

Sydney Port Botany Terminal 3 Project

Air Quality and Dust Management Plan

Terms and Definitions

The following terms, abbreviations and definitions are used in this plan:

Terms	Explanation
SPBT3	Sydney Port Botany Terminal 3
CEMP	Construction Environmental Management Plan
EM	Environmental Manager
EPA	Environmental Protection Agency
ERAP	Environmental Risk Action Plan
OEH	Department of Climate Change and Water
AQDMP	Air Quality and Dust Management Plan
EIS	Environmental Impact Statement
MCoA	Ministers Conditions of Approval
PM10	Particulate Matter - in the order of ~10 micrometers or less

Distribution

The master 'controlled' Air Quality and Dust Management Plan (AQDMP) document forms part of the project's CEMP as an Appendix. The controlled copy will be retained in TeamBinder, the Laing O'Rourke document management system, where it can be accessed by personnel as necessary.

All paper copies of this AQDMP will be considered as 'uncontrolled' unless they have been allocated a 'copy number' in a colour other than black.

The client representative will be provided with a copy in conjunction with the submission of the CEMP.

Issue, Revision and Re-issue

The initial issue of this AQDMP has been reviewed by Laing O'Rourke's Regional Environmental Manager to ensure it meets the requirements of the current EMS and policy, contract, specifications and standards. The plan is approved for use on the project by the Project Director. Evidence of initial review and approval is by signatures on the cover sheet.

In conjunction with the submission of the AQDMP, Laing O'Rourke will coordinate and facilitate an initial AQDMP Workshop with representatives from the client and Laing O'Rourke to discuss the contents and application of the AQDMP to facilitate the approval of the AQDMP and agree the proposed management measures and controls.

Revisions of this AQDMP may be required throughout the duration of the project to reflect changing circumstances or identified opportunities for improvement.

Revisions may result from:

- Management Review
- Changes to the Company's standard system

- Audit (either internal or by external parties)
- Client complaints or non-conformance reports.

Revisions shall be reviewed and approved by the Project Manager prior to issue. Updates to this AQDMP are numbered consecutively and transmitted to holders of controlled copies.

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1. Introduction

This Air Quality and Dust Management Plan (AQDMP) has been developed to address the construction activities associated with the Sydney Port Botany Terminal 3 (SPBT3) Project. In particular, the plan has been developed to address the requirement for a Dust Management Plan as outlined in the conditions of approval.

Development of Sydney Port Botany Terminal 3 will involve the construction of onshore civil infrastructure including container stacking areas. The proposed Terminals have four berths with a total length of 1,180 m. The approximate Terminal area, excluding the Wharf area is 46 ha.

The key components of the Sydney Port Botany Terminal 3 include:

- Ground treatment and consolidation measures
- Drainage, utilities, services
- Container yard
- HV & LV electrical
- Buildings
- Rail yard.

1.1 Objectives

The objective of this AQDMP is to ensure that all risks associated with dust control, potential dust migration and licensing and monitoring issues are considered and managed effectively during construction to avoid any environmental or community incident.

This AQDMP seeks to ensure that dust management is maintained and that associated mitigation measures are managed effectively to prevent any negative environmental impact on Botany Bay and surrounding residents and businesses. Appropriately trained personnel and experience gained from previous projects will be used to achieve high environmental performance on the SPBT3 Project.

It is recognised that during construction some specific areas will require alterations to the planned control measures due to changing circumstances. In these situations, the planned control measures will be reviewed, risk assessed and, where appropriate and practical, amended as necessary prior to commencing new or modified activities. These alterations are expected to primarily involve dust control issues and will be included in the updated erosion and sediment control plans for different stages of the construction works.

This AQDMP aims to satisfy the following objectives:

- Address the requirements of the planning approval for the SPBT3 Project
- Address the requirements of the Environmental Impact Statement (EIS) for the Port Botany expansion
- Address the requirements outlined in the Aurecon Framework Construction Environmental Management Plan
- Address the requirements of the relevant environmental legislation as it applies to this project
- Address the requirements of the Environment Protection Licence issued for the works undertaken for the SPBT3 Project
- Summarise potential impacts on the environment from the proposed works
- Document environmental procedures to control potential environmental impacts.

Responsibilities for the implementation and management of this AQDMP are in accordance with the Project's Construction Environmental Management Plan.

