

Appendix I

Air Quality Management Sub-plan

Western Harbour Tunnel

April 2024

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Document control

Approval and authorisation

Approved on behalf of ACCIONA by	Andrew Marsonet
Signed	
Dated	15 December 2022

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Glossary/ Abbreviations

Abbreviations	Expanded text
Ancillary facility	A temporary facility for construction of the CSSI including an office and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory, material stockpile area and car parking facilities. <i>Note: where an approved management plan contains a stockpile management protocol, a material stockpile area located within the construction boundary is not considered to be an ancillary facility</i>
AQMP	Air Quality Management Sub-plan (this document)
BOM	Australian Government Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CSSI	Critical State Significant Infrastructure
DEC	Former Department of Environment & Conservation NSW
DPE	NSW Department of Planning 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	Minister's Conditions of Approval
MOD2	Western Harbour Tunnel and Warringah Freeway Upgrade TBM solution of crossing Sydney Harbour – Modification 2
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
OEH	Former Office of Environment and Heritage
PM _{2.5}	Particulate matter less than or equal to 2.5 micrometres in diameter
PM ₁₀	Particulate matter less than or equal to 10 micrometres in diameter
POEO Act	<i>Protection of the Environment Operations Act 1997</i>

Abbreviations	Expanded text
Project, the	Western Harbour Tunnel project, a component of the Western Harbour Tunnel and Warringah Freeway Upgrade project
Project Area	The area required to facilitate the construction of the Project (i.e. construction footprint)
REMM	Revised Environmental Management Measure
Roads and Maritime	Former NSW Roads and Maritime Services, now part of Transport for NSW
RtS	Response to Submissions Report
SMART	Specific, Measurable, Achievable, Relevant and Time-based
TfNSW	Transport for NSW
WFU	Warringah Freeway Upgrade (component of the Western Harbour Tunnel and Warringah Freeway Upgrade project)
WHT	Western Harbour Tunnel (component of the Western Harbour Tunnel and Warringah Freeway Upgrade project)

1 Introduction

1.1 Context

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

This AQMP has been prepared to address the air quality requirements of the Minister's Conditions of Approval (MCoA) for the Western Harbour Tunnel and Warringah Freeway Upgrade project (SSI #8863), 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), Western Harbour Tunnel and Warringah Freeway Upgrade TBM solution of crossing Sydney Harbour – Modification 2 (MOD2), and applicable guidelines and legislation.

This Plan describes how ACCIONA proposes to manage potential air quality impacts during the construction of the Project.

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 Project will connect the approved M4-M5 Link in Rozelle to the Warringah Freeway at North Sydney/Cammeray. The Project will traverse from Rozelle to Cammeray, primarily comprising twin 6.5-kilometre bored/excavated tunnels with a crossing of Sydney Harbour, supported by surface based ancillary facilities.

The EIS was prepared to assess the impacts of construction and operation of the Western Harbour Tunnel and Warringah Freeway Upgrade project. As part of the EIS development, a detailed construction and operational air quality assessment was prepared as Appendix H (Western Harbour Tunnel and Warringah Freeway Upgrade Technical working paper: Air Quality, (Jacobs, January 2020). The findings are summarised in Chapter 12 (Air Quality) of the EIS.

A RtS report was prepared in response to submissions received on the EIS. The RtS includes clarifications as well as further detail relating to air quality management issues of the Project. The EIS environmental management measures were revised and included in Part D of the RtS report.

The Western Harbour Tunnel and Warringah Freeway Upgrade project was declared to be Critical State Significant Infrastructure (CSSI) by the Minister for Planning and Public Space (the Minister) on 9 November 2020 and approved by the Minister on 21 January 2021.

The MOD2 application proposed to modify the construction methodology across Sydney Harbour from an immersed tube tunnel (IMT) design with transition structures at both ends of the harbour crossing, to a tunnel boring machine (TBM) methodology and to include an additional construction support site at Emu Plains. MOD2 was lodged on 14 July 2023 and was approved by the Minister of Planning and Public Spaces on 27 January 2024. The RtS environmental management measures were revised and included in Appendix B2 of the MOD2 report, with specific air quality measures contained in this Plan.

The documents listed in the planning approval assessed the potential for air quality impacts and concluded that overall, the construction phase of the Project is unlikely to represent significant or ongoing impacts. The measures and management requirements to minimise impacts are detailed within this Plan.

1.3 Scope and staging

The scope of this Plan is to describe how ACCIONA will manage potential air quality impacts during construction of the Project.

As described in Transport for New South Wales (TfNSW) Staging Report, this Project will be managed in stages with the CEMP. This document applies to the WHT Package 3B and 3C which includes the following scope:

Stage 3B – WHT Northern Tunnelling and Integration works

- Excavation of twin mainline tunnels about 2.5 kilometres long and each accommodating three lanes of traffic in each direction, connecting portals adjacent to the Cammeray Golf Course to the Harbour Crossing section of the tunnel at Berrys Bay.
- Excavation of Falcon Street off-ramp tunnel.
- Excavation of Berry Street on-ramp tunnel.
- Cut and cover infrastructure surface construction at the Ridge Street North construction support site (WHT9), Berry Street and the Warringah Freeway portals.
- Integration works including Mechanical and Electrical (M&E) fit out for the Southern and Northern tunnelling sections, paving, surface connections, ventilation cavern fitout, integration and fitout of the Motorway Operation Centre (MOC) and Motorway Control Centre (MCC)
- Establishment and operation of Glebe Island (WHT3 – southern portion. The northern portion of WHT3 as described in the EIS will not be used); Ridge Street North (WHT9), and Cammeray Golf Course (WHT10) construction support sites.
- Operation of the City West Link Portal tunnelling support site (WHT12) after the completion of Stage 3A.
- Installation of acoustic structures.
- Utilities connections including but not limited to power, potable water, sewerage.
- Carrying out of surveys, test drilling, test excavations, geotechnical or contamination investigations or other tests or surveys, sampling or investigation.

Stage 3C – WHT Sydney Harbour Crossing

- Excavation of about 1.8 km of twin mainline tunnels using Tunnel Boring Machine (TBM) methodology.
- Construction of launch chambers beneath Birchgrove, and receival chambers and burial beneath the Waverton Peninsula.
- Establishment and operation of an underground slurry treatment plant within an existing ventilation cavern (constructed by the Stage 3A contractor).
- Establishment and operation of an underground Water Treatment Plant.
- Establishment and operation of an underground grout batching plant.
- Access and egress via City West Link Portal (WHT12) for:
 - Spoil removal.
 - Materials and equipment delivery, including concrete tunnel segments and box culverts.
- Use of Ridge Street North (WHT9) as a tunnelling support site, including the construction of an acoustic shed.
- Construction and operation of an additional construction ancillary site at Emu Plains (WHT13), primarily for the prefabrication and storage of tunnel lining segments, box culverts and other pre-cast concrete elements.

Requirements triggered by the 3B and 3C scope of works are identified in Table 3-1 and Table 3-2. For more details on staging refer to the Staging Report, which has been prepared in accordance with MCoA A10.

1.4 Interface with other planning documents

This Plan is a component of a suite of documents, prepared as part of the implementation of the Project's Environmental Management System. The Environmental Management System overview is described in Section 1.4 of the CEMP.

The key documents that interface with this Plan are outlined in Table 1-1.

Table 1-1 Key interfaces with the AQMP

Plan	Interface
Construction Environmental Management Plan	- Provides details on overall Project staging, interactions between Sub-Plans of the CEMP, and management of cumulative impacts - Provides a framework for how the construction works will be managed - Identifies procedures, processes and management systems that will apply in relation to construction activities - Provides environmental planning and controls for construction including environmental risk assessment, regulatory requirements, protection measures and sustainability requirements
Soil and Water Management Sub-plan	Sets out how soil and surface water will be managed during construction of the Project. Temporary ground stabilisation measures will be address as part of this plan.
Community Communication Strategy and Complaints Management System	- Describes how community and stakeholder engagement will be managed and facilitates communication about construction of the project with the community as well as relevant councils and agencies - Specifies the process for receiving, addressing, resolving and recording complaints as well as outlines the process required in the escalation of a complaint to an independent mediator

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how ACCIONA will manage potential air quality impacts during construction of the Project.

This Plan has been prepared to address the applicable statutory requirements and aims to ensure that the commitments in the planning approval are met with regard to impacts to air quality control.

2.2 Objectives

The objective of the AQMP is to ensure all avoidance, mitigation and management measures relevant to air quality impacts are properly implemented.

To achieve these objectives, ACCIONA will undertake the following:

- Ensure appropriate controls and procedures are implemented during construction activities to address air quality impacts along the Project corridor, as well as manage risks from analysis of relevant construction activities as per MCoA C2(d)(ii).
- Ensure appropriate measures are implemented to address the relevant MCoA requirements outlined in Table 3-1 and the safeguards detailed in the MOD2 report and outlined in Table 3-2.
- Ensure that the requirements of Transport for NSW specification G36 Environment Protection (November, 2022) are met.
- Ensure the requirements of the Project's Environment Protection Licence (EPL) are met.
- Implement relevant legislation and other requirements detailed in Section 3.1 of this AQMP.

Furthermore, ACCIONA will meet the performance outcomes from Table 28-4 of the EIS that are relevant to air quality impacts, as required by MCoA C2(d)(i), as identified in Table 2-1 below.

