

Appendix B6

Air Quality Management Sub Plan

Western Harbour Tunnel and Warringah Freeway Upgrade

SSI-8863

Stage 2 – Warringah Freeway Upgrade

January 2022

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Document control

Approval and authorisation

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Distribution of controlled copies

This AQMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the AQMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office and on the project website.

Copy number	Issued to	Version

Glossary/ Abbreviations

Abbreviations	Expanded text
AQMP	Air Quality Management Sub-Plan
BOM	Australian Government Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CSSI	Critical State Significant Infrastructure
DPIE	NSW Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environmental Protection Licence
ER	Environmental Representative
EU	European Union
MCoA	NSW Minister's Conditions of Approval
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OEH	Office of Environment and Heritage
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Project, the	Warringah Freeway Upgrade
REMM	Revised Environmental Management Measure
Roads and Maritime	Roads and Maritime Services
RtS	Response to Submissions Report
SEARs	Secretary's Environmental Assessment Requirements
TfNSW	Transport for NSW
WFU	Warringah Freeway Upgrade Stage 2

1 Introduction

1.1 Context

This Air Quality Management Sub-Plan (AQMP) forms part of the Construction Environmental Management Plan (CEMP) for the Warringah Freeway Upgrade (the Project), a component of the Western Harbour Tunnel and Warringah Freeway Upgrade project.

This AQMP has been prepared to address the requirements of the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project, the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement dated January 2020 (the EIS), the Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report dated September 2020 (the RtS) and applicable guidance and legislation.

In accordance with the Staging Report, Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) (October 2021, Revision 1), this Sub-plan is applicable to Stage 2 works.

1.2 Background and project description

The Western Harbour Tunnel and Warringah Freeway Upgrade project comprises a new 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 enable the future connection of the Beaches Link and Gore Hill Freeway Connection project.

The upgrade of Warringah Freeway extends from the northern end of the Sydney Harbour Bridge to Willoughby Road, and will optimise traffic flow, reducing the number of merge points along with introducing a southbound bus lane. The upgrade will also improve Ridge Street and Ernest Street bridges. The project description is outlined in Section 1.3 of the CEMP.

As part of the EIS development, a detailed construction and operational air quality assessment was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the then Department of Planning and Environment. The air quality assessment was included in the EIS as *Western Harbour Tunnel and Warringah Freeway Upgrade Technical working paper: Air Quality*, dated January 2020.

The construction air quality assessment in the EIS concluded that the construction activities associated with the Project were unlikely to represent a serious ongoing problem and impacts would be managed through the implementation of mitigation and management measures described in this AQMP.

The Western Harbour Tunnel and Warringah Freeway Upgrade Project was approved by the Minister for Planning and Public Spaces on 21 January 2021.

The proponent, Transport for NSW (TfNSW), has contracted the CPB Contractors and Downer Joint Venture (CPB Downer JV) for the design and construction of the Project.

1.3 Scope of the Sub-Plan

The scope of this AQMP is to describe how the CPB Downer JV proposes to manage potential air quality impacts during construction of the Project. Operational impacts and operational measures do not fall within the scope of this AQMP and therefore are not included within the processes contained within this AQMP.

This Sub-plan is applicable to all Project activities under the control of the CPB Downer JV, including all areas where physical works will occur or areas that may otherwise be impacted by the construction works. All CPB Downer JV staff and sub-contractors are required to operate fully under the requirements of this Sub-plan and related environmental management plans, for the duration of the construction program.

In accordance with the Staging Report, Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) (October 2021, Revision 1), this Sub-plan is applicable to Stage 2 works.

1.4 Environmental management systems overview

This Sub-plan forms part of the CEMP which provides a structured and systematic approach to environmental management. The CEMP is based on the requirements of the CPB Contractors' Management System (CMS) and the requirements of the CSSI approval.

The CMS is certified to *AS/NZS SIO 14001:2015 Environmental Management Systems – requirements with guidance for use*. Additional details on the CEMP and Project environmental management system documents are provided in Section 1.5 of the CEMP.

Key interactions for this Sub-plan with other elements of the CEMP include:

- **Soil and Water Management Sub-plan** – details a number of controls relating to the management of sediment control which minimise impacts to air quality.

2 Purpose and objectives

2.1 Purpose

The purpose of this AQMP is to describe how CPB Downer JV proposes to manage potential air quality impacts during construction of the Project.

2.2 Objectives

The key objective of the AQMP is to ensure all MCoA, REMMs and licence/permit requirements relevant to air quality are described, scheduled, and assigned responsibility as outlined in:

- The EIS and RtS prepared for Western Harbour Tunnel and Warringah Freeway Upgrade project
- Minister's Conditions of Approval granted to the project on 21 January 2021
- Roads and Maritime specifications G36, G38 and G40
- Relevant legislation and other requirements described in Section 3.1 of this AQMP.

Furthermore, the CPB Downer JV will aim to meet the performance outcomes from the EIS (Chapter 28, Table 28-4) as required by MCoA C2(d)(i). Relevant performance outcomes are detailed in **Table 2-1** including a cross reference to indicate how the matter is addressed in this Sub-plan.

Table 2-1 Performance Outcomes Identified in the EIS Relevant to this Sub-plan

Performance Outcome	How Addressed	Records
The project is designed, constructed and operated in a manner that minimises air quality impacts (including nuisance, dust and odour) to minimise risks to human health and the environment to the greatest extent.	Impacts on air quality, including nuisance, dust and odour will be minimised through the implementation of management and mitigation measures detailed in Section 7 of this Sub-plan.	Environmental Inspection Checklists Foreman's Diary Site Environment Plan

2.3 Targets

The following targets have been established for the management of air quality impacts during the project:

- Ensure compliance with the relevant legislative requirements, MCoA and REMMs
- Meet Environment Protection Licence (EPL) air quality parameters (if required)
- Ensure training on best practice air quality management is provided to all construction personnel through site inductions
- Provide effective management of dust, odour and other emissions during construction to minimise risks to human health and the environment.

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this AQMP is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the CEMP.

3.1.3 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this Sub-plan include:

- AS 3580.1.1-2007 Methods of Sampling Analysis of Ambient Air. Part 1.1 Guide to Siting Air Monitoring Equipment
- AS 3580.10.1-2003 Methods of Sampling Analysis of Ambient Air. Determination of Particulate Matter – Deposited Matter - Gravimetric Method
- DEC, Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, 2017.
- National Environment Protection Council (NEPC) – National Environment Protection Measure (NEPM) for Ambient Air Quality Guidelines
- OEH, Government Resource Efficiency Policy, 2014
- Roads and Maritime QA Specification G36 – Environmental Protection (Management System)
- Roads and Maritime QA Specification R272 – Automatic Weather Stations.

3.2 Air quality criteria

Air quality performance criteria applicable to the Project is detailed in section 3.2.2 and Table 3-1 of Appendix A (Air Quality Monitoring Program).

3.3 Minister's Conditions of Approval

The MCoA relevant to this Sub-plan are listed in **Table 3-1**. A cross reference is also included to indicate where the condition is addressed in this Sub-plan or other Project management documents.

Table 3-1 Minister's Conditions of Approval relevant to the AQMP

Ref No.	Condition Requirements	Document Reference	How Addressed
General			
A5	<p>Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:</p> <ul style="list-style-type: none"> (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party; (c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations; (d) outline of the issues raised by the identified party and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed. 	<p>Section 4 Appendix B</p>	<p>This AQMP and the Air Quality Monitoring Program (Appendix A) have been prepared in consultation with the relevant agencies identified in MCoA C4(c). Records of consultation are included in Appendix B</p>

Ref No.	Condition Requirements	Document Reference	How Addressed
A15	With the approval of the Planning Secretary, the Proponent may submit any strategies, plans or programs required by this approval on a progressive basis.	Section 1.1	As detailed in section 1.1, in accordance with the Staging Report, Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) (October 2021, Revision 1), this Sub-plan is applicable to Stage 2 works.
A27	<p>For the duration of the work until the commencement of operation, or as agreed with the Planning Secretary, the approved ER must:</p> <p>(d) review documents identified in Conditions A10, A17, C1, C4 and C11 and any other documents that are identified by the Planning Secretary, to ensure they are consistent with requirements in or under this approval and if so:</p> <p>(i) make a written statement to this effect before submission of such documents to the Planning Secretary (if those documents are required to be approved by the Planning Secretary); or</p> <p>(ii) make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Planning Secretary / Department for information or are not required to be submitted to the Planning Secretary/Department);</p>	Section 9.2	As detailed in Section 9.2 the AQMP will be reviewed by the approved ER in accordance with MCoA A27 to ensure it remains consistent with the requirements under the Project NSW Minister's Conditions of Approval.
Construction Environmental Management Plan			

Ref No.	Condition Requirements	Document Reference	How Addressed						
C4	<p>The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.</p> <table border="1"> <thead> <tr> <th></th> <th>Required CEMP Sub-plan</th> <th>Relevant government agencies to be consulted for each CEMP Sub-plan</th> </tr> </thead> <tbody> <tr> <td>(d)</td> <td>Air quality and odour</td> <td>NSW Health, relevant council(s)</td> </tr> </tbody> </table>		Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan	(d)	Air quality and odour	NSW Health, relevant council(s)	<p>Section 4 Appendix B</p>	<p>This AQMP has been prepared in consultation with the relevant agencies identified in MCoA C4(c). Records of consultation are included in Appendix B.</p>
	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan							
(d)	Air quality and odour	NSW Health, relevant council(s)							
C5	<p>The CEMP Sub-plans must state how:</p> <p>(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;</p>	<p>Table 2-1</p>	<p>The environmental performance outcomes identified in the EIS and RtS are detailed in Table 2-1 together with how each outcome is addressed by this Sub-plan.</p>						
	<p>(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;</p>	<p>Section 7</p>	<p>Section 7 details how the mitigation measures identified in the EIS and RtS relating to air quality will be implemented by the CPB Downer JV.</p>						
	<p>(c) the relevant terms of this approval will be complied with; and</p>	<p>Table 3-1 Table 3-2</p>	<p>Details of how CPB Downer JV will comply with the relevant terms of approval are listed in this Table, including references to the relevant sections of this Sub-plan.</p>						

Ref No.	Condition Requirements	Document Reference	How Addressed
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	Section 3.2.1 of the CEMP Section 6.3 Section 6.4 Table 7-1	Air quality issues requiring management during construction have been identified in the Environmental Risk Assessment Workshop (Section 3.2.1 of the CEMP) and Section 6.3 of this Sub-plan. The risk assessment will be reviewed every six months during construction. Cumulative impacts are detailed in Section 6.4 and management controls are described in Table 7-1 .
C9	CEMP Sub-plans must be submitted to the Planning Secretary for approval along with, or subsequent to, the submission of the CEMP but in any event, no later than one month before construction.	Section 4 Section 2.2 of the CEMP	This Sub-plan will be submitted to the Planning Secretary for approval no later than one month before construction.
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved, unless otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the CEMP and sub-plans for that stage have been endorsed by the ER and approved by the Planning Secretary.	Section 4 Section 9.2 Section 2 of the CEMP	Construction of the Project will not commence until the CEMP and all relevant CEMP Sub-plans have been approved, unless otherwise agreed by the Planning Secretary. Minor amendments to this AQMP will be reviewed and approved by the ER prior to being implemented for the duration of construction
Construction Monitoring Programs			
C11	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies identified for each	Section 4	The Air Quality Construction Monitoring Program is included in

Ref No.	Condition Requirements	Document Reference	How Addressed						
	<p>to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in Condition A1 or in the CEMP:</p> <table border="1" data-bbox="243 431 1115 672"> <tr> <td data-bbox="243 431 359 570"></td> <td data-bbox="365 431 653 570">Required Construction Monitoring Program</td> <td data-bbox="659 431 1115 570">Relevant government agencies to be consulted for each Construction Monitoring Program</td> </tr> <tr> <td data-bbox="243 574 359 672">(a)</td> <td data-bbox="365 574 653 672">Air Quality (including Odour) Monitoring</td> <td data-bbox="659 574 1115 672">EPA</td> </tr> </table>		Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program	(a)	Air Quality (including Odour) Monitoring	EPA	<p>Appendix A Appendix B</p>	<p>Appendix A of this Sub-plan. This monitoring program has been prepared in consultation with the EPA. Records of consultation are included in Appendix B.</p>
	Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program							
(a)	Air Quality (including Odour) Monitoring	EPA							

Ref No.	Condition Requirements	Document Reference	How Addressed
C12	<p>Each Construction Monitoring Program must provide:</p> <ul style="list-style-type: none"> a) Details of baseline data available b) Details of baseline data to be obtained and when c) Details of all monitoring of the project to be undertaken; d) The parameters of the project to be monitored; e) The frequency of monitoring to be undertaken; f) The location of monitoring; g) The reporting of monitoring results and analysis results against relevant criteria; h) Details of the methods that will be used to analyse the monitoring data; i) Procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts; j) A consideration of SMART principles; k) Any consultation to be undertaken in relation to the monitoring programs l) any specific requirements as required by Conditions C13 to C16. 	<p>The Air Quality Construction Monitoring Program is included in Appendix A</p>	<p>The Air Quality Construction Monitoring Program is included in Appendix A of this Sub-plan. The monitoring program has been prepared in accordance with the requirements of this condition.</p>
C17	<p>The Construction Monitoring Programs must be developed in consultation with relevant government agencies as identified in Condition C11. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant Construction Monitoring Programs, including copies of all correspondence from those agencies as required by Condition A5.</p>	<p>Section 4 Appendix A Appendix B</p>	<p>The Air Quality Construction Monitoring Program is included in Appendix A of this Sub-plan. This monitoring program has been prepared in consultation with the EPA. Records of consultation are included in Appendix B.</p>

Ref No.	Condition Requirements	Document Reference	How Addressed
C18	The Construction Monitoring Programs must be endorsed by the ER and then submitted to the Planning Secretary for approval at least one month before the commencement of construction.	Appendix A	The Air Quality Construction Monitoring Program is included in Appendix A of this Sub-plan. This monitoring program will be endorsed by the ER and submitted to the Planning Secretary for approval at least one month before the commencement of construction.
C19	Unless otherwise agreed with the Planning Secretary, construction must not commence until all of the relevant Construction Monitoring Programs have been approved by the Planning Secretary, and all relevant baseline data for the specific construction activity has been collected.	Appendix A	The Air Quality Construction Monitoring Program is included in Appendix A of this Sub-plan. Construction will not commence prior to submission of baseline data (where relevant) and approval of the monitoring program by the DPIE Planning Secretary.
C20	The Construction Monitoring Programs, as approved by the Planning Secretary including any minor amendments approved by the ER must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	Appendix A	The approved Air Quality Construction Monitoring Program will be implemented for the duration of construction.
C21	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program. <i>Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.</i>	Appendix A	Air Quality Monitoring Reports will be prepared every six months and submitted to the Planning Secretary and the EPA within 30 days of the reporting period (refer to Section 5.4 of Appendix A).

