

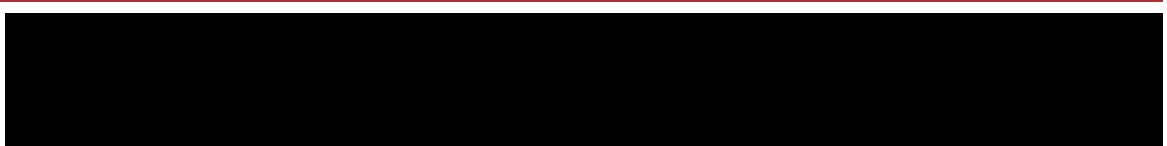


SSTOM - Air Quality Management Sub-Plan

SMWSASSM-PLD-1NL-PC-PLN-000028

Parklife Metro D&C

Approval Record

Revision	Author	Date	Issue	Reviewed by	Approved by
00	[REDACTED]	27/06/2023	Final for ER endorsement	[REDACTED]	[REDACTED]
	Environment Manager			Environment Manager	Project Manager
01	[REDACTED]	20/07/2023	Revised in response to DPE review	[REDACTED]	[REDACTED]
	Environment Manager			Environment Manager	Project Manager
02	[REDACTED]	11/10/2024	Annual Review	[REDACTED]	[REDACTED]
	Senior Environmental Advisor			Environment Manager	Project Director
03	[REDACTED]	10/12/2025	Annual Review / IFI	[REDACTED]	[REDACTED]
	Environmental Advisor			Environment Manager	Project Director
Signature					

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Amendment Record

Date	Revision	Version	Amendment Description
20/02/2023	A	1	Initial Draft
20/04/2023	B	1	Response to Sydney Metro comments
20/05/2023	C	1	Revised in response to comments
15/06/2023	D	1	Revised in response to ER comments
27/06/2023	00	1	Final for ER endorsement
20/07/2023	01	1	Revised in response to DPE review
13/08/2024	01	2	Annual management plan review for SM and ER review
11/10/2024	02	01	Approved Revision Issued for Information and ER endorsement
14/11/2025	02	02	Annual review
10/12/2025	03	01	Final issue for ER endorsement (No IC Certification required)

Details of Revision Amendments

Document Control

The Management Plan's owner Director or his/her delegate is responsible for updating this plan to reflect changes to the project, construction, legal and other requirements, as required.

Plan Authorisation

The implementation and distribution of this Management Plan are under the authority of the Project Director. All personnel employed on the Project will perform their duties in accordance with the requirements of this Management Plan, supporting management plans and related procedures.

Amendments

Any revisions or amendments must be approved by the Project Director and/or client before being implemented and distributed.

Acronym and Definitions

Abbreviation	Expanded Text
AQMP	Air Quality Management Sub-Plan
AAQNEPM	National Environment Protection Measure for Ambient Air Quality Guidelines
BoM	Australian Government Bureau of Meteorology
CEMP	Construction Environmental Management Plan
Condition	Conditions of Approval
DEC	Former Department of Environment and Conservation
DPE	NSW Department of Planning and Environment (now DPHI and DCCEEW)
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly DPE)
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence under the POEO Act
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EWMS	Environmental Work Method Statements
GREP NSW	Government Resource Efficiency Policy
IAQM	UK Institute of Air Quality Management
LGA	Local government area
OEH	NSW Office of Environment and Heritage
PM	Particulate matter
PM10	Particulate matter (10 micrometres or less in diameter)
PM2.5	Particulate matter (2.5 micrometres or less in diameter)
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
POEO Clean Air Regulation	Protection of the Environment Operations (Clean Air) Regulation 2010
REMMs	Revised Environmental Mitigation Measures
SMP	Sustainability Management Plan
SSTOM	Stations, Systems, Trains, Operations and Maintenance

1 Introduction

This NSW (off-airport) Air Quality Management Sub-plan (AQMP, this Sub-plan) is applicable to the SSTOM Works of the Sydney Metro Western Sydney Airport Project (the Project). This Sub-Plan describes how Parklife Metro D&C will minimise and manage air quality related impacts during the delivery of the SSTOM Works on NSW land.

This Sub-plan has been prepared to address the requirements of the:

- State Significant Infrastructure (SSI) 10051 Planning Approval (dated 23 July 2021)
- SSI 10051 Mod 1 (determined 14 April 2022), which includes a modification to Condition E4 to reduce the biodiversity offsets credit requirements
- SSI 10051 Mod 2 (determined 20 December 2024), which includes a modification to Condition E13 to decouple tree replacement from the Place, Urban Design and Corridor Landscape Plan and Condition E57 so that information on consultation, respite and out of hours work information be provided to the ER before the out of hours work commences, and to the EPA and Secretary on request.
- Sydney Metro Western Sydney Airport – CSSI Staging Report (Staging Report)
- AS/NZS ISO 14001:2016 Environmental Management Systems – Requirements with guidance for use
- Sydney Metro Construction Environmental Management Framework (CEMF)
- Environmental Impact Statement (EIS) and the Submissions Report, including the Revised Environmental Mitigation Measures (REMMs)
- Contractual requirements
- Applicable legislation (NSW and Commonwealth).

1.1 Background

Sydney Metro is Australia's biggest public transport program comprising four main packages of work including Metro North-West Line, Sydney Metro City and Southwest, Sydney Metro West and Sydney Metro Western Sydney Airport. The Sydney Metro Western Sydney Airport 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) and the growing region.

The Sydney Metro Western Sydney Airport Environmental Impact Statement (EIS) was prepared in October 2020 to assess the impacts of construction and operation of the Project and was placed on public exhibition between 21 October 2020 and 2 December 2020. The Project was declared a Critical State Significant Infrastructure (CSSI) Project and is listed in Schedule 5 of State Environmental Planning Policy (State and Regional Development) 2011. The Sydney Metro Western Sydney Airport Project was approved by the Minister for Planning and Public Spaces on 23 July 2021 (SSI 10051) under section 5.19 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). Modification 1 of the Project Approval, to reduce the biodiversity offsets credit requirements, was approved on the 14 April 2022. Modification 2 of the Project Approval, to modify Conditions E13 and E57, was approved on the 20 December 2024.

The Sydney Metro Western Sydney Airport Project involves the construction and operation of a new 23-kilometre metro line to connect Western Sydney suburbs from Bradfield in the south with St Marys in the north. The alignment includes a combination of tunnel, surface, bridges and viaduct sections, and comprises of six new metro stations between St Marys and Bradfield Station (formally named Aerotropolis Core Station), as well as a stabling and maintenance facility and operational control centre to support the operation of the new metro railway line (see Figure 1).



FIGURE 1 OVERVIEW OF SMWSA PROJECT

1.2 Scope

The SSTOM scope of works includes the installation of tracks, signalling, mechanical and electrical systems, supplying new driverless trains, construction of a stabling and maintenance facility at Orchard Hills, and construction of six stations, including:

- A new metro station connecting to, and providing an interchange with, the T1 Western Line (part of the existing Sydney Trains suburban rail network) at St Marys
- Two new metro stations between the T1 Western Line and Western Sydney International; one at Orchard Hills and one at Luddenham within the Northern Gateway Precinct
- Two new metro stations within the Western Sydney International site; one at the Airport Terminal and one at the Airport Business Park, both of which are managed under a separate CEMP
- A new metro station within the Bradfield precinct, south of Western Sydney International.

The SSTOM Works also includes the operation and maintenance of the new metro railway line and its assets, which will be managed separately to this CEMP and its sub-plans.

The scope of this AQMP is to describe how Parklife Metro D&C will minimise and manage air quality impacts of the SSTOM Works and discuss how compliance and implementation of the applicable sections from the following documents, collectively referred to herein as the 'Project requirements':

- NSW Minister for Planning and Public Spaces Conditions of Approval (Conditions)
- Revised Environmental Mitigation Measures (REMMs)
- Sydney Metro Construction Environmental Management Framework (CEMF).

2 Objectives and Targets

In order to assess the environmental performance relating to air quality during construction, environmental objectives and targets have been established. No specific construction air quality performance outcomes were identified by the EIS.

Section 13.1 of the CEMF provides objectives for the management of air quality during construction. Table 1 lists those management objectives and identifies the targets and tools to be used by Parklife Metro D&C to meet those objectives.

TABLE 1 OBJECTIVES AND TARGETS

Objective	Target	Measurement Tool
Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable.	<p>100% of plant and equipment on site to have maintenance records and pre delivery inspection report</p> <p>100% of weekly inspections review potential dust and air pollutants sources</p>	Site environmental monitoring
Identify and control potential dust and air pollutant sources.	<p>100% of weekly inspections review potential dust and air pollutants sources</p> <p>100% of air quality related complaints are investigated within 24 hours of receiving the complaint</p>	<p>Inspections and observations</p> <p>Site environmental monitoring</p> <p>Complaint Register</p>

Parklife Metro D&C will monitor the objectives and targets (refer to Section 3.3 of the CEMP) and provide a compliance report at least on an annual basis as part of auditing requirements (refer to Section 3.9 of the CEMP).

In accordance with Condition C14 the Air Quality Monitoring Program will compare actual performance of construction against the predicted performance. The Air Quality Monitoring Program (Appendix B) details the project monitoring criteria to identify performance indicators.

The Sustainability Management Plan will detail the reporting and record management associated with greenhouse gas accounting and reporting.

3 Legal and Other Requirements

3.1 Relevant Legislation and Guidelines

Legislation relevant to this Air Quality Management Sub-plan includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Protection of the Environment Operations (Clean Air) Regulation 2022* (POEO Clean Air Regulation)
- *Protection of the Environment Operations (General) Regulation 2022* (POEO General Regulation).

Additional guidelines and standards relating to the management of air quality include:

- UK Institute of Air Quality Management, 2014, Guidance on the assessment of dust from demolition and construction, Version 1.1
- National Environment Protection Councils (NEPC) – National Environment Protection (Ambient Air Quality) Measure Variation Instrument 2021 (Air NEPM)
- AS 3580.1.1-2016 Methods of Sampling Analysis of Ambient Air. Part 1.1 Guide to Siting Air Monitoring Equipment
- AS 3580.10.1-2016 Methods of Sampling Analysis of Ambient Air. Determination of Particulate Matter – Deposited Matter - Gravimetric Method
- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW Environment Protection Authority (EPA) (2022) (EPA Approved Modelling and Assessment Methods)

3.2 Project Requirements

The Conditions of Approval (Conditions), CEMF requirements and Revised Environmental Mitigation Measures (REMMs) relevant to the development of this Sub-plan are listed in Table 2. Other requirements relevant to this Plan are included in Appendix A.

