Staging Report

Project Name: M6 Stage 1 (SSI 8931)

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Table of Contents

Table of Tables

Table of Figures

Appendices

Glossary

Abbreviation	Expanded Text
AA	Acoustic Advisor
CEMP	Construction Environmental Management Plan
CGU	CPB Contractors, Ghella and UGL Engineering Joint Venture
CoA	Conditions of Approval
CNVIS	Construction Noise and Vibration Impact Statement
DPIE	Department of Planning Industry and Environment
EIS	Environmental Impact Statement
EMMs	Updated Environmental Management Measures
EPA	NSW Environment Protection Authority
ER	Environmental Representative
MOCs	Motorway Operations Complexes
NSW	New South Wales
PIR	Preferred Infrastructure Report
CSSI	Critical State Significant Infrastructure
TfNSW	Transport for New South Wales

1. Introduction

1.1. Purpose of this Staging Report

This Staging Report has been prepared and structured to address the requirements of Conditions of Approval (CoA) A11 to A15 of the M6 Stage 1 Motorway (SSI 8931) (the Project) Planning Approval as presented in Table 1. The Department of Planning, Industry and Environment (DPIE) will be advised of the status of the Project prior to the commencement of each stage.

Updates to this Staging Report will be made as required, particularly following any changes to the delivery strategy. Where amendments to the proposed staging are required, a revised Staging Report will be prepared in consultation with DPIE and will be submitted in accordance with CoA A15.

Table 1: Staging: Planning Approval conditions

CoA	Condition requirement(s)	Staging Report Section
A1	The CSSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the CSSI in the EIS, the Response to Submissions on the EIS, the PIR and Response to Submissions on the PIR.	Section 1.1 Appendix A Appendix B This Report must be submitted to the Planning Secretary for information prior to the commencement of the first stage.
A2	The CSSI must be carried out in accordance with all procedures, commitments, preventative actions, performance outcomes and mitigation measures set out in the documents identified in Condition A1 unless otherwise specified in, or required under, this approval.	Appendix A Appendix B
A11	The CSSI may be constructed and operated in stages. Where staged construction or operation is proposed, a Staging Report (for either or both construction and operation as the case may be) must be prepared and submitted to the Planning Secretary for information. The Staging Report must be submitted to the Planning Secretary no later than one month before the commencement of construction of the first of the proposed stages of construction (or if only staged operation is proposed, one month before the commencement of operation of the first of the proposed stages of operation).	This Report must be submitted to the Planning Secretary for information prior to the commencement of the first stage.
A12	The Staging Report must:	
	(a) if staged construction is proposed, set out how the construction of the whole of the CSSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when construction of each stage will commence and finish;	Section 2.2 and Section 2.3 outline activities which will occur within each construction stage and an indicative program for the works.
	(b) if staged operation is proposed, set out how the operation of the whole of the CSSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when operation of each stage will commence and finish (if relevant);	Staged operation is not proposed. This Staging Report only addresses staged construction activities.

CoA	Condition requirement(s)	Staging Report Section
	(c) specify how compliance with conditions will be achieved across and between each of the stages of the CSSI; and	Section 3 discusses the environmental management system which would be implemented on the Project to manage compliance across the stages of the Project.
	(d) set out mechanisms for managing any cumulative impacts arising from the proposed staging.	Section 2.5 addresses cumulative impacts.
A13	The CSSI must be staged in accordance with the Staging Report, as submitted to the Planning Secretary	The Project will be staged in accordance with this Report which will be submitted for information to the Planning Secretary prior to the commencement of the stage.
A14	Where staging is proposed, the terms of this approval that apply or are relevant to the works or activities to be carried out in a specific stage must be complied with at the relevant time for that stage.	Appendix A and Appendix B identify the applicability of each CoA and Environmental Management Measures (EMMs) to each stage of the Project.
A15	Where changes are proposed to the staging of construction or operation, a revised Staging Report must be prepared and submitted to the Planning Secretary for information no later than one (1) month prior to the proposed change in the staging.	If changes specified in CoA A15 occur, this Report will be revised, endorsed by the ER and submitted to the Planning Secretary no later than one month prior to the proposed change in the staging.

1.2. Background

The Project comprises a new twin motorway tunnel (approximately four kilometres (km) in length) between the M8 Motorway at Arncliffe and President Avenue at Kogarah with a tunnel portal and entry and exit ramps connecting the tunnels to the surface (Figure 1). Works will include a connection to the M8 Motorway, line marking of additional travel lanes between the St Peters interchange to the M6 Stage 1 tunnels, an intersection with President Avenue (including widening and raising of President Avenue) and intersection improvements at the President Avenue/Princes Highway intersection. Mainline tunnel stubs would be constructed to allow for connections to future stages of the M6 Extension.

The Project was declared as Critical State Significant Infrastructure (CSSI) and the M6 Stage 1 Project was approved by the Minister for Planning and Public Spaces on 18 December 2019.

1.3. Project Description

Key features of the Project include:

- Mainline tunnels approximately 3.0km in length, sized for three lanes of traffic and line marked for two lanes on opening of the motorway;
- Entry and exit ramp tunnels approximately 1.5km in length and a tunnel portal connecting the tunnels to a surface intersection with President Avenue;
- Provision of a new intersection at President Avenue including the widening and raising of President Avenue at this location;
- Upgrade of the President Avenue and Princes Highway intersection to improve capacity and network integration;
- Provision of a new shared cycle and pedestrian pathways;
- Mainline tunnel stubs for a future connection to extend the Project to the south;

- Two motorway operation complexes (MOCs) as follows:
  - Arncliffe: including mechanical and electrical fit-out of the ventilation facility built by the New M5 Motorway project, and provision of a new water treatment plant and substation.
  - Rockdale (south): including a ventilation building, Disaster Recover Site (DRS), substation and power supply, deluge tanks.
- A tunnel ventilation system, including ventilation facilities located at Marsh Street, Arncliffe and West Botany Street, Rockdale, and in-tunnel ventilation systems (jet fans and ventilation ducts);
- New utility services, and modifications and connections to existing Utility Services;
- A permanent power supply connection to the Rockdale Ventilation Facility Site MOC from Ausgrid's Canterbury Sub-Transmission Substation;
- Emergency access and evacuation facilities, including pedestrian and vehicular cross passages, long passages, fire and safety life systems;
- Ancillary infrastructure for motorway operations including operations management and control systems, permanent power supply, communications, lighting, electronic toll collection system, toll gantries and traffic control and signage (both fixed and variable signage);
- Drainage infrastructure to collect surface water and groundwater inflows for treatment;
- Reinstatement of Bicentennial Park and recreation facilities;
- Reinstatement and rehabilitation of construction leased areas within the Arncliffe Site;
- Minor adjustments to local roads in the Project area
- Development and implementation of systems integration and operating procedures with WestConnex Motorways to ensure safe operation of the interfaces between the Project and the WestConnex Motorways; and
- Any other works as required to complete the Project within the scope of the Environmental Impact Statement (EIS), Preferred Infrastructure Report (PIR), Submissions report (including EMMs) and CoA requirements.

Six surface compounds will facilitate construction of the Project, comprising:

- Arncliffe construction ancillary facility (C1), an existing construction site which was used for construction of the M8 Motorway;
- Rockdale construction ancillary facility (C2), within an existing Transport for New South Wales (TfNSW) depot;
- President Avenue construction ancillary facility (C3) at Rockdale, within Rockdale Bicentennial Park and an industrial area west of West Botany Street;
- Construction ancillary facilities (C4 and C5) near Muddy Creek to support construction of the Active Transport Corridor; and
- Princes Highway construction ancillary facility (C6) on the corner of Princes Highway and President Avenue, Kogarah, to support the intersection upgrade works.

