Australian Government

**Department of Infrastructure, Transport,
Regional Development, Communications and the Arts**

Cath Snelgrove
Director Environment
Sydney Metro
PO Box K659
Haymarket NSW 1240

Dear Ms Snelgrove

[redacted]

I write to notify you that, in accordance with Condition 39 of the Airport Plan, I have today approved the Construction (Rail) Plan and nine CEMPs submitted by Sydney Metro on 13 July 2023, namely:

- Noise and Vibration CEMP
- Biodiversity CEMP
- Soil and Water CEMP
- Traffic and Access CEMP
- Air Quality CEMP
- Aboriginal Cultural Heritage CEMP
- European and Other Heritage CEMP
- Waste and Resources CEMP
- Visual and Landscape CEMP

The requirements set out with the original notice of approval of the nine CEMPs continue to apply to the revised approved CEMPs. Sydney Metro is required:

a. To take reasonable steps to ensure that each person involved in carrying out a development that is part of the Rail Development is informed of, and complies with, the CEMP (Condition 45(3) of the Airport Plan).

b. To maintain accurate records demonstrating implementation of, and compliance with, the approved CEMPs, and other applicable conditions contained in Section 3.11.6 of the Airport Plan. Records must be made available to the Infrastructure Department on request (Condition 46 of the Airport Plan).

c. To publish information in a report about its compliance with the conditions set out in section 3.11.6 of the Airport Plan (Rail Conditions) and its implementation of the approved CEMPs (Condition 47 of the Airport Plan).

d. To ensure that an independent audit of its compliance with the conditions set out in section 3.11.6 (except Condition 44), and condition 46 of the Airport Plan (Rail Conditions) is conducted, by an approved independent auditor, in respect of the 12-month period commencing with commencement of Rail Construction Works. The independent audit report must be submitted to the Infrastructure Department, with a copy provided to the Environment Department, within six months of the end of the period in respect of which the audit was conducted (Condition 48 of the Airport Plan).

e. To ensure that any Rail Development is not carried out inconsistently with any of the approved Rail CEMPs (Condition 39 of the Airport Plan).

f. Unless otherwise agreed by an Approver, to publish the approved plans on its website (Condition 50 of the Airport Plan).

If you have any queries in relation to this letter, please do not hesitate to contact me.

Yours sincerely

David Jansen
Assistant Secretary
Western Sydney Airport Regulatory Policy Branch

14 August 2023

Sydney Metro Western Sydney Airport
Air Quality
Construction Environmental Management Plan

Sydney Metro Integrated Management System (IMS)

Applicable to:	Airport Rail Development
Document Owner:	Sydney Metro
System Owner:	-
Status:	Final
Version:	Rev06
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Figures

Tables

Document Control

Title	Sydney Metro Western Sydney Airport Air quality Construction Environmental Management Plan
Document No/Ref	SM-21-00033303

Version Control

Revision	Date	Description
01	**17 June 2021**	Draft for tender
02	**14 August 2021**	Draft for WSA Review
03	**1 November 2021**	Issued for DITRDC
04	**26 January 2022**	Final for DITRDC
05	**18 February 2022**	Final
06	**11 July 2023**	Draft for WSA Review
06	**13 July 2023**	Issued for DITRDC

Terms and Definitions

Terms	Definitions
The Act	**Airports Act 1996 (Cth) (Airports Act)**
AEPR	Airports (Environment Protection) Regulations 1997
AEW	Advanced and Enabling Works
Airport	Western Sydney International (Nancy-Bird Walton) Airport (WSI) located at the Airport Site. Note: The Airport is referred to in the Act as Sydney West Airport and is commonly known as Western Sydney International (Nancy-Bird Walton) Airport
Airport Lease	An airport lease for the Airport granted under section 13 of the Act
Airport Lessee Company	The company that is granted a lease over the Airport Site
Airport Plan	Means the September 2021 approved Airport Plan which includes the Variation for the SM - WSA Rail Development on the WSI airport and which otherwise means airport plan for the Airport Site as determined by the Infrastructure Minister under section 96B of the Act in December 2016 as varied from time to time in accordance with the Airports Act.
Airport Site	The site for Sydney West Airport as defined by the Airports Act.
AFFM	Aquatic Flora and Fauna Management
AS	Australian Standard
AQCEMP	Air Quality Construction Environmental Management Plan
BC Act	Biodiversity Conservation Act 2016 (NSW)
CCS	Community Communication Strategy
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CIZ	Construction Impact Zone
CNVS	Construction Noise and Vibration Impact Statement
CoA	Conditions of Approval
CSSI	Critical State Significant Infrastructure
CTMF	Construction Traffic Management Framework
Cwth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment (Cwth)
DECC	NSW Department of Environment and Climate Change
DITRDC	Department of Infrastructure, Transport, Regional Development and Communications
DPIE	NSW Department of Planning, Industry and Environment
ECM	Environmental Control Map
ECZ	Environmental Conservation Zone
EESG	NSW Environment, Energy and Science Group (formerly OEH)
EIS	Environmental Impact Statement
Environment Minister	**The Minister responsible for the EPBC Act**
EP&A Act	Environment Planning and Assessment Act 1979 (NSW)

Terms	Definitions
The Act	**Airports Act 1996 (Cth) (Airports Act)**
EPBC Act	Environment Protection and Conservation Act 1999 (Cwth)
EPL	Environment Protection Licence under the POEO Act
ER	Environmental Representative
EWMS	Environmental Works Method Statement
E&SMS	Environment and Sustainability Management System
IMS	Sydney Metro Integrated Management System
Infrastructure Department	The department responsible for administering the Act, currently the Australian Government Department of Infrastructure, Transport Regional Development and Communications (DITRDC)
ISO	International Standardization Organisation
KPI	Key Performance Indicator
NSW	New South Wales
NVMP	Noise and Vibration Management Plan
OCCS	Overarching Community Communication Strategy
OOHW	Out-of-Hour Works
Planning Secretary	The Secretary of the Department of Planning, Industry and Environment
POEO Act	Protection of the Environment Operations Act 1997 (NSW)
Preparatory Activities	Preparatory Activities mean the following: a. day to day site and property management activities; b. site investigations, surveys (including dilapidation surveys), monitoring, and related works (e.g. geotechnical or other investigative drilling, excavation, or salvage); c. establishing construction work sites, site offices, plant and equipment, and related site mobilisation activities (including access points, access tracks and other minor access works, and safety and security measures such as fencing but excluding bulk earthworks); d. enabling preparatory activities such as: i. demolition or relocation of existing structures (including buildings, services, utilities and roads); ii. the disinterment of human remains located in grave sites identified in the European and other heritage technical report in volume 4 of the EIS; and iii. application of environmental impact mitigation measures; and e. any other activities which an Approver determines are Preparatory Activities for this definition
Project	The Sydney Metro Western Sydney Airport Construction and operation as approved by the EPBC and Airport Plan as the Action or Rail Development within the Rail Construction Impact Zone on-airport, being the WSI airport, in agreeance with the Deed between SM - WSA and WSA Co.
Proponent	The person or organisation identified as the proponent in Schedule 1 of the planning approval. In this case Sydney Metro Authority.
RCIZ	Rail Construction Impact Zone
REMM	Revised Environmental Mitigation Measure
RMS	NSW Roads and Maritime Services

Terms	Definitions
The Act	**Airports Act 1996 (Cth) (Airports Act)**
SBT	Station Boxes and Tunnelling Works
SCAW	Surface and Civil Alignment Works
SCO	Sydney Coordination Office
SM	Sydney Metro
SM WSA	Sydney Metro Western Sydney Airport
SM WSA EIA	SMWSA EIS Appendix J: EPBC Act Draft Environmental Impact Assessment of On-airport proposed action (EPBC 2019/8541)
SMP	Sustainability Management Plan
Site Occupier	Site Occupier means: (a) before an Airport Lease is granted – the Commonwealth; and Note: Where a condition specifies an activity to be carried out by the Commonwealth, the Infrastructure Department will be responsible for carrying out the activity on behalf of the Commonwealth (unless stated otherwise). (b) after an Airport Lease is granted – the ALC.
SPIR	Submissions and Preferred Infrastructure Report
SSI	State Significant Infrastructure
SSTOM	Stations, Systems, Trains, Operations and Maintenance
SWMS	Safe Works Method Statement
TfNSW	Transport for New South Wales
WSA	Western Sydney Airport Co (ACN 618 989 272), the entity responsible for constructing and operating the Airport in accordance with the Airport Plan. For the purposes of the Airports Act 1996 (Cth), WSA is the “airport-lessee company” for WSI
WSI airport	Western Sydney International (Nancy-Bird Walton) (WSI) Airport

1. Introduction

1.1. Sydney Metro

Sydney Metro is Australia's biggest public transport project. Services between Rouse Hill and Chatswood started in May 2019 on the new stand-alone metro railway system. The Sydney Metro network and program of work includes the Metro North West Line (which opened in May 2019), Sydney Metro City & Southwest (which is currently under construction and due to open in 2024), Sydney Metro West (with construction due to start in 2020) and Sydney Metro – Western Sydney Airport (SM - WSA) (Project). Potential future extensions to Schofields/Tallawong in Rouse Hill in the north and to Macarthur in the south are under consideration and are being safeguarded but do not form part of the project.

The Project is shown in Figure 1-1 and will become the transport spine for Greater Western Sydney, connecting communities and travellers with the new Western Sydney International (Nancy-Bird Walton) Airport (referred to as Western Sydney International) (WSI airport) and the growing region.

The Project is being delivered under the Western Sydney City Deal, a partnership between the NSW Government, Australian Government and eight councils of the Western Parkland City. The NSW and Australian Governments have a shared objective of having the rail line operational when WSI airport is planned to open for passenger services.

The new railway line will service Greater Western Sydney and the new WSI airport. It will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service. The Project will link residential areas with job hubs from St Marys through to the new airport and the Western Sydney Aerotropolis.

It will provide a major economic stimulus for Western Sydney, supporting more than 14,000 jobs during construction for the NSW and national economies, including more than 250 new apprenticeships. The project comprises components that are located outside WSI airport (off-airport) and components that are located within WSI airport (on-airport).

The approval process for the off-airport and on-airport components of the project are different and are outlined below. One outcome of the on-airport approval is that a condition of working on the WSI airport site will require the Sydney Metro Western Sydney Airport project to produce and have approved, a series of Construction Environmental Management Plans (CEMP) prior to the SMWSA commencing construction on-airport. This Air Quality CEMP (AQCEMP) is one of a series of nine CEMPs for the Project which will be consistent with the WSI airport CEMPs and address all on-airport environmental components of the Project.

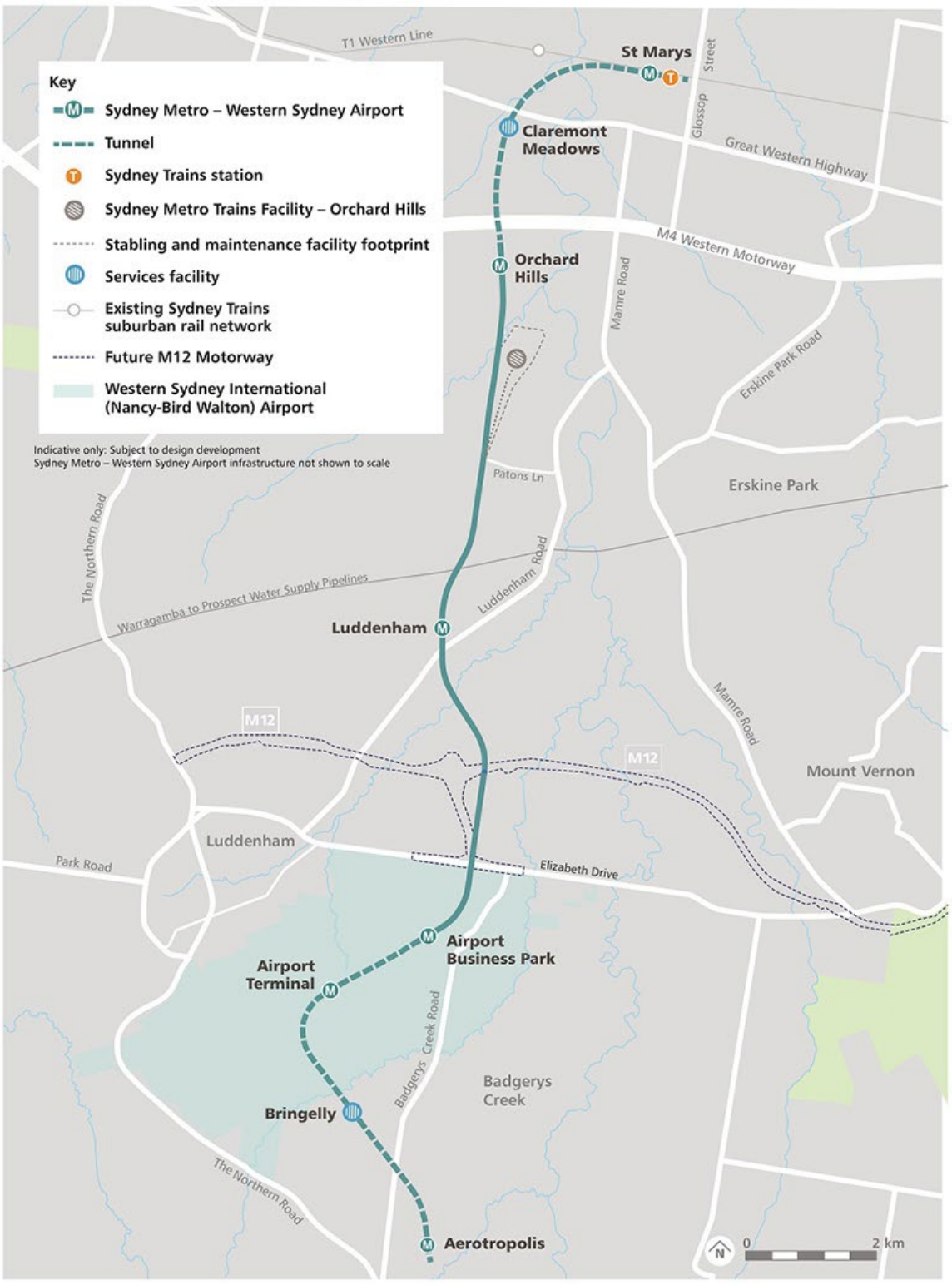


Figure 1-1 Sydney Metro Network

1.2. Sydney Metro Western Sydney Airport

The Western Sydney Airport Plan sets out the vision for the development and operation of Western Sydney International and provides authorisation for Stage 1 of the airport. The construction of Stage 1 of the airport is expected to be completed to enable operations to commence in 2026 and will comprise a single runway, a terminal and other relevant facilities to accommodate around 10 million passengers annually as well as air freight traffic. Interface with Western Sydney International Rail access to Western Sydney International Airport would contribute to the success of the airport and the Western Parkland City, as it will facilitate passengers' and workers' journeys, reduce road congestion and support the economic viability of the airport.

The Project is proposed to enter the airport site from the north and will include stations at the Airport Business Park and the Airport Terminal. The rail line will travel through the airport, before exiting the airport site beneath Badgerys Creek in the southeast of the airport site. Sydney Metro has been, and will continue, working closely with Western Sydney Airport to ensure design development and construction planning of the project is coordinated with the construction and operation of WSI airport.

1.3. Background/Context

The Airport Plan for the Western Sydney International was determined in December 2016, following preparation and exhibition of an Environmental Impact Statement, and incorporates the conditions specified by the Commonwealth Environment Minister. The delivery of the Project on the WSI airport site has been authorised through a variation of the Airport Plan by the Commonwealth Infrastructure Minister, taking into account advice from the Commonwealth Environment Minister.

In September 2019, the Commonwealth Infrastructure Minister referred the On-airport components of the Project to the Commonwealth Environment Minister. In December 2019, the delegate of the Commonwealth Environment Minister decided that advice is required under section 160 of the EPBC Act as the proposed action is likely to have a significant impact on the environment and will require further assessment (EPBC 2019/8541).