Table 2-1 Performance outcomes identified in the EIS relevant to this Plan

Performance outcome	How performance will be addressed	Records
The project is designed, constructed and operated in a manner that minimises air quality impacts to minimise risks to human health and the environment to the greatest extent	Provide effective management of dust and other emissions during construction • Implement the air quality mitigation measures in Section 7	Environmental inspection records Daily Work Diary Environmental monitoring results and reporting Sensitive Area Plans

2.3 Targets

The following targets have been established for the management of air quality impacts during the Project construction activities:

- Ensure full compliance with the relevant legislative requirements, MCoA and revised environmental management measures (REMMs).
- Meet EPL air quality parameters (if required).
- Achieve relevant Infrastructure Sustainability Council (ISC) requirements.

- Ensure air quality complaints from the community and stakeholders are managed in accordance with the Complaints Management System, as detailed within the Community Communication Strategy (CCS).
- Ensure training on best practice air quality management is provided to all construction personnel through site inductions.
- Provide effective management of dust 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

Legislation and regulatory requirements relevant to air quality for this Project include:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Protection of the Environment Operations (Clean Air) Regulation 2010* (POEO Clean Air Regulation).

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

3.1.2 Additional approvals, licences, permits and requirements

Relevant provisions of the above approvals, licences, permits and requirements are included in Appendix A1 of the CEMP.

3.1.3 Guidelines and standards

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

- *Air Quality Management Guideline* (Transport for NSW, 2019)
- *Guidance on the assessment of dust from demolition and construction* (IAQM, 2014)
- *National Environment Protection Councils (NEPC) – National Environment Protection Measure (NEPM) for Ambient Air Quality Guidelines* (AAQNEPM)
- *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*
- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA 2016) (EPA Approved Methods)
- *Roads and Maritime QA Specification G36 – Environmental Protection* (Management System) Western Harbour Tunnel (November, 2022)
- *Roads and Maritime QA Specification G38 – Soil and Water Management* (Management System) Western Harbour Tunnel (May, 2022)
- *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DEC, 2007))
- *NSW Government Resource Efficiency Policy* (OEH 2014) (GREP)
- *Technical Framework – Assessment and Management of Odour from Stationary Sources in NSW* (DEC, 2006)
- *Managing Urban Stormwater: Soils and Construction, Volume 1* (Landcom 2004) and *Volume 2* (DECC 2008) (the “Blue Book”).
- *Roads and Maritime QA Specification R272 – Automatic Weather Stations.*
- *Managing Urban Stormwater: Soils and Construction, Volume 1* (Landcom 2004) and *Volume 2* (NSW Department of Environment and Climate Change (DECC) 2008) (the “Blue Book”).

- UK Institute of Air Quality Management, 2014, Guidance on the assessment of dust from demolition and construction, Version 1.1

3.2 Minister's Conditions of Approval

The MCoA relevant to this Plan are listed in Table 3-1. A cross reference is also included to indicate where and how the conditions are addressed in this Plan or other Project management documents.

3.3 Revised Environmental Management Measures

Relevant REMMs, as identified in Appendix B2 of the MOD2 report, are listed in Table 3-2. A cross reference is also included to indicate where and how the conditions are addressed in this Plan or other Project management documents.

Table 3-1 Minister's Conditions of Approval relevant to this Plan

MCoA No.	Condition Requirements	Document Reference	How addressed
General			
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: (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.	Section 4	Evidence of consultation has been submitted to the Planning Secretary with this document.
Construction Environmental Management Plan			
C4	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.	Section 4	This AQMP has been prepared in consultation with the relevant agencies identified in this condition. Evidence of consultation has been submitted to the Planning Secretary with this document.

MCoA No.	Condition Requirements			Document Reference	How addressed
		Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan		
	(d)	Air quality	NSW Health, relevant council(s)		
C5	The CEMP Sub-plans must state how: (a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;			Table 2-1	This AQMP was prepared in accordance with the environmental performance outcomes identified in the EIS, RtS, and MOD2 as outlined in Section 2.2.
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;			Section 7	Relevant environmental management measures are detailed in Table 3-2 including where and how they are addressed in this Plan. Measures to achieve these requirements are detailed in Section 7 of this Plan
	(c) the relevant terms of this approval will be complied with; and			Table 3-1 Table 3-2	Details of how ACCIONA will comply with the relevant terms of the approval are listed in this Table, including references to the relevant sections of this AQMP

MCoA 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.	Table 7-1 Environmental Risk Assessment Workshop (CEMP)	Air quality issues requiring management during construction of the Project have been identified through the EIS, RtS, MOD2 and Environmental Risk Assessment Workshop. These issues, including cumulative impacts, have been outlined in Appendix A2 – Environmental Aspects & Impacts Register of the CEMP. Environmental risk analysis will be ongoing and regularly reviewed in accordance with Section 3.2 of the CEMP. Air quality issues, including cumulative impacts, are detailed in Section 6 of this AQMP. Management measures identified in Table 7-1 of this AQMP have been developed with consideration of SMART principles.
C9	The 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 2 of the CEMP	The CEMP Sub-plans have been submitted to the Planning Secretary for approval subsequent to the submission of the CEMP.

MCoA No.	Condition Requirements	Document Reference	How addressed						
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 2 of the CEMP	Construction of the Project will not commence until the CEMP and applicable Sub-plans as per the Staging Report have been approved, unless it is otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans will be 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 to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in Condition A1 or in the CEMP: <table><tr><th></th><th>Required Construction Monitoring Program</th><th>Relevant government agencies to be consulted for each Construction Monitoring Program</th></tr><tr><td>(b)</td><td>Air Quality Monitoring</td><td>EPA</td></tr></table>		Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program	(b)	Air Quality Monitoring	EPA	Appendix I2 - <i>Air Quality Monitoring Program</i>	An Air Quality Monitoring Program has been prepared in accordance with this condition and is included in Appendix I2 of this Plan. Refer to that document for details on how these conditions have been met.
	Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program							
(b)	Air Quality Monitoring	EPA							

MCoA No.	Condition Requirements	Document Reference	How addressed
C12	Each Construction Monitoring Program must provide: 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 C14.	Appendix I2 - <i>Air Quality Monitoring Program</i>	An Air Quality Monitoring Program has been prepared in accordance with this condition and is included in Appendix I2 of this Plan. Refer to that document for details on how these conditions have been met.

MCoA No.	Condition Requirements	Document Reference	How addressed
C17	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.	Section 4 AQMP Consultation Report Appendix I2	This AQMP, including the Air Quality Monitoring Program (Appendix I2), has been prepared in consultation with the relevant agencies identified in MCoA C4(d). Evidence of consultation has been submitted to the Planning Secretary with this document.
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.	Section 1.3 of Appendix I2 Section 2 of the CEMP	This Plan and the Air Quality Monitoring Program (Appendix I2) have been endorsed by the Environmental Representative prior to submission to the Planning Secretary.
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	Section 1.3 of Appendix I2 Section 2 of the CEMP	Construction will not commence until this Plan has been approved by the 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.	Section 1.3 of Appendix I2 Section 9.2 of this Plan Section 3.1.3 of the CEMP	The Air Quality Management Program (Appendix I2), as approved by the Planning Secretary, including any minor amendments approved by the Environmental Representative, will 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.

MCoA No.	Condition Requirements	Document Reference	How addressed
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>	Section 6.5 of Appendix I2 Section 8.7	The results of monitoring undertaken in accordance with the Air Quality Management Plan will be submitted to the EPA and DPE as required and at the frequency outlined in the Air Quality Monitoring Program (Appendix I2).
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 and Table 7-1	Measures to achieve this condition are detailed in Section 7 and Table 7-1.

Table 3-2 Revised Environmental management measures relevant to this AQMP

Ref #	Commitment	Document Reference	How Addressed
AQ1	Standard construction air quality mitigation and management measures will be detailed in construction management documentation and implemented during construction, such as: a) Reasonable and feasible dust suppression and/or management measures, including the use of water carts, dust sweepers, sprinklers, dust screens, site exit controls (e.g. wheel washing systems and rumble grids), stabilisation of exposed areas or stockpiles, and surface treatments	Section 7 Table 7-1 – AQMP1	Reasonable and feasible dust suppression measures will be implemented during construction.
	b) Selection of construction equipment and/or materials handling techniques that minimise the potential for dust generation	Section 7 Table 7-1 – AQMP2	Construction equipment and/or materials handling techniques will be selected 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)	Section 7 Table 7-1 – AQMP1	Measure to minimise dust generation during the transfer, handling and on-site storage of spoil and construction materials will be implemented.
	d) Adjustment or management of dust generating activities during unfavourable weather conditions, where possible	Section 7 Table 7-1 – AQMP3	Adjustment of dust generating activities during unfavourable conditions will be made where possible.
	e) Minimisation of exposed areas during construction	Section 7 Table 7-1 – AQMP4	Areas exposed during construction will be minimised.
	f) (Requirement deleted as part of MOD2 report)	-	-

Ref #	Commitment	Document Reference	How Addressed
	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	Section 7 Table 7-1 – AQMP9	Internal project communication protocols will be implemented to minimise cumulative impacts due to dust-generating activities in the same area.
	h) Site inspections will be carried out to monitor compliance with implemented measures.	Section 7 Table 7-1 – AQMP6	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 7 Table 7-1 – AQMP10 Community Consultation Strategy	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.

4 Consultation

4.1 Consultation for AQMP Preparation

This Plan has been developed and finalised in accordance with MCoA A5 with the agencies as described in the table below.

Table 4-1 Consultation requirements

Document	Relevant MCoA	Agencies to be consulted
Air Quality Management Sub-plan	C4	NSW Health North Sydney Council Inner West Council Penrith City Council
Air Quality Monitoring Program	C11	EPA

Consultation with each agency, including responses received and how any issues raised were addressed in the development of this Plan has been provided to the Planning Secretary along with this Plan.

