Staging Report

Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863)

March 2022 | Version: Rev 4

Contents

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Revision	Revision Date	Status	Description	Author / Company
0	1-Mar-2021	Final	Document endorsed by ER and submission to DPIE	TfNSW Environment Team
1	6-Oct-2021	Final	Revision to include additional stages (M2A, WHTCP and MH) and integration of WFU works	TfNSW Environment Team
2	7-Dec-2021	Final	Revision to address DPIE review comments	TfNSW Environment Team
3	8-Mar-2022	Final	Minor amendment to Stage 1A scope and management	TfNSW Environment Team
4	29-Mar-2022	Final	Revision to address DPIE review comments	TfNSW Environment Team

Glossary / Abbreviations

Abbreviation	Expanded Text
AA	Acoustic Advisor
BL	Beaches Link (proposed project)
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CGC	Cammeray Golf Course adjustment works, Stage 1B of the Western Harbour Tunnel and Warringah Freeway Upgrade
CoA	Conditions of approval
CNVIS	Construction Noise and Vibration Impact Statement
COVID-19	Coronavirus disease
CUT	Critical utility installation, relocation and protection, Stage 1A of the Western Harbour Tunnel and Warringah Freeway Upgrade
DPE	NSW Department of Planning and Environment
EIS	Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (January 2020)
EPA	NSW Environment Protection Authority
ER	Environmental Representative
ITS	Intelligent Transport System
Low Impact Work	Low impact work as defined in the Conditions of Approval includes: (a) site establishment work approved under a Site Establishment Management Plan; (b) operation of ancillary facilities if the ER has determined the operational activities will have minimal impact on the environment and community; (c) minor clearing and relocation of native vegetation, as identified in the documents listed in Condition of Approval A1; (d) installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and at-property treatments (including the implementation of the NIP); (e) property acquisition adjustment work including installation of property fencing, and relocation and

Abbreviation	Expanded Text
	adjustments of utilities to property including water supply and electricity; (f) relocation and connection of utilities where the relocation or connection has a minor impact to the environment as determined by the ER; (g) archaeological testing under the Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) or archaeological monitoring undertaken in association with (a) – (f) above to ensure that there is no impact on heritage items; (h) the relocation of Cape Don and Baragoola historic vessels as permitted subject to Condition of Approval E53; (i) adjustment of Cammeray Golf Course as identified in Condition of Approval E101and relocation of the Cammeray Golf Club dam / harvesting scheme subject to Condition of Approval E209; (j) noise barrier / wall between Massey and Amherst Street, Cammeray as identified in Condition of Approval E183 and Appendix C; (k) maintenance of existing buildings and structures required to facilitate the carrying out of the CSSI; and (l) other activities determined by the ER to have minimal environmental impact which may include but not be limited to construction of minor access roads, temporary relocation of pedestrian and cycle paths and the provision of property access. Notwithstanding the following works are not Low Impact Work: (a) where heritage items (excluding those impacted by activities (i) and (j) above), or threatened species or threatened ecological communities (within the meaning of the *Biodiversity Conservation Act 2016* or *Environment Protection and Biodiversity Conservation Act 1999*) are affected or potentially affected by any low impact work, that work is construction, unless otherwise determined by the Planning Secretary in consultation with Heritage NSW, EESG or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation); and (b) any night time (hours as defined by the ICNG) work that exceeds noise management levels as identified in Condition of Approval E68(b)(i)

Abbreviation	Expanded Text
	The low impact work described in this definition becomes construction with the approval of a Construction Environmental Management Plan.
MH	Maritime Heritage – relocation of historic vessels *M.V. Cape Don and Baragoola,* Stage 1E of the Western Harbour Tunnel and Warringah Freeway Upgrade
Minister, the	Minister for Planning and Public Space (or delegate)
M2A	Massey to Amherst noise barrier, Stage 1C of the Western Harbour Tunnel and Warringah Freeway Upgrade
NSW	New South Wales
OOHW	Out of Hours Works
Project, the	Western Harbour Tunnel and Warringah Freeway Upgrade Project
REMM	Revised Environmental Management Measure as outlined in the project RtS documentation.
ROL	Road Occupancy Licence
RtS	Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions (September 2020)
SCO	Sydney Coordination Office
SSI	State Significant Infrastructure
TfNSW	Transport for New South Wales
TMC	Transport Management Centre
WFU	Warringah Freeway Upgrade, Stage 2 of the Western Harbour Tunnel and Warringah Freeway Upgrade
WHT	Western Harbour Tunnel project, Stage 3 of the Western Harbour Tunnel and Warringah Freeway Upgrade
WHTCP	Western Harbour Tunnel construction power, Stage 1D of the Western Harbour Tunnel and Warringah Freeway Upgrade
WHTWFU	Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863)

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) A10 to A14 of the Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) (WHTWFU/ the project) planning approval. Table 1 cross-references sections in this report that address each applicable planning approval requirement relating to the Staging Report.

The Department of Planning and Environment (DPE) has been 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 the determination of any project modifications or changes to the delivery strategy (refer to Sections 2.2). Where amendments to the proposed staging occur, a revised Staging Report will be prepared in consultation with DPE and will be submitted in accordance with CoA A14.

Table 1: Staging Report Planning Approval condition cross references

CoA	Condition requirement(s)	Staging Report Section
A1	The Proponent must carry out the CSSI in accordance with the terms of this approval and generally in accordance with the: a) Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement – Volumes 1A-B and 2A-J (dated January 2020) (the EIS); and b) Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report (dated September 2020) (the RtS).	This document
A2	The CSSI must only be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the documents listed in **Condition A1** unless otherwise specified in, or required under, this approval.	This document.
A10	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 Endorsed by the ER and then 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 one month prior to the commencement of the first stage.
A11	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;	Sections 2.2 and 2.4 outline the activities which will occur within each construction stage and an indicative program for the works.

CoA	Condition requirement(s)	Staging Report Section
	(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);	Sections 2.3 and 2.4 outline the activities which will occur within each operational stage and an indicative program for the works.
	(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 impelemented 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 2.6 includes details on how cumulative impacts will be managed.
A 12	The CSSI must be staged in accordance with the Staging Report, as approved by the Planning Secretary.	The project will be staged in accordance with this report which will be submited for information to the Planning Secretary prior to the commencement of the stage.
A13	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 allocate the applicability of each CoA and Revised Environmental Mitigation Measures (REMMs) to each stage of the project.
A14	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 approval no later than one month prior to the proposed change in the staging.	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 Western Harbour Tunnel and Warringah Freeway Upgrade (WHTWFU) project comprises a new tolled motorway tunnel connection across Sydney Harbour, and an upgrade of the Warringah Freeway to integrate the new motorway infrastructure with the existing road network and to connect to the future proposed Beaches Link and Gore Hill Freeway Connection project.

Due to its importance, the WHTWFU was declared to be critical state significant infrastructure (CSSI) by the Minister for Planning and Public Spaces on 9 November 2020.

On 21 January 2021, the Department of Planning, Industry and Environment (DPIE) approved the construction and operation of the WHTWFU.

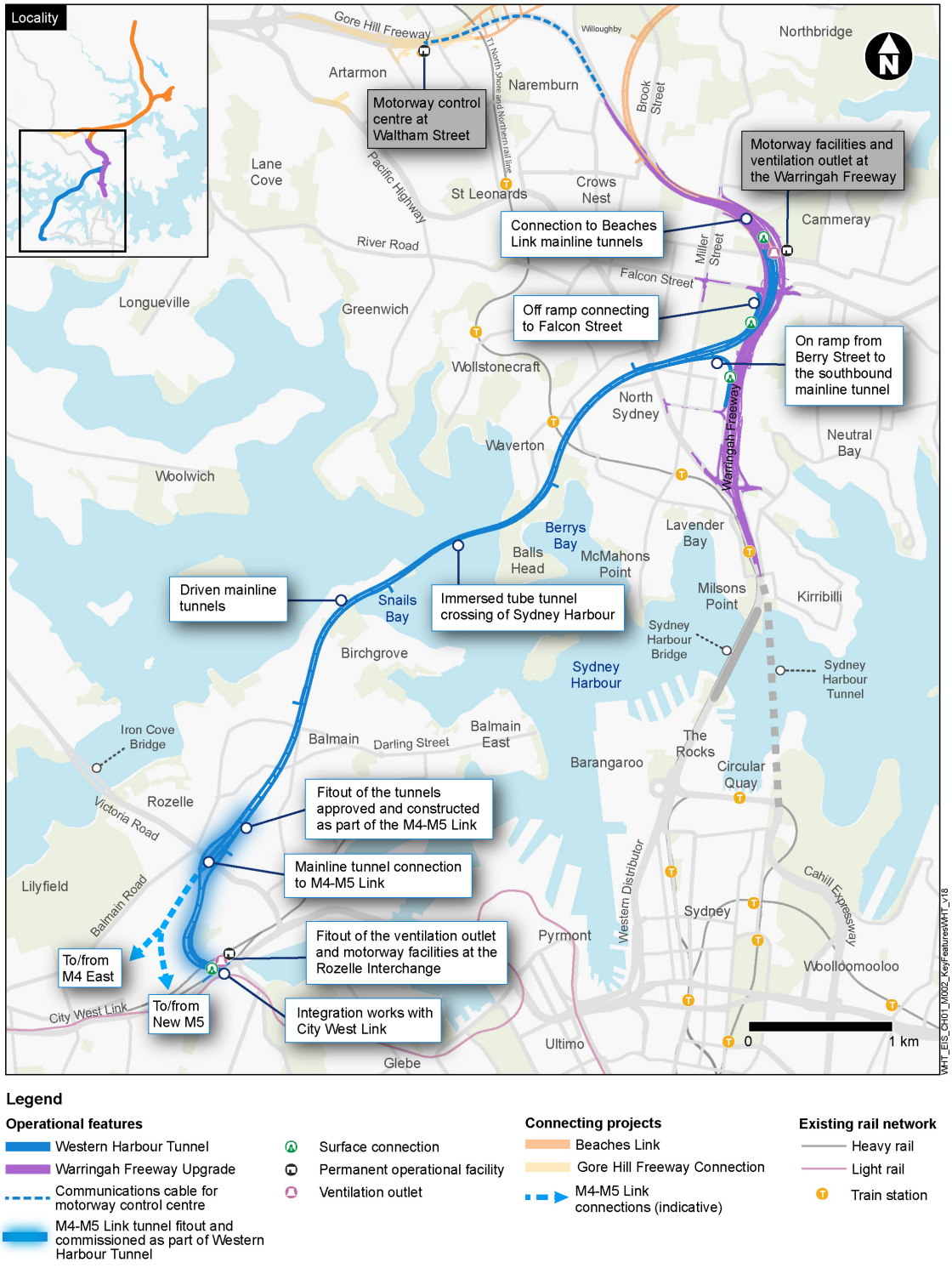
1.3 Project Description

The WHTWFU project comprises of two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the existing Warringah Freeway at North Sydney (the Western Harbour Tunnel (WHT)) (refer to Figure 1)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the future proposed Beaches Link and Gore Hill Freeway Connection project (the Warringah Freeway Upgrade (WFU)) (refer to Figure 2).

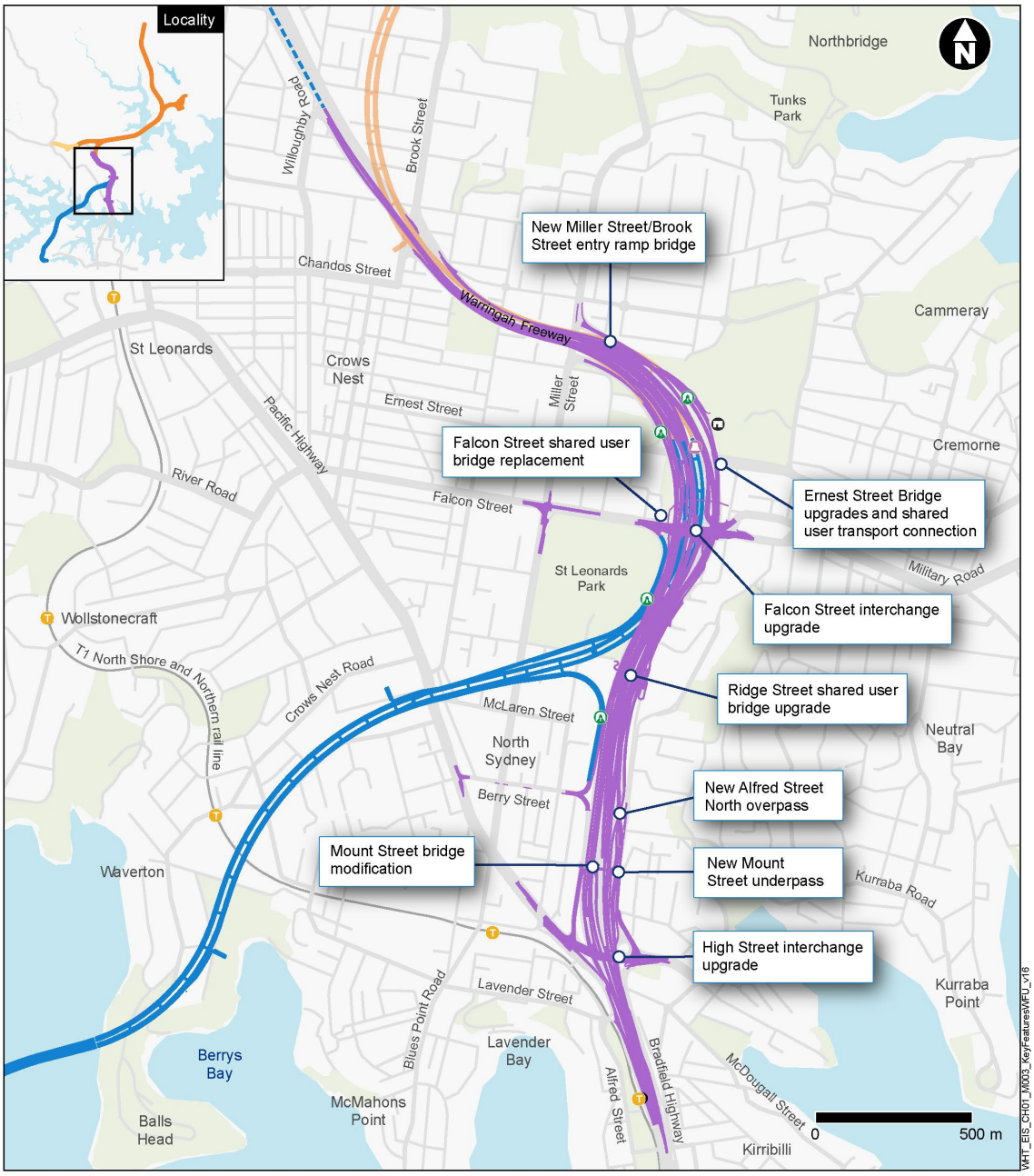
The WHTWFU project has been split into two separate projects, which will be delivered by TfNSW.

