



**Liberty Industrial
Harbour Control Tower
Removal Works**

Air Quality Management Plan

**Barangaroo
Hickson Road, Sydney NSW**

**17 March 2016
51541-103290 Revision B
JBS&G Australia Pty Ltd**

Harbour Control Tower Removal Works Air Quality Management Plan

Liberty Industrial

Barangaroo Headland Park
Hickson Road, Sydney, NSW

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Figure 1 – Site Location

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Appendix A – Asbestos Management Plan

List of Abbreviations

A list of the common abbreviations used throughout this report is provided below.

- ACM Asbestos Containing Material
- AQMP Air Quality Management Plan
- AMP Asbestos Management Plan
- BDA Barangaroo Delivery Authority
- BPL Boulderstone Pty Ltd
- CFEMP Construction Framework Environmental Management Plan
- DECCW NSW Department of Environment, Climate Change and Water
- DP&I NSW Department of Planning and Infrastructure
- DP Deposited Plan
- EPA New South Wales Environment Protection Authority
- JBS JBS Environmental Pty Ltd (now JBS&G Australia Pty Ltd)
- LOR Limit of Reporting
- MCoA Minister's Conditions of Approval
- PM10 Particulate Matter less than 10 microns in diameter
- SoC Statement of Commitments
- WMP Waste Management Plan

1 Introduction

JBS&G Australia Pty Ltd (JBS&G) was engaged by Liberty Industrial (Liberty, the client) to prepare an Air Quality Management Plan (AQMP) for the works associated with the decommissioning and demolition of the Harbour Control Tower (the tower) that is present at the eastern portion of the Headland Park area of the Barangaroo development site located at Hickson Road, Sydney, NSW, 2000 (**Figure 1**). The AQMP is required to monitor and control potential air emissions that may migrate from the decommissioning / demolition program proposed for the tower and its surrounding area. This AQMP is also outlines mitigation strategies required to be implemented during the various stages of removal works to minimise particulate emissions to the maximum extent practicable.

1.1 Purpose

Barangaroo (formerly East Darling Harbour) is a 22-hectare area of Sydney's harbour foreshore immediately adjoining the western edge of the Sydney CBD which has been identified for urban renewal by the NSW State Government. The site has been divided into three redevelopment areas - the Headland Park, Barangaroo Central and Barangaroo South.

The Barangaroo Headland Park has been recently developed as an area of parkland and a Northern Cove adjacent to Hickson Road. Included at the eastern extent of the Barangaroo Headland Park is the now unoccupied Harbour Control Tower.

The Barangaroo Project Site details are summarised in **Table 1.1** and described in more detail in the following sections.

Table 1.1: Summary Details for the Barangaroo Project Site

Lot/DP	Lots 1, 3, 5 and 6 of Deposited Plan 876514, including adjacent parts of Sussex Street, Hickson Road and Towns Place
Address	Hickson Road, Millers Point NSW
Local Government Authority	City of Sydney
Site Zoning	Zone B4 Mixed Use and RE1 Public Recreation
Current Use	Vacant / Roadway
Geographical Co-ordinates, Elevation	Easting – 333643m E, Northing – 6251851m S, 2-3m AHD
Site Area	Approximately 22 ha

As a part of the overall site development works, it is required that the tower be decommissioned and removed. The area of the tower is shown relative to the Headland Park Site on **Figure 1**.

This Air Quality Management Plan (AQMP) forms part of the construction environmental management documentation for the Harbour Control Tower project. The AQMP provides specific management measures to ensure that the decommissioning and demolitions works associated with the removal of the Harbour Control Tower have minimal Air Quality impact and risks, and where possible, enhanced environmental outcomes.

This AQMP is designed to sit within the context of the Construction Environmental Management Plan for the purposes for the removal of the Harbour Control Tower site located adjacent the main area of the Barangaroo Headland Park development site. The plan is required to:

- Include management measures, procedures, monitoring, auditing and reporting requirements and allocates responsibility in relation to construction phases of the project to minimise particulate emissions during the works to the extent practicable; and

- Provide measures that will be used to manage environmental risk and opportunities including provision for reactive management of potential air quality issues.