TABLE 2 COMPLIANCE TABLE

No.	Condition	Where addressed
SSI 10051 Infrastructure Approval (dated 23 July 2021)		
C1	Construction Environmental Management Plans (CEMPs) and CEMP Sub-plans must be prepared in accordance with the Construction Environmental Management Framework (CEMF) included in the documents listed in Condition A1 of this schedule to detail how the performance outcomes, commitments and mitigation measures specified in the documents listed in Condition A1 of this schedule will be implemented and achieved during construction.	This Sub-plan
C6	<p>The CEMP Sub-plans must state how:</p> <p>(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved;</p> <p>(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;</p> <p>(c) the relevant terms of this approval will be complied with; and</p>	<p>Section 2</p> <p>Section 6</p> <p>Section 3.2 and Appendix A</p>
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	Section 6.2
C10	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary or endorsed by the ER (whichever is applicable), unless	Section 3.5

No.	Condition	Where addressed
	otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary or endorsed by the ER (whichever is applicable), including any minor amendments approved by the ER, must be implemented for the duration of construction.	
C13	The following Construction Monitoring Programs must be prepared in consultation with the relevant government agencies (as required by Condition A6) identified for each to compare actual performance of construction of the CSSI against the performance predicted in the documents listed in Condition A1 or in the CEMP. Where a government agency(ies) request(s) is not included, the Proponent must provide the Planning Secretary / ER (whichever is applicable) justification as to why. (d) Air Quality - Relevant Councils	Appendix B
C14	Each Construction Monitoring Program must provide: (a) details of baseline data available including the period of baseline monitoring; (b) details of baseline data to be obtained and when; (c) details of all monitoring of the project to be undertaken; (d) the parameters of the project to be monitored; (e) the frequency of monitoring to be undertaken; (f) the location of monitoring; (g) the reporting of monitoring results and analysis results against relevant criteria; (h) details of the methods that will be used to analyse the monitoring data; (i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicated unacceptable project impacts; (j) a consideration of SMART principles; (k) any consultation to be undertaken in relation to the monitoring programs; and (l) any specific requirements as required by Conditions C15 to C16.	Appendix B
C17	With the exception of any Construction Monitoring Programs expressly nominated by the Planning Secretary to be endorsed by the ER, all Construction Monitoring Programs must be submitted to the Planning Secretary for approval.	Appendix B
C18	The Construction Monitoring Programs not requiring the Planning Secretary's approval must obtain the endorsement of the ER as being in accordance with the conditions of approval and all undertakings made in the documents listed in Condition A1. Any of these Construction Monitoring Programs must be submitted to the ER for endorsement at least one (1) month before the commencement of construction or where construction is staged no later than one (1) month before the commencement of that stage.	Appendix B
C19	Any of the Construction Monitoring Programs which require Planning Secretary approval must be endorsed by the ER and then submitted to the Planning Secretary for approval at least one (1) month before the commencement of construction or where construction is staged no later than one (1) month before the commencement of that stage.	N/A
C20	Unless otherwise agreed with the Planning Secretary, construction must not commence until the Planning Secretary has approved, or the ER has endorsed (whichever is applicable), all of the required Construction Monitoring Programs and all relevant baseline data for the specific construction activity has been collected.	Appendix B
C21	The Construction Monitoring Programs, as approved by the Planning Secretary or the ER has endorsed (whichever is applicable), including any minor amendments approved by the ER, must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary or the ER (whichever is applicable), whichever is the greater.	Appendix B
C22	The results of the Construction Monitoring Programs must be submitted to the Planning Secretary, ER and relevant regulatory agencies, for information in the form of a Construction Monitoring Report at the frequency identified in the relevant Construction Monitoring Program. Note: Where a relevant CEMP Sub-plan exists, the relevant Construction Monitoring Program may be incorporated into that CEMP Sub-plan	Section 7.6 Appendix B

Revised Environmental Mitigation Measures (REMMs)

AQ1	The Air Quality Management Plan for the project would incorporate the following best-practice odour management measures which would be implemented as appropriate during relevant construction works: <ul style="list-style-type: none"> The extent of opened and disturbed contaminated soil at any given time would be minimised Temporary coverings or odour suppressing 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 	Air Quality Management and Mitigation Measures Table 10
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No.	Condition	Where addressed
Construction Environmental Management Framework		
13.2a	On-airport management of air quality will be achieved through the implementation of the SMWSA Air Quality r CEMP and Principal Contractors will develop and implement an Air Quality Management Plan for all off-airport works. Both plans will include, as a minimum:	
i.	The air quality mitigation measures as detailed in the planning approval documentation;	Table 10
ii.	The requirements of any approval and applicable licence conditions;	Section 3.4
iii.	Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls;	Section 4.5
iv.	The responsibilities of key project personnel with respect to the implementation of the plan;	Section 7.1
v.	Air quality and dust monitoring requirements; and	Section 7.3
vi.	Compliance record generation and management	Section 7.6
b	Air quality and dust monitoring will involve the following as a minimum:	
i.	Meteorological conditions will be monitored and appropriate responses will be organised and undertaken periodically by the Principal Contractor;	Appendix B
ii.	Regular visual monitoring of dust generation from work zones; and	Appendix B
iii.	Monitoring emissions from plant and construction vehicles to ensure they have appropriate emission controls and are being maintained correctly.	Table 10
c	The following compliance records will be kept by the Principal Contractor:	
i.	Records of any meteorological condition monitoring;	Section 7.6
ii.	Records of any management measures implemented as a result of adverse, windy weather conditions; and	Section 7.6
iii.	Records of air quality and dust inspections undertaken.	Section 7.6

3.3 IS Rating Requirements

The IS Rating requirements relevant to this AQMP are outlined in Table 3.

TABLE 3 IS RATING CREDIT REQUIREMENTS RELEVANT TO THIS AQMP

ID	ISC Rating Tool Requirement	Where addressed
Dis-4 L1	Measures to minimise adverse impacts to local air quality during construction and operation have been identified and implemented. Monitoring of air emissions and/or air quality is undertaken at appropriate intervals and in response to complaints during construction.	Section 6 Appendix B Section 7.4
Dis-4 L2	Monitoring and modelling demonstrates no recurring or major exceedances of air emission or air quality goals.	Section 5 [This AQMP does not address operational air quality impacts]

3.4 Licences and Permits

An Environment Protection Licence (EPL 21807) for *Railway activities – railway infrastructure construction* is in place for the project and that air quality requirements prescribed by the EPL are integrated into this Sub-plan and associated monitoring program to ensure compliance. Specific measures and conditions of the EPL have not been included in this Sub-plan, but are maintained in consultation with the NSW EPA as per the current EPL.

3.5 Document Approval

In accordance with the Staging Report and Condition A33, this Sub-plan was provided to the ER for endorsement at least 1 month prior to construction, to support the review and endorsement of the associated Monitoring Program and other Sub-plans.

CEMP and Sub-plans (including monitoring programs) were approved by DPE (now DPHI) on 4 August 2023 with construction commencing on 8 August 2023. This Sub-plan will be implemented for the duration of construction and reviewed and updated in accordance with Section 8.3.

4 Existing Environment

The existing air quality environment is described below, based on existing publicly available information. Ambient air quality monitoring stations in proximity to the study area include one station at St Marys (around 700 metres east of the study area) and one station at Bringelly (around two kilometres east of the study area) as shown on Figure 2. The monitoring stations are maintained by DPHI.

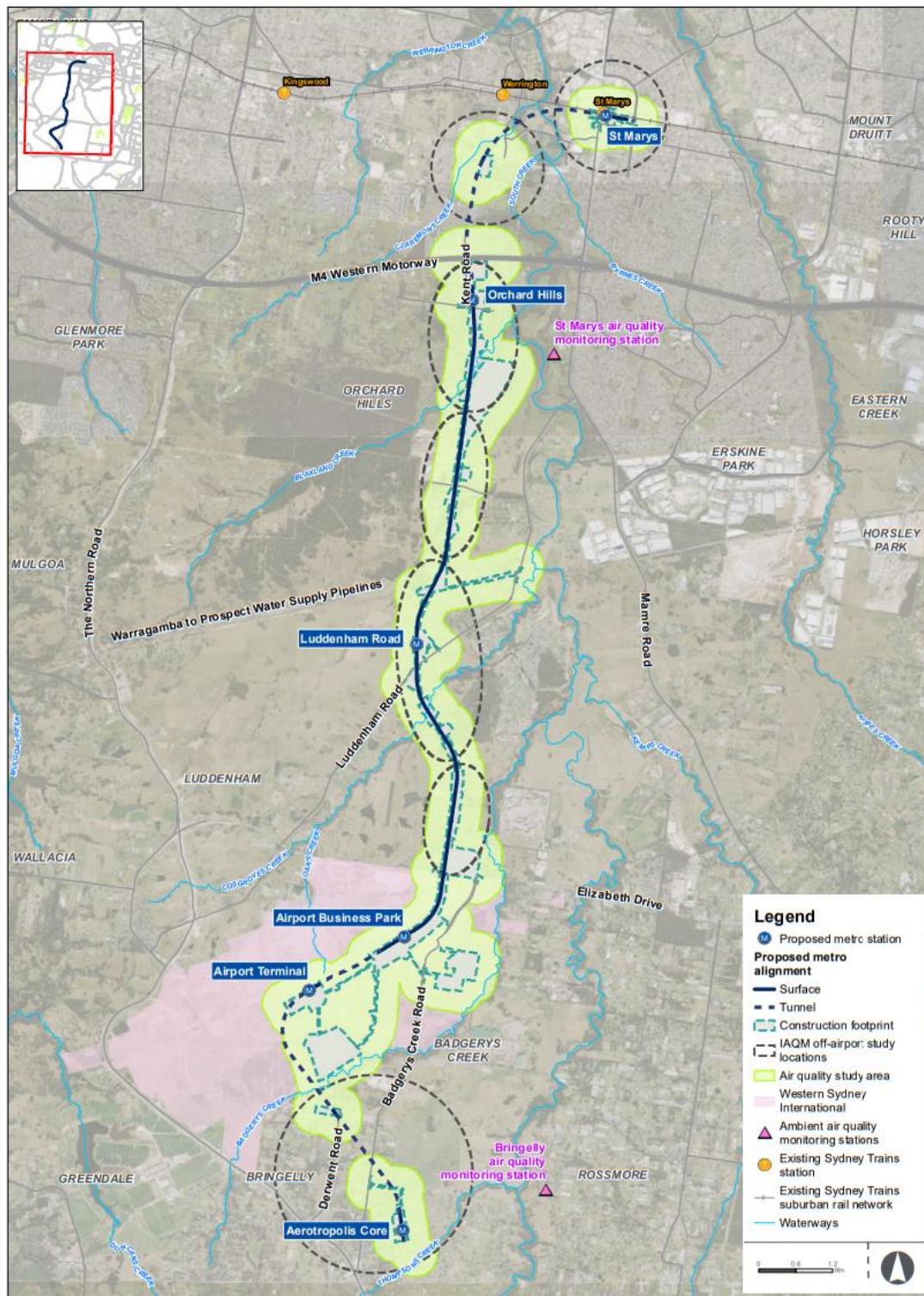


FIGURE 2 AIR QUALITY STUDY AREA, ASSESSMENT LOCATIONS AND MONITORING STATIONS

4.1 Climate and Meteorology

Seasonal wind patterns observed at St Marys show a predominant north-south directional pattern for all seasons with slightly higher levels of winds from the east during summer compared to the other seasons. Seasonal wind patterns for Bringelly show predominantly south-southwest winds for autumn and winter, increased levels of wind from the east during spring and predominant stronger easterly winds during summer. Both areas experience a high proportion of calm winds (less than 0.5 metres per second) which represent around 25 per cent of winds over a typical annual time frame. The high proportion of calm winds suggests the potential for significant periods throughout the year where the ability of local winds to disperse particulates and other air pollutants is poor.