A detailed description of the Project is provided in Chapter 5 of the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (EIS).



(Reference: Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement, Figure 1-2)

Figure 1: Key features of the Western Harbour Tunnel component of the project



Legend

Operational features
- Warringah Freeway Upgrade
- Western Harbour Tunnel
- Communications cable for motorway control centre
- Surface connection
- Permanent operational facility
- Ventilation outlet

Connecting projects
- Beaches Link

Existing rail network
- Heavy rail
- Train station

(Reference: Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement, Figure 1-3)

Figure 2: Key features of the Warringah Freeway Upgrade component of the project

2 Project Staging

2.1 Overview

TfNSW has elected to stage portions of the project in response to further planning and feedback received from stakeholders and industry consultation.

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, reducing the cumulative impacts and minimising impacts on local communities, the environment, and users of the surrounding road and other transport networks.

The duration of construction is significantly influenced by the complexity and magnitude of the interfaces between the various scopes of work. The staging strategy seeks to minimise the risk to delivery timing and impacts on nearby communities, including cumulative impacts from construction (refer to Section 2.6).

The stages of the project comprise of:

Stage 1 - Early and enabling works:

- Stage 1A – Critical utility installation, relocation and protection (CUT)
  (commencement of construction 19 May 2021)
- Stage 1B – Cammeray Golf Course adjustment works (CGC)
- Stage 1C – Massey to Amherst noise wall (M2A)
  (commencement of construction 9 December 2021)
- Stage 1D – WHT construction power and utilities (WHTCP)
- Stage 1E – Maritime Heritage – relocation of historic vessels *M.V. Cape Don and Baragoola* (MH)

Stage 2 - Warringah Freeway Upgrade project:

- Stage 2 – Warringah Freeway Upgrade (WFU)
  (commencement of construction 2 May 2022)

Stage 3 - Western Harbour Tunnel project (WHT).

- Supplementary stages to be confirmed at a later stage (upon procurement of the WHT Contractor/s)

Further information on the works comprising each stage is contained in Section 2.2.

2.1.1 The Staging Rationale

The rationale for the staged construction and operation of the project is based on the following considerations:

- Making the scope of the project more manageable by dividing the works into numerous construction contracts
- Ensure the following pre-construction activities are carried out ahead of main construction activities, to ensure they can continue unhindered:

    - Critical utility installation, relocation and protection
    - Cammeray Golf Course adjustment works
    - Installation of the Massey to Amherst noise wall
    - Installation of construction power and utilities for tunnelling support sites, and
    - Relocation of historic maritime heritage vessels
- Minimising impacts on key stakeholders by relocating utilities and golf course facilities prior to the main works
- Limit as far as possible concurrent activities at any one time, minimising cumulative impacts within the construction footprint
- Action and satisfy proposed REMMs as detailed in the project EIS/RtS. This approach is intended to mitigate impacts on the community and environment, ahead of expected construction impacts
- Keeping with Government advice on staggering activities to limit the potential spread of COVID 19
- Result in a shorter construction program overall, as well as earlier completion of the asset.

The project will be operated in two stages, with the operation of the WFU and WHT projects commencing in accordance with the staged construction strategy.

2.2 Construction Stages

2.2.1 Early and enabling works

The early and enabling works comprise the following stages:

- Critical utility installation, relocation and protection (CUT)
- Cammeray Golf Course adjustment works (CGC)
- Massey to Amherst noise wall (M2A)
- Construction power and utilities for WHT (WHTCP)
- Maritime Heritage – relocation of historic vessels *M.V. Cape Don and Baragoola* (MH)

2.2.1.1 Critical utility installation, relocation and protection (CUT)

The critical utility installation, relocation and protection stage of the project will include the following works:

- Alfred Street North, Neutral Bay
    - Relocation of existing in-ground Sydney Water sewer mains
    - Relocation and undergrounding of existing Ausgrid overhead and in-ground assets

    - Relocation of existing communication provider assets, including Telstra (in-ground), Optus (including overhead and in-ground assets), TPG (in-ground assets) and NBN (in-ground assets)

- Arthur Street/High Street, North Sydney
    - Relocation of existing in-ground Ausgrid assets
    - Relocation of various in-ground communication provider assets, including Vocus, Optus, Verizon, TPG, UeComm and Telstra
    - Relocation of two (2) existing Sydney Harbour Tunnel fire hydrant booster stations on Arthur Street and Mount Street
    - Relocation of existing in-ground 415V feed to Sydney Harbour Tunnel control room
    - Installation of enabling infrastructure and equipment for Sydney Harbour Tunnel ITS Gantry
- Cammeray Avenue / Ernest Street / Cammeray Golf Course
    - Relocation of existing in-ground Ausgrid assets
    - Removal of existing disused in-ground 132kV and 33kV Ausgrid assets
    - Relocation of existing in-ground Sydney Water sewer and potable water mains
    - Relocation of existing in-ground UeComm communication provider assets
    - Installation of new permanent Intelligent Transport System (ITS) node and temporary connections
    - Installation of temporary construction power supply along Ernest Street from Ben Boyd Road to the Cammeray Golf Course site (WHT10).
- Sydney Harbour Bridge*
    - Installation of enabling infrastructure and equipment on the existing ITS Gantry 9
    - Gantry leg reinforcement
    - Installation of power and communications infrastructure

*These works are the subject to a Heritage Impact Assessment and consistency assessment to demonstrate an improved outcome for the heritage impacts on the Sydney Harbour Bridge

2.2.1.2 Cammeray Golf Course adjustment works (CGC)

The Cammeray Golf Course adjustment works include works required under REMMs WQ8 and LP7, and CoA E101, E197 and E209, including:

- Installation of a new permanent replacement stormwater harvesting dam (and associated infrastructure) within Cammeray Golf Course prior to decommissioning of the existing dam

- An active transport link through Cammeray Golf Course between Ernest Street and Warringa Road / Bells Avenue, Cammeray must be provided prior to the removal of the existing path, and
- Adjustments to the golf course to maintain its viability, including:
    - Demolition and removal of redundant paths
    - Installation of a temporary Active Transport Link*
      *note: these works are proposed to be undertaken as low-impact works, prior to works under the CEMP, subject to the assessment outlined in section 3.3.1
    - Vegetation trimming and removal
    - Utility protection and adjustment works
    - Earthworks and construction of retaining walls
    - Installation of irrigation and drainage infrastructure for the 9 hole golf course
    - Landscaping and plantings for 9 hole golf course

2.2.1.3 Massey to Amherst Street noise barrier

The existing Massey to Amherst Street noise barrier is impacted by the widening of the Warringah Freeway and the installation of the new noise barrier is programmed to occur before the start of the construction of the Warringah Freeway Upgrade. The works will include:

- Vegetation trimming and removal
- The demolition and removal of the existing noise wall section
- Excavation and civil works
- Construction of pile foundations and footings
- Construction and installation of new noise barrier
- Reinstatement works including backfilling, installation of rock face, fencing, and landscape paving
- Road reinstatement works including mill and re-sheet, and line marking

2.2.1.4 Construction power and utilities for WHT

The construction power and utility installation for Western Harbour Tunnel will include the following works:

- Balls Head Road, Waverton
    - High Voltage Cable (HVC) substation installation
    - Trench excavation, electrical conduit and joint installation
- Louisa Road, Birchgrove

    - HVC substation installation
    - Trench excavation, electrical conduit and joint installation
- Lilyfield Road to Victoria Road , Rozelle and Balmain
    - HVC substation installation
    - Trench excavation, electrical conduit and joint installation

2.2.1.5 Maritime Heritage – relocation of historic vessels *M.V. Cape Don and Baragoola*

The relocation of historic vessels *M.V Cape Don and Baragoola* will include the following activities:

- Installation of support piles for each of the four temporary mooring dolphins (each pile would be driven to rock, no dredging required)
- Installation of a reinforced concrete pile cap on each of the groups of around four piles supporting each dolphin
- Addition of two fender piles to each of the two central dolphins, including connection to the pile cap
- Lowering and connection of gangway units between each of the four new temporary mooring dolphins, and to connect with the existing dolphin at the southern end of the Balls Head Coal Loader wharf
- Fit out and finishing of the temporary mooring structure, including installation of gangway flooring, gangway and dolphin fencing and hand railing, and bollards.
- Installation of existing utility connections
- Temporary relocation of both the *M.V Cape Don and Baragoola*

2.2.2 Warringah Freeway Upgrade project

The Warringah Freeway Upgrade works will include:

- Assessment and installation of at-property treatments and noise walls to mitigate construction noise from the project
- Site preparation works including clearing of vegetation, installation of temporary fencing and hoarding, installation of environmental controls including erosion and sedimentation controls
- Establishment and operation of ancillary facilities at High Street south (WFU2), High Street north (WFU3), Arthur Street east (WFU4), Berry Street east (WFU5), Ridge Street east (WFU6), Merlin Street (WFU7), Cammeray Golf Course (WFU8) and Rosalind Street (WFU9) and Northern Hub (NH1)
- Operation of ancillary facilities at High Street south (WFU2), High Street north (WFU3), Arthur Street east (WFU4), Berry Street east (WFU5), Ridge Street east (WFU6), Merlin Street (WFU7), Cammeray Golf Course (WFU8), Rosalind Street (WFU9) and Northern Hub (NH1)

- Preparation of the Cammeray Golf Course construction support site for the benefit of the WHT works and proposed BL works
- Utility installation, relocation and protection (in addition to the CUT stage works), including new and relocated drainage and installation of Intelligent Transport System (ITS):
    - Underbore and service relocation from Ernest Street through Cammeray Avenue to Rosalind Street
    - ITS node construction (move from Ernest Street to Rosalind)
    - Northbound verge ITS trenching works (between Ch2800- Ch3050)
- CCTV and cleaning of existing drainage structure
- Construction of retaining walls, including excavation, piling, installation of concrete footings, provision of structural support (ie rock anchors or soil nails), shotcreting, drainage structures, installation of panels and backfilling of retaining wall structure
- Construction of the new Ridge Street Pedestrian Bridge, including localised excavation, piling, concrete works, roadworks, installation of bridge spans, stairs and ramp and demolition works
- Bridge modifications and widening works to the Mount Street bridge and Falcon Street bridge and entry and exit ramps including installation of traffic barriers, concrete works, installation of structural steel, installation of drainage, asphalting and line marking
- Realignment of traffic including demolition of existing barriers, rock walls, drainage, lighting and signage, asphalting works
- Construction of the bridge over Alfred Street exit ramp including excavation and concrete works
- High Street bridge widening and ramps including piling and concrete works
- Bulk earthworks for the widening of the Warringah Freeway into the Cammeray Golf Course, including the micro tunnel for the Green Park drainage pipe (1500mm diameter) from the (proposed) Beaches Link compound
- Construction of Warringah Freeway southbound bus lanes including piling and concrete works
- Construction of the Mount Street (North Street) and Ernest Street (Cammeray) underpasses including excavation, piling and concrete works.
- Construction of the inner carriage way:
    - Directional sign removal and relocation to Ernest Street
    - Rock excavation and piling for the WHT cut and cover structure
- Demolition and construction of footpaths at the Falcon and Miller Street intersection
- Installation of stormwater drainage

- Upgrade or capacity improvements of other cross drainage structures which cross underneath the Warringah Freeway
- Upgrade and capacity improvements to the drainage pipelines along the on and off ramps connecting the Warringah Freeway with the existing culvert crossing near Brook Street at Cammeray/Crows Nest
- Upgrading local and arterial roads connecting to the Warringah Freeway Upgrade
- Road pavement works
- Installation of shared user paths and cycleways
- Surface finishing works such as linemarking and the installation of directional signage and other roadside furniture
- Final landscape treatments and rehabilitation works
- Testing and commission works
- Site clean-up and demobilisation including the reinstatement of construction support sites, post construction condition surveys, removal of construction-related signage, and the removal of construction-related environmental controls and traffic management infrastructure

2.2.3 Western Harbour Tunnel Project (WHT)

The Western Harbour Tunnel project includes:

- Twin mainline tunnels about 6.5 kilometres long connecting the M4-M5 Link at Rozelle to the Warringah Freeway, near Cammeray
- An immersed tube tunnel crossing of Sydney Harbour between Birchgrove and Balls Head
- Underground connections to the M4-M5 Link project beneath Rozelle
- Tunnelled ramps and surface connections at Rozelle, North Sydney and Cammeray, including direct connections to and from the Warringah Freeway (including integration with the Warringah Freeway Upgrade), an off ramp to Falcon Street and an on ramp from Berry Street at North Sydney
- Tunnelled stubs for future underground connections to the future proposed Beaches Link and Gore Hill Freeway Connection project under the Warringah Freeway near Cammeray
- Fitout and commissioning of a ventilation outlet and motorway facilities at the Rozelle Interchange
- Construction of a ventilation outlet and motorway facilities at the Warringah Freeway in Cammeray
- Operational facilities including a motorway control centre at Waltham Street, in the Artarmon industrial area, and tunnel support facilities at the Warringah Freeway in Cammeray

- Other operational infrastructure including groundwater and tunnel drainage management and treatment systems, signage, tolling infrastructure, fire and life safety systems, lighting, emergency evacuation and emergency smoke extraction infrastructure, CCTV and other traffic management systems.

2.3 Operation Stages

Operation of the project would be staged as per construction staging, with the WFU stage to commence operation (2025) prior to the WHT stage (2026).

The staging report is focussed on construction and any further proposed staging of operation will be addressed by revising the report as per CoA A14 (refer Section 2.5).