1.2 Project description

The location of the Harbour Control Tower is shown on **Figure 1**. The project is simply to decommission the services to the Tower, and then facilitate the demolition of the Tower. Subsequent to the demolition, the footprint of the Tower will be incorporated within the recently completed Headland Park to the west of the Tower.

1.3 Scope of AQMP

This plan addresses Air Quality issues and risks associated with the decommissioning and demolition of the tower and any impacts which are influenced by the removal methodologies and staging. The AQMP will provide mitigations strategies required to minimise particulate emissions to the maximum extent practicable. It covers all areas where physical works will occur, or off-site areas that may be impacted by works. Potential air quality impacts of fibre and particulate impacts have been identified during a qualitative assessment of the project.

This AQMP is designed to sit within the context of the Construction Environmental Management Plan as prepared for the decommissioning and demolition works for the Tower and associated site.

1.4 Objectives

The objectives of this AQMP are:

- To minimise adverse air quality impacts to the maximum extent practicable – including particulates and potential asbestos fibre emissions from the tower removal works;
- Meet the environmental performance objectives of the Barangaroo Delivery Authority;
- Ensure compliance with relevant environmental legislation; and
- Ensure environmental risks associated with the tower removal activities are properly managed.

This plan is not a static document and will be reviewed and updated by the key project personnel throughout the construction programme.

1.4.1 Specific Conditions

Specific conditions have been further advised by Liberty as relevant to the preparation of the plan and are summarised following:

- Prior to commencement of works, the (former) Air Quality Management Plan (JBS, 3 July 2014) is to be amended in consultation with the EPA to address the following:
 - Requirements and/or contingencies that will be implemented in the event that friable asbestos impacted material is encountered at the Harbour Control Tower;
 - The inclusion of an additional dust deposition monitoring location near the Harbour Control Tower for the duration of the demolition works; and

- The expansion of the respirable fibre monitoring program to a location in close proximity to the Harbour Control Tower.