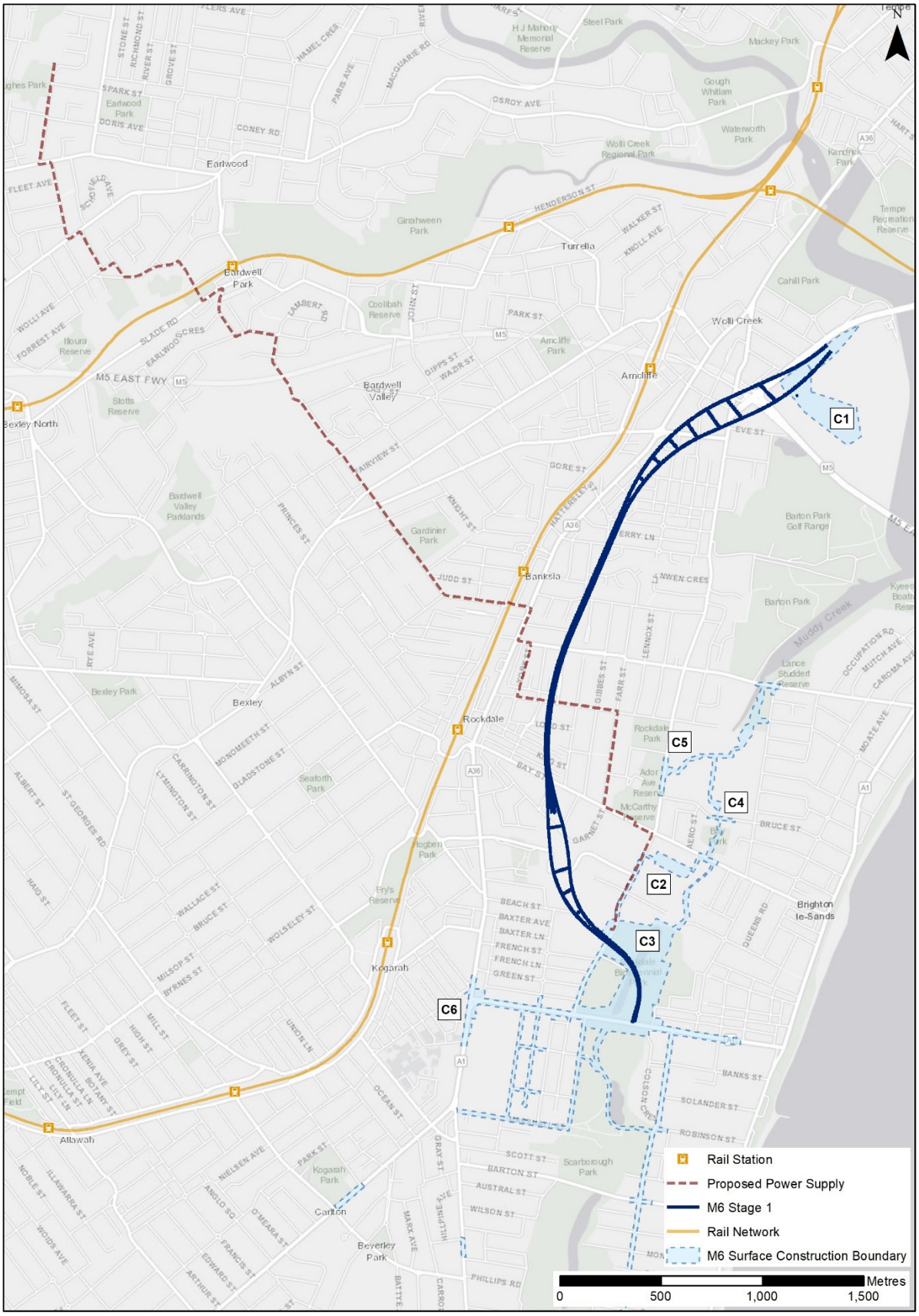

Figure 1: Project overview

2. Project Staging

2.1. Overview

The CPB Contractors, Ghella, UGL Engineering (CGU) joint venture will deliver the Project in partnership with TfNSW. To facilitate efficient delivery, CGU has elected to stage construction of the Project. This Staging Report has been prepared to clearly articulate the staging strategy, and to facilitate effective and genuine consultation with stakeholders.

The staging strategy for the Project focuses on balancing the need for construction to occur in a safe and efficient manner, while managing constructability constraints and minimising impacts on local communities, environment, and users of the surrounding road and transport network.

The Planning Approval includes provision for Site Establishment to occur prior to Construction in accordance with a Site Establishment Management Plan (SEMP) in accordance with CoA A17. The definition provided for site establishment is:

> Low impact work undertaken to establish a construction ancillary facility. However, site establishment works do not include:
>
> (a) piling (except for piling required for the erection of noise barriers around construction compounds); or
>
> (b) the erection of acoustic sheds at construction compounds including the hardstand area on which it will be erected; or
>
> (c) establishing tunnel shafts/dives.

The Site Establishment definition and condition for the M6 Stage 1 Project are conventional in the context of Infrastructure Approvals, however, the M6 Stage 1 Project includes a site previously established by a construction project at Arncliffe (C1 Arncliffe Construction Ancillary Facility) and a site that is operated by the proponent as a depot (C2 Rockdale Depot Construction Ancillary Facility).

Enabling works (which are not considered Site Establishment under the terms of the Project Approval) are required at these sites to prepare them for construction (e.g. operation of the construction ancillary facilities).

Enabling works include:

- Repairs to existing acoustic sheds and associated restoration and replacement of equipment and services;
- Repair of existing M8 tunnel infrastructure at C1 Arncliffe Construction Ancillary Facility; and
- Minor bored piling at C2 Rockdale Depot Construction Ancillary Facility for ancillary equipment (e.g. Water Treatment Plant and Bentonite Plant).

Therefore, CGU has elected to stage construction to facilitate completion of site establishment activities inclusive of the requisite enabling works. Proposed stages are detailed below.

Stage 1 - Preliminary Construction

- Installation of environmental controls at construction compounds (C1, C2 & C3) such as fencing, hoarding and noise walls
- Removal of existing structures where required
- Establishment of site facilities such as offices, amenities and storage, including installation and connection of services such as water, sewer and electricity
- Delivery of plant and other construction equipment

- Construction commencement activities including site clearing, construction of haul roads and hardstands
- Delivery and installation of construction facilities such as water treatment plants
- The repair, refurbishment and replacement (if required) of the existing M8 construction facilities and services at the C1 site, to facilitate reuse for the M6 Stage 1 Project.

Stage 2 - Construction

- The operation of construction compounds and ancillary facilities
- Bulk excavation of shafts, tunnels, and for other civil structures
- Construction of MOCs and associated facilities
- Mechanical and electrical fit-out of built structures as required
- Permanent power supply works (Earlwood to Rockdale)
- Reinstatement and rehabilitation of construction areas
- Other works as required to fulfil Project objectives.

Further information and details of construction activities relative to construction staging are in Section 2.2. Staging of the operation of the Project is not proposed.

2.1.1. Staging Rationale

The primary rationale for staging construction of the Project is to enable effective identification and management of risks from two key stages of works:

- Preliminary construction (including site establishment and enabling works); and
- Subsequent construction (typified by the operation of construction ancillary facilities to support tunnelling and road works).

The staging approach has been developed utilising a risk management-based approach to address the inherent risks arising from preliminary construction which includes site establishment (Stage 1) and higher risks arising from full scale construction activities involving bulk excavation (Stage 2). By adopting a staged approach to construction, site establishment and enabling works can be managed effectively. The staged approach also promotes genuine and positive consultation through development of clear scope and timing for activities and mitigations.

