

Air Quality Management Sub-plan

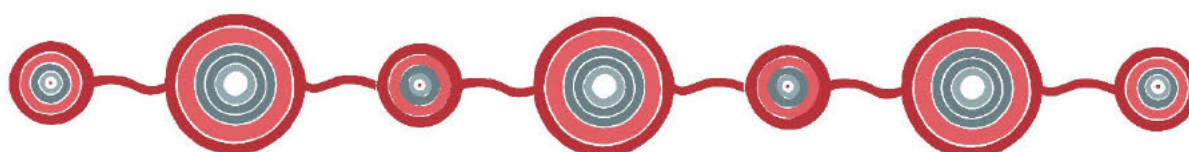
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AW EDWARDS acknowledges the Traditional Owners of Country throughout Australia and recognises the continuing connection to lands, waters and communities.
We pay our respect to Aboriginal and Torres Strait Islander people and culture, and to their Elders past and present.

"COMMUNITY"
Artwork by Raechel Saunders

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1 BACKGROUND

The Sydney Metro City & Southwest is a 30 kilometre metro rail between Chatswood and Bankstown, including; 17 kilometres of new tunnel from Chatswood, under the harbour to Sydenham connecting seven new underground stations at Crows Nest, Victoria Cross (North Sydney), Barangaroo, Pitt Street, Martin Place, Central and Waterloo. Upgrading 13 kilometres of the Bankstown line, including 11 existing stations; Sydenham, Marrickville, Dulwich Hill, Hurlstone Park, Canterbury, Campsie, Belmore, Lakemba, Wiley Park, Punchbowl and Bankstown plus southern service facilities.

The application for the Sydney Metro Crows Nest Over Station Development for Site C, on the north-western corner of Hume Street and Clarke Street, was lodged by Sydney Metro as a State Significant Development on 10 June 2021 (reference SSD- 13852803) and was approved by the Minister in December 2021. The project is described in the approval (hereafter referred to as the SSD Approval) as:

Construction of an eight (8) storey commercial office building above the metro station.

A W Edwards has been awarded the tender to construct Crows Nest Metro Over Station Development Site C (the OSD project).

2 DOCUMENT PURPOSE

The purpose of this air quality management sub-plan (the plan) is to minimise potential air quality and dust related impacts from the OSD project, on receivers adjacent to and near the construction site. This plan is a sub-plan to the Crows Nest Construction Environmental Management Plan (CEMP).

This plan addresses the requirements of the SSD Approval detailed in Table 1, as the requirements relate to construction and the activities being undertaken on site.

Table 1 Conditions of Approval

Condition	Requirement	Reference
B45 (b)	Prepare an Air Quality Management Sub-Plan (AQMP) for the development, independent of the AQMP approved with the CSSI station works. A copy of the AQMP must be submitted to the Planning Secretary and Certifying Authority. The Sub-Plan must include, as a minimum, the following elements:	This plan
B45 (b) (i)	(i) be prepared by a suitably qualified and experienced expert in accordance with the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (the Approved Methods).	This plan has been prepared by Darren Green who has more than 15 years' experience in managing air quality impacts from construction.
B45 (b) (ii)	(ii) relevant environmental criteria to be used in the day-to-day management of dust and volatile organic compounds (VOC/odour)	Table 2
B45 (b) (iii)	(iii) mission statement	Section 6
B45 (b) (iv)	(iv) dust and VOCs/odour management strategies consisting of:	Table 2 Section 6