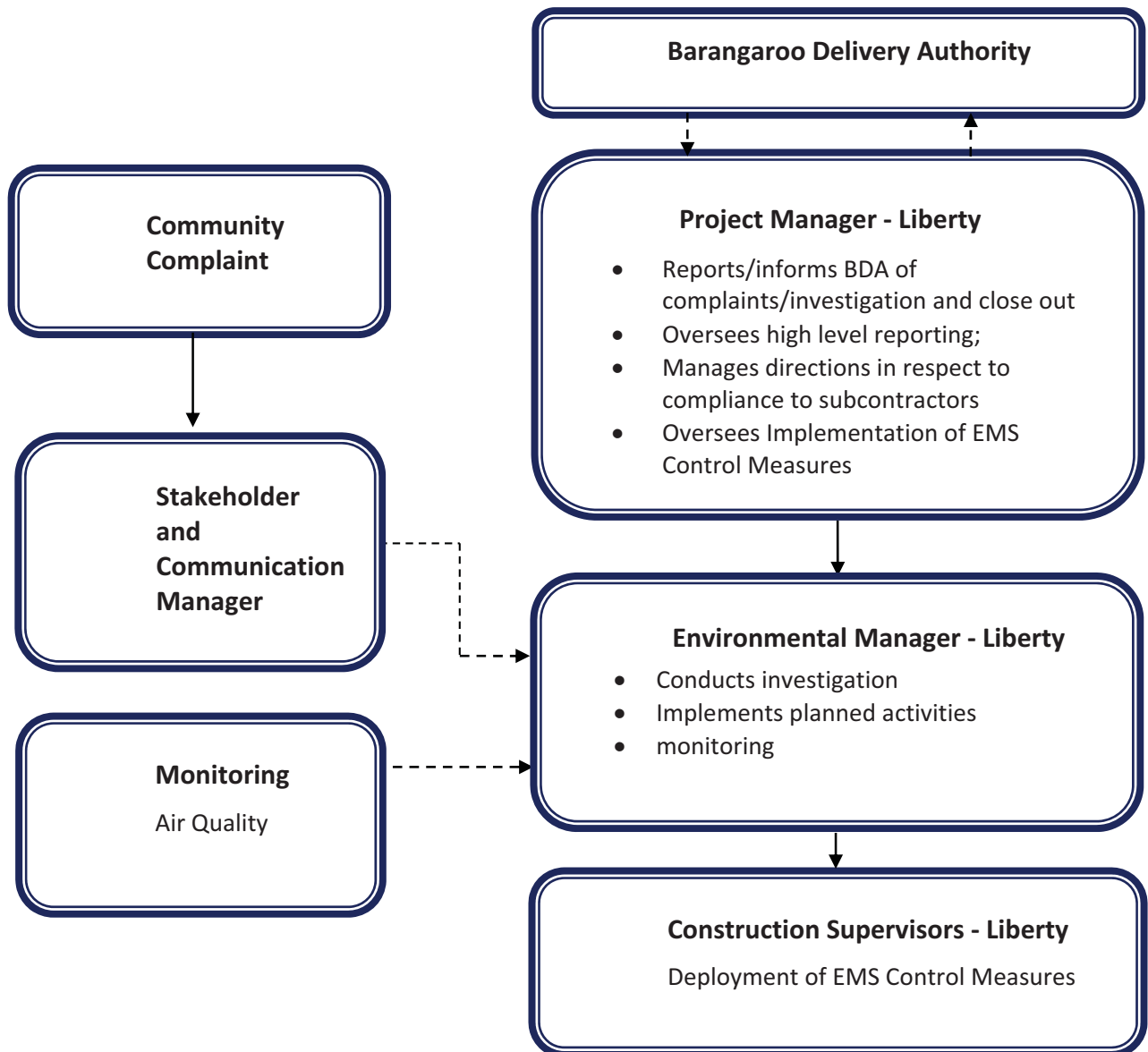
1.5 Key Issues

The existing air quality around the project area is influenced by emissions from commercial and residential land uses, and transportation sources.

Emissions of particulates are considered possible as a result of the anticipated activities associated with the tower removal works. Asbestos fibres may potentially be present with sources of particulate emissions with the tower. A range of management/mitigation measures are required to be implemented to minimise these emissions to the extent practicable. Monitoring of key air quality parameters is additionally required to provide information to site personnel to assist in the day to day management of air quality impacts and also be provided to the public as part of transparent and open community involvement.

2 Roles and Responsibilities

The following flow chart outlines the roles and responsibilities of the project for implementing this plan.



3 AQMP Compliance

3.1 Statutory Requirements

Statutory Requirements are detailed in the below list;

Protection of the Environment Operations Act 1997 (NSW) states:

- “Must not cause air pollution from construction plant (s 124 and 125), dealing with materials – including movement of soil and construction materials (s 126) or cause emission of air pollutants (s 128) as a result of activities – including dust generation from earthworks, clearing or grubbing activities”; and
- “Must not allow soil or dust to be deposited or blown onto a public place (s 145)”.

Protection of the Environment Operations (Clean Air) Regulation 2002 (NSW) states:

- Vehicles must not emit visible air impurities for a continuous period of 10 seconds or more (clauses 8 and 9).

NSW EPA - Approved Methods for the Sampling and Analysis of Air Pollutants in NSW identifies:

- Relevant Air Quality Sampling Requirements.

NSW EPA - Approved Methods for the Modelling and Assessment of Air Pollutants in NSW

- Relevant Air Quality Modelling Requirements.