Through staging construction, clearer consultation will be achieved by enabling a structured consultative process, where progressive review, approval and implementation of plans related to construction stages can be applied. Staging also improves the understanding for all stakeholders of construction impacts and aspects and in addition to compliance requirements, providing clarity around planned works.

The benefits of the staging strategy are a clear definition of construction stages, with defined activities at each stage. This provides clear information for all participants and stakeholders, and a clear understanding of the triggers for CoAs and EMMs.

2.2. Construction Stages

2.2.1. Stage 1: Preliminarily Construction

Key activities to occur during Stage 1: Preliminary Construction are presented in Figure 2, Figure 3 and Figure 4. A detailed list of works and construction activities proposed to commence during Stage 1: Preliminary Construction are listed in Table 2.

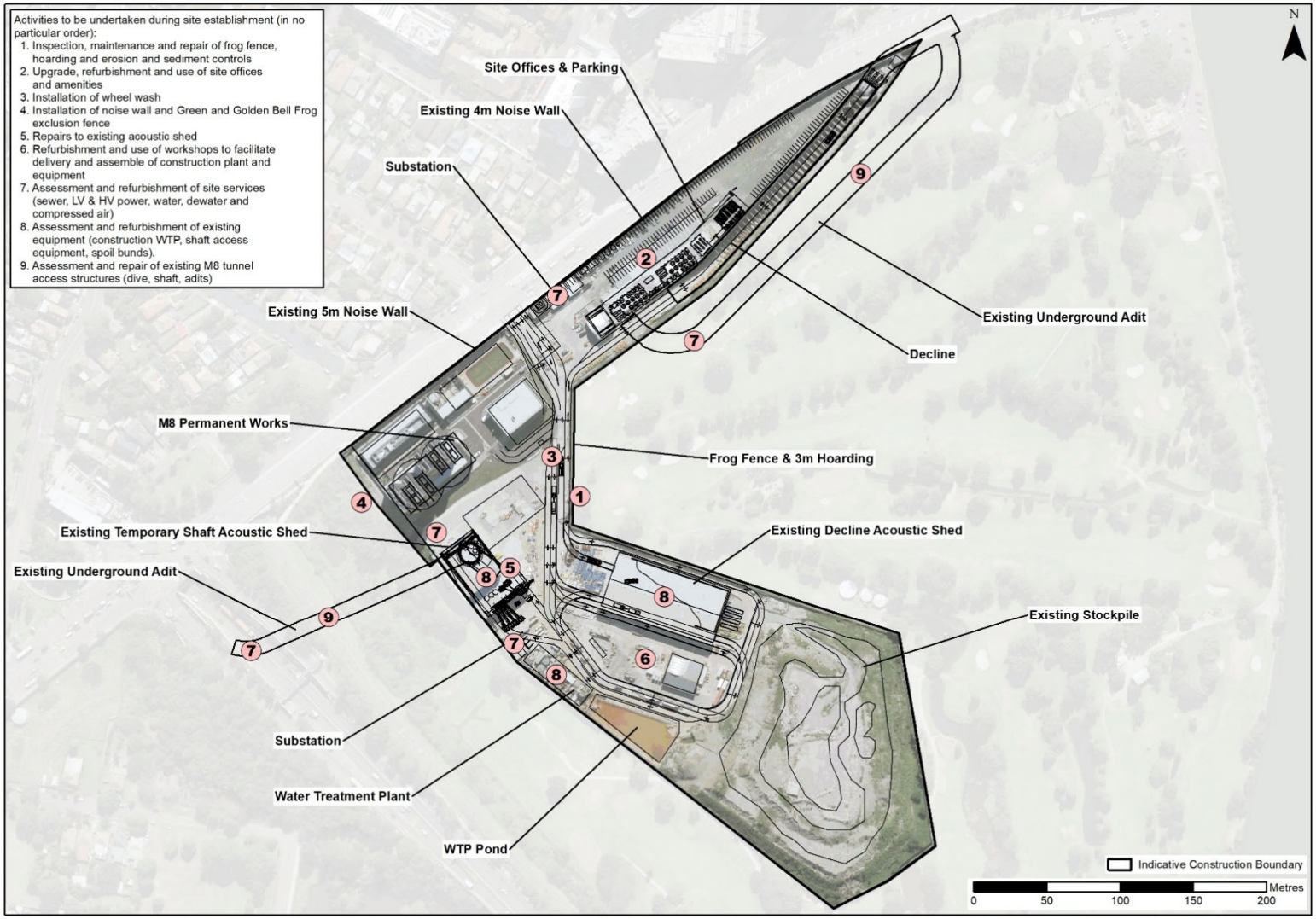

Figure 2: Preliminary construction works at C1, including site establishment

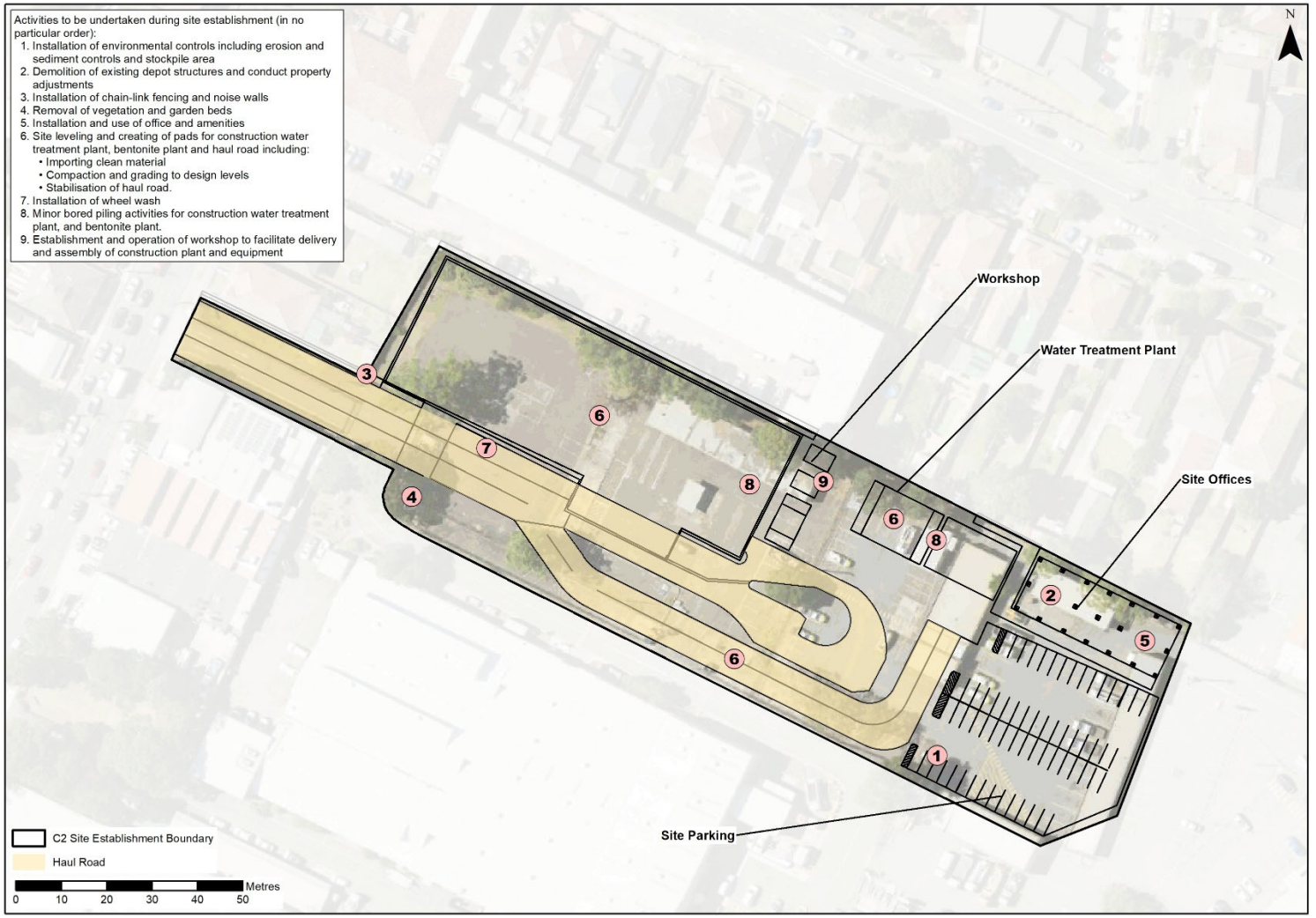

Figure 3: Preliminary construction works at C2, including site establishment

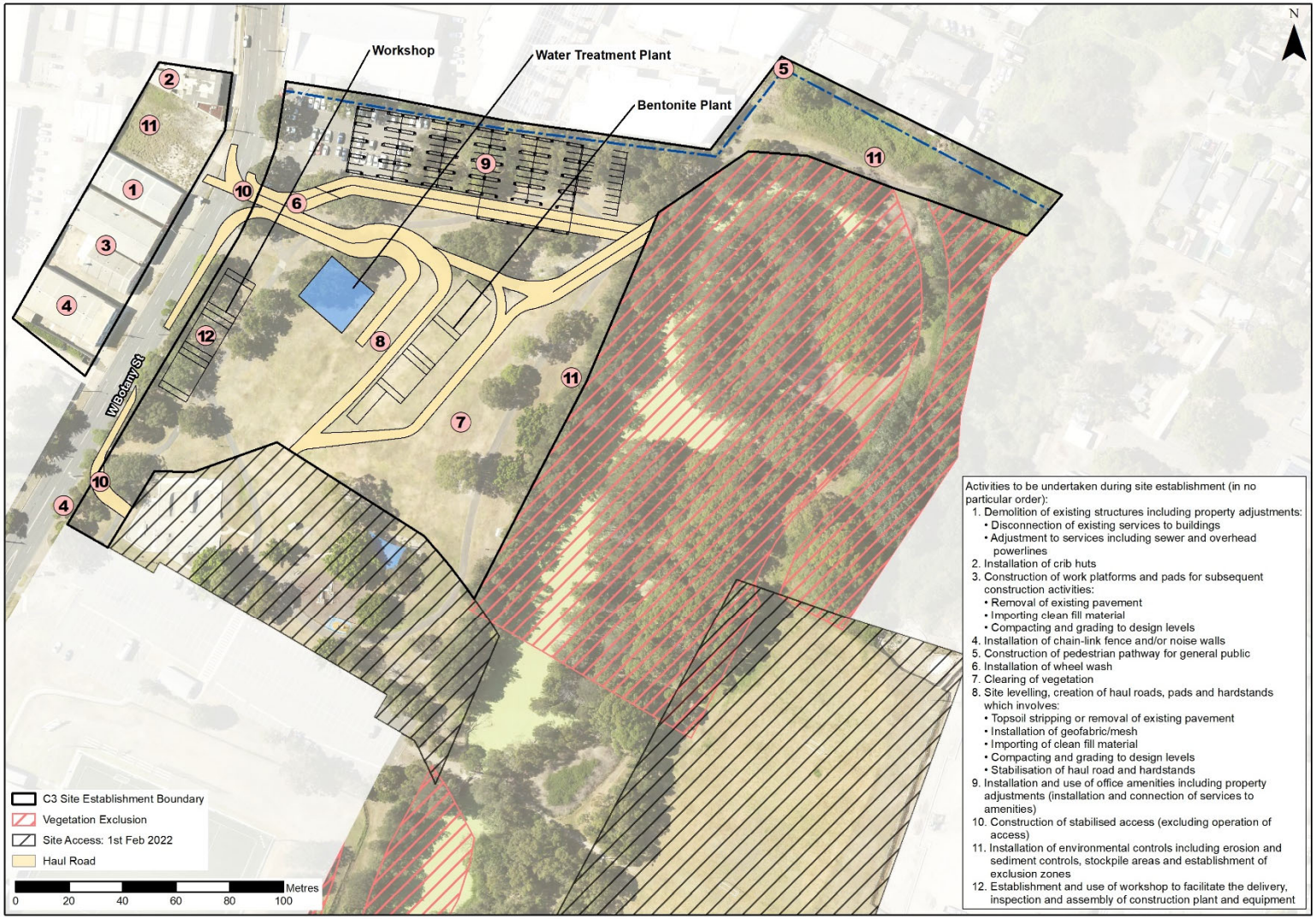

Figure 4: Preliminary construction works at C3, including site establishment

Table 2: Stage 1: Preliminary Construction proposed activities

Location	Preliminary construction activity

Arncliffe construction ancillary facility (C1)	▪ Installation and/or repair of environmental mitigation measures (wheel baths, site hoarding and noise walls, frog fencing and for the ongoing management of the pre-existing stockpile)
	▪ Upgrade, refurbishment and use of site offices and amenities
	▪ Refurbishment and use of workshops to facilitate delivery and assembly of construction equipment and plant
	▪ Assessment and refurbishment of site services (sewer, low and high voltage power, water, dewatering facilities and compressed air)
	▪ Assessment and refurbishment of existing equipment such as the water treatment plant, shaft access equipment (alimak and gantry crane), spoil bunds and acoustic sheds (some repairs required)
	▪ Assessment and repair of existing M8 tunnel access structures (dive, shaft and adits) and services including:
	  ▸ Geotechnical safety assessments
	  ▸ Repair and replacement of temporary tunnel support systems as required
	  ▸ Invert repairs (to facilitate subsequent construction access)
	  ▸ Repair and refurbish tunnel services such as lighting, ventilation, power supply and communication equipment
	  ▸ Upgrade or replace exiting construction service pipes (dewater, air) and emergency equipment (call points, caches etc).