The following documents were prepared as part of the SMWSA EIS, to respond to the Request for Further Information, and were published, in accordance with the Direction to Publish, from 21 October to 18 November 2020:

- SMWSA EPBC Act Final Environmental Impact Assessment of on-airport proposed action (EPBC 2019/8541)
- SMWSA EIS Technical Paper 3: Biodiversity Development Assessment Report
- SMWSA EIS Appendix F: Construction Environmental Management Framework.

An EPBC Act Final Environmental Impact Assessment of on-airport proposed action

(EPBC 2019/8541) and an updated Biodiversity Development Assessment Report were approved by the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and formed part of the conditions of the Airport Plan Variation which were lodged with the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC) and approved by the Commonwealth Infrastructure Minister on 15 September 2021.

This AQ CEMP provides the management approach and requirements for managing air quality related matters during construction of the Project. This Plan forms one of nine CEMPs which are collectively covered by the Sydney Metro Construction Environmental Management Framework (CEMF) as well as the WSI Airport AQ CEMP.

To ensure the environmental resources, responsibilities and management measures are implemented during the construction activities, the CEMF are included within the Construction (Rail) Plan. The implementation of the Construction (Rail) Plan, including the CEMF, sits adjacent to other Project level management plans including the Community communications strategy and the Sustainability Plan as illustrated in Figure 1-2.

The Construction (Rail) Plan (including the CEMF and nine CEMPs) provide the environmental management approach and requirements and therefore should be read in conjunction with each other due to interconnecting management outcomes and objectives. Specifically, for the AQ CEMP, it is considered that the following management plan linkages can be made:

- Biodiversity CEMP – management of dust and air emissions to prevent impact on adjacent vegetation and fauna habitat, including aquatic and terrestrial.
- Soil and Water CEMP – management of dust emissions often requires the application and use of water for suppression to control release of particulate matter. The use of water on site will need to be undertaken in a manner to ensure the control of runoff is managed and receiving waters are not impacted by the works.
- Waste and Resources CEMP – water usage is considered a key resource for the suppression and management of dust generation during the construction phase. Where possible, water required for dust generation will be sourced from the on-site storage dams. If the water within the storage dams are insufficient, alternative water sources would be sought as per the Waste and Resources CEMP.
- Visual and Landscape CEMP – impact on the air quality has the potential to affect the visual amenity and landscape of the receiving environment, particularly with regards to dust generation.
- Community communications strategy – it is anticipated that the surrounding community and stakeholders will be highly receptive to air quality impacts, particularly dust generation and the accumulation of particulate matter.

Sustainability Plan– management and reduction of greenhouse gas emissions and management of impacts regarding general health, wellbeing, and quality of life for surrounding communities. Where relevant, linkages to other CEMPs and management objectives have been included in the risk assessment and the environmental control measures, Section 6.2 and Section 7 respectively. Table 1-1 below highlights relationships and linkages of this Air Quality CEMP with other CEMPs and management plans, including key cross-referencing to the Airport Plan and the Sydney Metro - Western Sydney Airport (SMWSA) EIS requirements.

Table 1-1 Air quality CEMP relationship with other CEMP documentation

CEMP	Airport Plan (3.11.6)	SM - WSA EIA Table 8-1: On-airport environmental management framework requirements	SMWSA EIA Table 8-3: Mitigation measures
Aboriginal Cultural heritage	39 2(f)	CEMF5	AH8
Air quality	39 2(e)	CEMF10	AQ1-3
Biodiversity	39 2(b)	CEMF6	FF1, 3, 5, 6, 9-11 HR2
Community communications strategy	40	N/A	N/A
European and other heritage	39 2(g)	CEMF5	NAH9
Noise and vibration	39 2(a)	CEMF4	NV1
Soil and water	39 2(c)	CEMF3 CEMF8	HYD1 WQ1-2 GW4-6 SC1,5-9, 11 HR1,3
Sustainability plan	41	N/A	SUS1-3 GHG1
Traffic and access	39 2(d)	CTMF	T1,3 ,4,6
Visual landscape	39 2(i)	CEMF7	LV1-3
Waste and resources	39 2(h)	CEMF9 CEMF11	WR1-3

Key
Moderate to high relevance to this CEMP
Some relevance to this CEMP

1.4. Document purpose

The purpose of this Plan is to provide the foundation for the management of air quality impacts in accordance with best practice and legal requirements (including environmental mitigation measures, controls, monitoring and reporting) during the construction phase of the Project based on the assessment undertaken as part of the SMWSA EIS.

This Plan details the air quality management requirements that must be satisfied in order to demonstrate compliance with the conditions as set out in Condition 39 (2) of Section 3.11.6 of the Airport Plan for the construction of the Project of the Western Sydney Airport.

Legal and other requirements are identified within the CEMF (refer to CEMF Chapter 2) and maintained in a register. Mitigation measures (specific to biodiversity) required to satisfy these requirements are derived from the EIA and through risk assessment processes (refer Section 6.3) and included within this CEMP (Section 7). Where the development of the Project

environmental assessment has not covered that addressed by the WSA assessment, the WSA mitigation measures have been adopted also to provide consistency with the WSA CEMPs (Section 7).

Implementation of these measures is ensured through monitoring, training and competence, inspection, audit and reporting actions detailed in Section 10 and 11, with the responsibilities for implementation identified in Section 9. Continual improvement processes in relation to compliance with regulatory requirements are detailed in CEMF Section 3.18.

In summary, this Plan sets out to achieve the following:

- Provision of details for the management and mitigation measures to be implemented, including timing and responsibilities.
- Ensuring the commitments of the Conditions (as set out in the Airport Plan) and regulatory requirements are met and satisfied by both Sydney Metro and contractors.
- Provision of process for monitoring implementation, reporting, and auditing of air quality related management and compliance related issues.
- Commitment to meeting the requirements of AS/NZS ISO 14001:2016 Environmental Management Systems, including the need for continual improvement.
- Provision of a process to be implemented for the management of complaints, for stakeholder engagement, and for the management of emerging environmental issues as they arise,
- Provision of a system including procedures, plans and documentation for implementation by Sydney Metro personnel and contractors to enable Project completion in accordance with the environmental requirements.
- Consistency with the WSI airport CEMPs.

Effective implementation of this Plan will assist Sydney Metro and relevant contractors to achieve compliance with necessary environmental regulatory and policy requirements in a systematic manner with an outcome of continual environmental management performance.

1.5. Consistency

A major requirement of these plans is for Sydney Metro to maintain consistency with the already approved WSA CEMPs. This consistency requirement results in SM not needing to undertake consultation as is the requirement of WSA for their plans.

SM approached the development of these plans to meet the requirements of the Airport Plan, ensure compliance with Tables 8-1, 8-2 and 8-3 of the EPBC 2019/8541 and remain consistent with the WSA CEMPs.

SM have achieved this consistency through the following:

- Consistent format
- Consistent language
- Consistent existing environment with the addition of the SM – WSA RCIZ existing environment
- Consistent aspects and impacts but removing those not applicable and adding specific SM – WSA aspects and impacts

- Consistent risk assessment but removing those not applicable and adding specific SM – WSA risks

- Consistent mitigation measures but removing those not applicable and adding SM – WSA specific mitigation measures
- Consistent monitoring with the addition of any SM – WSA specific monitoring requirements
- Consistent auditing and reporting
- References to SEMF replaced with consistent CEMF requirements.

1.6. Sydney Metro environmental management system overview

Sydney Metro operates in general accordance with AS/NZS ISO 14001:2016 – Environmental management systems. A copy of the Sydney Metro environmental policy is provided in Appendix A of the CEMF. The Project will be undertaken in accordance with the Sydney Metro Construction (Rail) Plan including the SM CEMF, WSA SEMF and the associated CEMPs (including this Plan).

Both the SM CEMF and the WSA SEMF form an appendix to the Sydney Metro Construction (Rail) Plan and is the overarching environmental plan for the implementation of the nine CEMPs. It provides a structured and systematic approach to environmental management and provides an expectation and guidance with regards to environmental management for the overall construction of the Stage 1 development.

The structure of the environmental management system for the Project is shown in Figure 1-2.

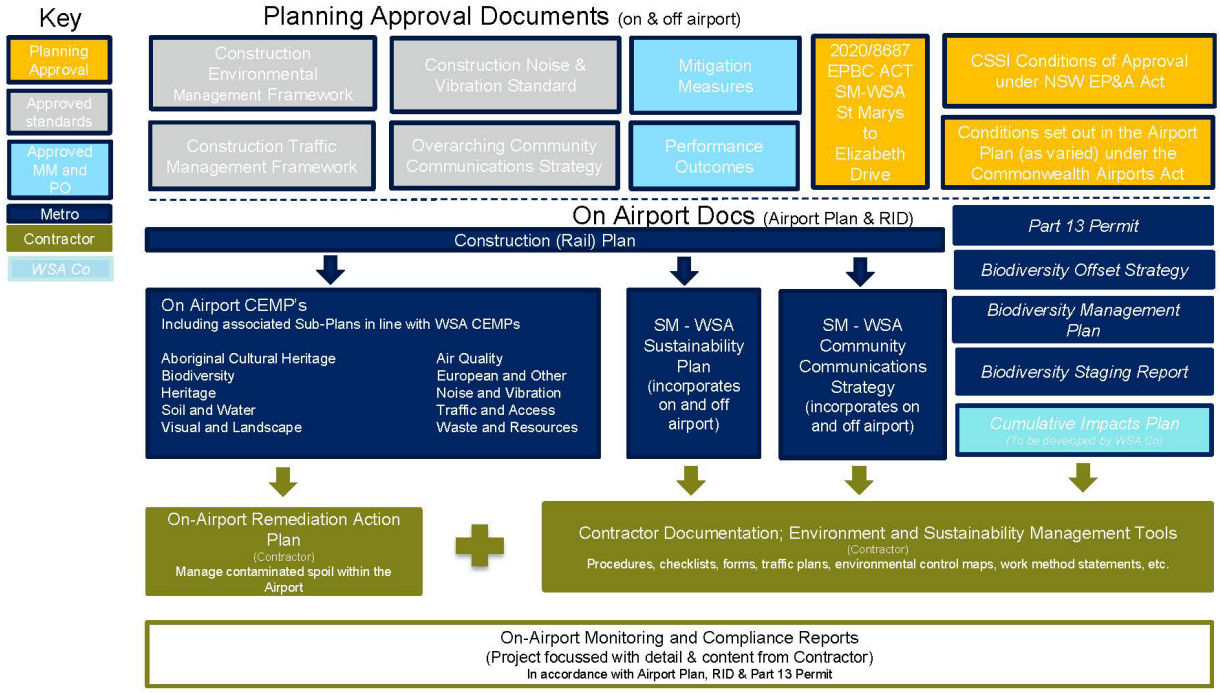


Figure 1-2 SMWSA Environmental Management System and CEMP context

1.7. Consultation requirements of this plan

There is no direct consultation condition requirement for the Project under the Airport Plan and as such, there has been no direct consultation completed during the development of this CEMP, however, WSA completed consultation during the development of the latest WSA BCEMP (Revision 0) and subsequently and during the review and update of Revision 0 and 1 in 2018 and Revision 2 in 2019 of their AQEMP document. (Sections 1.7 and 1.8). SMWSA will continue to consult with WSA in the development of these plans and as required with relevant stakeholders prior to seeking approval for these plans.

WSA Consultation will continue with agencies, councils and other relevant stakeholders throughout the Project where there is a change to a WSA CEMP. Where the outcomes of this consultation impact on the scope of the Project, to maintain consistency, the change will be documented in subsequent revisions of the relevant CEMPs, with details of such consultation included in the applicable document.

1.8. Certification and approval

This AQ CEMP will be reviewed and approved for issue by the SMWSA Environment Manager prior to submission to the DITRDC.

1.9. Distribution

All Sydney Metro personnel and contractors will have access to this AQ CEMP via the Project document control management system. The Approved Plan must be published on Sydney Metro's website within one month of being approved and be available until the end of the Construction Period. An electronic copy can be found on the Project website.

This document is uncontrolled when printed. One controlled hard copy will be maintained by the quality manager at the Project office.

2. Scope of works

2.1. Overall Project scope

The Sydney Metro Construction Plan details the construction staging of the Airport Railway Development.

The delivery of the Railway Development will be through a packaging strategy with a wide variety of package sizes, risk profiles and contracting entities. Each package will have different levels of environmental risk and environmental obligations, depending on the scope of works, location of works and sensitivity of the receiving environment and cultural heritage issues and relevant statutory requirements and obligations.

The packages have been divided into:

- AEW – Advanced and Enabling Works;
- SCAW – Surface and Civil Alignment Works;
- SBT – Station Boxes and Tunnelling Works;
- SSTOM – Stations, Systems, Trains, Operations and Maintenance.

The On-Airport Railway Development of the Project comprises the following key features as described in the Sydney Metro Construction (Rail) Plan (which is consistent with the Airport Plan and EIA Chapter 4):

- Around two kilometres of surface rail alignment within Western Sydney International (SCAW);
- Around 3.3 kilometres of twin rail tunnels (including tunnel portal) within Western Sydney International (SBT);
- Around three kilometres of twin rail tunnels between Western Sydney International and the Aerotropolis Station (SBT);
- Two new metro stations, Airport Business Park Station and Airport Terminal Station (STOM);
- All operational systems and infrastructure (SSTOM);
- A rail segment factory comprising a concrete batch plant and stockpile area (SBT, SCAW and SSTOM); and
- Spoil stockpile areas (SBT and SCAW).

Details of the Project construction activities, staging and programming including the phases of works is described in the Sydney Metro Construction (Rail) Plan (2021) as required by the Airport Plan Variation.

The proposed construction activities that would be undertaken for the Project include:

- preparatory activities (AEW);
- main construction works including;
    - tunnelling and associated works (SBT);
    - corridor and associated works (SCAW);

- stations and associated works (SSTOM);
- rail systems fitout (SSTOM);
- activities required for tunnel and viaduct segment manufacture and storage and temporary haulage roads (SBT and SCAW); and
- finishing works and testing and commissioning (FAW).

The Project would also include the potential permanent placement of spoil at two sites to support the development of future stages of the airport.

The Rail Construction Impact Zone (CIZ) including the construction footprint and key construction sites proposed for use during the construction of the Project are shown in Figure 2-1. This figure also indicates the Western Sydney International Stage 1 CIZ and the Environmental Conservation Zone within Western Sydney International.