2.4 Indicative timing

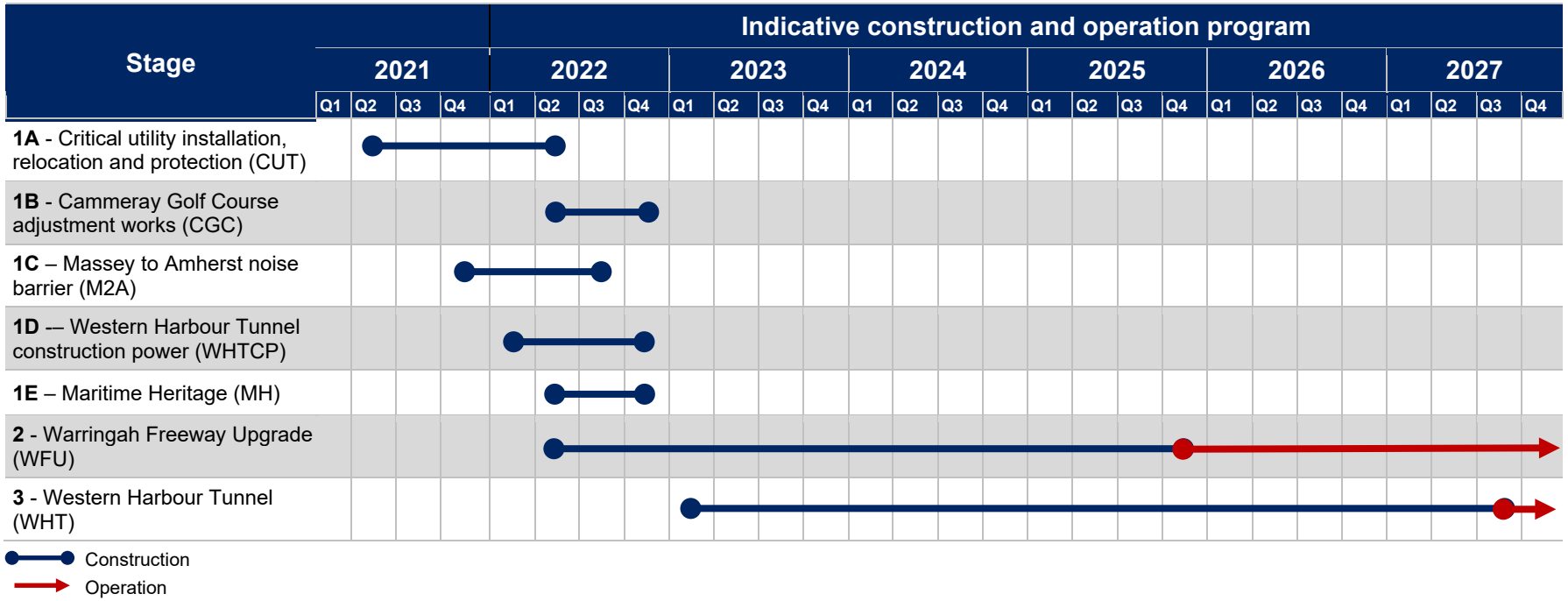
Construction of the WHTWFU project is planned to commence in 2021, with completion of construction in 2027. Early and enabling works and site establishment would be the first works carried out for the project, with substantial construction starting in 2022.

An indicative construction and operational program is shown in Table 2 for each stage. The timing specific to each stage will be subject to review as the procurement processes evolve.

2.5 Changes to the Staging

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 changed in the staging.

Table 2: Indicative construction and operation stage timeframes



2.6 Cumulative impacts

Cumulative impacts may occur as a result of the project stages being constructed concurrently, or consecutively, with other stages of the project and/ or other approved CSSI or SSI projects in the area, including Stage 1 Early and enabling works, Stage 2 Warringah Freeway Upgrade, Stage 3 Western Harbour Tunnel, WestConnex M4-M5 Link andRozelle Interchange, Sydney Metro West and the proposed Beaches Link and Gore Hill Freeway Connection project (subject to approval).

TfNSW has elected to stage the Project in an effort to reduce cumulative impacts from the Project overall. This will result in a shorter construction program, reducing the impact and duration in any one work area, as well as an earlier completion of the asset.

Cumulative impacts during construction of the project stages will be managed through compliance with the relevant CoAs, coordination meetings between TfNSW, its contractors, external agencies and stakeholders, and environmental management measures related to key environmental impacts including traffic and access, noise and vibration and construction fatigue.

Key CoAs established to manage cumulative impacts during construction of the project stages include but are not limited to:

- E69 (Out-Of-Hours Work Protocol) to facilitate the coordination of out-of-hours work to ensure appropriate respite is provided to the community
- E82 (Utility Coordination and Respite) to coordinate and ensure respite periods are provided for all work undertaken for the delivery of the CSSI, including those undertaken by third parties (such as utility relocations)
- E83 (Out-of-Hours Works – Community Consultation on Respite) to ensure appropriate respite periods for out-of-hours work are implemented in consultation with the community at each affected location on a regular basis
- E139 (Construction Parking Management) to manage light and heavy vehicle use associated with the CSSI and impacts to the community
- E140 (Construction Parking and Access Strategy) to manage impacts resulting from on- and off-street parking changes during construction of the CSSI
- E154 (Utility Coordination Manager) to manage and coordinate all utility work associated with the delivery of the CSSI and to ensure respite is provided to the community

Further details of how compliance with these requirements will be achieved, monitored and reported during construction are provided in section 3.

Other mechanisms to mitigate cumulative impacts from the CSSI and its multiple stages are provided in sections 2.6.1 to 2.6.5.

2.6.1 Traffic management

Coordination meetings between TfNSW, Contractors and Transport Management Centre (TMC)/ Sydney Coordination Office (SCO) will occur on a regular basis throughout the delivery of the CSSI and its multiple stages. Key issues for discussion at the traffic coordination meetings will include ROLs and any other traffic changes or impacts as a result from the CSSI.

2.6.2 Noise mitigation

OOHW coordination meetings chaired by TfNSW, with representatives from other Contractors (and other projects stages and CSSI projects), including Utility Authorities, working in the vicinity of the project will occur on a weekly basis. The purpose of these meetings is to coordinate out of hours works, to minimise cumulative noise and vibration impacts and maximise respite for affected sensitive receivers as required by the Planning Approval.

TfNSW has also taken the proactive approach and has started to implement a project specific Noise Insulation Program for at property treatment to minimise noise impacts as a result of the CSSI. For further information on noise mitigation and the Noise Insulation Program, refer to https://v2.communityanalytics.com.au/rms/wht/noise.

2.6.3 Interface management

The project has multiple interfaces that will be managed and specific interface agreements will be required for the purpose of facilitating and promoting coordination with relevant third parties such as utility providers and other CSSI/SSI projects.

TfNSW contractor's will be required to enter into an Interface Deed with Contractors and Utility Providers in which they interact with i.e. WFU Contractor will be required to enter into an Interface Deed with the WHT Contractor and the BL Contractor, to coordinate works and minimise cumulative impacts.

2.6.4 Visual amenity and landscape mitigation

The WHTWFU project elements at Cammeray will be constructed in close proximity to elements for the proposed BL project. When preparing the Beaches Link and Gore Hill Freeway Connection environmental impact statement operational landscape and visual amenity impacts were assessed cumulatively with the WFU project. The urban and landscape designs for both projects in this area will be developed to be sympathetic with and consistent with each other, thus minimising cumulative impacts from the projects.

2.6.5 Other measures to minimise cumulative impacts

In order to minimise cumulative impacts TfNSW will have oversight of projects' construction programs and the ability to identify potential cumulative impacts as to the duration and nature (visual, noise, traffic, business disruptions). Once the potential impacts are identified, TfNSW and its principal contractors will trigger appropriate management measures including; for example, hours of operation, respite and other noise mitigation measures (screening, community consultation as to alternate work programs etc.).

The suite of management measures best adapted to the impacted zone will be determined through community consultation. The steps to managing cumulative impacts are:

- Community Consultation Managers' and Environment Managers' to identify suite of REMMs to address cumulative impact via liaison with Sydney Coordinating Office, Councils and other stakeholders or sensitive receivers
- Develop suitable suite of management measures applicable to the area
- Separation of time and place, staging/phasing works to minimise cumulative impacts

- Progressively build cumulative management measures into the respective CEMP/ Sub plans, for example CNVIS, and Traffic Management Plans for specific areas
- Monitor complaints to identify unexpected/emerging cumulative impacts
- Up-date approach and revised CEMP and specific sub-plan updates, as needed.

3 Compliance

3.1 CoA and REMMs

The applicability of the CoA and REMMs to each stage of the project has been assessed, allocated and confirmed. These allocations to each stage of the project are tabled in Appendix A and Appendix B respectively:

- Where a CoA or REMM has been determined to be relevant to a stage, it is defined as **Applicable** to that stage. This indicates that the CoA or REMM will be fully complied with during the stage
- Where a CoA or REMM does not relate to the stage, it is defined as **Not Applicable**. This indicates that the CoA or REMM may not be complied with during the stage
- Where only part of a CoA or REMM relates to the stage, it is defined as **Partial**. This indicates that the CoA or REMM will be at least partially complied with during the stage to the degree explained in Appendix A or Appendix B.

In the event where there is a refinement in design or construction methodology, the change will be considered in the context of consistency with the Minster's approval for the Project. The applicability to the CoA and REMMs to that stage shall also be reviewed as part of the consistency assessment.

3.2 Construction Environmental Management Framework

Consistency in environmental management across each stage of the project will be achieved through the implementation of the *WHTWFU Construction Environmental Management Framework* (CEMF). The CEMF formed part of the Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report (RtS) and provides a linking document to the Construction Environmental Management Plans (produced by the Proponent and contractors). A link to the CEMF contained in the RtS is provided in Appendix C.

The CEMF provides a whole-of-construction life-cycle approach to construction environmental management and sets the environmental and community engagement requirements for construction. More specifically, it details:

- The Construction Environmental Management Plans (CEMPs), sub-plans and other supporting documentation for each environmental management category (i.e. noise and vibration, visual amenity, etc.)
- Key issues that each sub plan would address, along with the relevant guidelines or requirements each plan would be prepared in accordance with.

The requirements of the CEMF have been allocated to each stage of the project by indicating the applicability of each section of the CEMF to each stage. These allocations are provided in Appendix C.

Compliance with the CEMF will help achieve the environmental performance outcomes for the project. These performance outcomes outline the broader objectives to be achieved by TfNSW in the design, construction and operation of the project.

3.3 Environmental management approach

The project contractors are required to adhere to and implement the requirements of the CEMF to a degree that is appropriate to the applicable stage of construction / operation. The applicability of the CEMF to each stage allows for effective and efficient management of environmental issues that is commensurate to the impacts of each project stage on each environmental management category. Table 3 indicates the applicability of the requirements relating to each CEMF environmental management category to each stage of the project. This includes for each environmental management category:

- Whether a stand-alone sub-plan will be prepared ('Sub-plan')
- Whether the category risks will be addressed in the main CEMP document in the form of a procedure ('P'), or
- Whether the risk is not relevant to the scope of work and is not addressed within the CEMP (Not Applicable).

This assessment was based on each project stage's scope of work, relevant CoA and REMMs requirements. The corresponding CoA for each management plan or monitoring program are identified within the table. Additional plans and programs identified in the CoA, not specifically referenced in the CEMF have also been included. Table 3 also outlines the tool (i.e. CEMP or low impact works), which would be used to manage environmental requirements during the stage of the project.

3.3.1 Low impact works

Each stage of the project would include some "low impact work" (refer to definitions section and CoA), which would become "construction" following approval of the CEMP for that applicable stage. In some instances "low impact work" for a later stage may occur following approval of a CEMP for an earlier, separate stage, e.g. "low impact work" undertaken as part of the Warringah Freeway Upgrade (Stage 2) may occur following approval of the CEMP for the Critical utility installation, relocation and protection stage in Stage 1A.

In some instances, the CSSI planning approval defines a stage or an activity as low impact works i.e. Stage 1E Marine Heritage. All activities regarded as 'Low Impact Works' will not be defined as 'Construction' in accordance with the definition of 'Construction' provided in the CSSI planning approval.

Low Impact Works will only occur after the following activities have been undertaken:

- Consideration of relevant regulatory requirements
- Identification of relevant Conditions of Approval (CoA), Environmental Performance Outcomes (EPOs) and Revised Environmental Mitigation Measures (REMMs)
- Preparation of a Low Impact Works Approval Form by the relevant contractor and approval by TfNSW to confirm that the works do not represent 'Construction' in accordance with the applicable planning approval. This application must include (as a minimum):
    - Detailed description of the proposed works
    - Environmental risk assessment (including identification of actual and potential environmental impacts)

- Identification of mitigation measures to be implemented to address any actual or potential environmental risks and/or impacts (including details on community consultation relevant to the works)
- Environmental Control Map, and
- Endorsement by the Environmental Representative as necessary in accordance with the nature of the Low Impact Works and/or the definition of 'Construction' in the CSSI planning approval.

Table 3: CEMF and Construction Environmental Management Tool Applicable to each Stage.

STAGE (No.) / CEMF (relevant CoA)	1A	1B	1C	1D	1E	2	3
	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Construction Environmental Management Tool	CEMP	CEMP	CEMP	Low Impact Works Approval	Low Impact Works Approval	CEMP	CEMP
Traffic, Transport and Access (CoA C4(a))	Sub-plan	Sub-plan	Sub-plan	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Noise and vibration (CoA C4(b))	Sub-plan	Sub-plan	Sub-plan	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Flora and Fauna (CoA C4(c))	P	Sub-plan	P	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Air Quality and Odour (CoA C4(d))	P	P	P	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Soil and Surface Water (CoA C4(e))	P	Sub-plan	P	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Groundwater (CoA C4(f))	N/A	N/A	N/A	N/A	N/A	P	Sub-plan
Maritime Heritage (CoA C4(g))	N/A	N/A	N/A	N/A	Low-impact Assessment	N/A	Sub-plan
Non-Aboriginal Heritage (CoA C4(h))	P	P	P	Low-impact Assessment	Low-impact Assessment	Sub-plan	Sub-plan
Aboriginal Cultural Heritage (CoA C4(i))	P	P	P	Low-impact Assessment	N/A	P	Sub-plan
Dredging and Disposal (CoA C4(j))	N/A	N/A	N/A	N/A	N/A	N/A	Sub-plan
Noise and vibration monitoring program (CoA C11(a))	Included in sub-plan	Included in sub-plan	Included in sub-plan	Low-impact Assessment	Low-impact Assessment	Included in sub-plan	Included in sub-plan
Air Quality (including Odour) Monitoring Program (CoA C11(b))	P	P	P	Low-impact Assessment	Low-impact Assessment	Included in sub-plan	Monitoring Program
Surface Water Monitoring Program (CoA C11(c))	P	P	P	Low-impact Assessment	Low-impact Assessment	Included in sub-plan	Monitoring Program
Groundwater Monitoring Program (CoA C11(d))	N/A	N/A	N/A	N/A	N/A	P	Monitoring Program
Marine Monitoring Program (CoA C11(e))	N/A	N/A	N/A	N/A	Low-impact Assessment	N/A	Monitoring Program
Dredging Monitoring Program (CoA C11(f))	N/A	N/A	N/A	N/A	N/A	N/A	Monitoring Program

3.4 Compliance Monitoring

Several layers of compliance checking will be applied during the construction of the CSSI. Contractors will maintain their own internal audit program to ensure they meet the requirements set out in the CoA and contract. TfNSW will conduct an additional auditing program across all stages with a specific focus on compliance with the conditions of approval. TfNSW will monitor compliance with the Planning Approval across all stages through surveillance, environmental inspections, record-keeping and contractor compliance reporting.