3.2 Environmental Licence Conditions

The AQMP has been prepared to satisfy the relevant conditions of Environment Protection Licence (EPL) 13336 as issued to the Barangaroo Delivery Authority historically for the Barangaroo Headland Park. **Table 3.1** following summarises each of the relevant requirements of the EPL and the compliance of the site works. It is considered appropriate at this stage of the works to consider the requirements of the historical environmental licence for the Headland park works to the additional works proposed with the Tower demolition.

Table 3.1: AQMP Requirements as Required by Environmental Protection Licence

Condition Number	Issues to be addressed in development of EPL (EPL 13336)	Where addressed in this AQMP
O3	Prevention of visible dust emission beyond site boundaries	Section 8.2
M1	Monitoring records to be retained	Section 8.5
E1	Site wide air emissions reports to be issued 30 days after commencement of works and monthly thereafter	Section 8.5
E3.1	AQMP to be developed with air emission controls	Section 7
E3.2	Monitoring plan to be developed. Including: <ul style="list-style-type: none"> Real time particulate monitoring sites; Establishment of a suitable number of PM10 monitoring sites; Ambient monitoring sites to monitor chemicals known to be present in contaminated soil; Real time meteorological station 	Sections 8.1, 8.2, 8.3 and 8.4
E3.2	Reactive management strategy to be developed including: <ul style="list-style-type: none"> Hourly review of real-time monitoring data; Monitoring trigger levels and appropriate trigger actions to prevent exceedance of air quality criteria; Review of monitoring activities, trigger levels and mitigation actions 	Sections 4 and 9
E3.4	On-site meteorological weather station. Requirement for site inspections to occur: <ul style="list-style-type: none"> Where wind speed exceeds 8 m/s during working hours; and Where wind speed exceeds 8m/s as averaged over a 1 hour period in an easterly direction during non work hours. 	Section 9
E3.6	Notification to EPA of exceedances, management and rectification within 2 days	Section 8.5

4 Environmental Criteria

A qualitative assessment has been undertaken of the potential for air emissions from the demolition of the Harbour Control Tower. Potential air emissions have been identified as:

- Particulates as associated with the demolition of building materials (i.e. concrete); and
- Potential respirable fibres where asbestos containing materials potentially present in the Tower are improperly handled and / or demolished.

The criteria to be used in the assessment of particulate and potential respirable fibre impacts, as discussed through further sections of this report, are summarised following in **Table 4.1**.

Table 4.1: Air Quality Criteria for Monitoring at Headland Park Main Works (inc. the tower site)

Pollutant	Criteria		Averaging Period
PM10	Ppm	$\mu\text{g}/\text{m}^3$	24-hour
	N/A	50	
	N/A	30	Annual
Dust Deposition	$\text{g}/\text{m}^2/\text{month}$	$\text{g}/\text{m}^2/\text{month}$	Monthly (as with units)
	2 (increment) ¹	4 (total) ¹	
Respirable fibres	Fibre / ml		4 hours
	0.01		

Note: 1. The $4\text{g}/\text{m}^2/\text{month}$ is the maximum total allowable dust deposition due to all sources when there are no bench mark criteria available. The $2\text{g}/\text{m}^2/\text{month}$ is the maximum dust deposition allowable from project sources.

5 Communication Strategy

The real-time monitoring of particulates and respirable fibres will enable the immediate dissemination of data to the community and relevant stakeholders. Of paramount importance, the collected and collated data will be used by site personnel in the pro-active day to day management of impacts, as specifically described in the Reactive Management Strategy provided as **Section 9**.

Secondly, and in line with the sustainability (community) goals for the Project, data will be available to the public. Data will be made available by Liberty subsequent to any specific request from a member of the public. Liberty will further provide contact details as notified at the site perimeter during the works for any enquiries from the public.

6 Environmental Management

Details regarding other aspects of environmental management including:

- Consultation and approval requirements;
- Organisational structure;
- Roles and Responsibilities;
- Sub-contractor and suppliers; and
- Authorities and stakeholders,

are provided to generalised documents available for the project by Liberty to manage general environmental compliance. Replicated in this document, and specific to responsibilities within these groupings and relevant to the management of air quality impacts, as attached to each mitigation action and monitoring and reporting requirement are detailed throughout **Sections 7, 8 and 9**.