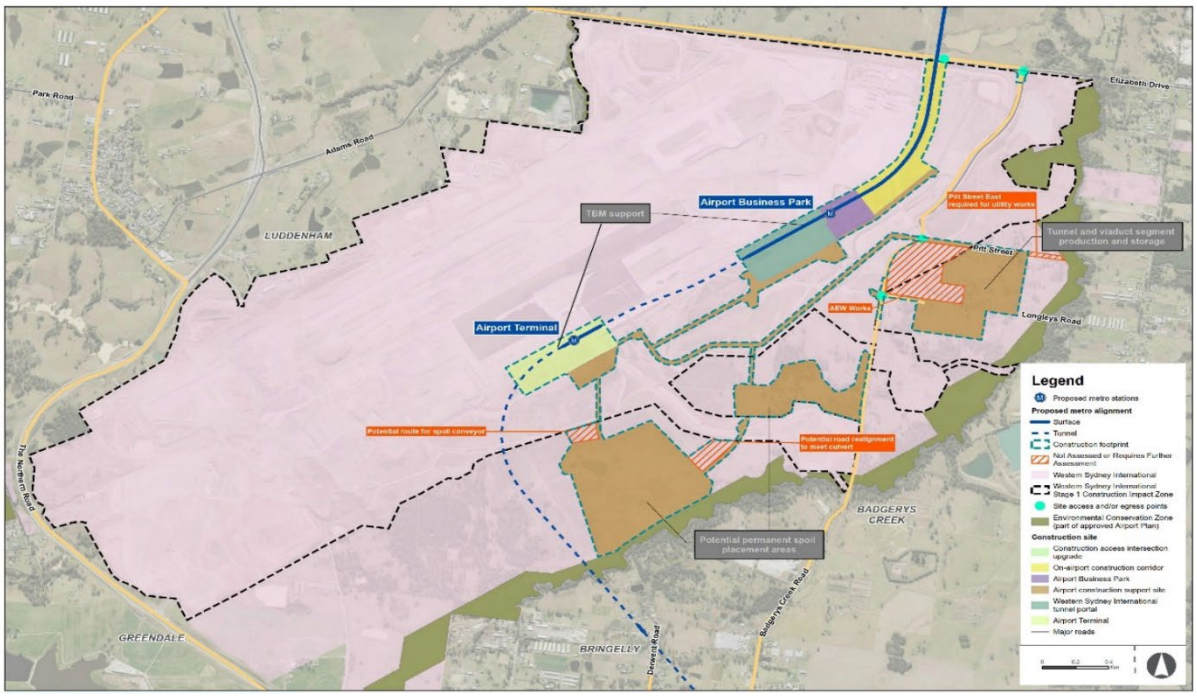


Figure 2-1 SMWSA construction footprint and key construction sites

It is anticipated that the Project construction works would commence in 2021 and take about five years to complete, subject to planning approval. The Operational Sydney Metro opening is anticipated to align with the opening of passenger services for Western Sydney International in 2026. An indicative main construction program for the project is shown in Figure 2.2.

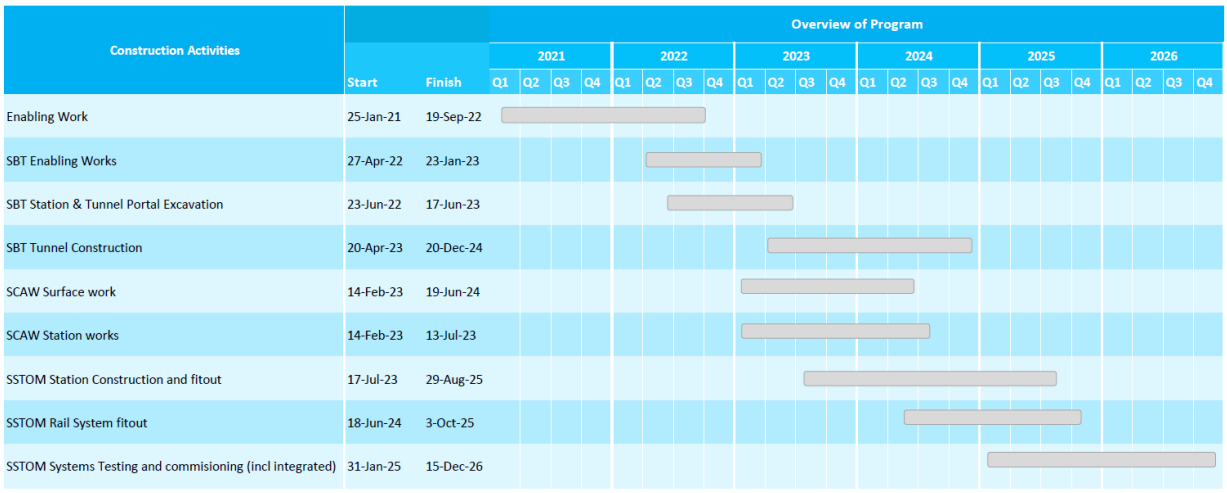


Figure 2-2 Indicative main construction program for the project

2.2. Preparatory activities

Preparatory activities for the proposed action are required to establish key construction sites and facilitate construction activities.

The majority of the preparatory activities are expected to commence in advance of main construction works, such as tunnelling and station excavation, while some preparatory activities would continue concurrently with the main construction works. Preparatory activities would include:

- detailed site investigations and subsequent clearance works;
- provision of construction haul roads;
- relocating, adjusting and protecting utilities and services affected by the proposed action;
- supplying power, water and other utilities to construction sites and other areas within the construction footprint;
- vegetation clearance (as required); and
- establishment of construction sites.

2.3. Construction sites

The Project's construction activities will be carried out within and to the south-west of the WSI airport Stage 1 CIZ. The indicative works at proposed construction sites required for the construction of the Project are shown in Figure 2-3. The use of these sites will be confirmed by the construction contractor(s) (when appointed) in consultation with Western Sydney Airport.

Location	Preparatory activities	TBM launch	TBM support	TBM retrieval	Spoil handling and removal	Roadheader launch/support	Ancillary facility construction	Stabling and maintenance facility construction	Major earthworks	Bridge and viaduct construction	General civil works	Concrete batch plant	Equipment and material laydown	Rail system fitout	Site offices and worker amenities	Water treatment plant	Potential acoustic shed	Vehicle parking
On-airport																		
On-airport construction corridor	✓				✓		✓		✓	✓	✓		✓	✓	✓			✓
Airport Business Park	✓				✓		✓		✓		✓		✓	✓	✓			✓
Western Sydney International tunnel portal	✓	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Airport Terminal	✓		✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Airport construction support site	✓				✓				✓		✓	✓	✓	✓	✓			✓

Note: TBM retrieval would occur outside the proposed action at the Aerotropolis Station site

Figure 2-3 Indicative works at proposed construction sites

3. Objectives and targets

3.1. Objectives

The key objective of this Air Quality CEMP is to ensure that impacts associated with air quality are managed to within permitted air quality criteria as far as practicable, and best practice controls and procedures are implemented during construction activities to maintain ambient air quality at acceptable levels at sensitive receptors surrounding the Airport Site and minimise the risk of dust or odour nuisance impacts on neighbours.

To achieve this objective, the following will be undertaken:

- Ensure emissions are minimised from all plant, equipment and machinery;
- Ensure appropriate measures are implemented to address the management measures detailed in WSA AQ CEMP;
- Ensure appropriate measures are implemented to address the performance outcomes detailed in Tables 8-1, 8-2 and 8-3 of the SM-WSA EIA; and.
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 4 of this Plan.

3.2. Targets and Performance objectives

Air quality specific targets and performance criteria have been established for the management of air quality impacts during the Project which have been, in part, derived from the performance criteria identified in the Western Sydney Airport EIS Table 28-10, as presented below in Table 3-1.

Table 3-1 Air quality targets

Objective	Target	Document Reference
Ensure ambient air quality is maintained at acceptable levels at sensitive receptor locations surrounding the airport site	Not exceeding the criteria outlined in Table 8-1 No dust or odour related complaints	Monitoring Results Complaints database
Minimising the risk of dust or odour nuisance impacts on neighbours	No dust or odour related complaints Not exceeding the criteria outlined in Table 8-1	Monitoring Results Complaints database
Ensure emissions are minimised from all plant, equipment and machinery	All plant and equipment are maintained in accordance with manufacturers requirements Not exceeding the criteria outlined in Table 8-1	Plant and equipment log books

The targets in Table 3-1 have been set to provide a benchmark performance objective to which Sydney Metro will endeavour to achieve. Failure to achieve the targets will not be considered a non-conformance, however, will prompt internal review of environmental management (as detailed further in environmental control measures in Table 7-1 (of this CEMP) and assessment of potential improvement opportunities.

4. Legal and other requirements

Relevant environmental legislation and other requirements are identified below

4.1. Relevant legislation and guidelines

As the WSI Airport is to be developed under the Airport Plan determined under the Airports Act, some state laws will not be applicable to the Project (s112 of this Act). Where state law is applicable, this Plan will set out the relevant applicable state legislation and requirements and demonstrate how compliance with those laws including obtaining relevant permits will be achieved. Where state laws are not applicable, there may nonetheless be a requirement to have regard to those laws, for example, through mitigation measures to be incorporated in CEMPs to satisfy conditions under the Airport Plan.

4.1.1. Legislation

Legislation and regulations to this Plan are summarised in Table 4-1.

Table 4-1 Principal legislation and relevance

Legislation or regulation	Relevance	CEMP compliance provisions
Commonwealth		
Airports Act 1996 (Airports Act)	The Airports Act and Airports Regulations set out the framework for the regulation and management of activities at airports that could have potential to cause environmental harm. This includes offences related to environmental harm, environmental management standards, monitoring and incident response requirements. The Airport Plan prepared under the Airports Act covers a number of environmental matters and, in particular, details specific measures to be carried out for the purposes of preventing, controlling or reducing the environmental impact associated with the airport. Criminal offences are applicable if these measures are not complied with.	This CEMP forms part of the overall Sydney Metro environmental management system which has as a target, full compliance with the Airport Plan. Relevant mechanisms within this CEMP that will contribute to this include but are not limited to: Section 3.1 – Objectives Section 4.3 – Airport Plan Conditions Section 4.4.1 – Environmental Impact Statement requirements Section 6.2 – Risk Assessment Section 7 – Environmental Control Measures Section 9 – Environmental Roles and Responsibilities Section 10 – Environmental Inspection, Monitoring and Auditing Section 10.6 – Environmental Incidents and complaints management Section 10.5 – Review of approved plans
Airports (Environment Protection) Regulations 1997 (AEPR)	Imposes a general duty to prevent or minimise environmental pollution once an airport lease is granted. Promotes improved environmental management practices at airports. Includes provisions setting out definitions, acceptable limits and objectives for air quality, as well as monitoring and reporting requirements.	Refer to commentary on Airport Plan above.

Legislation or regulation	Relevance	CEMP compliance provisions
Airports (Building Control) Regulations 1996	Any conditions imposed on the ABC and ALC on their consents must be satisfied by the applicant. These conditions are additional to any requirements identified under the CEMP.	This document.
National Environment Protection (Ambient Air Quality) Measure (NEPM-AAQ)	Sets the national health-based air quality standards for six air pollutants (carbon monoxide, nitrogen dioxide, sulphur dioxide, lead, ozone and PM10) and includes advisory reporting standards for PM2.5	Section 7 – Environmental Control Measures Section 8 – Air Quality Criteria Section 10 – Environmental Inspection, Monitoring, Auditing and Reporting.
National Environment Protection (Air Toxics) Measure National Environment Protection (National Pollutant Inventory) Measure 1998	Sets a nationally consistent approach to monitoring (by reference to 'investigation levels') for five air toxics: benzene, formaldehyde, toluene, xylenes and benzo (a) pyrene (as a marker for polycyclic aromatic hydrocarbons). These are not compliance standards but are for use in assessing the significance of the monitored levels of air toxics with respect to the protection of human health.	Section 8 – Air Quality Criteria Section 10 – Environmental Inspection, Monitoring, Auditing and reporting Note: Monitoring of these five air toxics may not be relevant, however, this summary is provided as a trigger for continued. consideration of this requirement as delivery of the Airport progresses.
National Environment Protection (National Pollutant Inventory) Measure	The primary goals are to: (a) collect a broad base of information on emissions and transfers of substances and (b) disseminate information to all sectors of the community. This NEPM covers a variety of air pollutants.	Refer to Sustainability Plan.
National Greenhouse and Energy Reporting Act 2007	An airport lessee company (ALC) is required to register and report its operational greenhouse gas emissions attributable to the activities over which it has operational control. This is because it is expected that its emissions will exceed relevant thresholds. This may also apply to the construction contractor and other contractors or users of the airport (e.g. airlines).	Section 7 – Environmental Control Measures.
Ozone Protection and Synthetic Greenhouse Gas Management Act 1989 and the Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995	This Act and these Regulations impose controls on the manufacture, import, export and management of substances that deplete ozone in the atmosphere including CFCs 11, 12, 113, 114 and halons 1211, 1301 and 2402.	Section 7 – Environmental Control Measures.
NSW As the Airport is to be developed under the Airport Plan determined under the *Airports Act 1996 (Cth),* some state laws will not be applicable to the project (see for example S 112 of that Act). Where state laws are not applicable, it is still intended to have regards to relevant laws for example through inclusion of mitigations measures incorporated into this CEMP. These laws are identified below.		

Legislation or regulation	Relevance	CEMP compliance provisions
Environmental Planning and Assessment Act 1979 (EP&A Act)	Objects of the Act include the encouragement of proper management and conservation of natural and artificial resources and the promotion of the orderly and economic use and development of land in NSW. The EP&A Act also provides for the making of environmental planning instruments including State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs), which include land use controls, such as development standards applicable to the land within the area covered by each instrument.	This Project has been authorised under the Airports Act; however, a range of matters arising from the EP&A Act have been considered. Section 7 – Environmental Control Measures
State Environmental Planning Policy (Western Sydney Aerotropolis) 2020 (Aerotropolis SEPP)	The Aerotropolis SEPP was made in accordance with division 3.3 of the EP&A Act and provides planning controls for development within the Western Sydney Aerotropolis. The Aerotropolis SEPP overrides any LEP provisions that apply to that land.	Section 7 – Environmental Control Measures
Liverpool Local Environmental Plan 2008 (Liverpool LEP)	The Liverpool LEP provides local environmental planning controls and standards for land in the Liverpool LGA in accordance with the standard environmental planning instrument under section 33A section 3.20 of the EPA Act.	Section 7 – Environmental Control Measures
Penrith Local Environmental Plan 2010 (Penrith LEP)	The Penrith LEP provides local environmental planning controls and standards for land in the Penrith LGA in accordance with the standard environmental planning instrument under section 33A3.20 of the EPA Act.	Section 7 – Environmental Control Measures
Work Health and Safety Act 2011 & Work Health and Safety Regulation 2017.	The Work Health and Safety Act 2011 (NSW) (the Act) provides a framework to protect the health, safety and welfare of all workers and others in relation to NSW workplaces and work activities. The Work Health and Safety Regulation 2017 set out specific requirements for particular hazards and risks, such as noise, machinery, and manual handling.	This document.
Protection of the Environment Operations Act 1997 (POEO Act), and the Protection of the Environment Operations (General) Regulation 2009 (POEO (General) Regulations)	The POEO Act provides a range of controls with regard to air quality including requirements to maintain plant and equipment in proper and efficient condition and to operate plant and equipment in a proper and efficient manner. This includes the means of processing, handling, moving, storage and disposal of materials.	Section 7 – Environmental Control Measures

Legislation or regulation	Relevance	CEMP compliance provisions
POEO Act and Protection of the Environment Operations (Clean Air) Regulation 2010 (Clean Air Regulation)	The object of the POEO Act is to achieve the protection, restoration and enhancement of the quality of the NSW environment having regard to the need to maintain ecologically sustainable development. The Clean Air Regulation prescribe standards for certain groups of plant and premises to regulate industry's air emissions and impose requirements on the control, storage and transport of volatile organic liquids.	Section 7 – Environmental Control Measures
Ozone Protection Act 1989	This Act regulates or prohibits the manufacture, sale, distribution, conveyance, storage, possession and use of ozone-depleting substances in NSW.	Section 7 – Environmental Control Measures

4.1.2. Guidelines and standards

Guidelines and standards that are relevant to air quality management and this Plan are summarised in Table 4-2.

Table 4-2 Relevant guidelines and standards

Guidelines and standards
AS 2922 Ambient Air Guide for Citing of Sampling Equipment
AS 3580.1.1-2007 Methods for Sampling and Analysis of Ambient Air – Guide to Siting Air Quality Monitoring Equipment
AS 3580.10.1-2003 Methods of Sampling Analysis of Ambient Air
Air Quality Monitoring Criteria for Deposited Dust (DEC Guideline)
AS/NZS ISO 14001:2014 – Environmental Management Systems
Approved Methods for the Sampling and Analysis of Air Pollutants in NSW (DEC 2005)
Clean Air for NSW Consultation Paper (OEH 2016)
Green Star Rating System (Green Building Council of Australia)
Guidance on the assessment of dust from demolition and construction (UK Institute of Air Quality Management (IAQM)2014)
Managing particles and improving air quality in NSW (EPA 2013)
Western Sydney Aerotropolis Development Control Plan 2020 Phase 1

4.2. Approvals and other specifications

Approvals and other specifications relevant to this CEMP include:

- Functional Specifications
- Sydney Metro Western Sydney Airport Plan
- Western Sydney Airport Environmental Impact Statement

- Sydney Metro Sustainability Plan
- Sydney Metro Community and Stakeholder Engagement Plan
- Sydney Metro Construction (Rail) Plan including the Construction Environmental Management Framework.