An analysis of the intraday wind patterns was undertaken by examining the wind roses for the 2014- 2019 data for the time periods of 9am to 3pm, midnight to 7am, and 7am to 5pm (typical workday).

The analysis showed the following:

- Both St Marys and Bringelly meteorology data showed very high percentages of calm wind speed at night with calm percentages of approximately 45 per cent for both stations. This was very high compared to the daytime percentages which showed calm winds at St Marys and Bringelly of 14 and 12 per cent respectively
- Night-time wind direction was predominantly from a south to south-westerly direction, which is consistent with the expected wind direction at night due to the topography sloping down toward the north in the area
- Winter and autumn patterns were broadly similar to the patterns observed during summer and spring with northerly, south-westerly and easterly winds dominating the wind patterns
- 9am and 3pm wind roses showed a similar pattern to the overall night-time and day-time calm percentages with approximately 20 per cent calm winds at 9am and very low calm wind percentages (less than five per cent) observed at 3pm.

4.2 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 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.

4.3 Particulate Matter

Annual air quality data for the period 2014-2019 (Office of Environment and Heritage, 2014-2019) indicates that annual average PM10 concentration around St Marys and Bringelly ranges between 15.1 and 21.2 micrograms per cubic metre (see Table 4 and Table 5). There are a number of recorded exceedances of the 50 micrograms per cubic metre maximum 24-hour concentration criterion, however the exceedances are generally due to exceptional events related to bushfires, hazard reduction burns and dust storms.

Annual air quality data for the period 2016-2019 (Office of Environment and Heritage, 2016-2019) indicates that annual average PM2.5 concentration around St Marys and Bringelly is around 8 micrograms per cubic metre (see Table 6 and Table 7). There are a number of recorded PM2.5 exceedances of the 25 micrograms per cubic metre maximum 24-hour concentration criterion. As with PM10 concentrations however, the PM2.5 exceedances were generally due to exceptional events related to bushfires, hazard reduction burns and dust storms. Particulate data from 2019 is heavily skewed by the bushfires that occurred across NSW in November and December 2019. Data from 2019 does not represent normal long-term air quality conditions in the Sydney basin.

TABLE 4 ST MARY'S MONITORING LOCATION AMBIENT PM10 CONCENTRATION (2014-2019)

Statistic	Criteria	24-hour average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Maximum 24-hour concentration	50	45.0	53.0	100.2	49.8	100.5	159.8
24-hour exceedance count	-	0	1	3	0	2	26
Statistic	Criteria	Annual average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Annual Average	25	16.7	15.1	16.0	16.2	19.3	24.7

TABLE 5 BRINGELLY MONITORING LOCATION AMBIENT PM10 CONCENTRATION (2014-2019)

Statistic	Criteria	24-hour average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Maximum 24-hour concentration	50	42.6	57.0	61.6	83.7	92.9	134.0
24-hour exceedance count	-	0	1	3	6	8	24
Statistic	Criteria	Annual average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Annual Average	25	16.6	15.8	17.0	19.8	21.2	23.6

TABLE 6 ST MARY'S MONITORING LOCATION AMBIENT PM2.5 CONCENTRATIONS (2016-2019)

Statistic	Criteria	24-hour average PM2.5 concentration - $\mu\text{g}/\text{m}^3$			
		2016	2017	2018	2019
Maximum 24-hour concentration	25	93.2	38.2	80.5	88.3
24-hour exceedance count	-	5	3	2	21
Statistic	Criteria	Annual average PM2.5 concentration - $\mu\text{g}/\text{m}^3$			
		2016	2017	2018	2019
Annual Average	8	7.8	8	7.8	9.8

TABLE 7 BRINGELLY MONITORING LOCATION AMBIENT PM2.5 CONCENTRATIONS (2016-2019)

Statistic	Criteria	24-hour average PM2.5 concentration - $\mu\text{g}/\text{m}^3$			
		2016	2017	2018	2019
Maximum 24-hour concentration	25	21.6	52.5	55.6	178.0
24-hour exceedance count	-	0	2	4	27
Statistic	Criteria	Annual average PM2.5 concentration - $\mu\text{g}/\text{m}^3$			
		2016	2017	2018	2019
Annual Average	8	7.6	7.5	8.0	11.3

4.4 Existing and Future Air Pollution Sources

Existing air pollution sources within and surrounding the study area include:

- Emissions from vehicles using the surrounding road network including the M4 Western Motorway, Elizabeth Drive, The Northern Road and Great Western Highway and diesel freight on the T1 Western Line
- Various small scale agricultural activities.

There are several ongoing and planned large scale construction projects within and surrounding the study area which would also be sources of air pollution and may overlap with the construction of the project. These projects include:

- Western Sydney International Stage 1
- Future M12 Motorway
- Finalisation Auxiliary Works (FAW, SMWSA package)

4.5 Sensitive Receivers

Table 8 provides a description of the existing surrounding environments relevant to the SSTOM Works and identifies potential sensitive receivers with respect to air quality and dust management. These receivers shall be assessed for potential impact and the locations of these receivers will be shown in the Environmental Control Maps (ECMs) (refer to Section 3.4 of the CEMP).

TABLE 8 SENSITIVE RECEIVERS (SOURCE: EIS CHAPTER 10 AND 22)

Construction site	Surrounding environment	Potential air quality sources	Potential sensitive receivers
St Marys Station	The St Marys construction site is located around the existing Sydney Trains station at St Marys.	<ul style="list-style-type: none"> • Establishment/demobilisation of work site • Excavation and earthworks associated with local area works and utilities relocations • Piling and material handling • Construction of above ground structures 	There are over 100 high sensitivity residential and commercial receivers within 20 metres of the construction footprint at this location.
Orchard Hills East Station	The Orchard Hills construction site is located at Orchard Hills, south of the M4 Western Motorway, east of Kent Road and both north and south of Lansdowne Road. The existing site consists of semi-rural residential properties with areas of cleared and vegetated land.	<ul style="list-style-type: none"> • Establishment/demobilisation of work site • Excavation associated with local area works and utilities relocations • Piling and material handling • Construction of above ground structures 	There are more than 10 high sensitivity residential receivers within 20 metres of the construction footprint at this location.
Luddenham Road Station	The Luddenham Road Station construction site is located on Luddenham Road, in between Elizabeth Dr (to the South) and the M4 Western Motorway (to the North).	<ul style="list-style-type: none"> • Establishment/demobilisation of work site • Excavation and earthworks associated with local area works and utilities relocations • Construction of above ground structures 	There are no high sensitivity receivers within 20 metres of the construction footprint at this location.
Bringelly services facility and Bradfield Station	The Bringelly services facility would be located at the northern end (western side) of Derwent Road at Bringelly. The existing site consists of a rural-residential property.	<ul style="list-style-type: none"> • Establishment/demobilisation of work site • Excavation associated with local area works and utilities relocations • Construction of above ground structures 	There are more than 10 high sensitivity receptors within 20 metres of the construction footprint.
23km of metro rail alignment from St	This construction site is underground St Marys	<ul style="list-style-type: none"> • Establishment/demobilisation of work site 	Cumulative sensitive receivers across all

Construction site	Surrounding environment	Potential air quality sources	Potential sensitive receivers
Marys Station to Bradfield Station	Station in the North to Orchard Hills and then surface to the Airport Business Park and then underground to Bradfield Station in the South.	<ul style="list-style-type: none"> Excavation associated with local area works and utilities relocations Management of disturbed areas 	sites (220 high sensitivity receptors)
Claremont Meadows services facility	The site is located to the southeast of the intersection of the Great Western Highway and Gipps Street. The existing site consists of a primarily cleared grassed area and an area previously disturbed by construction activities.	<ul style="list-style-type: none"> Establishment/demobilisation of work site Excavation associated with local area works and utilities relocations Spoil handling, storage and transport Construction of above ground structures for the facility 	There are more than 100 high sensitivity residential receivers within 20 metres of the construction footprint at this location.

5 Environmental Aspects and Impacts

5.1 Construction Activities

The EIS assessed the construction activities associated with the Project with the potential to temporarily generate dust and they include:

- Demolition of existing structures
- Earthworks
- Construction
- Material track-out.

There are two primary emission pathways that could result in air quality impacts during construction being dust generation and gas emissions. The Staging Report identifies the primary risks to air quality associated with delivery of the SSTOM Works as being minor excavation and ground disturbance work and the use of plant and light vehicles resulting in emissions around work areas and generation of dust on unsealed surfaces. Minor air quality impacts would occur without controls. TABLE 9 details the construction activities applicable to the SSTOM Works and the potential for these activities to result in dust and/or gas emissions during delivery.

5.1.1 Dust

The potential for dust related impacts during construction was evaluated in the EIS using the risk-based assessment approach developed by the UK Institute of Air Quality Management (UK IAQM). The UK IAQM assessment approach is an evaluation of the risk of dust impacts during construction. Chapter 22 of the EIS noted that the UK IAQM method results in a risk rating for each type of construction activity without mitigation. This risk rating is then used to determine what mitigation and management measures are required to effectively manage these risks.

The EIS concluded that with the implementation of the appropriate mitigation measures (Refer to Section 6) the risk of dust impacts associated with the construction activities for the SMWSA project would be negligible to low.

5.1.2 Gas Emissions

The EIS concluded that given the commonly applied mitigation measures to be applied (such as those listed in Table 10), potential temporary adverse air quality impacts from the operation of construction equipment are not anticipated that risk of mitigated impacts associated with gas emissions as a result of plant and machinery operation are not anticipated.

5.2 Aspects and Potential Impacts

The aspects and potential air quality impacts of the SSTOM Works are listed in Table 9. Dust and particulate matter generation as listed in TABLE 9 may lead to health impacts, sensory impact (visual/odour), property impacts, environmental impacts, reputational impacts and regulatory impacts. These will be managed as outlined in Section 6, with potential impacts to human health managed in accordance with Project WHS management plans.

TABLE 9 ASPECTS AND IMPACTS RELEVANT TO AIR QUALITY

Aspects	Potential sources
Site Establishment	<p>Dust generation due to:</p> <ul style="list-style-type: none"> • Piling • Stockpiling • Establishment of internal access roads, hardstand areas and onsite parking • Wind erosion of exposed surfaces and stockpiles • Wheel-generated dust from vehicular traffic on unsealed roads and work site access points <p>Particulate matter (PM2.5/10) generation due to:</p> <ul style="list-style-type: none"> • Operation of construction vehicles and plant • Dust generating activities set out above
Minor Earthworks	<p>Dust generation due to:</p> <ul style="list-style-type: none"> • Generation of dust from unsealed surfaces • Operation of excavators, front end loaders, bulldozers, dump trucks and other plant • Piling works • Loading/unloading trucks with spoil and aggregate • Stockpiling of material • Wind erosion of exposed surfaces and stockpiles • Wheel-generated dust from vehicular traffic on unsealed roads and work site access points <p>Particulate matter (PM2.5/10) generation due to:</p> <ul style="list-style-type: none"> • Operation of construction plant and vehicles • Dust generating activities set out above
Material handling, storage and transport	<p>Dust generation due to:</p> <ul style="list-style-type: none"> • Imported materials stockpiles • Imported materials haulage • Wheel-generated dust from heavy vehicle movements around sites <p>Particulate matter (PM2.5/10) generation due to:</p> <ul style="list-style-type: none"> • Operation of construction vehicles and plant • Dust generating activities set out above
Plant and vehicle emissions	<p>Dust generation (wheel generated) from:</p> <ul style="list-style-type: none"> • Construction vehicles • Construction equipment and other plant <p>Particulate matter (PM2.5/10) generation due to:</p> <ul style="list-style-type: none"> • Operation of construction vehicles and plant • Dust generating activities set out above <p>Potential for air quality impacts associated with operating plant and vehicle:</p> <ul style="list-style-type: none"> • Emissions from plant or equipment
Odour generated from exposed contaminated soil or material	<p>Potential for air quality impacts associated with odour generation from:</p> <ul style="list-style-type: none"> • Unexpected contaminated material finds and handling of that material • Emissions from stationary plant or equipment • Exposed soils/sediments • Waste and toilet odours

6 Environmental Controls

6.1 Overview

Table 10 outlines the management and mitigation measures developed for the management of air quality impacts associated with construction of the SSTOM Works.