4.2 Ongoing consultation

Any ongoing consultation with agencies, where required, will be undertaken in accordance with Section 7 of this Plan. 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

Air quality in a region is influenced by a number of factors including the terrain, meteorology (weather patterns), historical trends in road traffic emissions and the current (ambient) and historical air quality environment.

The following sections summarise what is known about existing air quality conditions within and adjacent to the Project, and factors influencing potential air quality impacts.

Data presented within this plan is based on information contained in Section 12.4 of Chapter 12 (Air Quality), the MOD2 report, and Appendix H (Technical working paper: Air quality) of the EIS.

5.1 EIS dust assessment zones

The construction dust assessment for the EIS considered potential dust impacts across five assessment zones. Receiver type and density of receivers located within 350 metres to the project footprint is shown in Figure 5-1 below. Residential receivers comprise the majority of receiver types in proximity to the project, followed by a number of industrial receivers (particularly around White Bay) as well as commercial receivers with concentrations on arterial roads in Rozelle and North Sydney CBD, and finally recreational land use at foreshore areas and Cammeray.

As a result of the approval of MOD2 to change the method of construction of the tunnel under Sydney Harbour, construction works in Zone 2 would no longer be required and those in Zone 4 would now occur below ground. As a result, potential air quality impacts to the local ambient surface environment in these areas would no longer occur.

The surrounding area and receivers were not separated into different assessment zones for the Emu Plains construction support site (WHT13) as part of the MOD2 report.

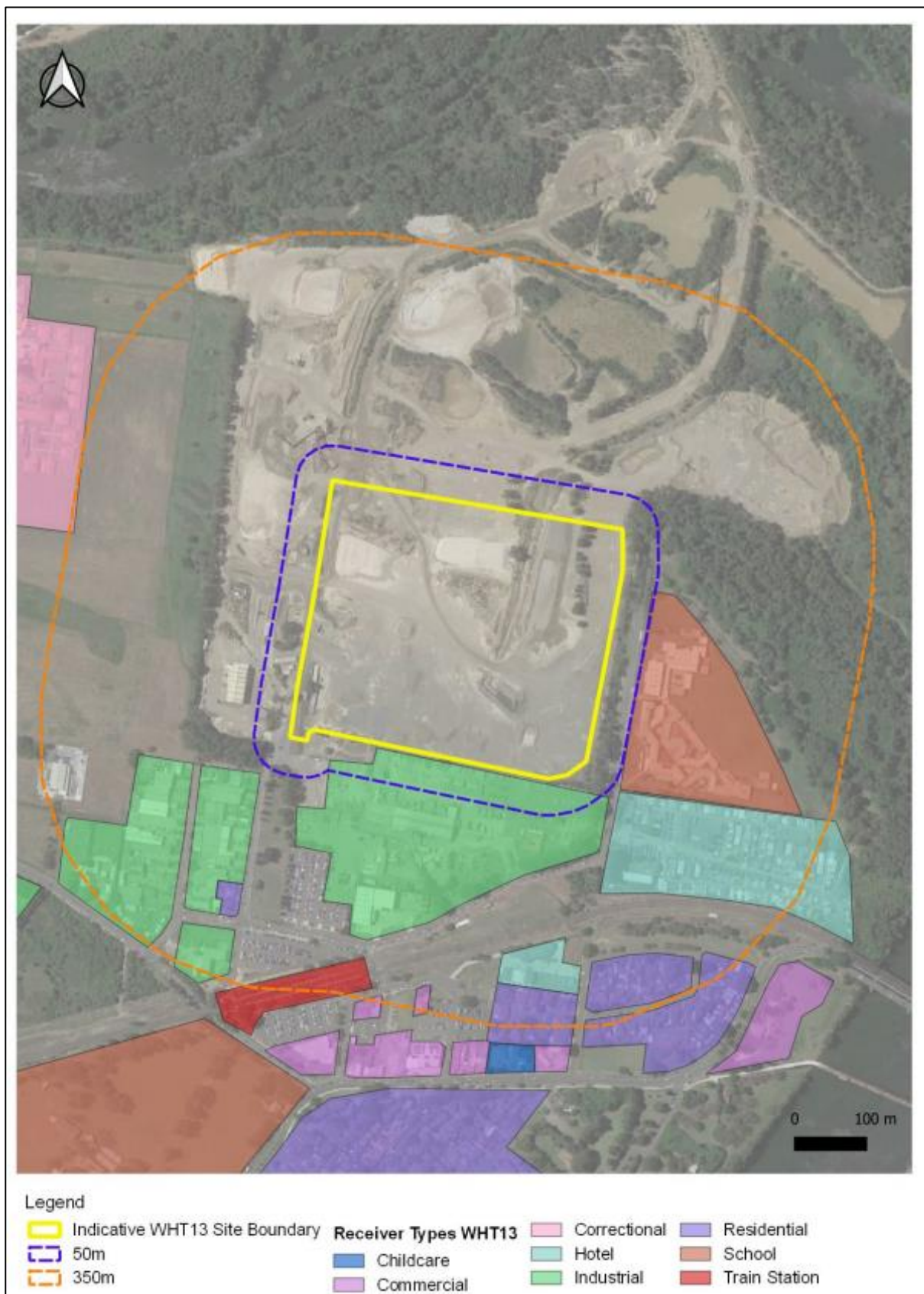


Figure 5-2: Receiver types in proximity to the Emu Plains (WHT13) construction support site

5.2 Air quality records

Air quality in the vicinity of the Western Harbour Tunnel is expected to be representative of a high density commercial / urban environment. The adjacent arterial roads to the project, namely Warringah Freeway (along with network of major roadways linking the freeway to North Sydney and Northern Beaches area), City West Link and Victoria Road, represents the primary sources of air pollution in the area.

Air quality monitoring relevant to the Project Area of Inner West and North Sydney has been undertaken through monitoring at nearby Department of Planning and Environment (DPE) and Transport for NSW (formerly Roads and Maritime Services) monitoring stations. Data from Appendix H (Technical working paper: Air quality) of the EIS showed the following for ambient air quality between 2004 and 2018 at DPE stations (Chullora, Earlwood, Randwick, Rozelle, Lindfield, Liverpool and Prospect) and Transport for NSW M5 East stations (CBMS, T1, U1, X1, F1 and M1):

- Maximum 1-hour and rolling 8-hour mean 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 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 DPE 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 Roads and Maritime roadside stations in 2016 were 144–165 µg/m³. These values were higher than the highest maximum values for the background stations.
- Annual mean PM₁₀
 - Concentrations at the DPE 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 around 40 µg/m³.

- Annual mean PM_{2.5}
 - PM_{2.5} has only been measured over several years at three DPE stations in the study area. Concentrations at Chullora and Earlwood showed a similar pattern, with a systematic reduction between 2004 and 2012 being followed by a substantial increase in 2013. The main reason for the increase was a change in the measurement method. The increases meant that background PM_{2.5} concentrations in the study area during 2016 were already very close to or above the standard in the AAQ NEPM of 8 µg/m³, and above the long-term goal of 7 µg/m³.
- Maximum 24-hour PM_{2.5}
 - There has been no systematic trend in the maximum 24-hour PM_{2.5} concentration. As with the annual mean PM_{2.5} concentration, the maximum 1-hour concentrations were very close to or above the standard in the AAQ NEPM of 25 µg/m³ and were generally above the long-term goal of 20 µg/m³.

Note, data from this period was utilised in order to be representative of ‘pre-construction’ conditions, and exclude periods where major project construction (such as the Rozelle Interchange) was being undertaken.

The background air quality level relevant to Emu Plains construction support site (WHT13) is outlined in Section 9.3.2 of the MOD2 report. The closest air quality monitoring station (AQMS) to WHT13 is located in Penrith. The annual averages of PM₁₀ and PM_{2.5} for Penrith AQMS are provided in Table 5-1.

Table 5-1 PM₁₀ and PM_{2.5} annual averages for Penrith AQMS

Date	PM ₁₀ annual average (ug/m ³)	PM _{2.5} annual average (ug/m ³)
2021	16.7	7.9
2022	13.8	5.8
Average (Background)	15.3	6.85

5.3 Rainfall, soil dryness and wind

Meteorology conditions along the Project within the Inner West and North Sydney areas are expected to be representative of coastal areas along the east coast of NSW.

Climatic information for the region representative of the Project was extracted from the BOM data set for the Sydney (Observatory Hill) (site number 066064). A summary of the temperature and rainfall data is shown below in Table 5-2

Table 5-2 Summary of temperature and rainfall data from Observatory Hill

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann ual
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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann ual
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Source: BoM (2018) Climate averages for Station: 066064; Commenced: 1858 – last record April 2018; Latitude: 33.86°S; Longitude: 151.21 °E

Climatic information for the region representative Emu Plains (WHT13) construction support site was extracted from the BOM data set for Penrith Lakes AWS (site number 067113). A summary of the temperature and rainfall data is shown below in Table 5-3.

Table 5-3 Summary of temperature and rainfall data from Penrith Lakes AWS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann ual
Mean daily maximum temperature (°C)												
30.8	29.6	27.6	24.7	21.2	18.2	18.1	20.0	23.4	25.9	27.5	29.7	24.7
Mean daily minimum temperature (°C)												
18.6	18.5	16.8	13.1	9.2	6.8	5.4	6.2	9.3	12.3	15.0	17.0	12.4
Mean monthly rainfall (mm)												
95.1	118.8	104.7	50.2	35.2	45.2	37.2	30.4	30.8	54.9	83.5	65.0	755.1
Mean rain days per month (number)												
7.8	8.4	8.6	5.9	4.2	5.5	4.3	3.4	4.8	5.4	7.7	7.3	73.3

Source: BoM (2018) Climate averages for Station: 067113; Commenced: 1995 – last record April 2024; Latitude: 33.72°S; Longitude: 150.68 °E

Meteorological patterns are dominated 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. Refer to wind roses from the two closest BOM stations presented in Figure 5-3.