4.3. Airport Plan Conditions

Conditions relevant to air quality management during construction are provided in Table 4-3. Compliance with the Airport Plan conditions is a statutory requirement and as such, failure to comply may constitute a criminal offence liable to criminal prosecution under the Airports Act.

Table 4-3 Conditions relevant to air quality management

Condition No.	Condition	Timing	Responsibility	Reference within this CEMP
39.1	The rail authority must not: (a) Commence Rail Construction Works until each and all of the CEMPs specified in paragraph (2) have been prepared and approved in accordance with this condition; or (b) Carry out any Rail Development inconsistently with any of the approved Rail CEMPs.	Prior to Main Construction Works	Sydney Metro	CEMP Sections 6, 7, 8, 9 and 10
39.2	The Rail Authority must prepare and submit to an Approver for approval; (e) an Air Quality CEMP; in relation to the carrying out of the Rail Development.	Prior to construction works	Sydney Metro Contractors	This document (Air quality CEMP)
39.3	The criteria for approval of each of the Rail CEMPs are that an Approver is satisfied that (a) The CEMP complies with the mitigation measures and other requirements set out in Table 8-1 and Table 8-3 of the EIA which are relevant to that CEMP; and b) The Rail Authority, in preparing the CEMP has taken into account any performance outcomes specified in Table 8-2 of the EIA relevant to the CEMP; and (c) the CEMP is otherwise appropriate	Prior to construction works	Sydney Metro	This document (Air quality CEMP), Table 4-5
39.4	The Rail Authority must ensure that: (a) a Rail CEMP is to the extent possible, consistent with a CEMP of the Site Occupier; and (b) no Rail CEMP is inconsistent with the approved Construction (Rail) Plan.	CEMP Preparation	Sydney Metro	This document Section 1.3 Section 4.4 Section 7

Condition No.	Condition	Timing	Responsibility	Reference within this CEMP
45.3	The Rail Authority must take reasonable steps to ensure that: (a) each person involved in carrying out a development which is part of the Rail Development: (i) is informed of the conditions that are relevant to the carrying out of the Rail Development; and (ii) in carrying out the Rail Development, complies with those conditions as if they applied to the person in the same way as they apply to the Rail Authority; and (b) each person involved in operating a development described in section 3.10 of Part 3 of the Airport Plan: (i) is informed of the conditions that are relevant to the operation of the development; and (ii) in operating the development, complies with those conditions as if they applied to the person in the same way as they apply to the Rail Authority.	Prior to construction	Sydney Metro	Section 11
46	Site Occupier and Plan Owner to maintain records about compliance with conditions Each Site Occupier, the Rail Authority and each Plan Owner must maintain accurate records which demonstrate its compliance with the conditions, including measures taken to implement the Approved Plans, and must make the records available upon request to the DITRDC.	During construction	Sydney Metro	Section 10
47.4	Unless otherwise agreed in writing by an Approver, the Rail Authority must prepare a report addressing its compliance with each condition set out in section 3.11.6, including implementation of any Approved Plan, in respect of: (a) the 12-month period commencing with the commencement of Rail Construction Works; and (b) each subsequent 12-month period until the end of the Rail Construction Period; and (c) any period between the commencement of Rail Construction Works and the end of the Rail Construction Period that is not covered by paragraph (a) or (b).	During construction	Sydney Metro	Section 10.4

Condition No.	Condition	Timing	Responsibility	Reference within this CEMP
47.5	Unless otherwise agreed in writing by an Approver, the Rail Authority must publish each report prepared under sub-condition (4) on its website within three months of the end of the period in respect of which the report was prepared. Documentary evidence providing proof of the date of publication must be provided to the DITRDC at the same time as each report is published (with a copy to be provided to the Environment Department). Each report must remain on the Rail Authority's website for a minimum of 12 months (beginning on the date of publication).	During construction	Sydney Metro	Section 10.4
48.4	The Rail Authority must ensure that an independent audit of its compliance with the conditions set out in section 3.11.6 (except condition 44) is conducted in respect of the 12-month period commencing with the commencement of Rail Construction Works.	During construction	Sydney Metro	Section 10.4
48.5	The Rail Authority must ensure that an independent audit of its compliance with condition 46 is conducted in respect of the 12-month period from commencement of Rail Operations.	During construction	Sydney Metro	Section 10.4
48.6	The Rail Authority must submit the report of each audit conducted under sub-condition (4) or (5) to an Approver (with a copy to the Environment Department) within six months of the end of the period in respect of which the audit was conducted. For each audit, the independent auditor must be approved by an Approver prior to the commencement of the audit. Audit criteria must be agreed by an Approver and the report of the audit must address the criteria to the satisfaction of an Approver.	During construction	Sydney Metro	Section 10.5
49.1	The Plan Owner may seek approval for a variation of an Approved Plan by submitting to an Approver a version of the plan with the proposed variation clearly marked in it (varied plan).	During construction	Sydney Metro	Section 10.5
49.2	The criteria for approval of the varied plan are the same as those in the Approval Condition, but only to the extent that they are relevant to the proposed variation.	During construction	Sydney Metro	Section 10.5
49.3	If an Approver approves a varied plan prepared under sub-condition (1) or paragraph (5)(b), or the Infrastructure Minister varies an Approved Plan under paragraph (5)(a), then, from the date when it is approved or varied (as the case may be), the plan as varied is taken to be the Approved Plan for the purposes of the conditions.	During construction	Sydney Metro	Section 10.5

Condition No.	Condition	Timing	Responsibility	Reference within this CEMP
49.4	The ALC must review each Approved Plan for which it is the Plan Owner every five years to ensure that the Approved Plan continues to meet the approval criteria for that plan. The ALC must provide a report on the review (which may be included in an annual report required under condition 47). If the plan does not continue to meet the approval criteria, within three months of the provision of the report, the ALC must prepare and submit for approval under sub-condition (1) a variation to the Approved Plan to ensure it continues to meet the approval criteria	During construction	Sydney Metro	Section 10.5
49.5	Despite sub-condition (4), the ALC must review the Cumulative Impacts Plan every 12 months in consultation with the Rail Authority to ensure that the Plan continues to meet the approval criteria. The ALC must provide a report on the review (which may be included in an annual report required under condition 47). If the plan does not continue to meet the approval criteria, within three months of the provision of the report, the ALC in consultation with the Rail Authority must prepare and submit for approval under sub-condition (1) a variation to ensure it continues to meet the approval criteria.	During construction	Sydney Metro	Section 10.5
49.6	The Infrastructure Minister may: (a) vary an Approved Plan; or (b) request in writing that the Plan Owner prepare and seek approval for a specified variation of an Approved Plan in accordance with sub-condition (1), if the Infrastructure Minister believes on reasonable grounds that: (c) a condition has been contravened and the nature of the contravention is relevant to the subject matter of the Approved Plan; and (d) the variation or the request for a specified variation (as the case may be) will address the contravention.	During construction	Sydney Metro	Section 10.5
49.7	The Plan Owner must comply with a request made by the Infrastructure Minister in accordance with sub-condition (5) within three months of the date of the request.	During construction	Sydney Metro	Section 10.5
49.9	Within two months of the grant of an Airport Lease, the ALC must prepare and submit for approval, in accordance with sub-condition (1), a variation of each plan that was approved under a condition before the lease was granted, and for which the ALC is the Plan Owner, to reflect the change in Site Occupier resulting from the grant of the Airport Lease.	During construction	Sydney Metro	Section 10.5

Condition No.	Condition	Timing	Responsibility	Reference within this CEMP
50.1	Publication of Approved Plans Unless otherwise agreed in writing by an Approver, the Plan Owner must publish all Approved Plans on its website.	During construction	Sydney Metro	Section 10.5
50.2	Each Approved Plan must be published on the Plan Owner's website within one month of being approved and remain so published: (a) for CEMPs – until the end of the Airport Construction Period or Rail Construction Period as relevant; (f) for all other plans – until there is a Master plan for the Airport.	During construction	Sydney Metro	Section 10.5

4.4. Environmental Impact Statement requirements

4.4.1. WSA EIA Requirements

The requirements of air quality management to be taken into account and addressed during the construction phase of the Project on the Stage 1 area are included in the WSA EIS, specifically Table 28-10. In line with the requirement of the SM - WSA CEMPs to be consistent with the WSA CEMPs, Sydney Metro have ensured that the implementation, risk assessment, management measures, monitoring, auditing, reporting and responsibility for biodiversity management by the Project is aligned with the requirements of the WSA.

4.4.2. SMWSA EIA requirements

The requirements of air quality management to be taken into account and addressed during the construction phase of the Project are included in the SMWSA EIA Table 8-1 CEMF 10. A summary of these requirements and how they have been addressed in this Air quality CEMP is presented in Table 4-5.

Table 4-4 Summary of Air quality management requirements for the SMWSA EIA

EIA reference	Topic	Summary	Air quality
Table 8-1 CEMF 10	Framework requirements	The on-airport Air Quality CEMP would detail the Sydney Metro – Western Sydney Airport air quality management objectives, including:	
		• minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable and	Section 3- Objectives and targets Section 7- Environmental Control Measures
		• identify and control potential dust and air pollutant sources.	Section 3 Objectives and targets Section 7- Environmental Control Measures
		The on-airport Air Quality CEMP would be consistent with the Western Sydney Airport Air Quality CEMP including all appendices (and sub plans) to the CEMP. The plan would include as a minimum:	This AQ WSA CEMP was based on the WSA CEMP
		• air quality mitigation measures	Section 7 – Environmental control measures
		• site plans or maps indicating locations of sensitive receptors and key air quality/dust controls	Section 5- Existing Environment
		• air quality and dust monitoring requirements	Section 10- Environmental inspection, monitoring, auditing and reporting
		• compliance record generation and management, including: o records of any meteorological condition monitoring o records of any management measures implemented as a result of adverse, windy weather conditions and o records of air quality and dust inspections undertaken.	-

EIA reference	Topic	Summary	Air quality
		The on-airport Air Quality CEMP would include the following air quality mitigation measures: • plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes • plant and equipment to be switched off engines when not in use • avoidance of the use of diesel or petrol powered generators and instead using mains electricity or battery powered equipment, where practicable • appropriate vehicle speeds on sealed and unsealed roads • development and implementation of a construction logistics plan to manage the sustainable delivery of goods and materials • implementing measures to support and encourage sustainable travel for construction workers to and from the construction sites • water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind-blown dust emissions • wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate • dust extraction and filtration systems will be installed for tunnel excavation works and deep excavation with limited surface exposure.	Section 7 – Environmental Control Measure
Table 8-3 Mitigation Measures	AQ1	The Air Quality Management Plan for the project would incorporate the following best-practice odour management measures would be implemented during relevant construction works: • the extent of opened and disturbed contaminated soil at any given time would be minimised • temporary coverings or odour supressing agents would be applied to excavated areas where appropriate • regular odour monitoring would be conducted during excavation to verify that no offensive odours are being generated	Section 7 – Environmental Control Measure
	AQ2	Where acoustic sheds are proposed these would be designed and managed to prevent/minimise the escape of dust emissions.	Section 7 – Environmental Control Measure

EIA reference	Topic	Summary	Air quality
	AQ3	Air quality monitoring, consistent with the Western Sydney Airport, Air Quality Construction Environmental Management Plan would be carried out during construction to ensure that works meet the requirements under Schedule 1 of the Airports (Environment Protection) Regulations 1997	Section 10.2 – Air Quality Monitoring

5. Existing environment

The following information is summarised from both the WSA EIS and SMWSA EIA and refers to the Airport Site and SMWSA support sites areas. Refer to both for more details.

For the purpose of the phase of Main Construction Works covered by this CEMP, the existing environment described herein is considered consistent and acceptable for consideration in the risk assessment process and the identification of suitable environmental mitigation measures and controls - for details with regards to environmental mitigation measures and controls for the management of air quality impacts refer to Section 7.

5.1. Sensitive receptors

Sensitive receptors were identified within about five kilometres of the Airport Site for the purpose of assessing the potential impacts of air emissions at these locations. Due to the density of sensitive receptors in the vicinity of the Airport Site, a representative selection comprising 152 of these sensitive receptors was made, locations for which have been provided in Appendix B. These sensitive receptor types include residences, schools, churches and other community infrastructure. Sensitive receptors from suburbs surrounding the Airport Site at varying distances were also included.

The location of the sensitive receptors in relation to the Airport Site in general, and specifically to Stage 1 Works is included in the Appendix B sensitive receptors figure. There have been no additional sensitive receptors identified since the undertaking of the WSA EIS and as such, the existing environment is still considered accurate and applicable to the works to be undertaken for the Project.

5.2. Air quality records

Existing air quality has been characterised from air quality monitoring data collected over ten years (2005– 2014) at monitoring stations operated by the NSW Office of Environmental and Heritage. These monitoring stations included Bringelly, Macarthur/Campbelltown West, Liverpool and Richmond, and recorded parameters such as nitrogen dioxide, particulate matter, sulphur dioxide and ozone. Generally, air quality for the local area is good, except for isolated high pollution days or extreme events such as dust storms and bushfires. Uncontrolled combustion events such as bushfires will influence regional observations of PM10 and PM2.5, and to a lesser extent, nitrogen oxides. A summary of monitoring data considered applicable to the work activities covered by this CEMP collated over the period of 2005 to 2014 for the area Sydney West and Southwest is presented below in Table 5-1.

Table 5-1 Air quality monitoring results- Bringelly, Macarthur/ Campbelltown West, Liverpool and Richmond

Pollutant	Averaging Period	NEPM Goals	Reference
		Maximum Concentration	Average Recorded Concentration (2005-2014)
National Standards and goals for ambient air quality			
PM10	1 day	50 µg/m3	40 - 97 µg/m3
	Annual	25 µg/m3	15 - 25 µg/m3
PM2.5	1 day	25 µg/m	Liverpool: 22 - 268 µg/m3 Richmond: 18 - 149 µg/m3

Pollutant	Averaging Period	NEPM Goals	Reference
		Maximum Concentration	Average Recorded Concentration (2005-2014)
	Annual	8 µg/m3	Liverpool: 6 - 9 µg/m3 Richmond: 4 - 8 µg/m3
	1 day	228 µg/m3	Bringelly: 5.1 – 9.2 µg/m3 C' West: 5.7 – 9.9 µg/m3
	Annual	60 µg/m3	Bringelly: 0.3 – 1.2 µg/m3 C' West: 1.2 – 1.4 µg/m3

Since the completion of the WSA EIS in 2015, ongoing monitoring has been undertaken. These monitoring stations will continue to be used throughout the construction phase with further details provided in Section 10. A summary of the data collected post-WSA EIS is included in Table 5-2.

Table 5-2 Comparison on Measured Air Quality Data versus NEPM Goals and Historical Data

Pollutant	Averaging Period	NEPM Goals	Monitoring Results	Recorded Average Daily (µg/m3)			
		Maximum Concentration	Average Recorded Concentration (2005 – 2014)	North	South	East	West
National standards and goals for ambient air quality							
PM10	1 day	50 µg/m3	40 - 97 µg/m3	314.1	80.2	29.4	92.5
	Annual	25 µg/m3	15 - 25 µg/m3	-	-	-	-
PM2.5	1 day	25 µg/m3	Liverpool: 22 - 268 µg/m3	22.4	61.3	7	67.6
			Richmond: 18 - 149 µg/m3	-	-	-	-

5.3. Wind speed and direction

The average wind speed across the five-year review period (2010-14) was 2.6 metres per second. The percentage of calm period with winds less than 0.5 metres per second during this period was nine per cent. An analysis of the climatic data suggests that there is no strong relationship between the time of year and the monthly wind speed, although the monthly average wind speeds are generally less during autumn.