The Sustainability Management Plan will detail the management of greenhouse gas minimisation and management, as well as the associated greenhouse gas accounting and reporting, which includes:

- Reporting processes on greenhouse gas and energy usage data
- Manage the sustainable delivery of goods and materials
- Identify the sustainability, climate change and greenhouse gas objectives, initiatives and targets, or provide processes for their development.

Monitoring of air quality impacts will be undertaken using visual inspections of onsite construction activities and where required, real-time monitoring, as detailed in the Air Quality Monitoring Program in Appendix B. This risk-based approach will be used in the proactive and reactive responses to dust management, as summarised below, and will be implemented in conjunction with the mitigation measures identified in Table 10.

Where mitigation measures or controls are identified in this AQMP, or during construction, that are not necessarily sourced from industry guidelines and standards but are considered industry best-practice and are the most suitable approach for management of the SSTOM Works, this will be approved by the Parklife Metro D&C Environmental Manager, in consultation with Sydney Metro and the ER, as required.

6.1.1 Proactive Management

The trigger for stopping works during high winds will be based on whether the meteorological conditions have the potential to cause unacceptable impacts to receivers. A review of work practices will be triggered when high wind conditions (>15m/s) are experienced.

Visual inspections will be undertaken by Site Supervisors, Site Engineers and Environmental Coordinators/Advisors periodically to ensure construction activities are not generating excessive amounts of dust with the potential to adversely impact nearby receivers. This includes monitoring the following key mitigation measures:

- Dust covers on haulage trucks are in place prior to leaving the construction site and whenever the load is in transit
- Stockpiles, spoil movements and cleared areas are being managed in accordance with the Soil and Water Management Sub-plan
- Stabilising disturbed areas as soon as possible
- Inspection of public roads adjacent to construction worksites for tracked dust or mud
- Vehicle speeds on unsealed haul roads
- Communication of weather conditions and air quality mitigation measures at toolboxes and site prestart briefings.

If dust has potential to leave site, the construction activities causing this will be assessed. Construction activities may be suspended, relocated, or modified to minimise the emission of dust from the premises to the greatest extent practicable.

6.1.2 Reactive Management

If visual inspections identify that dust conditions are becoming unfavourable or that dust is leaving the premises, the following actions may be implemented:

- Cease or modify dust generating activities to minimise any further dust impacts
- Increase watercart use in problematic areas
- Cover disturbed ground with geofabric, soil binder, or similar
- Increasing efforts to clean hardstand areas, including roads, or any loose dirt or fines.

6.2 Air Quality Management and Mitigation Measures

TABLE 10 AIR QUALITY MANAGEMENT AND MITIGATION MEASURES

ID	Requirement	Timing	Source or req.	Responsibility
AQ_M1	Identify sensitive land uses/sensitive receivers in Environmental Control Maps (ECMs), prior to works commencing.	Pre-construction	CEMF 13.2(a)	Environmental Coordinator
AQ_M2	Incorporate information on dust and odour sources, impacts and mitigation measures into Site Induction and on-going Toolbox Talks.	Pre-construction Construction	CEMF 3.11(a)(iii)	Environmental Coordinator
AQ_M3	Undertake on-going monitoring for dust (site inspections) to assess the effectiveness of mitigation measures.	Construction	CEMF 13.2(b)	Environmental Coordinator
AQ_M4	Undertake regular monitoring of meteorological conditions and respond appropriately, which may include varying work methods or ceasing works in high winds when dust generating works become unfavourable.	Construction	CEMF 13.2(b)	Environmental Coordinator
AQ_M5	Plant and equipment will be serviced and maintained in good working order and have appropriate anti-pollution devices installed to reduce unnecessary emissions from exhaust fumes. All equipment and vehicles are to be regularly maintained and records kept of maintenance.	Construction	CEMF 13.3(a)(i) CEMF 13.2(b)	Site Supervisors Plant Operators
AQ_M6	Plant and equipment to be switched off when not in use, which will be incorporated into the regular environmental inspection checklist.	Construction	CEMF 13.3(a)(ii)	Site Supervisors Environmental Coordinators Project engineers
AQ_M7	Minimise the use of diesel- or petrol-powered generators and instead utilise mains electricity or battery powered equipment, where practicable.	Site Establishment Construction	CEMF 13.3(a)(iii)	Site Supervisors Environmental Coordinators Project Engineers
AQ_M8	Appropriate vehicle speeds on sealed and unsealed roads and all loads will be covered when travelling to and from the worksite.	Construction	CEMF 13.3(a)(iv)	Site Supervisors
AQ_M9	Development and implementation of a construction logistics plan to manage the sustainable delivery of goods and materials.	Construction	CEMF 13.3(a)(v)	Project Engineer Sustainability Manager
AQ_M10	Implementing measures to support and encourage sustainable travel for construction workers to and from the construction sites.	Construction	CEMF 13.3(a)(vi)	Site Supervisor Sustainability Manager
AQ_M11	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.	Construction	CEMF 13.3(a)(vii)	Site Supervisors
AQ_M12	Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate.	Construction	CEMF 13.3(a)(viii)	Site Supervisors
AQ_M13	The extent of opened and disturbed contaminated soil at any given time will be minimised.	Construction	REMM AQ1	Site Supervisors Environmental Coordinators

ID	Requirement	Timing	Source or req.	Responsibility
AQ_M14	Temporary coverings and or odour supressing agents will be applied to excavated areas and temporary stockpile sited where appropriate.	Construction	REMM AQ1	Site Supervisors Environmental Coordinators
AQ_M15	Regular odour monitoring will be conducted during excavation to verify that no offensive odours are being generated.	Construction	REMM AQ1	Site Supervisors Environmental Coordinators
AQ_M16	Where acoustic sheds are proposed these will be designed and managed to prevent / minimise the escape of dust emissions.	Construction	REMM AQ2	Site Supervisors Environmental Coordinators
AQ_M17	Where necessary access roads will be sealed and or stabilised and regularly swept to minimise dust emissions.	Construction	REMM AQ1	Site Supervisors Environmental Coordinators
AQ_M18	Only wet cutting and grinding of concrete will occur.	Construction	REMM AQ1	Site Supervisors Environmental Coordinators
AQ_M19	Mobile cranes and excavators to comply with United States Environmental Protection Agency Tier 4 exhaust emission standards if on site for more than 3 months.	Construction	Sustainability Specification	Plant Inspector
AQ_M19	All plant and equipment to be located away from sensitive receivers, where possible, to reduce unnecessary impacts from emissions from exhaust fumes.	Construction	Best practice Condition E1	Site Supervisors Environmental Coordinators
AQ_M20	Monitoring of meteorological conditions will include the below trigger responses in relation to air quality management: <ul style="list-style-type: none"> High winds (>15m/s) will trigger a review of works where areas and activities are prone to generating dust to determine if construction activities need to be altered or cease. Review of works to determine if construction activities need to be altered or cease when wind speeds and direction have historically resulted in complaints. 	Construction	Best practice Condition E1 Condition C14	Site Supervisors Environmental Coordinators
AQ_M21	Ensure purchasing practices confirm that fuel purchased for use in plant and equipment conforms with the national diesel fuel quality standard, as far as practicable.	Construction	Best practice	Site Supervisors Project Engineers
AQ_M22	Double handling of spoil will be avoided wherever practicable.	Construction	CEMF 6.3(a)	Site Supervisors

6.3 Cumulative Impact Management

Parklife Metro D&C will manage the potential for cumulative impacts via coordination and engagement with key stakeholders and other SSI projects in accordance with the Cumulative Impacts Management Plan (developed by Sydney Metro in accordance with REMM CL1). Where relevant, Parklife Metro D&C will coordinate with the following stakeholders to manage interface and cumulative impacts:

- Western Sydney Airport
- Transport for NSW
- Western Parkland City Authority
- Sydney Water
- Emergency service providers
- Utility providers
- Other SM-WSA work packages and contractors.

Proposed consultation forums that will facilitate interface during construction and allow for proactive identification and management of cumulative impacts will include:

- Internal construction meetings
- Interface/coordination meetings between other projects
- Environment and Planning meetings with Sydney Metro
- Community and local business.

If the potential for cumulative impacts are identified, adaptive management will be applied. Parklife Metro D&C will identify if the controls within this Plan (refer to Table 10) are sufficient to address the potential for cumulative impacts and/or identify of additional measure are required to be applied.

7 **Compliance**

7.1 **People and Responsibilities**

The environmental roles and responsibilities of key project personnel are outlined in Section 3.5 of the CEMP. The Environment Manager, Construction Manager and Project Managers are accountable for the implementation of this Sub-plan.

Responsibilities specific to the implementation of this Sub-plan are identified as part of the responsibilities detailed in Table 10.

7.2 **Training**

Parklife Metro D&C will deliver environmental training specific to air quality management through:

- The site induction where the requirements of this Sub-plan will be communicated
- Toolbox talks for site specific air quality management actions and tasks
- Pre-starts – Expected unfavourable weather will be communicated via daily pre-start briefings and will be monitored and necessary actions communicated throughout the day.

Refer to Section 3.6 of the CEMP for details of training relevant to environmental management on the Project.

7.3 **Monitoring and Inspections**

In accordance with CEMF Section 13.2(b) air quality and dust monitoring will be undertaken via visual monitoring events and inspections, and will include:

- Meteorological conditions
- Visual monitoring of dust generation
- Monitoring for emissions from plant and machinery
- Realtime air quality monitoring targeting PM2.5 and PM10, in response to complaints and as part of investigations, as necessary.

For full detail of the air quality monitoring and inspections to be undertaken during delivery of the SSTOM Works, refer to Air Quality Construction Monitoring Program in Appendix B of this Sub-plan.

7.4 **Complaints**

Air quality complaints handling will be carried out in accordance with the Construction Complaints Management System and the Parklife Metro D&C's Community Communication Strategy. Complaints will be dealt with in a responsive manner, with a verbal response be provided to the complainant as soon as possible and within a maximum of two hours from the time of the complaint (unless the complainant requests otherwise). A detailed written response will then be provided, if required, to the complainant within one week. For further details on complaints management refer to Section 3.7 of the CEMP.

In the event an air quality complaint is received, a visual inspection will be carried out to confirm the impacts of construction activities near the site boundary and the construction practices and mitigation measures will be reviewed to minimise air quality impacts as far as practicable. If required, real-time particulate monitoring will be employed as part of the investigation of the complaint, or as a response to the complaint, in accordance with the Air Quality Monitoring Program in Appendix B.