7 Environmental Issues and Controls

7.1 Environmental Risk Assessment

Core activities associated with the removal of the tower which facilitate risks associated with Air Quality are:

- Decommissioning / demolition works, structure and infrastructure removal and removal of tower foundations;
- Stockpiling and handling activities related to materials sourced on-site; and
- Potential minor on-site excavations, this includes sandstone and soil excavations.

Primary risks associated with the above mentioned activities are;

- Dust pollution; and
- Other particulate generation, particularly asbestos fibres, as consequent of potential impacted materials present in the construction of the tower and its associated infrastructure.

7.2 Mitigation Measures

Mitigation measures have been designed for each of the potential sources of environmental emissions as identified in **Section 7.1** and outlined in **Table 7.1** following. These measures will ensure that dust and / or asbestos fibre emissions will be minimised to the maximum extent practicable during various processes associated with the stages of the removal works.

Table 7.1: Mitigation Measures to Prevent / Minimise Air Emissions from Works

Activity	Mitigation Measures	Timing			Accountability
		Pre-Works	During Works	Post-Works	
Masonry demolition including (but not limited to): <ul style="list-style-type: none"> • Site foundations • Site structural supports • Sandstone cutting (as required) 	Pulverisers used instead of hydraulic hammers to reduce the potential for dust generation		■		Project Engineers Foreman
	Directional water sprays and mist units to minimise particulate generation during works which are noted to be producing dust.	■	■		Project Engineers Foreman
	Minimisation of working areas where possible to control potential dust generation and limit worker traffic through these areas where possible.		■		Project Engineers Foreman
	Undertake demolition works with high potential for particulates during periods where wind direction is away from occupied / residential areas (i.e. southerlies)	■	■		Project Engineer
	Use of demolition methods appropriate to the specific task to minimise particulate generation where possible.	■	■		Project Engineer
	Erection of dust proof wall to separate works from Cultural Space	■	■		Project Engineer
	Additional water sprays to dampen the rubble to reduce potential for dust to plume out of chimney	■	■		Project Engineer Foreman

Activity	Mitigation Measures	Timing			Accountability
		Pre-Works	During Works	Post-Works	
Asbestos containing materials including (but not limited to): <ul style="list-style-type: none"> Fire doors Backing boards Brake pads 	Use of accredited contractors to remove asbestos containing materials. These contractors will also provide best practice guidance and / or supervision for the removal of asbestos containing materials.	■	■		Project Engineer
	Removal and off-site disposal of asbestos containing materials prior to other demolition works. This should be done in conjunction with NSW WorkCover protocols for the removal and disposal of asbestos containing material.	■	■		Project Engineers Foreman
	Wrapping of asbestos containing materials consistent with relevant safety and disposal requirements.		■		Foreman
	Works in accordance with Asbestos Management Plan (provided as Appendix A)	■	■		Project Engineers Foreman
Soil excavation including (but not limited to): <ul style="list-style-type: none"> Removal of soil around services / foundations 	Directional water sprays and mist units to minimise particulate generation particularly if excavated materials are noted to be dry during removal works.	■	■		Project Engineers Foreman
Unexpected Finds remediation / management including (but not limited to): <ul style="list-style-type: none"> Buried ACM products Damaged service conduits 	Sampling and analysis to characterise environmental characteristics of material and identification of any unique air quality risk in accordance with the relevant sampling guidance.		■		Environmental Manager
	On-site delineation of location and potential extent of material associated with unexpected find.		■	■	Environmental Manager
	Provide equipment for spillage clean up.	■	■		Environmental Manager
Stockpiling and soil / demolition material handling including (but not limited to): <ul style="list-style-type: none"> Stockpiled material awaiting classification / removal 	Directional water sprays and mist units to minimise particulate generation.	■	■		Project Engineers Foreman
	Stockpile left in place overnight / > 24 hours to be covered using weighted tarpaulins / plastic covers or equivalent		■	■	Project Engineers Foreman
	Minimise stockpile working face.		■		Project Engineers Foreman
	Stabilise any exposed site surfaces to minimise potential for fugitive dust		■	■	Foreman
Removal of materials from site including (but not limited to): <ul style="list-style-type: none"> Demolished building materials Site soils Remediated materials 	Trucks will be loaded on a concrete floor and will be bin trucks so soil tracking is unlikely		■		Foreman
	Do not overfill vehicles such as to create a potential that dust and / or ACM can be blown off loads.		■		Foreman
	Cover all loads with tarpaulin prior to movement.		■		Foreman
	Availability of roadway sweeper vehicles to remove any sediment / particulates as accumulated from wheel tracks on public roads.		■	■	Foreman
Heavy equipment operation including (but not limited to): <ul style="list-style-type: none"> Excavators Bulldozers Dump Trucks 	Inspection of exhaust emissions to identify excessive visible exhaust emissions. Where visible / excessive emissions identified, decommissioning of equipment and undertaking maintenance.	■	■		Foreman
	Ensure FEL and excavator exhausts away from ground.	■	■		Foreman
	Regularly inspect the site for spillages		■	■	Foreman