1.2 Commitment

It is the commitment of Laing O'Rourke to implement all measures discussed in this AQDMP and to meet all relevant criteria to ensure the health of Botany Bay and its surrounds is maintained and that a safe worksite is upheld. Laing O'Rourke is committed to minimising construction impacts on surrounding residents by mitigating potential dust issues that may arise from construction works at the SPBT3 project.

1.3 Targets

The following targets have been identified in terms of dust management for the project:

- Release of dust/particle matter must not cause an environmental nuisance at any dust sensitive location
- No complaints received regarding excessive dust generation or air pollution caused by construction
- Minimise erosion on site
- Prevent mud and litter from being deposited on roadway
- Ensure exhaust emissions of plant and equipment produced by construction activities are controlled to an acceptable level
- Achieve particulate concentrations and dust deposition rates from construction activities that meet guideline values
- Monitor and promptly maintain dust controls through the project
- Monitor the effects of activities and the effectiveness of mitigation measures
- Limit the disturbed area and reinstate as soon as practicable following the completion of works
- Ensure all personnel are appropriately trained in environmental awareness and the significance of the ongoing health of the surrounding Bay and community
- No environmental fines or prosecutions relating to dust and air

1.4 Statutory provisions and guidelines

The following statutory provisions and guidelines are applicable to the Project, with regards to air quality and dust management:

- Sydney Port Botany Terminal 3 Planning Approval
- POEO Act 1997
- POEO (Clean Air) Regulation 2010
- Office of Environment and Heritage National Environment Protection Measure for Ambient Air Quality: Air Monitoring Plan for NSW - June 2001

1.5 Ministers Conditions of Approval

MCoA's relevant to air quality management are outlined below.

MCoA Reference	MCoA Detail
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MCoA Reference	MCoA Detail
B2.4	<p>The Applicant shall prepare a Dust Management Plan in consultation with DEC, RTA, DOP, Botany and Randwick Councils. The Applicant shall address the requirements of these organisations in the Plan. The Applicant shall also consult with the Community Consultative Committee in preparation of the Plan. Plan must include, but not be limited to strategies in which the construction shall:</p> <ul style="list-style-type: none"> • Minimise or prevent the emission of dust from the site; • Ensure that all trafficable areas and vehicle manoeuvring areas in or on the premises shall be maintained, at times, in a condition that will minimise the generation, or emission from the premises, of windblown or traffic generated dust; • Ensure that all vehicles entering and leaving the site and carrying a load that may generate dust are covered at all times, except during loading and unloading. Any such vehicles shall be covered or enclosed in a manner that will prevent emissions of dust from the vehicle at all times; and • Ensure that all dust source surfaces are sealed. <p>The Plan shall be approved by the Director-General of DOP prior to commencement of construction.</p>

2. References

- Port Botany Expansion Environmental Impact Statement
- Aurecon Framework Construction Environmental Management Plan Sydney Terminal 3 Sydney International Container Terminals Pty Limited, Revision 3
- NSW Landcom publication Managing Urban Stormwater - Soils and Construction Edition 4 March 2004 (Blue Book).
- POEO (Clean Air) Regulation 2010
- Office of Environment and Heritage National Environment Protection Measure for Ambient Air Quality: Air Monitoring Plan for NSW - June 2001
- Reference is also made to the NSW Protection of the Environment Operations Act which integrates into one Act all of the controls necessary to regulate pollution and reduce degradation of the environment. The Act also provides for licensing of scheduled development work, scheduled activities and for offences and prosecution under this Act

3. Strategic Approach

3.1 Existing Environment

Air quality within the area surrounding Port Botany is influenced by both local and regional pollutant sources, including road traffic, domestic sources, aircraft and a variety of industrial emissions. The proximity to local pollutant sources and the influence of sea breezes play significant roles in the dispersion of pollutants around Botany Bay.

3.2 Potential Impacts

Construction activities have the potential to affect air quality if not properly managed. Due to the large surface area of the reclamation and stockpiles that will be potentially exposed to winds, there is potential for windblown sand and dust. Consequently, construction activities require careful construction planning and effective measures to ensure that there are no significant emissions of dust. Dust could be generated from the following sources:

- The dried reclaimed surface;
- Earthworks;
- Spoil handling & stockpiling on top of the reclamation;
- Movement of vehicles across unsealed areas on the site; and

- Concrete batching.

3.3 Controls

A variety of control measures will be implemented throughout the course of the works to manage air quality during construction.