TfNSW has engaged an independent ER and Acoustic Advisor for the early and enabling works (Stage 1) and WFU (Stage 2). TfNSW will also engage an independent ER and Acoustic Advisor for WHT (Stage 3). The ERs will:

- Undertake regular site inspections with the Contractor's environmental managers and TfNSW representatives
- Review compliance with the approvals on a periodic basis
- Review management plans and provide advice in relation to the level of risk associated with construction works
- Provide independent advice on matters relating to compliance to the Contractors, TfNSW and DPE if requested.

3.5 Independent Environmental Auditing

Independent Audits of the CSSI will be conducted and carried out in accordance with the *Independent Audit Post Approval Requirements (DPIE, 2020).*

The purpose of an Independent Audit is to obtain an independent and objective assessment of the environmental performance and compliance status of a 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.

Appendix A Applicability of Conditions of Approval to each stage

Table 4 has been based on the WHTWFU conditions of approval as issued by DPIE on 21 January 2021. This document is attached at the end of this table.

Table 4: Applicability of Conditions of Approval to each stage

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
General	A1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A3	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A4	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A6	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A7	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A8	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Noise Insulation Program	A9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Staging	A10	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A11	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A12	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A13	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A14	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A15	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Ancilary Facilities	A16	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Site Establishment Works	A17	Not Applicable – construction ancillary facilties would be established and operated in accordance with the CEMP	Not Applicable – construction ancillary facilties would be established and operated in accordance with the CEMP	Not Applicable – construction ancillary facilties would be established and operated in accordance with the CEMP	Not Applicable – minor construction ancillary facilties would be established and operated in accordance with the low impact works approval	Not Applicable – minor construction ancillary facilties would be established and operated in accordance with the low impact works approval	Applicable	Applicable
	A18	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A19	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A20	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Independent Appointment	A21	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A22	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A23	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Environmental Representative	A24	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A25	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A26	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Environmental Representatives – one for Stage 1 and Stage 2, and one for Stage 3.
	A27	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A28	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Acoustics Advisor	A29	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A30	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	A31	Applicable	Applicable	Applicable	Applicable		Applicable	Applicable
	A32	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.	Applicable – the Proponent will engage two Acoustic Advisors – one for Stage 1 and Stage 2, and one for Stage 3.
	A33	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A34	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Notification of Commencement	A35	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A36	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Auditing	A37	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A38	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.	Applicable – the Proponent will independently audit Stage 1 and Stage 2, separately to Stage 3 of the Project.
	A39	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A40	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A41	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A42	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Incident and Non-Compliance Notification and Reporting	A43	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A44	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A45	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	A46	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Identification of Workforce and Compounds	A47	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Applicable	Applicable
	A48	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Community Information, Consultation and Involvement	B1	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage
	B2	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage
	B3	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage
	B4	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage
	B5	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage	Applicable – WHTWFU Overarching Community Communication Strategy for all works in this stage

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	B6	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Complaints Management System	B7	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B8	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B9	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B10	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B11	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B12	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B13	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B14	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Provision of Electronic Information	B15	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Construction Environmental Management Plan	C1	Applicable – Refer to Appendix C for applicable CEMF requirements for each stage	Applicable – Refer to Appendix C for applicable CEMF requirements for each stage	Applicable – Refer to Appendix C for applicable CEMF requirements for each stage	Not Applicable – the WHTCP are defined as 'low impact works' and are not construction; environmental risks associated with the works will be addressed in accordance with Table 3.	Not Applicable – the MH are defined as 'low impact works' and are not construction; environmental risks associated with the works will be addressed in accordance with Table 3.	Applicable – Refer to Appendix C for applciable CEMF requirements for each stage	Applicable – Refer to Appendix C for applicable CEMF requirements for each stage
	C2	Applicable	Applicable	Applicable	Not Applicable – refer to Table 3	Not Applicable — refer to Table 3	Applicable	Applicable
	C3	Applicable	Applicable	Applicable	Not Applicable — refer to Table 3	Not Applicable — refer to Table 3	Applicable	Applicable
	C4	Partial – refer to Table 3	Partial – refer to Table 3	Partial – refer to Table 3	Not Applicable – refer to Table 3	Not Applicable – refer to Table 3	Partial – refer to Table 3	Applicable
	C5	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C6	Partial – refer to Table 3	Applicable	Partial – refer to Table 3	Not Applicable – refer to Table 3	Not Applicable – refer to Table 3	Applicable	Applicable
	C7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Partial – refer to Table 3	Not Applicable	Applicable
	C8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	C9	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C10	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Construction Monitoring Programs	C11	Partial – refer to Table 3	Partial – refer to Table 3	Partial – refer to Table 3	Not Applicable – refer to Table 3	Not Applicable – refer to Table 3	Partial – refer to Table 3	Applicable
	C12	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C13	Applicable	Applicable	Applicable	Not Applicable – refer to Table 3	Not Applicable – refer to Table 3	Applicable	Applicable
	C14	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	C15	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable – refer to Table 3	Not Applicable	Applicable
	C16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	C17	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C18	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C19	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C20	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	C21	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	D1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Operational Environmental Management	D2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	D3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	D4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Operational Monitoring Program	D5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D10	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D11	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	D13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Air Quality and Odour	E1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E10	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E11	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E14	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E15	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E17	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E18	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E19	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E20	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E21	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E22	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E23	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E24	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Ambient Air Quality	E25	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E26	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E27	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E28	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E29	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	E30	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E31	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E32	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E33	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E34	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E35	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E36	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E37	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E38	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E39	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E40	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E41	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable (during microbat roosting period April – Sep)	Not Applicable	Applicable
	E42	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
Biodiversity	E43	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E44	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E45	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E46	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E47	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E48	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
Flooding	E49	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Aboriginal Cultural Heritage	E50	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E51	Applicable – the tolling equipment is being installed on an exisiting gantry on the Sydney Harbour Bridge in consultation with Heritage NSW	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	E52	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E53	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	E54	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
Non-Aboriginal Heritage	E55	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E56	Applicable	Not Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable
	E57	Applicable	Not Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable
	E58	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E59	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E60	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E61	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E62	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E63	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E64	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Noise and Vibration	E65	Applicable	Applicable	Applicable	Applicable – survey will be included in the Noise and Vibration Procedure	Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	E66	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E67	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E68	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E69	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E70	Applicable	Applicable	Applicable	Applicable – works exceeding noise management levels and / vibration criteria would be managed in accordance with low impact works approval	Applicable – works exceeding noise management levels and / vibration criteria would be managed in accordance with low impact works approval	Applicable	Applicable
	E71	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E72	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E73	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E74	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E75	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E76	Applicable	Applicable	Applicable	Applicable – properties would be identified in the low impact works approval	Applicable – properties would be identified in the low impact works approva	Applicable	Applicable
	E77	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E78	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E79	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E80	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E81	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E82	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E83	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E84	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E85	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E86	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E87	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E88	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E89	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E90	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E91	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E92	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E93	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E94	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E95	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E96	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E97	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E98	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E99	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Socio-Economic, Land Use and Property	E100	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Cammeray Golf Course	E101	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Settlement	E102	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E103	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E104	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E105	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E106	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Condition Survey	E107	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E108	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E109	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E110	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E111	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E112	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E113	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Soils	E114	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Contaminated sites	E115	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E116	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E117	Partial – all requirements will be complied with fully, with the exception of (i) where the parcel of land is being handed over to another stage of the Project	Applicable	Applicable	Partial – all requirements will be complied with fully, with the exception of (i) where the parcel of land is being handed over to another stage of the Project	Not Applicable	Applicable	Applicable
	E118	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E119	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E120	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E121	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E122	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E123	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E124	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Sustainability	E125	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E126	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E127	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Traffic and Transport	E128	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E129	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E130	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable
	E131	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable
	E132	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E133	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E134	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	E135	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks.	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Not Applicable – spoil is generated during excavation of the tunnel and large bulk earthworks; this stage does not include tunnel exavation or large bulk earthworks	Applicable
	E136	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E137	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E138	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E139	Applicable	Applicable	Applicable	Applicable – mitigation measures would be implemented through the low impact works approval	Applicable – mitigation measures would be implemented through the low impact works approval	Applicable	Applicable
	E140	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E141	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E142	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E143	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E144	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E145	Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E146	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E147	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E148	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E149	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E150	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E151	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E152	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E153	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Utilities Management	E154	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
Place Design and Visual Amenity	E155	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E156	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E157	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E158	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E159	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E160	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E161	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E162	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E163	Not Applicable	Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E164	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E165	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E166	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E167	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E168	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E169	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	E170	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E171	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E172	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E173	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E174	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E175	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E176	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E177	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E178	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E179	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E180	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E181	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E182	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E183	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E184	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E185	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E186	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	E187	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E188	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E189	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E190	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E191	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E192	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E193	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E194	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E195	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E196	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E197	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E198	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E199	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	E200	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
Waste	E201	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E202	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E203	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E204	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E205	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Water	E206	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E207	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	E208	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E209	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	E210	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

CoA Topic	CoA	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	E211	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E212	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E213	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E214	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E215	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E216	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E217	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E218	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E219	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E220	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E221	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	E222	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E223	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	E224	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable

Appendix B Applicability of REMMs to each stage

Table 5 has been based on the latest version of the Revised Environmental Management Measures taken from Part D of the RtS. This document can be found here:

https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-2682%2120200914T005951.156%20GMT

Table 5: Applicability of REMMs to each stage

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Traffic and Transport – Construction	CTT1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	CTT3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	CTT4	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT6	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT7	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT8	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT9	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT10	Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT11	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	CTT12	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CTT13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	CTT14	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	CTT15	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	CTT16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	CTT17	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	CTT18	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	CTT19	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Traffic and Transport - Operation	OT1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	OT2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	OT3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	OT4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
Noise And Vibration	CNV1	Applicable	Applicable	Applicable	Not Applicable – construction noise and vibration impacts will be managed through the low impacts works approval as per Table 3	Not Applicable – construction noise and vibration impacts will be managed through the low impacts works approval as per Table 3	Applicable	Applicable
	CNV2	Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CNV3	Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CNV4	Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CNV5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CNV6	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CNV7	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	CNV8	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	CNV9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	CNV10	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	ONV1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	ONV2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	ONV3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Air Quality	AQ1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	AQ2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Human Health	HH1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	HH2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
Non Aboriginal Heitage	NAH1	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	NAH2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	NAH3	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	NAH4	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	NAH5	Applicable	Applicable	Not Applicable	Applicable	Not Applicable	Applicable	Applicable
	NAH6	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable
	NAH7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH8	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	NAH9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH10	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	NAH11	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	NAH12	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	NAH13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH14	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	NAH15	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	NAH17	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH18	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH19	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH20	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable
	NAH21	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH22	Applicable	Applicable	Not Applicable	Applicable	Applicable	Applicable	Applicable
	NAH23	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	NAH24	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	NAH25	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Aboriginal Cultural Heritage	AH1	This REMM was deleted as part of the RtS						
	AH2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	AH3	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable	Applicable
	AH4	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable	Applicable
	AH5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	AH6	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	AH7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	AH8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	AH9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	AH10	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Geology Soils and Groundwater	SG1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SG4	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SG5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	SG6	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SG7	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SG8	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SG9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SG10	Not Applicable – waste mitigtion measures to be implemented during this activity will be managed through a procedure as identified in Table 3.	Not Applicable – waste mitigtion measures to be implemented during this activity will be managed through a procedure as identified in Table 3.	Not Applicable – waste mitigtion measures to be implemented during this activity will be managed through a procedure as identified in Table 3.	Not Applicable – waste mitigtion measures to be implemented during this activity will be managed through a procedure as identified in Table 3.	Not Applicable – waste mitigtion measures to be implemented during this activity will be managed through a procedure as identified in Table 3.	Applicable	Applicable
	SG11	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SG12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG14	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG15	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG17	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SG18	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SG19	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SG20	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG21	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG22	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	SG23	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Hydrodynamics and Water Quality	WQ1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WQ2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WQ3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	WQ5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	WQ8	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ10	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	WQ11	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WQ12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	WQ13	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Flooding	F1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	F2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable
	F3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	F4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	F5	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	F6	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	F7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	F8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	F9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Biodiversity	B1	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B2	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B3	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	B4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	B5	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B7	The REMM was deleted as part of the RtS						
	B8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B10	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B11	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B13	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B14	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B15	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	B16	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B17	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B18	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B19	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B20	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B21	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B22	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B23	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B24	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	B25	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B26	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B27	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	B28	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	B29	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	B30	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Land Use and Property	LP1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	LP2	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	LP3	Applicable	Not Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	LP4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	LP5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	LP6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	LP7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	LP8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	LP9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Socio Economics	SE1	Not Applicable	Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SE2	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SE3	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	SE4	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Business	BU1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	BU2	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	BU3	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
Landscape Character and Visual Amenity	V1	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V2	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V3	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V4	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V5	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V6	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V7	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V8	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V9	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V10	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	V11	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	V12	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Hazards and Risks	HR1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	HR2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	HR3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	HR4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	HR5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	HR6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	HR7	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	HR8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	HR9	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	WM1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

REMM Topic	REMM	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Resource and Waste Management	WM2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WM3	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WM4	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WM5	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	WM6	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	WM7	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	WM8	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Sustainability	SU1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	SU2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Climate change Risks	CC1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Greenhouse Gas Assessment	GHG1	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	GHG2	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Cumulative impacts	CI1	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CI2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CI3	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	CI4	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

Appendix C Applicability of CEMF to each stage

Table 6 has been based on the latest version of the Construction Environmental Management Framework that was included in Part D of the RtS. This document can be found here:

https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-2682%2120200914T005951.156%20GMT

Table 6: Applicability of CEMF to each stage

CEMF Topic	Key issue	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Traffic management plan	Construction traffic and access management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Construction traffic and access management implementation including:							
	• Traffic staging plans	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	• Traffic control plans and identification of truck marshalling areas	Applicable – traffic control plans Not applicable – truck marshalling areas	Applicable – traffic control plans Not applicable – truck marshalling areas	Applicable – traffic control plans Not applicable – truck marshalling areas	Not Applicable	Not Applicable	Applicable	Applicable
	• Pedestrian management plans	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	• Parking management plans	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	• Heavy vehicle hauling routes	Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	• Construction traffic and access mitigation including: • Montioring and inspection requirements • Compliance records • Driver certification requirements	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Marine works and marine traffic management plans	Marine works and marine traffic management objectives	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	Marine works and marine traffic implementation including: • Works approval requirements • Exclusion zones • Temporary mooring locations	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	Marine works and marine traffic mitigation including requirements for vessel movements and navigational restrictions	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
Noise and vibration management plan	Hours of construction	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Construction noise and vibration management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Construction noise and vibration management implementation including the requirements of environmental management measure CNV1 (refer to Table D2-1 of this submissions report)	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Construction noise and vibration impact statements for all construction support sites and major construction works required for the project as required by environmental management measure CNV2	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

