criteria, and implementation of the mitigation measures needed to achieve the environmental outcomes.

The specific monitoring actions for each environmental element have been outlined in the relevant sub-plan.

Broadly the requirements for monitoring during the construction phase may include:

- Collection, measurement and analysis of specified data at the locations and frequencies required by the sub-plans according to recognised and accepted scientific methods by suitably qualified people
- Daily visual environmental site inspections at each worksite, including inspections of environmental control measures and environmental impacts of construction activities
- Targeted monitoring of key parameters in response to an incident or failure to comply with the Imposed Conditions, the CEMP or one of the sub-plans.
- Closest sensitive receptors within 72 hours of the commencement of a new activity that possesses higher potential to generate impact (noise, vibration, dust)
- To validate noise/vibration predictions
- Properties or addresses identified in the deed or other approvals.

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.

7.2.1 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 site investigations to be undertaken will provide additional information 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 was carried out for at least twelve (12) months (where practical) commencing in August 2018. In addition, this baseline monitoring will continue, where not impacted by the site establishment activities, and will be used to also monitor performance.

Baseline monitoring completed for each relevant environmental element has been further detailed in the respective sub-plan.

7.3 Auditing

Auditing will be undertaken to verify compliance with the Imposed Conditions, the CEMP and associated sub-plans. The audits will include review of prior audits and the impacts of associated corrective actions. The auditing requirements for the project have been outlined in Table 10.

Table 10 Project Auditing Requirements

Description	Frequency	Parties Involved	Reporting Requirements
AS/NZS ISO 14001 Audit	Annually	External	Environmental Monitor, CBGU
CG Imposed Conditions	Monthly*	Internal	Environmental Monitor, CBGU
CEMP and Sub-plans	Monthly*	Internal	Environmental Monitor, CBGU

* These monthly audits can be satisfied through weekly inspections or document review as per the CEMP Audit Schedule.

External auditing will be undertaken by an environmental auditor independent of the Cross River Rail (TSD) package in accordance with ISO19011:2003 – Guidelines for Quality and or Environmental Management Systems Auditing.

The CBGU and Environmental Monitor must maintain appropriate audit records, and these are to be reported on in the Monthly and Annual Reports.

7.4 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 CBGU in consultation with the Delivery Authority and Directly Affected Persons where deemed necessary. These corrective actions may 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 CBGU 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.

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

7.5 Reporting

7.5.1 Monthly Report

To ensure compliance with Coordinator-General Condition 6 and where relevant the OEMP, CBGU will prepare and submit a monthly report within 6 weeks from the end of the month to the Delivery Authority, which includes the following information:

- Monitoring data required by the Imposed Conditions or CEMP undertaken for the period and, where required, an interpretation of the results;
- A schedule of all validated monitoring results. Validated monitoring results must be produced for the preceding month's monitoring programme (OEMP p 33);
- Details of any non-compliance event, including a description of the incident, resulting effects, corrective actions, revised construction practices to prevent a recurrence, responsibility and timing;
- Reporting of complaints, including the number of complaints, description of issues, responses and corrective actions, maintaining appropriate confidentiality (in accordance with Condition 9(f)(vii)).

A copy of the Monthly Environmental Report must be submitted to the Authority and the Environmental Monitor and be provided to the Coordinator-General and posted on the project website in accordance with the Imposed Conditions.

7.5.2 Annual reporting

In accordance with the OEMP, the Annual Environmental Report must be prepared by an independent (OEMP p 34), suitably qualified person, endorsed by the Environmental Monitor (OEMP p 34) and submitted to the CG no later than 31 July in any year during the construction phase. The report must address the previous 12 months activities (1 July to 30 June) and must be posted on the Project website for the duration of the construction phase.

The Annual Environmental Report must include (OEMP p 34):

- An evaluation of environmental management in relation to achievement of environmental outcomes, satisfaction of the performance criteria or where not satisfied, implementation of mitigation measures. The evaluation must extend to the effectiveness of mitigation measures for particular environmental elements and localities
- An overview and evaluation of the implementation of the complaints handling and response process and procedure. The evaluation, in part, must refer to the number of complaints and the significance of the issues raised in complaints, together with closing out of the complaints to the satisfaction of the complainants
- An overview and evaluation of the environmental record achieved during the reporting period. The environmental record must address, in part, the number and significance of environmental incidents and non-compliances with the CG's Imposed Conditions and CEMP
- An evaluation of the effectiveness of the community information and engagement system for the Project. The evaluation must include, in part, the system for advanced notice of construction works and the availability of relevant, comprehensible information about the programme of works and the nature, scale and intensity of work packages
- A summary of key issues and significant reoccurring issues for community relations. The overview must include an analysis of each issue to identify any common cause, successful mitigation measures and opportunities to resolve and close out such issues
- Identification of aspects for improvement in environmental management and community relations, and proposed actions to achieve such improvements).

7.5.3 Incidents and Non-Compliance Event Reporting

Environmental incidents meeting the criteria of an NCE shall be notified verbally (OEMP p33) as soon as practical and in writing within 48 hours of becoming aware of an incident occurring to Project Co, IEM, Delivery Authority and CG. Notification will generally be undertaken by the Environment and Sustainability Manager or a member of the CBGU environment team. Additional notification of the incident to the relevant authorities, EM and parent companies will also be undertaken as required (see Figure 6).

Should the Project Co, IEM, Delivery Authority and CG not be contactable by telephone, CBGU will contact them by:

a. leaving a voice message;
b. sending a text message;
c. sending an email; and
d. making direct contact with nominated back-up personnel in person or by telephone.

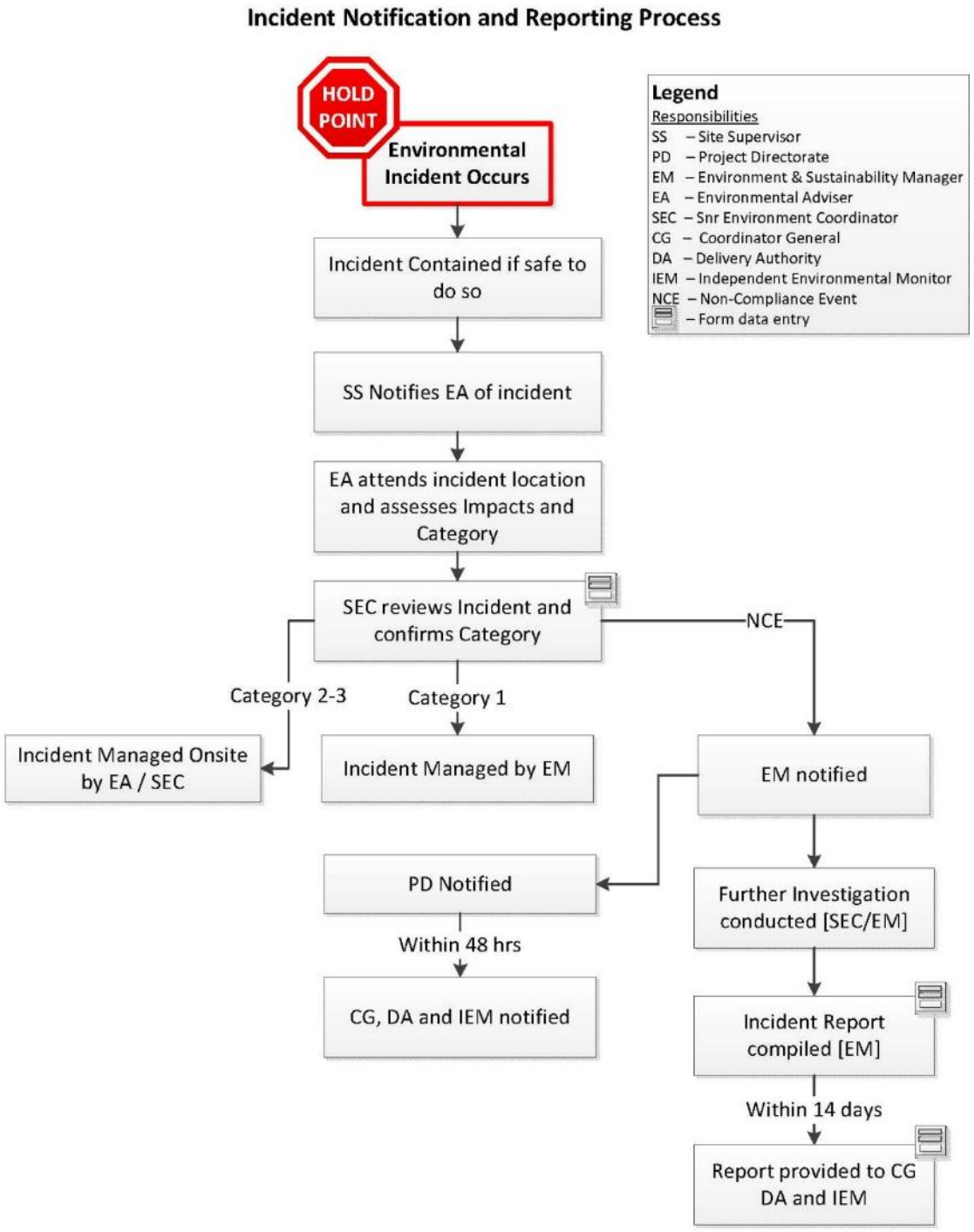


Figure 6 Incident Notification and Reporting

7.5.3.1 Non-Compliance Event Notification – Development Authority

In addition to any statutory requirements, within 48 hours of an NCE being identified, the Environmental Monitor and the CG must be notified of the non-compliance and initial response in accordance with Imposed Condition 5(a) and 5(b) will be prepared and provided by CBGU. This notification will include the following information:

- A description of the Non-Compliance Event, detailing; the location; date; and time of the event

- Name and details of the designated contact person
- An outline of any actions taken or will be taken to respond to the Non-Compliance Event.

7.5.3.2 Incident (NCE) Report – Development Authority

Within 14 days following the notification of an NCE, written advice detailing the following information will be provided to the Environmental Monitor and the CG:

- A description of the non-compliance event including details of the location, date and time of the noncompliance event
- The name and contact details of a designated contact person
- The circumstances in which the non-compliance event occurred
- Details of any complaint in relation to the non-compliance event
- The cause of the non-compliance event
- A description of the environmental effects of the non-compliance event
- The results of any sampling or monitoring performed in relation to the non-compliance event
- Actions taken to mitigate the environmental effects of the non-compliance event
- Proposed actions to prevent a reoccurrence of the non-compliance event, including timing and responsibility for implementation.

The report will accompany the next monthly environmental report. These Non-Compliance Events will be made available on the project website for the duration of the construction phase of the project.

7.5.3.3 Internal Incident Report

Internal Incident Notification shall occur in accordance with the CPB Contractors Environmental Management System. Where necessary, the Project Director or delegate will also notify the joint venture parent companies, CPB Contractors Pty Ltd, BAM International Australia Pty Ltd, Ghella Pty Ltd and UGL Engineering Pty Ltd.

7.5.3.4 Regulatory Incident Report

In consultation with the Delivery Authority, CBGU will complete all reporting requirements for the CG, DES and any other regulatory agencies who require notification.

8 Documentation & Communication

8.1 Environmental Records

CBGU 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

A range of other records shall be created and maintained in accordance with each relevant sub-plan and as detailed within same. These may include, for example:

- 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
  - Waste transporter or waste 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)
- Documented records of contaminated material movement and disposal
- Soil disposal permits will be maintained on register
- Archival recording will be carried out in accordance the DES's guideline on Archival Recording of Heritage Places.

8.2 Document Control

A register will 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 maintained and are 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 are 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 (Teambinder) has been established for registering all in-coming and out-going correspondence regarding environmental matters during the design, construction and commissioning phases of the site investigation and establishment works. 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
- General correspondence.

8.3 Review and Improvement

CBGU will coordinate the preparation, review and distribution as appropriate, of the environmental documents, including on the project website. All environmental management documents are subject to ongoing review and continual improvement.

CBGU will implement a document control procedure to control the flow of documents within and between CBGU, Regulatory Agencies, the Delivery Authority and relevant stakeholders and subcontractors. This will include a process for regular review and if required updating of the CEMP, including a process to review and implement additional or different mitigation measures in response to monitoring results.

Updates to the CEMP that include new or additional Relevant Project Work will be endorsed by the Environmental Monitor as being consistent with condition 4 (g) before Relevant Project Work proceeds.

8.3.1 Construction Environmental Management Plan Review

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

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

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

8.4 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* CEP and/or CSEP.

As per condition 4 (f) of the I the CEMP will be made available for the public on the project website for the duration of the construction phase.

Appendix A

Requirements Verification Traceability Matrix

Requirements Verification Traceability Matrix

Annex D Requirements

DOORS Require-ment ID	PSTR ID	Ref. Section (Annex D)	Requirement Description	Design Evidence ID	Design Evidence (Sections)	V&V Status	Reviewer	Additional Comments
			6.1 Environmental Requirements					
		6.1.2	Project Co must prepare, update, maintain, and implement Environmental arrangement Plans (EMPs), consistent with the OEMP including all sub-plans prepared by the State as per the State Approval, including:					
		5.9.2	a Construction Environment Management Plan (CEMP) consistent with the CG's Conditions, for the duration of the relevant Project Activities;		CRRTSD-EN-MPL-CBGU-000019	Passed	A Lilford	

Coordinator-General's change report/s – Appendix 1 – Project Wide Imposed Conditions: Part C. – Condition 4 Construction Environmental Management Plan

CRRDA REFERENCE	REQUIREMENT		ADDRESSED IN SECTION
(a)	Prior to the commencement of Project Work, a Construction Environmental Management Plan for those works (Relevant Project Work) must be developed by the Proponent and endorsed by the Environmental Monitor as being consistent with the Outline EMP and these imposed conditions.		This Plan
(b)	The endorsed Construction Environmental Management Plan must be submitted to the Coordinator General at least 20 business days prior to the commencement of Relevant Project Works.		This Plan
(c)	The Construction Environmental Management Plan must:		
	(i)	describe the Relevant Project Work	Section 2
	(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 location of Directly Affected Persons	Relevant sub-plans
	(iii)	be generally consistent with the Outline EMP and incorporate its environmental outcomes and performance criteria	This Plan
	(iv)	incorporate and respond to the Imposed Conditions (Construction)	This Plan and associated Sub-plans

CRRDA REFERENCE	REQUIREMENT		ADDRESSED IN SECTION
	(v)	demonstrate that the Imposed Conditions (Construction) will be complied with during Relevant Project Work	This Plan and associated Sub-plans
	(vi)	incorporate the community engagement plan, including the complaints management process, in accordance with Condition 9	Sections 4.4, 6 and 8
	(vii)	where predictive studies indicate impacts beyond those provided for in the performance criteria, incorporate mitigation measures to achieve the environmental outcomes	Associated sub-plans
	(viii)	establish specific mitigation measures and processes for consultation with Directly Affected Persons for Project Works under Conditions 9(c), 11(c), and 11(e)	This Plan and associated Sub-plans
	(ix)	contain a program and procedures for ongoing monitoring to identify the effectiveness of mitigation measures in achieving the Imposed Conditions (Construction) and the environmental outcomes in (iii)	Section 7.2 and associated sub-plans
	(x)	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	Section 8.3 and associated sub-plans
	(xi)	incorporate the EMP sub-plans required by the Imposed Conditions or as required by the approved Outline EMP.	All associated sub-plans
(d)	The Construction Environmental Management Plan must be implemented for the duration of Relevant Project Work.		This Plan
(e)	Relevant Project Work is authorised if it is undertaken in accordance with the Construction Environmental Management Plan.		This Plan
(f)	The Construction Environmental Management Plan must be publicly available on the project website for the duration of the construction phase.		Section 8.4
(g)	The Construction Environmental Management Plan may be updated.		
	(i)	updates to the Construction Environmental Management Plan that include new or additional Relevant Project Work must be endorsed by the Environmental Monitor as being consistent with condition 2 before Relevant Project Work may proceed.	Section 8.3
(h)	Updates to the Construction Environmental Management Plan that are limited to new or different mitigation measures for Managed Work may be endorsed by the Environmental Monitor.		Section 8.3

Appendix B

Project Approvals Register

Approval / Permit / Licence	Regulatory Authority	Responsibility / Timeframe	Items approved
Heritage Exemption Certificate	Department of Environment and Science (DES)	Environment and Sustainability Manager 36 BD	Working on a Queensland heritage place
Cultural Heritage Management Plan	DATSIP	CRR DA	Working on a project requiring an EIS
Soil disposal permit	DES	Environment and Sustainability Manager 15 BD	Removal of contaminated material from site
Waste Levy Exemption	DES	Environment and Sustainability Manager 35 BD	Disposing of hazardous waste and reduction in levy based on waste present prior to 1992

Appendix C

Project Environmental Risk Assessment

Environmental Risk Register

The CBGU environmental risk register identifies the environmental aspects of the project, the associated potential environmental impacts, and a risk rating for that impact. Applicable management measures are nominated within the environmental management plan identified in the table. Management measures may include physical controls, procedures, forms, checklists, monitoring requirements, permits, etc. A revised risk rating, assuming the controls nominated within the environmental management plans are implemented, is also included in the table.

The risk rating (refer Table 13) is based on the likelihood of the event occurring (refer Table 11) and the consequence (refer Table 12).

Table 11 Likelihood criteria

Probability (likelihood)	Description (1)	Description (2)	Description (3)
Almost certain (5)	Common /Frequent Occurrence	Can be expected to occur 75% – 99%	More than 1 event per month
Likely (4)	Is known to occur or "It has happened regularly"	Can quite commonly occur 50% - 75%	More than 1 event per year
Possible (3)	Could occur or "I've heard of it happening"	May occasionally occur 25% - 50%	1 event per 1 to 10 years
Unlikely (2)	Not likely to occur very often	May infrequently occur 10% - 25%	1 event per 10 to 100 years
Rare (1)	Conceivable but only in exceptional circumstances	May occur in exceptional circumstances 0% - 10%	Less than 1 event per 100 years

Table 12 Consequence criteria relevant to environment and heritage

Consequence (impact)	Description
Negligible (1)	Short term ecological damage
Minor (2)	Limited but medium term ecological damage
Moderate (3)	Major but recoverable ecological damage
Major (4)	Heavy ecological damage, costly restoration
Substantial (5)	Permanent widespread ecological damage

Table 13 Risk rating

		Consequence				
		Negligible (1)	Minor (2)	Moderate (3)	Major (4)	Substantial (5)
Likelihood	Almost certain (5)	Low (5)	Moderate (10)	Very High (18)	Extreme (23)	Extreme (25)
	Likely (4)	Low (4)	Moderate (9)	Very High (17)	Very High (20)	Extreme (24)
	Possible (3)	Low (3)	Moderate (8)	High (13)	Very High (19)	Very High (22)
	Unlikely (2)	Low (2)	Low (7)	High (12)	High (15)	Very High (21)
	Rare (1)	Low (1)	Low (6)	Moderate (11)	High (14)	High (16)

Table 14 CBGU Environmental Risk Register

Note: Risk ratings are identified as extreme (E), very high (VH), high (H), moderate (M), and low (L). Applicable management measures are nominated within the environmental management plan identified in the table. Management measures may include physical controls, procedures, forms, checklists, monitoring requirements, permits, etc.

Environmental aspect (Significant Environmental Hazard)	Potential Environmental Impact (risk)	L	C	Risk ranking	Environmental management	L	C	Risk ranking
Vegetation clearance / grubbing / demolition	Clearing outside of approved area	5	2	M10	• FFMP	1	2	L6
	Impacts on unexpected threatened species	2	4	H15	• FFMP	1	4	H14
	Displacement of, or injury to fauna	3	2	M8	• FFMP	2	2	L7
	Spread of noxious weeds via personnel, plant / equipment, topsoil/mulch	3	2	M8	• FFMP	2	2	L7
	Generation of dust leading to amenity, community nuisance	5	3	VH3	• AQMP	3	3	H13
	Loss of screening for heritage properties or impacts to heritage curtilage (beyond approved impacts)	3	4	VH19	• ICHMP • NICHMP	1	4	H14
	Complete / partial loss of heritage value for future generations due to insufficient archival recording	5	2	M10	• ICHMP • NICHMP	1	2	L6
	Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	5	2	M10	• WQMP • ESCMP	3	2	M8
	Inappropriate disposal of waste including demolition, vegetation and hazardous or special waste, including asbestos	3	4	VH19	• WMP • Sustainability Management Plan	3	2	M8
	Missed opportunities to maximise beneficial re-use of wastes	4	1	L4	• WMP • Sustainability Management Plan	3	1	L3
Earthworks and excavation	Generation and mobilisation of dust from construction sites and spoil removal trucks impacting receivers including residents, businesses, and vegetation	5	2	M10	• AQMP	3	2	M8

Environmental aspect (Significant Environmental Hazard)	Potential Environmental Impact (risk)	L	C	Risk ranking	Environmental management	L	C	Risk ranking
	Disturbance or damage of unidentified Aboriginal heritage artefact	1	4	H14	• ICHMP	1	3	M11
	Disturbance or damage of non-Aboriginal heritage item	4	3	VH17	• NICHMP	2	3	H12
	Noise and vibration impacts on nearby receivers	5	2	M10	• NVMP	3	2	M8
	Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	5	3	VH18	• WQMP • ESCMP	3	3	H13
	Pollution of groundwater	2	4	H15	• WQMP	1	3	M11
	Distribution of or mis-management of unexpected contamination or acid sulphate soils	5	3	VH18	• WQMP • ASSMP	2	3	H12
	Incorrect disposal of contaminated spoil (including asbestos)	5	4	E23	• WMP • Sustainability Management Plan	2	3	H12
Establishment and operation of site facilities	Amenity and visual impacts on nearby receivers due to compounds, including light spill and overshadowing	5	2	M10	• CEMP	4	2	M9
	Spread of noxious weeds via personnel, plant / equipment, topsoil/mulch	3	2	M8	• FFMP	2	2	L7
	Dust impacts to receivers due to stockpiling, exposed surfaces, material handling	4	2	M9	• AQMP	3	2	M8
	Noise and vibration impacts on nearby receivers, including out of hours impacts	5	3	VH18	• NVMP	4	2	M9
	Failure of construction water treatment plant leads to uncontrolled discharge or discharge that doesn't meet Coordinator-General's Approval	4	4	VH20	• WQMP	3	4	VH19
	Contamination of soil or water from spill or leak of dangerous or hazardous materials from plant / equipment	5	2	M10	• WQMP	4	1	L4

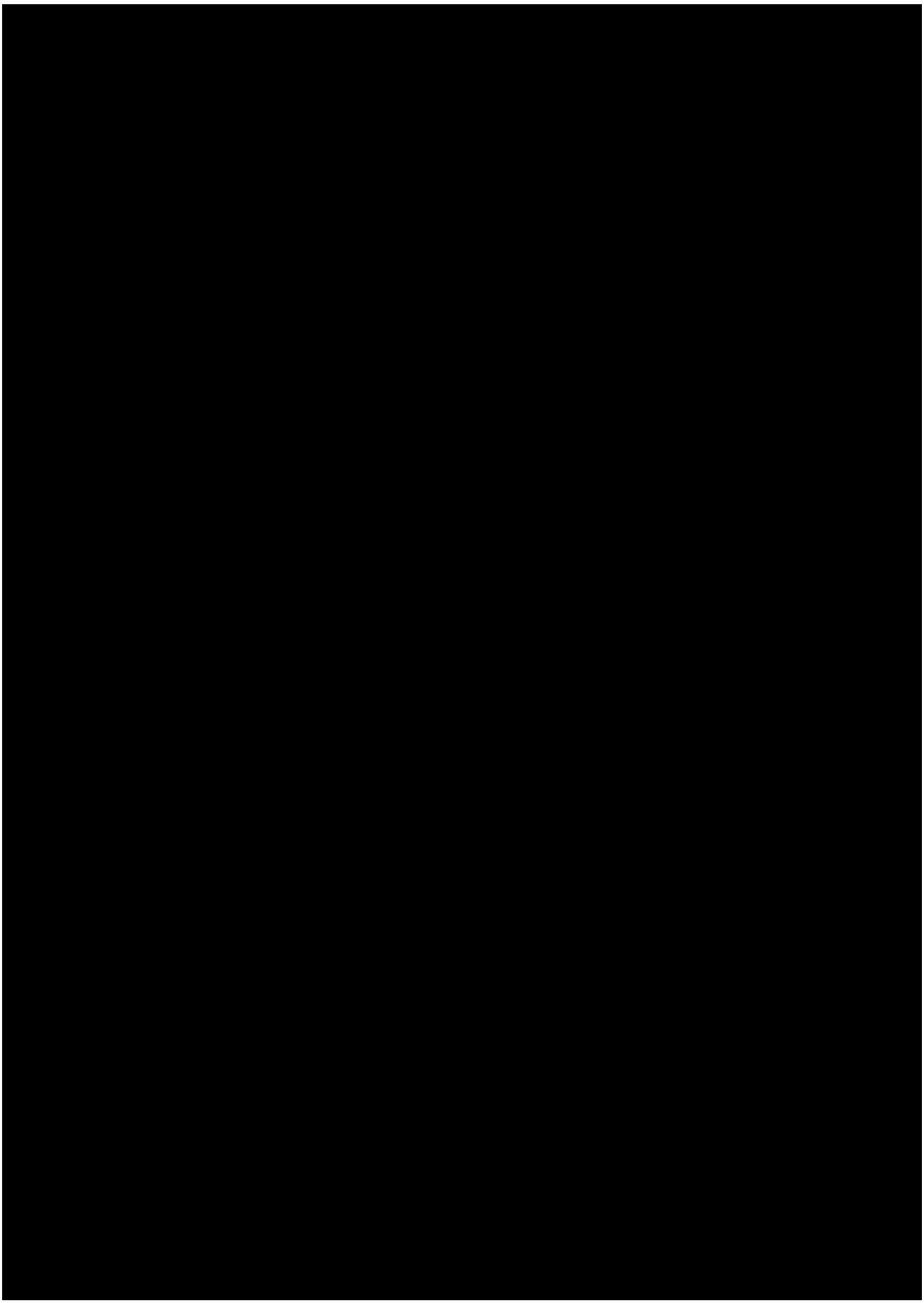
Environmental aspect (Significant Environmental Hazard)	Potential Environmental Impact (risk)	L	C	Risk ranking	Environmental management	L	C	Risk ranking
	Contamination of soil or water from spill or leak of dangerous or hazardous materials from bulk storage	3	4	VH19	• WQMP	2	2	L7
	Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	5	2	M10	• WQMP • ESCMP	2	2	L7
	Inappropriate disposal of waste including hazardous or special waste, including asbestos	3	4	VH19	• WMP	2	3	H12
	Inappropriate disposal of office wastes	3	1	L3	• WMP • Sustainability Management Plan	2	1	L2
	Traffic and parking impacts due to increased number of construction vehicles, site access arrangements	5	2	M10	• TMP	3	2	M8
	Tracking of mud at site access points	4	2	M9	• AQMP • WQMP	3	1	L3
General construction activities	Breach of CoA or EPL conditions, legal or client requirements leading to PINs, fines, prosecution, loss of reputation, strained relationships, contractual implications	5	4	E23	• CEMP and subplans	2	3	H12
	Minor incidents, e.g. small leaks / spills, that do not cause or threaten material harm to the environment	5	2	M10	• CEMP • WQMP	4	1	L4
	Serious incidents, e.g. uncontrolled release of concrete washout water, water treatment plant, major fuel spill, that cause or threaten material harm to the environment	3	4	VH19	• CEMP • WQMP	1	4	H14
	Generation of dust due to cutting/grinding/sawing equipment, material /waste/spoil handling; and generation of exhaust emissions due to inappropriate plant maintenance	5	2	M10	• AQMP	3	2	M8
	Noise and vibration impacts on nearby receivers, including out of hours impacts resulting in structural damage or community complaints	5	3	VH18	• NVMP	3	3	H13