Ref No.	Condition Requirements	Document Reference	How Addressed
Air Quality and Odour			
E1	Measures must be implemented to minimise and manage the emission of dust, odour and other air pollutants during construction and operation.	Section 7	Management and mitigation measures to minimise air quality impacts are detailed in Section 7 of this Sub-plan.

3.4 Revised Environmental Management Measures

Relevant REMMs, as identified in Part D of the RtS, are listed in **Table 3-2**. A cross reference is also included to indicate where the commitment is addressed in this Sub-plan or other Project management documents.

Table 3-2 Environmental management measures relevant to this AQMP

Ref #	Commitment	Reference	How Addressed
AQ1	<p>Standard construction air quality mitigation and management measures will be detailed in construction management documentation and implemented during construction, such as:</p> <ul style="list-style-type: none"> a) Reasonable and feasible dust suppression and/or management measures, including the use of water carts, dust sweepers, sprinklers, dust screens, site exit controls (eg wheel washing systems and rumble grids), stabilisation of exposed areas or stockpiles, and surface treatments b) Selection of construction equipment and/or materials handling techniques that minimise the potential for dust generation c) Management measures to minimise dust generation during the transfer, handling and on-site storage of spoil and construction materials (such as sand, aggregates, or fine materials) (e.g. the covering of vehicle loads) d) Adjustment or management of dust generating activities during unfavourable weather conditions, where possible e) Minimisation of exposed areas during construction f) Management measures for managing unexpected odour generation likely to result in odour impacts at sensitive receivers in the vicinity during the disturbance, handling and storage of potentially odorous materials, including any contingency measures g) Internal project communication protocols to ensure dust-generating activities in the same area are coordinated and mitigated to manage cumulative dust impacts of the project 	<p>Table 7-1</p>	<p>Relevant mitigation and management measures are detailed in Table 7-1 of this Sub-plan. Evidence of implementation will be demonstrated through Environmental Inspection Checklists, Foreman's Diaries and Site Environment Plans.</p>

Ref #	Commitment	Reference	How Addressed
	h) Site inspections will be carried out to monitor compliance with implemented measures.		
AQ2	Dust and air quality complaints will be managed in accordance with the overarching complaints handling process for the project. Appropriate corrective actions; if required, will be taken to reduce emissions in a timely manner.	Section 8.7 Section 3.7.5 of the CEMP	Community feedback and complaints relating to local air quality will be managed in accordance with the Communication Strategy and Complaints Management System as detailed in Section 8.7 of the Sub-plan and Section 3.7.5 of the CEMP.

4 Consultation

This AQMP will be developed and finalised in consultation with nominated agencies in accordance with MCoA C4(c). Consultation with each agency, including responses received and how any issues raised were addressed in the development of this Sub-plan are included in the Consultation Report **Appendix B**.

This AQMP will be submitted to the Planning Secretary for approval no later than one month before construction in accordance with the MCoA condition C9. Construction will not commence until the AQMP has been approved by the Planning Secretary. The AQMP will be implemented for the duration of Stage 2 construction.

Community feedback and complaints relating to air quality will be managed in accordance with the Community Communication Strategy and Complaints Management System.

5 Existing Environment

The following sections summarise existing air quality conditions within and adjacent to the Project. Data are based on information contained in Section 12.4 and Appendix H of the EIS. Land-use in the vicinity of the Project is generally dominated by high density residential and commercial land uses, with a large number of residential and commercial buildings within 350 metres of the construction corridor.

5.1 Air quality records

Air quality in the vicinity of the Warringah Freeway is expected to be representative of a high density commercial / urban environment with large arterial roads passing through the area. The Warringah Freeway itself (along with network of major roadways linking the freeway to North Sydney and Northern Beaches area) represents the primary source of air pollution in the area.

Air quality monitoring relevant to the Project has been undertaken through monitoring at nearby DPIE and Roads and Maritime (RMS) monitoring stations. Data from Appendix H of the EIS showed the following for ambient air quality between 2004 and 2018 at DPIE stations (Chullora, Earlwood, Randwick, Rozelle, Lindfield, Liverpool and Prospect) and RMS M5 East urban background stations (CBMS, T1, U1, X1, F1 and M1):.

- Maximum 1-hour and rolling 8-hour mean Carbon Monoxide (CO)
 - All values were well below the NSW EPA air quality criteria of 30 mg/m³ (1-hour) and 10 mg/m³ (8-hour), and concentrations were fairly stable at all stations between 2004 and 2018. In 2016 the maximum 1-hour concentrations were typically between around 2–3 mg/m³, and the maximum 8-hour concentrations were around 2 mg/m³.
 - There were general downward trends in maximum concentrations, and these were statistically significant at most stations.
- Annual mean Nitrogen Dioxide (NO₂)
 - Concentrations at all stations were well below the NSW EPA air quality criterion of 62 µg/m³ and ranged between around 15 and 25 µg/m³ (depending on the station) in recent years. Values at the DPIE stations exhibited a systematic, and generally significant, downward trend overall. However, in recent years the concentrations at some stations appear to have stabilised.
 - The long-term average NO₂ concentrations at the RMS roadside stations (F1 and M1) were 34–37 µg/m³, and around 10–20 µg/m³ higher than those at the background stations. Even so, the concentrations at the roadside stations were also well below the criterion.
- Maximum 1-hour NO₂
 - Although variable from year to year, maximum NO₂ concentrations have been fairly stable in the longer term. The values across all stations typically range between 80–120 µg/m³, and continue to be well below the criterion of 246 µg/m³.
 - The maximum 1-hour mean NO₂ concentrations at the RMS roadside stations in 2016 were 144–165 µg/m³. These values were higher than the highest maximum values for the background stations.
- Annual mean Particulate Matter 10 micrometres or less (PM₁₀)
 - Concentrations at the DPIE stations showed a downward trend, and this was statistically significant at several stations. In recent years the annual mean concentration at these stations has been between 17–19 µg/m³, except at Lindfield where the concentration is substantially lower (around 14 µg/m³). The concentrations at the RMS background stations

appear to have stabilised at around 15 µg/m³. These values can be compared with air quality criterion of 30 µg/m³ and the standard of 25 µg/m³ in the recently varied NEPM.

- Maximum 24-hour PM₁₀
 - Maximum 24-hour PM₁₀ concentrations exhibited a slight downward trend overall, but there was a large amount of variation from year to year. In 2016 the concentrations at the various stations were clustered at around 40 µg/m³.

5.2 Rainfall, soil dryness and wind

Meteorology around the Warringah Freeway is dominated by Sydney Harbour with conditions expected to be representative of coastal areas along the east coast of NSW.

Climatic information for the region around the Warringah Freeway was extracted from the BOM data set for the Sydney (Observatory Hill) (site number 066062). A summary of the temperature and rainfall data is shown below in **Table 5-1** with wind roses from the two closest BOM stations presented as **Figure 5-1**.

Table 5-1 Observatory Hill (site number 066062) Temperature and Rainfall Data

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean daily maximum temperature (°C)												
26	25.8	24.8	22.5	19.5	17	16.4	17.9	20.1	22.2	23.7	25.2	21.8
Mean daily minimum temperature (°C)												
18.8	18.8	17.6	14.7	11.6	9.3	8.1	9	11.1	13.6	15.7	17.6	13.8
Mean monthly rainfall (mm)												
101.7	117.5	130.8	128.5	118.6	133.2	96.6	80.7	67.9	76.4	83.6	77.5	1216
Mean rain days per month (number)												
8.6	9	9.8	9	8.6	8.7	7.5	7.2	7.2	7.9	8.4	8	99.9

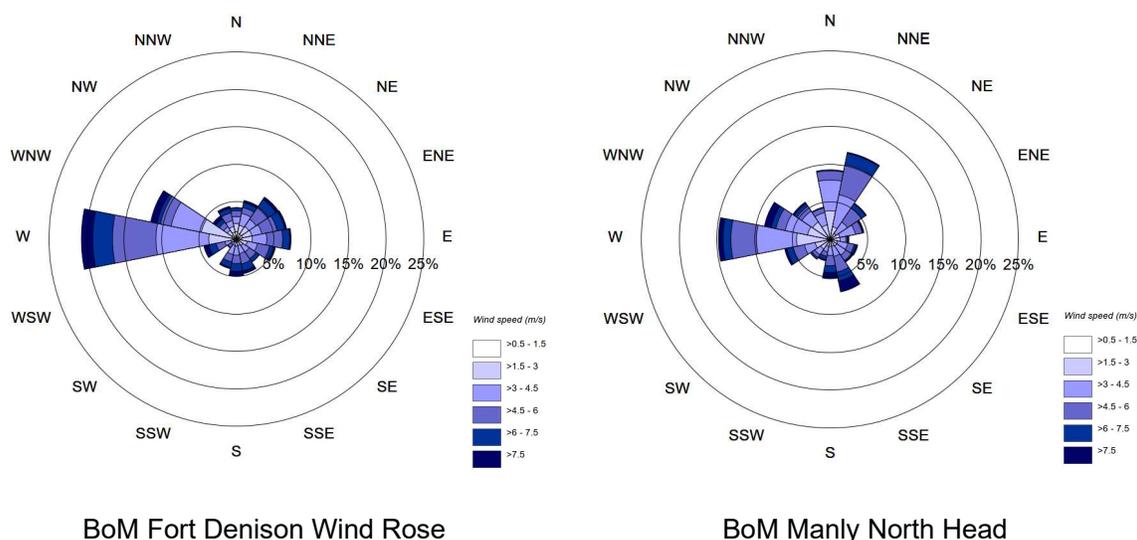


Figure 5-1 Fort Denison and Manly Meteorological Data, 2016

Meteorological patterns in the Warringah Freeway area are influenced by typical Sydney harbour coastal sea breeze patterns, with westerly winds dominating with a lesser degree of easterly and north-easterly winds noted at the Fort Denison and North Head meteorological stations.

From a construction dust perspective, the meteorological data that is most relevant is the wind speed and temperature. Periods of higher wind speeds and hot, dry temperatures are the periods when dust emissions may be exacerbated by meteorological conditions. During these periods, extra attention on the dust mitigation measures should be paid to reduce the potential for dust migration from construction works.

6 Environmental aspects and impacts

6.1 Construction activities

Emissions to the atmosphere during construction that could result in adverse impacts to air quality are typically divided into two categories. These are:

- Dust and particulates
- Gaseous.

Key construction activities that could result in dust emissions include:

- General earthworks particularly during site establishment
- Vegetation clearing and grubbing
- Demolition of existing kerbs, structures and pavements
- Pavement construction
- Preparation of road subgrade and grade
- Spray-painting of the road for line marking
- Drainage works and relocation of utilities
- Bridge preparation and installation
- Installation of road furniture, lighting and signage
- Topsoil / material handling including stockpiling, material loading and material haulage
- Vehicular movements over unpaved surface (including unsealed access roads)
- Wind erosion of exposed areas and temporary stockpiles
- Tracking of dirt onto roads.
- Construction of noise barriers and retaining walls.

Gaseous emissions which may be generated by construction activities include:

- Vehicle and plant exhaust emissions, which may be excessive if vehicles and plant are poorly maintained
- Odours/gases released during:
 - Excavations of organic or contaminated materials
 - During sealing works
 - Operation of concrete / asphalt batching plants.
 - Road line making.

Refer also to the Aspects and Impacts Register included in Appendix A2 of the CEMP.

6.2 Factors likely to affect dust generation and impacts

In addition to the inherent risks of construction activities creating the potential to generate dust, several environment factors have the potential to affect the likelihood of dust emissions. These include:

- Wind direction – determines whether dust and suspended particles are transported in the direction of sensitive receivers

- Wind speed – governs the potential suspension and drift resistance of particles
- Soil type – more erodible soil types have an increased soil or dust erosion potential
- Soil moisture – increased soil moisture reduces soil or dust erosion potential
- Rainfall or dew – rainfall or heavy dew that wets the surface of the soil and reduces the risk of dust generation
- Evaporation – dries out the surface of the soil and leads to increased risk of dust generation
- Exposed surfaces – during construction, non-vegetated surfaces will be exposed prior to revegetation, which is a key factor influencing dust emissions.

6.3 Air quality impacts arising from construction

Air quality impacts during construction of the Warringah Freeway Upgrade would generally include potential increases in dust and combustion emissions during construction activities such as earthworks, bridgeworks, construction of retaining walls, noise walls and storm water drainage. The potential for impacts on air quality will depend on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction may include:

- Temporary increase in air emissions from dust and products of combustion (from equipment operations)
- Temporary increased windborne dust emanating from disturbed/exposed surfaces
- Increased dust and debris arising from haulage of materials during construction
- Deposition of dust on surfaces where it may cause damage and/or lead to a need for increased cleaning or repair
- Aesthetic effects that arise from visible airborne dust plumes and deposits of dust on surfaces
- Need for increased maintenance of air filtering systems (e.g. air conditioners, etc.)
- Potential adverse health effects including eye, nose and throat irritation from excessive inhalation of fine particles
- Impacts on water quality and/or vegetation health from dust deposition
- Impacts on residential sensitive receivers, including impacts on living areas, swimming pools and general amenities
- Complaints from the public relating to dust or odours.

Some impacts on air quality attributable to the Project are anticipated and have been described in the EIS. Section 7 provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

6.4 Cumulative impacts

Potential cumulative impacts associated with the construction of the Project (being both Western Harbour Tunnel and Warringah Freeway Upgrade) were presented and assessed in Chapter 27 of the EIS and Appendix A2 of the CEMP. The assessment concluded that in all locations associated with the construction of the Project, cumulative impacts to air quality were considered to be negligible.

7 Environmental mitigation and management measures

Specific measures and requirements to meet the objectives of this AQMP and to address impacts on air quality are outlined in **Table 7-1**.