Activity	Mitigation Measures	Timing			Accountability
		Pre-Works	During Works	Post-Works	
<ul style="list-style-type: none"> Material removal trucks 	Provide equipment for spillage clean up.		■	■	Environmental Manager

8 Air Quality Monitoring

8.1 Air Quality Monitoring Programme

As per the qualitative assessment of potential air emissions for the Harbour Control Tower site and the air quality controls as identified in **Section 7**, air quality monitoring will be required for:

- Particulate emissions, occurring as airborne and deposited particulates as summarised in **Tables 8.1**;
- Respirable fibres including asbestos fibres as summarised in **Table 8.2**; and
- Meteorological data as summarised in **Section 8.3**.

The Environmental Manager is responsible for all aspects of environmental monitoring. However environmental monitoring activities may be undertaken by a range of environmental consultants / trained technicians at the discretion of the Environmental Manager.

8.2 Dust Pollution

Real time particulate monitoring has been identified in the air quality impact assessment as being an integral component of the management of air emissions from the proposed removal works. The following particulate monitoring is proposed for the works.

8.2.1 Portable DustTrak Units

Portable DustTrak units were previously used the Headland Park construction works to undertake continuous dust monitoring at the Headland Park site boundaries. This includes areas in proximity of where the tower removal works are being undertaken.

It shall be ensured that this dust monitoring is re-commenced during the Harbour Control Tower demolition works. DustTrak monitoring locations shall be undertaken in proximity of the Harbour Control Tower site during demolition works here. The actual locations of dust monitoring will be determined depending on areas of potential particulate emissions (i.e. location of stockpiles, demolition works etc). As a minimum, each round of DustTrak monitoring shall comprise:

- One sample location taken at a representative upwind / background location to the Headland Park / Harbour Control Tower demolition works; and
- At least one distinct 'downwind' location on the site boundary near the works area. As well as the location of site activities, the selection of DustTrak 'downwind' locations shall be cognisant of the location of site receptors and prevailing meteorological conditions.

DustTrak monitoring shall be undertaken at these locations on an hourly basis throughout all operational periods of the site works. The 'upwind' sample location is required to establish the background contribution to levels of particulates. All 'downwind' measurements shall be reported as subtracted from the 'upwind' sample location. Generally the wind at the site occurs in an easterly direction.

DustTrak measurements shall be taken over a minimum period of ten minutes. The 10 minute averaged concentration shall be assessed. Where this exceeds 50 $\mu\text{g}/\text{m}^3$ as attributable to site activities (assessed as the difference of the measured reading and the 'upwind' sample location), then the Environmental Manager shall be immediately notified and air quality controls implemented. The recommendation of air quality controls must be

cognisant of the whether the Harbour Control Tower works or the Headland Park works are the source of the dust / particulate emissions.