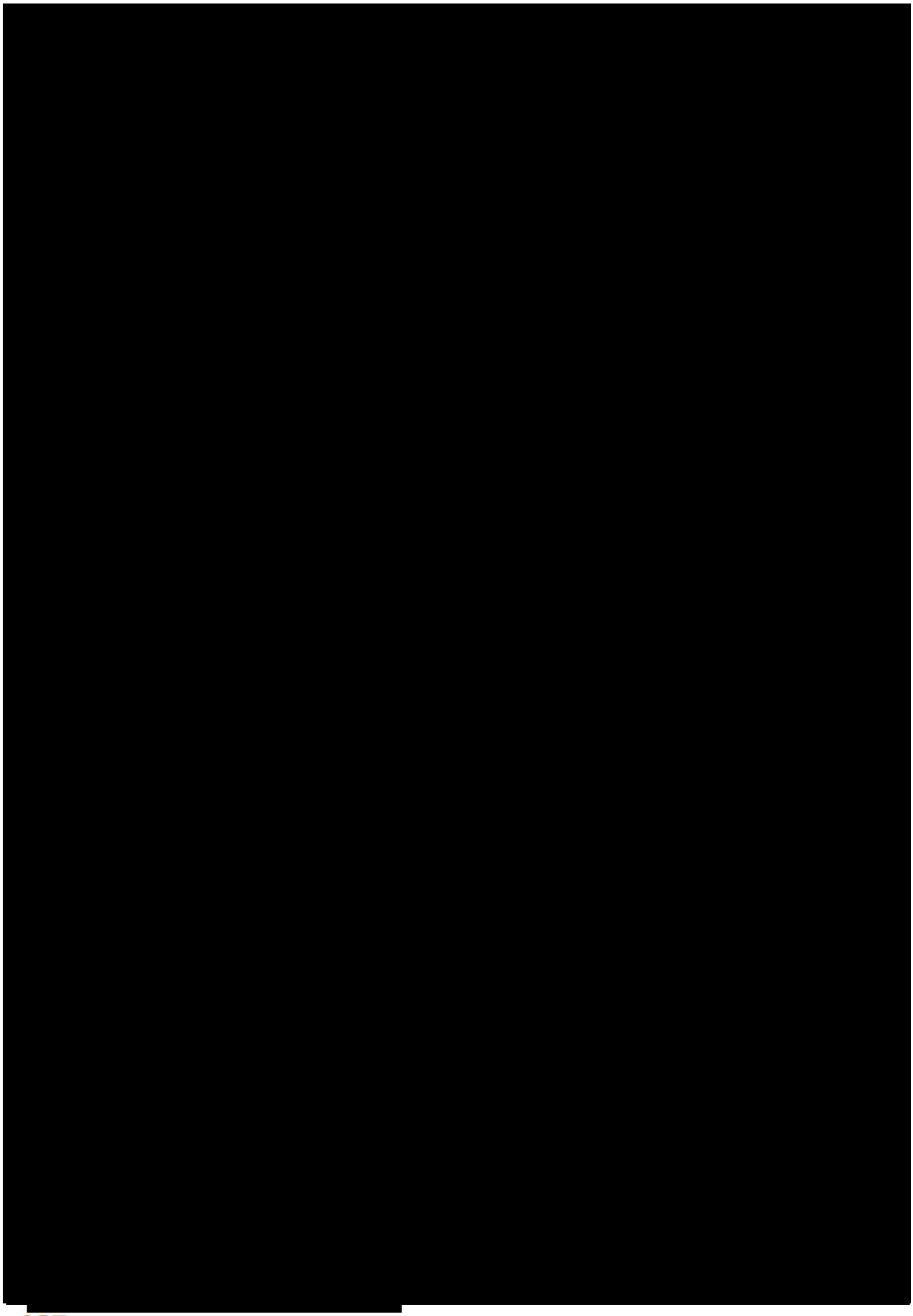
Environmental aspect (Significant Environmental Hazard)	Potential Environmental Impact (risk)	L	C	Risk ranking	Environmental management	L	C	Risk ranking
	Inappropriate disposal of waste including hazardous or special waste, including asbestos	3	3	VH19	• WMP	2	2	L7
	Visual impacts on nearby receivers due to light spill, construction works, overshadowing	4	2	M10	• CEMP •	2	2	L7
	Traffic and parking impacts due to increased number of construction vehicles, site access arrangements	5	2	M10	• TMP	3	2	M8
	Contamination of soil or water from spill or leak of dangerous or hazardous materials from plant / equipment	5	2	M10	• WQMP	4	1	L4
	Inappropriate management of concrete wastes, overtopping of washout area (e.g. during a rain event)	5	3	VH18	• WQMP	2	2	L7
	Uncontrolled (beyond design) release of sediment basins of runoff from disturbed areas resulting in uncontrolled discharge to soils or water	5	4	E23	• WQMP • ESCMP	2	4	H15
	Litter, inappropriate use of co-mingling and waste receptacles	5	1	L5	• WMP • Sustainability Management Plan	3	1	L3
	Failure to realise opportunities to recycle water to reduce discharge, beneficial re-use of materials	3	1	L3	• WMP • Sustainability Management Plan	2	1	L2
Tunnel excavation	Vibration leading to structural damage or cosmetic damage	5	4	E23	• NVMP	3	3	H13
	Regenerated noise impacts on nearby receivers, including out of hours impacts, resulting in sleep disturbance or community complaints	5	2	M10	• NVMP	4	2	M9
	Vibration leading to damage of property or heritage items	3	3	VH19	• NVMP	2	3	H12

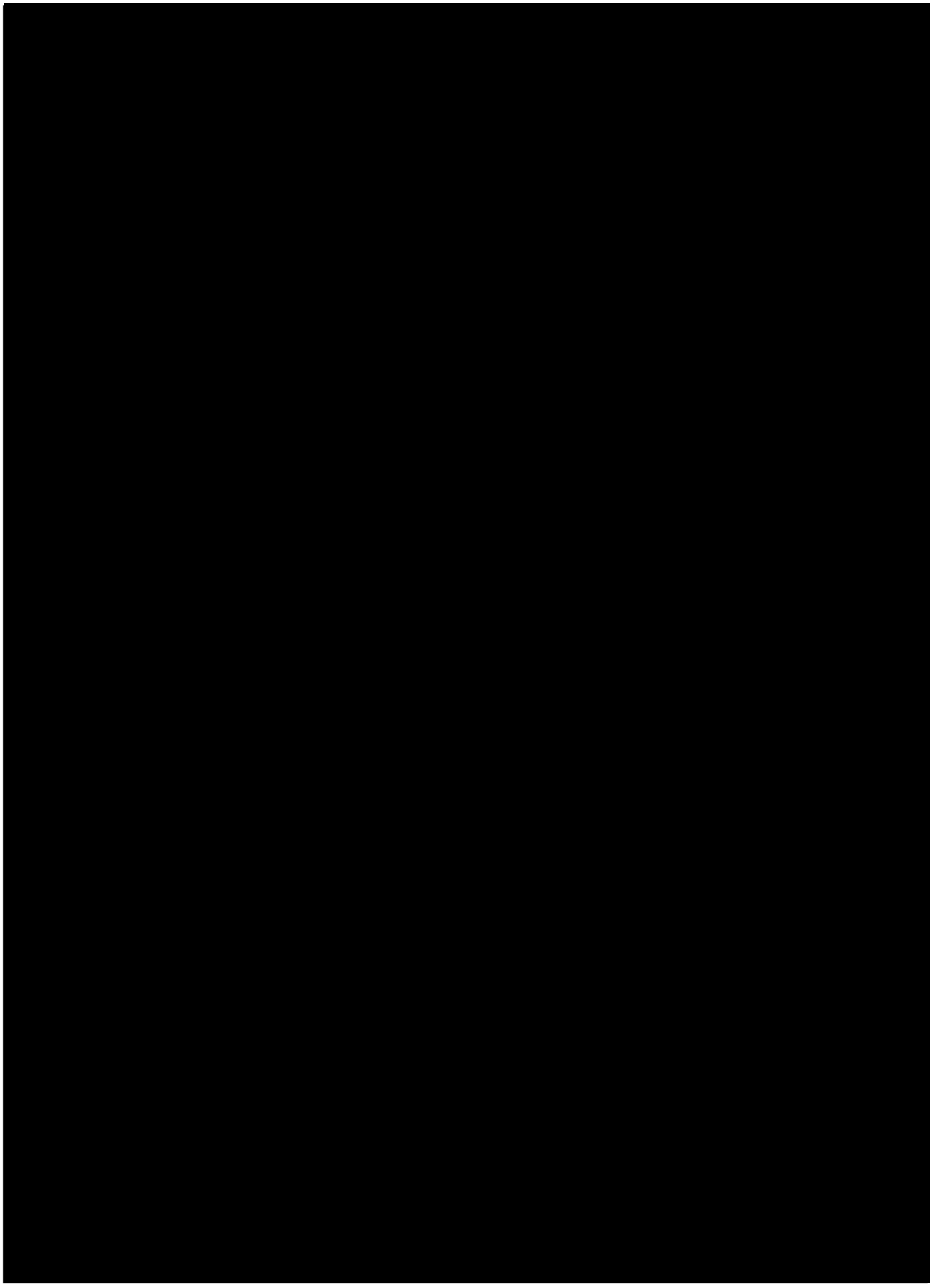
Environmental aspect (Significant Environmental Hazard)	Potential Environmental Impact (risk)	L	C	Risk ranking	Environmental management	L	C	Risk ranking
	Changes to groundwater level and quality leading to contamination, changes in salinity, ASS	3	3	H13	• WQMP	2	3	H15
	Changes to groundwater levels impact on survival of species and or ecosystems that rely on groundwater	3	3	H13	• WQMP • NCMP	3	3	H13
	Contamination of soils and groundwater due to spills and leaks	5	2	M10	• WQMP	3	1	L3
	Inappropriate disposal of spoil	5	2	M10	• WMP • Sustainability Management Plan	2	2	L7
	Inappropriate disposal of contaminated groundwater	3	4	VH19	• WQMP	1	4	H14
Spoil transport, deliveries, general plant operation on public roads	Traffic impacts due to increased number of construction vehicles (heavy and light vehicles) and vehicle movements	5	2	M10	• TMP	4	2	M9
	Generation of dust due to material /waste/spoil loading and unloading; and generation of exhaust emissions due to inappropriate plant maintenance	5	2	M10	• AQMP	2	2	L7
	Tracking of mud or waste on public roads	4	2	M9	• AQMP • WQMP	2	1	L2
	Noise and vibration impacts on receivers near construction site or along haul roads (during standard hours)	4	2	M9	• NVMP	2	2	L7
	Noise and vibration impacts on receivers near construction site or along haul roads (out of hours)	5	3	VH18	• NVMP	3	3	H13

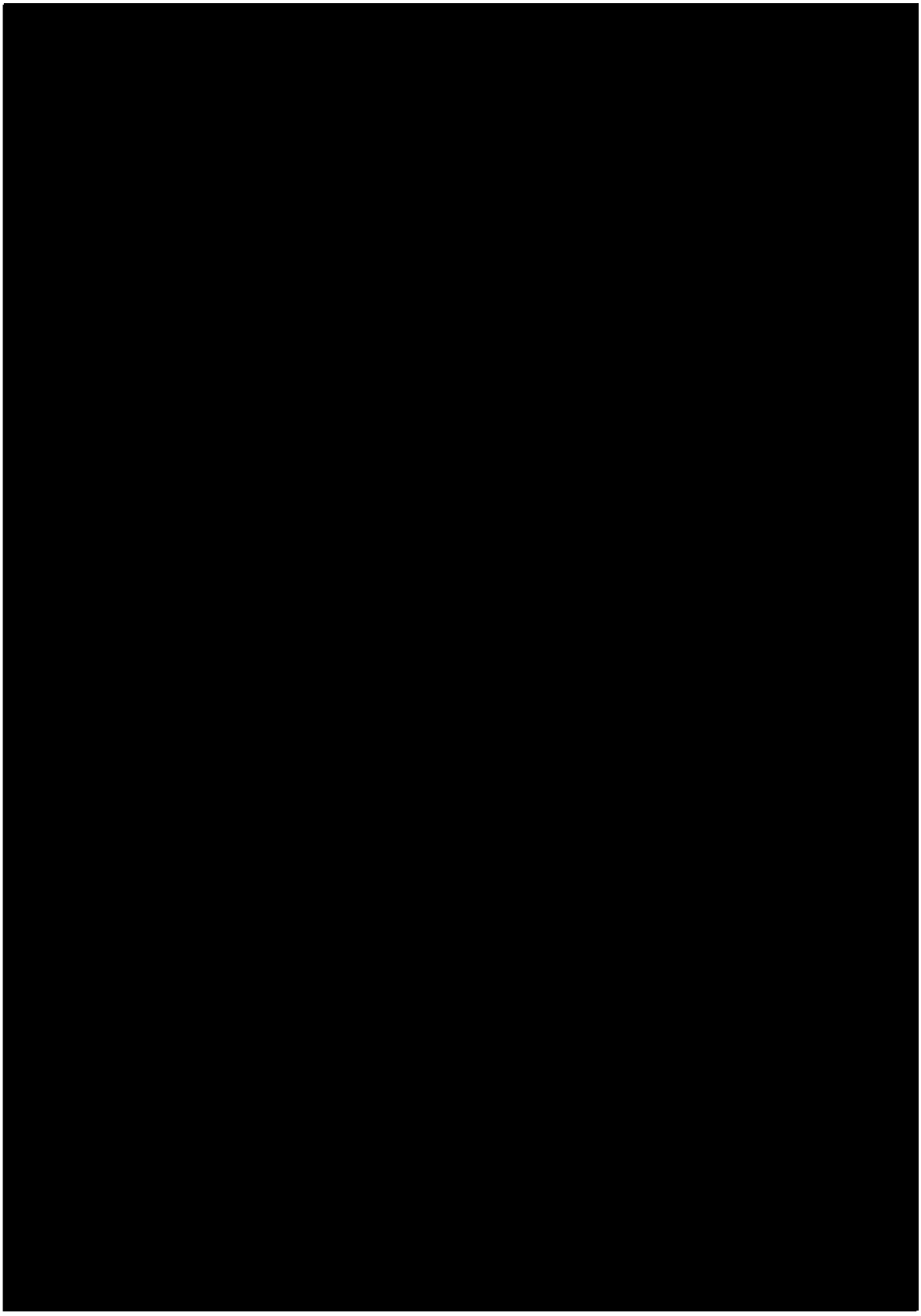
Appendix D

Environmental Checklist and Non-Compliance Event Notification



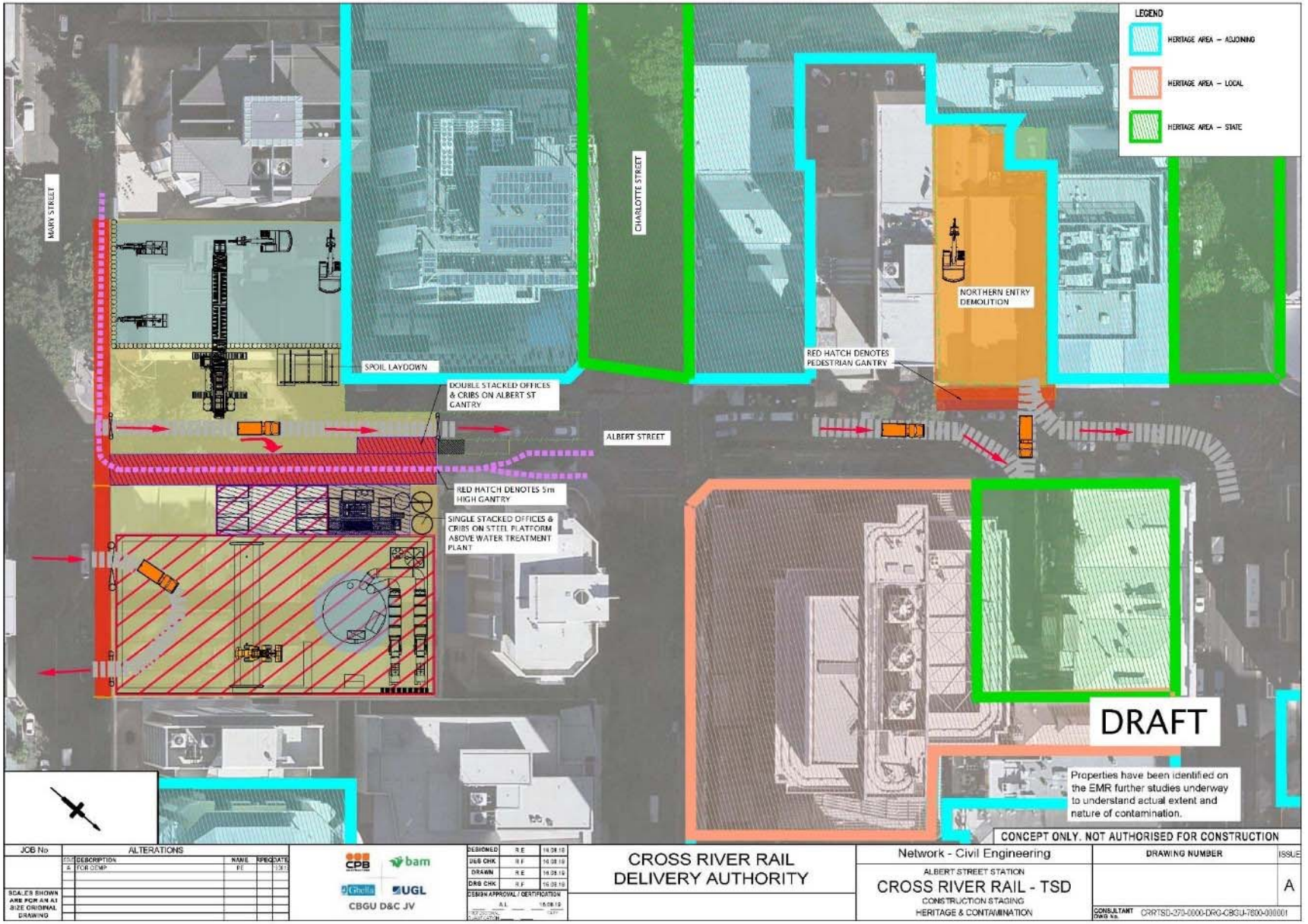


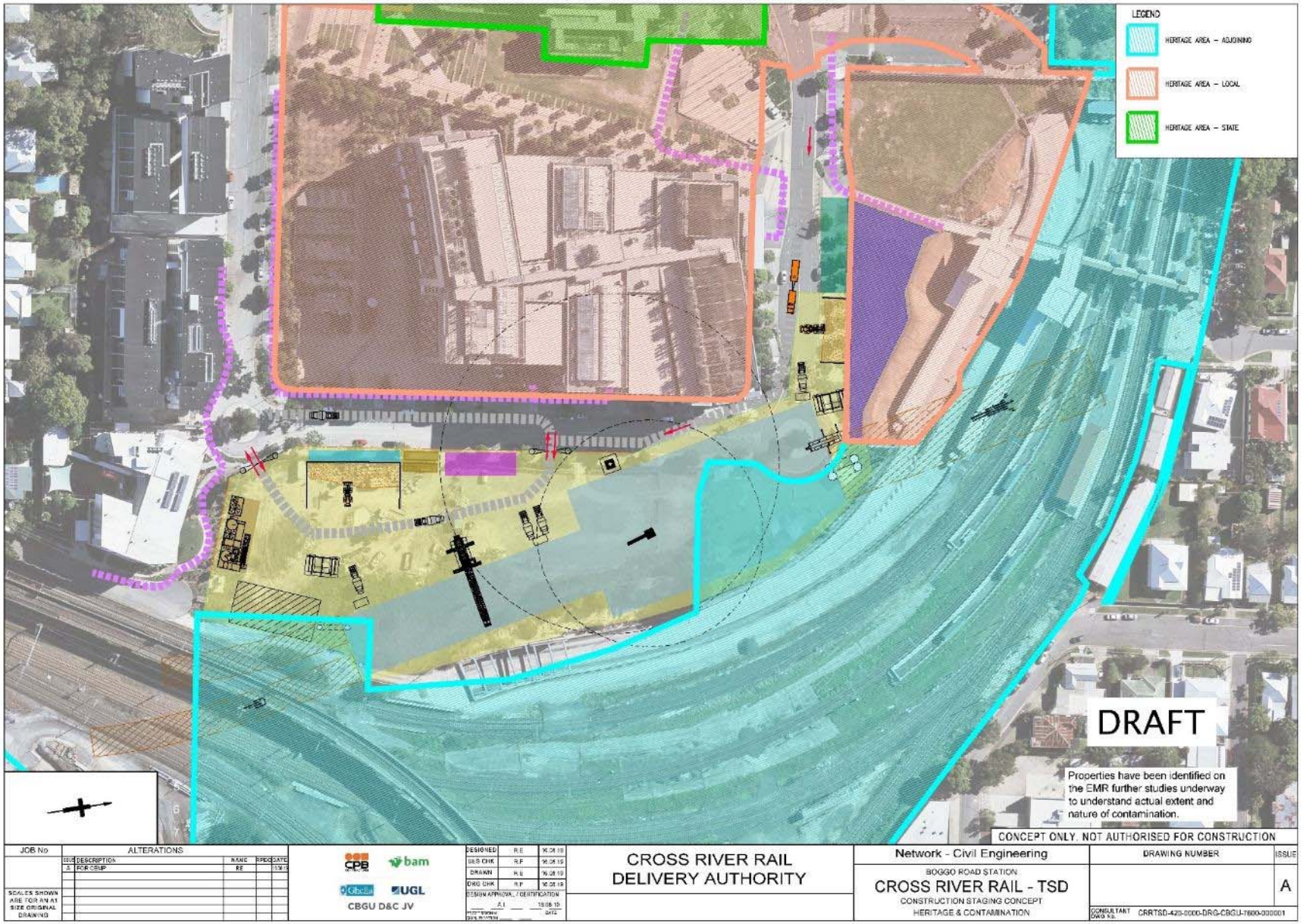


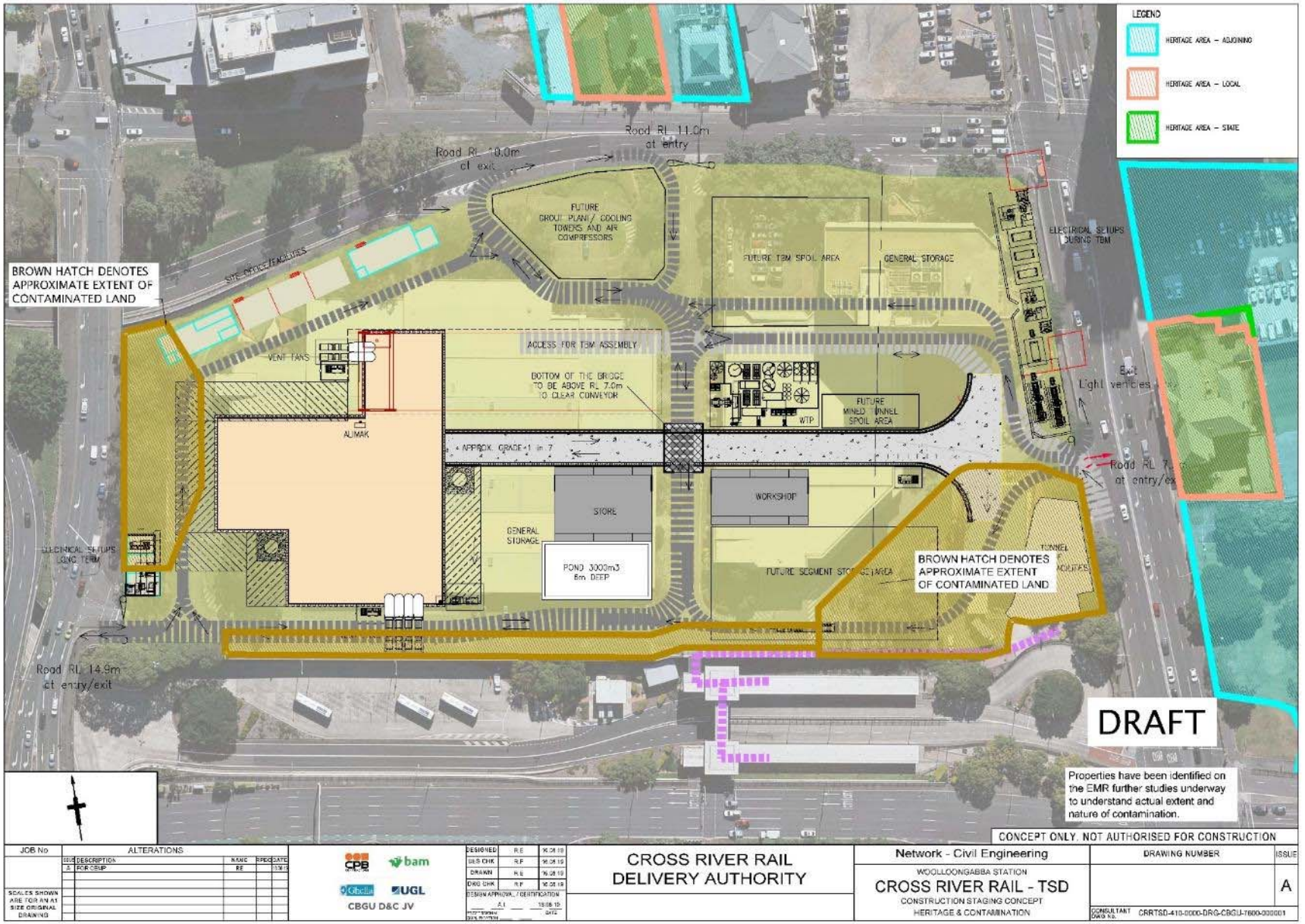


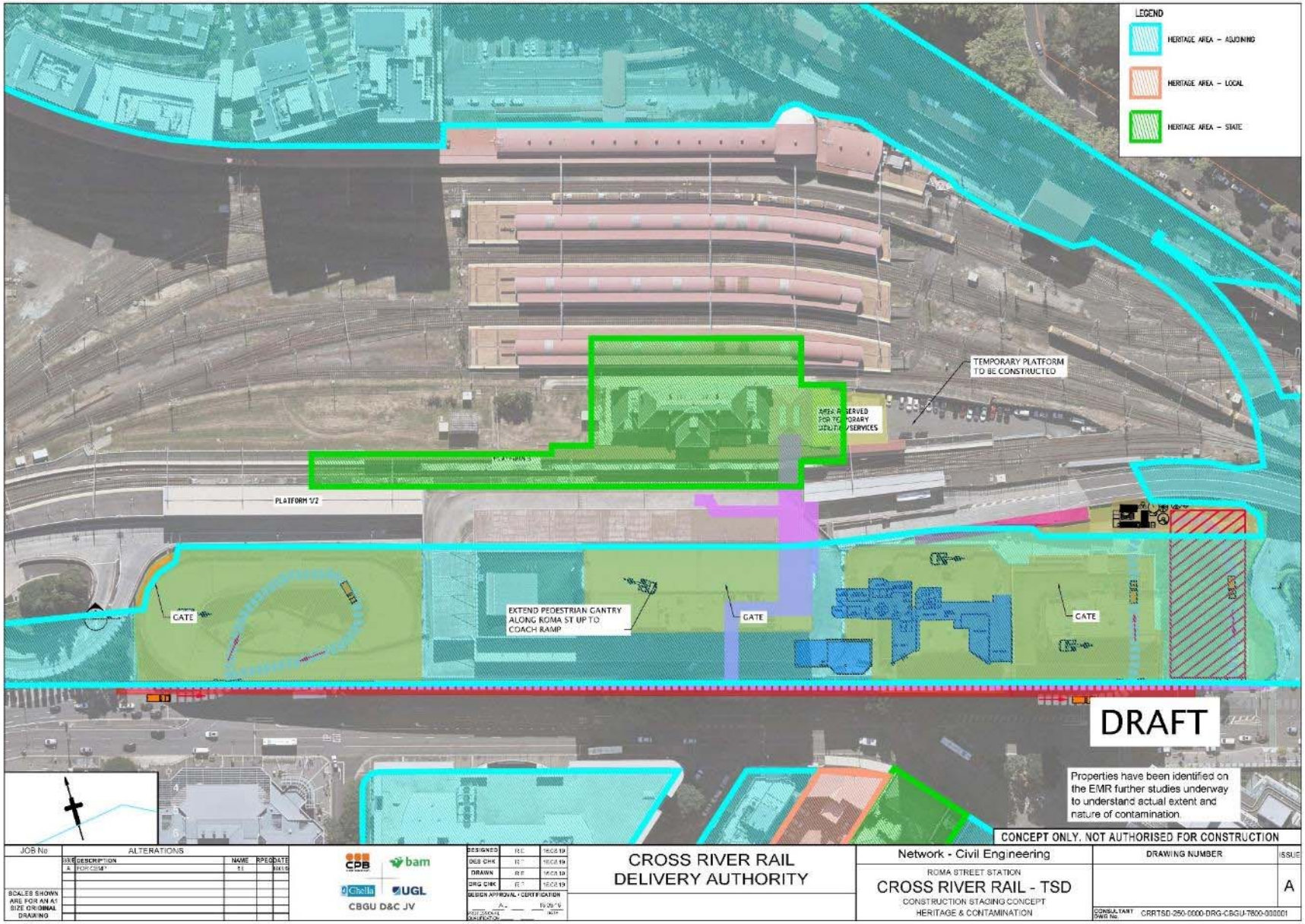
Appendix E

Environment Constraints Maps


LEGEND
HERITAGE AREA – ADJOINING
HERITAGE AREA – LOCAL
HERITAGE AREA – STATE
MARY STREET
CHARLOTTE STREET
NORTHERN ENTRY DEMOLITION
RED HATCH DENOTES PEDESTRIAN GANTRY
SPOIL LAYDOWN
DOUBLE STACKED OFFICES & CRIBS ON ALBERT ST GANTRY
ALBERT STREET
RED HATCH DENOTES 5m HIGH GANTRY
SINGLE STACKED OFFICES & CRIBS ON STEEL PLATFORM ABOVE WATER TREATMENT PLANT
DRAFT
Properties have been identified on the EMR further studies underway to understand actual extent and nature of contamination.
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
CBGU D&C JV
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING
HERITAGE & CONTAMINATION
DRAWING NUMBER
ISSUE
A