On an annual basis, the predominant winds at Badgerys Creek originate from the south-west, followed by the south-south-west and north. Very few winds originate from the north-west. Winds vary across seasons; during winter the majority of winds originate from the south-west while in summer they are more frequently from the north-east. A copy of the annual and seasonal wind rose for Badgerys Creek for the year 2014 is provided in Figure 5-1.

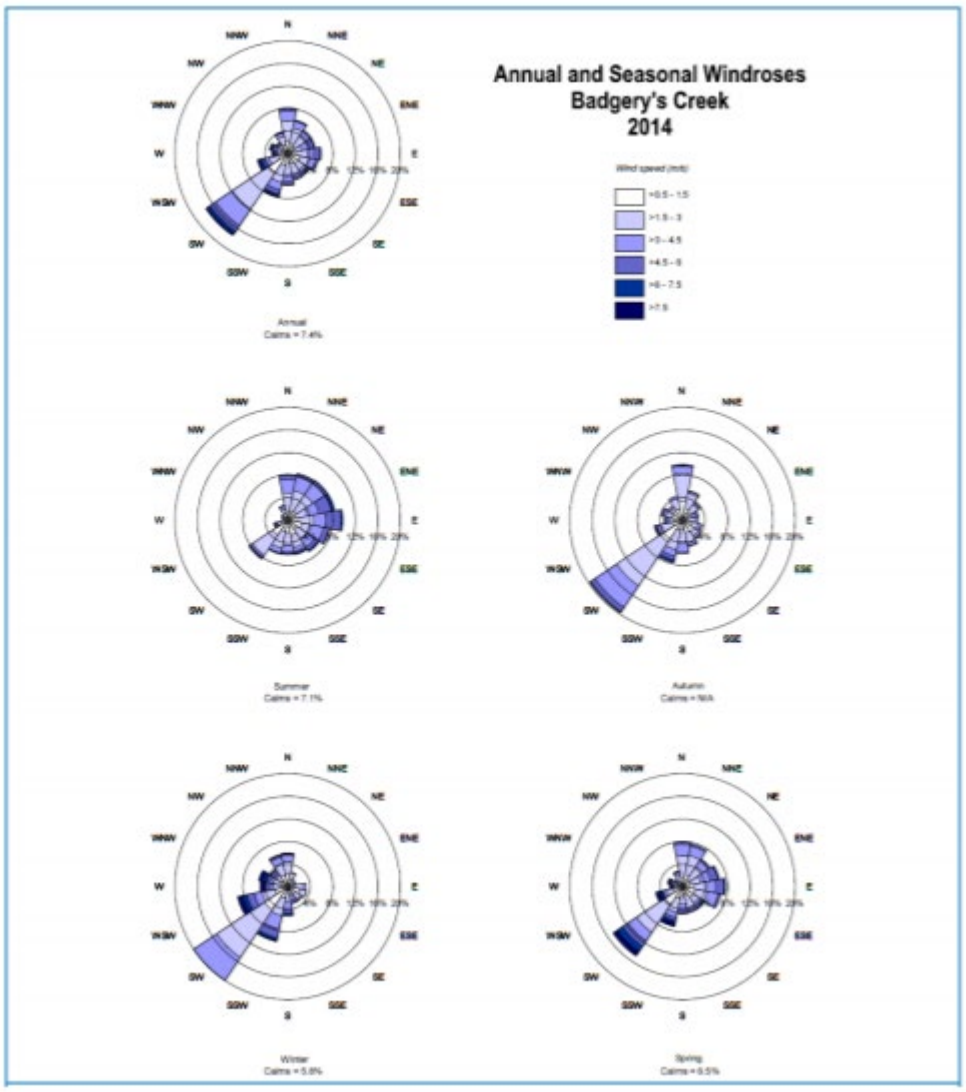


Figure 5-1 Annual and seasonal wind rose, Badgerys Creek 2014

5.4. Temperature, rainfall and humidity

The Airport Site hosts an automatic weather station operated by the Bureau of Meteorology. The weather station has recorded rainfall data at the Airport Site since 1998. Data is provided in Table 5-1. Average annual rainfall at the Airport Site is 676.6 millimetres (mm).

Climate and rainfall data have been updated since the WSA EIS development. There is a strong seasonal variation in temperature at Badgerys Creek. During the data collection and review period for the WSA EIS and in 2019, January was the hottest month while June and July were the coldest months as presented below in Table 5-3.

The rainfall data collected during the WSA EIS indicates that February is the wettest month, with an average rainfall of 114 millimetres while July is the driest month, with an average rainfall of 30 millimetres. In 2019, the average rainfall in February is 342 millimetres while July keeps being the driest month.

In the WSA EIS and 2019, the annual average relative humidity reading at Badgerys Creek was 73 per cent. The month with the highest relative humidity on average was June, at 79 per cent. September and October had the lowest relative humidity.

Table 5-3 Average monthly rainfall at the Airport site*

Statistic	J	F	M	A	M	J	J	A	S	O	N	D
Mean monthly rainfall (mm) a	76	95	83	48	36	61	23	35	33	54	69	56
Highest monthly rainfall (mm) a	192	342	285	253	156	250	72	231	82	182	173	131
Lowest monthly rainfall (mm) a	1	13	21	2	2	2	0.4	1	1	0.4	8	0.0
Highest daily rainfall (mm) a	138	107	68	84	54	109	28	70	51	63	63	65
Evaporation (mm) b	173	128	116	76	50	38	38	56	75	120	146	154
Note: * All data has been rounded to the nearest decimal point (except for July, October and December Lowest monthly rainfall). a. Data from Bureau of Meteorology automatic weather station b. Data from Bureau of Meteorology Parramatta weather station, as the nearest representative location with available evaporation data.												

5.5. Odour

The Airport Site is mostly isolated from other industry activities that have the potential to be odorous. The exception is the poultry industry with a number of broiler and egg-laying farms in the vicinity, particularly to the east of the Airport Site. Background odour was not included as part of the air quality assessment for the Project.

5.6. Terrain

The project is situated within the Sydney basin approximately nine kilometres east of the Blue Mountains. The terrain is generally flat with minor topographical undulation along the length of the project alignment. Although the local relief surrounding the broader project area is minor and is not expected to influence the broad scale meteorology in the region, there are localised topographical effects that may influence low wind speed conditions. There is a decrease in elevation as the alignment moves north toward St Marys. This topographical feature has the potential to affect the area under low wind speed conditions with cool air following the low-lying topography toward the north.

5.7. Existing and future air pollution sources

Existing air pollution sources include:

- emissions from vehicles using the surrounding road network including Elizabeth Drive and The Northern Road;
- semi-rural industries; and
- various small scale agricultural activities.

Ongoing earthworks for Western Sydney International Stage 1 would influence the local air quality environment, as would the ongoing and planned large scale construction projects surrounding the airport site including The Northern Road and the future M12 Motorway.

The Western Sydney Airport - Environmental Impact Statement identified that during earthworks, predicted dust impacts would be at or below the project air quality assessment criteria. In relation to the future ambient air quality environment relevant to the proposed action, the operation of Western Sydney International would significantly influence the on-airport air quality environment

6. Air quality aspects and impacts

6.1. Construction activities

Construction of the Project will result in dust emissions generated during both the earthworks, main Terminal works and the construction of aviation infrastructure. Specific to the works covered by this CEMP (refer to Section 2 and Construction (Rail) Plan Section 6), the likely activities that have the potential to impact on air quality include the following:

- Operation of heavy machinery including cranes, dozers, scrapers and graders, compactors, and piling rigs.
- The transportation loading and unloading of materials.
- Hauling on paved and unpaved roads.
- Exposure of ground surfaces resulting in wind erosion.
- Concrete batching plants and material stockpiling.
- Concrete cutting.
- Grouting and spraycreting.
- Diesel and petrol powered generators providing site temporary power.
- Asphalt of carpark pavements.
- Finishes trades include paints, glues and waterproofing products.

In addition to the above, there will also be diesel particulate matter emissions (comprising PM2.5 only) from the onsite equipment. Additionally, construction of the Project will result in greenhouse gas emissions from the operation of construction equipment and vegetation clearing.

6.2. Risk assessment

A risk assessment has been undertaken as part of the review and development of this CEMP and in accordance with Environmental Aspects, Impact and Risk Procedure (Chapter 26 of the SM - WSA EIS). The parts of the overall risk assessment relevant to waste and resources have been extracted and summarised in Table 6-1 applying to all phases of works that the Construction (Rail) Plan authorises.

The identification of construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific Project activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking.

The identification of risks included a review of the works, and review of the environmental risks identified by the EIS. The mitigation measures in the risk assessment are in line with the EIS mitigation measures in Section 7 of this CEMP, Table 6.1 as well as the SMWSA risk assessment in Chapter 26 of the SMWSA EIS.

Table 6-1 Air quality risk assessment

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
01	Site establishment	Site and delivery vehicles travelling on unseated roads	Dust generation	Stakeholder complaints and dust on public roads	Low (8)	AQ_01 AQ_05 AQ_07 AQ_18	Low (5)	• Waste and Resources CEMP • Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Erosion and Sedimentation Control Plans (ESCPs) • Environmental Control Map (ECM)
02	Site establishment	Topsoil stripping for compound footprint	Dust generation	Dust leaving site boundary into nearby environmental conservation zone	Low (9)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_11 AQ_12 AQ_17 AQ_20	Low (6)	• Air Quality CEMP • Aboriginal Cultural Heritage CEMP (Top Soil Management Protocol) • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • ESCPs

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
								• ECM
03	Site establishment	Construction and operation of compound buildings and amenities	Dust and waste generation	Stakeholder complaints and dust leaving site boundary into nearby environmental conservation zone	Med (13)	AQ_01 AQ_05 AQ_07 AQ_18 AQ_22 AQ_24 AQ_25 AQ_26 AQ_27 AQ_32 AQ_33	Low (9)	• Air Quality CEMP • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • ESCPs • ECM

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
04	Site establishment	Delivery of heavy plant	Dust generation and sediment tracking	Dust on public roads	Low (9)	AQ_01 AQ_18	Low (6)	• Waste and Resources CEMP • Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • ESCPs • ECM
05	Site establishment	Spraying weeds	Chemical drift	Damage to nearby vegetation	Low (9)	AQ_01 AQ_02 AQ_17	Low (6)	• Air Quality CEMP • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • ESCPs • ECM

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
06	Site establishment	General waste handling	Dust and waste materials blowing through site	Stakeholder complaints and dust leaving site boundary into nearby environmental conservation zone	Low (8)	AQ_01 AQ_08 AQ_16	Low (5)	• Air Quality CEMP • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM
07	Earthworks	Constructing and operating site access roads	Dust generation	Stakeholder complaints and dust leaving site boundary into nearby environmental conservation zone	Med (17)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_11 AQ_12 AQ_17 AQ_18 AQ_20 AQ_21 AQ_22 AQ_28 AQ_29	Low (9)	• Air Quality CEMP • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
08	Earthworks	Use of heavy plant / multiple plant use	Emissions	Air pollution and stakeholder complaints	Med (13)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_17 AQ_30 AQ_31 AQ_34 AQ_35 AQ_36 AQ_40	Low (9)	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM • Dust Management and Vehicle and Equipment Emissions Plan
09	Earthworks	Bulk topsoil stripping	Dust generation	Dust leaving site boundary into nearby environmental conservation zone or local roads	Severe (23)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_11 AQ_12 AQ_17	Med (18)	• Air Quality CEMP • Aboriginal Cultural Heritage CEMP (Top Soil Management Protocol) • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
10	Earthworks	Vegetation Clearing	Dust generation	Dust leaving site boundary into nearby environmental conservation zone or local roads	Severe (23)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_11 AQ_12 AQ_17	Med (18)	• Air Quality CEMP • Biodiversity CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM
11	Earthworks	Stockpiling materials	Dust generation	Dust from stockpile leaving site boundary into nearby environmental conservation zone or local roads	Severe (23)	AQ_01 AQ_07 AQ_09 AQ_12 AQ_14 AQ_17	Med (14)	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM
12	Earthworks	Slope or embankment creation / stabilisation processes	Dust generation	Dust leaving site boundary into nearby environmental conservation zone or local roads	Severe (23)	AQ_01 AQ_07 AQ_09 AQ_12	Med (14)	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
						AQ_17		• Complaints Procedure • Induction • Area ESCPs • ECM
13	Utility realignment works	Potholing	Dust generation	Dust on public roads	Severe (23)	AQ_01 AQ_05 AQ_07 AQ_17	Low (6)	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM
14	Utility realignment works	Trenching	Dust generation	Dust leaving site boundary into nearby environmental conservation zone or local roads	Severe (23)	AQ_01 AQ_05 AQ_07 AQ_09 AQ_12 AQ_17	Low (6)	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM

Ref	Activity	Construction Aspect	Environmental Aspect	Potential Impact	Risk level [2] pre-mitigation	Mitigation measure [1]	Risk level post-mitigation	Management tools
19	Tunnelling and associated works	Tunnel Boring Machine (TBM) Cross Passage Works Stub Tunnel Excavation	Dust generation	Air pollution, community health impacts	Low	AQ3	Low	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM
18	Tunnelling and associated works	Construction of tunnel portal	Dust generation	Air pollution, community health impacts	Low	AQ2 AQ3	Low	• Air Quality CEMP • EWMS • Soil and Water CEMP • Traffic and Access CEMP • Complaints Procedure • Induction • Area ESCPs • ECM

Noted:

1 Refer to Section 7 for mitigation measures and controls

2 Derived from risk assessment process detailed in the SEMF Appendix G

6.3. Impacts

The potential for impacts on air quality was considered in Section 12 of the WSA EIS. An assessment was undertaken of the potential sources detailed in Section 6.1. The findings are summarised in the sections below. In addition to the inherent risks of specific construction activities creating the potential to generate dust, several other environment factors also affect the likelihood of dust emissions. These include:

- Wind direction – determines whether dust and suspended particles are transported in the direction of the sensitive receptors. This has been addressed in Section 5.3, with the predominant annual wind direction being from the southwest, particularly during the seasons of winter and autumn.
- Wind speed – governs the potential suspension and drift resistance of particles. This has been addressed in Section 5.3.
- Rainfall or dew – rainfall or heavy dew that wets the surface of the soil and reduces the risk of dust generation. Rainfall patterns in the area of Badgerys Creek is detailed further Section 5.4, indicating higher rainfall expectation within the months of February, March and November with mean averages exceeding 100 mm/month;
- Effectiveness of protective measures.
- Adjacent land uses and activities that may create dust resulting in a cumulative impact on air quality.

Accordingly, project personnel involved in the activities above need to consider the factors effecting emissions to air in consultation with their environmental representatives to ensure appropriate mitigation measures are adopted.

6.4. Cumulative Impacts

A formal Cumulative Impact Plan will be developed jointly by SMWSA and WSA to allow for effective planning and management of air quality impacts from rail and airport construction activities. Refer to the CIP (WSA00-WSA-00400-EN-PLN-000013) for more details.

SMWSA will facilitate regular cross package planning meetings with all active Contractors. The purpose of these forums will be to identify when and where concurrent potential dust generating works may occur such that the cumulative impact of these works can be assessed and where possible mitigated or avoided. These forums would also involve look ahead planning sessions to highlight potential pending weather conditions that may require specific management measures.

Such measures may include staggered scheduling of particular earthworks with interfacing packages during periods of elevated dust risk, the collaborative management of shared haul roads to ensure effective dust treatment or the pre-emptive use of polymers or dust binding agents in addition to the routine use of these controls.

A targeted SMWSA, WSA and Contractor inspection program will also be scheduled to assess the effectives of controls and the potential need to increase or augment mitigations measures to manage potential cumulative impacts.