CEMF Topic	Key issue	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	Out of hours works protocol as required by environmental management measure CNV3 including: • Details of works required outside standard construction hours, including acceptable justifications for works outside of standard construction hours, what types of works are allowed to take place outside of construction hours, and justifications of why the activities are required outside standard construction hours • Details of the assessment and approval process (internal and external) for works proposed outside standard construction hours • Noise and vibration mitigation and management measures that are to be considered and implemented where appropriate to manage potential impacts associated with works outside standard construction hours • The noise and vibration impact assessment processes that will be followed to identify potentially affected receivers, clarify potential impacts and determine appropriate mitigation and management measures	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Construction noise and vibration mitigation including: • Monitoring and inspection requirements • Compliance records	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Blast Management Strategy as required by environmental management measure CNV9 which will: • Detail the blasting to be performed including location, method and justification of the need to blast • Identify any potentially affected noise and vibration sensitive sites including heritage buildings and utilities • Establish appropriate criteria for blast overpressure and ground vibration levels at each category of noise sensitive site • Detail storage and handling arrangements for explosive materials and the proposed transport of those materials to the construction support site • Identify hazardous situations that may arise from the storage and handling of explosives, the blasting process and recovery of the blast site after detonation of the explosives • Determine potential noise and vibration and risk impacts from blasting and appropriate best management practices • Detail community consultation procedures. • Note – the Blasting Management Strategy may not form part of the CNVMP and may be a separate plan	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	Air Quality Objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

CEMF Topic	Key issue	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
Air quality management plan	Air quality management implementation including: • Details of standard construction air quality mitigation and management measures required by environmental management measure AQ1 (refer to Table D2-1 of this submissions report • Odour management measures for odour from sediments and acid sulfate soils (if confirmed)	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	• Air quality mitigation including: • Compliance records • Monitoring and inspection requirements	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
Waste and resource use	Waste and spoil management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Waste and spoil management implementation including procedures for handling and storing potentially contaminated substances	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	Waste and spoil mitigation including: • Monitoring and inspection requirements • Compliance records	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
Soil and water management plan	Soil, surface water and contamination management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Soil, surface water and contamination management implementation including:							
	• Erosion and sediment control plans	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	• Management responses to contaminated sediments (if confirmed), including remediation action plans (in accordance with environmental management measure SG2).	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	• Acid sulfate soil management plans	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	• Emergency spill procedures	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	• Dewatering plans (including aquatic fauna relocation requirements)	Applicable – excluding aquatic fauna relocation requirements	Applicable	Applicable – excluding aquatic fauna relocation requirements	Applicable – excluding aquatic fauna relocation requirements	Not Applicable	Applicable	Applicable
	• Water quality monitoring and management	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	Soil, surface water and contamination mitigation including: • Monitoring and inspection • Compliance records	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	Construction flood emergency management measures including requirements for construction support sites to manage risks to adjoining properties.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
Groundwater management plan	Groundwater management objectives	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Applicable
	Groundwater management implementation including: • Additional modelling requirements • Acceptable groundwater inflow levels • Ground movement management and minimisation requirements	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable

CEMF Topic	Key issue	CUT	CGC	M2A	WHTCP	MH	WFU	WHT
	Groundwater mitigation including: • Monitoring and inspection requirements • Compliance records	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Dredging management plan	Dredging management objectives	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	Dredging management implementation including contamination management and contingency measures	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	Dredging mitigation including: • Backhoe dredging operations would be completed within a floating silt curtain, as described in Appendix P (Technical working paper: Hydrodynamics and dredge plume modelling) • No overflow would be permitted from transport barges taking material not suitable for offshore disposal to White Bay for unloading and land disposal • Additional silt curtains would be located around sensitive foreshore areas eg seagrass areas • Works would be completed under a full time supervision and inspection regime	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
Flora and fauna management plan	Flora and fauna management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Flora and fauna management implementation including:							
	• Seagrass monitoring and management	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	• Intertidal and rocky reef management	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable
	• Marine mammals and reptile management	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	• Unexpected flora and fauna finds procedure	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	• Stop works procedure	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	• Weed management measures	Applicable	Applicable	Applicable	Applicable	Not Applicable	Applicable	Applicable
	• Dewatering management	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	• Large Bent-winged Bat management	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Applicable
	Flora and fauna mitigation including: • Monitoring and inspection requirements • Compliance records	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
Heritage management plan	Heritage management objectives	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Heritage management implementation including Aboriginal and non-Aboriginal heritage unexpected finds procedures	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable
	Maritime heritage management detailing the objectives and methodologies to conserve maritime heritage and mitigate impacts. As required by environmental management measure NAH15 (refer to Table D2-1 of this submissions report).	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Applicable	Not Applicable	Not Applicable
	Heritage mitigation including: • Monitoring and inspection requirements • Compliance records	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable	Applicable

Appendix D Aspect and impact registers

- Stage 1A – Critical utility installation, relocation and protection (CUT)
- Stage 1B – Cammeray Golf Course adjustment works (CGC)
- Stage 1C – Massey to Amherst noise wall (M2A)
- Stage 2 – Warringah Freeway Upgrade (WFU)

*registers for future stages will be included once prepared and finalised.

An environmental risk assessment for the various construction stages has been completed to assist in determining applicability of each CEMF environmental management category to each stage of the project. The tables identifies the stage of the project, the associated potential environmental impacts and a risk rating for that impact. The risk rating (refer to Table 3) is based on the likelihood of the event occurring (refer to Table 1) and the consequence (refer to Table 2); the classification system used is based on the *Environmental Management Plan Guideline – Guideline for Infrastructure Projects* (DPIE April 2020). Where a risk is assessed as negligible or minor it will be managed with a procedure; medium, major and substantial risks will be managed with a sub-plan.

Table 1: Likelihood criteria

Probability (likelihood)	Description
Highly likely (5)	*Is expected to occur in most circumstances*
Likely (4)	*Will probably occur during the life of the project*
Possible (3)	*Might occur during the life of the project*
Unlikely (2)	*Could occur but considered unlikely or doubtful*
Rare (1)	*May occur in exceptional circumstances*

Table 2: Consequence criteria

Consequence (impact)	Description
Minor (1)	*Minor incident of environmental damage that can be reversed*
Medium (2)	*Isolated but substantial instances of environmental damage that could be reversed with intensive efforts*
High (3)	*Substantial instances of environmental damage that could be reversed with intensive efforts*
Major (4)	*Major loss of environmental amenity and real danger of continuing*
Critical (5)	*Severe widespread loss of environmental amenity and irrecoverable environmental damage*

Table 3: Risk rating

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

Table 4: Aspect and impact register – Stage 1A (Critical utility installation, relocation and protection)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Air Quality	• General construction activities (no major earthworks or excavation anticipated) • Utility works and relocation	• Generation of dust due to cutting/grinding/sawing equipment, material /waste/spoil handling; and generation of exhaust emissions due to inappropriate plant maintenance • Generation and mobilisation of dust impacting receivers including residents, businesses, vegetation and habitats	8 (minor)	Direct: • Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation • Access roads within Project sites will be maintained and managed to reduce dust generation • Storage of materials that have the potential to result in dust generation will be minimised within Project sites at all times • During high wind and/or dry conditions, programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Demolition activities will be planned and carried out to minimise the potential for dust generation • Adequate dust suppression will be applied during all demolition works required to facilitate the Project Indirect: • Other measures outlined in the Air Quality Management Procedure (AQP)	6 (minor)	Air Quality Management Procedure (AQP)
Biodiversity	• Vegetation clearance	Clearing outside of an approved area, including: • Accidental clearing outside of the project boundaries • Accidental clearing beyond the requirements of the Project Approval • Accidental lopping of trees and/or damage to tree roots • Accidental clearing of threatened species or threatened ecological communities outside of the project boundary	8 (minor)	Direct: • Toolbox talks regarding clearing limits • Clearly delineate the Project footprint prior to clearing Indirect: • Engage an arborist to supervise works where impact or damage to tree roots is probable • Provide tree protection where required at the direction of the arborist • Other measures outlined in the Flora and Fauna Management Procedure (FFP)	6 (minor)	Flora and Fauna Management Procedure (FFP)
	• General construction activities • Utility works and relocation	Spreading of weeds in stockpiled material	8 (minor)	Direct: • Implement a weed management procedure. Indirect: • Other measures outlined in the FFP	6 (minor)	Weed Management Procedure (within FFP)
Contamination	• General construction activities • Utility works and relocation	Contamination of soil or water from spill or leak of dangerous or hazardous materials from plant / equipment	10 (moderate)	Direct: • The use of any hazardous substance that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds • Any refuelling undertaken on site shall be undertaken in designated areas only, outside of riparian areas and well away from stormwater system inlets • All spills or leakages will be immediately contained and absorbed • Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways • All sites are hardstand • Inspection regime of bulk storage facility	3 (minor)	Soil and Water Management Procedure (SWP)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Undertake Detailed Site Investigations at any locations identified as having moderate or high risks of contamination in accordance with CoA E115 Indirect: • Other measures outlined in the Soil and Water Management Procedure (SWP)		

		Exposure to unidentified contaminated materials during works, causing program delays and injuries and health concerns	10 (moderate)	Direct:
				• Induct construction personnel in the identification and management of previously unidentified contaminated sites.
				• The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contaminated lands finds procedure. The procedure will include:
				  • Cease work in the vicinity
				  • Initial assessment by an appropriately qualified environmental consultant
				  • Further assessment and management of contamination, if confirmed, in accordance with Section 105 of the CLM Act
				Indirect:
				• Other measures outlined in the Unexpected Contaminated Land Finds Procedure
					8 (minor)	Unexpected Contaminated Land Finds Procedure (within SWP)

Heritage	• Utility works and relocation	Disturbance or damage of unidentified Aboriginal heritage artefact	4 (minor)	Direct: • All on site personnel will be provided with site training in regard to Aboriginal cultural heritage site awareness, key mitigation and management requirements and their responsibilities pertaining to the Aboriginal Heritage provisions of the NPW Act 1974 (NSW) prior to construction commencing. Training will include unexpected heritage finds procedures for heritage items, objects and human remains. • Implement Unexpected Heritage Finds and Human Remains Procedure Indirect: • Other measures outlined in the Heritage Management Procedure (HP)	3 (minor)	Heritage Management Procedure (HP) Unexpected Heritage Finds and Human Remains Procedure (within HP)
		Disturbance or damage of non-Aboriginal heritage items including: • St Leonards Park • Cammeray Park (including air raid trenches) • Sydney Harbour Bridge	9 (moderate)	Direct: • Any excavations, intrusive works or other operations that have the potential to impact areas of known heritage, cultural or archaeological items must ensure works are performed in accordance with a heritage assessment and regulatory requirements (which may include a dilapidation survey and/or supervision of works by a competent person and/or vibration monitoring) • Any such areas should be signposted and segregated by the erection of physical barriers to prevent authorised entry Indirect: • Archival recording in accordance with CoA E56 and REMM NAH5 • Integrated design assessment by heritage specialists of potential air raid trench impacts • Prepare a Heritage Impact Assessment (HIA) and implement recommendations for any works that may cause impact to the heritage significance of the Sydney Harbour Bridge • Other measures outlined in the Heritage Management Procedure	6 (minor)	Heritage Management Procedure (HP)
Noise and Vibration	• General construction activities • Utility works and relocation	Noise and vibration impacts on nearby receivers, including out of hours impacts resulting in structural damage or community complaints	15 (significant)	Direct: • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail noise and vibration requirements from this plan through inductions, toolboxes and targeted training	9 (moderate)	Noise and Vibration Management Plan (NVMP) Construction Noise and Vibration Monitoring Program

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Noise and vibration monitoring undertaken in accordance with the Project's Construction Noise and Vibration Monitoring Program • The safe working distances for vibration intensive plant would be complied with where feasible and reasonable. This would include the consideration of smaller equipment when working in close proximity to existing structures • Erection of temporary noise walls • Community liaison and notification • Provision of respite and alternative accommodation where required • Programming the works to minimise the duration of noisy works in any one particular location Indirect: • Other measures outlined in the NVMP and Construction Noise and Vibration Monitoring Program		
		Noise disturbance due to works undertaken out of standard construction hours	15 (significant)	• Out of Hours Works are to be carried out in accordance with the Project's Out-of-Hours-Works Protocol and EPL • Ensure OOHW are appropriately justified – safety or community requirement. • Implement noise mitigation strategies for out of standard hours work as per OOHW Protocol. • Monitor noise for compliance to project goals. • Community notifications distributed.	9 (moderate)	NVMP OOHW Protocol
Soil and Water	• General construction activities • Utility works and relocation	Serious incidents, e.g. uncontrolled release of washout water, water treatment plant, major fuel spill, that cause or threaten material harm to the environment	12 (moderate)	Direct: • Any washout areas will be adequately sized, regularly maintained, and located in designated covered areas. They will be outside of riparian areas and well away from stormwater system inlets in a position where wastewater will not enter any drainage lines or waterways • The use of any hazardous substance that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds • Any refuelling undertaken on site shall be undertaken in designated areas only, outside of riparian areas and well away from stormwater system inlets • Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways Indirect: • Other measures outlined in the SWP	8 (minor)	SWP
		Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	12 (moderate)	Direct: • ESCPs will be prepared for all work and implemented in advance of site disturbance • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail erosion and sediment control management measures • Further targeted training to key on site personnel • EWMS will be prepared for high risk activities • An experienced soil conservation specialist (CPESC) will be engaged to provide advice regarding erosion and sediment control • Hardstand areas and surrounding public roads will be cleaned as required using methods such as brooms, bobcat attachments or street sweepers Indirect:	6 (minor)	SWP ESCP