Rockdale construction ancillary facility (C2)	▪ Demolition of existing depot structures and property adjustments where required for access and site establishment ▪ Installation of mitigation measures including noise walls, fencing, hoarding, wheel bath, sediment and erosion control devices, and drainage ▪ Removal of vegetation in depot, which does not include any Plant Community Types (PCTs) or Threatened Ecological Communities (TECs) ▪ Installation of site offices, amenities, workshop and parking ▪ Connection of services such as water, sewer and power to offices and amenities ▪ Minor site levelling and installation of haul roads and hardstands ▪ Delivery and assembly of plant and equipment including water treatment plant ▪ Creation of working platforms and pads for subsequent construction activities ▪ Construction of footings for noise walls, bentonite plant and construction water treatment plant (which may include some bored piling due to poor ground conditions)
President Avenue construction ancillary facility (C3)	MOC area (west of West Botany Street) Demolition of existing structures and property adjustments including: ▪ Disconnection of existing services to buildings requiring removal ▪ Adjustments to services, including sewer and overhead wiring ▪ Installation of fencing and crib sheds ▪ Creation of working platforms and pads for subsequent construction activities Within areas of Bicentennial Park (east of West Botany Street): ▪ Install pedestrian pathway between West Botany Street and Brighton-Le-Sands Public School ▪ Installation of mitigation measures including fencing, noise walls, hoarding, wheel bath, sediment and erosion control

Location	Preliminary construction activity

	▪ Demolition of existing structures (picnic and barbeque shelter) and property adjustments including minor vegetation clearing in compound area (no clearing of any PCTs or TECs for Stage 1)
	▪ Site levelling, which will include:
	  ▸ Removal of existing kerbs and garden beds;
	  ▸ Installation of geofabric; and
	  ▸ Spreading and compaction of imported material to design levels.
	▪ Installation of site offices, amenities including establishment and use of workshop to facilitate delivery, inspection and assembly of construction plant and equipment
	▪ Installation of site equipment such as a water treatment plant and bentonite plant
	▪ Other commencement activities related to site establishment including construction of stabilised site access (but not operation of a construction compound)

Shared cycle and pedestrian pathways construction ancillary facilities (C4 and C5)	▪ No activities or works are proposed during Stage 1: Preliminary construction
Princes Highway construction ancillary facility (C6)	▪ No activities or works are proposed during Stage 1: Preliminary construction
Permanent Power Supply	▪ No activities or works are proposed during Stage 1: Preliminary construction
Other construction sites and activities	▪ No activities or works are proposed during Stage 1: Preliminary construction

2.2.2. Construction

Stage 2 activities involve all other works required to construct the Project as outlined in Section 1.3. These activities are described in Table 3.