- Water carts to be used to wet down haul roads and excavations to suppress dust during construction periods. Water carts will provide constant dust suppression to all site haul roads and earthworks formations.
- The site will establish a real-time metrological weather station including web-based telemetry and notifications.
- Where dust from earthworks or other dust generating activities cannot be controlled adequately by existing dust suppression measures, the activities shall be stopped and the process reviewed and additional mitigation measures employed. Senior project staff including the Project Manager, Site Supervisor and Environmental Manager shall be responsible for ceasing work in the event that significant dust emissions are leaving the site.
- Review forward forecasts and re-program works during periods of high winds to ensure that a dust nuisance is not caused external to the site.
- Review all dust suppressions measures during activities when the winds speed exceeds 8m/s. Site inspection and completion of an 'Excessive Wind/Dust Generation' form to be undertaken to ensure dust is controlled within the site. This form is seen in Appendix 1.
- Water sprays and/or misting facilities for the control of dust at the concrete batch plant.
- Maintain dust suppression equipment such as water carts and water sprays, so that they are readily available as required during dust generating activities or high wind speed
- Provision of dust suppression equipment during periods of site shutdown such as weekends, RDOs and extended site closures. This will include a water cart on callout and the implementation of any misting systems.
- Monitor wind speed through the site weather station outside of normal hours.
- Construction Supervisors shall visually inspect plant and equipment exhaust periodically during the works for excessive emissions. Excessive emissions shall be defined as visual emissions continuing for a period of greater than 20 seconds.
- Non-conformances with these measures shall be documented in the relevant Supervisor's daily diary and the offending plant item serviced/repaired or upgraded to manufacturer's specifications as soon as possible.
- Excessive mud to be removed from vehicles before entering public roads by a wheel wash, hardstand at the site access point to prevent tracking of mud and sediment on to public roads.
- Minimise vehicles speeds on unpaved areas and site roads – general site speed limit shall be 20km/hr.
- All plant and equipment to be maintained in good working order in accordance with the relevant manufacturers requirements to limit the emission of smoke and dust.
- All vehicles transporting materials into and from the site are to be covered after loading to prevent wind blown dust emissions and spillage.
- Spilt materials will be removed from public roads or properties outside the construction site immediately.

- Daily visual monitoring of dust generation will be undertaken for the duration of the project and shall include site exit points. Visual monitoring shall be recorded on the relevant Supervisor's site diary.
- Sweeper/vacuum truck to be used if required to clean public roads in and around the site.
- The stockpiling of impacted material from the excavation of material from any identified contamination hotspots will be minimised. Where this material is required to be stockpiled, the foot print will be minimised and height kept to less than 2m.
- Temporary stockpiles shall be located more than 15m from the Botany Bay edge as directed on-site and will be covered/stabilised when not in use.
- Stabilisation of disturbed areas will be undertaken as soon as practical after the completion of works and in accordance with the specification.
- Provide awareness training within the site specific induction and toolbox meetings in the need to minimise dust and report emissions. In particular the need to identify activities causing dust emissions.

3.4 Mitigation Measures

Mitigation measures for air quality and dust management for the construction phase of the project are outlined below.

Mitigation Measures	Responsibility	Source of Requirement	Timing
Apply water, through the use of water trucks, to active earthwork areas, stockpiles, gravel roads and loads of soil being transported to reduce windblown dust emissions.	Project Engineer Superintendent	EIS 23.8.1	Throughout construction
Site roads to consist of coarse gravel and to be kept wet where required to minimise wheel generated dust emissions	Project Engineer Superintendent	EIS 23.8.1	Throughout construction
Place a thin bituminous membrane layer to sections of the reclaimed area not being used for more than 3 months, but where subsequent construction activities are to take place on site, to stabilise and reduce windblown dust emissions	Environment Manger Project Engineer	EIS 23.8.1	Throughout construction
Keep the working face and areas of open excavation to a minimum	Project Manager	EIS 23.8.1	Throughout construction
Vegetate or stabilise stockpiles where material is to remain on site for a long period of time (unused for longer than 1 month)	Environment Manger	EIS 23.8.1	Throughout construction
Cease work if excess dust is observed, or phase down while the source is being actively investigated and suppression measures are implemented	Environment Manger Superintendent	EIS 23.8.1	Throughout construction
Restrict construction traffic to defined roads and keep to 20km/hr site speed limit. Signpost the speed limit along all construction roads	Superintendent	EIS 23.8.1	Throughout construction
Remove soil adhering to the wheels and undercarriage of vehicles prior to departure from the site	Superintendent	EIS 23.8.1	Throughout construction
Progressively landscape and vegetate areas as the construction activities proceed, where practical	Environment Manger Project Manager	EIS 23.8.1	Throughout construction
Visually monitor dust generation from work zones to ensure that excessive dust is not being produced.	Environment Manger All Personnel	EIS 38.5	Throughout construction