LEGEND
HERITAGE AREA – ADJOINING
HERITAGE AREA – LOCAL
HERITAGE AREA – STATE
DRAFT
Properties have been identified on the EMR further studies underway to understand actual extent and nature of contamination.
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
DESCRIPTION
FOR CBUP
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
HERITAGE & CONTAMINATION
DRAWING NUMBER
ISSUE
A
CRRTSD-420-0000-DRG-CBGU-7600-000001


LEGEND
HERITAGE AREA – ADJOINING
HERITAGE AREA – LOCAL
HERITAGE AREA – STATE
BROWN HATCH DENOTES APPROXIMATE EXTENT OF CONTAMINATED LAND
Road RL 11.0m at entry
Road RL 10.0m at exit
FUTURE GROUT PLANT / COOLING TOWERS AND AIR COMPRESSORS
FUTURE TBM SPOIL AREA
GENERAL STORAGE
ELECTRICAL SETUPS DURING TBM
ACCESS FOR TBM ASSEMBLY
VENT FANS
BOTTOM OF THE BRIDGE TO BE ABOVE RL 7.0m TO CLEAR CONVEYOR
FUTURE MINED TUNNEL SPOIL AREA
WTP
ALIMAK
APPROX. GRADE 1 in 7
STORE
GENERAL STORAGE
POND 3000m3 6m DEEP
WORKSHOP
FUTURE SEGMENT STORAGE AREA
TUNNEL ACCESS
BROWN HATCH DENOTES APPROXIMATE EXTENT OF CONTAMINATED LAND
Road RL 14.9m at entry/exit
DRAFT
Properties have been identified on the EMR further studies underway to understand actual extent and nature of contamination.
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
WOOLLOONGABBA STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
HERITAGE & CONTAMINATION
DRAWING NUMBER
ISSUE
A
CBGU D&C JV


LEGEND
HERITAGE AREA – ADJOINING
HERITAGE AREA – LOCAL
HERITAGE AREA – STATE
TEMPORARY PLATFORM TO BE CONSTRUCTED
PLATFORM 1/2
GATE
EXTEND PEDESTRIAN GANTRY ALONG ROMA ST UP TO COACH RAMP
GATE
GATE
DRAFT
Properties have been identified on the EMR further studies underway to understand actual extent and nature of contamination.
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
DESCRIPTION
NAME
DATE
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED
DES CHK
DRAWN
DRG CHK
DESIGN APPROVAL / CERTIFICATION
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
HERITAGE & CONTAMINATION
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-250-0000-DRG-CBGU-7800-000001

Appendix F

Site Layouts

LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
GATE (SITE ENTRY)
GATE (SITE EXIT)
TSD CAR PARK
TSD SITE OFFICES
REALIGN TEMPORARY PEDESTRIAN PATH
LAND BRIDGE
LEVEL CROSSING DETAIL TO BE CONFIRMED BY QR, TSD, RIS
LAYDOWN AREA
PORTAL STRUCTURE
TBM DISASSEMBLY AREA
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE A DESCRIPTION FOR CONSTRUCTION MANAGEMENT PLAN NAME R.E DATE 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
GENERAL ARRANGEMENT
DRAWING NUMBER
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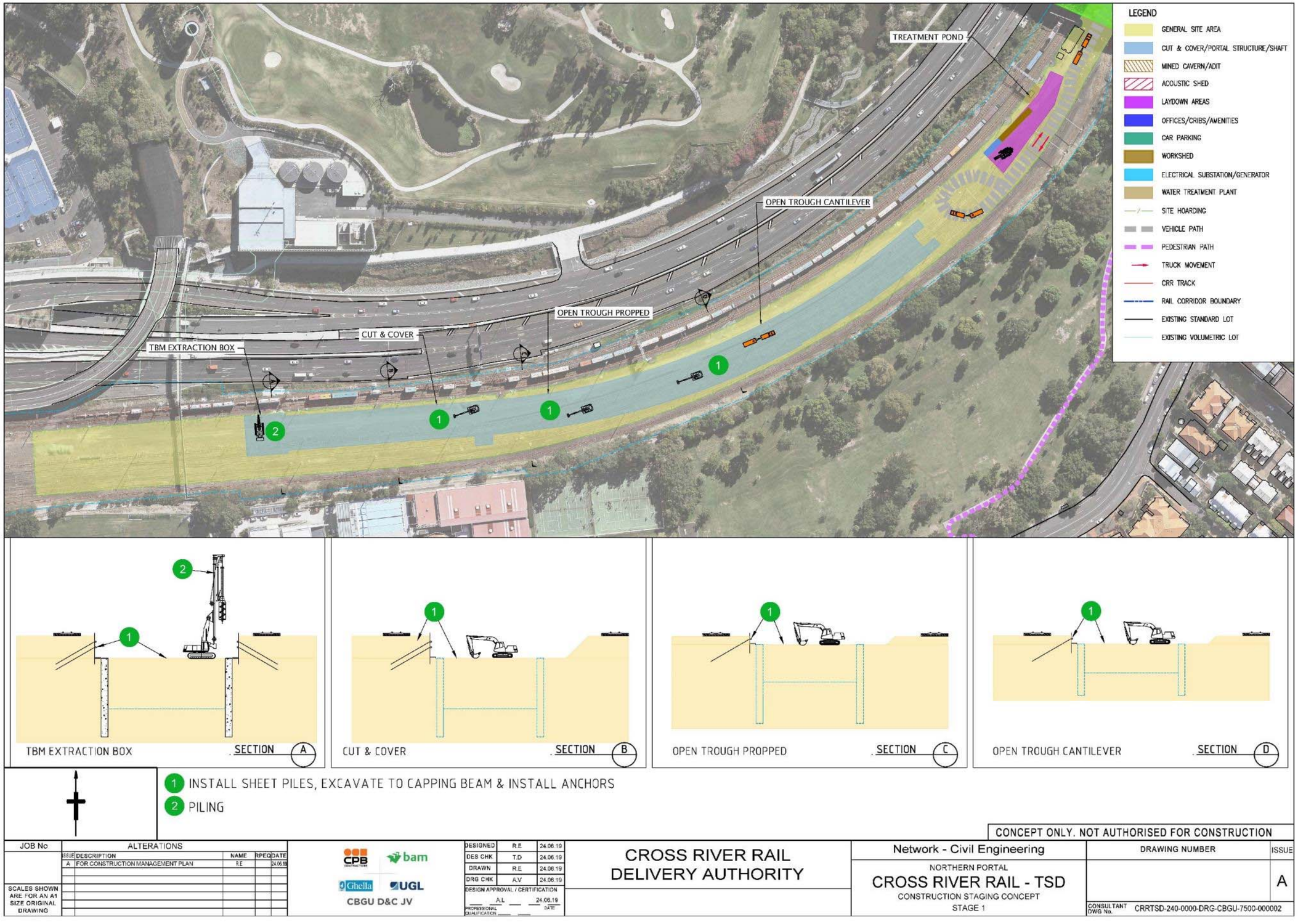
A
CONSULTANT DWG No. CRRTSD-240-0000-DRG-CBGU-7500-000001


TREATMENT POND
OPEN TROUGH CANTILEVER
OPEN TROUGH PROPPED
CUT & COVER
TBM EXTRACTION BOX
LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
TBM EXTRACTION BOX SECTION A
CUT & COVER SECTION B
OPEN TROUGH PROPPED SECTION C
OPEN TROUGH CANTILEVER SECTION D
1 INSTALL SHEET PILES, EXCAVATE TO CAPPING BEAM & INSTALL ANCHORS
2 PILING
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1
DRAWING NUMBER
ISSUE
A
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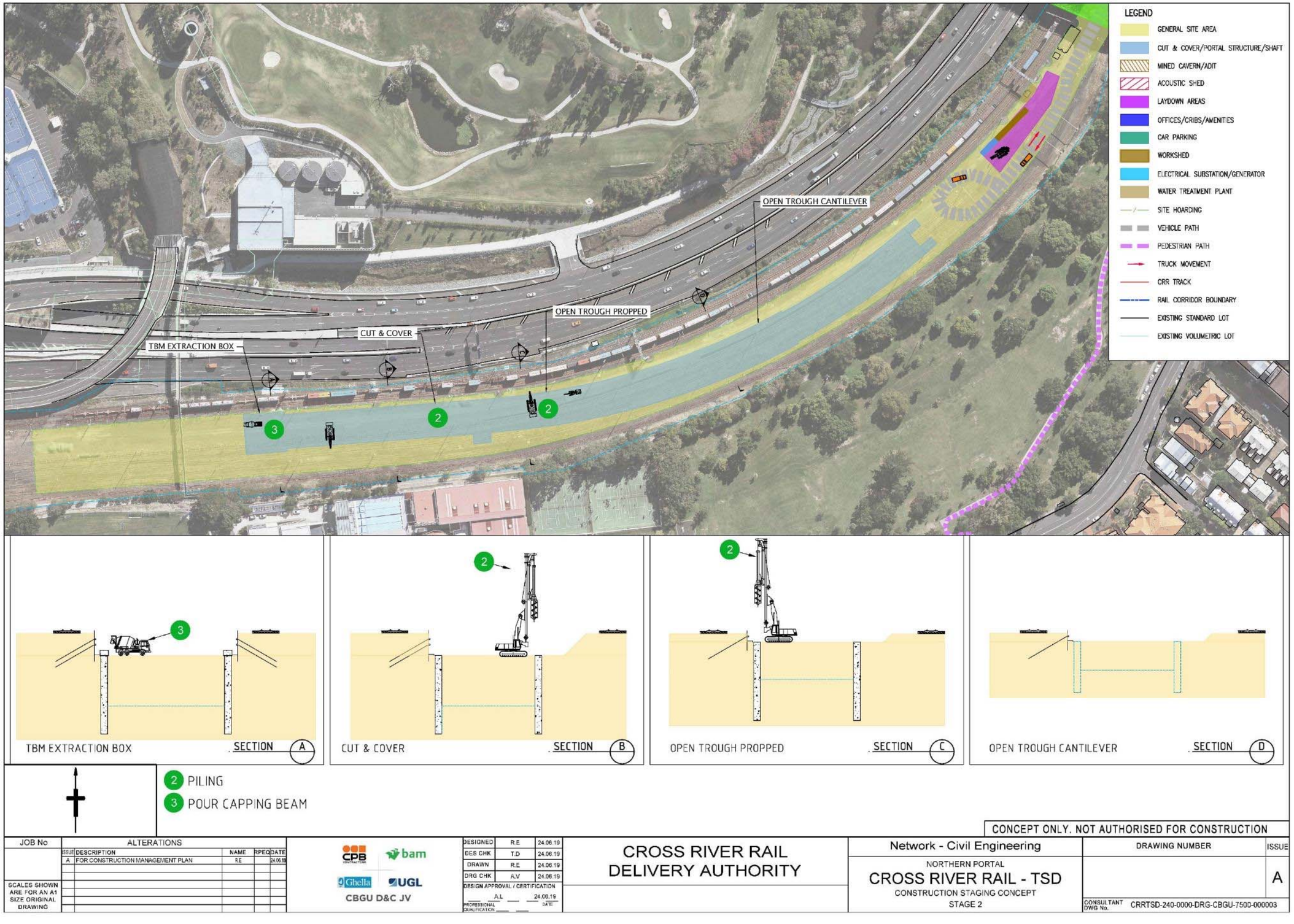
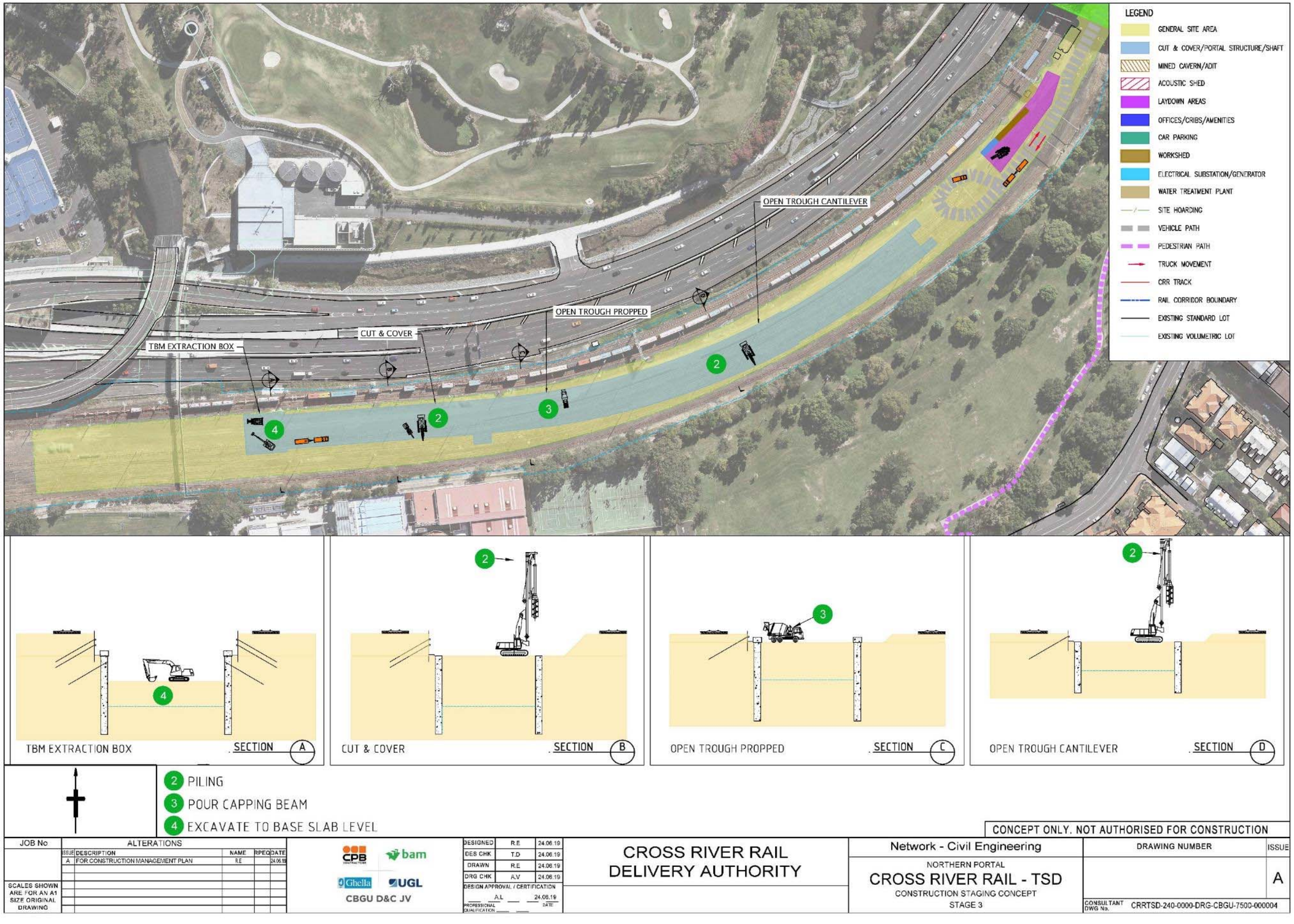
CRRTSD-240-0000-DRG-CBGU-7500-000002


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
OPEN TROUGH CANTILEVER
OPEN TROUGH PROPPED
CUT & COVER
TBM EXTRACTION BOX
3
2
2
TBM EXTRACTION BOX . SECTION A
CUT & COVER . SECTION B
OPEN TROUGH PROPPED . SECTION C
OPEN TROUGH CANTILEVER . SECTION D
2 PILING
3 POUR CAPPING BEAM
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 2
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-240-0000-DRG-CBGU-7500-000003


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
TBM EXTRACTION BOX
CUT & COVER
OPEN TROUGH PROPPED
OPEN TROUGH CANTILEVER
TBM EXTRACTION BOX SECTION A
CUT & COVER SECTION B
OPEN TROUGH PROPPED SECTION C
OPEN TROUGH CANTILEVER SECTION D
2 PILING
3 POUR CAPPING BEAM
4 EXCAVATE TO BASE SLAB LEVEL
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3
DRAWING NUMBER
ISSUE
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CONSULTANT DWG No.
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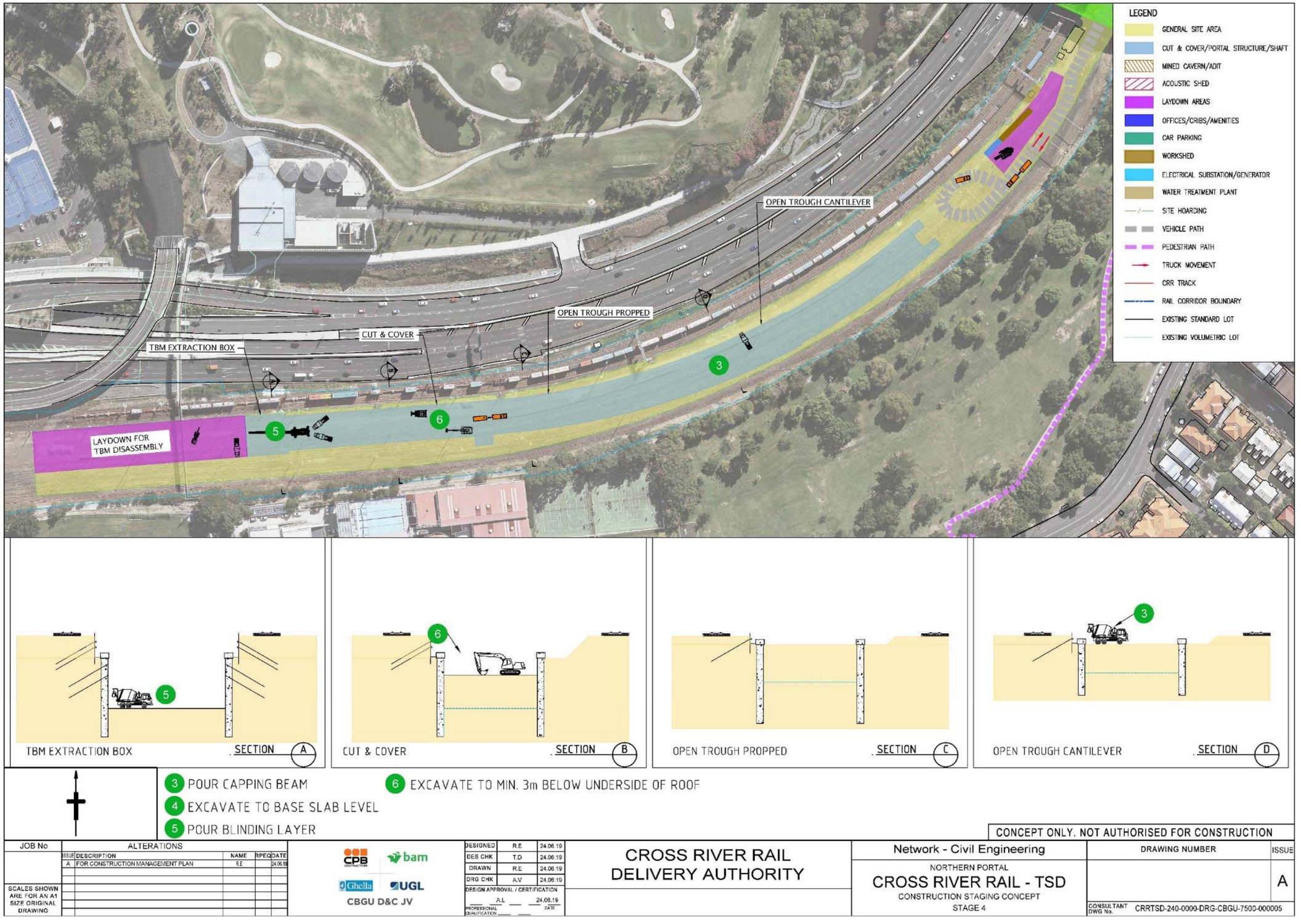
LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
OPEN TROUGH CANTILEVER
OPEN TROUGH PROPPED
CUT & COVER
TBM EXTRACTION BOX
LAYDOWN FOR TBM DISASSEMBLY
3
5
6
TBM EXTRACTION BOX SECTION A
CUT & COVER SECTION B
OPEN TROUGH PROPPED SECTION C
OPEN TROUGH CANTILEVER SECTION D
3 POUR CAPPING BEAM
4 EXCAVATE TO BASE SLAB LEVEL
5 POUR BLINDING LAYER
6 EXCAVATE TO MIN. 3m BELOW UNDERSIDE OF ROOF
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 4
DRAWING NUMBER
ISSUE
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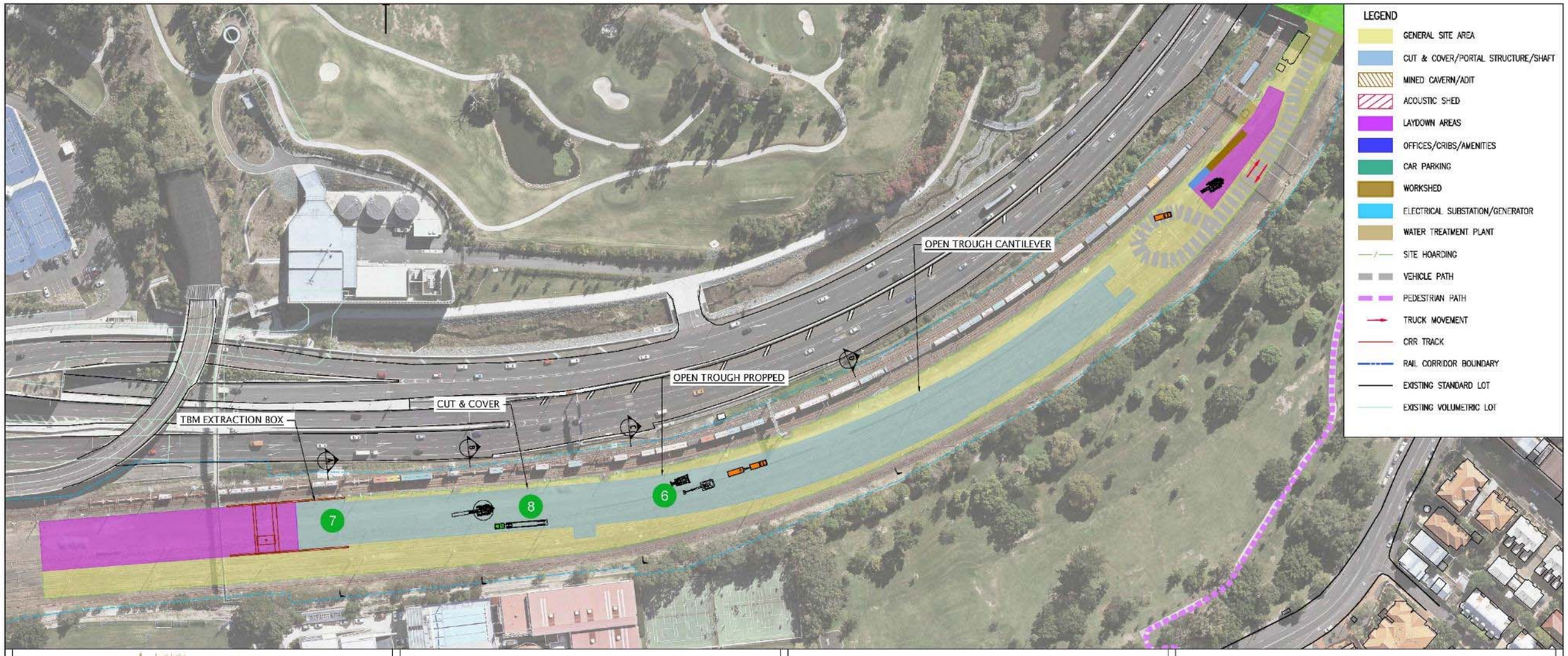
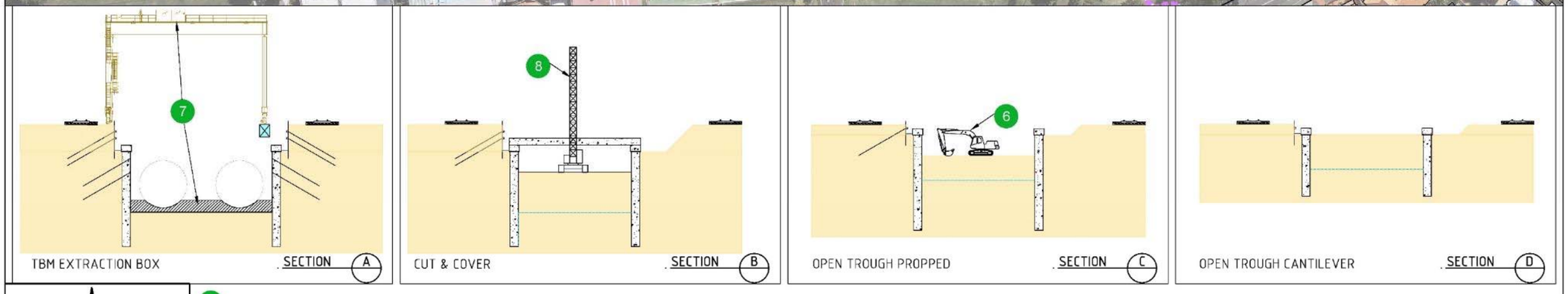
CONSULTANT DWG No.
CRRTSD-240-0000-DRG-CBGU-7500-000005





6 EXCAVATE TO MIN. 3m BELOW UNDERSIDE OF PROP
7 ERECT PORTAL CRANE & INSTALL TBM CRADLE
8 INSTALL PRECAST ROOF

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	T.D	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	A.V	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE

CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 5

DRAWING NUMBER	ISSUE
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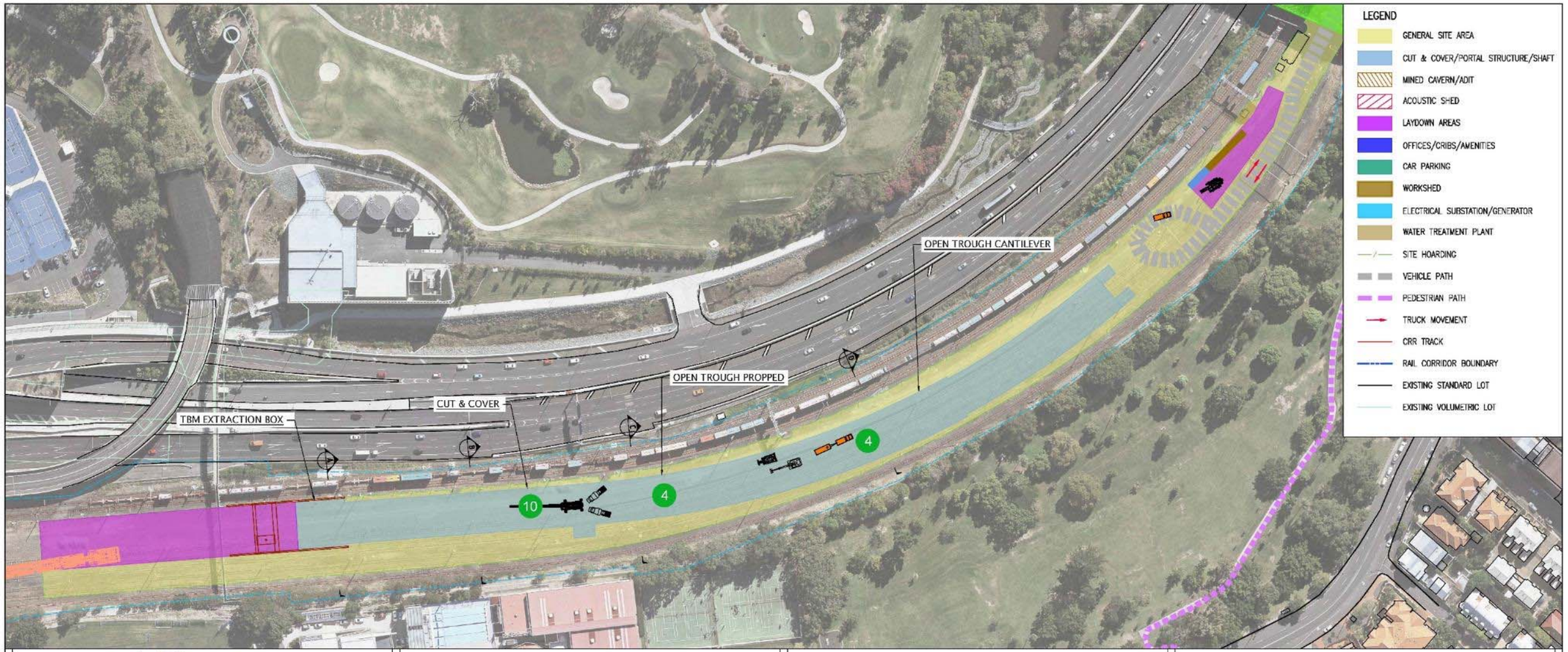
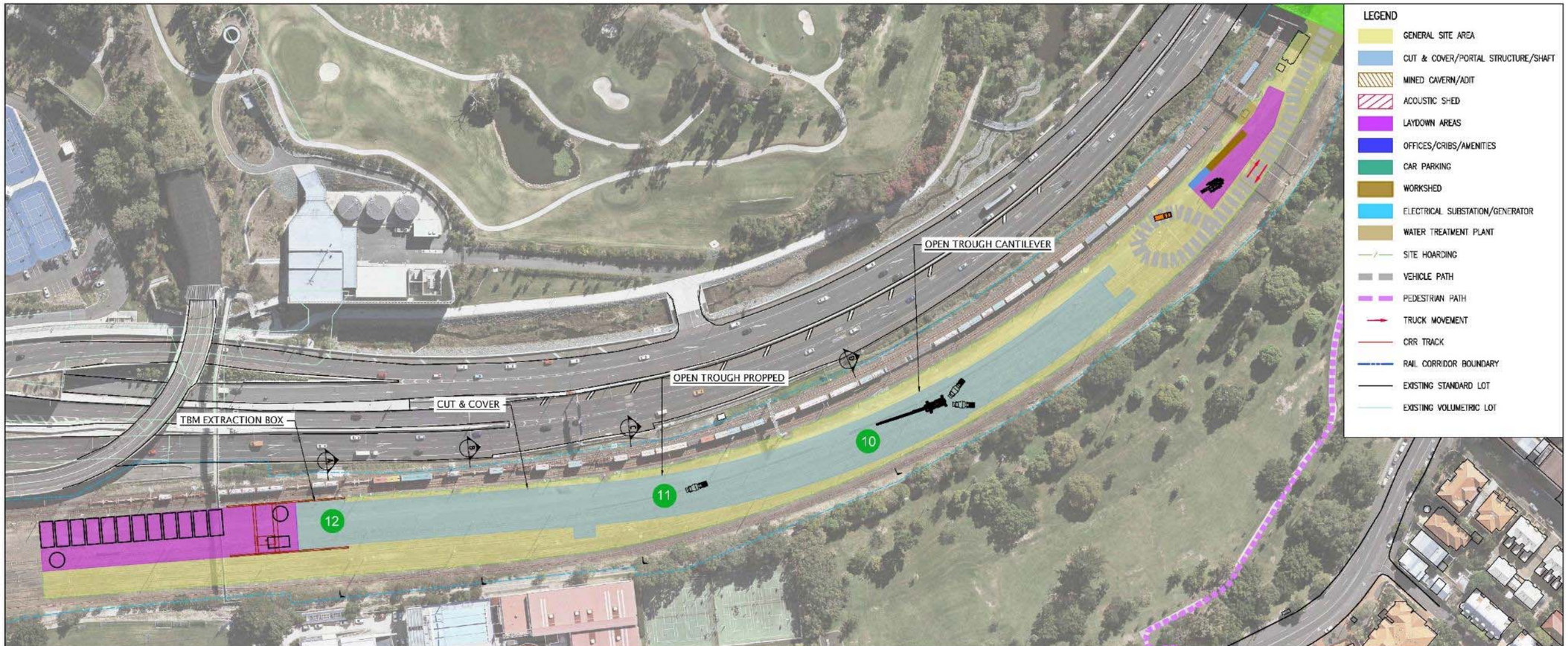
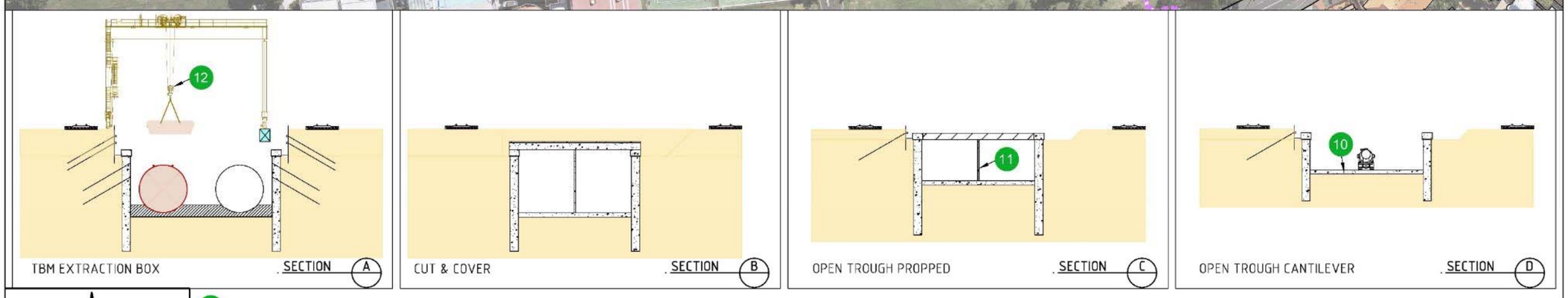
CONSULTANT DWG No. CRRTSD-240-0000-DRG-CBGU-7500-000006


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
TBM EXTRACTION BOX
CUT & COVER
OPEN TROUGH PROPPED
OPEN TROUGH CANTILEVER
10
4
4
TBM EXTRACTION BOX SECTION A
CUT & COVER SECTION B
OPEN TROUGH PROPPED SECTION C
OPEN TROUGH CANTILEVER SECTION D
4 EXCAVATE TO BASE SLAB LEVEL
9 INSTALL PROPS
10 POUR BASE SLAB
11 INSTALL FIRE SEPERATION WALL
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 6
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No. CRRTSD-240-0000-DRG-CBGU-7500-000007





10 POUR BASE SLAB
11 INSTALL FIRE SEPERATION WALL
12 TBM DISASSEMBLY

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	T.D	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	A.V	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE

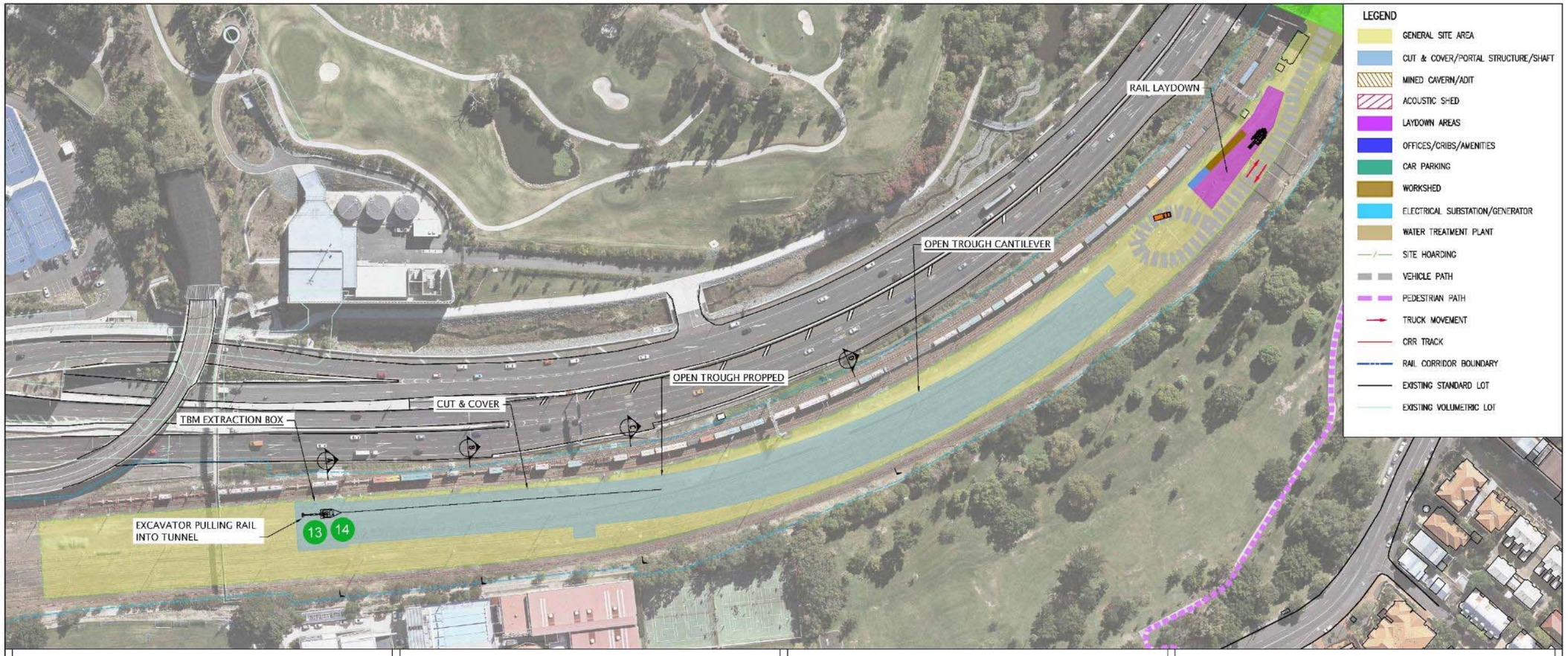
CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 7

DRAWING NUMBER	ISSUE
	A

CONSULTANT DWG No. CRRTSD-240-0000-DRG-CBGU-7500-000008


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
RAIL LAYDOWN
OPEN TROUGH CANTILEVER
OPEN TROUGH PROPPED
CUT & COVER
TBM EXTRACTION BOX
EXCAVATOR PULLING RAIL INTO TUNNEL
13
14
TBM EXTRACTION BOX
SECTION A
CUT & COVER
SECTION B
OPEN TROUGH PROPPED
SECTION C
OPEN TROUGH CANTILEVER
13 POUR BASE SLAB, INSTALL FIRE SEPERATION WALL & INSTALL ROOF
14 RAIL INSTALLATION
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
NORTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 8
DRAWING NUMBER
ISSUE
A
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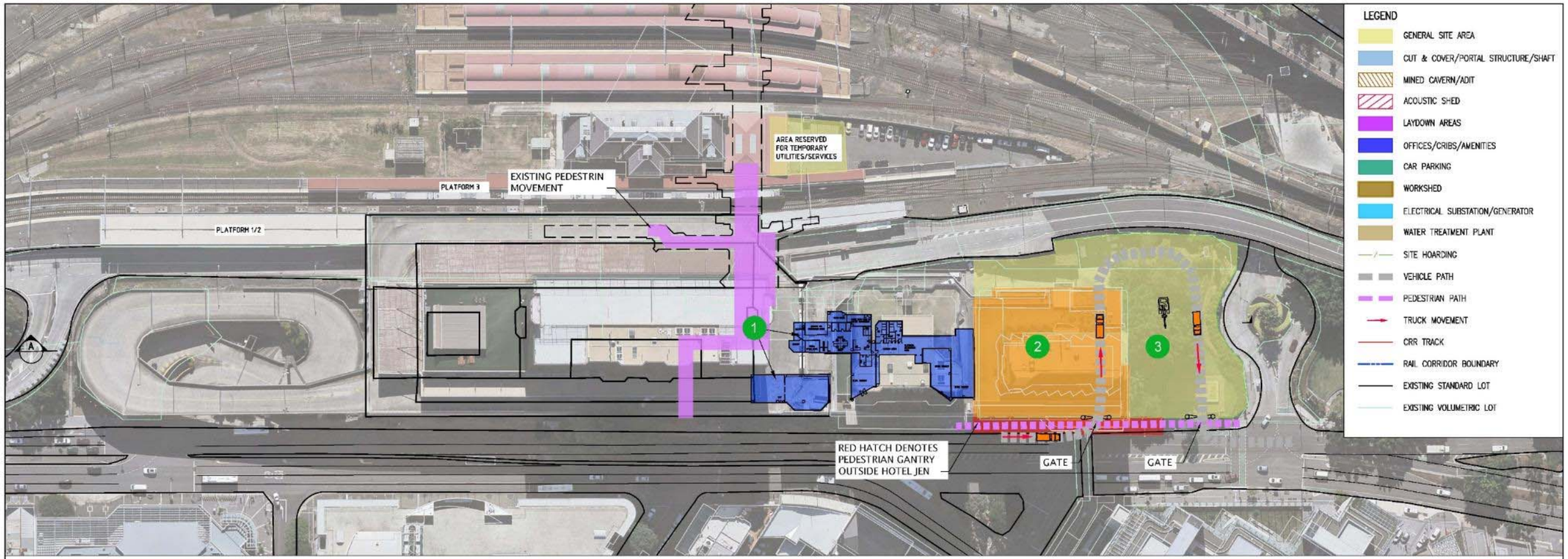
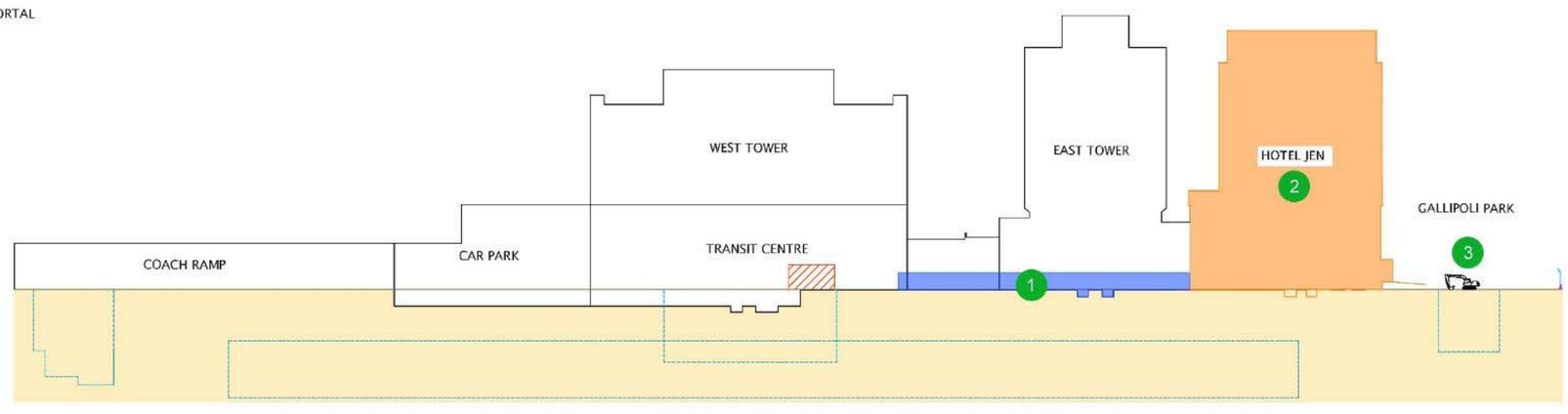




1 SET UP OFFICES & CRIBS IN EAST TOWER
2 DEMOLITION - HOTEL JEN
3 EARTHWORKS IN GALLIPOLI PARK

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	T.D	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	T.D	24.06.19

DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION — DATE

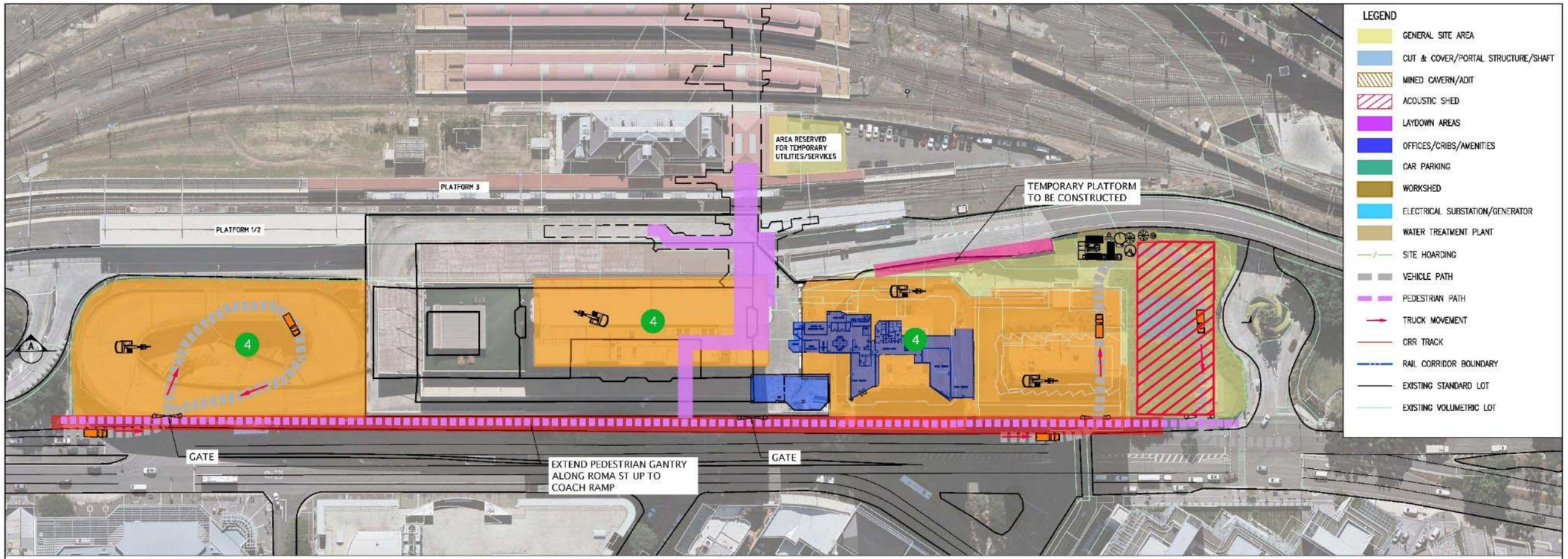
CROSS RIVER RAIL DELIVERY AUTHORITY

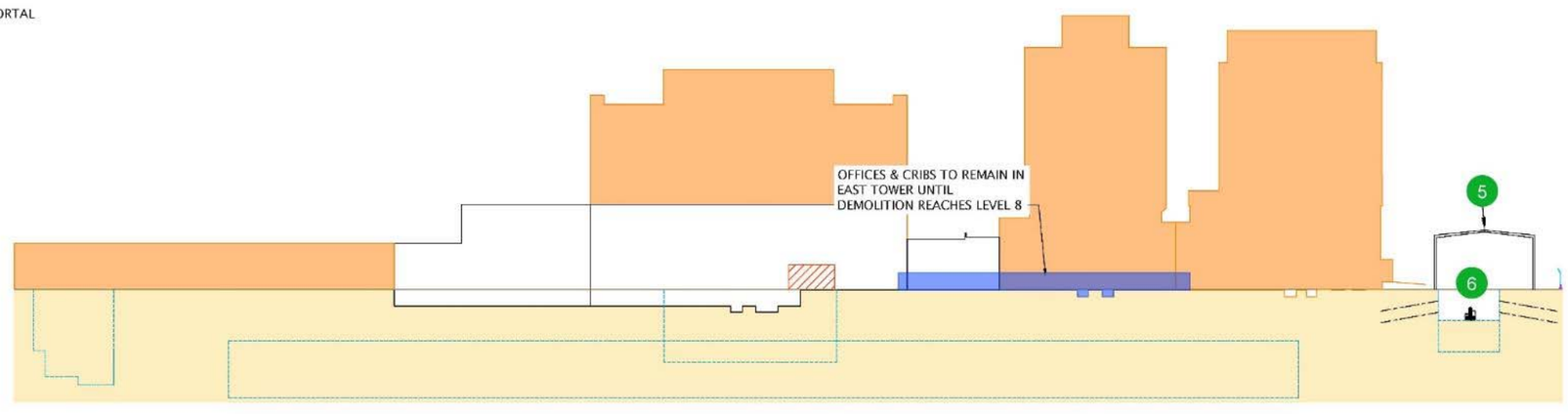
Network - Civil Engineering

ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1

DRAWING NUMBER	ISSUE
	A

CONSULTANT DWG No. CRRTSD-250-0000-DRG-CBGU-7500-000001





4 DEMOLITION - EAST TOWER, WEST TOWER AND COACH RAMP
5 ERECT ACOUSTIC SHED IN GALLIPOLI PARK
6 EXCAVATE GALLIPOLI PARK SHAFT

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	T.D	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	T.D	24.06.19

DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION DATE

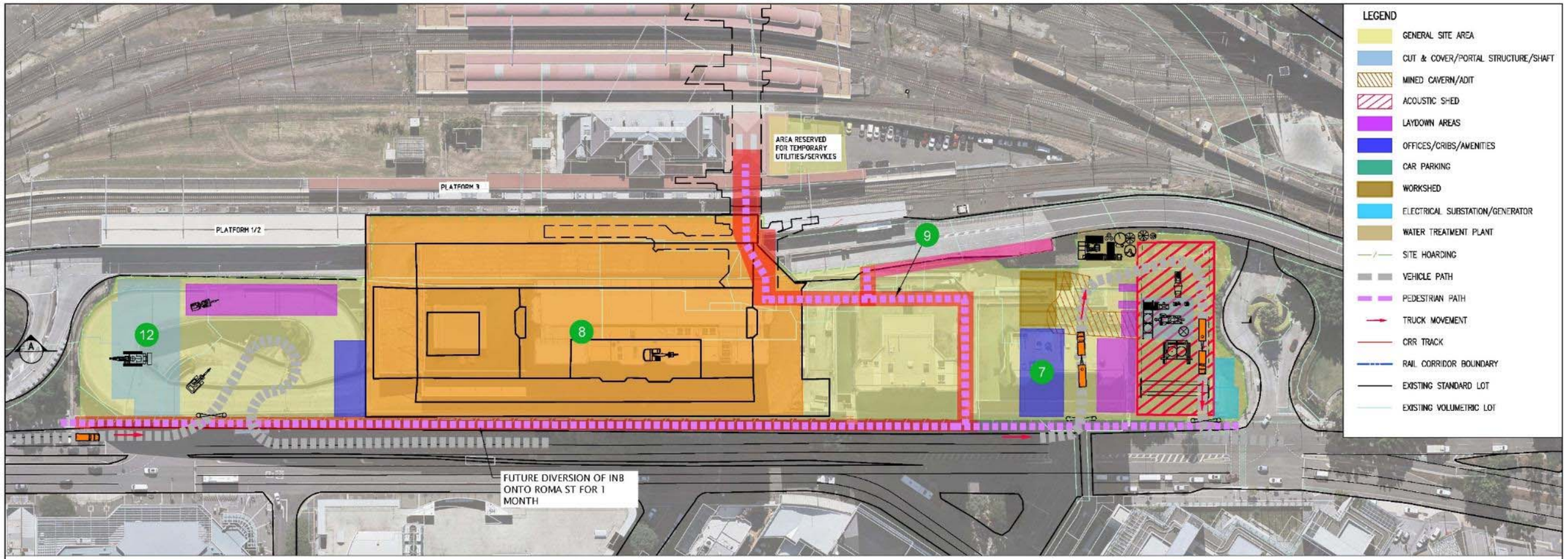
CROSS RIVER RAIL DELIVERY AUTHORITY

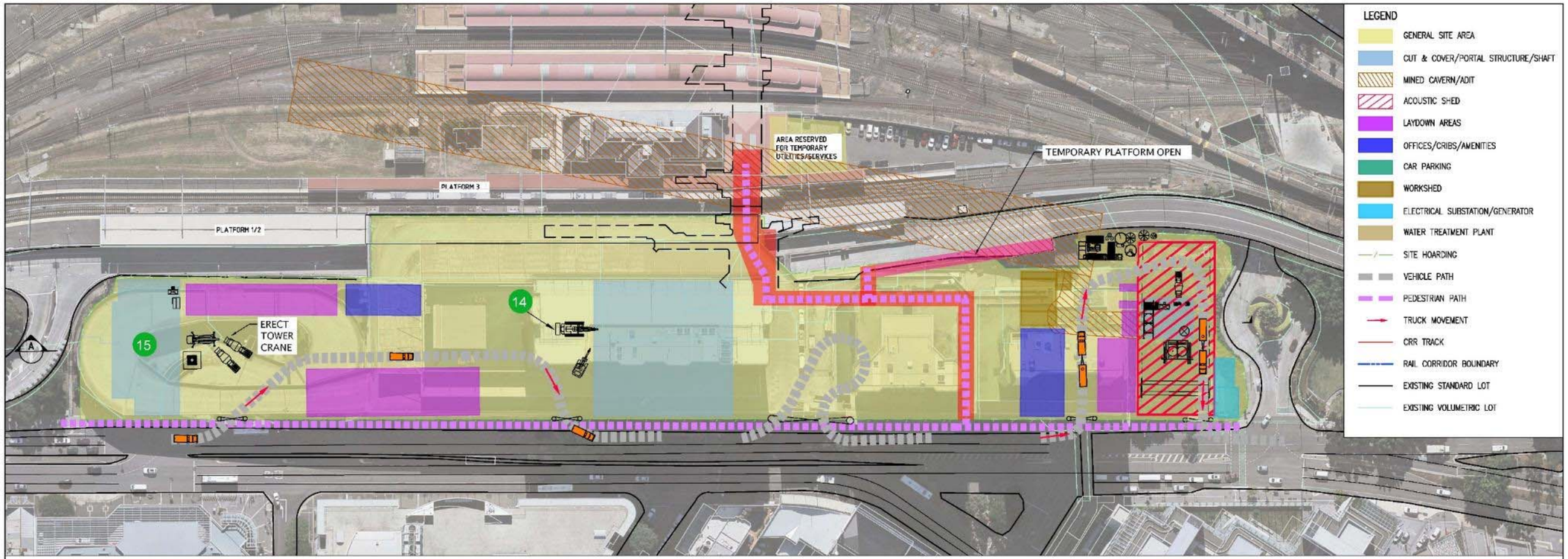
Network - Civil Engineering

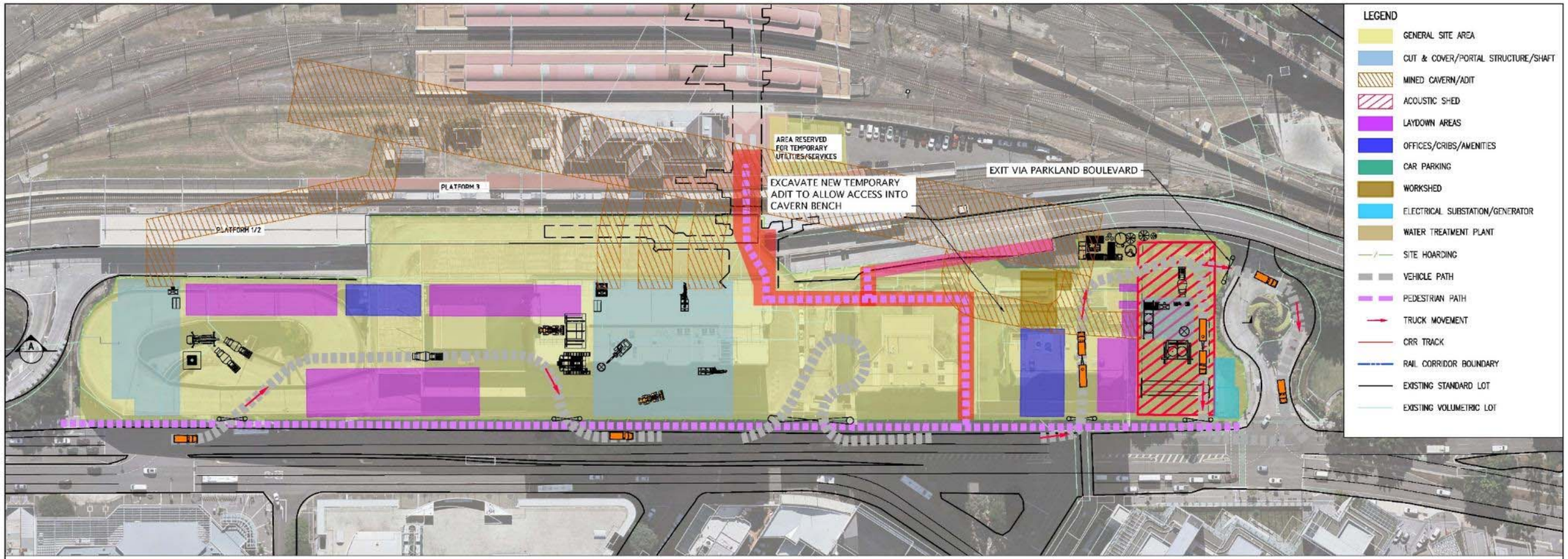
ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 2