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 surface works.

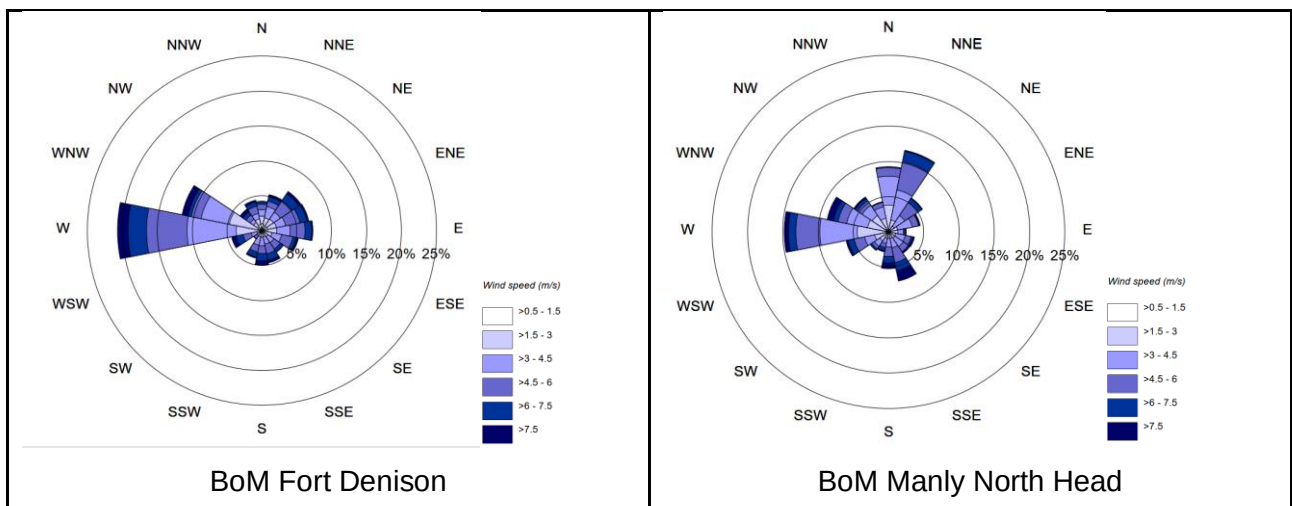


Figure 5-3 Fort Denison and Manly Meteorological Data, 2016

6 Environmental aspects and impacts

6.1 Construction activities

Emissions to the atmosphere during construction are expected to be temporary and relatively short lived. Adverse impacts to air quality from construction activities are typically divided into the following categories:

- Dust and particulates
- Gaseous emissions.

Key construction activities that could result in dust and particulate emissions include:

- General earthworks particularly during site establishment
- Vegetation clearing and grubbing
- Construction of cut and cover structures
- Drainage works and relocation of utilities
- Demolition of existing kerbs, structures and pavements
- Pavement construction
- Construction of noise barriers and retaining walls
- Cement and concrete works, such as precast concrete works
- Tunnel spoil handling, including stockpiling, loading and haulage
- 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.

Key construction activities that could result in gaseous emissions include:

- Vehicle and plant exhaust emissions
- Gases potentially released during:
 - Paving works
 - Excavations of contaminated materials
 - During sealing works
 - Road line marking

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

6.2 Air quality impacts arising from construction

Potential impacts associated with construction are discussed in Chapter 12 of the EIS and Section 9.3.2 of the MOD2 report, and are summarised below:

- 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 from 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.
- Temporary increase in air emissions from dust and products of combustion (from equipment operations).
- Complaints from the public relating to dust or other emissions.

6.2.1 Factors likely to affect dust generation and impacts

Several environment factors have the potential to affect the likelihood of dust emissions during construction. 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.

6.2.2 Dust emissions from surface construction works

Without mitigation, the EIS and MOD2 report identified multiple construction support sites would have a low to medium risk of dust settlement and human health impacts from earthworks. Additionally, the EIS noted these sites would have a medium risk to ecological receivers from earthworks and track-out (material tracking onto roads). The sites and risk level are identified in Table 6-1 below.

Table 6-1 List of sites with identified dust risk

Site	Site reference	Risk level
White Bay (Glebe Island area)	WHT3	Medium
Berry St North	WHT8	Medium
Ridge Street North	WHT9	Medium
Cammeray Golf Course	WHT10	Medium
Rozelle Cut and Cover Portals ¹	WHT12	Low
Emu Plains ²	WHT13	Low to Medium

Note:

¹ As approved through Consistency Assessment, not the EIS.

² As approved through MOD2, not the EIS.

The EIS found that the effects of airborne dust during construction will be temporary and of relatively short duration. As such, mitigation is considered straightforward because dust suppression measures are routinely employed as 'good practice' at most construction sites and areas of surface disturbance. The impacts associated with dust emissions as a result of the Emu Plains construction support site (WHT13) approved through MOD2 are generally consistent with those assessed in the Project EIS. Section 7 of this Plan provides a suite of mitigation measures that will be implemented to avoid or minimise air quality impacts.

However, as noted in Section 12.5.1 of the EIS, even with rigorous air quality management in place, it is not possible to guarantee that the mitigation measures implemented to manage any potential dust impacts during construction will be wholly effective all the time. There is still the residual risk that nearby residences, commercial buildings, hotel, cafés and schools in the vicinity of construction works might experience occasional dust impacts. This does not imply that impacts are likely, or that if they did occur, that they will be frequent or persistent. Overall, construction dust is unlikely to represent a serious ongoing problem with effects being temporary and likely only to arise during dry weather with the wind blowing towards a receiver at a time when dust is being generated and mitigation measures are not fully effective.

6.2.3 Dust emissions containing contaminants

There is the potential for dust emissions to contain contaminants mobilised through the disturbance of contaminated soils, and other hazardous materials. Areas identified in the EIS and the MOD2 report as potentially containing contaminated soils and other hazardous substances which may be disturbed during construction include:

- Cammeray Golf Course (noting that major earthworks has been undertaken and it is likely that the majority of contaminated material has been removed by the Warringah Freeway Upgrade project).
- Ridge St North (Falcon St Off Ramp).
- Berry Street North
- Emu Plains (WHT13) construction support site

Prior to the commencement of any work that would result in the disturbance of moderate to high risk contaminated sites identified in the EIS, where this contamination has not been previously removed or remediated (i.e. as part of another Stage of works for WHT or the Warringah Freeway Upgrade Project), in compliance with the Project's conditions a Detailed Site Investigation and will be undertaken to confirm existence, location, type and extent of any contamination. Where this is confirmed to exist, contamination management measures will be determined in consultation with the Projects EPA accredited independent Site Auditor. Further information on this process is detailed in the Project's Soil and Surface Water Management Plan.

6.2.4 Emissions from plant and equipment

The use of on-site diesel-powered vehicles, generators and construction equipment, and the handling and/or on-site storage of fuel and other chemicals, will potentially result in localised increased concentrations of airborne particle matter, CO, NO_x, sulfur dioxide and volatile organic compounds. Minor emissions from these sources will be localised and will be adequately managed with standard environmental management measures.

6.2.5 Emissions during blasting

If blasting for the project is required, it will be carried out underground and there will be no direct emissions from blasting to the external air. Further analysis and assessment of potential blast impacts will be carried out during further design development, including the preparation of a Blast Management Plan. Emissions to ambient air from blasting will be managed to ensure safe working conditions for workers underground.

6.2.6 Cumulative impacts

Potential cumulative impacts associated with the concurrent construction of the 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 negligible.

Potential cumulative impacts associated with Emu Plains (WHT13) construction support site is discussed in Table 9-32 of the MOD2 report. The assessment indicated the adjacent Boral Quarry site would contribute to the local air quality impact. However, impacts from the Emu Plains (WHT13) construction support site would be managed such that cumulative impacts with the adjacent site would be mitigated with standard and well proven mitigation measures, these risks would be reduced to low.

6.3 Air quality criteria

Air quality criteria are used to provide guidance as to whether a concentration or deposition rate has the potential to result in an adverse effect on a receptor, whether that be residential, commercial or recreational. Criteria are also different with effects being separated into either amenity effects or health effects.

In consideration of the proposed works, expected impact and the proximity of the construction activities to sensitive communities, the monitoring of deposited dust will be carried out for the duration of surface works construction activities where no spoil/acoustic shed is in place.

The relevant criteria provided in the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (NSW EPA, 2017) has been adopted for the construction phase of the Project.

The EPA expresses dust deposition criteria in two ways. Firstly, in terms of an acceptable increase in dust deposition over the existing background/baseline deposition levels. The acceptable increase in deposited dust levels depends on the existing environment deposition levels. The second criteria is a measure of maximum total dust deposition levels. Table 6-2 details the air quality monitoring criteria for deposited dust for the Project.

The criteria in Table 6-2 for dust deposition relate to the 100th percentile, total cumulative concentration of dust in the air and not just contributions from Project-specific sources. As the majority of the Project is located in an urban environment, there is potential that existing dust levels may already be in exceedance of criteria, therefore ambient dust concentrations must also be considered when evaluating against these criteria.