Table 3: Stage 2: Construction Activities

Location	Construction activity
Arncliffe construction ancillary facility (C1)	▪ Operation of construction ancillary facilities ▪ Bulk excavation of tunnels including installation of tunnel support and groundwater control systems, ▪ Construction of back-end works (e.g. drainage, pavements, barriers) ▪ Construction of MOC and facilities ▪ Mechanical and electrical fit-out of tunnels and structures ▪ Reinstatement and rehabilitation of construction areas ▪ Other works as required to fulfil Project objectives
Rockdale construction ancillary facility (C2)	▪ Operation of construction ancillary facilities including construction of an acoustic shed ▪ Bulk excavation of a temporary shaft, tunnel and caverns including installation of shaft and tunnel support and groundwater control systems ▪ Supporting construction of backend works (e.g. drainage, pavement, barriers) ▪ Mechanical and electrical fit-out as required ▪ Reinstatement of construction areas ▪ Other works as required to fulfil Project objectives
President Avenue construction ancillary facility (C3)	▪ Operation of construction ancillary facilities including construction of an acoustic shed, water treatment plant and a waterway diversion ▪ Bulk excavation of a temporary shaft, permanent ventilation shaft, tunnels (soft ground and ramps), cut and cover and entry ramps, including ground improvement, diaphragm wall construction, tunnel support and groundwater control systems ▪ Ground improvement works ▪ Construction of back-end works (e.g. drainage, pavements, barriers) ▪ Mechanical and electrical fit-out of tunnels and structures as required ▪ Construction of MOC and facilities ▪ Upgrade of road network including a new intersection for tunnel access and associated infrastructure ▪ Reinstatement and rehabilitation of construction areas, installation and finalisation of recreational facilities including an active transport corridor ▪ Other works as required to fulfil Project objectives

Location	Construction activity
Shared cycle and pedestrian pathways construction ancillary facilities (C4 and C5)	▪ Establishment and operation of construction ancillary facilities ▪ Installation of the Active Transport Corridor including interface and upgrade of road and existing transport corridors ▪ Reinstatement and rehabilitation of construction areas ▪ Other works as required to fulfil Project objectives
Princes Highway construction ancillary facility (C6)	▪ Establishment and operation of construction ancillary facilities ▪ Upgrade of road networks and transport corridors including utility modifications, relocations and amendments. ▪ Traffic staging as required ▪ Remediation of the former petrol stations and reinstatement and rehabilitation of construction areas ▪ Other works as required to fulfil Project objectives
Permanent Power Supply	▪ Installation of Permanent Power Supply from Earlwood to Rockdale, including trenching, underbore works, cable pulling, cable joining, commissioning, restoration and rehabilitation works
Other construction sites and activities	▪ Upgrades to surface road network along president Avenue ▪ Minor adjustments to local roads in the Project area ▪ Provision of new cycle and pedestrian pathways ▪ Installation of new utility services and modifications and connections to existing utility services ▪ Construction of ancillary infrastructure for motorway operations (e.g communications, lighting, traffic control and signage), and updates to existing infrastructure (including line-marking) ▪ Development and integration of systems with WestConnex Motorways to ensure safe operation of the interfaces between the Project and the WestConnex Motorways ▪ Any other works required for the Project under the CoA/EIS/PIR

2.3. Indicative timing

Stage 1: Preliminary Construction is anticipated to commence in October 2021 at locations C1, C2 and C3.

Stage 2: Construction is planned to commence in late December 2021, with initial activities including tunnel excavation from the Arncliffe Construction Compound (C1) and works within the road network at the Princes Highway and President Avenue. Piling works and bulk excavation activities within President Avenue construction ancillary facility (C3) are planned to commence later in 2022, with the commencement of piling and diaphragm wall activities from February 2022, and bulk excavation of shafts, cut and cover, and entry ramps from May 2022. Staging timeframes for the Project are described and illustrated in Table 4 and Table 5.

Table 4: Proposed staging timeframe

Indicative Construction Staging and Operations Program		
	Start	End
Stage 1 Preliminary construction	October 2021	December 2021
Stage 2 Construction	December 2021	November 2025
Motorway Operations	August 2025	Ongoing

Table 5: Indicative timeframe for Project activities by location

Location	Indicative timeframes																	
	2021	2022				2023				2024				2025				2026
	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
C1 (Arncliffe)																		
C2 (Rockdale)																		
C3 (President Ave)																		
C4 &C5 (Active Transport)																		
C6 (Princes Hwy)																		
Permanent Power Supply																		
Stages																		
Stage 1: Preliminary Construction																		
Stage 2: Construction																		
Motorway Operations																		

Legend	
Stage 1: Preliminary Construction	
Stage 2: Construction	
Motorway Operations	

2.4. Changes to Staging

In accordance with CoA A15, where changes are proposed to the staging of construction (or operation), a revised Staging Report will be prepared, endorsed by the ER and submitted to the Planning Secretary for information no later than one month prior to the proposed change in the staging.

2.5. Cumulative Impacts

Cumulative impacts are not anticipated from the staging of the Project. Where unexpected cumulative impacts are identified during construction of Project stages, they will be managed through compliance with relevant CoAs, coordination with external stakeholders including utility providers, and implementation of EMMs related to key environmental impacts.

The mechanism for identifying any potential unexpected cumulative impacts will be through monitoring, inspections, reporting and auditing processes required by the environmental management systems (e.g. environmental management documents required by CoA Part C – refer to Section 3). The mechanism for managing any cumulative impacts that are identified will be via the processes for responding to non-compliances, non-conformances and incidents as per the applicable environmental documents.

3. Compliance

3.1. Construction Environmental Planning

The Construction Environmental Management Plan (CEMP) and CEMP Sub-plans that will be used to manage the requirements associated with each stage of work were determined using a risk-based approach. This included completing an assessment of the scope of work for each construction stage, the CoAs and EMMs which would be triggered by the scope of works and the risk associated with each environmental management category listed in Table 4 of the Planning Approval.

In summary:

- Where the risk assessment determined an environmental category had a moderate (or greater) risk after mitigation and management measures had been applied, then it was determined that a CEMP Sub-plan would be required.
- Where the risk assessment determined an environmental category had a low (or negligible) risk after mitigation and management measures had been applied, then it was determined that a procedure within the CEMP would be required.

    - A low or negligible risk of an environmental category is assigned where the risks related to the scope of works, can be effectively managed through existing management and mitigation measures required under the TfNSW General Specifications (i.e. G36, G38, G40) and the CGU's Environmental and Safety Management Systems (based on the CPB Contractors Environmental Management System).
    - In addition to the above, the Management Procedures would be developed to address requirements identified in the EIS, CoA and EMMs appropriate to the scope of work for the identified stage (refer to Appendix A and Appendix B of this document).