7.5 Audits

The effectiveness of air quality mitigation measures described in this AQMP will be reviewed as part of the monitoring, inspection and audit regime. Refer to Section 3.9 of the CEMP for an indicative audit schedule.

7.6 Reporting and Records

Refer to the CEMP for full details on non-conformance and other reporting and record keeping requirements and processes.

In addition to those reporting and record keeping requirements detailed in the CEMP, and in accordance with Section 13.2(c) of the CEMF, the following air quality compliance records will be kept by Parklife Metro D&C:

- Records of any meteorological condition monitoring
- Records of any management measures implemented as a result of adverse, windy weather conditions
- Records of air quality and dust inspections undertaken.

8 Review and Improvement

8.1 Non-Compliances and Incidents

A non-compliance is a breach of the Parklife Metro D&C EMS, Conditions, CEMF requirements and/or Revised Environmental Mitigation Measures (REMMs), which requires a system improvement action. The Parklife Metro D&C Environment Manager will record any non-compliances that are identified during observations, inspection or audits or as a result of a complaint or environmental incident in an Environmental Non-Compliance Register. Where rectification works are required, an appropriate person will be identified by the Environment Manager who will be issued a corrective or preventative action to implement, and a timeframe by when this should be completed. The action will remain open until the Environment Manager has reviewed the supplied evidence and confirmed the non-compliance has been adequately addressed. Environmental non-compliances will form part of the ongoing EMS continual review and improvement process.

In the event that a non-compliance is identified, Sydney Metro, the ER, and the appropriate regulatory agency will be notified immediately. Refer to Section 3.9 of the CEMP for further details on the management and types of non-compliances.

Reporting requirements are outlined in Section 3.9 of the CEMP. In addition to this, Incidents will be classified and reported in accordance with the Sydney Metro Environmental Incident and Non-compliance Reporting Procedure, which describes specific requirements based on the incident classification. Internally, within Parklife Metro D&C, incidents will be reported, managed and tracked through the use of Glaass Pro, which is a software platform used to manage project management systems. Refer to Section 3.8 of the CEMP for further details on incident reporting.

8.2 Continuous Improvement

Parklife Metro D&C will continually improve environmental systems and performance through the implementation of an audit and review program. Refer to Section 3.9 of the CEMP.

8.3 Sub-plan Update and Amendment

A formal review of the management systems by the Parklife Metro D&C Senior Management Team will also occur on an annual basis, as a minimum. This review shall generate actions for the continual improvement of the systems and supporting management plans.

If changes to this AQMP are identified as required as a result of an annual performance review, or as a result of project changes, construction updates, risk reviews, or general observations throughout construction, they may be approved by the ER in accordance with Condition C10 or by the Planning Secretary. Minor changes to this AQMP that may be approved by the ER would generally comprise changes that are of an administrative or minor nature, which do not increase impacts to nearby sensitive land use(s), and are consistent with the terms of the Infrastructure Approval and with the document as approved by the Planning Secretary. Where the ER deems it necessary (i.e. where the change is not considered to be minor), the amended AQMP will be provided to the Planning Secretary for approval.

Appendix A Other conditions of approval and REMMS Relevant to This Plan

Note: additional Conditions relevant to the preparation and approval of this Sub-plan are included in Table 2.

Minister's Conditions of Approval (23 July 2021) SSI 10051		
Reference	Requirement	Where addressed
A6	<p>Where the terms of this approval require a document or monitoring program to be prepared, or a review to be undertaken, in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:</p> <ul style="list-style-type: none"> (a) documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval; (b) a log of the dates of engagement or attempted engagement with the identified party and a summary of the issues raised by them; (c) documentation of the follow-up with the identified party(s) where feedback has not been provided to confirm that the party(s) has none or has failed to provide feedback after repeated requests; (d) outline of the issues raised by the identified party(s) and how they have been addressed; and (e) a description of the outstanding issues raised by the identified party(s) and the reasons why they have not been addressed. 	Appendix B
E1	All reasonably practicable measures must be implemented to minimise the emission of dust and other air pollutants during construction.	Section 6 Table 10 Appendix C

Revised Environmental Management Measures		
Reference	Requirement	Where addressed
AQ1	<p>The Air Quality Management Plan for the project would incorporate the following best-practice odour management measures which would be implemented as appropriate during relevant construction works:</p> <ul style="list-style-type: none"> the extent of opened and disturbed contaminated soil at any given time would be minimised temporary coverings or odour suppressing 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 	Appendix B
AQ2	Where acoustic sheds are proposed these would be designed and managed to prevent/minimise the escape of dust emissions	Section 6 Table 10

Revised Environmental Management Measures

Reference	Requirement	Where addressed
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	Appendix B
Ref	Requirement	Where addressed
3.4g(iii)	iii. For each plan under the CEMP include a matrix of the relevant SSI Conditions of Approval referencing where each requirement is addressed	Table 2
3.4g(iv)	For each plan under the CEMP, set objectives and targets, and identify measurable key performance indicators in relation to these	Section 2
3.5a	<p>Subject to Section 3.4(b) the Principal Contractors will prepare issue-specific environmental sub plans to the CEMP which address each of the relevant environmental impacts at a particular site or stage of the project. Issue specific sub plans will include as a minimum:</p> <ul style="list-style-type: none"> i. Spoil management; ii. Groundwater management; iii. Traffic and transport management; iv. Noise and vibration management; v. Heritage management; vi. Flora and fauna management; vii. Visual amenity management; viii. Soil and water management; ix. Air quality management; and x. Waste management. <p>Some of these sub plans may also be informed by other environmental management documents included in the planning approval, for example the Construction Traffic Management Framework or Construction Noise and Vibration Standard</p>	This Sub-plan
13.1a	<p>The following air quality management objectives will apply to construction:</p> <ul style="list-style-type: none"> i. Minimise gaseous and particulate pollutant emissions from construction activities as far as feasible and reasonable; ii. Identify and control potential dust and air pollutant sources; and iii. For on-airport works, the Sydney Metro Western Sydney Airport Air Quality CEMP will detail all the air quality management objectives and will be consistent with the WSA Air Quality CEMP including all appendices to the CEMP. 	<p>Section 6 Table 10</p> <p>Section 5.1</p> <p>Not applicable to this Off-airport AQMP</p>

Revised Environmental Management Measures

Reference	Requirement	Where addressed
13.2a	<p>On-airport management of soil and water will be achieved through the implementation of the SMWSA Soil and Water CEMP and Principal Contractors will develop and implement an Air Quality Management Plan for all off-airport works. Both plans will include, as a minimum:</p> <ul style="list-style-type: none"> i. The air quality mitigation measures as detailed in the planning approval documentation; ii. The requirements of any approval and applicable licence conditions; iii. Site plans or maps indicating locations of sensitive receivers and key air quality / dust controls; iv. The responsibilities of key project personnel with respect to the implementation of the plan; v. Air quality and dust monitoring requirements; and vi. Compliance record generation and management. 	<p>This Sub-plan Section 6</p> <p>Section 6 Table 10</p> <p>Table 2 Section 3.4</p> <p>Section 4.5</p> <p>Section 7.1</p> <p>Section 3</p> <p>Section 6</p>
13.2b	<p>Air quality and dust monitoring will involve the following as a minimum:</p> <ul style="list-style-type: none"> i. 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. 	<p>Section 7.3</p> <p>Section 7.3</p> <p>Section 6 Table 10 Appendix C</p>
13.2c	<p>The following compliance records will be kept by the Principal Contractor:</p> <ul style="list-style-type: none"> 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. 	<p>Section 7.6</p> <p>Section 7.6</p> <p>Section 7.6</p>
13.3a	<p>The on-airport Air Quality CEMP and the off-airport Air Quality Management Plan will include the following air quality mitigation measures as well as any relevant Conditions:</p> <ul style="list-style-type: none"> i. Plant and equipment will be serviced and maintained in good working order to reduce unnecessary emissions from exhaust fumes; 	Section 6

Revised Environmental Management Measures

Reference	Requirement	Where addressed
ii.	Plant and equipment to be switched off engines when not in use;	Table 10 Appendix C
iii.	The avoidance of diesel or petrol powered generators and instead using mains electricity or battery powered equipment, where practicable;	Section 6 Table 10 Appendix C
iv.	Appropriate vehicle speeds on sealed and unsealed roads;	Section 6 Table 10
v.	Development and implementation of a construction logistics plan to manage the sustainable delivery of goods and materials;	Section 6.1 Sustainability Management Plan
vi.	Implementing measures to support and encourage sustainable travel for construction workers to and from the construction sites;	Section 6.1 Sustainability Management Plan
vii.	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;	Section 6 Table 10 Appendix C
viii.	Wheel-wash facilities or rumble grids will be provided and used near the site exit points, as appropriate; and	Section 6 Table 10 Appendix C

Appendix B Air Quality Monitoring Program

Doc No Ref: SMWSASSM-PLD-1NL-PC-PLN-000029



SSTOM - Air Quality Monitoring Program

SMWSASSM-PLD-1NL-PC-PLN-000029

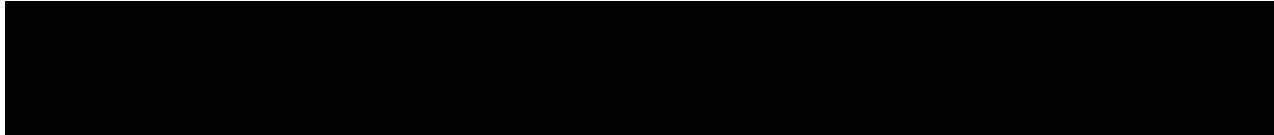
Parklife Metro D&C



Approval Record

Revision	Author	Date	Issue	Reviewed by	Approved by
00	[REDACTED] Environment Manager	27/06/2023	Final for ER endorsement and DPE review and approval	[REDACTED] Environment Manager	[REDACTED] Project Director
01	[REDACTED] Environment Manager	20/07/2023	For DPE Approval	[REDACTED] Environment Manager	[REDACTED] Project Director
02	[REDACTED] Environmental Approvals	12/12/2024	Annual Revision / IFI	[REDACTED] Environment Manager	[REDACTED] Project Director
03	[REDACTED] Environmental Advisor	01/12/2025	Annual Revision / IFI	[REDACTED] Environment Manager	[REDACTED] Project Director

Signature


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Amendment Record

Date	Revision	Version	Amendment Description
20/02/2023	A	1	Initial Draft
27/04/2023	B	1	Response to SM comments
25/05/2023	C	1	Revised in response to comments
15/06/2023	D	1	Revised in response to ER comments
27/06/2023	00	1	Final for ER endorsement and DPE review and approval
20/07/2023	01	1	For DPE Approval
2/09/2024	01	2	Annual Review (note: this Monitoring Program forms part of the Air Quality Management Plan document SMWSASSM-PLD-1NL-PC-PLN-000028. It has been issued here for separate review and once approved will be included as Appendix B of the Air Quality Management Plan)
13/11/2024	01	3	Update following SM and ER review
12/12/2024	02	1	Final issue for ER endorsement
06/11/2025	02	2	Annual Review
01/12/2025	03	1	Final issue for ER endorsement (No IC Certification required)

Details of Revision Amendments

Document Control

The Management Plan's owner Director or his/her delegate is responsible for updating this plan to reflect changes to the project, construction, legal and other requirements, as required.