Table 7-1 Air quality management and mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ1	Install perimeter screening around all site and ancillary facilities. Shade cloth (or similar) is to be used to minimise dust migration.	Shade cloth Plyboard	Pre-Construction	Project Manager Foreman Engineer	Best Practice ¹	Construction area plans/designs Environmental Inspection Checklist
MMAQ2	Implement the following strategies to minimise air emissions from off road diesel equipment and plant: <ul style="list-style-type: none"> • Undertake routine servicing and maintenance of plant and equipment in accordance with manufacturer specifications • Chemical/fuel storage tanks will be fitted with a conservation vent (to prevent air inflow and vapour escape until a pre-set vacuum or pressure develops) • Switch off equipment not in use for extended periods Aim to achieve compliance with mobile non-road diesel plant and equipment used for cConstruction with the relevant United States Environmental Protection Agency, European Union (EU) standards or	Procurement strategy includes low emission plant	Pre-Construction	Foreman Plant Operators Construction Environmental Manager	Best Practice	Environmental Inspection Checklist Plant and equipment records
		Modelled trends for analysis of air quality data to set goals and objectives using a S.M.A.R.T. approach.	Construction	Construction Environmental Manager	Air Quality Monitoring Program Appendix A Section 3.2.2.	Air quality modelling
		Modelling and measurement using a S.M.A.R.T. approach of air quality performance in	Construction	Construction Environmental Manager	Air Quality Monitoring Program	ISCA Credit Summary Form

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
	approved equivalent emission standards.	accordance with Infrastructure Sustainability Council of Australia (ISCA) requirements for the Project.			Appendix A Section 3.2.2.	
MMAQ3	Liaison and coordination measures will be established with the proponents of other major construction projects within 500 metres of the Project, to minimise and manage potential cumulative construction dust impacts. Measures may include scheduling of construction activities and construction deliveries, coordinated monitoring and data sharing, cooperation in the event of cumulative dust complaints, and coordination of engagement with potentially affected receivers.	Coordination meetings Communication Strategy	Pre-Construction Construction	Construction Environmental Manager Engineer	EIS Appendix H Table 9-1	Meeting minutes Monthly Report
MMAQ4	Vegetation clearing will be staged where possible to minimise the area and time that surfaces are exposed.	N/A	Pre-Construction Construction	Project Manager Foreman Engineer	Best Practice ¹	Construction area plans/ designs Environmental Inspection Checklist

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ5	Apply wheel-wash or rumble grid facilities at access points to limit the tracking of materials beyond the site boundary.	Wheel wash Rumble grids	Construction	Project Manager Foreman Engineer	EIS Appendix H Table 9-1	Construction area plans/ designs Environmental Inspection Checklist
MMAQ6	Impose 10km/hr maximum-speed-limit across all site haulage routes and adhere to speeds limits within compound sites to limit the generation of dust from vehicle movements.	On-site speed signs	Construction	Project Manager Foreman Engineer	Best Practice ¹	Environmental Inspection Checklist Toolbox talks
MMAQ7	Compact or seal compound area surfaces to limit the potential for dust generation.	Chip seal, concrete, asphalt and soil binders as applicable	Pre-Construction Construction	Project Manager Foreman Engineer	Best Practice ¹	Environmental Inspection Checklist
MMAQ8	Regularly water exposed areas, disturbed areas and stockpiles and limit the amount of materials stockpiled around the site.	Water carts Wetting systems Geofabrics/ plastics	Construction	Foreman Engineer	EIS Appendix H Table 9-1	Environmental Inspection Checklist
MMAQ9	Limit stockpiling activities and other dust generating activities during conditions where winds are blowing strongly towards nearby receivers.	Weather station Wind alerts	Construction	Foreman Engineer	EIS Appendix H Table 9-1	Environmental Inspection Checklist Foreman's Diary

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ10	Ensure that all loads with the potential to produce dust or gaseous emissions are covered when materials are being transported to and from site.	Dust screens / covers on trucks	Construction	Foreman Engineer	Best Practice ¹	Environmental Inspection Checklist
MMAQ11	Wherever possible, position internal haulage routes away from surrounding receivers.	N/A	Construction	Engineer Construction Environment Manager	Best Practice ¹	Construction area plans/ designs Site Environment Plan
MMAQ12	Regularly water exposed and disturbed areas especially during hot, dry and windy weather conditions and as determined necessary by real time environmental monitoring and site observations	Water carts Wetting systems Real-time Environmental Monitoring Equipment	Construction	Foreman Engineer	EIS Appendix H Table 9-1	Environmental Inspection Checklist Daily Observations Real-time air quality monitoring
MMAQ13	Wherever possible, minimise the extent of disturbed and exposed surfaces, and restore as soon as possible. Ensure that any material exposed areas are stabilised during project shutdown periods to prevent dust mobilising and settling on adjacent roads and property.	Soil binders	Construction	Construction Environmental Manager Foreman	EIS Appendix H Table 9-1 Best practice ¹	Environmental Inspection Checklist

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ14	Adjust the intensity of activities based on measured dust levels, weather forecasts and the proximity of and direction of the works in relation to the nearest surrounding receivers.	Weather forecasts Dust monitoring Real-time Environmental Monitoring Equipment	Construction	Construction Environment Manager Foreman	Best Practice ¹	Dust deposition monitoring reports Trigger-level alerts from real-time air quality monitoring equipment
MMAQ15	Reasonable and feasible dust suppression and/or management measures, including the use of water carts, dust sweepers, sprinklers, stabilisation of exposed areas or stockpiles, and surface treatments will be implemented. Optimum management measures for each specific task will be identified when preparing EWMS	Water carts Wetting systems Soil binder Wheel-wash or rumble grid facilities	Construction	Project Manager Foreman Engineer	EIS Appendix H Table 9-1 <i>RMS Stockpile Site Management Guidelines</i>	Environmental Inspection Checklist Erosion & Sediment Control Plans EWMS
MMAQ16	Dust and air quality complaints will be managed in accordance with the overarching complaints handling process for the project. Appropriate corrective actions will be taken to reduce emissions in a timely manner.	Complaints management system	Construction	Construction Environmental Manager	Section 8.7 EIS Appendix H Table 9-1	Environmental Inspection Checklist

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ17	Site inspections will be carried out to monitor compliance with implemented measures.	Environment personnel	Construction	Construction Environmental Manager Foreman	EIS Appendix H Table 9-1	Environmental Inspection Checklist
MMAQ18	Internal project communication protocols will be developed and implemented to help ensure dust-generating activities in the same area are coordinated to manage potential cumulative dust impacts.	Environment personnel	Construction	Construction Environmental Manager	EIS Appendix H Table 9-1	Toolbox talks Site Environment Plan
MMAQ19	Construction equipment and/or materials handling techniques that minimise the potential for dust generation will be identified and implemented. Optimum management measures for each specific task will be identified when preparing EWMS	Applicable plant and equipment Environmental personnel and construction workers	Construction	Construction Environmental Manager Foreman	EIS Appendix H Table 9-1	Environmental Inspection Checklist Site Induction Onsite training Toolbox and Prestart records Site Work Packs EWMS
MMAQ20	In the event of uncovering odorous material, or detection of nuisance odours (nuisance to workers or confirmed beyond boundaries), investigate and implement any necessary management measures identified in the investigation process.	Odour suppressants	Construction	Construction Environmental Manager Project Manager Foreman	Best Practice	Environmental Inspection Checklist

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
MMAQ21	Stockpiles will be located as far away from residences and other sensitive receivers as possible and maintained in accordance with <i>RMS Stockpile Site Management Guidelines</i> .	Site Environment Plan Geotextile Soil binder Hydroseed	Construction	Project Manager Foreman	Best Practice ¹ <i>RMS Stockpile Site Management Guidelines</i>	Environmental Inspection Checklist Erosion and Sediment Control Plans
MMAQ22	No burning of any timbers or other combustible materials must occur on site.	Environment personnel	Construction	Project Manager Foreman	Best Practice ¹	Weekly Environmental Inspection Checklist
MMAQ23	Temporary stabilisation of disturbed areas to occur as soon as possible and no longer than within one week.	Soil binders Geofabrics	Construction	Project Manager Foreman	Best Practice ¹	Weekly Environmental Inspection Checklist
MMAQ24	Work activities must be reviewed if management measures are not adequately restricting dust generation.	Environment personnel	Construction	Project Manager Foreman	Best Practice ¹	Weekly Environmental Inspection Checklist

¹ Best practice measures consistent with *Guidance on the assessment of dust from demolition and construction, February 2014, UK Institute of Air Quality Management*

8 Compliance management

8.1 Roles and responsibilities

The CPB Downer JV project team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 7 of this AQMP.

8.2 Training

All employees, contractors and utility staff working on site will undergo site induction training relating to air quality management issues. The induction training will address elements related to air quality management including:

- Existence and requirements of this AQMP
- Relevant legislation and guidelines
- Roles and responsibilities in relation to air quality management
- Incident response, management and reporting
- Air quality mitigation and management measures
- Community complaints response and reporting
- Specific responsibilities to minimise air quality impacts on sensitive receptors.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in air quality management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

8.3 Monitoring and inspection

Monitoring and inspection requirements are outlined in **Table 8-1** and **Appendix A Section 5.2** (Air Quality Monitoring Program).

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

Table 8-1 Monitoring and inspection

Monitoring details	Location	Record	Responsibility	Frequency
PM10 and PM2.5 monitoring at fixed, and activities based locations.	All	Data summary tables from monitoring undertaken	Construction Environmental Manager	Real-time and activities based
Meteorological data including daily rainfall, hourly temperature, relative humidity, wind (direction and speed) and barometric pressure.	All	Onsite monitoring station at Warringah Freeway construction compound Daily rainfall records from closest BOM or DPIE station	Construction Environmental Manager	Daily
Monitor the NSW Office of Environment & Heritage (OEH) Air Quality Index (http://www.environment.nsw.gov.au/AQMS/aqi.htm) for the latest air quality forecast in the region of the works or any air quality alerts in place. If air quality in the region is poor, investigate options to avoid, reduce or minimise work activities and sources of dust generation which could contribute to further degradation of regional air quality.	All	Air Quality Concentrations	Construction Environmental Manager	Daily
Visual observations during daily site inspections to ascertain the effectiveness of implemented controls, including any observed dust plumes originating from the work site and/or activities observed outside of the Project that may impact on dust levels near sensitive receivers.	All	Strong Wind Work Modification Record, where wind in excess of 40km/h Complaints records	Construction Environmental Manager Foreman	Daily
In addition to the fixed location monitoring at construction boundaries, a site specific activities-	All	Inspection / monitoring records	Construction Environmental Manager	As required

Monitoring details	Location	Record	Responsibility	Frequency
<p>based monitoring of air quality will also be undertaken at sensitive receivers and/or designated locations. Particulate matter (PM10 and/or PM2.5) will be monitored using a hand-held device. Data will be collected using a light-scattering laser photometer used in real-time for aerosol mass readings (e.g. using a TSI DustTrak 8532 or similar). The mobile device will be used for regular, attended monitoring of PM10 (or PM2.5) over a fixed period (e.g. 15-minutes). Activity-based monitoring will generally be conducted at the nearest downwind sensitive receiver during applicable works (construction works with potential air quality impacts).</p> <p>This type of monitoring enables flexible and responsive monitoring options to assess risks and impacts and in response to events (e.g. adverse weather, a complaint or detection of exceedances at fixed locations). By assessing the same parameter as the fixed location monitoring devices using a comparable technique, direct data comparison will be possible and may aid in data analysis and risk assessment.</p>				

8.4 Licences and permits

Air quality management will be undertaken in accordance with the Project EPL for the scheduled activity “road construction” that prescribes stipulated air quality requirements are addressed through the implementation of the environmental control measures.

8.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Sub-plan, MCoA and other relevant approvals, licences and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.6 Reporting

Reporting requirements and responsibilities are documented in Section 3.9.4 and 3.9.5 of the CEMP. Additional reporting will also be generated as required in assessment documents and the Air Quality and Odour Monitoring Program.

Specific reports prepared in response to air quality will include:

- Six monthly compliance reports during construction will be submitted to DPIE and EPA within 30 days of the reporting period unless otherwise agreed with DPIE.

8.7 Complaints

Community feedback and complaints relating to local air quality will be managed in accordance with Section 3.7.5 of the CEMP the complaints management / handling process.

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this AQMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

Additional details on continuous improvement processes are provided in Section 3.12 of the CEMP (Management Review).

9.2 AQMP update and amendment

The process by which this Sub-plan will be reviewed and revised is described in Section 3.13 of the CEMP. This will occur as needed.

Only the Construction Environmental Manager, or delegate, has the authority to change any of the environmental management documentation.

As referenced in Table 3-1, this plan will be reviewed by the approved ER in accordance with CoA A27 to ensure it remains consistent with the requirements under the NSW Minister's Conditions of Approval

Minor amendments to this AQMP will be reviewed and approved by the ER prior to being implemented for the duration of construction as required by MCoA condition C10.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure (refer to Section 3.11.2 of the CEMP).

Appendix A Air Quality Monitoring Program

Appendix A

Air Quality Monitoring Program

Western Harbour Tunnel and Warringah Freeway Upgrade

SSI-8863

Stage 2 – Warringah Freeway Upgrade

January 2022

WHTBLWFU-CPBD-NWW-AH-PRG-000002-1

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Rev	Date	Description	Approval
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D	11/11/21	Updated based on ER comments	
0	16/11/21	Endorsed by ER and submission to DPI&E	
1	28/01/22	Updated based on DPIE comments received	

Distribution of controlled copies

This Air Quality Monitoring Program as part of the Air Quality Management Plan is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the Air Quality Monitoring Program as part of the Air Quality Management Plan and supporting documentation will be maintained by the Quality Manager at the Project office and on the project website.

Copy number	Issued to	Version

Glossary/ Abbreviations

Abbreviations	Expanded Text
AQMP	Air Quality Management Sub-plan
BoM	Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CPB Downer JV	CPB Downer Joint Venture
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPL	Environment Protection Licence
MCoA	NSW Minister's Conditions of Approval
Project, the	Warringah Freeway Upgrade
REMM	Revised Environmental Management Measures
TfNSW	Transport for New South Wales
TARP	Trigger Action Response Plan
WFU	Warringah Freeway Upgrade Stage 2

1 Introduction

1.1 Context

This Air Quality Monitoring Program (or Program) has been prepared for the design and construction of the Warringah Freeway Upgrade Project (the Project). This Program forms **Appendix A** of the Air Quality Management Sub-plan (AQMP).

The Program addresses the requirements of the Minister's Conditions of Approval (MCoA), the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (EIS), and the Revised Environmental Management Measures (REMM) listed in the Western Harbour Tunnel and Warringah Freeway Upgrade Submissions Report.

In accordance with the Staging Report, Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863) (October 2021, Revision 1), this Plan is applicable to Stage 2 works.

1.2 Scope of the Monitoring Program

The scope of this Program is to describe how CPB Downer Joint Venture (CPB Downer JV) proposes to monitor dust impacts during construction of the Project. Operational monitoring and operation measures do not fall within the scope of the construction phase and therefore are not included within this Program.

The requirement to prepare an Air Quality Monitoring Programs is required by CoA C11(b).

Note: Odour monitoring is not deemed necessary as part of the WFU scope of works noting that the EIS only identifies potential construction related odour impacts generated during the dredging, handling and management of harbour sediments within Sydney Harbour and at the White Bay construction support site (WHT3) which are specific to the Western Harbour Tunnel scope of works (EIS Chapter 12 "Air Quality" sections 12.2.1, 12.2.2 "Odour Assessment", 12.5, 12.5.4).

2 Purpose and objectives

2.1 Purpose

The purpose of this Program is to describe how the CPB Downer JV propose to monitor dust impacts during construction of the Project.

The Program will be implemented to monitor the effectiveness of mitigation measures applied during the construction phase of the Project. Monitoring of dust will be undertaken to identify potential impacts and ensure an appropriate management regime can be implemented to address those impacts.