DRAWING NUMBER	ISSUE
	A

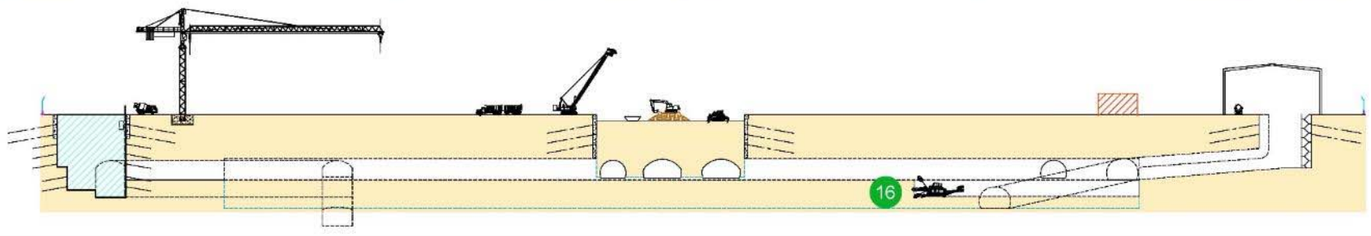
CONSULTANT DWG No. CRRTSD-250-0000-DRG-CBGU-7500-000002


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
AREA RESERVED FOR TEMPORARY UTILITIES/SERVICES
PLATFORM 3
PLATFORM 1/2
FUTURE DIVERSION OF INB ONTO ROMA ST FOR 1 MONTH
12
8
9
7
TO NORTHERN PORTAL (NORTH)
TO ALBERT ST (SOUTH)
SECTION A
7 RELOCATE CRIBS & AMENITIES
8 DEMOLITION - CAR PARK, TRANSIT CENTRE
9 ERECT NEW PEDESTRIAN ACCESS CORRIDOR
10 EXCAVATE ACCESS ADIT FROM GALLIPOLI PARK SHAFT TO CAVERN
11 EXCAVATION TOP HEADING CAVERN
12 PILING SERVICE BUILDING SHAFT
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK T.D 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-250-0000-DRG-CBGU-7500-000003

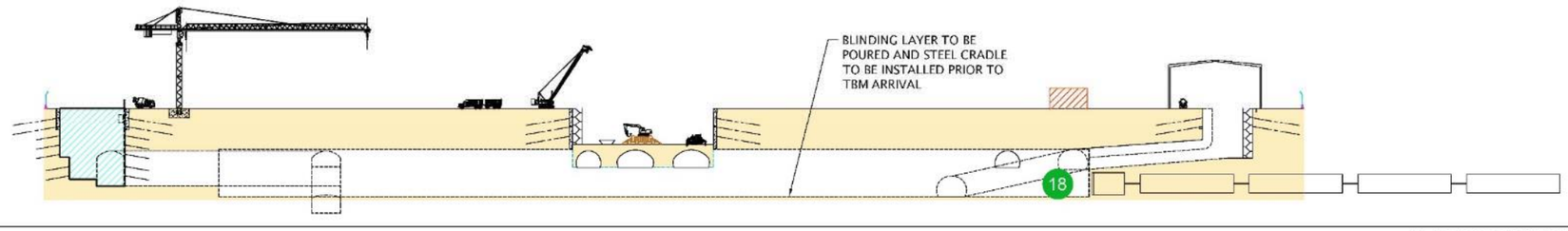

LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
AREA RESERVED FOR TEMPORARY UTILITIES/SERVICES
TEMPORARY PLATFORM OPEN
PLATFORM 3
PLATFORM 1/2
ERECT TOWER CRANE
15
14
A
TO NORTHERN PORTAL (NORTH)
TO ALBERT ST (SOUTH)
14
PERMANENT ADIT
13
15
SECTION A
13 EXCAVATION SERVICE BUILDING SHAFT
14 PILING VT BOX
15 BUILDING WORKS SERVICE BUILDING SHAFT
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK T.D 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 4
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-250-0000-DRG-CBGU-7500-000004



CAVERN BENCH EXCAVATION



CAVERN EXCAVATION COMPLETE



16 CAVERN BENCH EXCAVATION
17 EXCAVATION VT BOX
18 TBM BREAKTHROUGH

ALL SECTIONS TAKEN THROUGH SECTION A

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	T.D	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	T.D	24.06.19

DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION DATE

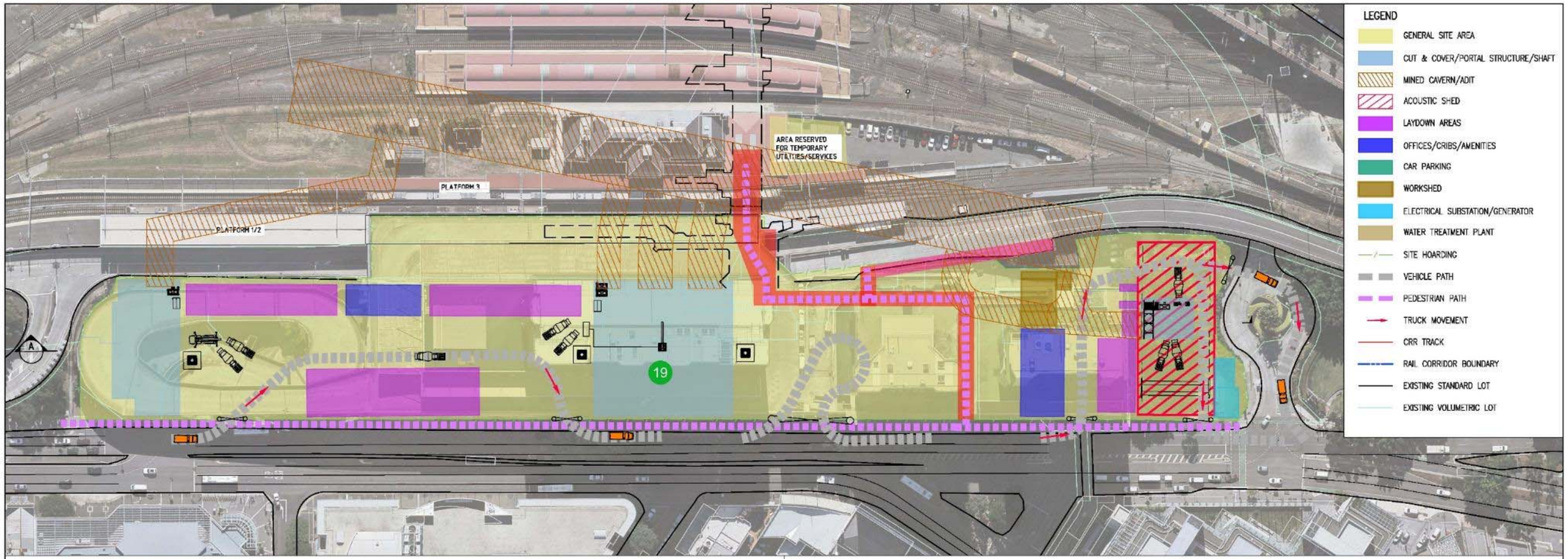
CROSS RIVER RAIL DELIVERY AUTHORITY

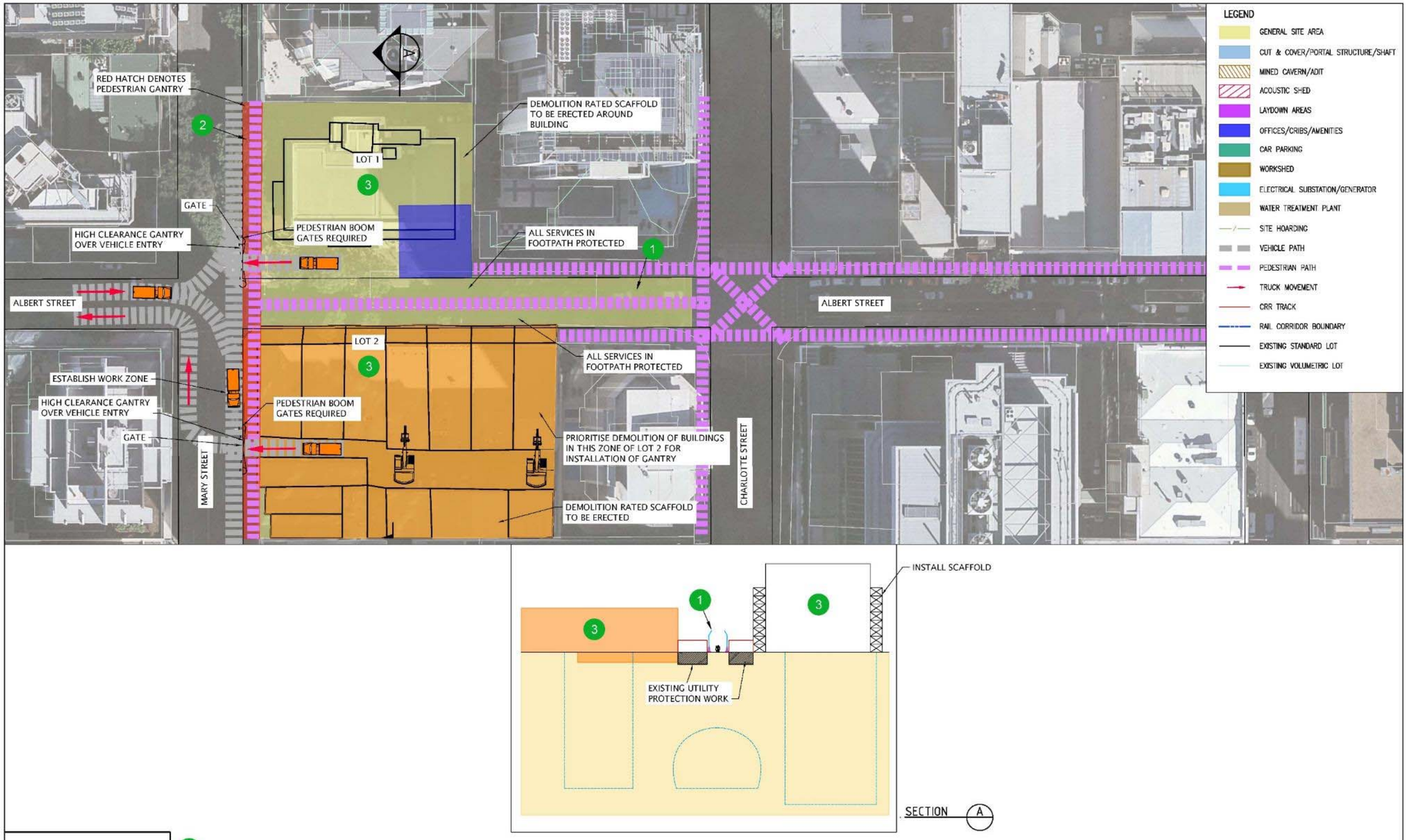
Network - Civil Engineering

ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 5

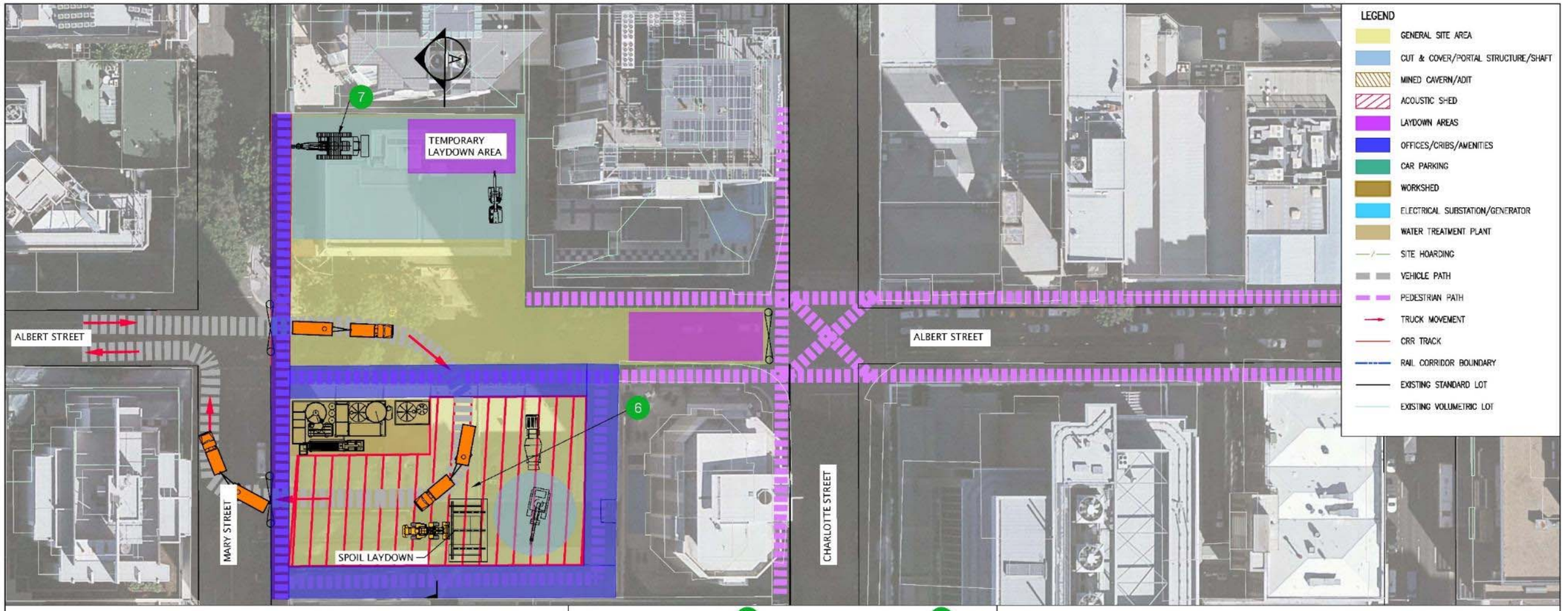
DRAWING NUMBER	ISSUE
	A

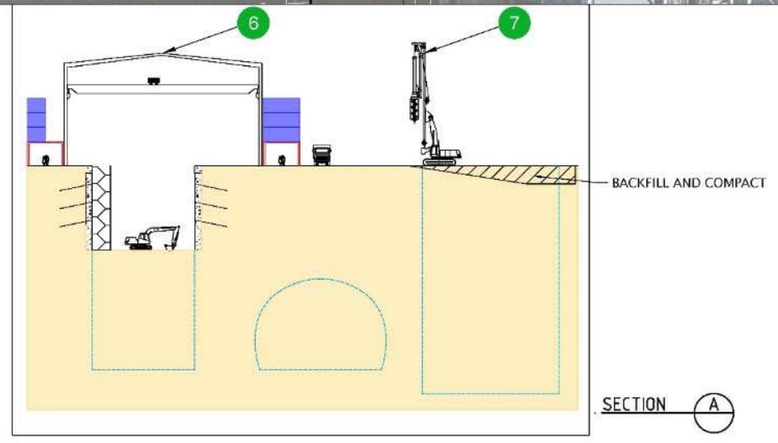
CONSULTANT DWG No. CRRTSD-250-0000-DRG-CBGU-7500-000005


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
AREA RESERVED FOR TEMPORARY UTILITIES/SERVICES
PLATFORM 3
PLATFORM 1/2
19
A
CAVERN SECONDARY LINING
19
20
PLAZA WORKS
22
21
MEZZANINE & PLATFORM INSTALLATION
20
BUILDING WORKS GALLIPOLI PARK SHAFT
23
19 BUILDING WORKS VT BOX
20 CAVERN SECONDARY LINING & FIT OUT
21 BACKFILL TEMPORARY CONSTRUCTION ADIT
22 PLAZA WORKS
23 BUILDING WORKS GALLIPOLI PARK SHAFT
ALL SECTIONS TAKEN THROUGH SECTION A
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK T.D 24.06.19
DRAWN R.E 24.06.19
DRG CHK T.D 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ROMA STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 6
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-250-0000-DRG-CBGU-7500-000006


RED HATCH DENOTES PEDESTRIAN GANTRY
2
GATE
HIGH CLEARANCE GANTRY OVER VEHICLE ENTRY
ALBERT STREET
ESTABLISH WORK ZONE
HIGH CLEARANCE GANTRY OVER VEHICLE ENTRY
GATE
MARY STREET
LOT 1
3
PEDESTRIAN BOOM GATES REQUIRED
DEMOLITION RATED SCAFFOLD TO BE ERECTED AROUND BUILDING
ALL SERVICES IN FOOTPATH PROTECTED
1
LOT 2
3
PEDESTRIAN BOOM GATES REQUIRED
ALL SERVICES IN FOOTPATH PROTECTED
PRIORITISE DEMOLITION OF BUILDINGS IN THIS ZONE OF LOT 2 FOR INSTALLATION OF GANTRY
DEMOLITION RATED SCAFFOLD TO BE ERECTED
CHARLOTTE STREET
ALBERT STREET
LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
INSTALL SCAFFOLD
1
3
3
EXISTING UTILITY PROTECTION WORK
SECTION A
1 ERECT TEMPORARY BARRIER HOARDING DOWN ALBERT ST
2 ERECT PEDESTRIAN OVER HEAD GANTRY DOWN MARY ST
3 DEMOLITION OF EXISTING BUILDINGS LOT 1 & LOT 2
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE A DESCRIPTION: FOR CONSTRUCTION MANAGEMENT PLAN NAME: R.E RPEQ: DATE: 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No. CRRTSD-270-0000-DRG-CBGU-7500-000001

LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
ESTABLISH WORK ZONE
ALBERT STREET
GATE
ALBERT STREET
TEMPORARY LAYDOWN AREA
OFFICES, CRIBS & AMENITIES STACKED ON TOP OF GANTRY
LOT 2 TEMPORARY SHAFT
MARY STREET
CHARLOTTE STREET
4
5
SECTION A
4 ERECT PEDESTRIAN OVER HEAD GANTRY AROUND BACK OF LOT 2 AND EAST SIDE OF ALBERT ST
5 PILING LOT 2 TEMPORARY SHAFT
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE A DESCRIPTION: FOR CONSTRUCTION MANAGEMENT PLAN NAME: R.E
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 2
DRAWING NUMBER
ISSUE A
CONSULTANT DWG No. CRRTSD-270-0000-DRG-CBGU-7500-000002





6 ERECT ACOUSTIC SHED IN LOT 2 AND COMMENCE EXCAVATION OF SHAFT

7 PILING LOT 1 SHAFT

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	K.B	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	C.M	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE

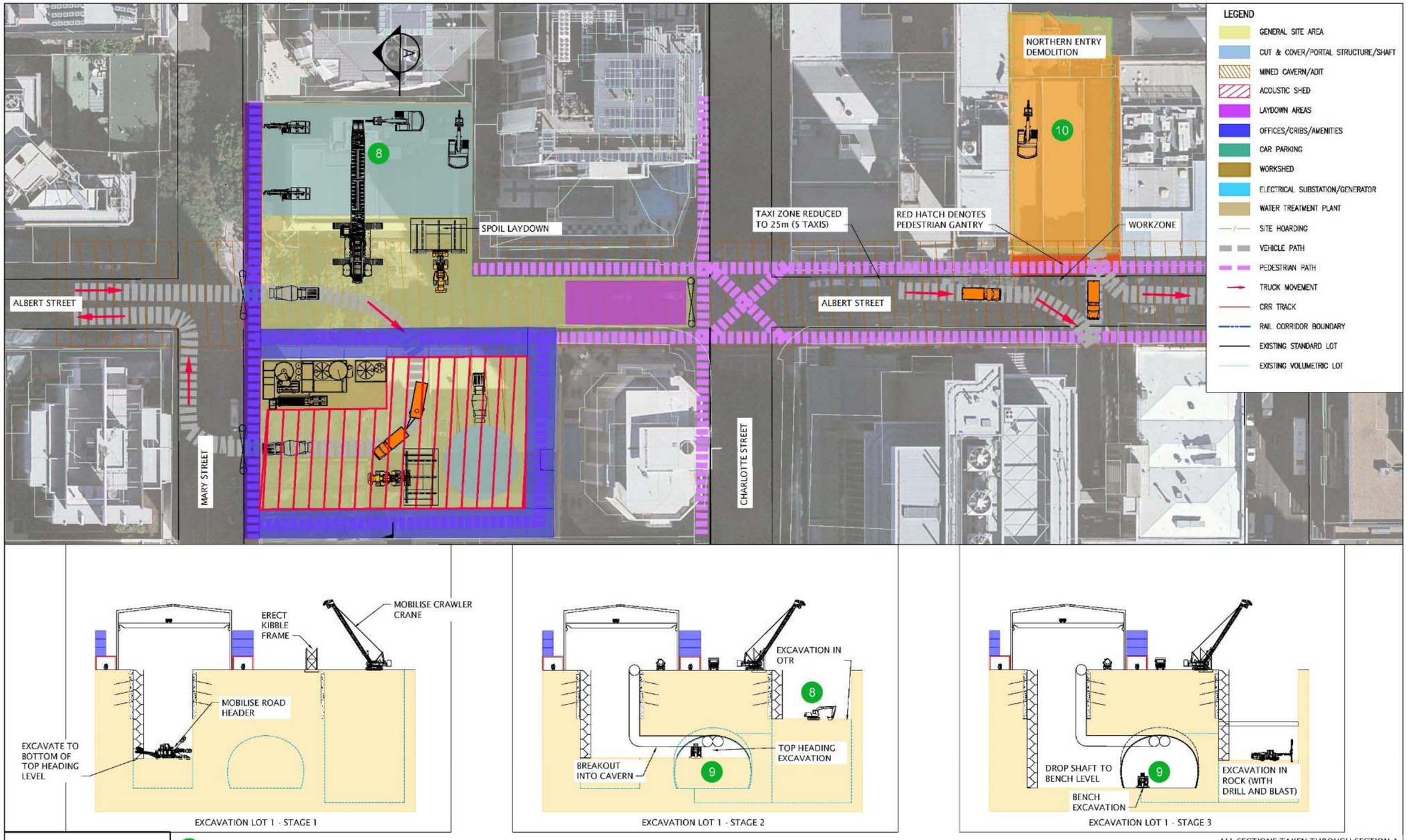
CROSS RIVER RAIL DELIVERY AUTHORITY

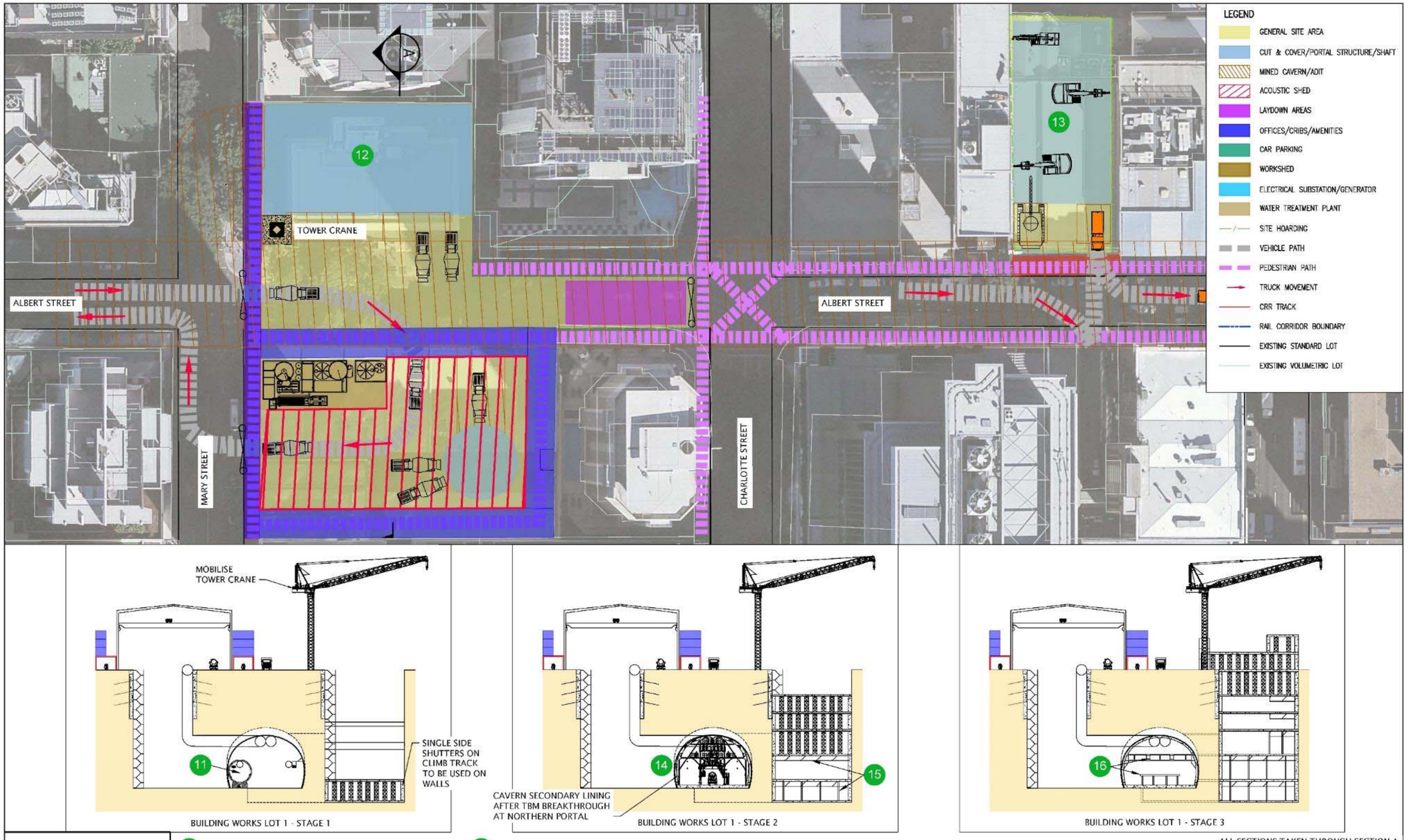
Network - Civil Engineering

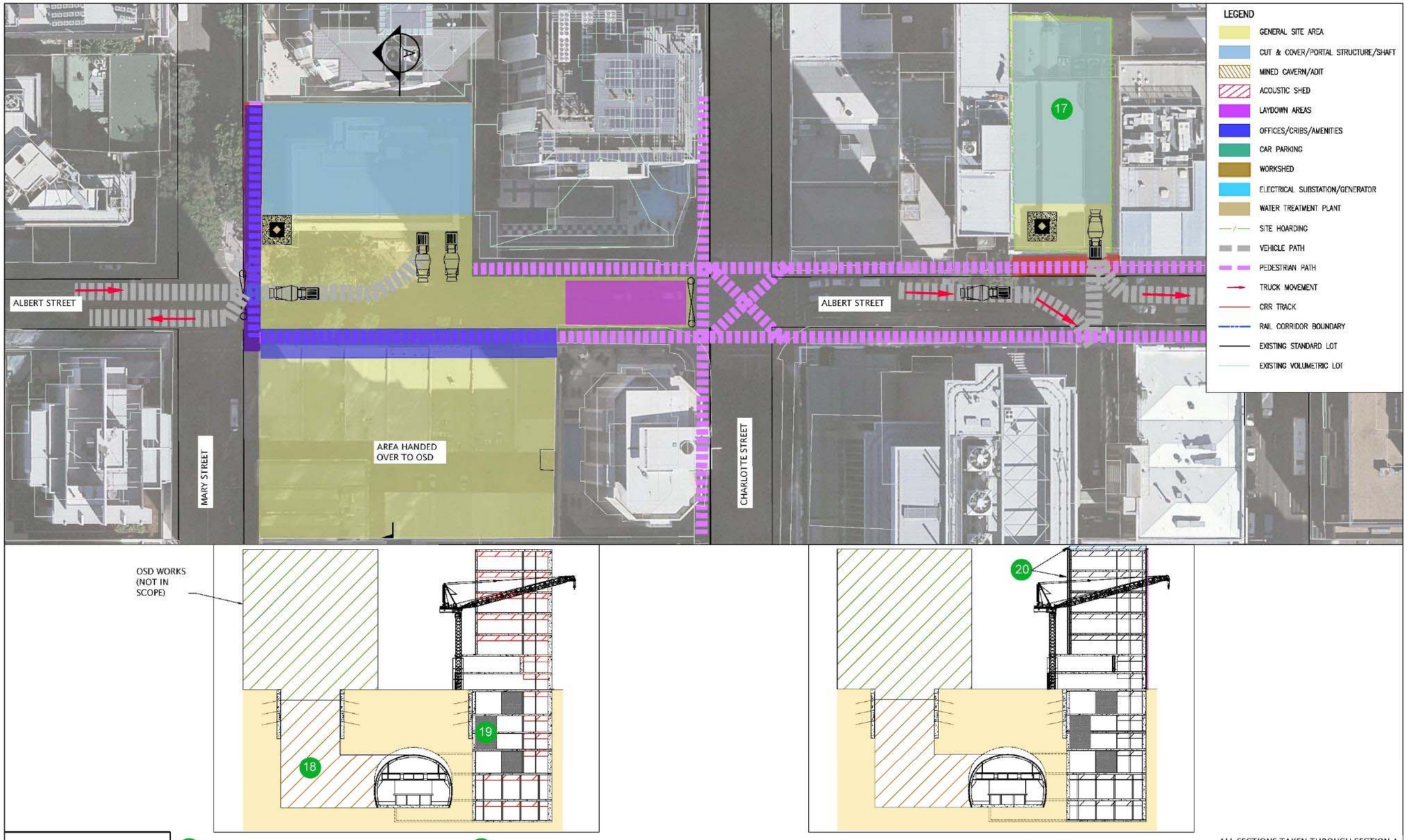
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3

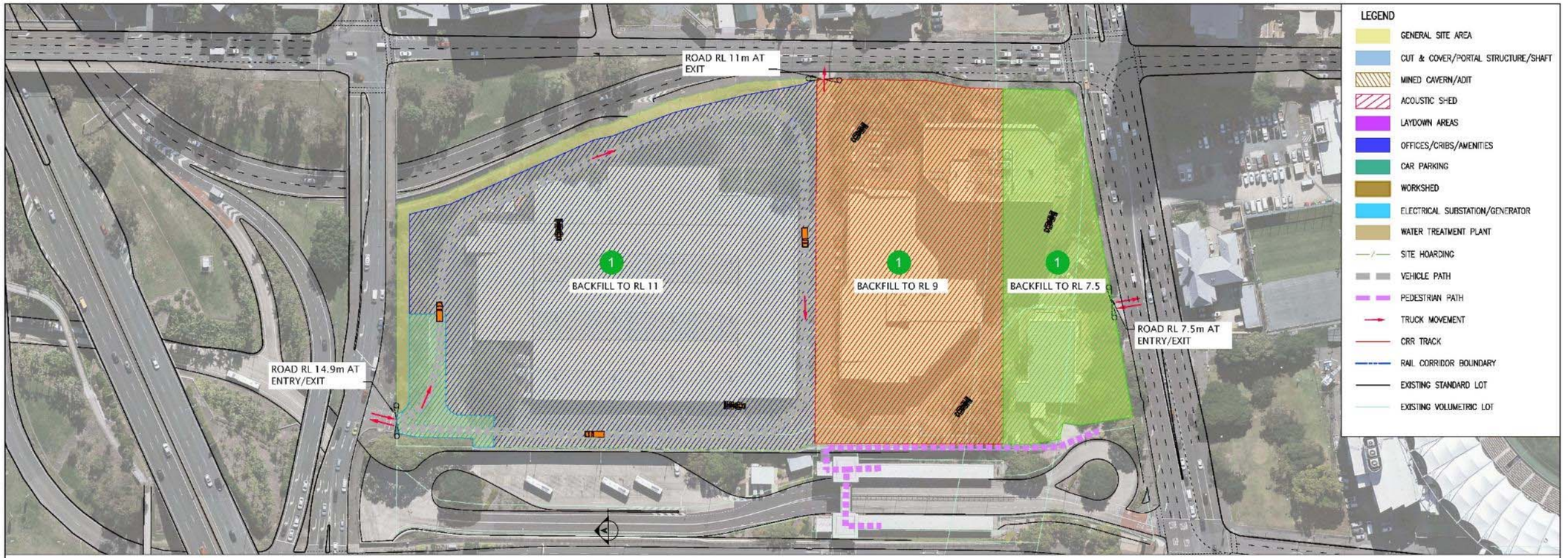
DRAWING NUMBER	ISSUE
	A0

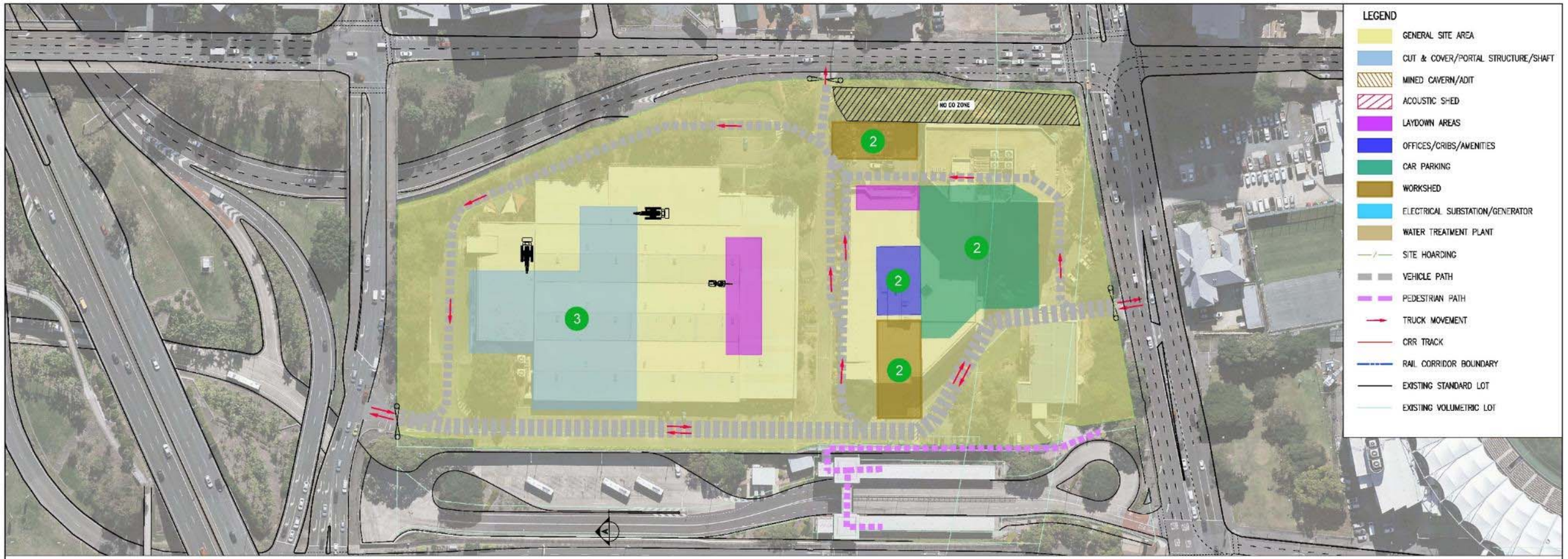
CONSULTANT DWG No. CRRTSD-270-0000-DRG-CBGU-7500-000003

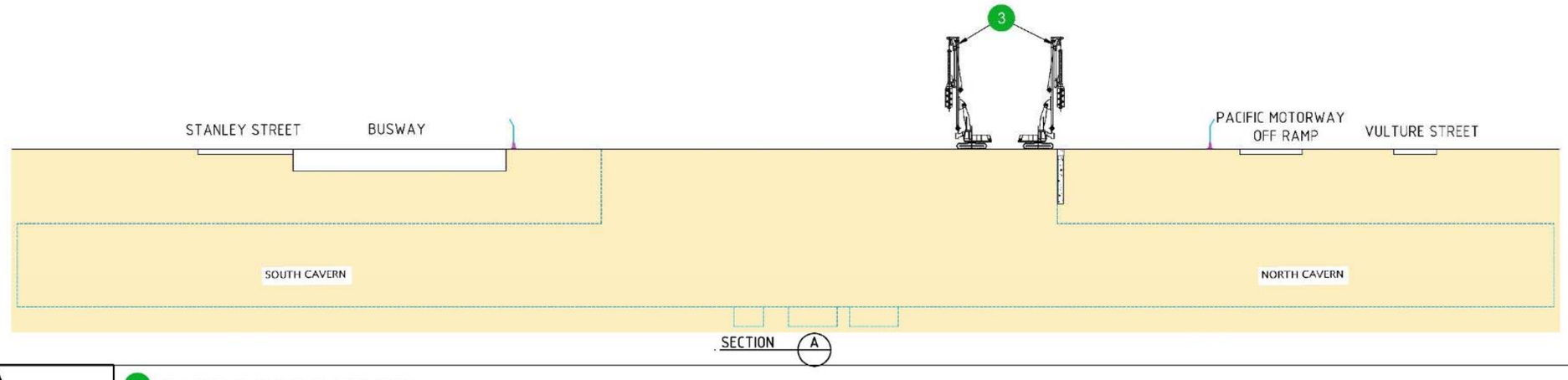

LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
NORTHERN ENTRY DEMOLITION
10
8
SPOIL LAYDOWN
TAXI ZONE REDUCED TO 25m (5 TAXIS)
RED HATCH DENOTES PEDESTRIAN GANTRY
WORKZONE
ALBERT STREET
ALBERT STREET
MARY STREET
CHARLOTTE STREET
ERECT KIBBLE FRAME
MOBILISE CRAWLER CRANE
MOBILISE ROAD HEADER
EXCAVATE TO BOTTOM OF TOP HEADING LEVEL
EXCAVATION LOT 1 - STAGE 1
EXCAVATION IN OTR
8
TOP HEADING EXCAVATION
BREAKOUT INTO CAVERN
9
EXCAVATION LOT 1 - STAGE 2
DROP SHAFT TO BENCH LEVEL
9
EXCAVATION IN ROCK (WITH DRILL AND BLAST)
BENCH EXCAVATION
EXCAVATION LOT 1 - STAGE 3
8 EXCAVATE LOT 1 SHAFT
9 CAVERN MINING
10 NORTHERN ENTRY DEMOLITION
ALL SECTIONS TAKEN THROUGH SECTION A
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 4
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-270-0000-DRG-CBGU-7500-000004


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
12
13
TOWER CRANE
ALBERT STREET
ALBERT STREET
MARY STREET
CHARLOTTE STREET
MOBILISE TOWER CRANE
11
SINGLE SIDE SHUTTERS ON CLIMB TRACK TO BE USED ON WALLS
BUILDING WORKS LOT 1 - STAGE 1
14
15
CAVERN SECONDARY LINING AFTER TBM BREAKTHROUGH AT NORTHERN PORTAL
BUILDING WORKS LOT 1 - STAGE 2
16
BUILDING WORKS LOT 1 - STAGE 3
ALL SECTIONS TAKEN THROUGH SECTION A
11 TBM BREAKTHROUGH
12 BUILDING WORKS LOT 1 SHAFT
13 EXCAVATION NORTHERN ENTRY SHAFT
14 CAVERN SECONDARY LINING
15 SERVICE INSTALLATION AND BLOCK WORK LOT 1 SHAFT
16 MEZZANINE & PLATFORM INSTALLATION
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 5
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-270-0000-DRG-CBGU-7500-000005


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
ALBERT STREET
ALBERT STREET
MARY STREET
CHARLOTTE STREET
AREA HANDED OVER TO OSD
17
OSD WORKS (NOT IN SCOPE)
18
19
20
17 BUILDING WORKS NORTHERN ENTRY
18 BACKFILL LOT 2 SHAFT
19 INSTALL ESCULATORS
20 INSTALL FACADE AND ROOF ENCLOSURE
ALL SECTIONS TAKEN THROUGH SECTION A
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE A DESCRIPTION FOR CONSTRUCTION MANAGEMENT PLAN NAME R.E DATE 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
ALBERT STREET STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 6
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-270-0000-DRG-CBGU-7500-000006


ROAD RL 11m AT EXIT
BACKFILL TO RL 11
BACKFILL TO RL 9
BACKFILL TO RL 7.5
ROAD RL 14.9m AT ENTRY/EXIT
ROAD RL 7.5m AT ENTRY/EXIT
LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
TO BOGGO RD (SOUTH)
TO ALBERT ST (NORTH)
STANLEY STREET
BUSWAY
PACIFIC MOTORWAY OFF RAMP
VULTURE STREET
SECTION A
1 BACKFILL TO SPECIFIED RL'S
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK C.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK C.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
WOOLLOONGABBA STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-410-0000-DRG-CBGU-7500-000001





2 SITE ESTABLISHMENT ACTIVITIES
3 PILING & CAPPING BEAM INSTALLATION WORKING NORTH TO SOUTH

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	C.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	C.M	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE

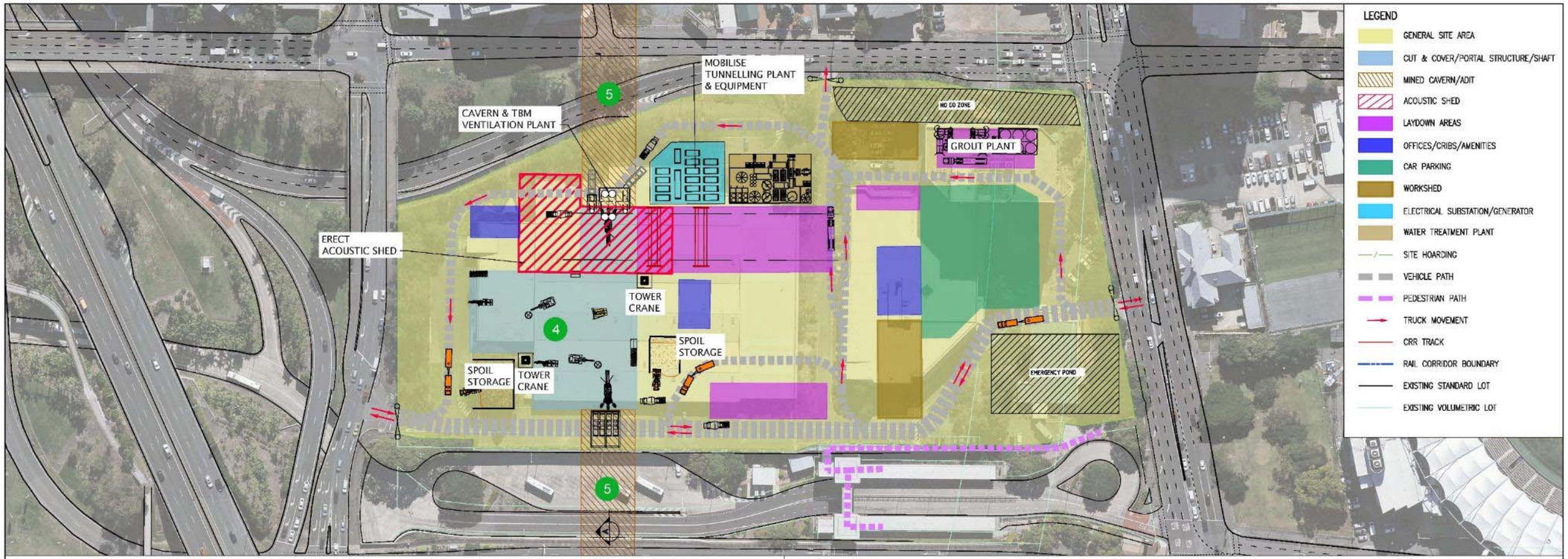
CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

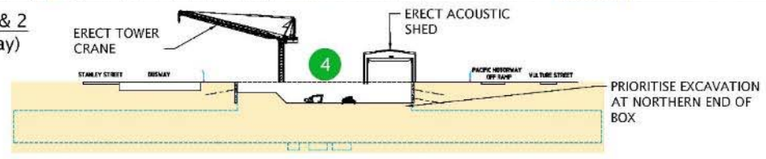
WOOLLOONGABBA STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 2

DRAWING NUMBER	ISSUE
	A

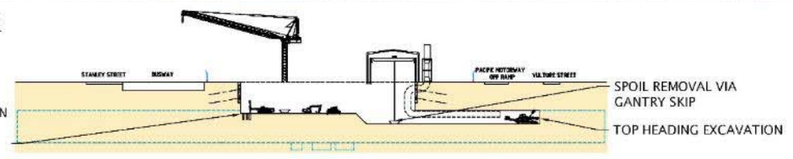
CONSULTANT DWG No. CRRTSD-410-0000-DRG-CBGU-7500-000002



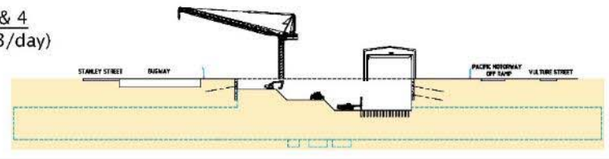
EXCAVATION STAGE 1 & 2
RIP & PUSH (500 m3/day)



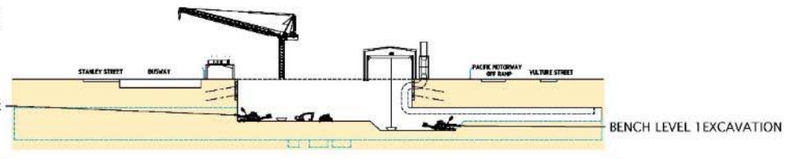
EXCAVATION STAGE 6



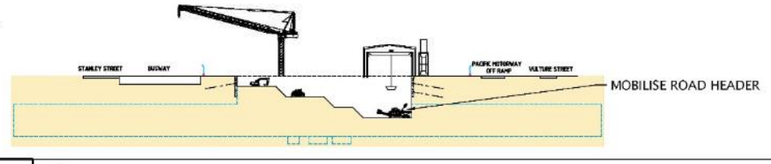
EXCAVATION STAGE 3 & 4
DRILL & BLAST (400 m3/day)



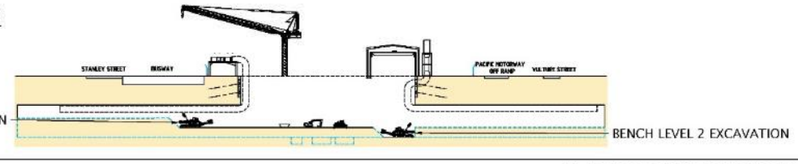
EXCAVATION STAGE 7



EXCAVATION STAGE 5



EXCAVATION STAGE 8



4 STATION BOX EXCAVATION
5 CAVERN EXCAVATION

ALL SECTIONS TAKEN THROUGH SECTION A

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	C.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	C.M	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE

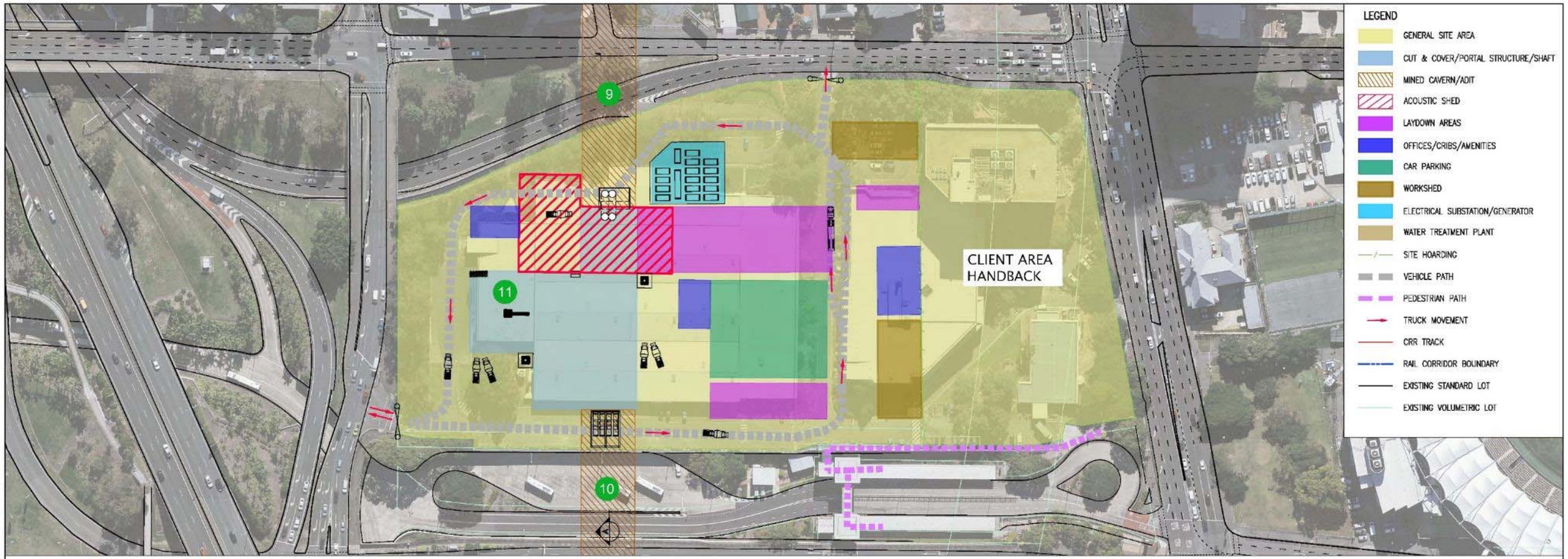
CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

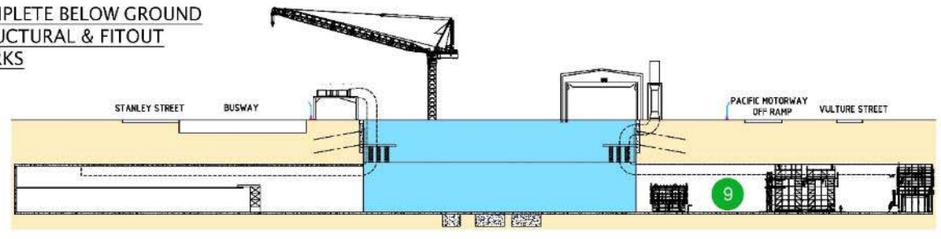
WOOLLOONGABBA STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3

DRAWING NUMBER	ISSUE
	A

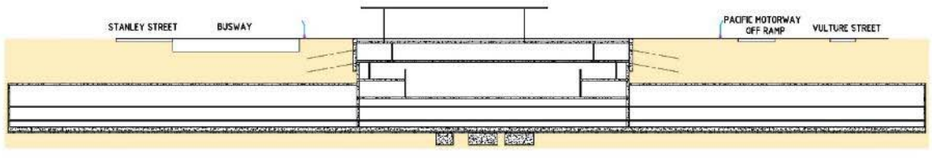
CONSULTANT DWG No. CRRTSD-410-0000-DRG-CBGU-7500-000003



COMPLETE BELOW GROUND STRUCTURAL & FITOUT WORKS



COMPLETE ABOVE GROUND STRUCTURAL & FITOUT WORKS



8 ROAD HEADER AND TBM OPERATIONS COMPLETE
9 SECONDARY LINING NORTH CAVERN
10 MEZZANINE INSTALLATION SOUTH CAVERN
11 ABOVE GROUND BUILDING WORKS & FITOUT

ALL SECTIONS TAKEN THROUGH SECTION A

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS			
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	C.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	C.M	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION — DATE