Plan Authorisation

The implementation and distribution of this Management Plan is under the authority of the Project Director. All personnel employed on the Project will perform their duties in accordance with the requirements of this Management Plan, supporting management plans and related procedures.

Amendments

Any revisions or amendments must be approved by the Project Director and / or client before being implemented and distributed.

Glossary/Abbreviations

Abbreviation	Expanded Text
BOM	The Australian Bureau of Meteorology
CEMF	Construction Environmental Management Framework
CEMP	Construction Environmental Management Plan
CSSI	Critical State Significant Infrastructure
EIS	Environmental Impact Statement
DPE	Department of Planning and Environment (now DPHI and DCCEEW)
DPHI	NSW Department of Planning, Housing and Infrastructure (formerly DPE), who are the Appropriate Regulatory Authority for matters under the EP&A Act
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPA	Environmental Protection Authority
ER	Independent Environmental Representative
ISO	International Organisation for Standardisation
Minister, the	Minister of the NSW Department of Planning and Environment (or delegate)
Monitoring Program	This Air Quality Monitoring Program
NATA	National Association of Testing Authorities
NZS	New Zealand Standard
PM	Particulate Matter
REMMs	Revised Environmental Mitigations Measures
SMART	Specific, Measurable, Achievable, Realistic, Timely
SMWSA	Sydney Metro Western Sydney Airport
SSI	State Significant Infrastructure
SSTOM	Stations, Systems, Trains, Operations and Maintenance

1 Introduction

This Air Quality Monitoring Program (Monitoring Program), which is an appendix of the Air Quality Management Sub-plan (AQMP) that forms part of the Construction Environmental Management Plan (CEMP), is applicable to the SSTOM Works of the Sydney Metro Western Sydney Airport (the Project) on NSW State land. This Monitoring Program describes how Parklife Metro D&C will monitor air quality impacts of the SSTOM Project.

This Monitoring Program has been prepared to address the requirements of the:

- State Significant Infrastructure (SSI) 10051 Planning Approval (dated 23 July 2021)
- SSI 10051 Mod 1 (determined 14 April 2022), which includes a modification to Condition E4 to reduce the biodiversity offsets credit requirements
- SSI 10051 Mod 2 (determined 20 December 2024), which includes a modification to Condition E13 to decouple tree replacement from the Place, Urban Design and Corridor Landscape Plan and Condition E57 so that information on consultation, respite and out of hours work information be provided to the ER before the out of hours work commences, and to the EPA and Secretary on request.
- Sydney Metro Western Sydney Airport – Critical State Significant Infrastructure (CSSI) Staging Report
- AS/NZS ISO 14001:2016 Environmental Management Systems – Requirements with guidance for use
- Sydney Metro Construction Environmental Management Framework (CEMF)
- Environmental Impact Statement (EIS) and the Submissions Report, including the Revised Environmental Mitigation Measures (REMMs)
- Contractual requirements
- Applicable legislation (NSW and Commonwealth).

1.1 Background

Sydney Metro is Australia's biggest public transport program comprising four main packages of work including Metro North West Line, Sydney Metro City and Southwest, Sydney Metro West and Sydney Metro Western Sydney Airport. The Sydney Metro Western Sydney Airport Project (the Project) 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) and the growing region.

The Sydney Metro Western Sydney Airport EIS was prepared in October 2020, which assessed the impacts of the construction and operation of the Project. The Project EIS was placed on public exhibition for a period of six weeks from 21 October to 2 December 2020. The Project was declared a Critical State Significant Infrastructure (CSSI) Project and is listed in Schedule 5 of *State Environmental Planning Policy (State and Regional Development)*.

The Sydney Metro Western Sydney Airport (SMWSA) Project was approved by the Minister for Planning and Public Spaces on 23 July 2021 (SSI 10051) under section 5.19 of the *Environmental Planning and Assessment Act 1997* (EP&A Act). Modification 1 of the Project Approval, to reduce the biodiversity offsets credit requirements, was approved on the 14 April 2022. Modification 2 of the Project Approval, to modify Conditions E13 and E57, was approved on the 20 December 2024.

The Project involves the construction and operation of a new metro railway line around 23km in length to connect Western Sydney suburbs from Bradfield in the south with St Marys in the north. The alignment includes a combination of tunnel, surface, bridges and viaduct sections, and comprises of six new metro stations between St Marys and Bradfield Station (formally named Aerotropolis Core Station), as well as a stabling and maintenance facility and operational control centre to support the operation of the new metro railway line, (see Figure 1).

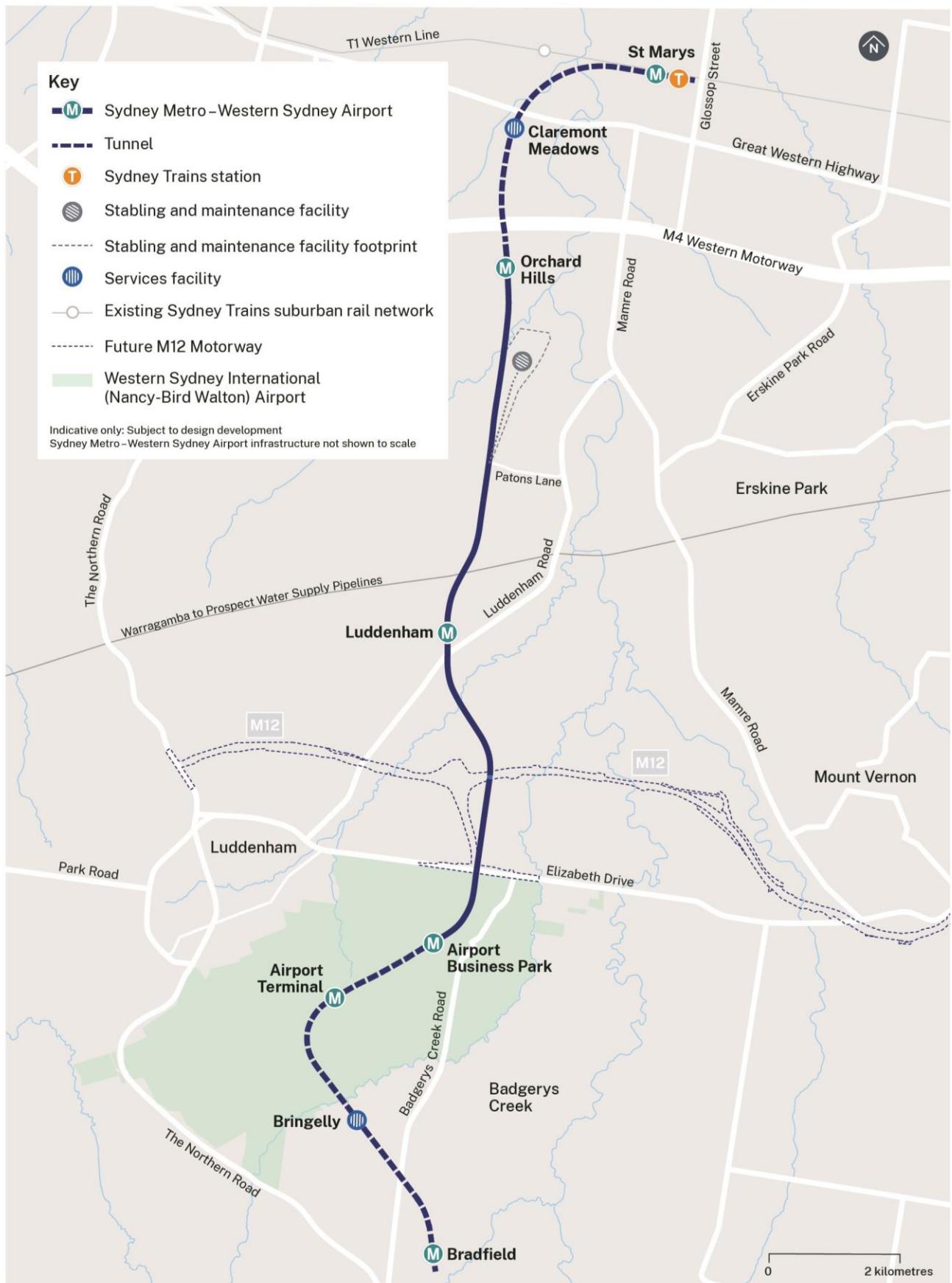


FIGURE 1 OVERVIEW OF THE SMWSA PROJECT

1.2 Scope

The scope of this Monitoring Program is to describe how Parklife Metro D&C will monitor impacts to air quality of the SSTOM Works and discuss compliance and implementation requirements of the applicable sections from the following documents, collectively referred to herein as the 'Project requirements':

- NSW Minister for Planning and Public Spaces Conditions of Approval (Conditions)
- SSI 10051 Mod 1 (determined 14 April 2022), which includes a modification to Condition E4 to reduce the biodiversity offsets credit requirements
- SSI 10051 Mod 2 (determined 20 December 2024) which includes a modification to Conditions E13 and E57.
- Revised Environmental Mitigation Measures (REMMs)
- Sydney Metro Construction Environmental Management Framework (CEMF).

The SSTOM Works scope, as part of the Sydney Metro Western Sydney Airport Project, includes:

- Installation of tracks, signalling, mechanical and electrical systems
- Construction of a stabling and maintenance facility at Orchard Hills
- Construction of the lower chamber of Bringelly shaft, along with capping and backfill
- Construction of the lower chamber of Claremont Meadows shaft, along with capping and backfill
- Construction of six stations, including:
 - A new metro station connecting to, and providing an interchange with, the T1 Western Line (part of the existing Sydney Trains suburban rail network) at St Marys
 - Two new metro stations between the T1 Western Line and Western Sydney International; one at Orchard Hills and one at Luddenham within the Northern Gateway Precinct
 - Two new metro stations within the Western Sydney International site; one at the Airport Terminal and one at the Airport Business Park, both of which are located on Airport land and are managed separately to this Monitoring Program
 - A new metro station within the Bradfield precinct, south of Western Sydney International.

The SSTOM Works also includes the supply of new driverless trains, and the operation and maintenance of the new metro railway line and its assets once construction is complete, which will be managed separately to this Monitoring Program.

2 Legal and Other Requirements

2.1 Relevant Legislation and Guidelines

Legislation relevant to this Air Quality Monitoring Program includes:

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

Additional guidelines and standards relating to this Monitoring Program include:

- UK Institute of Air Quality Management, 2014, Guidance on the assessment of dust from demolition and construction, Version 1.1
- National Environment Protection Councils (NEPC) – National Environment Protection Measure (NEPM) for Ambient Air Quality Measure (AAQNEPM, Air NEPM)
- AS 3580.1.1-2016 Methods of Sampling Analysis of Ambient Air. Part 1.1 Guide to Siting Air Monitoring Equipment
- AS 3580.10.1-2016 Methods of Sampling Analysis of Ambient Air. Determination of Particulate Matter – Deposited Matter – Gravimetric Method
- Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW Environment Protection Authority (EPA) (2021) (EPA Approved Modelling and Assessment Methods)

2.2 Project Requirements

The Monitoring Program has been prepared in accordance with the requirements of Condition C14 (refer to Table 1), with consideration of the SMART principles.