6.5. Earthworks

The WSA EIS predicted dust impacts during the earthworks will be at or below the air quality assessment criteria for each of the reported air quality parameters, both incrementally as a result of the Project and cumulatively when assessed with background concentrations and modelled inputs of other projects. The assessment found that while the predicted concentrations remain low at all offsite residential receptors, the nature of the plume spread for the 24-hour and annual averaging periods is highest to the north-east and south-west of the Airport Site, consistent with the prevailing winds measured at Badgerys Creek.

Refer to Dust management and vehicle and equipment emissions plan (Appendix A) for more information.

7. Environmental Control Measures

Mitigation and management measures that will be implemented during construction are detailed in Table 7-1 and are consistent with those provided in the WSA SWCEMP (2021), as per the Airport Plan as well as Section 8.3, Table 8-1 and Table 8.3 of SMWSA EIA. The relevant control measures will be included in the site-specific Environmental Work Method Statement (EWMS) and Environmental Control Map (ECM) – refer to Section 3.6 of the CEMF for further detail.

For monitoring of the implementation of control measures, refer to Section 10.

Table 7-1 Environmental control measures

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
General					
AQ_01	Training will be provided to all project personnel, including relevant subcontractors on sound air quality control practices and the requirements from this Plan through inductions, toolboxes and targeted training.	Pre-construction Construction	All personnel will be inducted before commencing works.	All Contractors	Good Practice
AQ_02	The application of pesticides will be modified, reduced or controlled during high or unfavourable wind conditions where wind can carry pesticides outside of the defined treatment area.	Construction	Meteorological information will be used to assess wind conditions.	All Contractors	Good Practice
AQ_03	Ensure there is no burning of any materials on site.	Construction	All personnel will be inducted before commencing works.	All Contractors	Good Practice
AQ3	Ensure that works meet the requirements under Schedule 1 of the Airports (Environment Protection) Regulations 1997	Construction	Air quality monitoring, consistent with the Western Sydney Airport, Air Quality Construction Environmental Management Plan would be carried out during construction to ensure that works meet the requirements under Schedule 1 of the Airports (Environment Protection) Regulations 1997		SMWSA EIA Table 8-3
Dust management					
AQ_04	Dust management measures will be implemented to mitigate the impacts of dust during construction, including the following:	Pre-construction Construction	Dust Management and Vehicle and Equipment Emissions Plan (Appendix B) ECM to include dust management details for specific activities/areas. All personnel will be inducted and provided with ongoing training	All Contractors	WSA EIS Table 28-11

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ_05	Avoiding site run-off of water or mud to reduce the potential for track-out dust emissions.	Pre-construction Construction	ECM to include access/egress controls All personnel will be inducted and provided with ongoing training.	All Contractors	WSA EIS Table 28-11
AQ_06	Only using cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays.	Pre-construction Construction	Construction equipment will be scheduled prior to undertaking the works.	All Contractors	WSA EIS Table 28-11
AQ_07	Ensuring adequate water will be made available on the site for effective dust and particulate matter suppression and mitigation, using non-potable water where possible. Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil being transported to reduce wind-blown dust emissions	Pre-construction Construction	Non-potable water sources will primarily be used to meet this requirement. Non-potable water sources will include stormwater runoff captured in sediment dams or existing dams on site or through agreement from adjacent landowners. Options to use Sydney Water recycled water are being investigated. However, potable water may be supplied from existing assets operated by Sydney Water. Groundwater is not currently proposed to be utilise as a water source.	All Contractors	WSA EIS Table 28-11 SM – WSA Table 8-1 CEMF 10
AQ_08	Using enclosed chutes and conveyors and covered skips where appropriate.	Pre-construction Construction	Where applicable, select appropriate plant/equipment to minimise dust generation. All personnel will be inducted and provided with ongoing training.	All Contractors	WSA EIS Table 28-11
AQ_08	Minimising drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment, and using fine water sprays on such equipment wherever appropriate.	Pre-construction Construction	Where applicable, select appropriate plant/equipment to minimise dust generation while moving spoil. All personnel will be inducted and provided with ongoing training	All Contractors	WSA EIS Table 28-11
AQ_10	Making equipment readily available on-site to clean up spillages as soon as reasonably practicable after the even	Pre-construction Construction	Equipment will be stocked at different locations across the site. It will be restocked as it is used.	All Contractors	WSA EIS Table 28-11

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ_11	Where acoustic sheds are proposed, dust emissions should be prevented/ minimised from escaping	Construction	Where acoustic sheds are proposed these would be designed and managed by the SBT Contractor to prevent/minimise the escape of dust emissions	All Contractors	SMWSA EIA- Table 8-3 AQ2
Dust impacts from earthworks					
AQ_12	Vegetation clearing will be staged where possible to minimise the area and time that surfaces are exposed. Minimise stockpiling of material. Stockpiles will be located away from sensitive receivers where practicable.	Pre-construction Construction	Vegetation clearing will be scheduled ahead of time and will be done in combination with the location of sensitive receivers. Appendix A - Dust management and vehicle and equipment emissions plan	All Contractors	WSA EIS Table 28-11
AQ_13	Exposed surfaces with no scheduled work will be treated to minimise dust generation. Exposed surfaces will be stabilised progressively using the most practical site-specific methods, including watering and geo-fabrics for short-term exposure and emulation spray, spray grass, soil compaction and revegetation for longer term exposed areas or final finishes. Revegetate earthworks and exposed areas or soil stockpiles as soon as practical.	Pre-construction Construction	Surface treatment details to be included on the ECM for the work. This could include the use of hessian, mulches or tackifiers to cover exposed areas as soon as possible after completion of earthworks where it is not possible to re-vegetate or cover with topsoil. Temporary areas that are not disturbed or used (>10 days) are to be stabilised to managed dust. All personnel will be inducted and provided with ongoing training. Appendix A - Dust management and vehicle and equipment emissions plan.	All Contractors	WSA EIS Table 28-11
Dust impacts from other main construction works					
AQ_14	Avoiding scrabbling (roughening of concrete surfaces) where practicable.	Pre-construction Construction	Construction works will be scheduled ahead of undertaking the works.	All Contractors	WSA EIS Table 28-11

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ_15	Storing sand and other aggregates in bunded areas and not allowing them to dry out unless required for purposes.	Pre-construction Construction	Storage areas will be determined in combination with the site layout design and documented on the ECM	All Contractors	WSA EIS Table 28-11
AQ_16	Delivering bulk cement and other fine powder materials in enclosed tankers and storing them in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	Pre-construction Construction	Deliveries will be organised and scheduled ahead of time. Training will be provided to all drivers and delivery personnel.	All Contractors	WSA EIS Table 28-11
AQ_17	Sealing and appropriately storing bags of any fine powder materials.	Pre-construction Construction	Storage and handling will be documented on the ECM. All personnel will be inducted and provided with ongoing training.	All Contractors	WSA EIS Table 28-11
AQ_18	Construction activities will be modified, reduced or controlled during high or unfavourable wind conditions if they have a potential to increase off-site dust generation.	Construction	Meteorological conditions will be continuously monitored.	All Contractors	WSA EIS Table 28-11
Dust track out					
AQ_19	Using water-assisted dust sweeper(s) on the access and local roads to remove, as necessary, any material tracked out of the site. This may require the sweeper to be continuously in use.	Construction	Access roads and sweeper requirements documented on the ECM. All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_20	Avoiding dry sweeping of large areas.	Construction	All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_21	Sealing high use haul roads and regularly inspecting and making necessary repairs to the surface as soon as reasonably practicable.	Construction	Haul roads and maintenance requirements documented as applicable on the ECM. All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ_22	Recording all inspections of haul routes and any subsequent action in a site log book.	Construction	Recorded in site diary. All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_23	Regularly cleaning and damping down hard surfaced haul routes with fixed or mobile sprinkler systems or mobile water bowsers.	Construction	Haul roads/surfaces and maintenance requirements documented as applicable on the ECM. All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_24	Implementing a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site. The location of wheel wash to be shown on ECMs.	Construction	This will be determined in combination with the site design layout and detailed on the ECM.	All Contractors	WSA EIS Table 28-11
AQ_25	Providing an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.	Construction	This will be determined in combination with the site design layout and detailed on the ECM.	All Contractors	WSA EIS Table 28-11
AQ_26	Locating site access points as far as practicable from sensitive receptors	Construction	This will be determined in combination with the site design layout and detailed on the ECM.	All Contractors	WSA EIS Table 28-11
AQ_27	Hardstand areas and surrounding public roads will be cleaned, as required, using methods including brooms, bobcat attachments or street sweepers.	Construction	Maintenance requirements will be shown on relevant ECMs. All personnel will undertake inductions and reiterated through ongoing site training	All Contractors	Good practice
AQ_28	Measures implemented to minimise dust, soil or mud from being deposited by vehicles on public roads. This will be achieved by implementing mitigation measures such as stabilised site access (rumble grids, concrete and/or large aggregate) at entry/exit points. Manual cleaning will also be carried out where appropriate. In the event of any spillage or tracking, the spilt material will be	Construction	Applicable management measures will be shown on ECMs. All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	Good practice

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
	removed immediately and in accordance with the environmental incident classification and reporting procedure.				
AQ_29	Vehicle movement will be confined to designated haul roads and areas. These roads will have speed limits of 40 km/h in order to reduce dust generation. Reduced speed limit may be implemented where dust generation persists.	Construction	A traffic management plan will be prepared to comply with this.	All Contractors	Good Practice
AQ_30	All loaded haulage trucks will be covered where there is a risk of release of dust or other materials on public roads.	Construction	A traffic management plan will be prepared to comply with this.	All Contractors	Good Practice
Vehicle and equipment emissions					
AQ_31	All vehicles will be switched off when not in operation. Where practical lower vibration generating items of excavation plant and equipment shall be used.	Construction	Dust Management and Vehicle and Equipment Emissions Plan (Appendix B) All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_32	Engines of plant parked next to residents will be switched off when not in operation.	Construction	Dust Management and Vehicle and Equipment Emissions Plan (Appendix B). All personnel will undertake inductions and reiterated through ongoing site training.	All Contractors	WSA EIS Table 28-11
AQ_33	Avoid the use of diesel- or petrol powered generators and instead use mains electricity or battery powered equipment, where practicable.	Construction	Dust Management and Vehicle and Equipment Emissions Plan (Appendix B). Construction equipment will be ordered before the works are to be undertaken to ensure the appropriate equipment is available.	All Contractors	WSA EIS Table 28-11
AQ_34	Implement measures to support and encourage sustainable travel for construction workers to and from the airport site, including public transport, shuttle busses, cycling, walking, and car-sharing.	Construction	Induction training Tool box talks to encourage sustainable travel to and from the site.	All Contractors	WSA EIS Table 28-11

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ_35	Daily monitoring of vehicle and plant is to be undertaken as a pre-start inspection	Construction	Before any vehicles / plant enter the construction site, they must provide confirmation of their daily pre-start inspection.	All Contractors	Good Practice
AQ_36	Exhaust systems of construction plant, vehicles and machinery will be maintained in accordance with manufacturer's specifications to ensure that excessive visible exhaust emissions do not persist under normal operational loads of the plant and machinery.	Construction	Before any vehicles / plant enter the construction site, they have to provide confirmation of their daily pre-start inspection.	All Contractors	Good Practice
AQ_37	Periodic visual checks will be undertaken to ensure ongoing compliance, typically weekly. Where practicable, vehicles will be fitted with pollution reduction devices	Construction	Before any vehicles / plant enter the construction site, they must provide confirmation of their daily pre-start inspection.	All Contractors	Good Practice
AQ_38	Material brought to site will be in bulk from the suppliers, where practicable	Construction	Construction material will be ordered before the works are to be undertaken to ensure the appropriate equipment is available.	All Contractors	Good Practice
AQ_39	Material will be sourced from local suppliers, where practicable	Construction	Material will be ordered before the works are to be undertaken to ensure the local suppliers are available.	All Contractors	Good Practice
AQ_40	No use of ozone-depleting substances is to occur.	Construction	Procurement processes and checks during inspections. Ensure that the relevant providers of goods and services do not use ozone depleting substances	All Contractors	Legal requirement
AQ41	Develop and implement a construction logistics plan to manage the sustainable delivery of goods and materials to the airport site.	Construction	Construction Logistics Plan	All Contractors	WSA EIS Table 28-11
Odour management					

ID	Measure/ Requirement	When to Implement	How to Implement	Responsibility for Implementation	Reference
AQ42	Implement/ best practice odour management	Construction	The Air Quality Management Plan for the project would incorporate the following best-practice odour management measures would be implemented during relevant construction works: • the extent of opened and disturbed contaminated soil at any given time would be minimised • temporary coverings or odour supressing agents would be applied to excavated areas where appropriate • regular odour monitoring would be conducted during excavation to verify that no offensive odours are being generated	All Contractors	SMWSA EIA Table 8-3 AQ1
Tunnel and deep excavations					
AQ_43	Dust extraction and filtration systems will be installed for tunnel excavation works and deep excavation with limited surface exposure.	Construction	Vent stacks will be monitored and located to provide minimal risk to receptors	SBT Contractors	SMWSA EIA Table 8-1 CEMF 10

8. Air Quality Management

All Contractors must:

- Plan and carry out all its construction activities to avoid where practicable, the generation of dust and vehicle emissions. Contractors must employ reasonably practicable measures to minimise the emission of dust and other air pollutants during the Contractors Activities.
- Employ reasonably practicable construction methods / measures that will keep the air pollution, including dust to a minimum.

8.1. Air quality criteria

The air quality criteria applicable for use as identified in the WSA EIS are principally those defined in the NSW EPA Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales, which accounts for various pollutant criteria and averaging period from multiple sources, including the NEPM-AAQ and NERDDC. They are summarised in Table 8-1. Where relevant, AEPR criteria are also listed.

Table 8-1 Air quality monitoring criteria applicable to the airport

Pollutant	Criterion (3)	Averaging period	Source
Total suspended particulate matter (TSP)	90 µg/m3	1 year	NSW EPA, AEPR
Particulate matter < 10 µm (PM10)	50 µg/m3	24 hours(c)	NSW EPA, NEPM-AAQ
	25 µg/m3	1 year	NSW EPA, NEPM-AAQ
Particulate matter < 2.5 µm (PM2.5)	25 µg/m3	24 hours	NEPM-AAQ
	20 µg/m3 (by 2025)	24 hours	NEPM-AAQ
	8 µg/m3	1 year	NEPM-AAQ
	7 µg/m3 (by 2025)	1 year	NEPM-AAQ
Deposited dust – Incremental	2 g/m2/month	Annual	NERDDC
Deposited dust – Cumulative	4 g/m2/month	Annual	NERDDC

ppm = parts per million; pphm = parts per hundred million; µg/m3 = micrograms per cubic metre; mg/m3 = milligrams per cubic metre.

NERDDC 1988, Air Pollution from Surface Coal Mining: Measurement, Modelling and Community Perception, Project No. 921, National Energy Research Development and Demonstration Council, Canberra

Any exceedance of the above criteria will be reported to the DITRDC in accordance with Section 10.4.

9. Environmental roles and responsibilities

The key environmental management roles and responsibilities for the construction phase of the work are detailed in both the SM CEMF (Section 3.15).

Sydney Metro will ensure enough resources are allocated on an ongoing basis to ensure effective implementation by both Sydney Metro and the responsible contractors.

10. Environmental inspection, monitoring, auditing and reporting

Monitoring, inspection and auditing will be undertaken to measure effectiveness and facilitate continuous improvement of air quality management.

Refer to section 3.16 of the SM CEMF for general environmental monitoring, inspection and auditing requirements.

A summary of the environmental inspection, monitoring and auditing requirements is provided below, with details of how they apply to air quality management where applicable.