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Mitigation Measures	Responsibility	Source of Requirement	Timing
Inspect sites to ensure that adequate dust controls are being used such as regularly watering unsealed areas.	Superintendent Environment Manger	EIS 38.5	Throughout construction
Ensure that all vehicles entering and leaving the site and carrying a load that may generate dust are covered at all times, except during loading and unloading. Any such vehicles shall be covered or enclosed in a manner that will prevent emissions of dust from the vehicle at all times	Superintendent	Best Practice	Throughout construction
Remove mud spilt by construction equipment on to public roads or other sealed pavements	Superintendent	Best Practice	Throughout construction
Maintain exhaust systems of construction plant, vehicles and machinery in accordance with manufacturer specifications and undertaking periodic visual checks of exhaust systems emissions	Superintendent Project Engineer	Best Practice	Throughout construction
Locate stockpiles as far away from residences as practical	Superintendent Project Engineer	Best Practice	Throughout construction
Install and use rumble grids at exit points to prevent mud being tracked onto public roads	Superintendent Project Engineer	Best Practice	Throughout construction
Do not leave machinery and vehicles running or idling when not in use	All Personnel	Best Practice	Throughout construction
Undertaken pre-operation inspections of plant and equipment to ensure maintenance regimes are being implemented.	Superintendent Project Engineer	Best Practice	Throughout construction
Review operations when wind speed exceeds 8m/s and complete excessive wind/dust generation form	Superintendent Environment Manger	LOR Management	Throughout construction
Cease operations when dust cannot be controlled	Superintendent Environment Manger	Best Practice	Throughout construction
Monitoring through dust deposition gauges. Review monitoring results for daily and monthly trends and correlate with construction activities	Environment Manger	Best Practice	Throughout construction
Review forward forecasts and re-program works during periods of high winds to ensure that a dust nuisance is not caused external to the site	Superintendent Environment Manger	Best Practice	Throughout construction
Install a weather station to detail meteorological conditions and wind speeds	Environment Manger	EIS	During major foreshore works
High volume air sampler to monitor air quality	Environment Manger	EIS	During major foreshore works

3.5 Monitoring

Ambient background data and project specific air quality objectives have been set in the project EIS.

Aspect	Average Background for EIS Impact Assessment	Current Criteria	
		NSW EPA Criterion	Project Specific Criterion

Aspect	Average Background	Current Criteria	
Dust Deposition	1.5 –2 g/m2/ month	4 g/m2/ month	2 g/m2/ month

The air quality impacts for this stage of construction have not been assessed in the EIS for the terminal 3 works. Due to this, the criteria in the table above will be utilised.

Daily monitoring will be undertaken in the form of visual inspections of the site by each Supervisor and the General Foreman. Results of visual inspections will be recorded in the relevant site diary and on the weekly checklist as appropriate.

Three dust deposition gauges will be installed within residential areas – two in the residential area north of Foreshore Road, and one in the Matraville residential area immediately east of Amcor (Botany Road, Matraville). An additional dust deposition gauge will also be located in Penrhyn Estuary. To ensure minimal impact on sensitive habitats, and to minimise the potential for sedimentation in shallow waters, sampling would be undertaken in accordance with Australian Standard AS 3580.10.1-1991 – Particulates – deposited matter (gravimetric method) and laboratory analysis performed by a NATA accredited laboratory.

Visual monitoring will be undertaken continually throughout construction for air quality and dust. If excessive dust or air quality impacts are observed, works are to cease and the source to be actively investigated and suppression measures implemented before proceeding.

Real time PM10 air quality monitoring may be undertaken to show immediate spot check air quality results or in response to complaints or to monitor effectiveness of site controls. Targets will be initially set at PM10 < 50µg/m3 averaged over 24 hours and PM10 <30µg/m3 as an annual average.

3.6 Suppression Improvement

The monitoring activities outlined above are being undertaken to proactively identify dust issues as the works progress. Monitoring activities will be reviewed as soon as the results become available. Where results indicate that limits are within 80% of that specified in the table above, the activities undertaken will be identified and the current mitigation measures reviewed.