This Program provides details of the dust monitoring network, frequency of monitoring, and test parameters. This Program supplements the AQMP, which is an appendix of the Construction Environmental Management Plan (CEMP).

2.2 Objectives

The key objectives of this Program are to ensure all MCoAs, REMMs, and licence/permit requirements relating to dust monitoring are described, scheduled, and assigned responsibility as outlined in:

- The EIS prepared for Warringah Freeway Upgrade
- The Submissions Report prepared for Warringah Freeway Upgrade
- Conditions of Approval granted to the Project on 21 January 2021
- RMS specifications G36, G38 and G40
- The Project's Environment Protection Licence (EPL)
- All relevant legislation and other requirements described in Section 3 of the AQMP.

Furthermore, the CPB Downer JV will aim to meet the performance outcomes from the EIS (Chapter 28, Table 28-4) as required by MCoA C2(d)(i). Relevant performance outcomes are detailed in **Table 2-1** including a cross reference to indicate how the matter is addressed in this Sub-plan.

Table 2-1 Performance Outcomes Identified in the EIS Relevant to this Sub-plan

Performance Outcome	How Addressed	Records
The project is designed, constructed and operated in a manner that minimises air quality impacts (including nuisance, dust and odour) to minimise risks to human health and the environment to the greatest extent.	Impacts on air quality, including nuisance, dust and odour will be minimised through the implementation of management and mitigation measures detailed in Section 7 of this Sub-plan.	Environmental Inspection Checklists Foreman's Diary Site Environment Plan

2.3 Consultation

This Program will be provided to the NSW Environment Protection Authority (EPA) as part of the Air Quality Management Plan (AQMP) in accordance with CoA C11(b). Refer to Section 2 of the CEMP for the consultation requirements relating to the CEMP and all sub-plans.

Ongoing consultation with relevant councils (North Sydney Council, Willoughby Council) and other stakeholders, including any unique local receivers (e.g. residents and schools), may be undertaken for particular issues pertaining to the Project's impact on local air quality. Community feedback and complaints relating to local air quality will be managed in accordance with the Communication Strategy and Complaints Management System.

3 Construction Dust Monitoring

3.1 Baseline Monitoring

Baseline monitoring data for construction air borne dust was not undertaken on the Project during the EIS. Additionally, a review of the EPA's Sydney air quality monitoring stations identified that the EPA do not measure construction dust impacts as part of their air quality monitoring program.

As the proposed monitoring method (see Section 3.2 below) uses established air quality goals, a separate baseline data collection period is not required to establish triggers.

3.2 Construction Monitoring

3.2.1 Overview

Particulate matter (PM10 and PM2.5) will be monitored continuously at fixed locations shown in **Table 4.1** and **Figure 4.1**.

In addition to the fixed location monitoring at construction boundaries, activities-based monitoring of air quality will also be undertaken at sensitive receivers and/or designated locations.

3.2.2 Performance Criteria

Project performance criteria for fixed monitoring locations and activities-based monitoring referred to in **Table 3.1** were adopted from the 24-hour National Environment Protection Council (NEPC) standards. This provides a conservative approach and adherence to these goals over shorter periods of measurement to ensure compliance with these standards. The recommended air quality standards for PM10 and PM2.5 are 50 µg/m³ and 25 µg/m³ respectively over a 24-hour exposure period and these have been adopted for use over shorter averaging periods.

Table 3.1: Performance criteria for monitoring program

Monitoring type	PM10 µm diameter	PM2.5 µm diameter	Averaging Period
Fixed location monitoring (real-time)	50 µg/m ³	25 µg/m ³	1 hour
Activities based monitoring and monitoring conducted in response to complaints or as directed by EPA	50 µg/m ³	25 µg/m ³	15 minute

* Total impact i.e. concentrations due to the Project plus background concentrations due to other sources

The Project is located in an urban environment, and in the absence of background / baseline data, there is a potential that existing ambient dust levels may already exceed the criterion listed in **Table 3.1**.

If an exceedance is identified against criteria in **Table 3.1**, a management response will be triggered. Details of management responses are detailed in Section 4.2. It is noted that criteria for PM10 and PM2.5 will likely be exceeded when there is no impact from construction (based on the existing environment described in the EIS). The PM2.5 criteria is particularly sensitive to temporal fluctuations and will likely be exceeded frequently. An emphasis will be placed on the management

of PM10 exceedances and criteria will be reviewed at 6-monthly intervals in accordance with **Table 5.2**.

Air quality data will be analysed in conjunction with construction activities and opportunities for improvement implemented where reasonable and feasible. Improvement opportunities for air quality management may be achieved by setting goals and/or objectives that are Specific, Measurable, Achievable, Relevant and Time-bound (S.M.A.R.T.). The project will adopt a S.M.A.R.T. approach as a well-established tool to assist in achieving air quality goals and objectives within manageable timeframes.

Modelling and measurement of air quality performance in accordance with Infrastructure Sustainability Council of Australia (ISCA) requirements for the Project will also be undertaken by adopting a S.M.A.R.T. approach.

4 Monitoring Methodology / Sampling Protocol

4.1 Fixed and Activities-based Monitoring

4.1.1. Fixed Location Monitoring

Particulate matter (PM10 and/or PM2.5) will be monitored continuously at a location at the boundary of the Cammeray Golf Course Ancillary Facility (WFU8) as identified in **Table 4.1** and shown in **Figure 4.1**.

Data will be collected using a single-channel, light-scattering laser photometer used in real-time for aerosol mass readings (e.g. SiteHive or similar). The monitoring device will use a sheath air system that isolates the aerosol in the optics chamber to keep the optics clean for reliability.

Table 4.1: Indicative fixed location monitoring proposed locations

Fixed monitoring location ID	Easting	Northing
Cammeray Golf Course Ancillary Facility (WFU8)	334747	6255822

Fixed monitoring has been chosen initially at this location due to the relatively intense, long-term construction and bulk earthwork activities being undertaken at or adjacent to this site and the relatively close distance to sensitive receivers listed with a medium or high sensitivity residential locations.

The device will be sited in consideration of the factors described in AS/NZS 3580.1.1 (Methods for sampling and analysis of ambient air – guide to siting air monitoring equipment). Other constraints (security, access to power/communications and proximity to structure including trees) may also impact actual location. As such, the actual location for the monitoring devices may vary from the indicative locations (+/- 50metres) due to these additional considerations for installation.

4.1.2. Activities Based Monitoring

In addition to the fixed location monitoring at Cammeray Golf Course, activities-based monitoring of air quality will also be undertaken at other sensitive receiver / designated construction locations along the construction corridor to monitor shorter duration activities with the potential to produce dust

Particulate matter (PM10 and/or PM2.5) will be monitored using a hand-held device. Data will be collected using a light-scattering laser photometer used in real-time for aerosol mass readings (e.g. using a TSI DustTrak 8532 or similar). The mobile device will be used for regular, attended monitoring of PM10 (or PM2.5) over a fixed period (e.g. 15-minutes). Activity-based monitoring will generally be conducted at the nearest downwind sensitive receiver, during applicable works (construction works with potential air quality impacts).

This type of monitoring enables flexible and responsive monitoring options to assess risks and impacts on both a regular basis (e.g. monthly at nearest downwind sensitive receiver) and in response to events (e.g. adverse weather, a complaint or detection of exceedances at fixed locations). By assessing the same parameter as the fixed location monitoring device using a comparable technique, direct data comparison will be possible and may aid in data analysis and risk assessment.

4.1.3. Monitoring frequency and data collection

Monitoring data from fixed locations will be collected and logged in real-time and supplemented with rolling and cumulative averages. Graphical reporting along with visual representation of trigger/response values, with automated alarm process will enable efficient and effective data interrogation (including trend analysis) and enable timely proactive and reactive management to occur.

Monitoring data from activities-based monitoring devices will be recorded for the monitoring period and analysed immediately in the field, prior to upload to the monitoring register (also noting meteorological parameters such as up-wind/down-wind). Activities-based monitoring will be undertaken at the commencement of new activities and at the frequencies specified in **Table 4.2** at the closest accessible down-wind sensitive receiver. Monitoring will only take place during activities which are identified as having the potential to impact air quality (e.g. earthworks). These activities are outlined in Section 5.1 of the Air Quality and Odour CEMP Sub-plan.

Table 4.2: Monitoring frequencies of fixed and activities-based monitoring

Type of monitoring	Frequency	Equipment ²
Fixed location monitoring	Continuous	Fixed location device (e.g. SiteHive Hexanode)
Activities based monitoring	As required in response to adverse weather events, other detections, complaints or as directed by EPA	Handheld / mobile device (e.g. TSI DustTrak 8532)

4.2 Data analysis and management response

Results obtained during the Monitoring Program will be compared against the values listed in **Table 3.1**. If an exceedance is identified, a Trigger Action Response Plan review will be triggered (see **Table 5.2**).

The review will assess:

- Data related to the exceedance, monitoring location and other project data (trending, rolling averages, nearby monitoring locations);
- Regional air quality data (from BoM and EPA air quality stations nearby)
- Recent meteorological data;
- Project activities including works and Environmental Management Controls (**Table 7-1** of Air Quality and Odour CEMP Sub-plan) in place at the time.
- Other (non-project) activities that may influence monitoring results (unrelated works or events such as fires)

If the exceedance is determined to be attributable to Project works, the event will be treated as an environmental incident and managed in accordance with the requirements of the CEMP, and corrective and preventative actions will be identified and implemented.

4.3 Quality Assurance and documentation

The use of fixed location, real time monitoring systems supplemented with activities-based monitoring provides accurate data appropriate for construction air quality monitoring purposes. The systems will be operated in compliance with the manufacturer's manual, including siting, use,

maintenance, and calibration. The Environmental and Sustainability Manager will be responsible for procuring appropriate equipment, maintenance, and calibration services. All personnel participating in measurement, data analysis or field maintenance activities will be trained in the use of equipment and appropriate data handling techniques.

QA/QC maintenance and calibration will be undertaken in accordance with manufacturers guidelines. As a minimum, equipment will be maintained at calibrated by approved facilities at least annually. Field maintenance will be performed by trained project personnel and at minimum will include zero calibration of handheld devices before each use. Trained personnel will also schedule and complete regular comparative checks with each fixed unit (i.e. using a handheld monitor in proximity to fixed devices) to assess data. All monitoring devices will be subject to quality assurance protocols as per OEM and calibration records will be maintained in accordance with the appropriate standards.

Figure 4.1: Map of fixed monitoring location (Cammeray Golf Course Ancillary Facility)



5 Compliance Management

5.1 Roles, responsibility, and training

The CPB Downer JV Project Team’s organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed Section 7 of the AQMP.

All employees, contractors and utility staff working on site will undergo site induction and targeted training relating to air quality controls.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

5.2 Monitoring and inspection

This Program details the monitoring requirements for dust monitoring. **Table 5.1** lists the specific monitoring requirements which are also shown in Table 8-1 of the AQMP.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

Table 5.1: Monitoring and inspection

Monitoring details	Location	Record	Responsibility	Frequency
PM10 and PM2.5 monitoring at fixed, and activities based locations proximal to selected potentially affected residential receptors.	All	Data summary tables from monitoring undertaken	Construction Environmental Manager	Real-time and activities based
Meteorological data including daily rainfall, hourly temperature, relative humidity, wind (direction and speed) and barometric pressure.	All	Onsite monitoring station at Warringah Freeway construction compound Daily rainfall records from closest BOM or DPIE station	Construction Environmental Manager	Daily
Monitor the NSW Office of Environment & Heritage (OEH) Air Quality Index (http://www.environment.nsw.gov.au/AQMS/aqi.htm) for the latest air quality forecast in the region of the works or any air quality alerts in place. If air quality in the region is poor, investigate options to avoid, reduce or minimise work activities	All	Air Quality Concentrations	Construction Environmental Manager	Daily

Monitoring details	Location	Record	Responsibility	Frequency
and sources of dust generation which could contribute to further degradation of regional air quality.				
Visual observations during daily site inspections to ascertain the effectiveness of implemented controls, including any observed dust plumes or odours originating from the work site and/or activities observed outside of the Project that may impact on dust levels near sensitive receivers.	All	Strong Wind Work Modification Record, where wind in excess of 40km/h Complaints records	Construction Environmental Manager Foreman	Daily
<p>In addition to the fixed location monitoring at construction boundaries, a site specific activities-based monitoring of air quality will also be undertaken at sensitive receivers and/or designated locations. Particulate matter (PM10 and/or PM2.5) will be monitored using a hand-held device. Data will be collected using a light-scattering laser photometer used in real-time for aerosol mass readings (e.g. using a TSI DustTrak 8532 or similar). The mobile device will be used for regular, attended monitoring of PM10 (or PM2.5) over a fixed period (e.g. 15-minutes). Activity-based monitoring will generally be conducted at the nearest downwind sensitive receiver during applicable works (construction works with potential air quality impacts).</p> <p>This type of monitoring enables flexible and responsive monitoring options to assess risks and impacts and in response to events (e.g. adverse weather, a complaint or detection of exceedances at fixed locations). By assessing the same parameter as the fixed location monitoring devices using a comparable technique, direct data comparison will be possible and may aid in data analysis and risk assessment.</p>	All	Inspection / monitoring records	Construction Environmental Manager	As required

5.2.1. Trigger Action Response Plan

A Trigger Action Response Plan (TARP) has been developed for implementation with this Monitoring Program and is detailed in Error! Reference source not found.. If any monitoring criteria are exceeded, the Environmental and Sustainability Manager will be informed and supervise the implementation of the TARP.

Table 5.2: Trigger Action Response Plan

	Category	Level	Actions
Triggers	PM_{2.5}	Within goal of 25 µg/m ³	Inspections and monitoring to continue as scheduled
		Exceeds 25 µg/m ³	<p>Immediately conduct PM₁₀ monitoring at the location and confirm exceedance.</p> <p>If PM₁₀ monitoring is compliant, note exceedance of PM_{2.5} and schedule additional monitoring within 1 week if works are continuing</p> <p>If PM₁₀ monitoring exceeds goals, complete data analysis and review and identify possible contributing factors by:</p> <ul style="list-style-type: none"> ▪ Targeted inspection of construction activities that are potentially responsible ▪ Increased monitoring (e.g. supplement data with additional activities-based monitoring). ▪ Review implementation of management control measures <p>If the exceedance is likely to be attributable to Project activities, report and manage the exceedance as an incident or non-conformance including notifications and appropriate response management.</p>
	PM₁₀	Within goal of 50 µg/m ³	Inspections and monitoring to continue as scheduled
		Exceeds 50 µg/m ³	<p>Complete data analysis and review and identify possible contributing factors by:</p> <ul style="list-style-type: none"> ▪ Targeted inspection of construction activities that are potentially responsible ▪ Increase monitoring (e.g. supplement data with additional activities based monitoring). ▪ Review implementation of management measures <p>If the exceedance is likely to be attributable to Project activities, report and manage the exceedance as an incident including notifications and appropriate response management.</p>
	Odour	Odour detection at site boundary during inspection	<p>Identify possible source.</p> <p>Establish if odour is related to construction activities:</p> <p>Review mitigation measures in place and assess implementation.</p> <p>Assess further controls that can be implemented, this may include:</p> <ul style="list-style-type: none"> ▪ Use of deodorisers ▪ Remove and/or cover odorous materials <p>If an offensive odour is present and is likely to be attributable to Project activities, report and manage the exceedance as an incident or non-conformance including notifications and appropriate response management.</p>

5.3

5.3 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Program, MCoA and other relevant approvals, licences and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

5.4 Reporting

During construction, dust monitoring data will be collected, tabulated, assessed and summarised in an Air Quality Monitoring Report (**Table 5.3**). Monitoring reports will be submitted to DPIE and EPA within 30 days of the reporting period unless otherwise agreed with DPIE.