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Other measures outlined in the SWP		
Traffic	• General construction activities • Utility works and relocation	Traffic and parking impacts due to increased number of construction vehicles, site access arrangements and vehicle movements	12 (significant)	Direct: • Designated haul routes for heavy vehicles • Use of the virtual superintendent system • Deployment of surveillance officers • Utilisation of the traffic control centre • Staff log-in at designated parking stations • Limiting vehicle movements to designated entries and exits and haulage routes • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail traffic, transport and access management measures • Communication and adherence to a Worker Code of Conduct • Minimise construction vehicle parking on public roads • Queuing and idling of construction vehicles in residential streets will be minimised • Measures identified in the TMP will be implemented for each ancillary facility/construction compound which requires direct access/egress onto the local/arterial road network Indirect: • Other measures outlined in the TMP	9 (moderate)	Traffic, Transport and Access Management Plan (TTAMP)
Utilities	• General construction activities • Utility works and relocation	Damage to existing utility services	20 (significant)	Direct: • Ensuring appropriate precautionary measures are undertaken or in place prior to works such as completing Dial Before You Dig searches • Positive utility identification such as through potholing or non-destructive digging • Utilisation of utility spotters • Ensuring Ground Penetration Permits are obtained • Appointment of a Project Utility Coordination Manager • Liaison with the relevant utility agencies Indirect: • Other measures outlined in the Utilities Management Strategy (UMS)	12 (moderate)	CEMP and Sub-plans
Visual	• General construction activities	Visual impacts on nearby receivers due to light spill, construction works, overshadowing	10 (moderate)	Direct: • Site establishment works will be conducted to minimise visual impacts. Where there is no noise wall or hoarding in place, boundary fencing will be installed to minimise visual, noise and air quality impacts on adjacent sensitive receivers • Retention of existing vegetation or treatment of key temporary structures • Minimise light spill from the project by directing construction lighting into the construction areas and ensuring the site is not over-lit Indirect: • Other measures outlined in the Site Establishment Management Plan (SEMP)	8 (minor)	CEMP and Sub-plans
Waste	• General construction activities • Utility works and relocation	Inappropriate disposal of waste (including demolition, vegetation and hazardous / special waste) or disposal at an unlicensed waste facility	12 (moderate)	Direct: • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures • Vegetation disposal in accordance with the FFMP and Weed Management Protocol	6 (minor)	Waste and Resource Use Management Procedure (WP) FFP SWP

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• HAZMAT surveys and removal of asbestos prior to demolition activities • Waste classification in accordance with EPA guidelines • Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and commercial wastes for either offsite processing and/or disposal to an appropriately licensed facility. • Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes • Waste tracking register Indirect: • Other measures outlined in the Waste and Resource Use Management Procedure (WP), SWP and FFP		
		Litter, inappropriate use of co-mingling and waste receptacles	4 (minor)	Direct: • All staff and subcontractors will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures (including the waste management hierarchy) and energy consumption • All recyclable solid wastes (paper/ cardboard/ plastic/ glass/ timber/ metals/ fluorescent lighting/ printer cartridges/ICT equipment) will be segregated for recycling purposes and volumes reported. Wherever possible, packaging should be avoided or minimised to prevent waste products being unnecessarily brought onto an operation Indirect: • Other measures outlined in the Sustainability Management Plan and WMP	2 (negligible)	WP

Table 5: Aspect and impact register - Stage 1B (Cammeray GolffCourse Reconfiguration)

Construction activity/aspect	Issue	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Cammeray Golf Course Adjustment						
Adjustment of the remaining portion of the Golf Course lands into a 9 hole golf course. Activities required to undertake the adjustment works include: 1. Excavation and commissioning of the new water harvesting dam. 2. Earthworks and construction of re-alignment of fairways, bunkers and tees. 3. Earthworks and installation of a new irrigation system. 4. Construction of new maintenance facilities and associated supporting infrastructure. 5. Tree clearing. 6. Landscaping including concrete footpaths, plantings and new trees. 7. Utility relocations within the Golf Course.	Air quality	Complaints from neighbours, including loss of amenity, dust in living areas, swimming pools	High (10)	• Induct personnel on air quality issues and safeguards. • Use water suppression during dust generating activities. • Use street sweepers to reduce dust in areas of dust build up. • Modify or cease operations during high winds. • All trucks on public roads to cover loads. • Vehicles, equipment, machinery used and all facilities – designed, operated and maintained to control the emission of smoke, dust, odours and fumes. • All disturbed areas stabilised, rehabilitated as soon as practicable. • Minimise tracked mud/dust on public roads. • No burning or incineration of any material at any time. • Areas of disturbance will be minimised and managed with an Erosion and Sediment Control Plan developed by the Project Soil Conservationist and approved by the TfNSW Soil Conservationist.	Low (4)	Air Quality Procedure Induction Erosion & Sediment Control Plan (ESCP) G38 Specification
		Potential adverse health effects	Low (11)		Low (6)	
		Generation of exhaust emissions due to inappropriate plant maintenance	Medium (9)		Low (3)	
	Biodiversity	Clearing / disturbance outside of approved area	Medium (8)	• Induct personnel on biodiversity issues and safeguards. • The location of any threatened species or other important flora, fauna and habitat features identified during pre-clearing surveys will be identified on the Sensitive Area Plans. • Establish clearing boundary prior to commencing works, including no-go zones. • The clearing of vegetation will be minimised with the objective of reducing impacts to all flora and fauna, to the greatest extent practicable. • Identify trees to be retained within clearing boundary. • Prior to the commencement of clearing, pre-clearing surveys will be undertaken to determine the presence and on-site location of any habitat features, threatened species and any weed infestations in vegetation to be cleared. • A Clearing and Grubbing Plan is to be prepared. • Prior to the commencement of clearing an ecologist or experienced fauna handler will conduct a search for any wildlife that may need to be removed and relocated. • Undertake tree removal using a suitably qualified arborist in accordance with AS 4373-2007 Pruning of Amenity Trees and NSW WorkCover Code of Practice for the Amenity Tree Industry (1998). • Arborist to be contacted and be present onsite if excavation works are within the critical root zone. • Disturbed area landscaped as part of future construction works. • Stockpiling/storage of cleared timber, mulch and other equipment is to be in areas designated and outside the critical root zone of remaining trees. • Declared noxious weeds are to be managed according to requirements under the *Biosecurity Act 2015* and Guide 6 (Weed Management) of the Roads and Maritime Services Biodiversity Guidelines 2011.	Medium (8)	Flora and Fauna Management Plan Induction TfNSW Specification G36 TfNSW Specification G40 TfNSW Biodiversity Guidelines
		Impacts on unexpected threatened species	Medium (12)		Low (6)	
		Displacement of, or injury to fauna	Medium (9)		Low (1)	
		Spread of noxious weeds via personnel, plant / equipment, topsoil/mulch	Medium (8)		Low (3)	
		Incorrect handling and translocation of fauna species from the existing dam to the new dam.	High (10)		Medium (8)	

Construction activity/aspect	Issue	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	Non-Aboriginal heritage	Commencement without undertaking archival recording of the existing Cammeray Golf Course.	High (17)	• Induct personnel on heritage issues and safeguards. • Prior to commencement of work in a specific area, heritage items adjacent to the project footprint will be fenced / flagged and sign posted as No-go zones. Preserved heritage items will be shown on relevant site plans and communicated to the relevant workforce. • If any previously unidentified heritage objects, archaeological relics, and/or Aboriginal objects are discovered, work must cease immediately and the TfNSW's Standard Management Procedure: – Unexpected Heritage Items shall be followed. • The proponent shall not destroy, modify or otherwise physically affect any heritage items outside the SSI footprint. • Prior to the commencement of works the construction methodology will be reviewed to confirm if works are required within the minimum working distance for known heritage items. If the works are within the minimum working distance the construction method will be reviewed to identify additional mitigation measures to be implemented, e.g. use of smaller plant. Where works cannot be avoided within the minimum working distance attended vibration monitoring will be completed at the commencement of the vibration generating activity, with additional mitigation implemented as required.	Low (7)	Heritage Procedure Induction TfNSW Unexpected Heritage Items procedure Archival Recording
		Impacts to heritage items (Cammeray Golf Course I0024, Cammeray Conservation Area CA01)	Medium (12)		Low (6)	
		Disturbance or damage to unidentified non-Aboriginal heritage item	Low (11)		Low (1)	
		Commencement without completion of the requirements associated with the Thematic study of the Cammeray Golf Course.	Medium (12)		Low (6)	
	Aboriginal heritage	Disturbance or damage to unidentified Aboriginal heritage item	Low (11)	• Induct personnel on heritage issues and safeguards. • If any previously unidentified heritage objects, archaeological relics, and/or Aboriginal objects are discovered, work must cease immediately and the TfNSW's Standard Management Procedure: – Unexpected Heritage Items shall be followed. • If human remains are discovered during construction, the find will be managed in accordance with the TfNSW's Standard Management Procedure: – Unexpected Heritage Items. • The proponent shall not destroy, modify or otherwise physically affect any heritage items, including human remains, outside the SSI footprint.	Low (1)	Heritage Procedure Induction TfNSW Unexpected Heritage Items procedure
	Surface water quality	Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	High (10)	• Induct personnel on soil and water issues and safeguards. • Erosion and Sediment Control Plans (ESCP) are to be prepared in accordance with the Blue Book. • Manage surface water and soils to minimise potential erosion and sedimentation of drains and watercourses in accordance with the requirements of the Blue Book. • Minimise areas of exposed soil surfaces to reduce erosion. • Install sediment control measures prior to commencing excavation or vegetation clearing works. • Stabilise disturbed areas at the completion of works. • Store oils and fuels in a suitably bunded, covered and secure area with sufficient capacity to contain at least 110 percent of the volume of the largest container. • In the event of a spill follow the Spill Management Procedure. • Any concrete washout undertaken on site shall be undertaken in designated areas only, well away from stormwater system inlets. • All vehicles leaving site will be required to ensure tyres, guards and drawbars are clear of excess sediment. • Use street sweepers and broom trucks as required.	Low (3)	Soil and Water Procedure Induction Spill Management Procedure G38 Specification Detailed Site Investigation (DSI)
		Contamination of soil or water from spill or leak of dangerous or hazardous materials from plant / equipment	High (10)		Low (1)	
		Contamination of soil or water from spill or leak of dangerous or hazardous materials from bulk storage	Medium (9)		Low (1)	
		Tracking of mud from work area	High (10)		Medium (8)	
		Incorrect storage and disposal of contaminated soils (incl. asbestos) resulting in contamination of soil or water	Medium (9)		Low (1)	

Construction activity/aspect	Issue	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Cover loads prior to exiting site. • Consolidated material stockpiles will only occur within an ancillary facility. • Temporary storage of materials adjacent to works will not be restricted to ancillary facilities. • Any refuelling undertaken on site shall be undertaken in designated areas only, well away from stormwater system inlets.		

		Exposure to unidentified contaminated materials during works	Medium (9)	• Induct construction personnel in the identification and management of previously unidentified contaminated sites.
				• The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contaminated land finds procedure. The procedure will include:
				  ○ Cease work in the vicinity
				  ○ Initial assessment by an appropriately qualified environmental consultant
				Further assessment and management of contamination, if confirmed, in accordance with Section 105 of the CLM Act.
					Medium (9)	

		Management of known areas of contamination during adjustment works.	Medium (9)	• Undertake Detailed Site Investigations (DSI) on the subject area prior to commencing disturbance of ground. • Prepare a DSI report detailing the extent of contamination and further measures to mitigate risk (as required). • Induct construction personnel in the identification and management of previously identified contaminated sites. • Further assessment and management of contamination, if confirmed, in accordance with Section 105 of the CLM Act.	Medium (9)	

	Noise	Noise nuisance to sensitive receivers from works in standard hours	High (10)	• Induct personnel on noise issues and safeguards.
				• Works shall generally be undertaken during standard working hours (Monday to Saturday).
				• High noise intensive works are restricted to occurring between 8am and 6pm (Monday to Friday) and 8am to 1pm (Saturday), unless required by an ROL. Respite will be implemented for these works in the form of works in continuous blocks that do not exceed three hours with a minimum one-hour respite in between each block.
				• Where feasible, hand tools will replace excavator mounted rock breakers to minimise the noise levels associated with removing rock (if encountered). Where hand held jackhammers are used, noise blankets will be used to reduce impacts on sensitive receivers.
				• Where feasible, noise sources will be shielded using acoustic noise blankets while ensuring that the occupational health and safety of workers is maintained.
				• For work outside of standard working hours the following additional management measures will apply:
				  - Works to be undertaken in accordance with the OOH Work Protocol
				  - Noise monitoring will be undertaken by the Contractor during works outside standard working hours to confirm that noise levels are within those modelled for the works
				  - Notification to sensitive receivers detailing work activities, dates and hours, impacts and mitigation measures and contact telephone number. Notification will be undertaken in accordance with the OOH Work Protocol and the Community Strategy.
					Low (4)	Noise and Vibration Management Sub-Plan
						Out of Hours Works Protocol
						Community Strategy
						Induction

		Noise nuisance to sensitive receivers from works conducted out of hours	High (18)		Medium (8)	

Construction activity/aspect	Issue	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	Vibration	Vibration nuisance to sensitive receivers	High (10)	• Induct personnel on vibration issues and safeguards. • Maintain minimum working distances between vibration intensive works and sensitive building structures for human response criteria where reasonable and feasible in accordance with RMS CNVG. • Complete pre and post-construction condition assessments for residential properties where vibration generating activities will be undertaken within the minimum working distance for cosmetic damage as defined in Table 2 RMS CNVG 2016.	Low (4)	Noise and Vibration Management Sub-Plan Induction
		Damage to property from vibration impacts	Medium (8)		Low (7)	
	Visual and amenity impacts	Visual impacts on nearby receivers due to light spill, construction works	High (10)	• Induct personnel on community nuisance issues and safeguards. • Minimise the extent of work areas and maintain worksites in a clean and tidy manner. • During out of hours works temporary lighting locations will be reviewed at the commencement of the shift to confirm the light is not towards residential properties, whilst providing the necessary light to complete the works safely.	Low (3)	Noise and Vibration Management Sub-Plan Induction
	Traffic	Amenity and noise impacts on sensitive receivers due to increased number of construction vehicles, site access arrangements and vehicle movements	High (10)	• Induct personnel on traffic issues and safeguards. • Develop temporary works that minimise conflicts with the existing road network and maximises spatial separation between work areas and travel lanes. • Complete a pre and post condition assessment of local roads used during CGC adjustment works. • Isolate work areas from general traffic through the implementation of appropriate traffic and access controls. • Notify affected communities about temporary traffic and access disruptions. • Minimise on-street parking removal to extent required for each work week. • Construction workers utilise designated off-street car parking areas where available. • Minimise periods of time during which roads and footpaths would be closed. • Property access is to be maintained in consultation with property owners. • Access to be maintained for public pedestrian pathways and cycleways. • Install signage to advise road users of any closures and alternative arrangements. • Pedestrian access will be maintained. Diversions around work areas will be minimised. • For any utility works on main arterial roads, a Road Occupancy Licence (ROL) and coordination with the Sydney Coordination Office (SCO)/Traffic Management Centre (TMC) would be required. • Undertake assessments for use of local roads in accordance with the E132 Ministers Conditions of Approval.	Medium (8)	Traffic, Transport and Access Management Sub-Plan Construction Parking Access Strategy Induction E133 Local Roads Approval
		Complaints from sensitive receivers due to changes in parking	High (10)		Medium (8)	
		Complaints from sensitive receivers due to changes in traffic arrangement	High (10)		Medium (8)	
		Complaints from sensitive receivers due to changes in traffic arrangements in local roads	High (10)		Medium (8)	
	Cumulative impacts (noise, vibration, air quality, traffic)	Complaints from sensitive receivers due to cumulative noise, vibration, air quality and traffic impacts from the works	High (10)	• Utilities Coordination Manager would coordinate contestable and non-contestable utilities to ensure out of hours respite is provided (for utilities in the CUT Scope as well as the CGC adjustment scope).	Medium (8)	Noise and Vibration Management Sub-Plan Traffic, Transport and Access Management Sub-Plan