Suppression and control measures will be evaluated and modified to improve outcomes and to prevent exceedences of the specified criteria. This will include but not limited to the following:

- Increased frequency of water cart operation on haul roads
- Increase flow rate in water sprays and misting
- Modification of site activities to reduce actively worked areas and increase temporary stabilisation
- Reduction in stockpile sizing
- Other measures in consultation with the site management team

3.7 Training

All site personnel shall undergo site specific induction training which will include environmental awareness. It will also include training in effective air quality and dust control on site. The need for these controls will be emphasised.

Toolbox meetings will also be undertaken as and when required. They will cover specific environmental issues and shall include air quality and dust control measures.

Personnel directly involved in implementing air quality and dust control measures on site will be given specific training in the construction, operation and maintenance of the various measures to

be implemented. Training of site personnel will be ongoing through the project to ensure environmental awareness and competency is incorporated into all work during the project.

Personnel conducting sampling, measuring, monitoring and reporting activities are to be suitably trained or experienced in the activity. Records of all training are to be filed in accordance with the project filing system.

3.8 Emergency Response

All incidents will be recorded on the Laing O'Rourke F 1222 Environmental Incident Complaint Report form. An investigation will be undertaken into the causes of the incident, potential environmental and safety impacts, improvements that can be made to the construction methodology and actions given to personnel. The incident investigation is outlined further in the CEMP.

Training will be given to site personnel in spill response and reporting. The training will focus on safety of all personnel, which spill materials are to be used for land and marine spills, the most effective way of stopping further contamination and who to report the incident too.

3.9 Monitoring of Controls

Items that require repair or action will be documented on the weekly checklist or on form F 1228 as seen in the CEMP. Items that require specific and detailed action will be recorded on the Project's Corrective Action Register.

A detailed inspection will also be conducted three to four days prior to long weekends, RDO weekends or other periods when the site will be shut down for a lengthy time period. This will enable items requiring attention to be identified, raised on an Environmental Improvement Request (EIR) (Form F 1228) and implemented. An example of an EIR is seen in the CEMP.

The Superintendent will be responsible for providing appropriate resources in terms of labour, plant and equipment to enable the items to be rectified in the nominated timeframes.

Inspections to be recorded on Form 1227 Weekly Environmental Inspection Checklist. If deemed necessary, additional sedimentation control measures will be implemented to ensure that water quality is maintained throughout the works.

Improvement requests received from the Client's Environmental Representative or other appropriate agencies shall be assessed and responded to within 24 hours if the issue is not environmentally threatening.

The following forms and check sheets shall be utilised to inspect, monitor and record erosion and sediment controls and water quality on this project and filed in accordance with the project filing system.

- Form F 1227 Weekly Environmental Checklist
- Form F 1228 Environmental Improvement Request
- Form F 0908 H&S and Environmental Checklist

All records are to be filed in accordance with the project filing system.

Quantitative data from dust deposition and real time monitoring will be collated and provided in the monthly project report and forwarded to SICTL.

3.10 Non-conformance and Corrective Action

Where the daily site inspections or quantitative dust monitoring identifies non-compliance with the relevant targets and criteria, or where complaints are received in relation to the site activities,

Laing O'Rourke will implement investigative and corrective action. The Environmental Manager will be responsible for the investigation, management and response to complaints.

The management of incidents associated with air quality shall be the responsibility of the Environmental Management and handled in accordance with the CEMP.

Communication strategies for the project including the receipt and response to complaints are outlined in the CEMP.

The corrective action may involve supplementary monitoring to identify the source of the non-compliance, and/or may involve modification of construction techniques or programme to avoid any recurrence or minimise its adverse effects. Corrective actions, revised limits or external negotiations will be undertaken in consultation with SICTL.

The management controls and monitoring activities outlined above will be reviewed and the project progresses in line with the review procedures provided in the CEMP.

Non-conformances and issues requiring corrective action will be documented on the Project's Corrective Action Register.

Appendix 1 - Excessive Wind/Dust Generation Form

		<h3>Excessive Wind/Dust Generation: Work Modification Record</h3>	
<p>This form is required to be completed when site wind speeds reach 8m/s (28.8km/hr)</p>			
Date:		Time:	
Location:			
Work Activity:			
Wind Strength and Direction: (Refer to site weather station or BOM Data)			
Existing controls in place to minimise dust generation:			
Modifications to work implemented:			
Additional Controls Implemented:			
Notes:			
Completed by Foreman / Project Engineer:		Signature:	
Completed by Environmental personnel:		Signature:	

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