Table 6-2 Dust Deposition Rate Criteria

Dust			
Pollutant	Averaging Time	Criteria	Source
Deposited Dust ^a	Annual (max increase) ^b	2 g/m ² /month	NSW EPA, 2017
	Annual (max total) ^c	4 g/m ² /month	NSW EPA, 2017
Notes: a. Dust is assessed as insoluble solids as defined by AS 3580.10.1-1991 (AM-19) b. Maximum increase in deposited dust level c. Maximum total deposited dust level.			

Source: Adapted from *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (NSW EPA, 2017)

7 Environmental mitigation and management measures

Construction associated with the Project has the potential to impact air quality within and adjacent to the construction footprint. In order to avoid, mitigate and/or minimise these potential impacts, a range of environmental requirements and control measures are identified in the various environmental documents, including the EIS and other Transport for NSW guidance documents. These specific measures and requirements, along with additional measures identified as best practice, are outlined in Table 7-1. Where required, measures will be updated into this document prior to the Harbour Crossing phase.

This chapter has been developed in consideration of the 'SMART Principles' – Specific, Measurable, Achievable, Relevant and Time-based.

7.1 Dust catchment areas and sensitive receivers mapping

Dust catchment areas and sensitive receivers mapping is provided in Appendix I1. This mapping will be used by the Project as a reference during construction and inductions.

The area of WHT12 is located primarily underground (i.e. within the portals constructed for the WestConnex Rozelle Interchange). The surface footprint of this site is already hardstand and provides office buildings. There are no dust generating activities nor exposed surfaces at this location and as such a dust catchment area is not included for WHT12.

The Project Area of the Sydney harbour crossing (i.e. works in Zone 4 as shown in Figure 5-1) will occur well below the ground level and as such no dust impact is expected to impact the local ambient environment at the surface.

The Emu Plains (WHT13) construction support site has a medium potential for dust emissions due to exposed soils presently on the site. As the majority of the site would be either sealed or covered by sheds as part of site establishment activities, the potential for dust emissions during the site's operation would be low.

All employees, contractors and utility staff working on site will undergo site induction training relating to air quality impact management issues, as discussed in Section 8.2.

7.2 Management and mitigation measures

Management and mitigation measures relevant to the Project are outlined in Table 7-1. These will be implemented to minimise impacts to air quality and ensure all commitments and requirements of the project approval are met. These specific management and mitigation measures have been developed to address the requirements of applicable legislation, the MCoA and commitments of the REMMs.

Table 7-1 Air quality impacts management and mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
AQMP1	Reasonable and feasible dust suppression and/or management measures will be implemented during construction 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) Management measures may include water carts, dust sweepers, dust suppressants, sprinklers, dust screens, site exit controls to prevent mud/material tracking (e.g. wheel washing systems and rumble grids), stabilisation of exposed areas or stockpiles, and surface treatments.	Environmental Work Method Statements (where applicable) Street sweeper, wheel washes, rumble grids, wetting systems (hoses, sprinklers etc), soil binders, segregation areas. Spoil handling sheds at Cammeray Golf Course and Ridge Street North.	Construction	Site Supervisor Environmental Manager	MCoA E1 REMM AQ1(a) REMM AQ1(c) EPL O3.2	Environmental inspection checklist records
AQMP2	Appropriate selection of construction equipment and/or materials handling techniques that minimise the potential for dust generation will be undertaken	Environmental Work Method Statements (where applicable)	Construction	Site Supervisor	MCoA E1 REMM AQ1(b)	Environmental inspection checklist records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
AQMP3	Weather forecasts and prevailing wind directions will be reviewed prior to the commencement of potential dust generating activities. Where dust is visually observed as migrating outside of the project boundary, additional adjustment/management measures will be implemented. This can include: • Additional water applied to haul roads and stockpile benches during excavation. • Dust curtains around drill rigs.	Weather forecast Wind direction and measurements Water carts/trucks Dust curtains	Construction	Site Supervisor	MCoA E1 REMM AQ1(d) EPL O3.1	Environmental inspection checklist records Weather records Environmental Work Method Statements (where applicable)
AQMP4	Exposed areas will be minimised during construction and revegetated as soon as practicable, including covering of exposed areas (for example, via acoustic sheds or hardstand).	Hardstand materials, soil binders and cover crop, coverings (such as geofabric or builders' plastic)	Construction	Site Supervisor	MCoA E1 REMM AQ1(e) EPL O3.1	Environmental inspection checklist records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
AQMP5	Site inspections will be carried out to monitor compliance with implemented air quality measures. Inspections will occur in line Table 8-1, and in line with the monitoring and reporting requirements of the Air Quality Monitoring Program.	Personnel to carry out site inspections Inspection checklist	Construction	Site Supervisor Environmental Manager	MCoA E1 REMM AQ1(h)	Environmental inspection checklist records Air Quality Monitoring Program (refer Appendix I2, Section 4.2) CEMP Section 5.12
AQMP6	Engine idling will be minimised and plant will be switched off when not in use to reduce emissions.	Plant and equipment maintenance as required Plant onboarding checks. Driver Code of Conduct	Construction	Site Supervisor	MCoA E1 Transport for NSW Specification G36	Plant and equipment records Environmental inspection checklist records
AQMP7	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	Section 3.7.1 of CEMP (Internal communication)	Construction	Site Supervisor	REMM AQ1(g)	Training, Induction and Toolbox Talks records.
AQMP8	Dust and air quality complaints will be managed in accordance with the overarching complaints management system for the project. Appropriate corrective actions, if required, will be taken to reduce emissions in a timely manner	Complaints Management System	Construction	Site Supervisor Environmental Manager	MCoA E1 REMM AQ2	Project Complaints Register

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
AQMP9	Implement the Air Quality Monitoring Program for the duration of construction	Personnel to carry out monitoring. Depositional dust monitoring stands and bottles. NATA Accredited Laboratory Nasal rangers (if required)	Construction	Environmental Manager	MCoA 11(b) Transport for NSW Specification G36	Air Quality Monitoring Program (refer Appendix I2)
AQMP10	No burning of any timbers or other combustible materials	Environmental Work Method Statements (where applicable)	Construction	Site Supervisor	Transport for NSW Specification G36	Environmental inspection checklist records
AQMP11	Trucks that are transporting / carrying loads of material that have the potential to generate dust must have their loads covered prior to leaving the Project Area	Construction vehicles fitted with load covering	Construction	Site Supervisor Environmental Manager	EPL O3.4	Environmental inspection checklist records

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference	Evidence
AQMP12	Pesticides (including herbicides) are only to be applied by personnel trained and competent in chemical use. Pesticide Application Records and public notifications are to be made in accordance with relevant legislation and G36, where pesticides are to be used in areas that could be accessed by members of the public. Only pesticides registered for use near water may be used near any waterways.	Trained Personnel to carry out pesticide applications. ACCIONA Pesticide Use procedure Environmental Work Method Statements Hazardous chemical storage locations	Construction	Site Supervisor Environmental Manager	REMM B14, B15 Transport for NSW Specification G36	Environmental inspection checklist records Pesticide Application Record

8 Compliance management

Compliance with this AQMP will be measured against the targets outlined in Section 2.3 of this Plan through ongoing monitoring throughout the construction of the Project.

8.1 Roles and responsibilities

The ACCIONA Project Team's organisational structure and overall roles and responsibilities as well as the Environmental Representative and required specialists are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 7 of this Plan.

8.2 Training

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

- Existence and requirements of this Plan
- 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 will occur for the duration of construction as appropriate. Further monitoring requirements are specified in the Air quality monitoring program (refer Appendix I2 of this Plan).

All monitoring of dust deposition and meteorology will be undertaken in accordance with the NSW DEC *Approved Methods for the Sampling and Analysis of Air Pollutant in NSW*.

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
Meteorological data including daily rainfall, temperature, and wind (direction and speed).	All Construction support sites	Daily rainfall records from closest BOM or DPE station	Environmental Manager	Approximately Daily
Informal visual observations during daily site inspections and weekly environmental site inspections to ascertain the effectiveness of implemented dust and air quality 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 Construction support sites	Daily diaries Weekly inspection record	Site Supervisor Environmental Manager	Daily Weekly
Weekly environmental 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 Construction support sites	Weekly inspection record	Site Supervisor Environmental Manager	Weekly
Monitoring as described in the Project Air Quality Monitoring Program (Appendix I2).	As described in the Project Air Quality Monitoring Program (Appendix I2).			

8.4 Licences and permits

An Environmental Protection Licence (21791) has been obtained by the Project. The requirements relevant to air quality have been incorporated into this Plan.

In the event a separate Environmental Protection Licence (EPL) is required, the relevant requirements of that EPL will be incorporated into this Plan.

8.5 Auditing

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

Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.6 Incidents and Non-compliances

All incidents will be managed in accordance with Section 3.8 of the CEMP.

All non-compliances will be managed in accordance with Section 3.10 of the CEMP.

8.7 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 the Air Quality Monitoring Program (refer Appendix I2).

In accordance with MCoA E37 within 18 months of commencement of construction, ACCIONA would provide relevant data to TfNSW for submission in accordance with the MCoA.

Incident response reporting will be carried out in accordance with Section 3.8 of the CEMP.

9 Review and improvement

9.1 Continuous improvement

As outlined in Section 3.12 of the CEMP, management reviews will be undertaken as part of the continual improvement process. The reviews will be initiated by the Environmental Manager and include relevant project team members and stakeholders. Continuous improvement of this plan and of monitoring requirements detailed in Section 8.3 of this Plan will be achieved by the ongoing evaluation of environmental management performance against planning approval requirements, 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 outlined in Section 2.2 and 2.3 of this Plan.