Table 5.3: Reporting requirements

Report	Frequency	Content	When	Reporting Authority
Air Quality Monitoring Report	Six monthly	Data summary tables from monitoring undertaken in reporting period Exceedances Management responses to any exceedances which may have occurred during reporting period	Within 30 days of end of reporting period	DPIE

Appendix B Consultation Report

CoA A5 Consultation Report Air Quality and Odour Sub-Plan

Western Harbour Tunnel and Warringah
Freeway Upgrade

SSI-8863

Stage 2 - Warringah Freeway Upgrade

Transport for New South Wales



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CoA A5 Consultation Summary Report – Air Quality and Odour Sub-Plan

Transport for NSW

Western Harbour Tunnel and Warringah
Freeway Upgrade

Stage 2

November 2021

Rev 0

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Document control

Title	Consultation Report – Air Quality and Odour Sub-Plan
Document No./Ref	

Version control

Revision	Date	Description	Approval
A	2/11/21	Consultation undertaken on AQMP	
B	11/11/21	Amended based on ER comments	
0	16/11/21	Endorsed by ER and submission to DPI&E	

Glossary/Abbreviations

Abbreviation	Expanded text
CEMP	Construction Environmental Management Plan
CoA	NSW Minister for Planning Conditions of Approval
CSSI	Critical State Significant Infrastructure
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
Minister, the	NSW Minister for Planning, Industry and Environment
NML	Noise Management Level
NSC	North Sydney Council
Planning Approval	The Planning Approval includes the Conditions of Approval, the EIS and the Submissions and Preferred Infrastructure Report (SSI-8863)
Proponent, the	Transport for NSW
Project, the	Western Harbour Tunnel and Warringah Freeway Upgrade
RBL	Rating Background Level
REMM	Revised Environmental Mitigation and Management Measure
RtS	Response to Submissions Report
WC	Willoughby Council
WHTBL	Western Harbour Tunnel and Beaches Link
WHTWFU	Western Harbour Tunnel and Warringah Freeway Upgrade
WFU	Warringah Freeway Upgrade Stage 2

1 Introduction

1.1 Background

The Western Harbour Tunnel and Warringah Freeway Upgrade (WHTWUFU) (the project) forms a core component of the broader Western Harbour Tunnel and Beaches Link (WHTBL) program of works. The project comprises two main components:

- A new crossing of Sydney Harbour involving twin tolled motorway tunnels connecting the M4-M5 Link at Rozelle and the Warringah Freeway at North Sydney (the Western Harbour Tunnel)
- Upgrade and integration works along the existing Warringah Freeway, including infrastructure required for connections to the Beaches Link and Gore Hill Freeway Connection project. Reconfiguration works as part of the Warringah Freeway Upgrade would optimise the road corridor and improve the performance of the Sydney Harbour Tunnel, the Sydney Harbour Bridge and the Western Harbour Tunnel.

Due to its importance, the WHTWUFU project was declared to be Critical State Significant Infrastructure (CSSI) by the Minister for Planning and Public Space on 9 November 2020.

On 21 January 2021, the Department of Planning, Industry and Environment (DPIE) approved the construction and operation of the WHTWUFU project (SSI 8863).

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

The WHTWUFU project will be delivered in numerous stages:

- Stage 1 - Early and enabling works:
 - Stage 1A - Critical utility installation, relocation and protection (CUT) (the subject of this Construction Environmental Management Plan (CEMP))
 - Stage 1B - Cammeray Golf Course adjustment works (CGC)
- Stage 2 - Warringah Freeway Upgrade project:
- Stage 3 - Western Harbour Tunnel project (WHT).

Further detail on each stage is provided in the WHTWUFU project Staging Report.

The Air Quality and Odour Sub-Plan applies only to Stage 2 of the project. CPB Downer JV has been appointed by Transport for New South Wales (TfNSW) to deliver the Warringah Freeway Upgrade project.

1.2 Purpose of this Consultation Report

This Consultation Report has been prepared to meet the requirements of the CSSI approval, in particular Condition of Approval (CoA) A5. CoA A5 outlines the requirements for undertaking and documenting consultation undertaken during the preparation of approval documents or monitoring programs required under the relevant CoA for those documents. This Consultation Report has been prepared to consolidate the consultation undertaken during the preparation of the following documents:

- CoA C4(d): Air Quality and Odour Sub-plan
- CoA C11(b): Air Quality (and odour) Monitoring Program

Consultation required during the development of these two documents is detailed in Table 1-1.

Table 1-1 Consultation Requirements

CoA ID	Document	Consultation requirement
C4(d)	Air Quality and Odour Sub-plan	NSW Health and relevant Councils
C11(b)	Air Quality (and odour) Monitoring Program	EPA

Note: Given the Monitoring Program forms Appendix A of the AQMP, the Monitoring Program was also submitted to NSW Health, North Sydney Council and Willoughby Council for review.

1.3 CoA Compliance

This section discusses the compliance of this Consultation Report with the relevant CoA as applicable to consultation required to be undertaken during the development of the AQMP.

Table 1-2 lists the applicable CoA, where and how they have been addressed in this Consultation Report.

Table 1-2 Compliance with applicable CoA

CoA ID	CoA Detail	Where Addressed	How Addressed
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:	Section 1.2 and Appendix 1 to 3	This consultation report identifies each of the stakeholders and agencies consulted in the preparation of this plan (Section 1.2). Full correspondence and documentation exchanged during consultation is found the Appendix 1 to Appendix 4 inclusive.

A5	(a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval;	Section 1.2 and Appendix 1 to 3	<p>Full correspondence and documentation exchanged during consultation is found in Appendix 1 to Appendix 4 inclusive.</p> <p>Each appendix relates to a different stakeholder and agency, thereby ensuring all evidence for each is consolidated in a single appendix. All correspondence is provided in a chronological order.</p>
A5	(b) a log of the dates of engagement or attempted engagement with the identified party;	Section 2 of this Report.	<p>Section 2 includes, by stakeholder and agency, a log of all points of engagement completed or attempted.</p> <p>It also summarises the issues raised by each stakeholder.</p>
A5	(c) documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations;	Section 2 of this Report.	<p>Section 2 includes, by stakeholder and agency, a log of all points of engagement completed or attempted.</p>
A5	(d) outline of the issues raised by the identified party and how they have been addressed; and	Section 2 of this Report and Appendix 1 to Appendix 4 inclusive.	<p>Section 2 identifies all the issues raised during consultation. It provides in tabular format:</p> <ul style="list-style-type: none"> • Issue raised; • Date raised; • How it was addressed or justification as to why it wasn't addressed; <p>Section 2 then provides cross- referencing to the relevant Appendix identifying where evidence of the above is documented in full within this Report.</p> <p><i>Note: Section 2 is broken down into each Stakeholder consulted with, and each has their own table addressing the above.</i></p>

A5	(e) a description of the outstanding issues raised by the identified party and the reasons why they have not been addressed.	Section 2 of this Report and Appendix 1 to Appendix 4 inclusive.	<p>Section 2 identifies all the issues raised during consultation. It provides in tabular format:</p> <ul style="list-style-type: none"> • Issue raised; • Date raised; • How it was addressed or justification as to why it wasn't addressed. <p><i>Note: Section 2 is broken down into each Stakeholder consulted with, and each has their own table addressing the above.</i></p>
C4	The following CEMP Sub-plans must be prepared in consultation with the relevant government agencies identified for each CEMP Sub-plan. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.	This Report	This Report has been prepared to address the consultation undertaken during the development of the NVMP.

1.4 Consultation Process

Consultation with stakeholders and agencies was undertaken using the following means:

- Formal correspondence (DPIE Portal notifications)
- Formal correspondence (standard email)
- Phone Calls.

2 Stakeholder and agency consultation

This Section of the Consultation Report provides detail of consultation undertaken with each stakeholder and agency in the preparation of the AQMP. In particular it contains:

A consultation log that identifies:

- Consultation dates (actual and attempted)
- Form of consultation
- Whether responses and / or comments were received
- Summary of the issues raised, including how they have been addressed

Documentary evidence of all the correspondence received and sent through the consultation phase is contained in the Appendices at the end of this Report. The Appendices and this Section are broken down by stakeholder and agency, not by issue.

2.1 AQMP – North Sydney Council

Consultation with North Sydney Council (NSC) commenced on 27 September 2021 and concluded 25 October 2021.

Table 2-1 below includes the details of engagement between CPB Downer JV and NSC regarding the AQMP. Table 2-2 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 1 of this report.

Table 2-1 Engagement log – AQMP – North Sydney Council

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the CEMP (including the AQMP) would be provided for review on 1/10/21 and that North Sydney Council would have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney	Gavin McConnell (NSC)
2	5/10/21	Email	AQMP was sent to NSC for consultation requesting comments back by Tuesday 26/10/21	Howard Chemney	Gavin McConnell
3	14/10/21	Email	Email reminder that all comments on the AQMP were due back by 26/10/21.	Howard Chemney	Gavin McConnell
4	25/10/21	Email	Email reminder that all comments on the AQMP were due back by 26/10/21.	Howard Chemney	Gavin McConnell
5	25/10/21	Email	Response from North Sydney Council providing a response	Gavin McConnell	Howard Chemney

Table 2-2 below summarises the consultation comments received from NSC on the AQMP.

Table 2-2 Summary of issues – AQMP – North Sydney Council

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
N/A	Table 9-1 does not provide for any real time dust monitoring programs during construction. Detailed air quality management plans should be developed for each work site and for high risk areas close to residences and sensitive ecological receptors including a proactive dust monitoring/management plan. These programs include real time monitoring of PM10 levels at the construction site boundary to alert site staff to increasing particulate levels to that additional mitigation measures can be implemented	25/10/21	Refer to Air Quality Monitoring Program which includes a real-time dust monitoring program

2.2 AQMP – Willoughby Council

Consultation with Willoughby Council commenced on 5 October 2021 and concluded 1 October 2021.

Table 2-3 below includes the details of engagement between CPB Downer JV and Willoughby Council regarding the AQMP. Table 2-4 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 2 of this report.

Table 2-3 Engagement log – AQMP – Willoughby Council (WC)

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	5/10/21	Email	AQMP was sent to NSC for consultation requesting comments back by Tuesday 26/10/21	Howard Chemney	Chris Binns (WC) Andrew Gillies (WC)

					Gordon Farrelly (WC)
2	14/10/21	Email	Email reminder that all comments on the AQMP were due back by 26/10/21	Howard Chemney	Chris Binns Andrew Gillies Gordon Farrelly
3	27/10/21	Email	Willoughby Council providing comments on the AQMP	Andrew Gillies	Howard Chemney

Table 2-4 below summarises the consultation comments received from Willoughby Council on the AQMP.

Table 2-4 Summary of issues – AQMP – Willoughby Council (WC)

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
AQMP	Council has reviewed this Sub-Plan and finds it satisfactory. Air quality impacts are a particular area of concern for both Council and the community, both from the works themselves and construction traffic to, from and within the project footprint. Given the works will take place within the North Sydney LGA, there would seem to be only minor, peripheral impacts in terms of air quality and odour within the Willoughby LGA. Council strongly encourages the project team to ensure that air quality monitoring procedures are thorough and transparent to assuage community concerns both within Willoughby and North Sydney LGAs..	27/10/21	Noted. No change required

2.3 AQMP – NSW Health

Consultation with NSW Health commenced on 27 September 2021 and concluded 18 October 2021.

Table 2-5 below includes the details of engagement between CPB Downer JV and NSW Health regarding the AQMP. Table 2-6 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 3 of this report.

Table 2-5 Engagement log – AQMP – NSW Health

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the AQMP would be provided for review on 1/10/21 and that Health NSW would have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney	Leena Gupta (NSW Health) Michael Staff (NSW Health) Richard Broome (NSW Health) Nick Ives (NSW Health)
2	1/10/21	Email	AQMP was sent to Health NSW for consultation requesting comments back by Tuesday 26/10/21	Howard Chemney	Leena Gupta Michael Staff Richard Broome Nick Ives
3	14/10/21	Email	CPB sent a follow-up email to remind NSW Health that the consultation period is for 3 weeks. CPB requested all comments must be received back by Friday 22 October 2021.	Howard Chemney	Leena Gupta Michael Staff Richard Broome Nick Ives
4	18/10/21	Email	Response received from Health NSW.	Nick Ives	Howard Chemney (CPB)

Table 2-6 below summarises the consultation comments received from NSW Health on the AQMP.

Table 2-6 Summary of issues – AQMP – NSW Health

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
			<p>Email received 18/10/21 from Nick Ives (Health NSW) advising the following:</p> <p><i>“I refer to the below documentation regarding Warringah Freeway Upgrade.</i></p> <ul style="list-style-type: none"> <i>· Ancillary Site Establishment Management Plan (1 October 2021 WHTBLWFU-CPBD-NWW-EV-PLN-000001-B);</i> <i>· Air Quality Management Sub Plan (1 October 2021 WHTBLWFU-CPBD-NWW-AH-PLN-000008-B);</i> <i>· Noise and Vibration Management Sub-Plan (1 October 2021 WHTBLWFU-CPBD-NWW-NV-PLN-000005-B); and</i> <i>· Instrument of Approval SSI 8863</i> <p><i>This documentation has been noted by Sydney Public Health Unit, Northern Sydney Public Health Unit and the Environmental Health Branch of NSW Health.</i></p> <p><i>NSW Health made initial comments at the EIS stage of the project. No further comment is being provided”.</i></p> <p>No change required.</p>

2.4 AQMP – NSW EPA

Consultation with NSW EPA commenced on 28 September 2021 and concluded 18 October 2021.

Table 2-7 below includes the details of engagement between CPB Downer JV and NSW EPA regarding the AQMP. 8 includes a summary of the issues raised, how those were addressed and closed out. Full evidence of correspondence is in Appendix 4 of this report.