Condition	Requirement	Reference
	<ul style="list-style-type: none"> objectives and targets risk assessment suppression improvement plan. 	Appendix D of CEMP Section 10
B45 (b) (v)	(v) monitoring requirements including assigning responsibility (for all employees and contractors)	Section 12
B45 (b) (vi)	(vi) communication strategy; and	Section 3
B45 (b) (vii)	(vii) system and performance review for continuous improvements	Section 14
B46	<p>The Sub-Plan must detail management practices to be implemented for all dust and VOC/odour sources at the site.</p> <p>The Sub-Plan must also detail the dust, odour, VOC and semi-volatile organic compounds (SVOC) monitoring program (e.g. frequency, duration and method of monitoring) to be undertaken for the project.</p>	Section 12 Section 13
B47	The Applicant must also develop and implement an appropriate comprehensive Reactive Air Quality and Odour Management Plan which will incorporate an Ambient Air Monitoring Program and Reactive Management Strategy to ensure that the assessment criteria are met during the works.	Section 10 Appendix D of CEMP
C9	The Applicant shall ensure that the requirements of the Construction Environmental Management Plan, Construction Pedestrian Traffic Management Plan, Construction Noise and Vibration Management Sub-Plan, Air Quality Management Plan and Construction Waste Management Plan required by Part B of this consent are implemented during construction.	This plan
C16	The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.	Section 10 Section 11
C17	<p>During construction, the Applicant must ensure that:</p> <p>(a) exposed surfaces and stockpiles are suppressed by regular watering</p> <p>(b) all trucks entering or leaving the site with loads have their loads covered</p> <p>(c) trucks associated with the development do not track dirt onto the public road network</p> <p>(d) public roads used by these trucks are kept clean; and</p> <p>(e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.</p>	Section 11

3 COMMUNICATION STRATEGY

This plan will be provided to each contractor during the procurement process and will be available to all persons involved in the project during construction.

Consultation and complaint management will be in accordance with the Crows Nest Community Communications Strategy.

4 CONSTRUCTION OVERVIEW

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Construction activities which have the potential to generate dust of the station broadly includes:

- Structure;
- Fit out;
- Services;
- External works; and
- Landscaping.

Exhaust emissions (including carbon monoxide (CO), sulfur dioxide (SO₂) and oxides of nitrogen (NO/NO₂) may also be generated by plant, machinery and vehicles used at the site.

Volatile organic compounds (VOC) may be generated during the application and use of solvents, paint, coatings and adhesives and may include:

- Benzene.
- Toluene.
- Xylenes.
- Formaldehyde.
- Polycyclic aromatic hydrocarbons (PAH).

Odours impacting sensitive receivers is unlikely to be generated by construction activities, however localised odour may be generated by the exhaust emissions and VOCs resulting in temporary impacts to construction personnel.

5 POTENTIAL IMPACTS

Potential impacts from construction activities include:

- Dust and vehicle emissions can have health impacts to residents, commuters and people working in the vicinity of the construction site.
- Dust can cause damage to personal and public property and may lead to extensive cleaning requirements and community complaints.
- Dust and vehicle emissions can result in odours that some people may be sensitive to.
- Exhaust emissions contributing to a localised increase of atmospheric concentrations of greenhouse gases, visible smoke plumes, odours, temporary elevation of exhaust gas and fine particulate concentrations.
- The generation of VOC vapours may cause nuisance odours or exposure of workers to air quality exceeding health-based exposure limits.

6 RISK ASSESSMENT

The CEMP has considered key environmental risks that may occur during the construction phase, using a risk management approach.

The risk assessment aims to achieve the following objectives:

- Identify any activities, events or outcomes that may have a negative impact on the local environment and/or human health/property.
- Evaluate and categorize each risk item in a qualitative manner.
- Determine whether environmental safeguards can manage the risk issues.
- Evaluate the residual risk after implementing the measures.

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You can find an environmental risk assessment for the project in Appendix D of the CEMP, and it's reviewed regularly in accordance with Section 10 of the CEMP.

7 AIR QUALITY MANAGEMENT OBJECTIVES

The following air quality management objectives apply to construction:

- To maintain air quality within acceptable limits.
- To reduce the levels of dust and VOC/odour emissions in the air.
- To prevent any adverse effects of air pollution on human health and the environment.
- To comply with all relevant legislation and regulations pertaining to air quality management.

8 ENVIRONMENTAL CRITERIA

Relevant environmental criteria to be used in the day-to-day management of dust and volatile organic compounds are identified in Table 2.