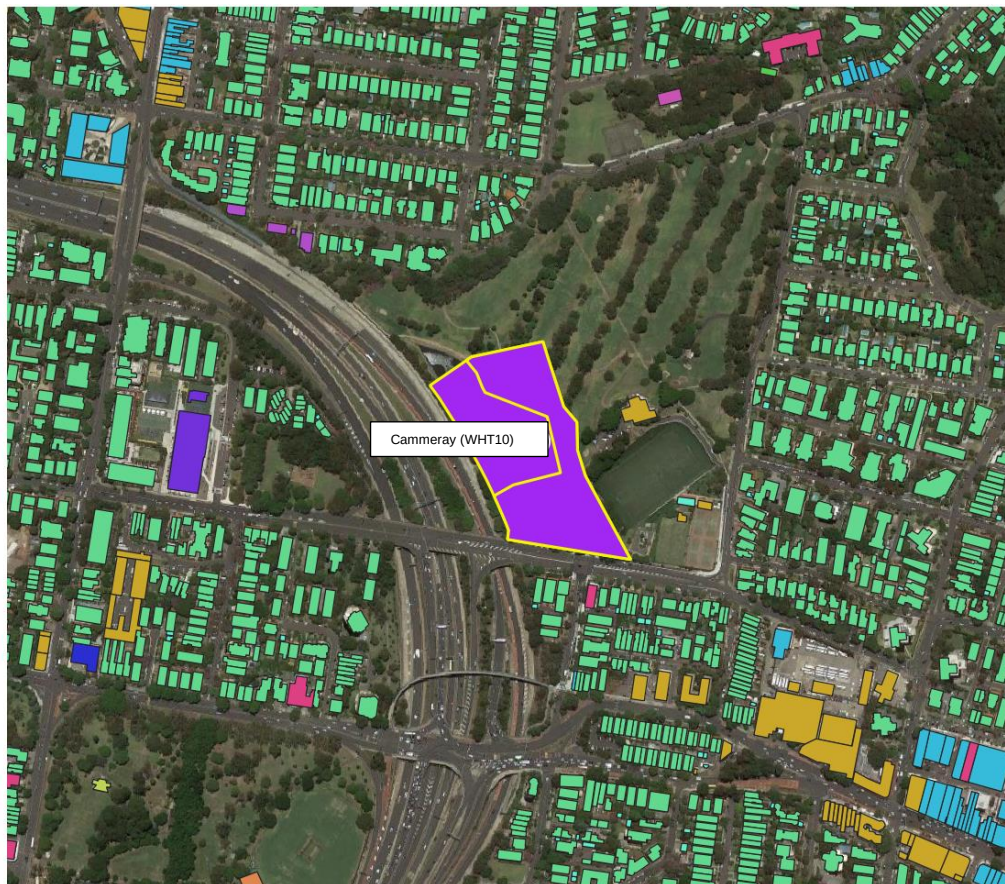
9.2 AQMP update and amendment

The auditing and review processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur whenever there is a change to the construction scope or methodology that may increase the potential impacts upon air quality to address relevant updates to a related Sub-Plan or monitoring program.

Only the Environment Manager can amend this Plan. Any update of this Plan will require endorsement by the Environmental Representative and depending on the change, the process outlined in Section 2 of the CEMP must be followed where approval from the Planning Secretary prior to implementation of the update is required.

Appendix I1 - Dust catchment areas and sensitive receivers





Air Quality Receivers

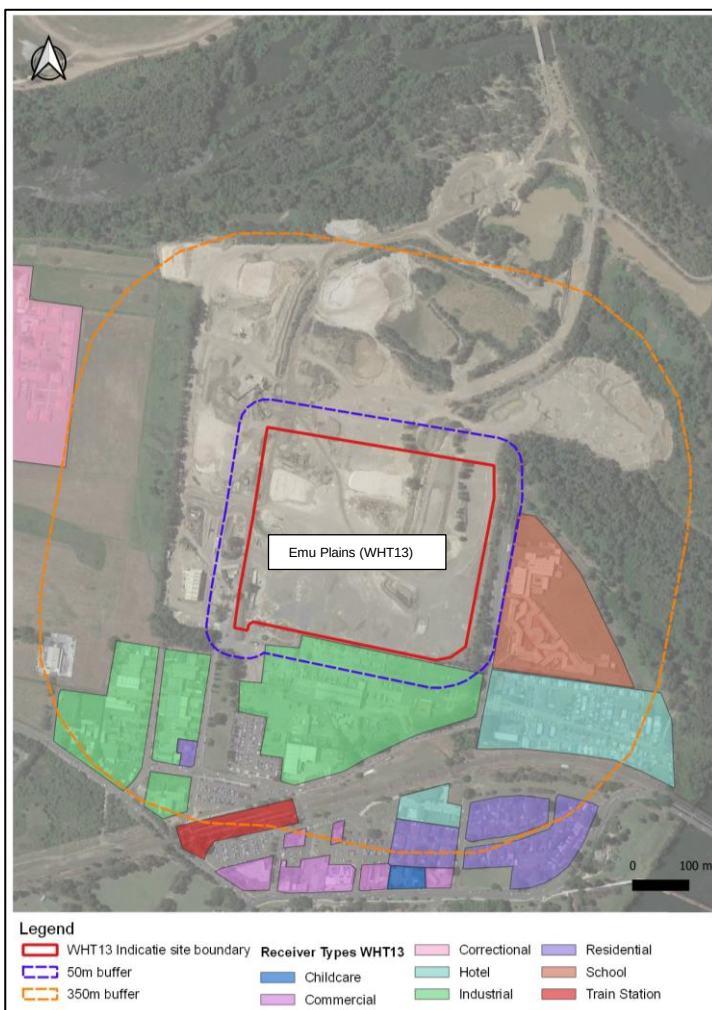
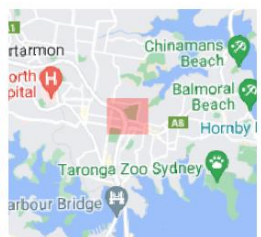
Legend

Construction Support Sites

Receiver Type

- Commercial/Industrial
- Mixed use
- NonReceiverBuilding
- OSR (Childcare)
- OSR (Educational)
- OSR (Remaining)
- Other project acquisition
- Recreational - Active
- Recreational - Passive
- Residential

0 80 160 m



Legend

- WHT13 Indicative site boundary
- 50m buffer
- 350m buffer

Receiver Types WHT13

- Childcare
- Commercial
- Correctional
- Hotel
- Industrial
- Residential
- School
- Train Station

Appendix I2 - Air Quality Monitoring Program

Appendix I2

Air Quality Monitoring Program

Western Harbour Tunnel

April 2024

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Document control

Approval and authorisation

Approved on behalf of ACCIONA by	Andrew Marsonet
Signed	
Dated	15 December 2022

Document Status

Revision	Date	Description	Approval
Rev A	15.12.2022	For TfNSW review	E. Woodward
Rev B	24.01.2023	For external review	E. Woodward
Rev 00	01.03.2023	For DPE review	E. Woodward
Rev 01	20.03.2023	Update following ER comments; for DPE review	E. Woodward
Rev 02	11.04.2023	Update following DPE comments; for DPE approval	E. Woodward
Rev 03	27.04.2023	Update following DPE comments; for DPE approval	E. Woodward
Rev 3.1	14/08/2023	Updated to include Stage 3C. For external consultation.	M.Lee / E. Woodward
Rev 3.2	22/02/2024	For Stage 3C ER review	C. Weller
Rev 3.3	13/03/2024	Updated following ER's review. For Stage 3C ER endorsement	C. Weller
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Glossary / Abbreviations

Abbreviation	Expanded text
AQMP	Air Quality Management Sub-plan
BOM	Australian Government Bureau of Meteorology
CEMP	Construction Environmental Management Plan
DDG	Depositional Dust Gauge
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly Department of Planning and Environment)
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EPL	Environmental Protection Licence
CoA	Minister's Conditions of Approval
Program	Air Quality Monitoring Program (this Program)
Project, the	Western Harbour Tunnel project
REMM	Revised Environmental Management Measure
TfNSW	Transport for NSW (formerly Roads and Maritime)

1 Introduction

1.1 Context

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

The Program forms Appendix I2 of Air Quality Management Sub-plan (AQMP) of the CEMP (Construction Environmental Management Plan).

This Program has been prepared to address the Minister's Conditions of Approval (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), Western Harbour Tunnel and Warringah Freeway Upgrade TBM solution of crossing Sydney Harbour – Modification 2 (MOD2) and applicable guidelines and legislation.

This Program has been developed in consideration of the SMART Principles – Specific, Measurable, Achievable, Relevant and Time-based.

1.2 Scope of Monitoring Program

The scope of this Program is to describe how ACCIONA will monitor dust deposition impacts during construction of Stage 3C of the Project (refer to the Air Quality Management Plan for greater detail on Project phasing and document update).

Operational monitoring and operation measures do not fall within the scope of the construction phase and therefore are not included within the processes contained within this Program.

1.3 Implementation of Monitoring Program

As per CoA C18, this Program has been endorsed by the Environmental Representative (ER) and then submitted to the Planning Secretary for approval at least one month prior to commencement of Stage 3C construction.

As per CoA C19, construction on Stage 3C will not commence until the Planning Secretary has approved all required Construction Monitoring Programs, including this Air Quality Monitoring Program.

The AQMP, as approved by the Planning Secretary including any minor amendments approved by the ER will be implemented for the duration of construction and for any longer period or specified by the Planning Secretary, whichever is the greater.

2 Purpose and objectives

2.1 Purpose

The purpose of the Program is to describe how ACCIONA will monitor dust deposition during construction of the Project, and to comply with MCoA C12.