10.1. Environmental inspections

10.1.1. Sydney Metro environmental inspections

Environmental site inspections at active, exposed work sites will be undertaken by the environmental team, Sydney Metro Environment Manager (or delegate) on a weekly basis to evaluate the effectiveness of environmental controls implemented by the contractor. The weekly site inspection is to include a visual check of general construction activities and any air quality mitigation measures and or controls including but not limited to the following:

- Observation of dust generation from specific construction activities including those from vehicle tracking and excavation works;
- Observation of excessive visible exhaust emission from plant and machinery under normal operational loads;
- The presence / generation of any odours associated with the work activities; and
- Plant and machinery left idling whilst unused for extended periods of time (i.e. 30 mins).

The findings of the Sydney Metro site environmental inspection will be recorded on a Sydney Metro Site Environmental Inspection report.

10.1.2. Contractor environmental inspections

Regular site inspections will be undertaken to monitor compliance with this Plan at active, exposed work sites. Inspection results will be recorded, and the inspection log made available to the DITRDC upon request. Any exceedance of air quality criteria will be reported in the monthly report, discussed at the Environmental Coordination meeting and appropriate remedial action will be taken. More frequent site inspections by the person accountable for air quality and dust issues will be conducted onsite when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. The Contractor's Environmental Manager and/or Environmental Coordinators will undertake inspections in accordance with the Contractor Environmental Management Framework. The contractor's Coordinators will record inspection findings on an inspection checklist form. If any maintenance and/or deficiencies in environmental controls or in the standard of environmental performance are observed, they will be recorded on the checklist form. Records will also include details of any maintenance required, the nature of the deficiency, any actions required and an implementation priority.

10.1.3. Pre-start inspection

Prior to the commencement of works on each shift, an informal inspection will be carried out by the relevant contractor and will include a check of relevant environmental controls and resources required to ensure effective operation and maintenance. This is to include an inspection of relevant air quality management mitigation measures and controls where applicable. Works are not to commence unless inspections are found to be satisfactory.

The foreman will undertake the pre-works inspection and record daily observations

10.2. Air quality monitoring

General environmental monitoring requirements are set out in the AEPR and include the following:

- Monitoring must take place under the direction of an appropriately qualified person, with previous relevant air quality monitoring experience and / or qualifications; and
- The results of the monitoring must be kept in a written record.

Specific air quality monitoring requirements, including timing and responsibilities, are included in Table 10-1 below.

Table 10-1 Air quality monitoring requirements

Reference	Requirement	Timing	Responsibility
AQ_M_01	Real time monitoring will be conducted at suitable locations for dust deposition and dust flux. This will be determined in consultation with the NSW EPA for the WSA monitoring locations. Contractors will determine monitoring locations based on work fronts and may involve hand held monitors to assess package influence on project wide cumulative air quality impacts Phone and /or email alerts will be delivered to the relevant personnel.	Pre-construction and during construction	Sydney Metro Environment Manager All Contractors
AQ_M_02	Weather data at the premises, including rainfall measured and recorded in millimetres per 24-hour period at the same time each day from the time that the site office is established	As required	All Contractors
AQ_M_03	Ongoing monitoring to continue to be undertaken as per Section 10.2.1	During construction	Sydney Metro Environment Manager
AQ_M_04	Regular site inspections, at a minimum weekly, will be undertaken to monitor compliance with the dust management plan . Inspection results will be recorded included in the monthly report.	During construction	Sydney Metro Environment Manager All contractors
AQ_M_05	Daily visual inspection and during high wind events. Records to be kept on a daily basis.	Pre-construction and during construction	All Contractors

Reference	Requirement	Timing	Responsibility
AQ_M_06	Odour management measures would be implemented during excavation of contaminated areas to check that: • the extent of opened and disturbed contaminated soil at any given time would be minimised • temporary coverings or odour supressing agents are applied to excavated areas where appropriate • no offensive odours are being generated • regular odour monitoring by a human.	During construction	All Contractors

10.2.1. Project Air Quality monitoring program

Air quality monitoring has been undertaken since October 2017 up until the present at the Airport Site for the purpose of obtaining air quality data. Baseline air monitoring quality data includes monitoring from the EIS and before September 2018 when EEW started. Details of the methodology and sampling locations (Air Quality Monitoring Program) are provided in the sections below.

SM - WSA will continue to implement the Air Quality Monitoring Program on a monthly basis in addition to any contractor specific monitoring as detailed in Section 10.2.3. SM - WSA will work into this program as required. Air quality monitoring sites and monitoring network are adequate for the current bulk earthworks. Monitoring has been undertaken confirming existing mitigation measures are adequate. The monitoring data will be represented in monthly reports. This will provide a basis to assess the data against the targets and allow for a simple process in identifying any exceedances. If exceedances are encountered additional measures will be put in place including:

- Review and modify work practices as appropriate.
- Using additional water carts.
- Using adhesive polymer to bind the top surface layer.
- Reducing speeds of site plant.
- Shutting down earthwork operations where required.

All environmental monitoring equipment will be calibrated as required by the manufacturer's specifications. Certificate of calibration currency can be made available upon request, with specific details to be provided in the annual reporting (refer to Section 10.4).

Dust deposition

Deposited matter refers to any dust that falls out of suspension in the atmosphere. Deposited dust is measured in accordance with AS/NZS 3580.10.1:2016 - Methods for sampling and analysis of ambient air Method 10.1: Determination of particulate matter—Deposited matter—Gravimetric method. A five-litre gauge with a 150 mm funnel is placed on a two-metre high stand. The gauge is left onsite for approximately one (1) month (30 days +/- two days) and then the sample is sent to a laboratory for analysis. The number of insoluble solids over the monitoring period are reported by the laboratory.

Particulate concentration

DMP 7200 real time particle counters sample real time PM2.5 and PM10. The DMP adopts two methods for measuring particulate mass concentration: particle counting and gravimetric analysis. The units measure the particulate concentration through 90º Mie scattering principle. The location of the air-monitoring stations is provided in Figure 10-1.

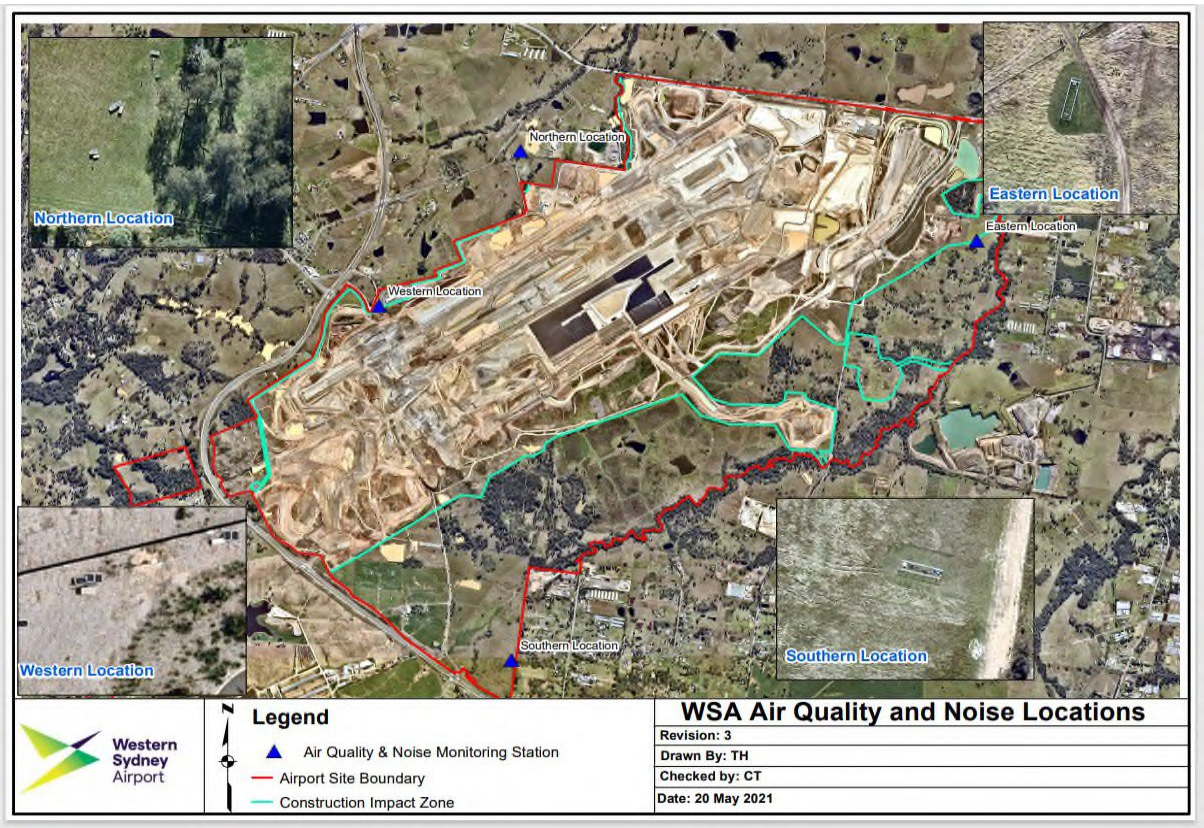


Figure 10-1 Air quality monitoring station location plan

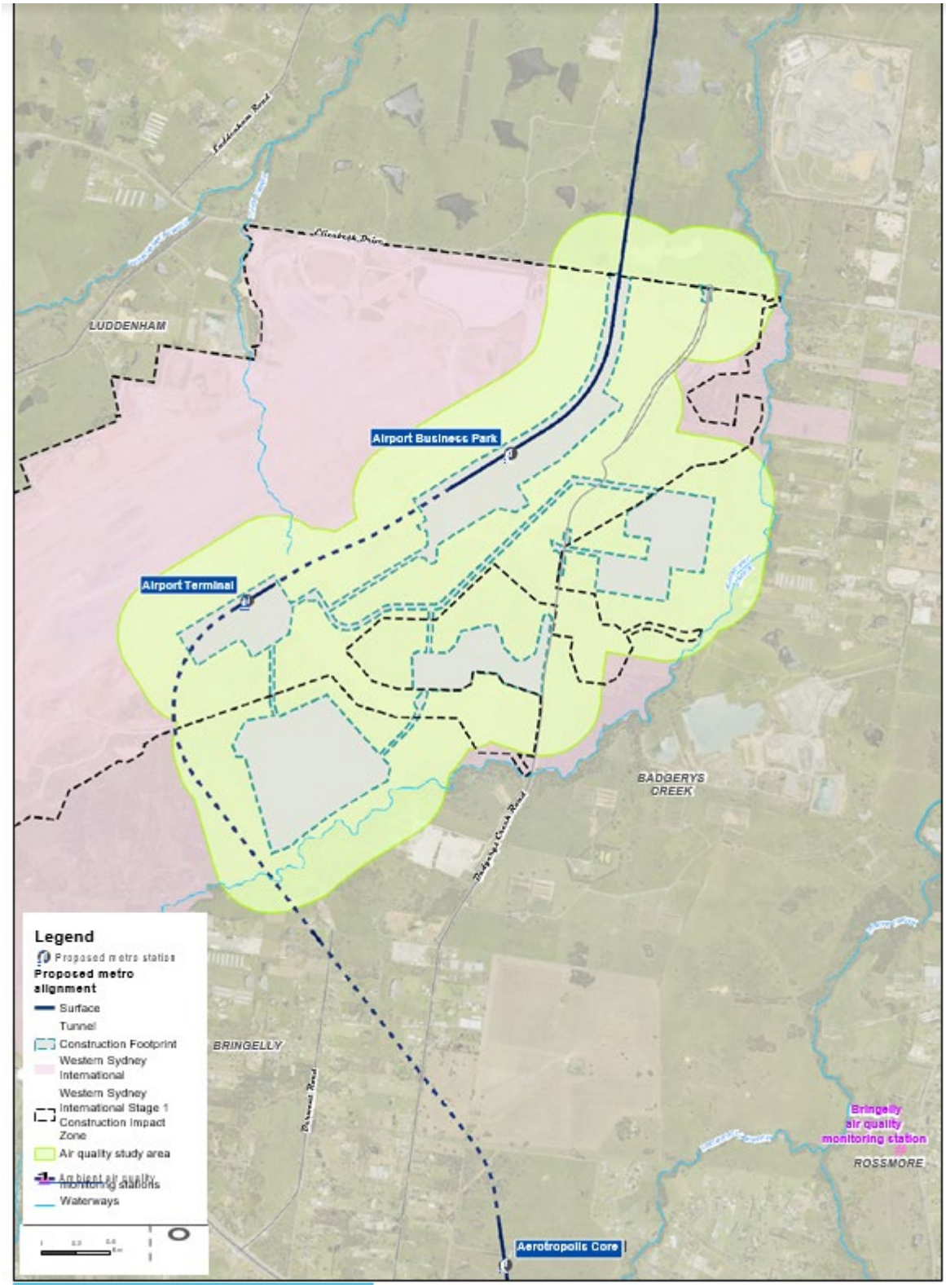


Figure 10-2 SM – WSA Air quality study area and monitoring station location plan

10.2.2. Additional monitoring for adverse weather

Additional inspections may be required during adverse weather conditions, such as dry periods (greater than one month) and high winds (greater than 30km/hr). Real time and forecasted weather conditions (from BOM) along with real – time monitors (>5 monitors on the site at any one time) will be continuously monitored during the project, particularly prior to weekends. Where required, adjustment to work practices will be made during these periods (e.g. reduction in activities, deployment of additional water carts.).

All monitoring equipment will be calibrated as required by the manufacturer's specifications. Certificate of calibration currency can be made available upon request, with specific details to be provided in the annual reporting (refer to Section 10.4).

10.2.3. Contractors air quality monitoring program

Real time monitoring will be conducted by each contractor at suitable locations for real time PM10, PM2.5, dust deposition and dust flux. Phone and/or email alerts will be delivered to the relevant personnel.

Contractors will determine monitoring locations based on work fronts and may involve hand held monitors and/ or dust deposition gauges to assess package influence on project wide cumulative air quality impacts. The monitoring will aid in understanding internal site sources only and will not form part of the monthly compliance report unless additional information is required.

Daily recorded observations of weather and associated site impact to air quality will be kept by each Contractor such that comparisons can be made between interfacing work packages to allow for an assessment of respective contributions to project wide cumulative impacts.

10.3. Environmental auditing

Refer to Section 3.16 of the CEMF for environmental auditing requirements, including internal audits, independent audits and audits to be undertaken by contractors.

Auditing and subsequent reporting will be undertaken annually to ensure compliance with:

- this AQCEMP;
- Airport Plan Conditions of Approval; and
- Condition 40.4, 40.5, 40.6 Independent audits about compliance with conditions as identified in Section 4 of this CEMP.

Sydney Metro will also undertake periodic audits of the Principal Contractor's Environment and Sustainability Management Systems (E&SMS) and compliance with the environmental aspects of contract documentation, including this AQCEMP.

On-airport works approved under the Airport Plan will be subject to environmental audits and compliance audits, noting unscheduled audits may also be undertaken. The environmental audits would audit the environmental systems and on-site performance of the on-airport works of SMWSA and be undertaken on a six monthly basis.

10.4. Environmental reporting

General environmental reporting requirements are detailed in Section 3.18 of the SMWSA CEMF.

In addition, a summary of reporting requirements required under this Air Quality CEMP (including environmental reporting requirements under the Airport Plan specific to this Air Quality CEMP) is provided below in Table 10-2.