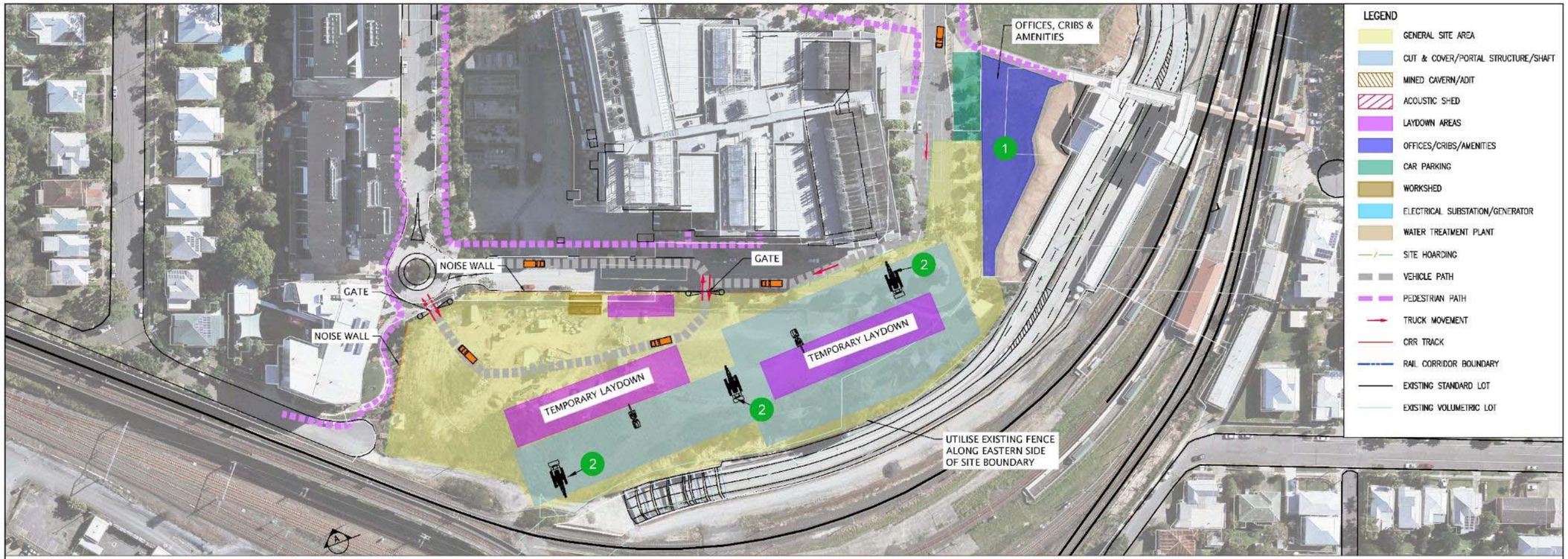
CROSS RIVER RAIL DELIVERY AUTHORITY

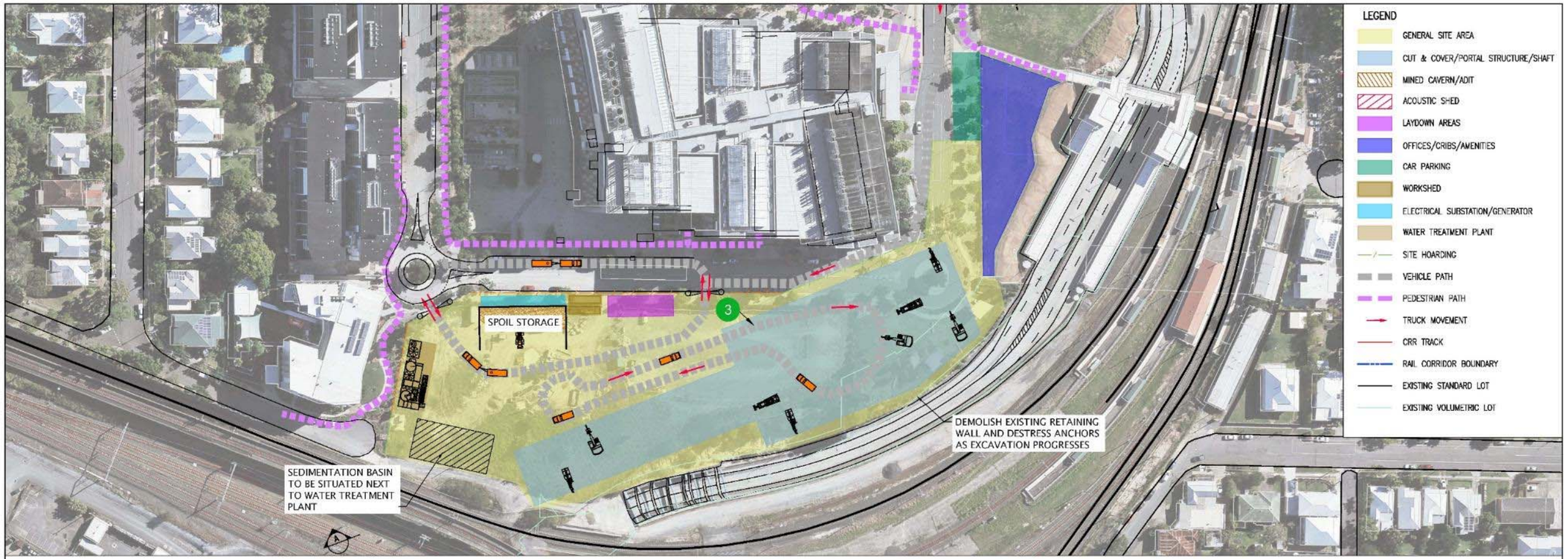
Network - Civil Engineering

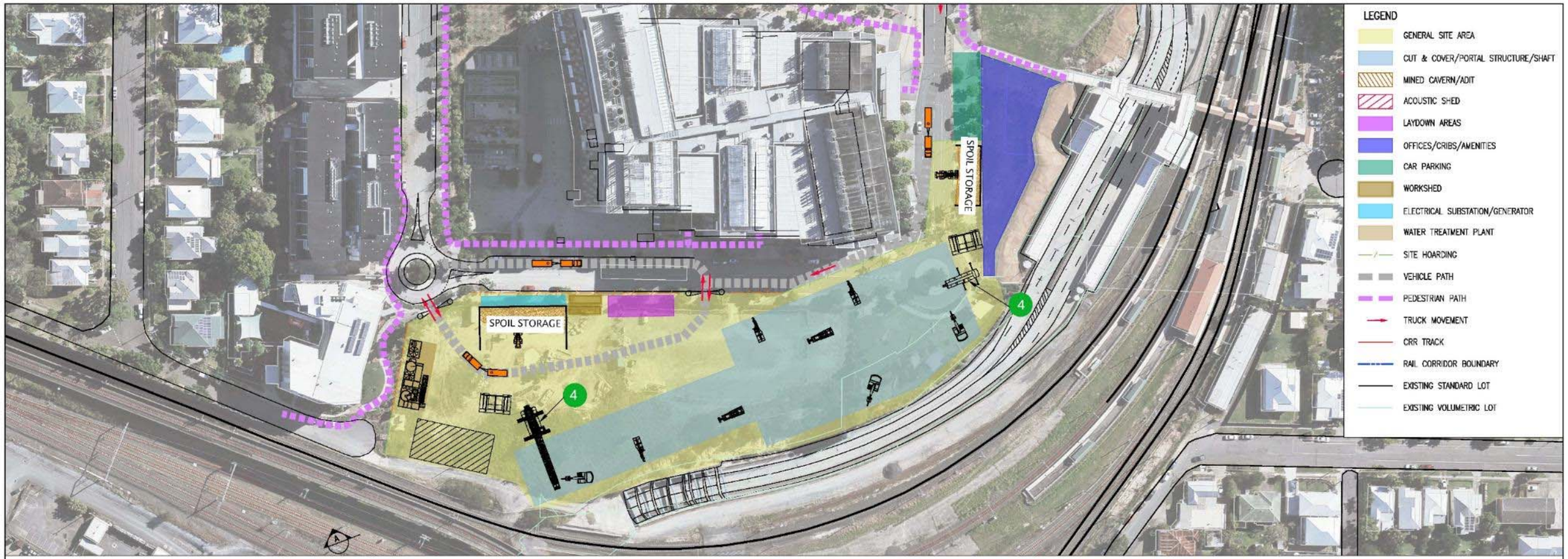
WOOLLOONGABBA STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING
STAGE 5

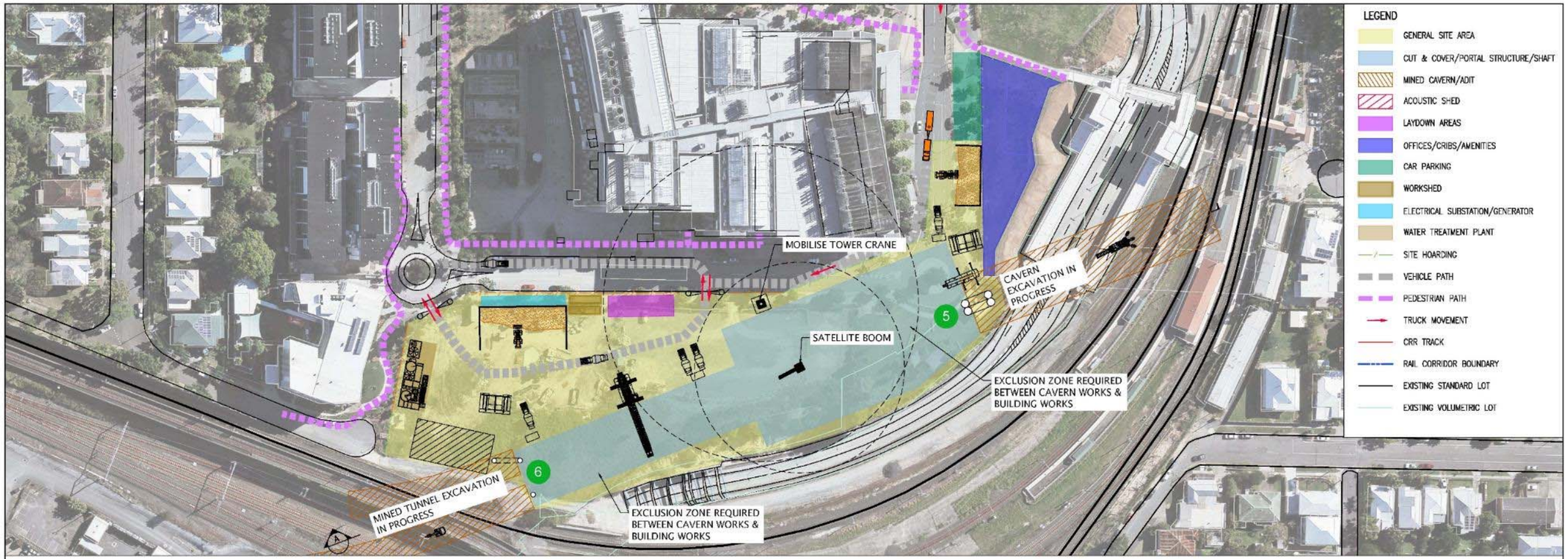
DRAWING NUMBER	ISSUE
	A

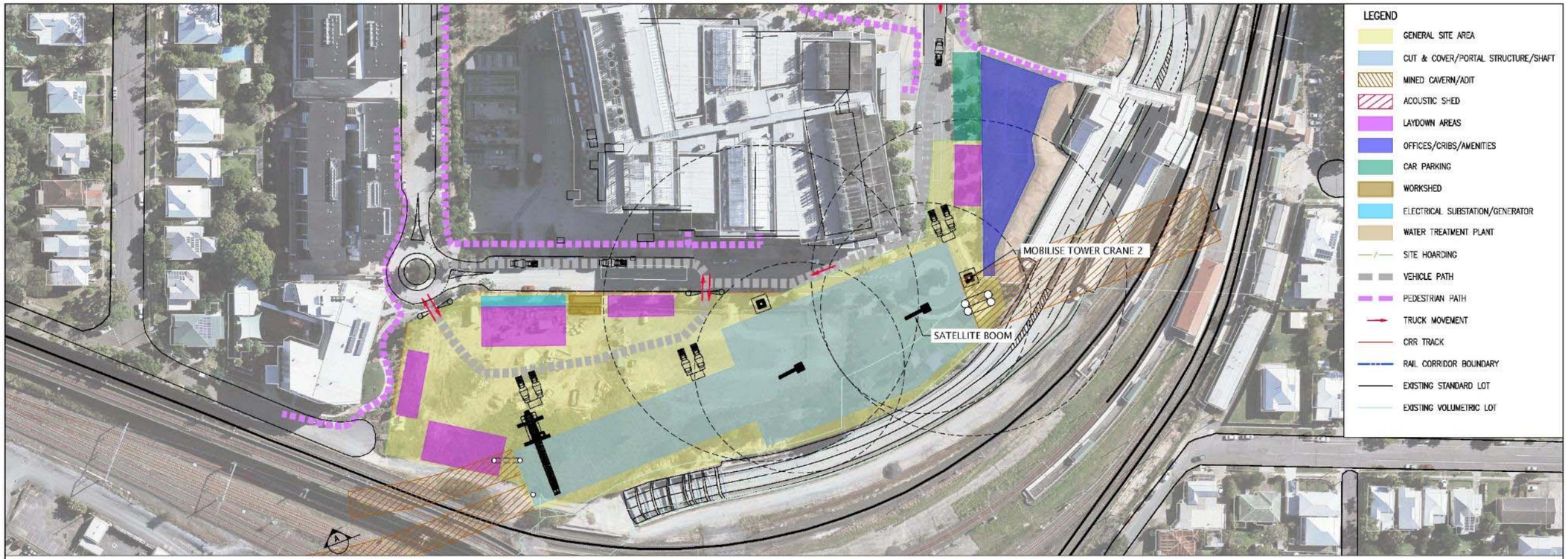
CONSULTANT DWG No. CRRTSD-410-0000-DRG-CBGU-7500-000005

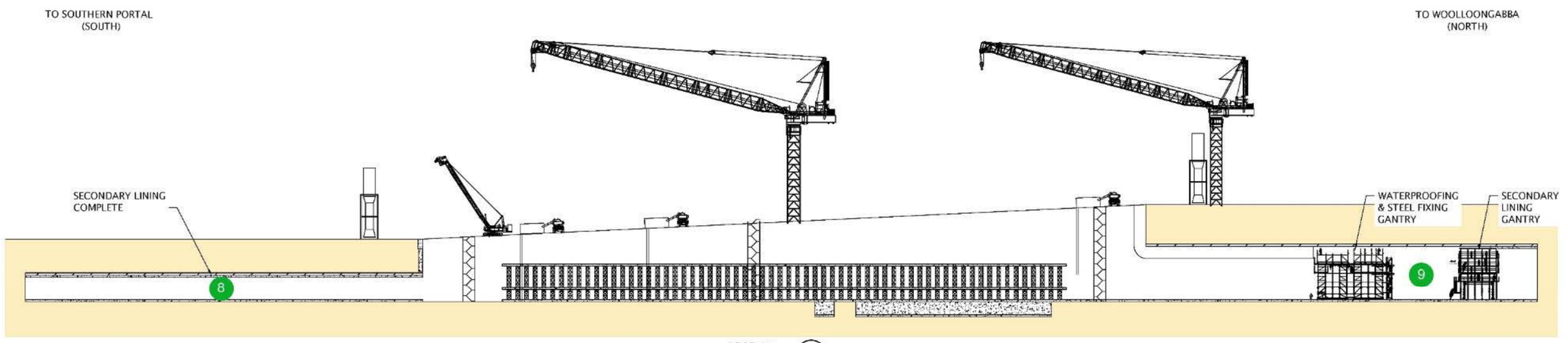

LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
OFFICES, CRIBS & AMENITIES
NOISE WALL
GATE
NOISE WALL
GATE
TEMPORARY LAYDOWN
TEMPORARY LAYDOWN
UTILISE EXISTING FENCE ALONG EASTERN SIDE OF SITE BOUNDARY
1
2
2
2
TO SOUTHERN PORTAL (SOUTH)
TO WOOLLOONGABBA (NORTH)
SOUTH MINED TUNNEL
NORTH CAVERN
SECTION A
1 SITE ESTABLISHMENT, PRELIMINARY EARTHWORKS & INSTALL PILE PLATFORMS
2 PILING & CAPPING BEAM INSTALLATION
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK P.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK P.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-420-0000-DRG-CBGU-7500-000001


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
SPOIL STORAGE
3
SEDIMENTATION BASIN TO BE SITUATED NEXT TO WATER TREATMENT PLANT
DEMOLISH EXISTING RETAINING WALL AND DESTRESS ANCHORS AS EXCAVATION PROGRESSES
TO SOUTHERN PORTAL (SOUTH)
TO WOOLLOONGABBA (NORTH)
AT SOUTHERN END OF BOX, EXCAVATE TO BOTTOM OF BASE SLAB LEVEL
AT NORTHERN END OF BOX, EXCAVATE TO TOP OF CAVERN BENCH LEVEL
3
SECTION A
3 EXCAVATION STAGE 1 - WITH RAMP
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK P.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK P.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 2
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-420-0000-DRG-CBGU-7500-000002


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
SPOIL STORAGE
SPOIL STORAGE
4
4
TO SOUTHERN PORTAL
(SOUTH)
TO WOOLLOONGABBA
(NORTH)
SECTION A
4 RAMP REMOVED, EXCAVATION SERVICED BY CRANES
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK P.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK P.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
AL 24.06.19
PROFESSIONAL QUALIFICATION
DATE
CROSS RIVER RAIL
DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No.
CRRTSD-420-0000-DRG-CBGU-7500-000003


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
MOBILISE TOWER CRANE
CAVERN EXCAVATION IN PROGRESS
SATELLITE BOOM
EXCLUSION ZONE REQUIRED BETWEEN CAVERN WORKS & BUILDING WORKS
MINED TUNNEL EXCAVATION IN PROGRESS
EXCLUSION ZONE REQUIRED BETWEEN CAVERN WORKS & BUILDING WORKS
5
6
A
TO SOUTHERN PORTAL (SOUTH)
TO WOOLLOONGABBA (NORTH)
MINED TUNNEL VENTILATION
INSTALL CANOPY TUBES PRIOR TO TUNNEL EXCAVATION
CAVERN VENTILATION
INSTALL CANOPY TUBES PRIOR TO TUNNEL EXCAVATION
6
7
5
SECTION A
5 CAVERN EXCAVATION (WITH ROAD HEADER)
6 MINED TUNNEL EXCAVATION (WITH TUNNEL EXCAVATOR)
7 STATION BUILDING WORKS
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK P.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK P.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 4
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No. CRRTSD-420-0000-DRG-CBGU-7500-000004





SECTION A

8 SECONDARY LINING SOUTH MINED TUNNEL
9 SECONDARY LINING NORTH CAVERN

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	P.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	P.M	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION — DATE

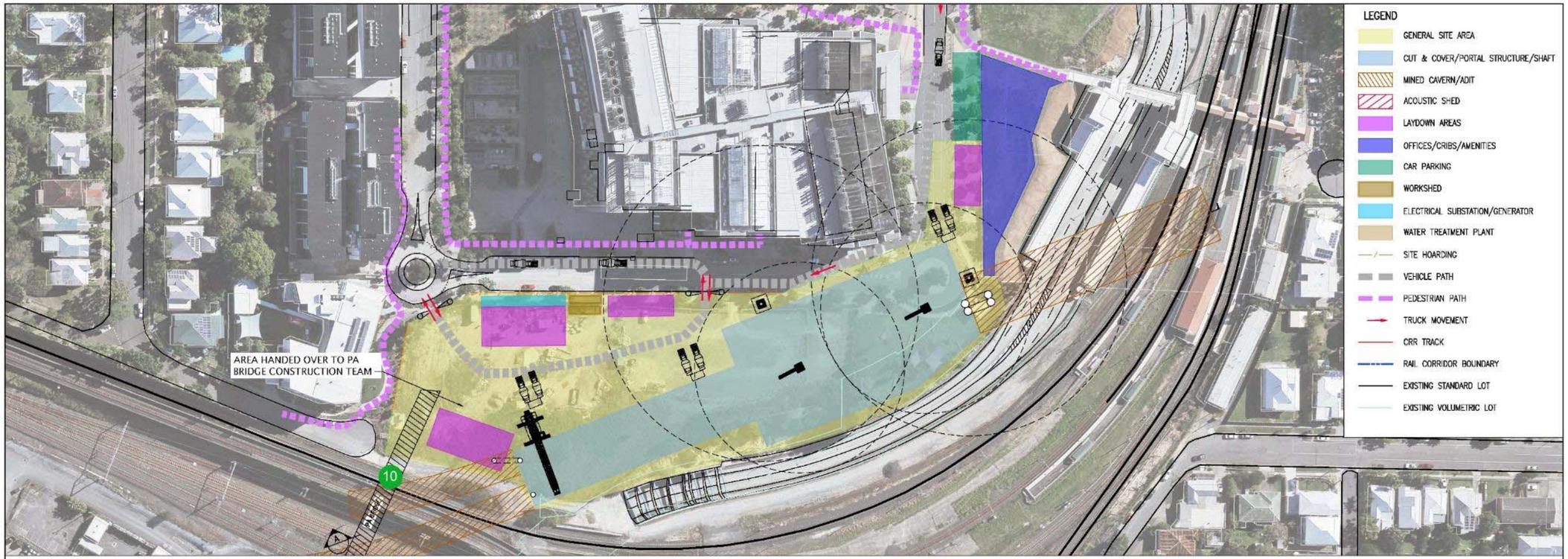
CROSS RIVER RAIL
DELIVERY AUTHORITY

Network - Civil Engineering

BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 5

DRAWING NUMBER	ISSUE
	A

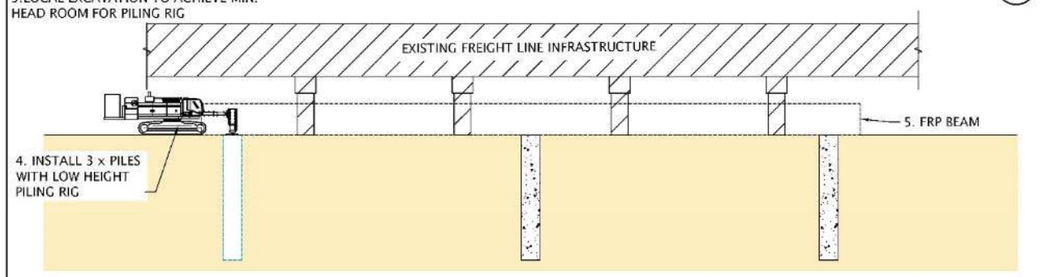
CONSULTANT DWG No. CRRTSD-420-0000-DRG-CBGU-7500-000005


LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
AREA HANDED OVER TO PA BRIDGE CONSTRUCTION TEAM
10
PA BRIDGE
A
TO SOUTHERN PORTAL (SOUTH)
TO WOOLLOONGABBA (NORTH)
SECTION A
10 PA BRIDGE CONSTRUCTION
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK P.M 24.06.19
DRAWN R.E 24.06.19
DRG CHK P.M 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
BOGGO ROAD STATION
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPTS
STAGE 6
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No. CRRTSD-420-0000-DRG-CBGU-7500-000006

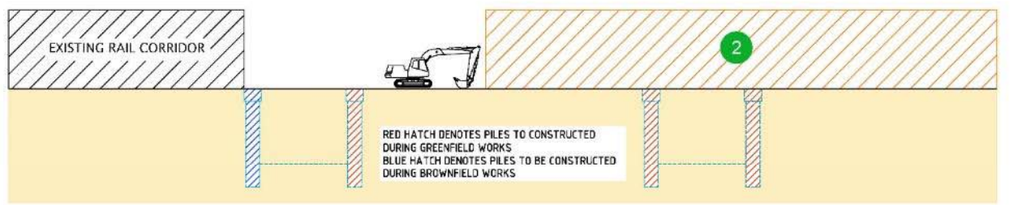
LEGEND
GENERAL SITE AREA
CUT & COVER/PORTAL STRUCTURE/SHAFT
MINED CAVERN/ADIT
ACOUSTIC SHED
LAYDOWN AREAS
OFFICES/CRIBS/AMENITIES
CAR PARKING
WORKSHED
ELECTRICAL SUBSTATION/GENERATOR
WATER TREATMENT PLANT
SITE HOARDING
VEHICLE PATH
PEDESTRIAN PATH
TRUCK MOVEMENT
CRR TRACK
RAIL CORRIDOR BOUNDARY
EXISTING STANDARD LOT
EXISTING VOLUMETRIC LOT
OFFICES, CRIBS, AMENITIES AND LAYDOWN AREAS ALL SITUATED IN YARD
CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION
JOB No
ALTERATIONS
ISSUE DESCRIPTION NAME RPEQ DATE
A FOR CONSTRUCTION MANAGEMENT PLAN R.E 24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING
CBGU D&C JV
DESIGNED R.E 24.06.19
DES CHK K.B 24.06.19
DRAWN R.E 24.06.19
DRG CHK A.V 24.06.19
DESIGN APPROVAL / CERTIFICATION
A.L 24.06.19
PROFESSIONAL QUALIFICATION DATE
CROSS RIVER RAIL DELIVERY AUTHORITY
Network - Civil Engineering
SOUTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
PARK ROAD RAIL STORAGE - STAGE 1
DRAWING NUMBER
ISSUE
A
CONSULTANT DWG No. CRRTSD-460-0000-DRG-CBGU-7500-000010

1.RELOCATE 2 x OLHE MASTS
2.INSTALL SHEET PILES TO PROTECT RAIL
3.LOCAL EXCAVATION TO ACHIEVE MIN. HEAD ROOM FOR PILING RIG

FREIGHT FLY OVER UNDERPINNING WORKS — SECTION A



GREENFIELD CONSTRUCTION — SECTION B



1 FREIGHT FLYOVER UNDERPINNING WORKS
2 DEMOLITION, SITE ESTABLISHMENT, PRELIMINARY EARTHWORKS & INSTALL PILE PLATFORMS

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

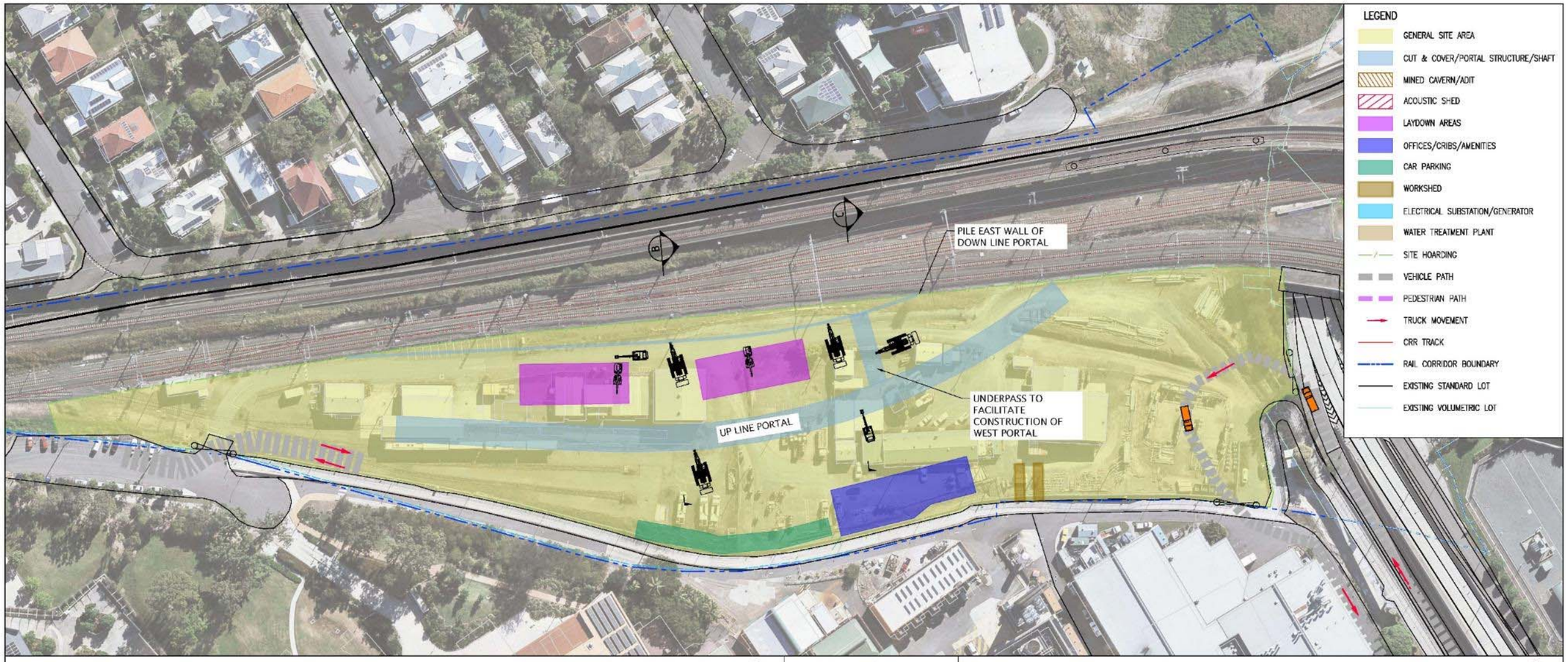
DESIGNED	R.E	24.06.19
DES CHK	P.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	A.V	24.06.19
DESIGN APPROVAL / CERTIFICATION	A.L	24.06.19
PROFESSIONAL QUALIFICATION		DATE