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

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

The requirements of MCoA C11, C12 and C17 to C21 inclusive and where they have been addressed within this document is included in Table 1.

Table 1 MCoA requirements for monitoring programs

Ref	Requirement	Where addressed						
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: <table border="1"> <tr> <th></th><th>Required Construction Monitoring Program</th><th>Relevant government agencies to be consulted for each Construction Monitoring Program</th></tr> <tr> <td>(b)</td><td>Air Quality Monitoring</td><td>EPA</td></tr> </table>		Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program	(b)	Air Quality Monitoring	EPA	This Program Section 2.3
	Required Construction Monitoring Program	Relevant government agencies to be consulted for each Construction Monitoring Program						
(b)	Air Quality Monitoring	EPA						
C12	Each Construction Monitoring Program must provide:	-						
	a) details of baseline data available	Section 3.1						
	b) details of baseline data to be obtained and when	Section 3.1						
	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	Section 3.2 Section 4						
	g) the reporting of monitoring results and analysis results against relevant criteria	Section 4.2 Section 4.3						
	h) details of the methods that will be used to analyse the monitoring data	Section 4.2						
	i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicate unacceptable project impacts	Section 4.2						
	j) a consideration of SMART principles	Section 4.2						
	k) any consultation to be undertaken in relation to the monitoring programs	Section 2.3						
	l) any specific requirements as required by Conditions C13 to C14	Not applicable						
C17	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	Section 2.3						

Ref	Requirement	Where addressed
	Programs, including copies of all correspondence from those agencies as required by Condition A5.	
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.	Section 1.3
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.	Section 1.3
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.	Section 1.3
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. Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan.	Section 4.3

2.2 Objectives

The key objectives of this Program is to ensure all requirements relating to dust deposition monitoring are described, scheduled, and assigned responsibility as outlined in:

- The revised environmental management measures (REMMs) included in RtS and MOD2 report prepared for Western Harbour Tunnel and Warringah Freeway Upgrade project
- Minister's Conditions of Approval granted to the project on 21 January 2021
- Transport for NSW specification G36 Environment Protection (Transport for NSW, 2020)
- The Project's Environment Protection Licence (EPL)
- Relevant legislation and other requirements described in the AQMP.

2.3 Consultation

This Program has been provided to the NSW Environment Protection Authority (EPA) in accordance with CoA C11(b). Evidence of consultation has been provided to the Planning Secretary in accordance with MCoA A5.

Ongoing consultation with relevant councils (North Sydney Council, Inner West Council, Penrith City 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 dealt with in accordance with the Project Communication Strategy and Complaints Management System.

3 Dust Deposition Monitoring

3.1 Baseline Monitoring

As described in the EIS, air quality in the vicinity of the Western Harbour Tunnel is expected to be representative of a high density commercial / urban environment. The adjacent arterial roads to the project, namely Warringah Freeway (along with network of major roadways linking the freeway to North Sydney and Northern Beaches area), City West Link and Victoria Road, represents the primary sources of air pollution in the area.

For the purpose of the EIS, air quality monitoring data from nearby Department of Planning and Environment (DPE) and Transport for NSW (formerly Roads and Maritime Services) monitoring stations was utilised and included in Appendix H (Technical working paper: Air quality) of the EIS. This data was sourced to inform ambient air quality, between 2004 and 2018, at DPE stations (Chullora, Earlwood, Randwick, Rozelle, Lindfield, Liverpool and Prospect) and Transport for NSW M5 East stations (CBMS, T1, U1, X1, F1 and M1). These dates were chosen in order to be consistent with 'pre-construction' conditions, and exclude periods where major project construction (such as the Rozelle Interchange) was being undertaken. Outcomes presented in the EIS are included in the Air Quality Management Plan.

No additional baseline monitoring data for dust deposition was undertaken during the preparation of the EIS, and a review of the EPA's Sydney air quality monitoring stations identified that the EPA do not measure dust deposition as part of their air quality monitoring program. As such, the EPA criteria of 4g/m²/month as detailed in the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2016) will be used in place of baseline data.

No baseline monitoring data for dust deposition at the Emu Plains construction support site was undertaken during the preparation of the MOD2 report.

3.2 Construction monitoring

3.2.1 Overview

Dust deposition gauges record airborne dust which can be derived from construction activities and provide a useful measure of changing local air quality.

A total network of five deposition dust gauges will be installed during construction of the Project (refer to Section 3.2.3).

Data from these gauges enables determination of dust deposition levels as a result of adjacent construction works. Data will be collected on a monthly basis (30 days +/- 2 days), and results for dust deposition will be compared against the criterion and reported in the Dust Deposition Monitoring Reports prepared every six months (Section 4.3).

Independent to dust deposition gauges, the Project will implement standard and well proven construction management measures to minimise dust generation. Refer to Table 7-1 of the Air Quality Management Plan for management measures that will be implemented throughout construction of the Project.

3.2.2 Performance Criteria

As described in Section 3.2 of the AQMP, dust deposition criteria provided in the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (NSW EPA, 2017) has been adopted for the construction phase of the Project.

The EPA expresses dust deposition criteria in two ways. Firstly, in terms of an acceptable increase in dust deposition over the existing background/baseline deposition levels. As background/baseline dust deposition levels are not available this criterion has not currently been adopted. The second

criterion is a measure of maximum total dust deposition levels. This criterion has currently been adopted for the Project. The long-term (annual average) EPA criterion for depositional dust that applies to the Project is provided in Table 3-1.

Table 3-1: Long-term impact assessment criterion for deposited dust

Pollutant	Averaging Time	Criteria	Source
Deposited Dust	Annual (max increase)	2 g/m ² /month ¹	NSW EPA, 2017
	Annual (max total)	4 g/m ² /month ¹	NSW EPA, 2017

¹ Dust is assessed as insoluble solids as defined by AS 3580.10.1-1991 (AM-19)

The Project is located in an urban environment, and in the absence of background / baseline data, there is a potential that existing deposited dust levels may already be in exceedance of the criterion listed in Table 3-1.

If the above triggers are observed, a review will be initiated and included as part of the Monitoring reports (refer to Section 4.3) to determine the significance of the exceedance(s) and possible causes. The review will assess the available dust deposition data, recent weather records, and recent activities or recorded air quality control incidents occurring at the relevant ancillary facility. In addition, the review will also identify what, if any dust minimisation improvements can be made.

In the case of dust complaint, this would be investigated by reviewing work practices at the time of the complaint, including recent meteorological conditions, and confirming whether appropriate mitigations have been implemented. More information on response to complaints is included in the Air Quality Management Plan.

3.2.3 Monitoring locations

Monitoring will be undertaken using depositional dust gauges located at each of the locations identified in Table 3-2 and shown on Figure 3-1 to Figure 3-4. Locations have been selected to align with the requirements of AS/NZS 3580.1.1-2016 'Methods for sampling and analysis of ambient air Guide to siting air monitoring equipment'.

Table 3-2 Dust monitoring locations

Location	Site	EIS Risk level	Proposed Monitoring
Glebe Island	WHT3	Medium	On White Bay boundary of the work site as shown in Figure 3-3.
Berry St North	WHT8	Medium	On North Sydney boundary of the work site as shown in Figure 3-1.
Ridge Street North	WHT9	Medium	St Leonards Park as shown in Figure 3-1
Cammeray Golf Course	WHT10	Medium	Cammeray Golf Course as shown in Figure 3-2.
Rozelle Portals ¹	WHT12	Low	None – low risk.
Emu Plains ²	WHT13	Low - Medium	On Emu Plains boundary of the work site as shown in Figure 3-4.

Note: ¹As identified through Consistency Assessment, not the EIS.

² As identified through MOD2 report, not the EIS.



Figure 3-1 Depositional Dust Gauge indicative locations for Ridge Street and Berry Street north