Table 10-2 Air quality reporting and record keeping

Action	Scope	Timing/ Frequency	Responsibility
Meteorological monitoring	Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor; ii. Regular visual monitoring of dust generation from work zones; and iii. Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly. c. The following compliance records will be kept by the Principal Contractor: i. Records of any meteorological condition monitoring; ii. Records of any management measures implemented as a result of adverse, windy weather conditions; and iii. Records of air quality and dust inspections undertaken.	Daily	Sydney Metro Environment Manager
Annual reporting	Unless otherwise agreed in writing by an Approver, an annual report will be prepared in relation to compliance with this Air Quality CEMP. In accordance with Condition 39 (2) WSA will publish each of the annual reports on its website within three months of the end of the period in respect of which the report was prepared, with evidence providing proof of the date of publication to the DITRDC with a copy to the Environment Department. The report must remain on the website for a period of at least 12 months.	Annually	Sydney Metro Environment Manager
NEPM	Compliance with the air quality criteria as detailed in section 6 (including the relevant NEPM requirements) will be included as part of the Annual Report.	Annually	Sydney Metro Environment Manager
Greenhouse gas emissions (NGER)	Refer to Sustainability Plan when approved. In the absence of an approved Sustainability Plan, NGERS will be reported in the Annual Report.	Annually	Sydney Metro Environment Manager

Action	Scope	Timing/ Frequency	Responsibility
Monitoring compliance reporting	Undertaking monitoring as required by this Air Quality CEMP. Contractor is to provide WSA with a monthly summary of all air quality monitoring undertaken and advise of compliance with criteria. Monitoring will be undertaken against the criteria outlined in section 8.	Monthly	All Contractors
Complaints reporting	Recording of complaints and stakeholder interactions in accordance with Community and Stakeholder Management Plan.	As required	Sydney Metro Environment Manager Sydney Metro Community and Stakeholder Manager All Contractors
Environmental Site Register (required under the 6.02(3) of the AEPR)	Environmental Site Register to be kept and maintained to include written record of environmental conditions of the Airport and its environmental management generally. The register is to include the results of monitoring required under section 10.2 and a record of any exceptional incidents that cause excessive pollution and the action taken to resolve the situation.	As required	All
Shut-down inspections	Inspection of contractor works including status of environmental controls prior to shut-down of site for an extended period (i.e. more than 2 days).	Prior to site shut-down	All contractors
General environmental inspection	Inspection of environmental management controls on site and sighting of site documentation as required by the contractor's CEMP.	Weekly	Sydney Metro
General environmental inspection	Inspection of environmental management controls and site documentation for contractor works (as required by the contractor's CEMP).	As per Contractor environmental management system (at least weekly)	All Contractors
Post-rainfall inspection	Inspection of environmental controls following a rainfall event exceeding 10 mm in any 24-hour period.	Within 24 hours of the rainfall event (excluding Sundays and public holidays)	All Contractors
Reporting pollution incidents	For the management and reporting requirements of all environmental incidents, refer to section 6 of the SEMF. Report pollution incidents resulting in offsite impacts to the NSW Environment Protection Authority – refer to WSA Environmental Non-conformance Classification and Reporting Procedure.	As required	All

Action	Scope	Timing/ Frequency	Responsibility
Pollution and or excessive noise reporting	In accordance with the AEPR, WSA must give an airport environment officer for the airport, within 14 days, a written report if monitoring results indicate pollution, or excessive noise, occurring as a result of the undertaking of the works associated with the Stage 1 development. The trigger for a 'pollution event' as per the Airports (Environment Protection) Regulations 1997 is provided in the relevant schedules of the AEPR.	As required	Sydney Metro
Reporting of non-conformances and improvement opportunities	The management and reporting requirements of environmental non-conformances and improvement opportunities will be in accordance with Section 8 of the SEMF.	As required	Sydney Metro All Contractors

10.5. Review of approved plans

Sydney Metro will review each approved plan at least every five years (from the date of approval) as required by the Airport Plan. A review will also be completed annually to ensure that it continues to meet the approval criteria. Details of the review will be included in the annual report. If the review identifies areas where the plan does not continue to meet the approval criteria for that plan, a variation to the approved plan will be prepared and submitted for approval. Once the reviewed plan is approved by the Approver, this reviewed plan will be the Approved Plan.

Sydney Metro may initiate reviews of Approved Plans at other times in response to improvement opportunities, non-conformances, and changes to scope of work or construction methodology or alterations to legal or contractual requirements.

If there is a material change to a WSA CEMP which impacts on an area of the RCIZ, then SMWSA will review their CEMPs to reflect that change addressed by the WSA review.

Any changes identified and implemented through the variation and review process identified above will be communicated to relevant contractors through re-issue of the revised Sydney Metro Approved Plan and subsequent training and awareness (refer to refer to Section 3.4 of the CEMF).

10.6. Environmental Incidents and complaints management

The management and reporting of environmental incidents shall be undertaken by the appropriate person as detailed in Section 3.12 of the SM CEMF.

All communications and complaints management will be implemented and managed in accordance with Section 4.2 and 4.3 of the SM CEMF and the Community communications strategy.

11. Competence, training and awareness

To ensure this Air Quality CEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements within. The Sydney Metro Environment Manager will coordinate the necessary and relevant environmental training in conjunction with other training and development activities.

All competence, training and awareness requirements will be implemented as detailed in Section 3.11 of the SM CEMF.

12. References

Commonwealth Department of Infrastructure and Regional Development, 2016. Airport Plan (December 2016)

Commonwealth Department of Infrastructure and Regional Development, 2016. Western Sydney Airport Environmental Impact Statement, 2016

NERDDC 1988, Air Pollution from Surface Coal Mining: Measurement, Modelling and Community Perception, Project No. 921, National Energy Research Development and Demonstration Council, Canberra

NSW Department of Environment and Conservation (DEC) (now NSW Department of Planning and Environment), 2005. Approved Methods for the Sampling and Analysis of Air Pollutants in NSW

NSW Office of Environment and Heritage (OEH), 2016. Clean Air for NSW Consultation Paper

Standards Australia 2001. Australian and New Zealand environmental management international standard (AS/NZS ISO 14001).

Appendix A – Dust management and vehicle and equipment emissions plan

A.1 Introduction

A1.1 Objectives

To describe the minimum mandatory requirements for the management of air quality associatedwith construction activities.

A1.2 Training

All personnel are to undertake Project inductions identifying their environmental and complianceobligations under the Conditions for the Project.

Obligations and responsibilities relevant to air quality management will also be included in daily pre-start or activity-specific pre-start briefings, toolbox talks or targeted environmental training asappropriate.

A.2 Standards and Guidelines

- Air Quality Construction Environmental Management Plan (AQCEMP)
- NSW EPA Local Government Air Quality Toolkit, Visual Guide: Dust from urban construction sites

A.3 Air Quality Management

The following are mitigation and management measures to address impacts on air quality from dust andvehicle and equipment emissions.

A.3.1 Dust Management Plan

- Avoiding site runoff of water or mud to reduce the potential for track-out dust emissions;
- Only using cutting, grinding or sawing equipment fitted or in conjunction with suitable dustsuppression techniques such as water sprays;
- Ensuring adequate water will be made available on the site for effective dust and particulate matter suppressions and mitigation, using non-potable water where possible;
- Using enclosed chutes and conveyors and covered skips;
- Minimising drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment, and using fine water sprays on such equipment wherever appropriate;
- Making equipment readily available on-site to clean up spillages as soon as reasonably practicableafter the event;
- Measures to reduce dust impacts from earthworks and other works, as outlined in Table 7-1 of this plan, including but not limited to:
    - Vegetation clearing will be staged where possible to minimise the area and time that surfacesare exposed; and
    - Minimise stockpiling of material. Stockpiles will be located away from sensitive receptorswhere practicable.

- Measures to reduce dust tracking out, as outlined in Table 7-1 of this plan, including but not limited to:
    - Sealing high use haul roads, regularly inspecting and making necessary repairs to the surfaceas soon as reasonably practicable.
    - Implementing a wheel washing system (with rumble grids to dislodge accumulated dust andmud) prior to leaving the site.
- Avoiding dry sweeping of large areas.

A3.2 Vehicle and Equipment Emissions Plan

- Requiring vehicle operators to switch off engines when not in use.
- Avoiding the use of diesel- or petrol-powered generators and instead using mains electricity orbattery powered equipment, where practicable.
- Considering appropriate vehicle speeds on sealed and unsealed roads;
- Construction logistics plan to manage the sustainable delivery of goods and materials to the airportsite, includes the following measures:
    - Material brought to site will be in bulk from the suppliers, where practicable; and
    - Material will be sourced from local suppliers, where practicable.
- Further sustainable practices to manage the delivery of goods and material to the airport site are detailed in the Sustainability Plan.
- Measures to support and encourage sustainable travel for construction workers to and from the airport site, such as public transport, shuttle buses, cycling, walking, and car-sharing are outlined inSection 7 Table 7-1 TA_14 of the Traffic and Access CEMP.
- Measures to reduce vehicle and equipment emissions, as outlined in Table 7-1 of this plan.

A.4 Complaints Management

Record all dust and air quality complaints in accordance with the complaints management system.

A.5 Incident Management

Any exceptional incident which causes dust/emissions, either on-site or in close proximity to the site, isto be recorded in the Foreman's daily diary and immediately reported to the Site Supervisor (SS). The SS to report the matter to the Environment Manager and Construction Manager.

Legend

Contractor Responsibilities

SS – Site SupervisorEC – Environmental Coordinator

EM – EnvironmentManager

Assess the Situation

- Review weather forecast daily for potential high winds (>20km/hr) at Horsley Park (www.weatherzone.com.au) [EC].
- Consult with SS and other subcontractors for strategies to minimise dust [EC].
- The need for and type of dust controls will be assessed prior to works being undertaken[SS].
- The implementation of dust and emission controls will be progressive and continual duringthe various stages of construction of the temporary site facility [SS/EC].

TOP DUST GENERATING WORK if winds exceed 20km/hr (10min average) and airquality controls are not sufficient to mitigate dust generation.

Re-assess the situation

Implement Air Quality Controls

Dust management plan [SS]

- Avoiding site runoff of water or mud to reduce the potential for track-out dust emissions
- Only using cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays
- Ensuring adequate water will be made available on the site for effective dust and particulate matter suppressions and mitigation, using non-potable water where possible
- Using enclosed chutes and conveyors and covered skips
- Minimising drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment, and using fine water sprays on such equipment wherever appropriate
- Making equipment readily available on-site to clean up spillages as soon as reasonably practicable after the event
- Measures to reduce dust impacts from earthworks and other works, as outlined in Table 7-1 of this plan, including but not limited to:
  - Vegetation clearing will be staged where possible to minimise the area and time that surfaces are exposed.
  - Minimise stockpiling of material. Stockpiles will be located away from sensitive receivers where practicable.
- Measures to reduce dust track out, as outlined in Table 7-1 of this plan, including but not limited to:
  - Sealing high use haul roads, regularly inspecting and making necessary repairs to the surface as soon as reasonably practicable.
  - Implementing a wheel washing system (with rumble grids to dislodge accumulated dust and mud) prior to leaving the site.
  - Avoiding dry sweeping of large areas.

Vehicles and equipment emissions plan

- Requiring vehicle operators to switch off engines when not in use
- Avoiding the use of diesel or petrol powered generators and instead using mains electricity or battery powered equipment, where practicable
- Considering appropriate vehicle speeds on sealed and unsealed roads
- Construction logistics plan to manage the sustainable delivery of goods and materials to the airport site, includes the following measures:
  - Material brought to site will be in bulk from the suppliers, where practicable
  - Material will be sourced from local suppliers, where practicable.

  Further sustainable practices to manage the delivery of goods and material to the airport site are detailed in the Sustainability Plan
- Measures to support and encourage sustainable travel for construction workers to and from the airport site, including public transport, shuttle buses, cycling, walking, and car-sharing are outlined in Section 2.2.2: Vehicle Movement Plans of the Traffic and Access CEMP
- Measures to reduce vehicle and equipment emissions, as outlined in Table 7-1 of this plan.

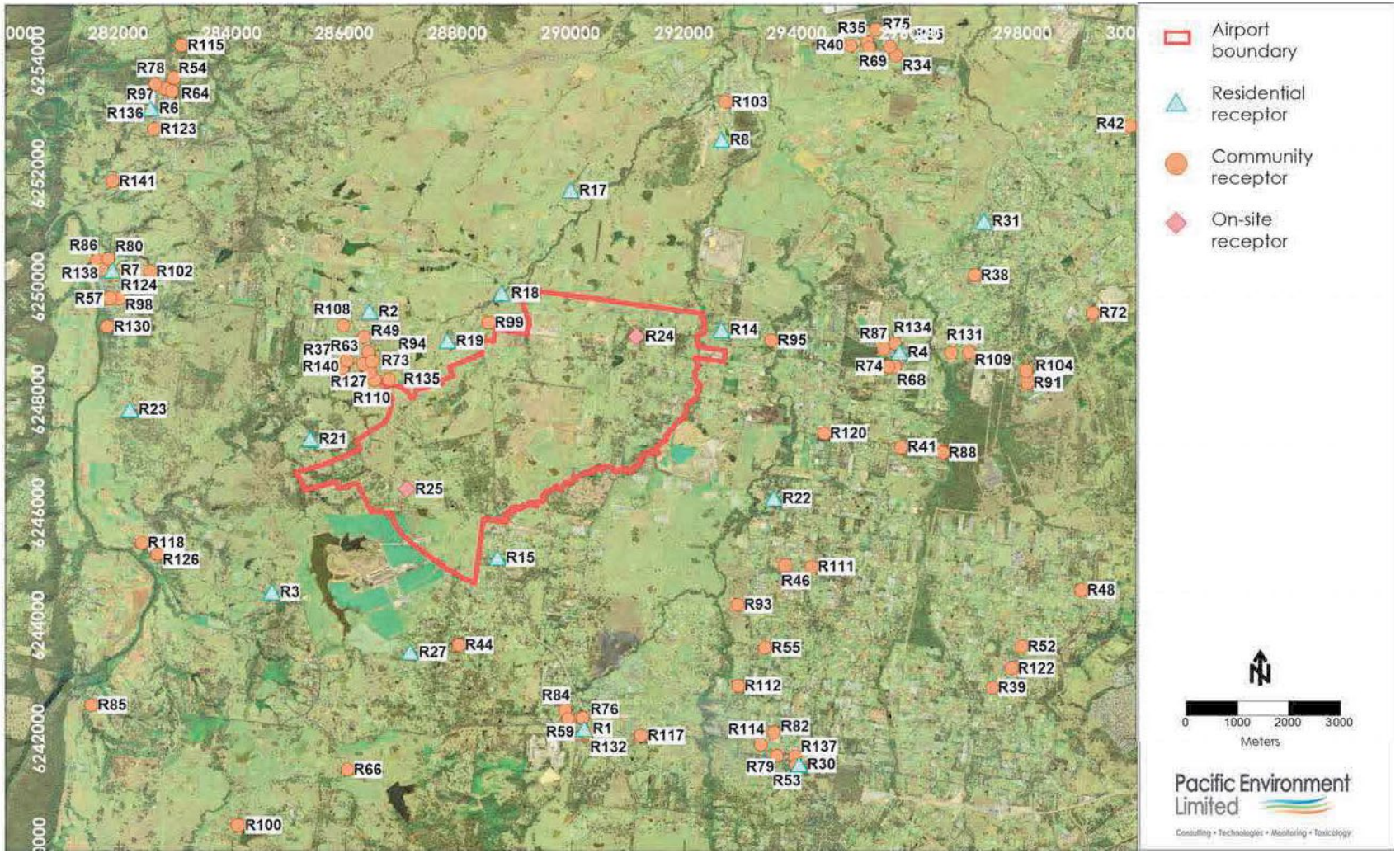
Observe Effectiveness of Controls

- If visible dust observed leaving site, re-assess the situation and potentially implement additional controls. [SS]
- If a dust complaint is received, re-assess the situation and potentially implement additional controls. [SS/EM]
- Bring any significant air quality issues to the attention of the EC (in the first instance) or the EM [SS]

Monitoring & Recording

- SS to monitor daily for tracking of mud on public roads, ensuring the integrity of the access/egress points and haul roads to ensure loose material not being tracked out. Outcomes of this monitoring are to be recorded in theSS daily diary (or similar).
- SS to record details of observations regarding visible dust emissions in SS daily diary (or similar).

Appendix B – Sensitive receptors in relation to the Airport Site



Source: WSA Qir Quality CEMP.