Table 2-7 Engagement log – AQMP – NSW EPA

#	Date	Correspondence		From	Recipient
		Form / Type	Purpose		
1	27/9/21	Email	To advise that the AQMP would be provided for review on 1/10/21 and that NSW EPA have 3 weeks to provide comment with comments due on Friday 22/10/21	Howard Chemney (CPB Downer JV)	Aleksandra Young & Kurt Sorensen (NSW EPA)
2	1/10/21	Email	AQMP was sent to NSW EPA for consultation requesting comments back by 22/10/21 and offering a live review / page turn	Howard Chemney	Aleksandra Young & Kurt Sorensen
3	1/10/21	Email	Email received acknowledging provision of the AQMP and advising that a response will be provided by 22/10/21	Kurt Sorensen	Howard Chemney
4	3/11/21	Email	AQMP comments provided by NSW EPA (Aleksandra Young) via TfNSW	Rob Owens	Aleksandra Young

Table 2-68 below summarises the consultation comments received from NSW EPA on the AQMP.

Table 2-8 Summary of issues – AQMP – NSW EPA

Document Section, CoA or REMM	Comment Raised	Date Raised	How Addressed / Justification Why Not Addressed
AQMP Table 7-1	The specific source of where the Best Practice measures have been obtained from is not provided.	3/11/21	Where a best practice is noted in Table 7-1 a reference is provided to the document which specifies that best practice. That document is <i>Guidance on the assessment of dust from demolition and construction, February 2014, UK Institute of Air Quality Management</i> and is located directly underneath Table 7-1 of the AQMP.
AQMP Table 7-1	The proposed mitigation measures in Table 7-1 lack specific details regarding the site-specific mitigation measures for the project.	3 November 2021	Table 7-1 of the AQMP was updated with mitigation measures that were site specific such as trigger-level alerts from real-time air quality monitoring equipment and defined speed limits on site.
AQMP Table 7-1	The EPA advises that the proponent could improve the AQMP by specifically identifying the site-specific mitigation measures and the metrics/criteria/triggers that certain actions will be undertaken, particularly the proactive and reactive measures.	3 November 2021	In addition to the comment above Appendix A of the AQMP was updated with specific air quality criteria / triggers regarding PM10 and PM2.5.
AQMP Table 7-1	The EPA also recommends the proponent undertake a gap analysis to determine if the sitespecific mitigation measures include all best practice mitigation measures for a construction site. The AQMP would then need to be updated to include any additional best practice mitigation measures.	3 November 2021	A gap analysis was undertaken using <i>Guidance on the assessment of dust from demolition and construction, February 2014, UK Institute of Air Quality Management</i> . The guidance document was referenced by the NSW EPA in the letter (Doc no. DOC21/941456) to CPB with comments on the AQMP. Table 7-1 of the AQMP was updated with additional mitigation measures and references to the guidance document.
Section 4 Appendix A of the	The EPA recommends the proponent consider a	3 November 2021	Appendix A of the AQMP describes two methods as

AQMP	monitoring method that is fit-for-purpose for adequate dust mitigation and management and is appropriately time resolved and quality assured, such as particulate monitors capable of continuous real-time monitoring and reporting of particulate concentrations.		appropriate for monitoring on the Project. In this regard real-time fixed location, and activities-based have been proposed and described in greater detail in Section 4.1 Appendix A of the AQMP.
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Appendix 1 North Sydney Council consultation records

Chemney, Howard

From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Monday, 25 October 2021 11:17 AM
To: Chemney, Howard
Subject: Fw: CEMP for WFU - Air Quality

CAUTION: This email originated from outside of the Organisation.

Howard,
As discussed please find comments re the air quality CEMP/.

Gavin

From: Peter Massey <Peter.Massey@northsydney.nsw.gov.au>
Sent: Friday, 8 October 2021 11:17 AM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>; Marise Van Der Walt <Marise.VanDerWalt@northsydney.nsw.gov.au>
Subject: RE: CEMP for Warringah Fwy Upgrade/ main works - Air Quality

Gavin/Marise,

Please see excerpt from my original EIS comments re air quality. It is the only comment I had to make re the construction phase of the project.

“Table 9-1 does not provide for any real time dust monitoring programs during construction. Detailed air quality management plans should be developed for each work site and for high risk areas close to residences and sensitive ecological receptors including a proactive dust monitoring/management plan. These programs include real time monitoring of PM₁₀ levels at the construction site boundary to alert site staff to increasing particulate levels to that additional mitigation measures can be implemented.”

Peter Massey
Manager Environmental Services
P +61 2 9936 8339 M +61 417 409 866
E Peter.Massey@northsydney.nsw.gov.au



www.northsydney.nsw.gov.au



From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Friday, 8 October 2021 11:11 AM
To: Peter Massey <Peter.Massey@northsydney.nsw.gov.au>; Marise Van Der Walt <Marise.VanDerWalt@northsydney.nsw.gov.au>
Subject: Re: CEMP for Warringah Fwy Upgrade/ main works - Air Quality

Hi Peter and Marise,
Please note my initial request for comments on this CEMP. I note Peters comments as well.
This should be a simple exercise for us as the primary responsibility rests with TfNSW, the contractor and EPA.

Can you two decide who is going to provide the comments by 20 October,

Thanks

Gavin

From: Peter Massey <Peter.Massey@northsydney.nsw.gov.au>
Sent: Friday, 8 October 2021 9:58 AM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Subject: RE: CEMP for Warringah Fwy Upgrade/ main works - Air Quality

Gavin,

I employed the services of a consultant to review the air quality components in relation to the operation of the ventilation stacks and did not make any comment in relation to the air quality (dust mainly) during the construction phase of the project. I assume that given that the compliance, in that regard, will rest with the EPA that comments in relation to construction related dust issues would be similar to any uber large construction project. Probably Marise/Fiona might be better to provide comments as they probably already have (at EIS stage) with regards to this component of the project.

Happy to elaborate on any of the above.
Thanks
Peter

Peter Massey
Manager Environmental Services
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E Peter.Massey@northsydney.nsw.gov.au



www.northsydney.nsw.gov.au



From: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Sent: Wednesday, 6 October 2021 1:28 PM
To: Peter Massey <Peter.Massey@northsydney.nsw.gov.au>
Subject: Fw: CEMP for Warringah Fwy Upgrade/ main works - Air Quality

Hi Peter,
I understand your team reviewed the air quality CEMPs for other projects. Would you please review and provide any comments that may be warranted. Email is fine.
20 October is the timeframe.
Please let me know if you have any questions.

Thanks
Gavin

From: Gavin McConnell
Sent: Wednesday, 6 October 2021 12:57 PM
To: Marise Van Der Walt <Marise.VanDerWalt@northsydney.nsw.gov.au>; Fiona Mulcahy <Fiona.Mulcahy@northsydney.nsw.gov.au>
Subject: CEMP for Warringah Fwy Upgrade/ main works - Air Quality

Hi Marise and Fiona,
Could you please review this and identify any significant issues that may be relevant and give me your comments by 20 Oct. Email is fine.
Please let me know if you have any questions.

Thanks

Gavin

***** This email message is for the named persons' use only and may contain confidential and/or legally privileged information. No confidentiality or privilege is waived or lost by any mis-transmission. If you are not the intended recipient please notify the sender by reply email and immediately delete this email. Use, disclosure or reproduction of this email by anyone other than the intended recipient(s) is strictly prohibited. No representation is made that this email or any attachments are free of viruses. Virus scanning is recommended and is the responsibility of the recipient.

Chemney, Howard

From: Chemney, Howard
Sent: Monday, 25 October 2021 8:38 AM
To: Gavin McConnell
Cc: Rob Owens; Jacqueline McKenzie
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

I called and left you a message on Friday enquiring if you needed any assistance and reminding you that comments on all the plans are due back tomorrow (Tuesday 26th October).

Can you please confirm whether Council will be providing any comments on the plans and if so, that we will receive all comments back by tomorrow.

Many thanks

Howard

0410 0542 009

From: Chemney, Howard <Howard.Chemney@cpbcon.com.au>
Sent: Thursday, 14 October 2021 1:28 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Just following up on the below.

Please let me know if Council have any queries during this review stage or require a live review / page turn on any of the documents submitted.

This is also a reminder that all comments must be received back by Tuesday 26th October.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Tuesday, 5 October 2021 5:04 PM
To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Further to the below emails and apologies for not sending these last Friday as indicated - please find attached both the CEMP (Construction Environmental Management Plan) and the ASEMP (Ancillary Site Establishment Management Plan) for the Warringah Freeway Upgrade for Councils review.

In addition, please note the CEMP has a number of sub-plans relevant to this stage of the works identified as follows:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

I will send these on in separate emails / via drop box given size limitations.

As indicated below, the consultation period for all these plans is for 3 weeks and therefore all comments must now be received back by Tuesday 26th October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Many thanks

Howard

From: Chemney, Howard

Sent: Tuesday, 28 September 2021 5:53 AM

To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>

Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>

Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation

Hi Gavin,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with Council on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the ER to have minimal environmental impact and those established under Condition A19), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

- (a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
- (b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
- (c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
- (d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
 - (i) meet the performance outcomes stated in the documents listed in Condition A1, and
 - (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
- (e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation with Council this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard

Sent: Monday, 27 September 2021 6:20 PM

To: Gavin McConnell <Gavin.McConnell@northsydney.nsw.gov.au>

Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>

Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation

Hi Gavin,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October.

Our requirement to consult with Council on these plans is contained in Condition C4 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)

(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

Specifically we are required to consult with Council on the following project relevant sub-plans:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

Appendix 2 Willoughby Council consultation records



27 October 2021

Howard Chemney
CPB Downer Joint Venture
Howard.Chemney@cpbcon.com.au
Warringah Freeway Upgrade project

Dear Sir,

RE: WARRINGAH FREEWAY UPGRADE – ANCILLARY SITE ESTABLISHMENT PLAN (ASEMP) AND CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP) SUB-PLANS – COMMENTS FROM WILLOUGHBY CITY COUNCIL

Infrastructure Approval (Application no. SSI 8863) for the Western Harbour Tunnel (WHT) and Warringah Freeway Upgrade (WFU) project was granted by the Minister for Planning and Public Spaces on 21 January 2021. The WHT/WFU project is being constructed in three stages:

Stage 1 – Early and Enabling Works:

- **Stage 1A** – Critical utility installation, relocation and protection
- **Stage 1B** – Cammeray Golf Course adjustment works

Stage 2 – Warringah Freeway Upgrade project

- **Stage 2A** – Warringah Freeway Upgrade early works
- **Stage 2B** – Warringah Freeway Upgrade main works

Stage 3 – Western Harbour Tunnel project

Council understands that the CPB Downer Joint Venture has been selected by the NSW Government to deliver Stage 2 – the WFU project.

As part of the conditions of the Infrastructure Approval, the CPB Downer Joint Venture is required to consult with Council on a range of plans related to the WFU project. Accordingly, draft versions of the following documents were sent to Willoughby City Council (Council) via email on 5 October 2021 requesting comment:

1. **Ancillary Site Establishment Plan (ASEMP)**
2. **Construction Environmental Management Plan (CEMP) Sub-Plans:**
 1. Traffic, Transport & Access Management Sub-Plan
 2. Noise & Vibration Management Sub-Plan
 3. Flora & Fauna Management Sub-Plan
 4. Air Quality and Odour Management Sub-Plan
 5. Soil and Surface Water Management Sub-Plan
 6. Heritage Management Sub-Plan



Given the WFU project footprint and proposed construction works are located almost completely within the North Sydney Council local government area (LGA), the impacts on Willoughby City Council are likely to be minimal. However, Council has reviewed most of the Plans and provides the following comments to ensure that environmental, traffic and transport and other impacts are satisfactorily managed.

1. Ancillary Site Establishment Management Plan (ASEMP):

Reference no. **WHTBLWFU-CPBD-NWW-EV-PLN-000001-B**

Dated 1 October 2021

Given the size of the ASEMP and relatively short time in which to provide a response, Council staff have not had the opportunity to review this Plan in detail. However, following a recent meeting with the CPB Downer Joint Venture project team where the ASEMP was discussed, Council is able to provide the following general comments.

The ASEMP relates to the Warringah Freeway Upgrade (WFU) project and has been prepared in accordance with the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project.

The ASEMP has been prepared to address the requirements of MCoA, the Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (dated January 2020) (the EIS), the Western Harbour Tunnel and Warringah Freeway Upgrade Response to Submissions Report (dated September 2020) (the RtS) and applicable guidance and legislation.

This ASEMP applies to the WFU component of the project, the key features of which include the following:

- Upgrade and reconfiguration of the Warringah Freeway from immediately north of the Sydney Harbour Bridge through to Willoughby Road at Naremburn.
- Upgrades to interchanges at Falcon Street in Cammeray and High Street in North Sydney.
- New and upgraded pedestrian and cyclist infrastructure.
- New, modified and relocated road and shared user bridges across the Warringah Freeway
- Connection of the Warringah Freeway to the portals for the Western Harbour Tunnel mainline tunnels and the Beaches Link tunnels, which will consist of a combination of trough and cut and cover structures.
- Upgrades to existing roads around the Warringah Freeway to integrate the Project with the surrounding road network.
- Upgrades and modifications to bus infrastructure, including relocation of the existing bus layover along the Warringah Freeway, and improvements to the geometry and connectivity of the existing southbound bus lane.



- Other operational infrastructure, including surface drainage and utility infrastructure, signage, tolling, lighting, CCTV and other traffic management systems.

The ASEMP outlines the environmental management practices and procedures to be implemented for the establishment of construction ancillary facilities and must be submitted to the Planning Secretary for approval one month before the installation of any ancillary facilities (excluding minor construction ancillary facilities).

As per Figure 1-2 (Overview of the construction support sites) on page 16 of the ASEMP, none of the construction support sites for the WFU project are located within the Willoughby LGA. There is proposed to be a site WHT11 Waltham Street in Artarmon however it is presumed that this will only be used as part of the later Stage 3 WHT works.

Given these facts, Council has no comments on the ASEMP at this stage. It seems comprehensive and thorough in its detail and proposed environmental management measures. Council requests that the project team consult with Council in future as required and as detailed in Section 7.6 (Community Engagement) on page 77 of the ASEMP.

2. Construction Environmental Management (CEMP) Sub-Plans:

2.1 Traffic, Transport & Access Management Sub-Plan (TTAMP)

Reference no. WHTBLWFU-CPBD-NWW-TF-PLN-000003-B

Dated 1 October 2021

Given the size of the TTAMP and relatively short time in which to provide a response, Council staff have not had the opportunity to review this Plan in detail. However, following a recent meeting with the CPB Downer Joint Venture (CCPBJV) project team on 13 October 2021, where the TTAMP was discussed, Council is able to provide the following general comments.

At this meeting, the CPBDJV project team outlined the broad scope of the TTAMP and its road network and road network management approach. The minutes for this meeting previously provided to Council by CPBDJV reflect the discussion, selected areas of concern for Council and operational arrangements for liaison with Council. It is noted that the TTAMP appears to provide mechanisms for these concerns to be managed.