Figure 3-2 Depositional Dust Gauge indicative location for Cammeray Golf Course

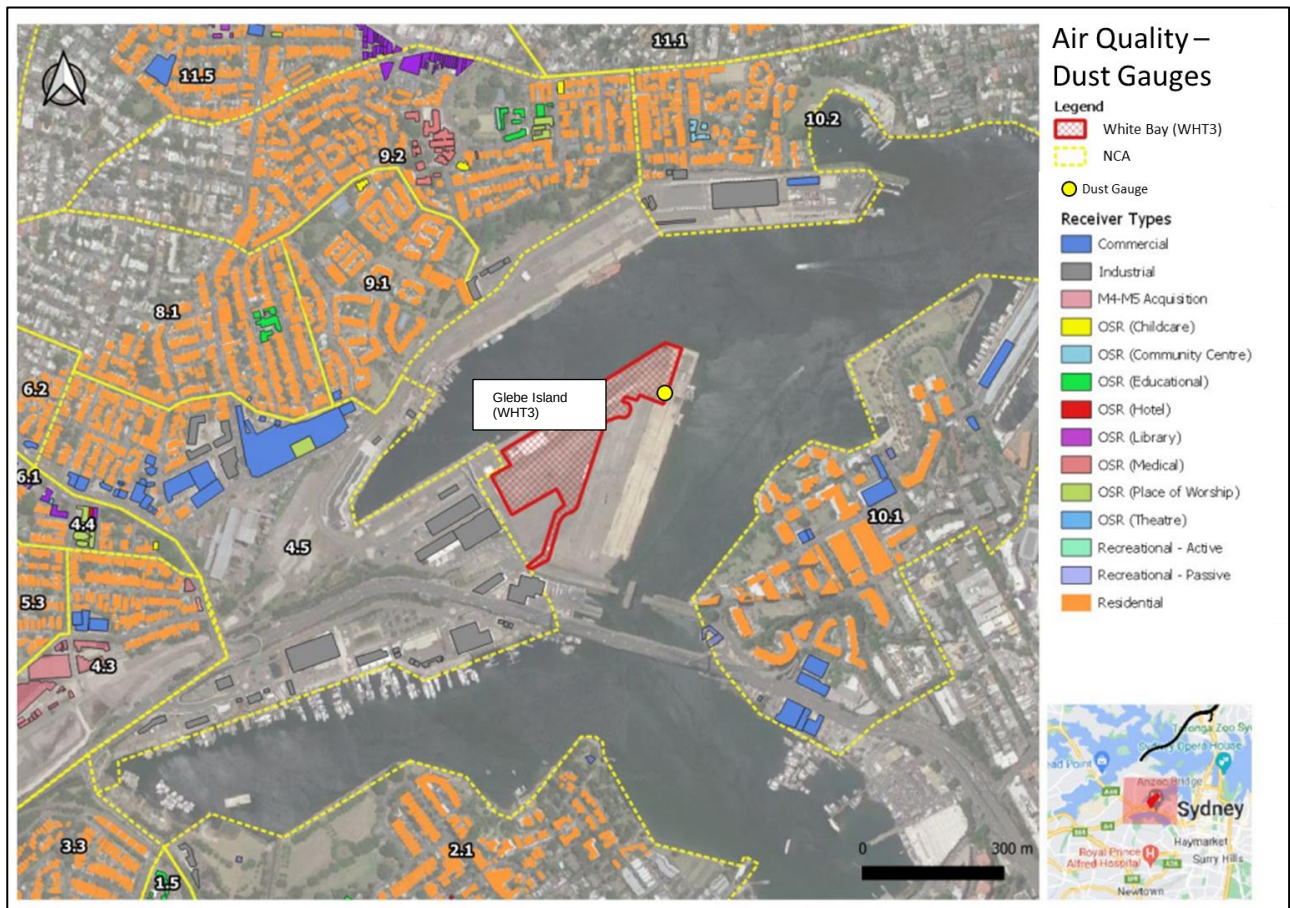


Figure 3-3: Depositional Dust Gauge indicative location for White Bay

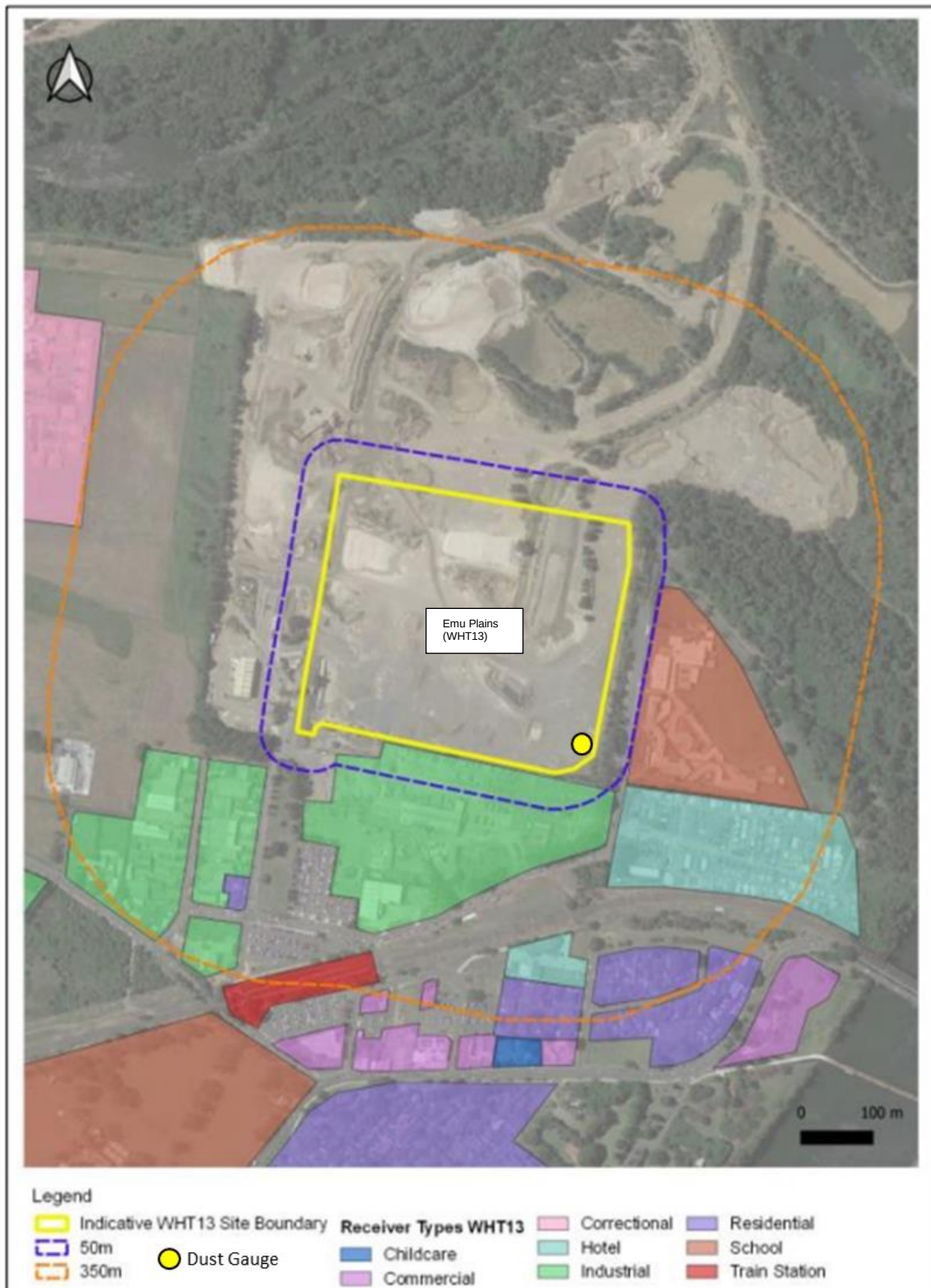


Figure 3-4: Depositional Dust Gauge indicative location for Emu Plains

3.2.4 Sample collection and laboratory analysis

The dust deposition gauges will be collected, and replaced, from site every 30 ± 2 days and then analysed for insoluble solids. Analysis will be undertaken by a National Association of Testing Authorities (NATA) accredited laboratory. Monitoring for depositional dust must comply with AS/NZS 3580.1.1-2016, Methods for sampling and analysis of ambient air – Determination of

particulates – Deposited Matter – Gravimetric Method and the NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2016).

3.2.5 Quality assurance and documentation

Quality assurance and control protocols during sampling and recording parameters will be undertaken every 30 ± 2 days (each sampling event) in accordance with AS/NZS 3580.10.1-2016, Methods for sampling and analysis of ambient air – Determination of particulates – Deposited Matter – Gravimetric Method to ensure the integrity of the dataset.

Samples are to be transported to a NATA-accredited laboratory under documented chain-of-custody protocols.

Field results will be checked for accuracy before leaving the site and errors or discrepancies will be cross-checked, and further investigation initiated if required.

Monitoring records will be maintained in accordance with the appropriate standard.

4 Compliance management

4.1 Roles, responsibilities and training

ACCIONA'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 control.

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

4.2 Data analysis and management response

Results from the construction dust deposition monitoring program will be compared with the criterion identified in Table 3-1 with results previously recorded on the project.

Dust monitoring outcomes will be included in six monthly Monitoring Reports, however the monitoring results will be received and reviewed monthly and, if a trigger is observed (see Section 3.2.2), a review will be initiated to determine the significance of the exceedance(s) and possible causes.

The review will assess available dust deposition data, recent weather data, and recent activities or air quality incidents occurring at the relevant ancillary facility site. The review will also identify what, if any, additional dust minimisation improvements can be made.

SMART principles (Specific, Measurable, Achievable, Realistic and Timely) have been considered and applied within this monitoring program to define scope, locations, procedures, testing and reporting. Where air quality exceedances are confirmed to have been caused by construction, the management mechanisms described in the AQOMP will be implemented, reviewed and/or improved.

4.3 Reporting

During construction, dust deposition data will be collected, tabulated and assessed against the criterion identified in Table 3-1. Monitoring reports will be included as part of the Project 6 monthly Monitoring Reports.

Reporting requirements associated with the Program for the construction phase of the Project are presented in Table 4-1.

Table 4-1 Reporting Requirements

Reporting Schedule	Content	Recipient (relevant authority)
Air Quality Monitoring Six monthly as part of Project Monitoring Reports	Data summary reports presenting tabulated dust monitoring data collected during the reporting period. Dust monitoring exceedance results (if applicable) will be presented. Applicable management responses.	EPA, DPHI

Incident response reporting will be carried out in accordance with Section 3.8 of the CEMP.

5 Review and improvement

5.1 Continuous improvement

Monitoring data will be reviewed throughout the construction period to identify potential benefits to increase, or decrease, or relocate sampling locations and/or the analytical suites. This may occur as the result of:

- Major changes in catchment use (not associated with the Project)
- Changes in access or safety implications for identified monitoring locations
- Improvements to better isolate construction impacts and avoid confounding inputs from other sources

In the case a review identifies the need for the monitoring program to be adjusted, the identification of revised/new sites or analytes will be undertaken in consultation with TfNSW and the Environment Representative.

This document will be subject to the review processes described in the CEMP.

5.2 Update and amendment

The processes described in the CEMP may result in the need to update or revise this Plan. This will occur as needed. In such cases, updates will occur as described in the CEMP.