Construction activity/aspect	Issue	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Adjustment works would be coordinated with other construction projects and other Early Works packages (as well as Stage 2 Main Works) to avoid cumulative noise impacts where possible. • Where it is not practical to avoid cumulative impacts additional noise mitigation at the source would be investigated including a review of the construction methodology.		Air Quality Procedure Induction
	Waste	Inappropriate disposal of waste including, vegetation and asbestos or disposal at an unlicensed waste facility	Medium (9)	• Induct personnel on traffic issues and safeguards. • Wastes will be managed in accordance with relevant NSW legislation and government policies including using the waste hierarchy principles. • Characterise and manage waste in accordance with the NSW EPA's Waste Classification Guidelines. • Where feasible, recyclable material is to be segregated from spoil to maximise recycling opportunities. • Appropriate signage for waste receptacles.	Low (1)	Waste Procedure
		Litter, inappropriate use of co-mingling and waste receptacles	Low (4)		Low (3)	

Table 6: Aspect and impact register - Stage 1C (Massey to Amherst noise barrier)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Air Quality	• General construction activities • Cutting of rock face to create slots (recess) for piles • Removal of existing noise barrier • Installation of new noise barrier • Landscaping/rehabilitation work	• Generation of dust due to cutting/grinding/sawing equipment, material /waste/spoil handling; and generation of exhaust emissions due to inappropriate plant maintenance • Generation and mobilisation of dust impacting receivers including residents, businesses, and vegetation	8 (minor)	Direct: • Construction activities with the potential to generate dust will be modified or ceased during unfavourable weather conditions to reduce the potential for dust generation • Access roads within Project sites will be maintained and managed to reduce dust generation (including the use of a street sweeper where appropriate) • Storage of materials that have the potential to result in dust generation will be minimised within Project sites at all times • During high wind and/or dry conditions, programming of dust generating activities is to be considered in order to reduce nuisance to neighbouring properties • Demolition activities will be planned and carried out to minimise the potential for dust generation • Adequate dust suppression will be applied during all demolition/rock cutting and excavation works required to facilitate the Project Indirect: • Other measures outlined in the Air Quality and Odour Management Procedure (AQOMP)	6 (minor)	Air Quality and Odour Management Procedure (AQOMP)
Biodiversity	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of new noise barrier • Vegetation clearance	Clearing outside of an approved area, including: • Accidental clearing outside of the project boundaries • Accidental clearing beyond the requirements of the Project Approval • Accidental lopping of trees and/or damage to tree roots • Accidental clearing of threatened species or threatened ecological communities outside of the project boundary	8 (minor)	Direct: • Toolbox talks regarding clearing limits • Clearly delineate the Project footprint prior to clearing Indirect: • Engage an arborist to supervise works where impact or damage to tree roots is probable • Provide tree protection where required at the direction of the arborist • Other measures outlined in the Flora and Fauna Management Procedure (FFMP)	6 (minor)	Flora and Fauna Management Procedure (FFMP)
		Spreading of weeds in stockpiled material	8 (minor)	Direct: • Implement a weed management procedure. Indirect: • Other measures outlined in the FFMP	6 (minor)	Weed Management Procedure (within FFMP)
Contamination	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works	Contamination of soil or water from spill or leak of dangerous or hazardous materials from plant / equipment	10 (moderate)	Direct: • The use of any hazardous substance that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds • Any refuelling undertaken on site shall be undertaken in designated areas only, and well away from stormwater system inlets • All spills or leakages will be immediately contained and absorbed	3 (minor)	Soil and Water Management Procedure (SWMP)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	• Removal of existing noise barrier • Installation of new noise barrier			• Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways Indirect: • Other measures outlined in the Soil and Water Management Procedure (SWMP)		

		Exposure to unidentified contaminated materials during works, causing program delays and injuries and health concerns	10 (moderate)	Direct:
				• Induct construction personnel in the identification and management of previously unidentified contaminated sites.
				• The discovery of previously unidentified contaminated material will be managed in accordance with an unexpected contaminated lands finds procedure. The procedure will include:
				  • Cease work in the vicinity
				  • Initial assessment by an appropriately qualified environmental consultant
				  • Further assessment and management of contamination, if confirmed, in accordance with Section 105 of the CLM Act
				Indirect:
				• Other measures outlined in the Unexpected Contaminated Land Finds Procedure
					8 (minor)	Unexpected Contaminated Land Finds Procedure (within SWMP)

Heritage	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of new noise barrier	Disturbance or damage of unidentified Aboriginal heritage artefact	4 (minor)	Direct: • All on site personnel will be provided with site training in regard to Aboriginal cultural heritage site awareness, key mitigation and management requirements and their responsibilities pertaining to the Aboriginal Heritage provisions of the NPW Act 1974 (NSW) prior to construction commencing. Training will include unexpected heritage finds procedures for heritage items, objects and human remains. • Implement Unexpected Heritage Finds and Human Remains Procedure Indirect: • Other measures outlined in the Heritage Management Procedure (HMP)	3 (minor)	Heritage Management Procedure (HMP) Unexpected Heritage Finds and Human Remains Procedure (within HMP)
		Disturbance or damage of non-Aboriginal heritage items including: • Cammeray Conservation Area at Cammeray • Heritage House (I0002) at 11 Armstrong Street, Cammeray • Heritage House (I0023) at 280 West Street, Cammeray • Tarella, Cammeray	9 (moderate)	Direct: • Any excavations, intrusive works or other operations that have the potential to impact areas of known heritage, cultural or archaeological items must ensure works are performed in accordance with a heritage assessment and regulatory requirements (which may include a dilapidation survey and/or supervision of works by a competent person and/or vibration monitoring) • Any such areas should be signposted and segregated by the erection of physical barriers to prevent authorised entry • Implementation of Noise and Vibration Management Plan to minimise the risk of structural damage to any heritage item (note – all heritage items are outside the buffer zone for vibration impacts) Indirect: • Other measures outlined in the HMP and the CNVMP	6 (minor)	HMP CNVMP
Noise and Vibration	• General construction activities	Noise and vibration impacts on nearby receivers, including out of hours impacts resulting in	15 (significant)	Direct:	9 (moderate)	Noise and Vibration Management Plan (NVMP)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	• Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of noise barrier	structural damage or community complaints		• All on site personnel will undergo a site induction and ongoing toolbox talks that will detail noise and vibration requirements from this plan through inductions, toolboxes and targeted training • Noise and vibration monitoring undertaken in accordance with the Project's Construction Noise and Vibration Monitoring Program • The safe working distances for vibration intensive plant would be complied with where feasible and reasonable. This would include the consideration of smaller equipment when working in close proximity to existing structures • Erection of temporary noise walls • Community liaison and notification • Provision of respite and alternative accommodation where required • Programming the works to minimise the duration of noisy works in any one particular location Indirect: • Other measures outlined in the NVMP and Construction Noise and Vibration Monitoring Program (NVMoP)		Construction Noise and Vibration Monitoring Program (NVMoP)
		Noise disturbance due to works undertaken out of standard construction hours	15 (significant)	• Out of Hours Works are to be carried out in accordance with the Project's Out-of-Hours-Works Protocol and EPL • Ensure OOHW are appropriately justified – safety or community requirement. • Implement noise mitigation strategies for out of standard hours work as per OOHW Protocol. • Monitor noise for compliance to project goals. • Community notifications distributed.	9 (moderate)	NVMP OOHW Protocol
Soil and Water	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Augering of piles • Removal of existing noise barrier • Installation of noise barrier	Serious incidents, e.g., uncontrolled release of contaminated water, major fuel spill, that cause or threaten material harm to the environment	12 (moderate)	Direct: • Any washout areas will be adequately sized, regularly maintained, and located in designated covered areas. They will be outside of riparian areas and well away from stormwater system inlets in a position where wastewater will not enter any drainage lines or waterways • The use of any hazardous substance that could result in a spill will be undertaken away from drainage or stormwater lines and, wherever possible, within defined bunds • Any refuelling undertaken on site shall be undertaken in designated areas only, outside of riparian areas and well away from stormwater system inlets • Spill containment kits will be placed at locations where there is direct discharge of stormwater to receiving waterways Indirect: • Other measures outlined in the SWP	8 (minor)	SWMP
		Erosion and sedimentation impacts on downstream waterways due to exposed land, inadequate controls or failure of controls	12 (moderate)	Direct: • ESCPs will be prepared for all work and implemented in advance of site disturbance • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail erosion and sediment control management measures	6 (minor)	SWMP ESCP

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Further targeted training to key on site personnel • EWMS will be prepared for high risk activities • An experienced soil conservation specialist (CPESC) will be engaged to provide advice regarding erosion and sediment control • Hardstand areas and surrounding public roads will be cleaned as required using methods such as brooms, bobcat attachments or street sweepers Indirect: • Other measures outlined in the SWP		
Traffic	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of noise barrier	Traffic and parking impacts due to increased number of construction vehicles, site access arrangements and vehicle movements	12 (significant)	Direct: • Designated haul routes for heavy vehicles • Use of the virtual superintendent system • Deployment of surveillance officers • Utilisation of the traffic control centre • Staff log-in at designated parking stations • Limiting vehicle movements to designated entries and exits and haulage routes • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail traffic, transport and access management measures • Communication and adherence to a Worker Code of Conduct • Minimise construction vehicle parking on public roads • Queuing and idling of construction vehicles in residential streets will be minimised • Measures identified in the TTAMP will be implemented for each ancillary facility/construction compound which requires direct access/egress onto the local/arterial road network Indirect: • Other measures outlined in the TTAMP • Local Roads Approval • Construction Parking and Access Strategy (CPAS)	9 (moderate)	Traffic, Transport and Access Management Plan (TTAMP)
Visual	• General construction activities • Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of noise barrier	Visual impacts on nearby receivers due to light spill, construction works, overshadowing	10 (moderate)	Direct: • Site establishment works will be conducted to minimise visual impacts. Where there is no noise wall or hoarding in place, boundary fencing will be installed to minimise visual, noise and air quality impacts on adjacent sensitive receivers • Retention of existing vegetation or treatment of key temporary structures • Minimise light spill from the project by directing construction lighting into the construction areas and ensuring the site is not over-lit	8 (minor)	CEMP and Sub-plans
Waste	• General construction activities	Inappropriate disposal of waste (including demolition, vegetation and hazardous / special waste) or disposal at an unlicensed waste facility	12 (moderate)	Direct: • All on site personnel will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures	6 (minor)	Waste and Resource Use Management Procedure (WRUMP) FFMP SWMP

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	• Excavation and civil works, including backfilling, temporary and permanent reinstatement works • Removal of existing noise barrier • Installation of noise barrier			• Vegetation disposal in accordance with the FFMP and Weed Management Protocol • HAZMAT surveys and removal of asbestos prior to demolition activities • Waste classification in accordance with EPA guidelines • Suitably licensed waste contractors will be used for the collection and transport of all non-domestic, retail and commercial wastes for either offsite processing and/or disposal to an appropriately licensed facility. • Receipts for waste transfer and disposal will be checked to ensure all details are correct and retained for audit purposes • Waste tracking register Indirect: • Other measures outlined in the Waste and Resource Use Management Procedure (WRUMP), SWMP and FFMP		
		Litter, inappropriate use of co-mingling and waste receptacles	4 (minor)	Direct: • All staff and subcontractors will undergo a site induction and ongoing toolbox talks that will detail waste and resource management measures (including the waste management hierarchy) and energy consumption • All recyclable solid wastes (paper/ cardboard/ plastic/ glass/ timber/ metals/ fluorescent lighting/ printer cartridges/ICT equipment) will be segregated for recycling purposes and volumes reported. Wherever possible, packaging should be avoided or minimised to prevent waste products being unnecessarily brought onto an operation Indirect: • Other measures outlined in the Sustainability Management Plan and WRUMP	2 (negligible)	WRUMP

Table 7: Aspect and impact register - Stage 2 (Warringah Freeway Upgrade)