Table 2 Environmental criteria to manage day-to day activities

CRITERIA	OBJECTIVE	TIMEFRAME
Limit idling of construction vehicles	No visible exhaust emissions for greater than 10 seconds	At all times
No dust or debris from construction on surrounding roads	Zero	At all times
No dust seen to be leaving the site boundary	Zero	At all times
No dust or odour complaints	Zero	At all times

9 ROLES AND RESPONSIBILITIES

A summary of the specific responsibilities for air quality management specific to each role are specified in Table 3.

Table 3 Summary of roles and responsibilities

ACTION	RESPONSIBILITY
<ul style="list-style-type: none"> ▪ Performance and compliance with the CEMP and air quality and dust management procedure. 	Construction Manager
<ul style="list-style-type: none"> ▪ Daily weather monitoring ▪ Visual inspections to determine if mitigation measures are needed or successful ▪ Implementation of environmental mitigation measures ▪ Recording implementation of mitigation measures 	Planning & Environment Manager Site Supervisor
<ul style="list-style-type: none"> ▪ Environmental monitoring and visual inspections ▪ Recording and reporting on effectiveness of mitigation measures 	Environmental Coordinator

ACTION	RESPONSIBILITY
<ul style="list-style-type: none"> Deal with complaints in a responsive manner so that stakeholders' concerns are managed effectively and promptly. A verbal response will be provided to the complainant as soon as possible and within a maximum of two hours from the time of the complaint. A detailed written response will then be provided, if required, to the complainant within one week. 	Community Engagement Manager

10 SUPPRESSION IMPROVEMENT PLAN

A dust suppression improvement plan can help reduce the amount of dust generated during construction. Table 4 documents the steps AWE has taken to develop its dust suppression improvement plan.

Table 4 Suppression improvement plan

STEP	DETAIL	REFERENCE
1. Identify the sources of dust	The first step is to identify the sources of dust, such as excavation, demolition, or transportation. Each source will require a different approach to suppress the dust.	Section 4 Section 5
2. Assess the current dust suppression measures	Evaluate the effectiveness of the current dust suppression measures, such as water sprays, chemical suppressants, or dust barriers. This assessment will help identify the areas that need improvement.	Section 6
3. Develop a dust management plan	Based on the assessment, develop a dust management plan that includes the necessary improvements to the current dust suppression measures. The plan should also specify the responsibilities of the personnel involved in dust suppression activities	This plan Section 9
4. Select appropriate dust suppression techniques	Based on the sources of dust, select the appropriate dust suppression techniques. For example, water sprays can be effective for suppressing dust generated during excavation, whereas dust barriers may be more effective in controlling dust generated during demolition.	Section 11
5. Train personnel	Train the personnel involved in dust suppression activities, such as equipment operators and site supervisors. They should be trained in the proper use of dust suppression techniques and the importance of maintaining equipment for optimum performance.	Section 6 CEMP
6. Monitor dust levels	Monitor the dust levels regularly to evaluate the effectiveness of the dust suppression measures. This monitoring can help identify areas where additional improvements are necessary	Section 12
7. Continuous improvement	Continuously review the dust suppression improvement plan and make adjustments as necessary to ensure that it is effective in suppressing dust. This will help ensure that the plan remains effective as construction or industrial activities progress	Section 13 Section 14