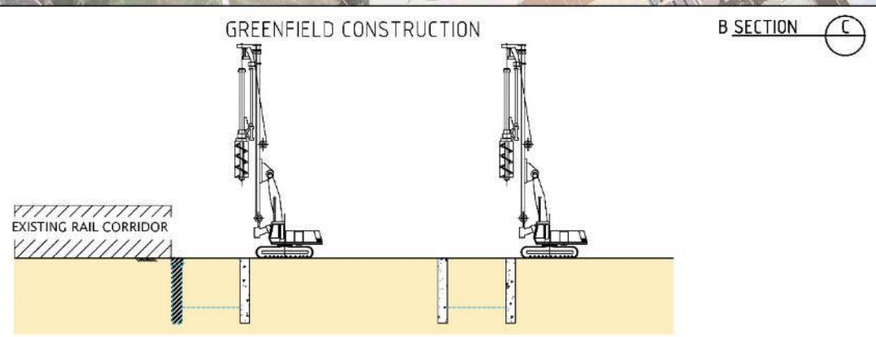
CROSS RIVER RAIL DELIVERY AUTHORITY

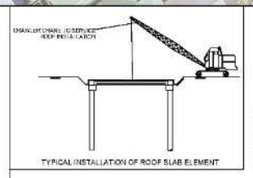
Network - Civil Engineering

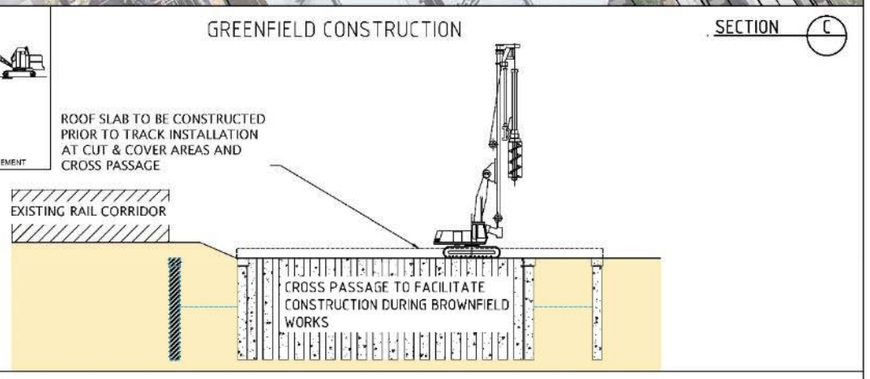
SOUTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 1

DRAWING NUMBER	ISSUE
	A
CONSULTANT DWG No. CRRTSD-460-0000-DRG-CBGU-7500-000001	









3 GREENFIELD PILING (EAST & WEST WALL UP LINE PORTAL, CROSS PASSAGE AND EAST WALL DOWN LINE DIVE STRUCTURE

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	P.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	A.V	24.06.19
DESIGN APPROVAL / CERTIFICATION		
PROFESSIONAL QUALIFICATION	A.L	24.06.19 DATE

CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

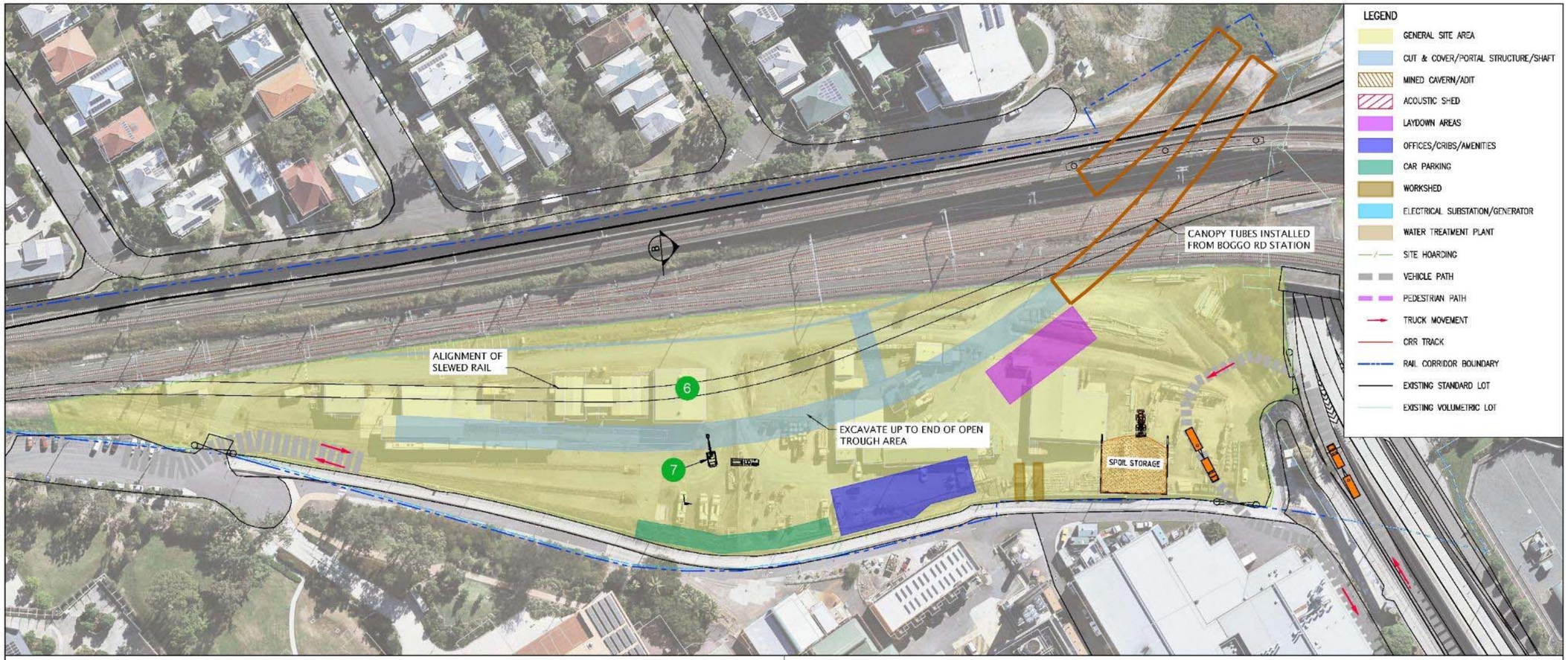
SOUTHERN PORTAL

CROSS RIVER RAIL - TSD

CONSTRUCTION STAGING CONCEPT

STAGE 2

DRAWING NUMBER	ISSUE
	A
CONSULTANT DWG No. CRRTSD-460-0000-DRG-CBGU-7500-000002	



4 INSTALL CULVERTS UNDER TRACKS TO ALLOW LONG DISTANCE PUMPING
5 CONSTRUCT TRACKS OFFLINE
6 TRACK SLEW
7 EXCAVATION & BASE SLAB INSTALLATION OF UP LINE OPEN TROUGH AREAS

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

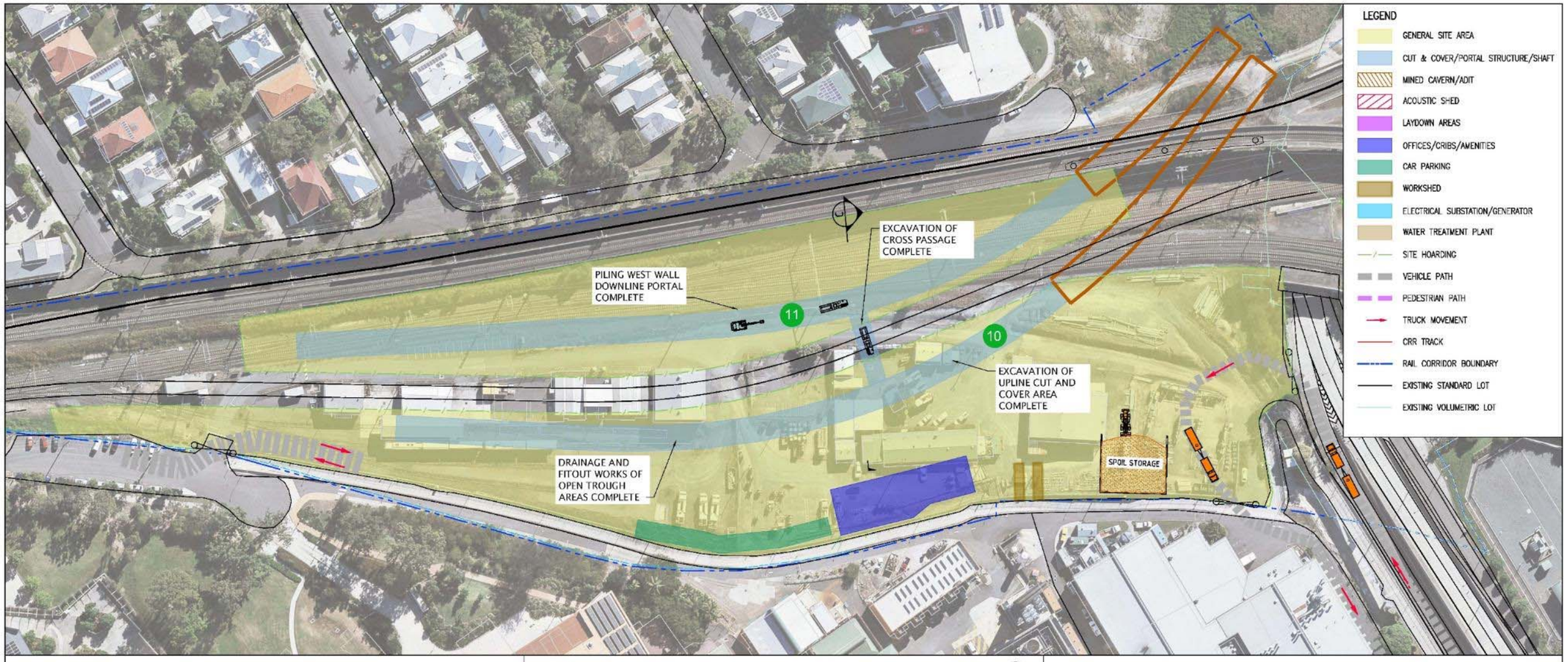
DESIGNED	R.E	24.06.19
DES CHK	P.M	24.06.19
DRAWN	R.E	24.09.19
DRG CHK	A.V	24.06.19
DESIGN APPROVAL / CERTIFICATION		
PROFESSIONAL QUALIFICATION	A.L	24.06.19 DATE

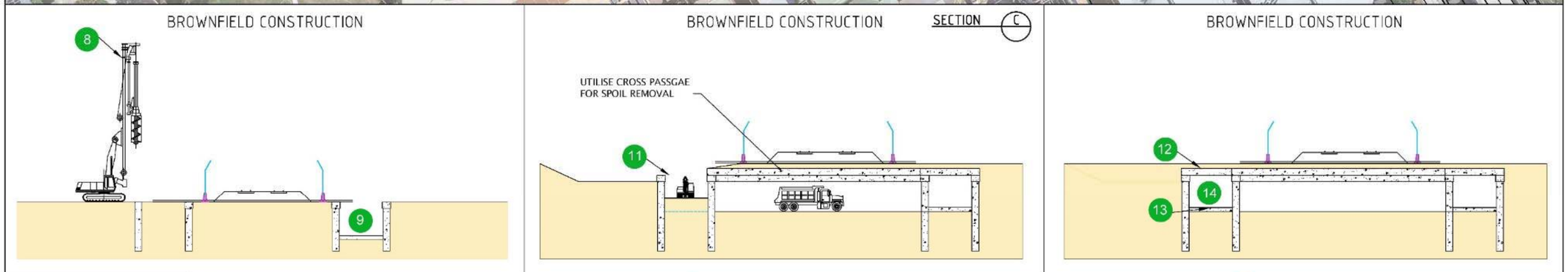
CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

SOUTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 3

DRAWING NUMBER	ISSUE
	A
CONSULTANT DWG No. CRRTSD-460-0000-DRG-CBGU-7500-000003	





8 BROWNFIELD PILES (WEST WALL DOWNLINE PORTAL)
9 DRAINAGE AND FITOUT WORKS UPLINE PORTAL
10 EXCAVATE UP LINE CUT & COVER AREAS AND CROSS PASSAGE
11 EXCAVATE DOWNLINE PORALTO MINIMUM 3m BELOW UNDERSIDE OF ROOF
12 INSTALL DOWNLINE PORTAL ROOF SLAB
13 COMPLETE EXCAVATION AND POUR BASE SLAB
14 DRAINAGE AND FIT OUT WORKS DOWN LINE

CONCEPT ONLY. NOT AUTHORISED FOR CONSTRUCTION

JOB No	ALTERATIONS				
	ISSUE	DESCRIPTION	NAME	RPEQ	DATE
	A	FOR CONSTRUCTION MANAGEMENT PLAN	R.E		24.06.19
SCALES SHOWN ARE FOR AN A1 SIZE ORIGINAL DRAWING					

CBGU D&C JV

DESIGNED	R.E	24.06.19
DES CHK	P.M	24.06.19
DRAWN	R.E	24.06.19
DRG CHK	A.V	24.06.19

DESIGN APPROVAL / CERTIFICATION
A.L 03.06.19
PROFESSIONAL QUALIFICATION — DATE

CROSS RIVER RAIL DELIVERY AUTHORITY

Network - Civil Engineering

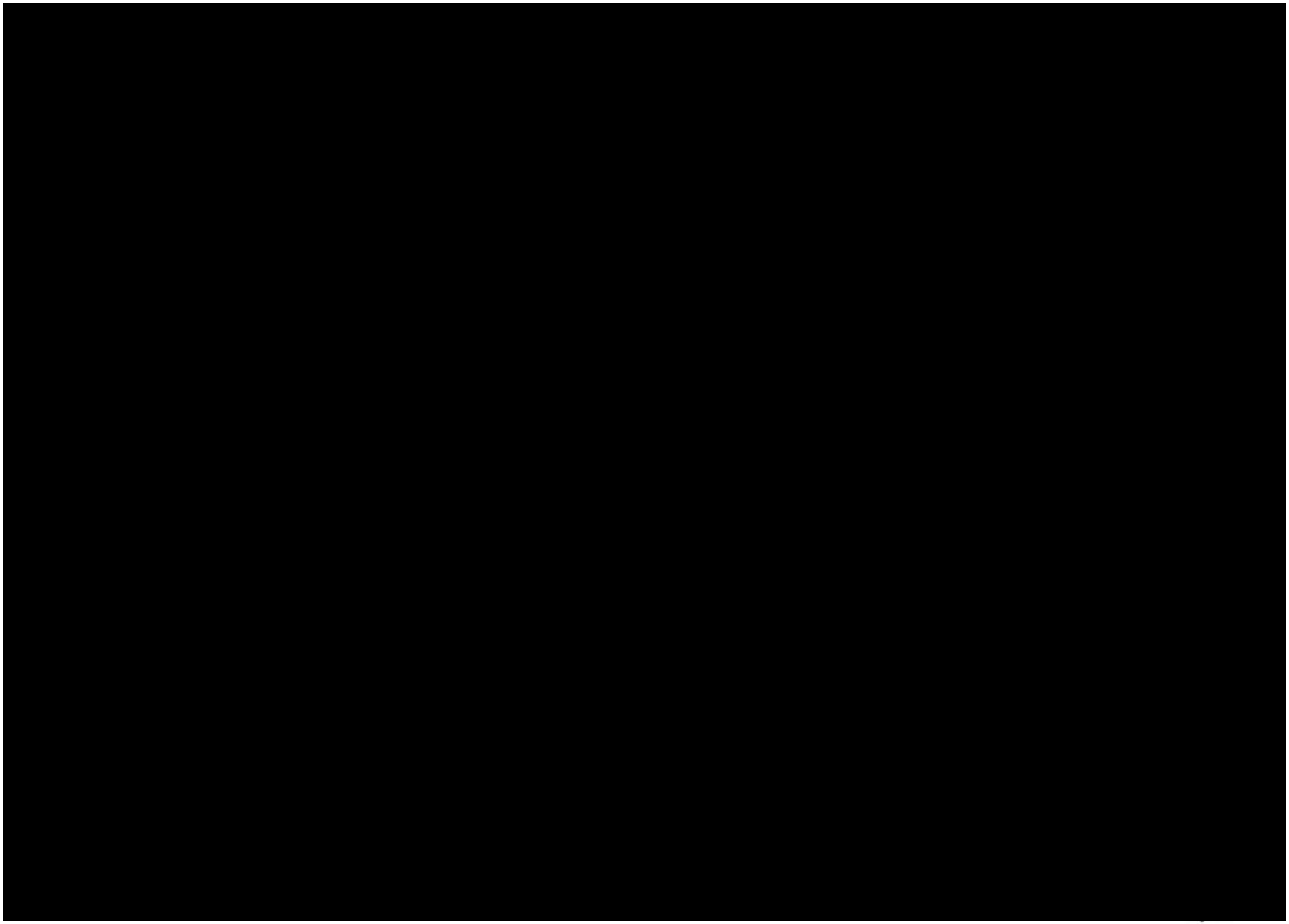
SOUTHERN PORTAL
CROSS RIVER RAIL - TSD
CONSTRUCTION STAGING CONCEPT
STAGE 4

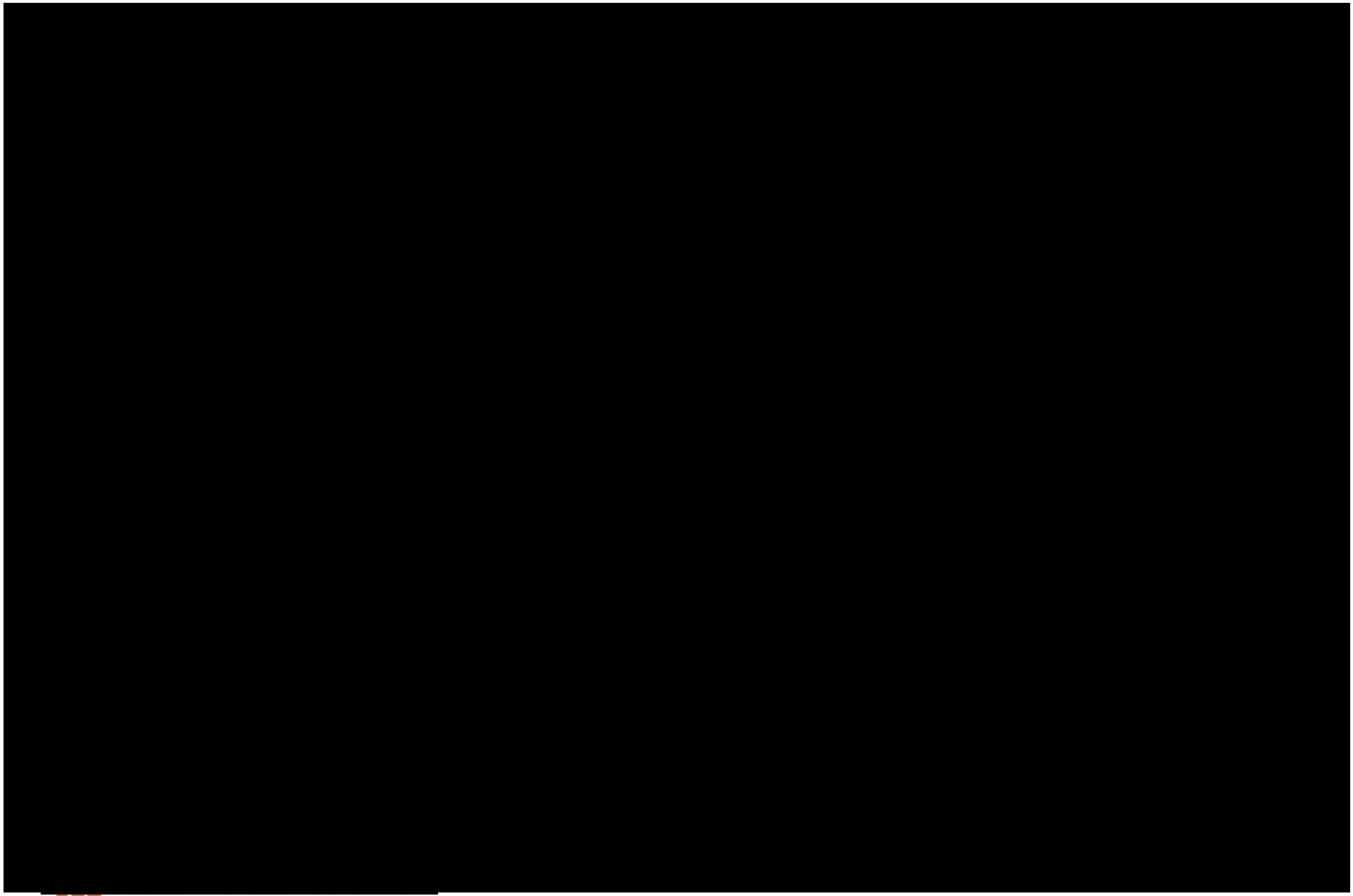
DRAWING NUMBER	ISSUE
	A

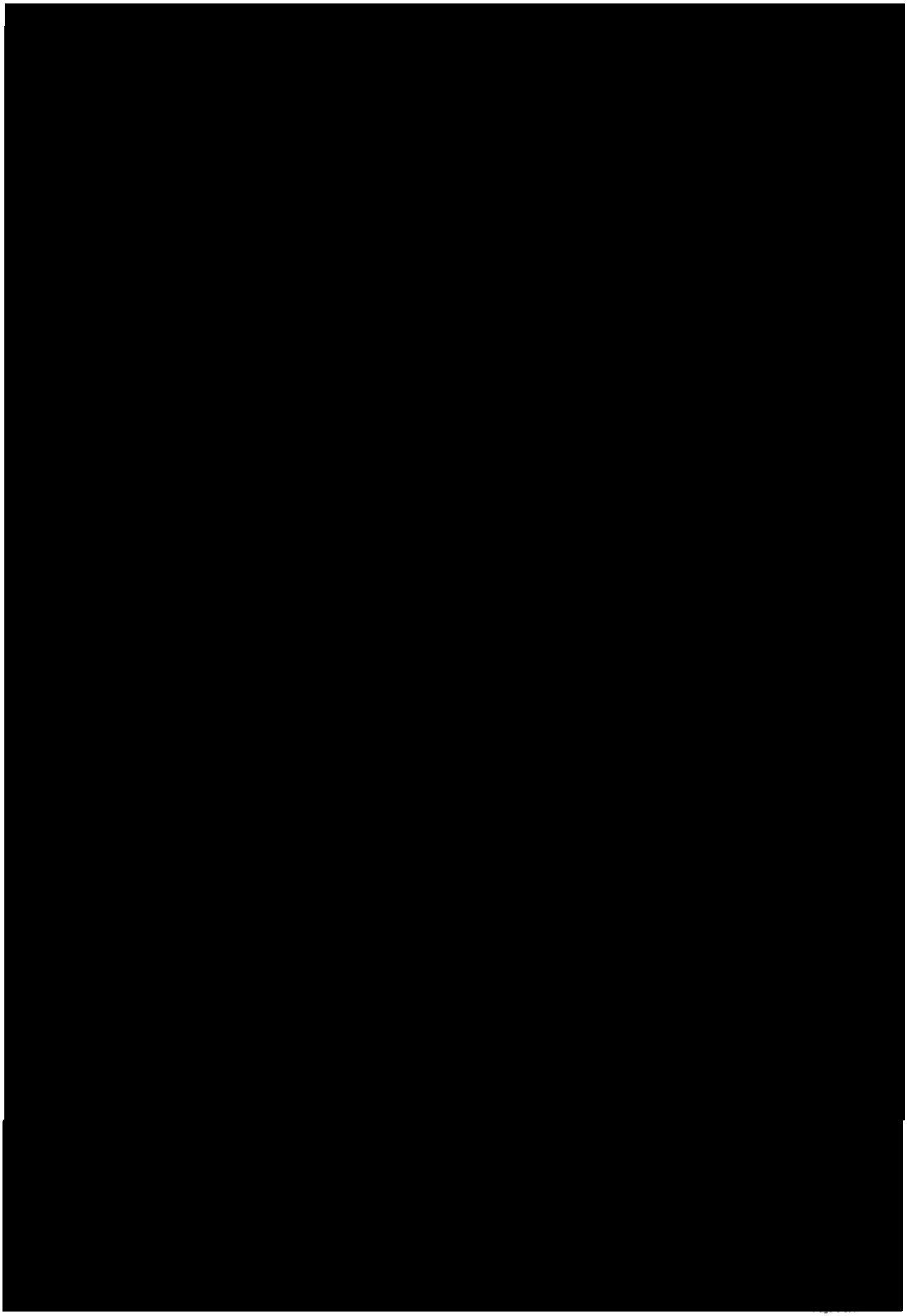
CONSULTANT DWG No. CRRTSD-460-0000-DRG-CBGU-7500-000004

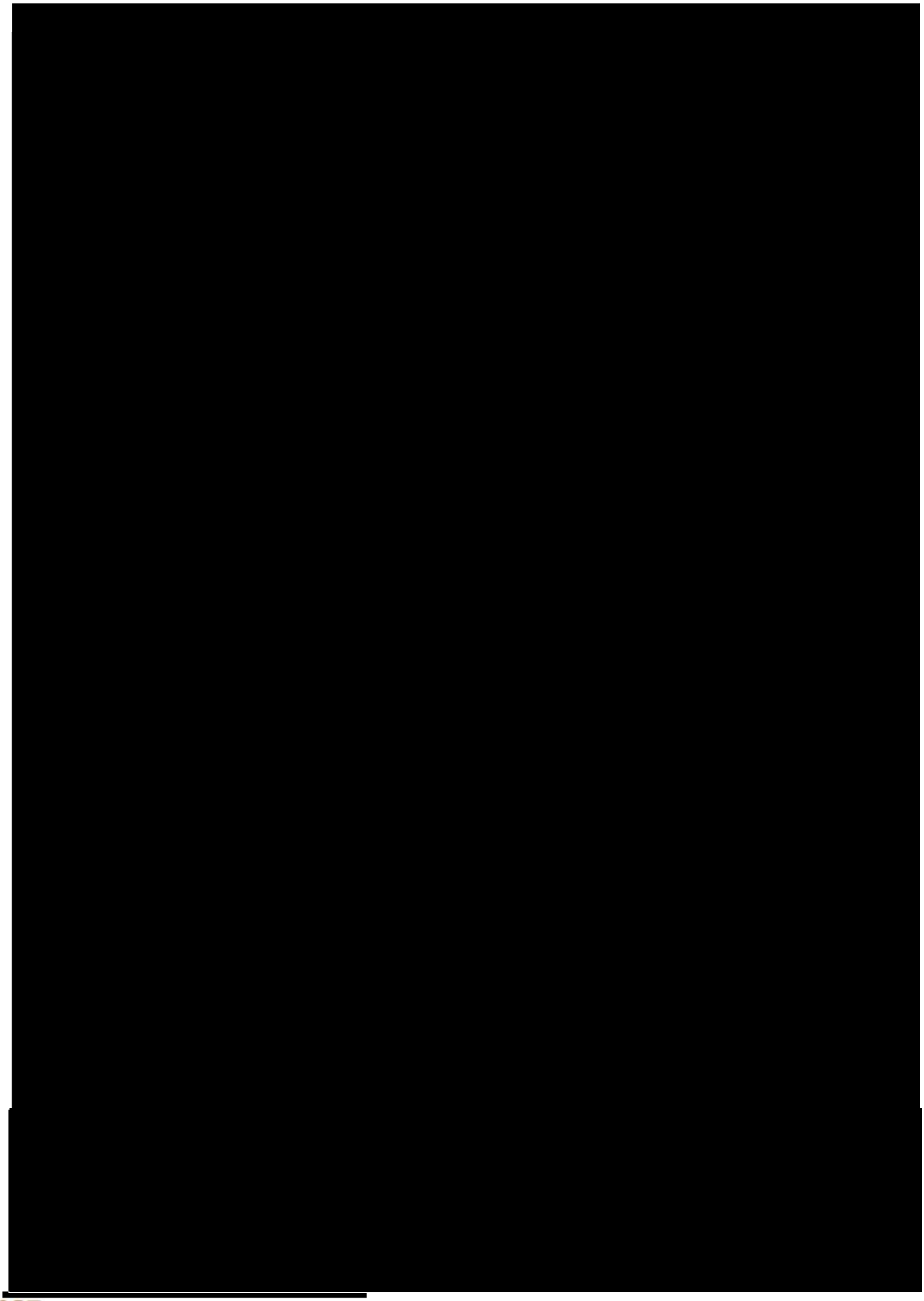
Appendix G

Incident Classification Matrix









Appendix H

Construction Program