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Air quality	• General earthworks • Vegetation clearing • Open excavation works • Spoil handling • Stockpiling • Vehicular movements on unsealed roads • Material haulage • Vehicle emissions • Handling of chemicals, waste and hazardous goods.	Complaints from neighbours, including loss of amenity, dust in living areas, swimming pools	Likelihood – 5 Consequence – 2 **Risk – 10 (Moderate)**	• Induct personnel on air quality issues and safeguards • Use water carts on unsealed surfaces and stockpiles • Utilise safe dust suppressants to reduce dust generation • Use street sweepers to reduce dust in areas of dust build up • Modify or cease operations during high winds • All trucks on public roads to cover loads • Vehicles, equipment, machinery used and all facilities – designed, operated and maintained to control the emission of smoke, dust, odours and fumes • All disturbed areas stabilised, revegetated and/or landscaped as soon as practicable • Minimise tracked mud/dust on public roads • No burning or incineration of any material at any time • Dust monitoring • Avoid "hot-work" during total fire bans and obtain any necessary permits/exemptions from the Rural Fire Service • WorkCover licensing requirements will be complied with for the storage of hazardous substances and dangerous goods • Appropriately stocked spill kits will be readily available at all chemical storage locations and during chemical use • Material Safety Data Sheets (MSDSs) will be obtained, complied with and retained on site for all required chemicals • Pesticide use will be in accordance with the Pesticides Act, 1999	Likelihood – 3 Consequence – 1 **Risk – 3 (Low)**	Air Quality Management Sub Plan (AQMP) Environmental Work Method Statements (EWMS) Soil and Water Management Sub Plan (SWMP) Complaints Procedure Project induction
		Potential adverse health effects	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Degradation of water quality and other aspects of the natural environment	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Health risks to neighbours and members of the public from release of gases and/or smoke	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	
Biodiversity	• Clearing of native vegetation. • Stockpile / haul road construction near vegetation. • General earthworks near vegetation. • Vehicular movements. • Open excavation works. • Bushfires	Loss of habitat for threatened species beyond minimum clearing footprint.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	• Induct personnel on biodiversity issues and mitigation measures. • Verify vegetation clearing boundaries prior to clearing • Ensure vegetation clearing boundaries clearly marked and visible as per FFMP • Prior to construction – identify and fence all flora and fauna habitat areas required to be protected as identified in the FFMP. • Minimise clearing of all vegetation and undertake progressive revegetation. • Pre-clearing inspections by Project Ecologist to review weeds and other threatened species • Implement ongoing weed monitoring and management programs. • Disturbed areas will be monitored for effective soil stabilisation and restoration / rehabilitation. • Implement a staged clearing process and undertake fauna rescue during clearing as required. • Project Arborist to provide advice on habitat tree health and provide ongoing advice. • Undertake threatened species management as required under the FFMP and detailed design documentation / Approval. • Undertake monitoring as required. • Spark arresters on plant prevent fires. • Obtain permits from Fire authorities during high risk fire season.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	Flora and Fauna Management Plan (FFMP) EWMS Vegetation Clearing procedure Fauna handling procedure Project induction
		Weed infestation	Likelihood – 5 Consequence – 2 **Risk – 10 (Moderate)**		Likelihood – 3 Consequence – 1 **Risk – 3 (Low)**	
		Potential longer term impacts associated with increased habitat fragmentation.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	
		Direct impact to flora or fauna during construction.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Aboriginal heritage	• Initial clearing and/or grubbing of vegetation. • Initial removal of topsoil. • Construction of site compounds and material or equipment stockpile areas. • Temporary access roads	Impact to undiscovered or undocumented heritage sites	Likelihood – 2 Consequence – 3 **Risk – 12 (High)**	• Induct personnel on heritage issues and mitigation measures. • For ancillary sites, identify and assess Aboriginal heritage items and predict potential impacts. • Implement unexpected find procedures as required.	Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	Heritage Management Sub Plan (HMP) Unexpected Heritage Items Procedure Project induction
		Finding / disturbing burials or human remains	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	
Non-Aboriginal heritage	• Initial clearing and/or grubbing of vegetation. • Initial removal of topsoil. • Construction of site compounds and spoil / mulch and / or equipment stockpile areas. • Temporary access roads during construction • Excavations and earthworks. • Pile driving causing vibration. • Use of other vibratory equipment such as rollers.	Impact to identified heritage items.	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**	• Pre-construction surveys to identify and assess non- Aboriginal heritage items. • Induct personnel on heritage issues and safeguards. • Protect identified heritage items with protective fencing or flagging from being disturbed during construction. • Undertake archival recording as required • Implement unexpected find procedures • Landholder consultation.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	Heritage Management Sub Plan (HMP) Noise and Vibration Management Sub Plan (NVMP) Unexpected Heritage Items Procedure Project induction
		Vibration damage during the construction period to identified sites.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Impact to undiscovered or undocumented heritage sites.	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Change in visual integrity of heritage sites.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**		Likelihood – 2 Consequence – 1 **Risk – 2 (Low)**	

Noise and vibration	• Potentially noisy and vibration impact generating works:
	  ○ Site establishment.
	  ○ Earthworks
	  ○ Piling
	  ○ Paving
	  ○ Saw cutting
		Noise impacts on sensitive receivers during construction.	Likelihood – 5
			Consequence – 3
			Risk – 18 (Very High)
				• Consult with local communities and affected residents.
				• Adherence to working hours in NVMP unless otherwise approved.
				• Respite periods for particularly noisy/ short duration activities (in accordance with NVMP).
				• Construction equipment selected, operated and maintained to minimise noise impacts and where necessary fitted with non-tonal reversing alarms.
				• Minimise impacts from saw cutting/ use effective shielding.
				• Regular noise monitoring to monitor predicted verses actual levels.
				• Implementing management measures where regenerated noise is found to be excessive and agreements are not in place.
				• Managing construction vehicle routes and speed of vehicles.
				• Modelling vibration impacts and monitoring where impacts are predicted.
				• Establish and maintain complaints management system.
				• Building condition reports on potentially impacted buildings and structures as required by Project approval.
				• review monitoring results and implement corrective actions as appropriate, such as for example revising mitigation measures, revising predictions.
				• Implement any additional feasible and reasonable mitigation measures, identified from the review of monitoring results, for minimising noise and vibration impacts
				• Discuss noise and vibration monitoring results at each ERG.
					Likelihood – 4
					Consequence – 2
					Risk – 9 (Moderate)
						NVMP
						EWMS
						Out of hours works (OOHW) protocol
						Negotiated agreements
						Complaints procedure
						Project induction

		Vibration impacts on nearby receptors, including heritage.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**		Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
Soil and water quality	• Clearing and grubbing. • Earthworks and stockpile management. • Storage of fuels and chemicals • Maintenance of plant and equipment, including servicing and refuelling • Sediment basin management • Drainage works • Concrete works • Temp access road construction • Bridge construction. • Landscaping • Landscaping maintenance	Erosion and movement of soils.	Likelihood – 5 Consequence – 3 **Risk – 18 (Very High)**	• Appropriately designed erosion control structures (e.g. rock checks, sedimentation basins, silt fences and sand bags) will be installed, maintained and cleaned regularly. • Locate spoil stockpiles, plant and equipment away from drainage lines, watercourses or stormwater drains in accordance with established criteria. • Install clean water diversions to ensure clean and dirty water are not mixed on site. • Storage, compound access and parking areas sealed, as early during works as practicable. • Chemical storage meets bunding requirements. • Wheel mud reduction/ cleaning measures at exit of all sites where required. • Buffer zones of vegetation will be maintained adjacent to waterways for as long as practical. • Rehabilitation and landscaping works of disturbed areas undertaken as soon as the works are completed and/or progressively where possible. • Implement concrete washout process within bunded areas. • Provide and maintain spill kits. • Establish clean water catch drains/ diversion early in Project before topsoil stripping. • Design drainage to maximise dirty water to sediment basins. • Establish dedicated ERSED crews for the Project. • Install signage at discharge points to assist workers to understand implications of dirty water release in sensitive areas. • Meet TfNSW Dewatering guidelines.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	SWMP EWMS Basin management procedure Project induction Targeted ERSED training
		Captured dirty water discharge from basins.	Likelihood – 4 Consequence – 3 **Risk – 17 (Very High)**		Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	
		Dirty water not captured and leaves site without controls.	Likelihood – 4 Consequence – 3 **Risk – 17 (Very High)**		Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	
		Haul road washout from flood event.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
Flooding	• Transverse drainage. • Haul roads and Freeway.	Restriction to flow paths causing localised flooding.	Likelihood – 4 Consequence – 3 **Risk – 17 (Very High)**	• Design drainage structures to cope with design flood events and Environmental Assessment commitments. • Locate compounds / plant / storage above 1 in 20 years flood level events. • Design and build temporary crossings to be stabilised and minimise scour / erosion during flood events. • Install scour protection as early as possible. • Look at predicting flood events from gauges or rainfall predictions. • Design and construct Project in accordance with CoA .	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	SWMP EWMS
		Changes to flood levels – increased impact to receivers.	Likelihood – 3 Consequence – 4 **Risk – 19 (Very High)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Stormwater inflow to site – clean stormwater getting mixed with dirty site water.	Likelihood – 5 Consequence – 3 **Risk – 18 (Very High)**		Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	
		Flood damage to plant / equipment / satellite compounds.	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Erosion of haul/ access road during large flood events.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
Spoil and Fill	• Cuts • Fill areas	Demand on local resources – local quarries / suppliers.	Likelihood – 4 Consequence – 1 **Risk – 4 (Low)**	• Design for balanced earthworks. • Offsite spoil movements to be monitored and tracked on the site waste disposal register to ensure spoil movements meet EPA guidelines,	Likelihood – 3 Consequence – 1 **Risk – 3 (Low)**	SWMP EWMS and Work Packs AQMP

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
	• Haulage of spoil and fill • Stockpiling • Spoil areas • Site establishment utility • Service relocations • Earthworks • Drainage works	ERSED issues from cuts / batters / stockpiles.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**	including characterisation of the spoil to determine correct disposal locations and volumes. • Spoil to be beneficially reused, on or off site, where applicable and meeting environmental requirements. Includes reuse of excavated material, either as fill, or as earth mounds for noise control, or beautification, shielding or revegetation mounds on site. • All loads accessing public roads to be covered to prevent any loss of material, which may cause driver safety issues. • Only locate stockpiles in accordance with criteria in CEMP/SWMP • Classify and dispose of any contaminated land in accordance with EPA guidelines.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**	CEMP Contaminated Land Management Procedure
		Sensitive area damage from stockpiling.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Contaminated land.	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
Waste Management	• Generation of waste during construction activities including building materials, excess unsuitable spoil material, vegetation material.	Excessive waste being directed to landfill.	Likelihood – 3 Consequence – 1 **Risk – 3 (Low)**	• Apply waste hierarchy principles – avoid-reduce-reuse-recycle. • Waste materials contained in waste bins or other suitable containers, and collected for recycling, reuse or disposal by the licensed waste contractor. • Separate, contain, manage and dispose contaminated waste to prevent migration and further contamination whilst maintaining compliance with EPA requirements. • Label and store all liquid waste containers in a bunded area prior to removal off-site. • Undertake inspections of the worksite and waste storage areas to ensure litter / debris is regularly cleaned up and contained on site. • Establish recycling system early on in Project. • Establish good segregation areas for concrete and waste concrete is not to be transported off site for land disposal. • Section 143 Notices Under the POEO Act and provision of a letter to landholder highlighting the need for a “s.143 Notice”, the Contractor’s role and the respective roles of the TfNSW and the landholder in ensuring that the waste is appropriately managed. • Consider types of waste, how each waste type will be used as a beneficial use and address in the approvals that no other type of waste will be used.	Likelihood – 2 Consequence – 1 **Risk – 2 (Low)**	Waste and Energy Management Plan (WEMP) EWMS Waste register
		Incorrect disposal of contaminated waste.	Likelihood – 3 Consequence – 4 **Risk – 19 Very High**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Meeting POEO Act requirements for VENM, ENM, Recovered Aggregate, Reclaimed Asphalt pavement and mulch	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
Traffic and transport	• Haulage of material. • Import of material / plant / equipment. • Travel to / from site.	Accidents - Safety of commuters, pedestrians, cyclists, contractors and subcontractors. Delays Noise Vibrations and Dust nuisance to residents on haul routes Unapproved use of local roads	Likelihood – 4 Consequence – 4 **Risk – 20 (Very High)**	• Develop and update Traffic Control Plans for all stages of work. • Identify and assess roads likely to be affected by Project construction and develop methods to minimise traffic increases. • Undertake before and after dilapidation surveys on local roads • Traffic controllers and / or signage for both egress and ingress off the work sites. • All vehicles carrying materials to be adequately covered to prevent any loss of material, which may cause driver safety issues. • Toolbox workforce on approved access routes	Likelihood – 3 Consequence – 3 **Risk – 13 (High)**	Traffic Management Plan (TMP) EWMS AQMP WEMP Project induction Toolbox talks
Visual Impact, Landscaping and Rehabilitation	• Cuttings and cut finishes. • Bridge design Revegetation / landscaping. • Removal of visually prominent native vegetation. • Evening / night works.	General public aesthetic impacts	Likelihood – 3 Consequence – 1 **Risk – 3 (Low)**	• Landscape and rehabilitation plan including extensive seeding planting in required areas will be developed and implemented. • Landscape treatments will incorporate the surrounding landscape types and vegetation patterns and address view scapes. • Embankments and cuttings will be stabilised by the use of appropriate landscape treatments. • The use of night-lighting will be minimised where possible during the construction phase and directed away from residential areas.	Likelihood – 2 Consequence – 1 **Risk – 2 (Low)**	Urban Design and Landscape Management Plan (UDLMP) FFMP
		Heritage related visual	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	

Issue	Construction activity/aspect	Potential impact	Risk level prior to mitigation	Indicative Mitigation Measures	Risk level following mitigation	Management Documents / Training Required
				• Site compounds and areas surrounding them will be kept tidy and be regularly cleaned and maintained. • Undertake landscaping and revegetation works in accordance with the approved Urban Design and Landscape Management Plan.		
Contamination	• Discovery of contaminated soils/ asbestos	Contamination of land and /or waterways from spills/ asbestos/ land contamination.	Likelihood – 4 Consequence – 3 **Risk – 17 (Very High)**	• Implement unexpected finds contamination management measures	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	Contaminated Land Management Procedure EPA guidelines
General Environmental Management	• Environmental management / supervision • Incident response	Poor environmental culture leading to peer environment outcomes. Non-compliance with CEMP, EPL, MCoA and legislative requirements.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**	• Ensure all environmental personnel are trained in the CEMP and all associated documents. • Environment team diligence in including requirements from CEMP and procedures into EWMS and training. • Regular review of environmental management documents. • Regular environment team and ERG meetings. • Environmental Manager to be involved in design and construction meetings. • Training in environmental emergency response. • Ensure NCR process is followed. • Early consultation with regards to proposed upcoming works and approvals to be sought. • Implementation of high operating standards & in accordance with accepted industry standards.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	CEMP Procedures (in CEMP and sub-plans) TfNSW Incident Management procedures EWMS Compliance Tracking Program Internal / external audits ERG
		Failure to follow requirements of strategies / procedures.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Failure to report environmental issues and incidents.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Inconsistent advice to construction personnel.	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Inadequate response to environmental incident/ emergency.	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
Planning Approvals	• Approvals/ Legislative Compliance	Lost opportunities to implement innovations leading to better environmental outcomes	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**	• Early consultation in preparing approvals and CEMP. • Ensure all environmental personnel are trained in the CEMP and all associated documents. • Environment team diligence in including requirements from CEMP and procedures into EWMS and training. • Regular review of environmental management documents. • Regular review of compliance with environmental management documents, MCoA etc. • Regular environment team and ERG meetings. • Early consultation with regards to proposed upcoming works and approvals to be sought.	Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	CEMP Compliance Tracking Program Internal / external audits ERG
		Poor working relationships with regulators	Likelihood – 3 Consequence – 2 **Risk – 8 (Moderate)**		Likelihood – 2 Consequence – 2 **Risk – 7 (Low)**	
		Delays due to receipt of approvals (e.g. CEMP, Planning Modifications, Environment Assessments for Ancillary Facilities)	Likelihood – 4 Consequence – 2 **Risk – 9 (Moderate)**		Likelihood – 1 Consequence – 2 **Risk – 6 (Low)**	