Table 6 provides a summary of the outcome of the risk assessment and presents the application and scope of the CEMP, Sub-plans and Management Procedures for each stage. The full risk assessment for each stage will be detailed within the CEMP for each Stage (Appendix A2 Aspects and Impacts Register).

Table 6: Applicable Construction Environmental Management Plans, CEMP Sub-plans and Procedures for each stage

Environmental Management Category	CoA	Stage 1 Preliminary Construction	Stage 2 Construction
Construction Environmental Management Plan (CEMP)	C1	CEMP: Preliminary construction and commencement activities	CEMP (updated to contain full scope)
Traffic and Access	C4(a)	Procedure	CEMP Sub-plan
Noise and Vibration	C4(b)	Noise and Vibration preliminary CEMP Sub-plan and CNVIS	CEMP Sub-plan (updated to contain full scope)
Flora and Fauna	C4(c)	Procedure	CEMP Sub-plan
Air Quality and Odour	C4(d)	CEMP Sub-plan (full scope)	
Soil and Surface Water	C4(e)	Procedure	CEMP Sub-plan

Environmental Management Category	CoA	Stage 1 Preliminary Construction	Stage 2 Construction
Groundwater	C4(f)	Not applicable	CEMP Sub-plan
Contamination	C4(g)	CEMP Sub-plan (full scope)	
Waste	C4(h)	CEMP Sub-plan (full scope)	
Leachate and Landfill Gas	C4(i)	Not applicable	CEMP Sub-plan

3.2. Management Procedures

Three Management Procedures were identified to manage low and negligible risks for Stage 1: Preliminary Construction.

3.2.1. Traffic and Access

A Traffic and Access Management Procedure would be developed to manage the risks related to traffic and access during preliminary construction and commencement activities. These activities are not anticipated to impact the operation of the road network. It is noted that the Stage 1 Preliminary Construction activities will trigger the requirement for the Construction Access and Parking Strategy (CoA E130).

This Management Procedure would be developed in accordance with TfNSW's and CGU's Safety and Environmental Management Systems to manage traffic and access risks. This Management Procedure would describe anticipated light and heavy vehicle movements, impacts to parking, access and pedestrian footpaths, cyclists and bus stops in addition to required mitigation measures. Where required, management will be described for:

- Light and heavy vehicle movements;
- Parking;
- Road Occupancy Licences;
- Access to construction ancillary facilities;
- Any changes to pedestrian footpaths, cyclists and bus stop;
- Communication strategies; and
- Training of staff and workforce.

3.2.2. Flora and Fauna

A Fauna and Flora Management Procedure would be developed to manage the risks related to flora and fauna during preliminary construction and commencement activities. This Management Procedure would be developed in accordance with TfNSW G36 and G40 and the CGU's Environmental Management System, in order to manage flora and fauna risks. The Management Procedure would include:

- Clearing and Grubbing Procedure for minor tree clearing;
- Fauna Handling Procedure in case fauna is encountered;
- Weed Management Procedure; and
- Green and Golden Bell Frog Stop Works Procedure, specific to Arncliffe construction (C1).

Occupation of the Arncliffe construction ancillary facility triggers the requirement to implement the Green and Golden Bell Frog Plan of Management (GGBF PoM), which is a key issue Plan required for compliance with CoA E44. The GGBF PoM would include a stop work procedure in the unlikely event a GGBF is encountered during the construction activities.

3.2.3. Soil and Surface Water

A Soil and Surface Water Management Procedure would be developed to manage the soil and surface water risks during preliminary construction and commencement activities. This Management Procedure would be developed in accordance with TfNSW G36 and G38 and the CGU's Environmental Management System, in order to manage soil and surface water. The Soil and Surface Water Management Procedure would include:

- Erosion and Sediment Control Procedure;
- Stockpile Management Procedure;
- Water Reuse and Dewatering Management Procedure; and
- Spill Management Procedure.

3.3. Additional Plans, Strategies and Programs

A screening assessment was also conducted to determine applicability for other primary plans, programs and strategies identified in the CoA. The outcome of the screening assessment is presented in Table 7.

Table 7: Additional plans, strategies and programs

Document	CoA	Stage 1 Preliminary Construction	Stage 2 Construction
Staging report	A11	Applicable	Applicable
Site Establishment Management Plans	A17	Applicable (C1, C2, C3)	Applicable
Compliance Monitoring and Reporting Program	A32-A35	Applicable	Applicable
Auditing	A36-A38	Not applicable	Applicable
Communication Strategy	B1	Applicable	Applicable
Surface Water Monitoring Program	C13(a)	Not applicable - preconstruction monitoring to continue	Monitoring Program
Groundwater Monitoring Program	C13(b)	Not applicable - preconstruction monitoring to continue	Monitoring Program
Noise and Vibration Monitoring Program	C13(c)	Monitoring in accordance with CNVIS	Monitoring Program
Blast Monitoring Program	C13(d)	Not applicable	Applicable
Air Quality Monitoring Program	C13(e)	Monitoring Program	Monitoring Program
Flora and Fauna Monitoring Program	C13(f)	Not applicable	Monitoring Program
Leachate and Landfill Gas Monitoring Program	C13(g)	Not applicable	Monitoring Program
Wetland Monitoring Program	C13(h)	Not applicable	Monitoring Program
Green and Golden Bell Frog Plan of Management	E44	Applicable (for location C1)	Applicable (for location C1)

Document	CoA	Stage 1 Preliminary Construction	Stage 2 Construction
Out of Hours Work Protocol	E70	Applicable	Applicable
Construction Parking and Access Strategy	E130	Applicable	Applicable
Water Reuse Strategy	E179	Applicable	Applicable

3.4. CoA and EMMs

Applicability of each CoA and EMM to each stage of the Project has been assessed using a risk management-based approach.

Where a CoA or EMM has been determined to be applicable to a stage, the CoA and/or EMM would be fully complied with during that stage. Where a CoA and/or EMM does not relate to the stage, it is defined as not applicable, and compliance is not necessary.

Where a CoA and/or EMM has been determined to be partially applicable (e.g. complex conditions relating to multiple monitoring programs) then the applicable aspects would be identified and complied with. The outcome of the assessments of CoAs and EMMs for applicability to each stage are tabulated in Appendix A (CoAs) and Appendix B (EMMs).

3.5. Compliance Monitoring and Auditing

Compliance monitoring and reporting for the Project will be undertaken through a multi-layered approach including surveillance, environmental inspections, record-keeping, monitoring as required by CoA C13, compliance reporting and auditing.

An Environmental Representative (ER), Acoustic Advisor (AA) and Community Complaints Mediator have also been appointed. The roles of each of these independent appointments are defined within the Planning Approval. In addition, the contractor's activities will be assessed for compliance in accordance with CGU's Environmental Management System, the Compliance Monitoring and Reporting Program (CoA A32) and the Independent Audit requirements (CoA A36-A38).

The purpose of an Independent Audit is to obtain an independent and objective assessment of the environmental performance and compliance status of the Project. Independent Audits differ from other compliance reporting requirements that may apply as they are undertaken and reported by an independent auditor, rather than an Authorised Reporting Officer. Proposed independent auditors will be agreed to in writing by the Planning Secretary prior to the commencement of an Independent Audit. The commencement of the independent audit program will coincide with the commencement of Stage 2 Construction, with all other compliance monitoring commencing from the start of Stage 1 Preliminary Construction and continuing through both construction stages.