11 MITIGATION MEASURES

- Regularly dampening unsurfaced haul routes and work areas in dry and windy conditions.
- All vehicles carrying spoil or rubble to or from the site shall at all times be covered to prevent the escape of dust or other material.
- All materials shall be stored or stockpiled at suitable locations and stockpiles shall be maintained at manageable sizes which allow them to be covered, if necessary, to control emissions of dust and/or VOCs/odour.
- Switching off the engines of all on-site vehicles and plant when not in use for an extended period.
- Regularly maintaining and servicing plant to minimise emissions, considering emissions from plant as part of pre-acceptance checks.
- Considering air quality impacts to neighbouring receivers when planning for and constructing the site layout and placement of plant.
- Minimising the tracking of dirt / dust onto public roads by stabilising site access and egress point, using street sweepers where required.
- Physical barriers shall be erected at right angles to the prevailing wind direction or shall be placed around or over dust sources to prevent wind or activity from generating dust emissions.
- Earthworks and scheduling activities shall be managed to coincide with the next stage of development to minimise the amount of time the site is left cut or exposed.
- The surface should be dampened slightly to prevent dust from becoming airborne but should not be wet to the extent that run-off occurs.
- If traversing unsealed construction roads, all equipment wheels shall be free of mud and in a suitable condition when entering public roads to limit tracking and dust generation.
- Gates shall be closed between vehicle movements and shall be fitted with shade cloth.
- Cleaning of footpaths and roadways shall be carried out regularly.
- Suspend dust generating activities during periods of strong winds and undertaking alternative tasks that do not generate adverse impacts.
- Materials that have been stockpiled long term will be covered or assessed and removed from site if no longer required.
- Use low-emission vehicles and equipment, such as electric tools or hybrid equipment, to minimise emissions of air pollutants.

12 MONITORING AND INSPECTION

Regular monitoring and inspections will be undertaken during construction to maintain compliance with air quality objectives for the OSD project in accordance with Table 3.

Additional requirements and responsibilities in relation to inspections and monitoring are documented in Section 9 of the CEMP.

Air Quality Management Sub-plan*Table 5 Monitoring and inspection*

MONITORING DETAILS	RECORD	RESPONSIBILITY	FREQUENCY	KEY PERFORMANCE INDICATOR
Meteorological data including daily rainfall, temperature, relative humidity, wind (direction and speed) and barometric pressure.	Weather forecasts from Bureau of Meteorology (BOM). Daily rainfall records.	Site Supervisor	Daily	N/A
Monitor the DPE website (http://www.environment.nsw.gov.au/AQMS/aqi.htm) for the latest air quality forecast in Greater Sydney or for any air quality alerts in place. If required, if air quality in the region is poor, investigate options to avoid, reduce or minimise work activities and sources of dust generation which could contribute to further degradation of regional air quality.	DPE website	Site Supervisor	Daily	N/A
Visual observations during daily site inspections to ascertain the effectiveness of implemented controls, including any observed dust plumes originating from the work site and/or activities observed outside of the OSD project that may impact on dust levels near sensitive receivers.	Site inspections. Complaints records.	Site Supervisor	Daily	Number of complaints per month related to dust or mud on public roads.
Monitor the concentration of VOCs using a handheld photoionization detector (PID).	Instrument readings.	Environmental Co-ordinator	In response to community complaints regarding odour.	Number of complaints per month related to odour.

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MONITORING DETAILS	RECORD	RESPONSIBILITY	FREQUENCY	KEY PERFORMANCE INDICATOR
In the event that the PID reading exceeds 10 parts per million (PPM), the effectiveness of existing controls will be reviewed and additional controls employed to minimise the generation of odour associated with VOCs.	Complaints records.			
Monitor the concentration of odour using a handheld olfactometer.	Instrument readings.	Environmental Co-ordinator	In response to community complaints regarding odour.	Number of complaints per month related to odour.
In the event that the reading exceeds 2 odour units, the effectiveness of existing controls will be reviewed and additional controls employed to minimise the generation of odour.	Complaints records.			

13 RECORDING

- The Site supervisor will record daily weather conditions, specifically those conditions which may exacerbate air quality, for example hot, dry and windy conditions. Daily weather conditions will be included in the daily pre-start.
- The Environmental coordinator will distribute a weekly weather forecast to the project team, identifying any unfavourable conditions or additional air quality controls.
- The Environmental coordinator will visually monitor daily construction activities (including dust generating activities, emissions from plant equipment and any excessive odours) to ensure air quality controls are effective.

14 CONTINUOUS IMPROVEMENT

This plan will be regularly reviewed and updated in accordance with Section 10 of the CEMP.

APPENDIX A: AIR QUALITY MANAGEMENT DIAGRAM