TABLE 1 REQUIREMENTS FOR THE PREPARATION OF THIS MONITORING PROGRAM

Condition	Condition	Where Addressed
C14	Each Construction Monitoring Program must provide:	
	(a) details of baseline data available including the period of baseline monitoring;	Section 3
	(b) details of baseline data to be obtained and when;	Section 3 and 4.3
	(c) details of all monitoring of the project to be undertaken;	Section 4
	(d) the parameters of the project to be monitored;	Section 4.1, 4.2 and 4.3 Table 8
	(e) the frequency of monitoring to be undertaken;	Section 4 Table 8
	(f) the location of monitoring;	Section 4.4
	(g) the reporting of monitoring results and analysis results against relevant criteria;	Section 4.5
	(h) details of the methods that will be used to analyse the monitoring data;	Section 4.5
	(i) procedures to identify and implement additional mitigation measures where the results of the monitoring indicated unacceptable project impacts;	Section 4.2, 4.3, 4.5 and 0
	(j) a consideration of SMART principles;	Section 4 and 0
	(k) any consultation to be undertaken in relation to the monitoring programs; and	Section 2.3
	(l) any specific requirements as required by Conditions C15 to C16.	N/A

2.3 Document Consultation

Reflecting the requirements of Condition C13(d), this Monitoring Program is required to be prepared in consultation with the agencies identified in Table 2.

TABLE 2 MONITORING PROGRAM AGENCY CONSULTATION

Subject	Agency Consultation
Air Quality Monitoring Program (Condition C13(d))	Penrith City Council and Liverpool City Council

Parklife Metro D&C have engaged with agencies identified in Condition C13 in developing and finalising this Monitoring Program. Records of consultation are summarised in Table 3 below, with further detail provided in Appendix A.

TABLE 3 SUMMARY OF CONSULTATION

Agency	Date consulted	Comments received	Discussion
Penrith City Council	15 March 2023 Resent 15 March 2023	29 March 2023	Comments provided by Penrith City Council have been reviewed and minor amendments have been made. Further detail is included in Appendix A.
Liverpool City Council	5 April 2023 Follow up on the 27 March 2023	No comments received	

2.4 Document Approval

This Monitoring Program has been developed in consultation with relevant Councils, in accordance with Condition A6 and C13.

In accordance with advice provided by Department of Planning and Environment (DPE) this Monitoring Program will be reviewed and endorsed by the ER and then submitted to the Planning Secretary for approval no later than one month prior to the commencement of construction.

Construction is not to commence until the CEMP and all required Sub-plans and Monitoring Programs have been endorsed by the ER, and where required approved by the Department of Planning and Environment (DPE now DPHI). This Monitoring Program will be implemented for the duration of construction.

3 Baseline Air Quality Data

Baseline ambient air quality data was collected as part of the EIS between 2014 and 2019 at various locations, including at St Marys and Bringelly. The data indicates that annual average PM10 concentration around St Marys and Bringelly ranges between 15.1 and 24.7 micrograms per cubic metre. There are several recorded exceedances of the 50 micrograms per cubic metre maximum 24-hour concentration criterion, however the exceedances are generally due to exceptional events related to bushfires, hazard reduction burns and dust storms.

The data indicates that annual average PM2.5 concentration around St Marys and Bringelly is around 8 micrograms per cubic metre. There are several recorded PM2.5 exceedances of the 25 micrograms per cubic metre maximum 24-hour concentration criterion. As with PM10, the exceedances are generally due to exceptional events.

Table 4 to Table 7 provide the baseline ambient air quality data that has been collected for the project.

TABLE 4 ST MARY'S MONITORING LOCATION AMBIENT PM10 CONCENTRATION (2014-2019)

Statistic	Criteria	24-hour average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Maximum 24-hour concentration	50	45.0	53.0	100.2	49.8	100.5	159.8
24-hour exceedance count	-	0	1	3	0	2	26
Statistic	Criteria	Annual average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Annual Average	25	16.7	15.1	16.0	16.2	19.3	24.7

TABLE 5 BRINGELLY MONITORING LOCATION AMBIENT PM10 CONCENTRATIONS (2014-2019)

Statistic	Criteria	24-hour average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Maximum 24-hour concentration	50	42.6	57.0	61.6	83.7	92.9	134.0
24-hour exceedance count	-	0	1	3	6	8	24
Statistic	Criteria	Annual average PM10 concentration - $\mu\text{g}/\text{m}^3$					
		2014	2015	2016	2017	2018	2019
Annual Average	25	16.6	15.8	17.0	19.8	21.2	23.6

TABLE 6 ST MARY'S MONITORING LOCATION AMBIENT PM2.5 CONCENTRATIONS (2016-2019)

Statistic	Criteria	24-hour average PM2.5 concentration - $\mu\text{g}/\text{m}^3$				
		2016	2017	2018	2019	
Maximum 24-hour concentration	25	93.2	38.2	80.5	88.3	
24-hour exceedance count	-	5	3	2	21	
Statistic	Criteria	Annual average PM2.5 concentration - $\mu\text{g}/\text{m}^3$				
		2016	2017	2018	2019	
Annual Average	8	7.8	8	7.8	9.8	

TABLE 7 BRINGELLY MONITORING LOCATION AMBIENT PM2.5 CONCENTRATIONS (2016-2019)

Statistic	Criteria	24-hour average PM2.5 concentration - $\mu\text{g}/\text{m}^3$				
		2016	2017	2018	2019	
Maximum 24-hour concentration	25	21.6	52.5	55.6	178.0	
24-hour exceedance count	-	0	2	4	27	
Statistic	Criteria	Annual average PM2.5 concentration - $\mu\text{g}/\text{m}^3$				
		2016	2017	2018	2019	
Annual Average	8	7.6	7.5	8.0	11.3	

4 Air Quality Monitoring

A summary of monitoring to be adopted during delivery for the SSTOM Works is provided in Table 8.

TABLE 8 SUMMARY OF AIR QUALITY MONITORING AND INSPECTIONS

Details	Frequency	Test Procedure	Responsibility
Monitoring			
Wind and weather forecast	Daily	Weather conditions and forecast data will be obtained from the Bureau of Meteorology (BOM) website and communicated at Pre-Start briefings.	Environmental Coordinator Site Supervisor
Climate	Daily	Daily rainfall monitoring from Bureau of Meteorology (BOM) website	Environmental Coordinator
	Hourly	Temperature and humidity data will be obtained from Bureau of Meteorology (BOM) website	Environmental Coordinator
Suspended particles (PM2.5/PM10)	Real time	Real time monitoring may be undertaken in response to a complaint and/or an investigation	Environmental Coordinator
Odour	Daily during odour generating works, upon a complaint	No detectable odour to extend beyond the project boundary	Site Supervisor
Dust monitoring	Daily and continuous	Ongoing visual inspection of onsite construction activities to trigger proactive and reactive mitigation measures in response to potentially unacceptable dust conditions and impacts	Site Supervisor Environmental Coordinator
Inspections			
Visual Surveillance	Daily	Confirm effectiveness of dust control mitigation to check whether visible dust emissions occur beyond project boundary	Site Supervisor Environmental Coordinator
Environmental Inspection	Weekly	Review potential dust and air pollutant sources and inspect existing controls for suitability and required maintenance	Environmental Coordinator
Plant inspections	Prior to use of plant	Inspection of plant and equipment to ensure they are in good working order, in accordance with manufacturers specifications	Site Supervisor Environmental Coordinator
Investigation	In response to a complaint or non-compliance	Response to complaints to occur in accordance with Community Communication Strategy Review of monitoring frequency will be undertaken Review of existing monitoring data to identify any potential exceedances of relevant air quality targets Investigate the complaint to qualify potential contributing construction activities being undertaken by Parklife Metro D&C at the time of the complaint Review of effectiveness of dust and air quality mitigation measures	Site Supervisor Environmental Manager Environmental Coordinator

4.1 Meteorological Monitoring

Monitoring local meteorological conditions will provide information on the risk of dust becoming airborne and mobilised from onsite construction activities and exposed areas. The use of predetermined alert values for some meteorological parameters can be used to trigger specific mitigation measures or action plans to prevent and/or minimise dust and impacts to air quality. These may include:

- High winds (>15m/s) will trigger a review of works where areas and activities are prone to generating dust to determine if construction activities need to be altered or cease.
- Review of works to determine if construction activities need to be altered or cease when wind speeds and direction have historically resulted in complaints.

Weather data including daily weather conditions and forecasts may be obtained from the Bureau of Meteorology (BOM) website (<http://www.bom.gov.au/places/nsw>). In the absence of electronic meteorological information, the Site Supervisor, Site Engineers, and Environmental Coordinator/Advisor will monitor local wind conditions onsite in relation to current works and apply the mitigation measures in the Air Quality Management Sub-plan, as required. In accordance with the CEMF Section 13.2(c)(i) records of all meteorological condition monitoring will be retained. Refer to Section 3.10 of the CEMP for full details on record and document management.

4.2 Monitoring Dust Generating Activities

Monitoring the impacts from dust generating activities will be undertaken using visual inspections of onsite construction activities in conjunction with the prevailing and forecasted metrological conditions. This risk-based approach will be used in the proactive and reactive responses to dust management and will highlight the effectiveness of implemented dust controls and the need for any additional measures such as stopping work in windy conditions.

4.2.1 Proactive

The trigger for stopping works during high winds will be based on whether the meteorological conditions have the potential to cause unacceptable impacts to receivers. A review of work practices will be triggered when high wind conditions (>15m/s) are experienced.

Visual inspections will be undertaken by Site Supervisors, Site Engineers and Environmental Coordinators/Advisors periodically to ensure construction activities are not generating excessive amounts of dust with the potential to adversely impact nearby receivers. This includes monitoring the following key mitigation measures:

- Dust covers on haulage trucks are in place prior to leaving the construction site and whenever the load is in transit
- Stockpiles, spoil movements and cleared areas are being managed in accordance with the Soil and Water Management Sub-plan
- Stabilising disturbed areas as soon as possible
- Inspection of public roads adjacent to construction worksites for tracked dust or mud
- Vehicle speeds on unsealed haul roads
- Communication of weather conditions and air quality mitigation measures at toolboxes and site prestart briefings.

If dust has potential to leave site, the construction activities causing this will be assessed. Construction activities may be suspended, relocated, or modified to minimise the emission of dust from the premises to the greatest extent practicable.

4.2.2 Reactive

If visual inspections identify that dust conditions are becoming unfavourable or that dust is leaving the premises, the following actions may be implemented:

- Cease or modify dust generating activities to minimise any further dust impacts
- Increase watercart use in problematic areas
- Cover disturbed ground with geofabric, soil binder, or similar
- Increasing efforts to clean hardstand areas, including roads, or any loose dirt or fines.

4.3 Real Time Particulate Matter Monitoring

Real time monitoring may be undertaken to support visual air quality monitoring in response to a complaint and/or as part of an investigation. Real time monitors will be used to provide an instantaneous indication of the PM10 & PM2.5

levels, which will be used to implement and measure the effectiveness of dust management measures and other air quality controls in response to elevated readings.

Real time monitoring locations would be selected on a case-by-case basis, based on meteorological conditions, construction activities at that time and nature of complaints/investigations.