Appendix A Applicability of CoAs to each stage

CoA Heading	CoA	Preliminary Construction	Construction
General	A1	Applicable	
	A2	Applicable	
	A3	Applicable	
	A4	Applicable	
	A5	Applicable	
	A6	Applicable	
	A7	Applicable	
	A8	Applicable	
	A9	Applicable	
	A10	Applicable	
Staging	A11	Applicable	
	A12	Applicable	
	A13	Applicable	
	A14	Applicable	
	A15	Applicable	
Ancillary Facilities	A16	Applicable	
Site Establishment Management Plan	A17	Applicable	
Operation of Construction Ancillary Facilities	A18	Not Applicable	Applicable
Minor Construction Ancillary Facilities	A19	Applicable	
Boundary Screening	A20	Applicable	
	A21	Applicable	
Environmental Representative	A22	Applicable	
	A23	Applicable	
	A24	Applicable	
	A25	Applicable	
	A26	Applicable	
	A27	Applicable	
Acoustic Auditor	A28	Applicable	
	A29	Applicable	

CoA Heading	CoA	Preliminary Construction	Construction
	A30	Applicable	
	A31	Appliable	
Compliance Monitoring and Reporting Program	A32	Applicable	
	A33	Applicable	
	A34	Applicable	
	A35	Applicable	
Auditing	A36	Not Applicable	Applicable
	A37	Not Applicable	Applicable
	A38	Not Applicable	Applicable
Incident Notification and Reporting	A39	Applicable	
	A40	Applicable	
Identification of Workforce and Compounds	A41	Not Applicable	Applicable
	A42	Applicable	
Communication Strategy	B1	Applicable	
	B2	Applicable	
	B3	Applicable	
	B4	Applicable	
	B5	Applicable	
Complaints Management System	B6	Applicable	
	B7	Applicable	
	B8	Applicable	
	B9	Applicable	
	B10	Applicable	
	B11	Applicable	
	B12	Applicable	
	B13	Applicable	
	B14	Applicable	
Provision of Electronic Information	B15	Applicable	
Construction Environmental Management Plan	C1	Applicable	
	C2	Applicable	
	C3	Applicable	

CoA Heading	CoA	Preliminary Construction	Construction
	C4	Partial – refer to Table 6	Applicable
	C5	Applicable	
	C6	Applicable	
	C7	Not Applicable	Applicable
	C8	Not Applicable	Applicable
	C9	Applicable	
	C10	Applicable	
	C11	Applicable	
	C12	Applicable	
	C13	Partial – refer to Table 6	Applicable
	C14	Partial – refer to Table 6	Applicable
	C15	Not Applicable	Applicable
	C16	Partial – refer to Table 7	Applicable
	C17	Not Applicable	Applicable
	C18	Not Applicable	Applicable
	C19	Partial – refer to Table 7	Applicable
	C20	Partial – refer to Table 7	Applicable
	C21	Partial – refer to Table 7	Applicable
	C22	Partial – refer to Table 7	Applicable
	C23	Applicable	
Part D – Operational Environmental Management	D1 – D14	Not Applicable	Not Applicable
Air Quality and Odour	E1	Applicable	
Air Quality	E2	Not Applicable	Applicable
Air Quality Independent Reviewer	E3	Not Applicable	Applicable
	E4	Not Applicable	
Limits for In-Tunnel Air Quality	E5	Not Applicable	Applicable
	E6	Not Applicable	
	E7	Not Applicable	Applicable
Monitoring of In-Tunnel Air Quality	E8	Not Applicable	
	E9	Not Applicable	Applicable

CoA Heading	CoA	Preliminary Construction	Construction
	E10	Not Applicable	
Notification and Reporting on In-Tunnel Air Quality	E11	Not Applicable	
	E12	Not Applicable	
Ventilation Outlets	E13	Not Applicable	Applicable
	E14	Not Applicable	Applicable
Limits on Emissions from Ventilation Outlets	E15	Not Applicable	Not Applicable
Monitoring of Ventilation Outlet Emissions	E16	Not Applicable	Applicable
Notification and reporting of Ventilation Outlet Emissions	E17	Not Applicable	Not Applicable
	E18	Not Applicable	Not Applicable
Maximum Concentrations for Ambient Air Quality	E19	Not Applicable	Not Applicable
Monitoring of Ambient Air Quality	E20	Not Applicable	Applicable
	E21	Not Applicable	Applicable
	E22	Not Applicable	Applicable
Notification and Reporting of Ambient Air Quality	E23	Not Applicable	Applicable
	E24	Not Applicable	
	E25	Not Applicable	
Design and Operation of Tunnel Ventilation System	E26	Not Applicable	Applicable
	E27	Not Applicable	Applicable
	E28	Not Applicable	Applicable
	E29	Not Applicable	
	E30	Not Applicable	Applicable
Emergency Discharge	E31	Not Applicable	
Tunnel Air Quality Management	E32	Not Applicable	Applicable
Tunnel Air Quality – General Reporting	E33	Not Applicable	Applicable
	E34	Not Applicable	
	E35	Not Applicable	
Quality Assurance and Control	E36	Not Applicable	
Development Guidelines	E37	Not Applicable	Applicable

CoA Heading	CoA	Preliminary Construction	Construction
Biodiversity	E38	Applicable	
	E39	Applicable	
	E40	Not Applicable	Applicable
	E41	Not Applicable	Applicable
	E42	Applicable	
Pre-clearing Surveys	E43	Applicable	
Green and Golden Bell Frog	E44	Applicable	
Bat Boxes	E45	Not Applicable	Applicable
Flooding	E46	Not Applicable	Applicable
	E47	Not Applicable	Applicable
Hazards and Risk	E48	Not Applicable	Applicable
	E49	Not Applicable	Applicable
	E50	Not Applicable	
	E51	Not Applicable	
	E52	Not Applicable	Applicable
	E53	Not Applicable	Applicable
	E54	Not Applicable	Applicable
	E55	Not Applicable	Applicable
	E56	Not Applicable	
Heritage	E57	Applicable	
	E58	Not Applicable	Applicable
	E59	Applicable	
	E60	Applicable	
Land Use Survey	E61	Applicable	
Work Hours	E62	Applicable	
	E63	Applicable	
	E64	Not Applicable	Applicable
Highly Noise Intensive Works	E65	Applicable	
Variation to Works Hours	E66	Applicable	
	E67	Applicable	
	E68	Applicable	

CoA Heading	CoA	Preliminary Construction	Construction
Out-of-Hours Work Scheduling and Respite	E69	Applicable	
Out-of-Hours Work Protocol – Works not subject to an EPL	E70	Applicable	
Out-of-Hours Works – Coordination and Respite	E71	Applicable	
Construction Noise and Vibration – General	E72	Applicable	
	E73	Applicable	
	E74	Applicable	
	E75	Applicable	
Construction Vibration Mitigation – Heritage	E76	Applicable	
Construction Noise Mitigation – Acoustic Sheds	E77	Not Applicable	Applicable
Construction Noise Mitigation – Out-of-Hours Works	E78	Applicable	
	E79	Applicable	
	E80	Applicable	
	E81	Applicable	
	E82	Applicable	
Workplace health and safety for nearby workers	E83	Applicable	
Noise Mitigation – Operation Noise Mitigation Measures	E84	Not Applicable	Applicable
	E85	Not Applicable	Applicable
	E86	Not Applicable	
Blasting Management Strategy	E87	Not Applicable	Applicable
	E88	Not Applicable	Applicable
	E89	Not Applicable	Applicable
	E90	Not Applicable	Applicable
	E91	Not Applicable	Applicable
Property, Landuse and Socio-Economic Impacts	E92	Applicable	
Settlement	E93	Not Applicable	Applicable
	E94	Not Applicable	Applicable
	E95	Not Applicable	Applicable