It is understood that the main area of works for the WFU project will be located south of Brook St i.e. within North Sydney LGA. Minimal or no construction activity is planned beyond Brook St, outside of any advanced warning signs and incidence response measures.

Nevertheless, construction works are likely to have impacts in terms of flow-on construction traffic effects and delays to existing traffic flows within the vicinity of the project. As such, Council wants to ensure that such impacts are minimised and adequately managed.



Council would like the TTAMP to provide assurance that it addresses and minimises the impacts from the construction of the WFU project in relation to the Willoughby LGA in at least the following key areas of concern:

- Safety for all road users, access to the Willoughby LGA, congestion minimisation, no or minimal movement of construction traffic in Willoughby LGA and no construction worker parking.
- The flexibility for Council to raise issues and for these to be resolved in an acceptable manner, which may include, and not limited to, changes to the TTAMP, site specific management plans, infrastructure, technology, operational and communication measures
- To seek and receive accurate and timely advice in response to community concerns.

In addition, the following advice is provided on specific matters related to the TTAMP:

Road network management and operation in Willoughby City Council

- Please note that road network management and operation in Willoughby City Council is managed through a broad and comprehensive permit system including: Road Opening permits, Crane/Heavy Plant and Road Occupancy permits and Work Zone permits. The provision of permits is mandatory when work is to be undertaken on Council's road network. There is a fee and conditions applicable for all permits. Council requests that the CPBDJV project team contact the Traffic and Transport Team should any such permits be required.

Heavy vehicle movements

- The surge in heavy vehicle movements associated with the construction of the WFU project increases the risks of delays, queues, congestion, noise, and air pollution, particularly during weekday morning and afternoon peak periods and potential for incidents on Willoughby Council's local road network. It is critical that the current operation, use and performance of the routes used for all sites are effectively investigated and all safety hazards identified so that the hazards are mitigated to always maximise safety for all road users.
- Haulage Routes (North) on page 66 of the TTAMP does not indicate the route taken in Miller Street as it approaches the Warringah Freeway. It is Council's preference that all heavy vehicles turn right and use the Warringah Freeway to head southerly and not use Strathallen Avenue. Strathallen Avenue is a narrow State Road with both significant horizontal and vertical alignment changes that would lead to safety and amenity (noise) issues for residents if heavy vehicles use this route.

Bicyclist and pedestrian safety and amenity

- The need to maximise the safety and amenity of bicyclist and pedestrians during construction is recognised in the TTAMP. The approach adopted is outlined in Section 4.6 and Section 5.7. The information provided does not address the impact when traffic changes impact on bicycle

routes such as the proposed arrangements at the bicycle link connecting Warringah Freeway with Amherst Street.

- There is significant concern with the management of bicyclists (and pedestrians) along the Warringah Freeway, west of the Brook Street on-ramp; and at the Brook Street on-ramp. The plans provided in the TTAMP i.e. WFU-JAJ-DRG-TW-00-(1106, 1107, 1206, 1216, 1306, 1316, 1406, 1506, 2006 and 2106) indicate the retention of the two-way bicycle link along the Freeway and crossing of the Brook Street on-ramp to/from Amherst St and Warringah Freeway under multiple traffic changes.
- The safety of bicyclists under this arrangement is of significant concern. These vulnerable road users will need to negotiate a road environment with construction infrastructure, changing road and traffic management environments and high speed traffic movements. Council is requesting that the CPBDJV project team review the management approach and designs to maximise safety for bicyclists at this location including considering options such as provision of infrastructure to grade separate motor vehicle and bicyclists; and the temporary closure and rerouting to eliminate this conflict point.

Future consultation on traffic and transport matters

- As per Section 6.2.1 of the TTAMP, it is understood that a Traffic and Transport Liaison Group (TTLG) will be created by the project team and is proposed to meet monthly to discuss construction staging, community concerns associated with traffic changes, impacts on road, path and public transport users and operators. Furthermore, a Traffic Control Group (TCG) is also described in Section 6.2.2 however these will be weekly meetings.
- Council has previously confirmed that a representative from Council's Traffic and Transport Team will be able to attend the more infrequent TTLG meetings as required. Council requests that the CPBDJV project team contact the Traffic and Transport Team to confirm attendance and agendas for these future meetings.

2.2 Noise & Vibration Management Sub-Plan:

Reference no. WHTBLWFU-CPBD-NWW-NV-PLN-000005-B

Dated 1 October 2021

Council has reviewed the Noise and Vibration Management Sub-Plan and the Noise and Vibration Monitoring Program and finds them satisfactory. The following additional comments are provided.

It is highly likely that Council will receive complaints from the community in regards to construction noise. The MCoA are quite extensive and cover community consultation, out of hours work and monitoring. Complaints should be directed to the Community Complaints Mediator and the Environmental Protection Authority (EPA).



2.3 Flora & Fauna Management Sub-Plan:

Reference no. WHTBLWFU-CPBD-NWW-EO-PLN-000004

Dated 1 October 2021

Council has not reviewed this Sub-Plan in detail. Given the works will take place within the North Sydney LGA, there would seem to be negligible impacts on flora and fauna within the Willoughby LGA. However, it is noted that Willoughby Creek and Flat Rock Creek have been mentioned in the Sub-Plan. Although these creeks are located some distance from the existing Freeway and proposed project footprint, the project team should contact Council to discuss any requirements and appropriate environmental management measures, should direct or indirect impacts be identified in future that have not already been identified and addressed in this Sub-Plan.

2.4 Air Quality and Odour Management Sub-Plan:

Reference no. WHTBLWFU-CPBD-NWW-AH-PLN-000008-B

Dated 1 October 2021

Council has reviewed this Sub-Plan and finds it satisfactory. Air quality impacts are a particular area of concern for both Council and the community, both from the works themselves and construction traffic to, from and within the project footprint. Given the works will take place within the North Sydney LGA, there would seem to be only minor, peripheral impacts in terms of air quality and odour within the Willoughby LGA. Council strongly encourages the project team to ensure that air quality monitoring procedures are thorough and transparent to assuage community concerns both within Willoughby and North Sydney LGAs.

2.5 Soil and Surface Water Management Sub-Plan:

Reference no. WHTBLWFU-CPBD-NWW-WA-PLN-000006

Dated 1 October 2021

Council has reviewed the Soil and Surface Water Management Sub-Plan and makes the following comments.

The MCoA refer to a Section A1 or A2 Site Audit Statement accompanied by an Environmental Management Plan (EMP). No mention is made in regard to consultation with the EPA or councils on the suitability of the EMP if there are ongoing maintenance requirements in terms of encapsulated/remaining contaminated material or monitoring/pretreatment prior to discharge of groundwater back into the aquifer. Whilst the Site Auditor will be responsible for ensuring the suitability of any EMP, bodies responsible for the management of the land or the receiving waters impacted by the EMP should be consulted with to ensure the plan is practicable and reasonable, plus there could be ongoing costs. Whilst the MCoA cannot be modified, a written undertaking could be made by the certified Contaminated Land Consultant to conduct consultation with the land



owners/managers and relevant councils regarding the suitability of any proposed EMP before it is submitted to the Site Auditor for assessment and a Site Audit Statement is issued.

2.6 Heritage Management Sub-Plan:

Reference no. **WHTBLWFU-CPBD-NWW-HE-PLN-000007**

Dated 1 October 2021

Council has reviewed the Heritage Management Sub-Plan and makes the following comments.

From a review of Willoughby Local Environmental Plan 2012 (LEP) heritage mapping and:

- Figure 5-1 (AHIMS site in the vicinity of the project area)
- Figure 5-2 (Location of non-Aboriginal heritage items and potential heritage items within the project area Map 1 of 2)
- Figure 5-3 (Location of non-Aboriginal heritage items and potential heritage items within the project area Map 2 of)

of the Heritage Sub-Plan, it is noted that the southwest border of the Naremburn Central Township heritage conservation area is located next to the existing Warringah Freeway. Several local heritage items are also located in the vicinity of Willoughby Rd and its intersection with the Freeway.

According to section 5.2 of the Heritage Sub-Plan (pg. 20):

Of those heritage items identified within the study area, 134 items would either have no impact or a negligible impact from the Project due to either the low impact activities proposed or the distances between these items and the project construction works. Impacts on these 134 items would be limited to temporary noise, vibration and/or visual impacts during construction, and managed through the implementation of minimum working distances for vibration intensive construction activities and other standard construction management measures.

It is unclear why the two heritage conservation areas in the North Sydney Council LGA (Camberay Conservation Area and Holtermann Estate A Conservation Area, Crows Nest) have been listed in Table 5-1 (Non-Aboriginal heritage items within the project area) of the Heritage Sub-Plan, but the aforementioned Naremburn Central Township heritage conservation area has not.

It is also unclear from the various documents what exactly is planned in the vicinity of this area, but presumably it would be various roadworks that create noise and vibration. As such, Council believes there may be indirect impacts on the Naremburn Central Township heritage conservation area, similar to those listed for the two North Sydney heritage conservation areas, namely:



- *Temporary and permanent visual impacts due to the removal of heritage fabric and the construction of permanent operational infrastructure within and adjacent to the heritage boundary.*
- *Temporary vibration impacts due to construction activities within and adjacent to the heritage boundary.*

As such, Council requests further clarification on what, if any, measures are proposed to safeguard properties located within the Naremburn Central Township heritage conservation area, as well as the several local heritage items located in the vicinity of Willoughby Rd and the Freeway.

In this regard, Council notes the requirements of Conditions E79, E80 and E81 of the Infrastructure Approval and the proposed environmental mitigation and management measures as detailed in section 7.7 (Vibration monitoring and acoustic treatment of heritage items) of the Heritage Sub-Plan.

There are no Aboriginal (AHIMS) heritage items located within vicinity of the project area and thus Council would agree that there would be no impacts on the AHIMS items mapped in the Willoughby LGA for this stage of the broader WHT and WFU project. Such impacts would be related to the future Beaches Link and Gore Hill Freeway Connection project.

Conclusion:

Thank you for your giving Council the opportunity to provide comment on these Plans. Please contact Andrew Gillies, Strategic Transport Planner on **9777 7655** or Andrew.Gillies@Willoughby.nsw.gov.au if you wish to discuss these matters further.

Yours sincerely,

Ian Arnott
PLANNING MANAGER

Chemney, Howard

From: Chemney, Howard
Sent: Tuesday, 5 October 2021 5:47 PM
To: Chris Binns; Andrew Gillies; Gordon.Farrelly@Willoughby.nsw.gov.au
Cc: Rob Owens; Jacqueline McKenzie
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Construction Environmental Management Plan sub-plans
Attachments: WHTBLWFU-CPBD-NWW-EO-PLN-000004-B_FFMP.pdf; WHTBLWFU-CPBD-NWW-NV-PLN-000005-B_NVMP.pdf; WHTBLWFU-CPBD-NWW-WA-PLN-000006-B_SWMP.pdf; WHTBLWFU-CPBD-NWW-HE-PLN-000007-B_HM.pdf; WHTBLWFU-CPBD-NWW-AH-PLN-000008-B_AQMP.pdf

Hi Chris, Andrew and Gordon,

As indicated in the email below, please find attached the following sub-plans for your review:

- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan
- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

The Traffic, Transport and Access Management Sub-plan will be sent via dropbox due to its size.

Thanks

Howard Chemney

Environment & Sustainability Manager
Warringah Freeway Upgrade
M 0410 542 009
E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard <Howard.Chemney@cpbcon.com.au>
Sent: Tuesday, 5 October 2021 5:44 PM
To: 'Chris Binns' <Chris.Binns@Willoughby.nsw.gov.au>; 'Andrew Gillies' <Andrew.Gillies@Willoughby.nsw.gov.au>; 'Gordon.Farrelly@Willoughby.nsw.gov.au' <Gordon.Farrelly@Willoughby.nsw.gov.au>
Cc: 'Rob Owens' <Rob.Owens@transport.nsw.gov.au>; 'Jacqueline McKenzie' <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan (ASEMP) / Construction Environmental Management Plan sub-plans

Hi Chris, Andrew and Gordon,

This email is to advise you that CPB Downer JV are required to consult with Willoughby Council on the Ancillary Site Establishment Management Plan (ASEMP) and Construction Environmental Management Plan (CEMP) sub-plans as detailed in conditions A17 and C4 of the Infrastructure Approval SSI 8863 for the Warringah Freeway Upgrade (see attachment).

With regards to the CEMP sub-plans we are required to consult with Council on the following sub-plans:

- Traffic, Transport & Access Management Sub-plan
- Noise & Vibration Management Sub-plan
- Flora & Fauna Management Sub-plan

- Air Quality and Odour Management Sub-plan
- Soil and Surface Water Management Sub-plan
- Heritage Management Sub-plan (which includes both indigenous and non-indigenous heritage)

Please find attached the Ancillary Site Establishment Management Plan (ASEMP) for your review with the other sub-plans to follow in a separate email. The Traffic, Transport and Access Management Sub-plan will be sent via dropbox due to its size.

Please note the consultation period for all plans is for 3 weeks and therefore all comments must be received back by Tuesday 26th October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

Appendix 3 NSW Health consultation records

Chemney, Howard

From: Nick Ives (Northern Sydney LHD) <nick.ives@health.nsw.gov.au>
Sent: Monday, 18 October 2021 10:02 AM
To: Chemney, Howard
Cc: Rob Owens; Jacqueline McKenzie
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - NSW Health

CAUTION: This email originated from outside of the Organisation.

Hi Howard,

I refer to the below documentation regarding Warringah Freeway Upgrade.

- Ancillary Site Establishment Management Plan (1 October 2021 WHTBLWFU-CPBD-NWW-EV-PLN-000001-B);
- Air Quality Management Sub Plan (1 October 2021 WHTBLWFU-CPBD-NWW-AH-PLN-000008-B);
- Noise and Vibration Management Sub-Plan (1 October 2021 WHTBLWFU-CPBD-NWW-NV-PLN-000005-B); and
- Instrument of Approval SSI 8863

This documentation has been noted by Sydney Public Health Unit, Northern Sydney Public Health Unit and the Environmental Health Branch of NSW Health.

NSW Health made initial comments at the EIS stage of the project. No further comment is being provided.

If you have any enquiries please contact me.

Nick Ives

Environmental Health Manager | **Northern Sydney Public Health Unit**
36-76 Palmerston Road, Hornsby, NSW 2077
Tel (02) 9485 6973 | Fax (02) 9485 6092 | Mob 0416 224 241 | nick.ives@health.nsw.gov.au



Health
Northern Syd

From: Chemney, Howard [mailto:Howard.Chemney@pcplr.com.au]
Sent: Thursday, 14 October 2021 1:41 PM
To: Leena Gupta (Sydney LHD) <Leena.Gupta@health.nsw.gov.au>; Michael Staff (Northern Sydney LHD) <Michael.Staff@health.nsw.gov.au>; Richard Broome <Richard.Broome@health.nsw.gov.au>; Nick Ives (Northern Sydney LHD) <nick.ives@health.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - NSW Health

Hi Lena, Michael, Richard and Nick,

Just following up on the below.