Baseline monitoring would rely on the EIS data provided in Section 3, and may be further supported by an additional monitoring point away from the work areas to be used as a control monitoring point.

Table 9 details the air quality monitoring criteria for particulate matter monitoring, which has been adopted from the National Environment Protection (Ambient Air Quality) Measure. The criteria in Table 9 relates to the real-time particulate matter monitoring, providing both an average over 24 hours and an annual average.

TABLE 9 CRITERIA FOR PARTICULATE MATTER

Pollutant	Average Time	Criteria	Source
Particulate Matter (PM10)	24 hours	50 µg/m ³	Air NEPM (NEPC 2021)
	Annual	25 µg/m ³	
Particulate Matter (PM2.5)	24 hours	25 µg/m ³	Air NEPM (NEPC 2021)
	Annual	8 µg/m ³	

4.4 Monitoring Locations

Visual monitoring of air quality controls and potential impacts will be undertaken at all active construction sites, as well as those construction sites that have yet to be effectively stabilised. The indicative locations of visual monitoring will include the following locations, as well as any other project sites that have the potential to result in dust or other air quality impacts:

- St Marys Station
- Claremont Meadows services facility
- Orchard Hills Station
- Stabling and maintenance facility at Orchard Hills
- Luddenham Station
- Bringelly services facility
- Bradfield Station
- Linewide alignment.

4.5 Reporting

A construction monitoring report covering air quality monitoring will be prepared on an annual basis, which will be submitted to the Planning Secretary, ER and Local Councils for information in accordance with Condition C22. The construction monitoring report will detail any potential non-compliances and actual non-compliances that occur during the monitoring period, and will provide a summary of air quality monitoring results obtained throughout the monitoring period.

5 Compliance Management

Results from the construction monitoring program will be compared with the applicable criterion and with results previously recorded on the Project and will be reported in the construction monitoring report.

If visual monitoring identifies unacceptable air quality impacts or dust leaving the premises, or if real-time particulate monitoring identifies and exceedance of the criteria, an investigation will be initiated to determine the significance of the exceedance or potential impacts and possible causes. The investigation will assess recent weather data, current construction works and recent activities or air quality incidents occurring at the relevant ancillary facility site. The outcomes of the investigation will determine whether any non-compliances have occurred, which will be managed in accordance with Section 3.9 of the CEMP.

As part of the response to the investigation, a review of the applied mitigation measures (outlined in Section 6 of Air Quality Management Sub-plan) will also be undertaken to ensure dust and air quality impacts from project works are being minimised to the largest extent possible. Where air quality impacts cannot be reduced, Parklife Metro D&C will re-assess the extent of impacts and implement additional and appropriate mitigation and management. Parklife Metro D&C will communicate any lessons-learnt in accordance with Section 3.11 of the CEMP. The process considers SMART principles in that the actions are specific and measurable, the outcomes are achievable and realistic, and all steps are time-focussed.

In accordance with Condition C22 the Air Quality Construction Monitoring Report will be submitted to the Planning Secretary, ER and Local Councils for information on an annual basis.



Appendix A Records of Consultation



Our reference: InfoStore
Contact: [REDACTED]
Telephone: [REDACTED]

29 March 2023

[REDACTED]
Environment Manager
Parklife Metro Joint Venture

Sent by email: [REDACTED]

Dear [REDACTED]

Sydney Metro – WSA: SSTOM Non-Aboriginal Heritage and Environmental Management and Monitoring

Thank you for providing Council with the opportunity to review and provide comment on the Non-Aboriginal Heritage Management Sub-Plan (Revision B), Flora and Fauna Management Sub-Plan (Revision B), and Air Quality Monitoring Program (Revision B), for works related to Stations, Systems, Trains, Operations and Maintenance.

After review of the abovementioned documentation, the following is provided.

Non-Aboriginal Heritage Management Sub-Plan (Revision B)

1. Council requests a copy of the archival recordings stated to have been undertaken.
2. It is noted that works are occurring in proximity to listed heritage items that are unlikely to be impacted, but there is still a potential for these items to be adversely impacted. It is therefore requested that an archival recording is undertaken for any listed heritage items within proximity to the works.
3. It is noted that an appropriately qualified heritage specialist is to be engaged for the project. It is requested that Council be furnished with details, including CV's of the shortlist of candidates for review and comment prior to engagement.
4. It is recommended that the appointed qualified heritage specialist is to be employed throughout the construction phase

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city



to attend regular site inspections, issue instructions, take photographs and record meeting notes especially relating to latent conditions and to ensure the approved plans and documents have been followed. Site visits are recommended to occur weekly as a minimum, particularly for works associated with St Marys Station. Prior to the issue of an Occupation Certificate, the consultant heritage architect is to submit a report detailing site inspections, issued instructions, photographs, meeting notes and confirmation that the works have adhered to approved plans and approval conditions. It is requested that Council be furnished with the final report.

5. A detailed archival recording should be undertaken for the jib crane at St Marys Station that is proposed to be dismantled and reassembled. Additionally, an archival recording of the jib crane is to be completed whilst it is being dismantled.

Flora and Fauna Management Sub-Plan (Revision B)

6. It is understood that majority of clearing has been undertaken during earlier stages of the project. The submitted report is satisfactory. Council has no objection, comment or recommendation.

Air Quality Monitoring Program (Revision B)

7. The proposed monitoring program is generally satisfactory.
8. The Air Quality Monitoring Program document details the baseline data available for reference during baseline modelling, as well as the parameters of the project to be monitored and frequency of monitoring to be undertaken. It is also noted the procedures to implement for additional mitigation measures should monitoring reveal unacceptable air quality impacts recorded.
9. It is noted in Section 6.1 that it is proposed to have wind conditions monitored and reviewed daily either via the project automatic weather station or via daily data available online. There is also mention of a daily review of the wind forecast in Table 7. It is recommended that wind direction and wind speed be monitored in real time, or on an hourly basis to ensure that appropriate mitigation measures can be implemented, or activities can cease within suitable timeframes to avoid any

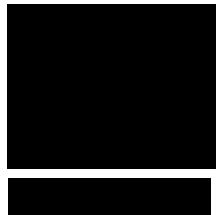


potential impacts on surrounding sensitive receivers in terms of air quality.

10. Whilst details have been provided in relation to the methods for selection of locations for which monitoring is to be undertaken, the specific locations have not been disclosed in Section 6.3.2. It is stated within the monitoring program document that the specific sampling locations will be determined in consultation with Sydney Metro and the Environmental Representative and will consider previous monitoring locations on the Sydney Metro – WSA project. It is recommended that the Air Quality Monitoring Program document include detailed locations for which the monitoring is to be undertaken, as well as identifying such locations on a diagrammatic figure to obtain perspective in relation to the subject property and surrounding sensitive receivers.

If you have any questions about this matter, please contact myself via email to [REDACTED] or on [REDACTED]

Yours sincerely



Project Interface – Sydney Metro

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrith.city

Liverpool City Council

Agency	Date consulted	Details
Liverpool City Council	5 April 2023	Initial consultation – via email
	10 May 2023	Follow-up email sent
	1 June 2023	Follow up phone call
	2 June 2023	Phone call and follow-up email

Note: no response currently received

General Correspondence

Reference No: SMWSASSM-PLD-GEN000141
Project Title: Sydney Metro Western Sydney Airport Project Delivery
Contract No: SSM - Stations, Systems, Trains, Operations and Maintenance (SSTOM)
Sub Contract: -
Orig Ref No:
DLM:

Date: 05 April 2023, 04:13 PM
From: [REDACTED] (Parklife Metro D&C)
To: [REDACTED] (Liverpool City Council)
Cc: [REDACTED] (Parklife Metro D&C) ; [REDACTED] (Sydney Metro) ; [REDACTED] (Sydney Metro) [REDACTED]
Subject: SMWSA Project - SSTOM Works - Non-Aboriginal Heritage, Fauna and Flora Management Sub-plan and Air Quali

Hi All,

As part of the Sydney Metro Western Sydney Airport (SMWSA) Project, Parklife Metro will be constructing the Stations, Systems, Trains, Operations and Maintenance (SSTOM) package. Aerotropolis Station at Bringelly in the south, but by way of providing background to the SSTOM Project, it includes the construction of the six new metro stations, installation of tracks, sign

In accordance with the SMWSA Project's infrastructure approval (SSI-10051), we have prepared a Non- Aboriginal Heritage, Flora and Fauna Management Sub-plan and Air Quality Council review these documents and if required, provide comment. Any review comments or issues raised will be duly considered by Parklife Metro in the name of open and honest co

Further to previous correspondence, we appreciate that you may have been contracted by other parties regarding earlier stages of the SMWSA Project, and therefore, Parklife Metro . have any questions or would like to set up a time to meet, please contact me via reply email or on 0488 477 686.

Regards,

[REDACTED]

Sent by [REDACTED]

Discipline: Design Series:
Sub Discipline: - Design Lots:

Attachments

Sydney Metro - WSA - SSTOM - Non-Aboriginal Heritage, Fauna and Flora Management Sub-plan and Air Quality Monitoring Program Consultation.htm (10 KB), Sydney Metro - WSA - SSTOM - Non-Aboriginal Heritage, Fauna and Flora Management Sub-plan and Air Quality Monitoring Program Consultation.zip (15 MB)

From: [REDACTED]
To: [REDACTED]
Subject: SMWSA Project - SSTOM Works Environmental Management Plans for review
Date: Wednesday, 10 May 2023 11:38:00 AM
Attachments: [image001.png](#)
[image002.png](#)

Dear [REDACTED]

In relation to the emails/transmittals sent to you on the 13th March, 29th March, 5th April regarding the review of the Non-Aboriginal Heritage Management Sub-plan, Flora and Fauna Management Sub-plan, Soil and Water Management Sub-plan, Noise and Vibration Management Sub-plan and Air Quality Monitoring Program. Should you have any questions regarding any of these documents or would like to meet to discuss any issues please contact me at your convenience.

It is our intention to finalise these documents in the near term and we would greatly appreciate any comments you may have or alternately if you have no comment a response to this affect.

Kind Regards

[REDACTED]
Environment Manager
Mob. [REDACTED]
email: [REDACTED]
Parklife Metro JV
680 George Street, Sydney NSW 2000



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From: [REDACTED]
To: [REDACTED]
Cc: [REDACTED]
Subject: Documents for review RE: SSTOM Project
Date: Friday, 2 June 2023 2:50:00 PM
Attachments: [image001.png](#)
[image002.png](#)

Hi [REDACTED]

It is required under our planning approval for the SSTOM Project (Metro from St Marys to Aerotropolis) to consult with you on the development of certain documents which are detailed in the next paragraph. Could you please confirm by return email if you have any comment on the documents provided. If you have no comment it would be greatly appreciated if you could respond accordingly as it would allow us to close out this condition.

In relation to the emails/transmittals sent to you on the 13th March, 29th March, 5th April regarding the review of the Non-Aboriginal Heritage Management Sub-plan, Flora and Fauna Management Sub-plan, Soil and Water Management Sub-plan, Noise and Vibration Management Sub-plan and Air Quality Monitoring Program.

Thank You

[REDACTED]
Environment Manager

Mob. [REDACTED]

email: [REDACTED]

Parklife Metro JV

680 George Street, Sydney NSW 2000



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Appendix C Air quality and dust procedure

Management and Responsibilities