CoA Heading	CoA	Preliminary Construction	Construction
	E96	Not Applicable	Applicable
	E97	Not Applicable	Applicable
Condition Survey	E98	Applicable	
	E99	Not Applicable	Applicable
	E100	Not Applicable	Applicable
	E101	Not Applicable	Applicable
	E102	Applicable	
Public and Open Space Planning	E103	Applicable	
	E104	Applicable	
	E105	Applicable	
	E106	Applicable	
	E107	Applicable	
	E108	Not Applicable	Applicable
	E109	Applicable	
	E110	Not Applicable	Applicable
Soils	E111	Applicable	
Contaminated Sites	E112	Applicable	
	E113	Applicable	
	E114	Applicable	
Sustainability	E115	Applicable	
	E116	Applicable	
Traffic, Transport and Access Construction Access	E117	Applicable	
	E118	Applicable	
	E119	Applicable	
	E120	Applicable	
	E121	Applicable	
	E122	Applicable	
	E123	Not Applicable	Applicable
	E124	Not Applicable	Applicable
	E125	Not Applicable	Applicable
	E126	Not Applicable	Applicable

CoA Heading	CoA	Preliminary Construction	Construction
Road Dilapidation	E127	Applicable	
	E128	Applicable	
Parking	E129	Applicable	
	E130	Applicable	
	E131	Applicable	
Safety Audits	E132	Applicable	
	E133	Not Applicable	Applicable
Road Network Performance Plan	E134	Not Applicable	Applicable
	E135	Not Applicable	Not Applicable
Urban Design and Place Making Construction Ancillary Facilities	E136	Applicable	
General Design	E137	Not Applicable	Applicable
	E138	Not Applicable	Applicable
	E139	Not Applicable	Applicable
Lighting and Security	E140	Applicable	
	E141	Applicable	
	E142	Applicable	
	E143	Applicable	
	E144	Applicable	
Tree Removals and Plantings	E145	Applicable	
	E146	Applicable	
	E147	Not Applicable	Applicable
	E148	Not Applicable	Applicable
	E149	Not Applicable	Applicable
Pedestrian and Cyclist Access	E150	Not Applicable	Applicable
	E151	Not Applicable	Applicable
	E152	Not Applicable	Applicable
	E153	Not Applicable	Applicable
Urban Design and Landscape Plan	E154	Applicable	
	E155	Applicable	
	E156	Applicable	

CoA Heading	CoA	Preliminary Construction	Construction
	E157	Applicable	
	E158	Applicable	
	E159	Not Applicable	Applicable
Operational Maintenance	E160	Not Applicable	Not Applicable
Utilities Management	E161	Applicable	
Utility Coordination Manager	E162	Applicable	
Waste	E163	Applicable	
	E164	Applicable	
	E165	Applicable	
	E166	Applicable	
	E167	Applicable	
Water	E168	Applicable	
	E169	Not Applicable	Applicable
	E170	Not Applicable	Applicable
	E171	Applicable	
Groundwater	E172	Not Applicable	Applicable
	E173	Not Applicable	Applicable
	E174	Not Applicable	Applicable
	E175	Not Applicable	Applicable
Stormwater Drainage	E176	Not Applicable	Applicable
	E177	Not Applicable	Applicable
	E178	Not Applicable	Applicable
	E179	Not Applicable	Applicable

Appendix B Applicability of EMMs to each stage

EMM Topic	EMM	Preliminary Construction	Construction
Construction Traffic, Access and Transport	TT1	Not Applicable	Applicable
	TT2	Not Applicable	Applicable
	TT3	Applicable	
	TT4	Not Applicable	Applicable
	TT5	Applicable	
	TT6	Not Applicable	Applicable
	TT7	Applicable	
	TT8	Not Applicable	
	TT9	Not Applicable	
Air Quality and Odour	AQ1	Applicable	
	AQ2	Applicable	
	AQ3	Applicable	
	AQ4	Not Applicable	Applicable
	AQ5	Not Applicable	Applicable
Health, Safety and Hazards	HS1	Applicable	
	HS2	Applicable	
	HS3	Applicable	
	HS4	Not Applicable	Applicable
	HS5	Not Applicable	
	HS6	Applicable	
	HS7	Not Applicable	
	HS8	Not Applicable	Applicable
Noise and Vibration	NV1	Partial – refer to Table 6	Applicable
	NV2	Applicable	
	NV3	Applicable	
	NV4	Applicable	
	NV5	Applicable	
	NV6	Applicable	
	NV7	Applicable	
	NV8	Not Applicable	Applicable

EMM Topic	EMM	Preliminary Construction	Construction
	NV9	Not Applicable	
Biodiversity	B1	Applicable	
	B2	Applicable	
	B3	Not Applicable	Applicable
	B4	Not Applicable	Applicable
	B5	Applicable	
	B6	Not Applicable	Applicable
Landscape and Visual	LVIA1	Applicable	
	LVIA2	Applicable	
	LVIA3	Applicable	
	LVIA4	Applicable	
	LVIA5	Applicable	
Property and Land Use	PL1	Applicable	
	PL2	Not Applicable	Applicable
	PL3	Not Applicable	Applicable
	PL4	Applicable	
	PL5	Applicable	
	PL6	Not Applicable	Applicable
	PL7	Applicable	
Social and Economic	SE1	Applicable	
	SE2	Applicable	
	SE3	Applicable	
	SE4	Applicable	
	SE5	Applicable	
	SE6	Not Applicable	
	SE7	Not Applicable	Applicable
Soil and Contamination	SC1	Not Applicable	Applicable
	SC2	Applicable	
	SC3	Applicable	
	SC4	Applicable	
	SC5	Applicable	

EMM Topic	EMM	Preliminary Construction	Construction
	SC6	Applicable	
	SC7	Applicable	
	SC8	Applicable	
Groundwater and Geology	GW1	Not Applicable	Applicable
	GW2	Not Applicable	Applicable
	GW3	Not Applicable	Applicable
	GW4	Not Applicable	Applicable
	GW5	Not Applicable	Applicable
	GW6	Not Applicable	Applicable
	GW7	Not Applicable	Applicable
	GW8	Not Applicable	Applicable
	GW9	Not Applicable	Applicable
	GW10	Not Applicable	Applicable
Geology (Ground Movement)	GM01	Not Applicable	Applicable
	GM02	Not Applicable	Applicable
Surface Water and Flooding	SWF1	Applicable	
	SWF2	Not Applicable	Applicable
	SWF3	Not Applicable	Applicable
	SWF4	Not Applicable	
	SWF5	Not Applicable	Applicable
	SWF6	Not Applicable	Applicable
	SWF7	Not Applicable	Applicable
	SWF8	Applicable	
	SWF9	Not Applicable	Applicable
	SWF10	Applicable	
	SWF11	Not Applicable	Applicable
	SWF12	Applicable	
Non-Aboriginal Heritage	NAH1	Applicable	
	NAH2	Applicable	
	NAH3	Applicable	
	NAH4	Not Applicable	Applicable

EMM Topic	EMM	Preliminary Construction	Construction
	NAH5	Applicable	
	NAH6	Not Applicable	Applicable
	NAH7	Not Applicable	Applicable
	NAH8	Not Applicable	Applicable
Aboriginal Cultural Heritage	AH1	Applicable	
	AH2	Applicable	
	AH3	Applicable	
Waste Management	W1	Applicable	
	W2	Not Applicable	Applicable
	W3	Not Applicable	Applicable
	W4	Applicable	
Climate Change Adaptation	CC1	Not Applicable	Applicable
	CC2	Applicable	
	CC4	Not Applicable	Applicable
	CC5	Not Applicable	Applicable
	CC6	Not Applicable	Applicable
	CC7	Not Applicable	Applicable
	CC8	Not Applicable	Applicable
	CC9	Not Applicable	Applicable
Greenhouse Gas	GG1	Applicable	Applicable
	GG2	Applicable	
	GG3	Not Applicable	Applicable
	GG4	Applicable	
	GG5	Applicable	
	GG6	Applicable	
	GG7	Applicable	
	GG8	Applicable	