Please let me know if you / NSW Health have any queries during this review stage or require a live review / page turn on any of the documents submitted.

This is also a reminder that all comments must be received back by Friday 22nd October.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Friday, 1 October 2021 11:42 AM
To: leena.gupta@health.nsw.gov.au; michael.staff@health.nsw.gov.au; Richard.broome@health.nsw.gov.au; Nick.Ives@health.nsw.gov.au
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - NSW Health

Hi Leena, Michael, Richard and Nick,

Further to the below correspondence, please find attached the following plans for your consultation:

- Ancillary Site Establishment Management Plan
- Noise & Vibration Management Sub-plan
- Air Quality and Odour Management Sub-plan

The consultation period is for 3 weeks and therefore we request all comments must be received back by Friday 22nd October.

Please give me a call if you need any clarification.

Thanks

Howard
0410 542 009

From: Chemney, Howard
Sent: Tuesday, 28 September 2021 4:24 PM
To: leena.gupta@health.nsw.gov.au; michael.staff@health.nsw.gov.au; Richard.broome@health.nsw.gov.au; Nick.Ives@health.nsw.gov.au
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: Warringah Freeway Upgrade - Ancillary Site Establishment Management Plan consultation - NSW Health

Hi Leena, Michael, Richard and Nick,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with NSW Health on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the ER to have minimal environmental impact and those established under Condition A19), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

- (a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
- (b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
- (c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
- (d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
 - (i) meet the performance outcomes stated in the documents listed in Condition A1, and
 - (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
- (e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation with NSW Health this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard

Sent: Monday, 27 September 2021 6:26 PM

To: leena.gupta@health.nsw.gov.au; michael.staff@health.nsw.gov.au; Richard.broome@health.nsw.gov.au; Nick.Ives@health.nsw.gov.au

Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>

Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan consultation - NSW Health

Hi Leena, Michael, Richard and Nick,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October.

Our requirement to consult with NSW Health on these plans is contained in Condition C4 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)

(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

Specifically we are required to consult with NSW Health on the following project relevant sub-plans:

- Noise & Vibration Management Sub-plan
- Air Quality and Odour Management Sub-plan

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

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Appendix 4 NSW EPA consultation records



DOC21/941456

3 November 2021

Mr Howard Chemney
Environment and Sustainability Manager
CPB Downer Joint Venture
(for Transport for NSW)

(via Major Projects Planning Portal)

Dear Mr Chemney

**Western Harbour Tunnel and Warringah Freeway Upgrade (SSI 8863)
EPA Comment on Post Approval Document: Air Quality Management Sub Plan – Warringah
Freeway Upgrade (Conditions C4(d) and C11(b))**

I am writing to you in reply to your request to the Environment Protection Authority (EPA) to comment on the draft document *Appendix B6: Air Quality Management Sub Plan*, Rev B, dated 1 October 2021, (the AQMP) that has been prepared for the Warringah Freeway Upgrade package of construction works for the above project.

The AQMP has been prepared in accordance with condition C4(d) of the SSI 8863 approval. Included in the AQMP document, at Appendix A, is the Air Quality (including Odour) Monitoring Program that has been submitted to the EPA as part of the consultation requirements to satisfy condition C11(b).

The EPA has taken a high-level review of the draft AQMP and in doing so considered international best practice in air quality management from construction¹. The EPA provides comments below on the draft AQMP for the project consideration in the final document. The EPA notes that as an outcomes-based regulator, the EPA does not typically comment on management plans or prescribes specific mitigation measures. It is ultimately the proponent's responsibility to implement sufficient actions and mitigations to comply with the conditions of the environment protection licence. Comments on the monitoring program are also provided below.

Mitigation measures

The AQMP outlines the dust mitigation measures for the project in Table 6-1. The table includes the measure, the resources needed, the responsible personnel and the methods by which evidence will be presented. It also includes the reference for the mitigation measure, either Best Practice or to Table 9-1 in Appendix H of the EIS. However, **the specific source of where the Best Practice measures have been obtained from is not provided.**

Broadly, the mitigation measures are comprehensive, covering communications, site management, equipment and vehicles, construction activities, monitoring and review. However, **the proposed mitigation measures in Table 6-1 lack specific details regarding the site-specific mitigation**

¹ The EPA considered *Guidance on the assessment of dust from demolition and construction*, February 2014, UK Institute of Air Quality Management which is comprehensive and reflects other best practice documents.

measures for the project. This lack of specific detail on the mitigation measures for the project does not provide confidence in the application or the auditability of the proposed mitigation measures. Site-specific mitigation measures should include the metrics, criteria, or triggers with which the measures would be enabled. Site specific details of the mitigation measures are also missing to determine if best practice principles are being employed. Examples of lack of detailed site-specific measures include:

- MMAQ6 installation of speed limits – no speed limit specified
- MMAQ12 regular watering of disturbed areas especially during hot dry and windy weather – no measurable indicators for the regularity of the watering or the meteorological conditions
- MMAQ14 adjust activities based on dust levels, weather forecasts and proximity to receptors – no metrics or criterion for when activities will be adjusted, and no specific actions of adjusted activities are provided. Additionally, as the monitoring program only includes dust gauges, this measure does not allow for timely reactionary mitigation measures
- MMAQ15 reasonable and feasible dust suppression and/or management measures – no site-specific details about which actual measures will be employed onsite
- MMAQ19 equipment and handling techniques that minimise dust generation – no site-specific details on the equipment or material handling that requires dust minimisation technique and the appropriate measures associated with each specific activity/equipment
- MMAQ23 temporary stabilisation of disturbed areas – no details provided on the stabilisation approach/method; the table does not provide information about the resources to be used to stabilise disturbed areas

The EPA advises that the proponent could improve the AQMP by specifically identifying the site-specific mitigation measures and the metrics/criteria/triggers that certain actions will be undertaken, particularly the proactive and reactive measures.

The EPA also recommends the proponent undertake a gap analysis to determine if the site-specific mitigation measures include all best practice mitigation measures for a construction site. The AQMP would then need to be updated to include any additional best practice mitigation measures.

Monitoring Program

The monitoring program (Appendix A) proposes to install four dust deposition gauges and provides the specific locations (Figures 1 and 2) which are to be sited in accordance with AS/NZS 3580.1.1. As no baseline data is available, the monitoring program proposes to use the EPA's assessment criterion of 4 g/m²/month of total deposited dust as the performance criteria. The results from the monitoring will be reported every 6 months. Exceedances will result in a review to determine possible causes and identify if any improvements in dust mitigation can be made.

While the monitoring program proposes to use an Australian Standard for dust monitoring and use a National Association of Testing Authorities (NATA) accredited laboratory for testing of samples, the AQMP includes the reactive mitigation measure of adjusting activities onsite based on dust levels (MMAQ14). As dust deposition gauge samples are collected every 30 ± 2 days, the ability to adequately manage activities onsite based on the proposed monitoring is not feasible.

The EPA does not consider dust deposition monitoring to be appropriately fit-for-purpose in managing the day-to-day dust issues onsite. Dust deposition gauges do not allow for real-time information to understand the short-term dust impacts, nor allow for immediate actions and responses to be undertaken to reduce or eliminate dust emissions.

The EPA recommends the proponent consider a monitoring method that is fit-for-purpose for adequate dust mitigation and management and is appropriately time resolved and quality assured, such as particulate monitors capable of continuous real-time monitoring and reporting of particulate concentrations.

Should you require clarification of any of the above please contact Anna Timbrell on 9274 6345 or email anna.timbrell@epa.nsw.gov.au

Yours sincerely



ALEKSANDRA YOUNG
Unit Head
Regulatory Operations Metro South

Chemney, Howard

From: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>
Sent: Wednesday, 20 October 2021 1:15 PM
To: Chemney, Howard
Cc: Rob Owens; Jacqueline McKenzie; Kurt Sorensen; Joshua Pisani; Sean Allison
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

CAUTION: This email originated from outside of the Organisation.

Hi Howard

As just discussed, the EPA will aim to provide comments on Noise & Vibration Management Plan for Warringah Freeway Upgrade, including Noise Monitoring by 29/10/21, which will align with comments on soil/water and air quality monitoring programs/management plans.

Rob, please could you amend the date on the major planning portal, please.

Thank you
Ola

Aleksandra (Ola) Kielkiewicz-Young
Unit Head
Regulatory Operations Metro South
NSW Environment Protection Authority
D 02 9995 6083 | M 0455 567 907



www.epa.nsw.gov.au @NSW_EPA

The EPA acknowledges the traditional custodians of the land and waters where we work. As part of the world's oldest surviving culture, we pay our respect to Aboriginal elders past, present and emerging.

Report pollution and environmental incidents 131 555 or +61 2 9995 5555

From: Chemney, Howard <Howard.Chemney@pcplr.com.au>
Sent: Friday, 1 October 2021 11:19 AM
To: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>; Kurt Sorensen <Kurt.Sorensen@epa.nsw.gov.au>
Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>
Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

Further to the below correspondence, please find attached the following plans for your consultation:

- Ancillary Site Establishment Management Plan
- Soil & Water Management Plan
- Noise & Vibration Management Plan
- Air Quality Management Plan

The consultation period is for 3 weeks and therefore we request all comments must be received back by Friday 22nd October.

Please give me a call if you need any clarification.

Thanks

Howard

0410 542 009

From: Chemney, Howard

Sent: Tuesday, 28 September 2021 5:55 AM

To: 'Aleksandra Young' <Aleksandra.Young@epa.nsw.gov.au>; 'Kurt Sorensen' <Kurt.Sorensen@epa.nsw.gov.au>

Cc: 'Rob Owens' <Rob.Owens@transport.nsw.gov.au>; 'Jacqueline McKenzie' <jacqueline.mckenzie@dswjv.com.au>

Subject: RE: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

Further to the below – it is also a requirement of Condition A17 of the Infrastructure Approval SSI 8863 that we consult with NSW EPA on the Ancillary Site Establishment Management Plan (ASEMP). This plan outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities / construction support sites. A snippet of this condition is reproduced below:

SITE ESTABLISHMENT WORK

Ancillary Site Establishment Management Plan

A17 Before establishment of any construction ancillary facility (excluding minor construction ancillary facilities determined by the ER to have minimal environmental impact and those established under **Condition A19**), the Proponent must prepare an **Ancillary Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must be prepared in consultation with the relevant council and government agencies. The Plan must be submitted to the Planning Secretary for approval one month before the establishment of any construction ancillary facilities. The **Ancillary Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:

- (a) a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of work to be undertaken at the site);
- (b) figures illustrating the proposed operational site layout and the location of the closest sensitive land user(s);
- (c) a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken prior to the commencement of site establishment work;
- (d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
 - (i) meet the performance outcomes stated in the documents listed in **Condition A1**, and
 - (ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
- (e) a program for monitoring the performance outcomes, including a program for construction noise monitoring.

Nothing in this condition prevents the Proponent from preparing individual **Ancillary Site Establishment Management Plans** for each construction ancillary facility.

We will be sending over the ASEMP for consultation this Friday 1st October.

As with the CEMP sub-plans, the consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions. We are also happy to assist you in your review of the

document by undertaking a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing this plan formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

From: Chemney, Howard

Sent: Monday, 27 September 2021 6:46 PM

To: Aleksandra Young <Aleksandra.Young@epa.nsw.gov.au>; Kurt Sorensen <Kurt.Sorensen@epa.nsw.gov.au>

Cc: Rob Owens <Rob.Owens@transport.nsw.gov.au>; Jacqueline McKenzie <jacqueline.mckenzie@dswjv.com.au>

Subject: Warringah Freeway Upgrade - Construction Environmental Management Plan / Monitoring Program consultation - NSW EPA

Hi Aleksandra and Kurt,

This email is to advise you that CPB Downer JV will be sending over a number of sub-plans to the Warringah Freeway Upgrade Construction Environmental Management Plan (CEMP) for consultation with Council this Friday 1st October. We will also be sending a number of monitoring programs.

Our requirement to consult with NSW EPA on these plans / programs is contained in Condition C4 & C6 of the Infrastructure Approval SSI 8863 as snipped below and included in the attachment.

- C4 The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan**. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant **CEMP Sub-plan**, including copies of all correspondence from those agencies as required by **Condition A5**.

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan
(a)	Traffic, transport and access	Relevant council(s)
(b)	Noise and vibration	NSW Health, relevant council(s)
(c)	Flora and Fauna	DPI Fisheries, DPIE Water, EESG, and relevant council(s)
(d)	Air quality and odour	NSW Health, and relevant council(s)

(e)	Soil and surface water	DPIE Water, EESG, EPA, Sydney Water (if Sydney Water's assets are affected) and relevant council(s)
(f)	Groundwater	DPIE Water, EESG, EPA, Sydney Water (where it is proposed to discharge groundwater into Sydney Water's assets) and relevant council(s)
(g)	Maritime Heritage	Heritage NSW and relevant council(s)
(h)	Non-Aboriginal Heritage	Heritage NSW and relevant council(s)
(i)	Aboriginal Cultural Heritage	Heritage NSW
(j)	Dredging and Disposal Management Plan	EPA, DPI Fisheries, Port Authority of NSW (including Harbour Master)

CONSTRUCTION MONITORING PROGRAMS

C11 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies identified for each to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in **Condition A1** or in the **CEMP**:

	Required Construction Monitoring Programs	Relevant government agencies to be consulted for each Construction Monitoring Program
(a)	Noise and Vibration Monitoring Program	EPA
(b)	Air Quality (including Odour) Monitoring	EPA
(c)	Surface Water Monitoring Program	DPIE Water, (Sydney Water if any Sydney Water assets are impacted), EPA
(d)	Groundwater Monitoring Program	DPIE Water, EPA
(e)	Marine Monitoring Program	DPI Fisheries, EPA
(f)	Dredging Monitoring Program	DPI Fisheries, EPA

Specifically we are required to consult with NSW EPA on the following project relevant sub-plans / monitoring programs:

- Soil and Surface Water Management Sub-plan (including Surface Water Monitoring Program and Groundwater Management Procedure)
- Noise and Vibration Monitoring Program
- Air Quality (including odour) Monitoring Program

The consultation period is for 3 weeks and therefore all comments must be received back by Friday 22nd October. Comments received after this date may not be addressed in time and will be considered during future revisions.

To assist you in your review of the documents we are happy to undertake a live review / page turn to discuss issues directly. Please contact me should you wish to take up this offer.

Please note that TfNSW will also be issuing these plans formally for consultation via the DPIE Portal.

Thanks

Howard Chemney

Environment & Sustainability Manager

Warringah Freeway Upgrade

M 0410 542 009

E Howard.Chemney@cpbcon.com.au

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