Presumably subsequent to the implementation of air quality controls, the measurement shall be repeated within 30 minutes.

Data from the DustTrak units, as available in real-time, will facilitate reactive management of potential exceedances of project particulate criteria. This allows site personnel to identify if activities onsite are causing elevated particulate concentrations and whether these concentrations represent compliance risks or a threat of nuisance to the local community. If activities are identified as potentially giving rise to offsite impacts, works will be managed as per the available controls, or potentially ceased until more favourable meteorological conditions are available.

Table 8.1: Summary of Requirements for Real Time Particulate Monitoring to Facilitate Reactive Management

Parameter	PM10
Location	At least one location upwind at site boundary. At least one locations downwind, considering location of material handling / potential dust generating activities at site boundary.
Frequency	Each round of measurements (two measurements in total) to be undertaken hourly through duration of dust generating works. Measurements subsequent to exceedance identification and 'reactive management' of activity to be undertaken within 30 minutes of implementation of air quality control.
Technique	Operation of instrument in accordance with manufacturer instruction. Instrument to be located on tripod at height of 1.6m above ground level. Instrument to be operated for period not exceeding 10 minutes and average concentration to be obtained.
Criteria	50 µg/m ³
Reporting	Record on daily field observations sheet. Exceedances of criteria to be reported to Environmental Management / Site Foreman immediately.
Responsibility	Environmental Manager
Duration	All Construction Works.

8.2.2 Dust Deposition Monitoring

Dust deposition monitoring was historically undertaken at up to a total of three locations distributed along the boundary of the Headland Park works site.

For the purposes of the Harbour Control Tower demolition works, it is recommended that three dust deposition monitoring locations are located near to the Harbour Control Tower works for the duration of the demolition works only. These shall be placed at three representative locations on the site boundaries, with preference given to providing a distribution of potential wind conditions, and positions in proximity / the direction of, areas of potential human exposure.

Table 8.2: Summary of Requirements for Dust Deposition Monitoring

Parameter	Deposited Dust
Location	Three locations distributed across the Harbour Control Tower project site
Frequency	Continuous operation during all demolition works with the potential to release particulates
Technique	Preparation of sample collection device by NATA accredited laboratory. Analysis of sample collection device by NATA accredited laboratory on monthly basis.
Criteria	2 g/m ² /month as attributable to works. Levels to be considered with airborne levels as reported by continuous particulate monitoring, and background levels historically established for the Headland Park construction works.
Reporting	Monthly measurements to be reported.
Responsibility	Environmental Manager
Duration	All Construction Works.

8.3 Asbestos

Asbestos containing materials will potentially occur in material being removed during the tower decommissioning and demolition works. Particulate monitoring, and maintenance of PM10 levels to the nominated site action criteria, is considered to be effective in managing any risk as may be posed by respirable fibres. Where asbestos containing materials are identified during the proposed works, whether in fill material or building products, exposures and handling of these products will require to be managed in accordance with the Asbestos Management Plan (AMP) which has been provided as **Appendix A**.

Respirable fibre monitoring will be required to be undertaken in proximity of the Harbour Control Tower works during asbestos handling activities consistent with the following (as also outlined in the Asbestos Management Plan provided as **Appendix A**):

- At least three daily static locations shall be established for air sampling for respirable fibres in proximity of the Harbour Control Tower and undertaken in accordance with a method consistent with NIOSH method 7400;
- Analysis of respirable fibres shall be undertaken by a NATA accredited laboratory by a PCM method to report a concentration of respirable fibres; and
- Any detection of respirable fibres shall be assessed by a scanning electron microscope method by a NATA accredited laboratory to confirm the presence of asbestos fibres; and
- The concentration of asbestos fibres shall be compared to the action criteria. Where an action criterion is exceeded, all works shall be ceased and asbestos contaminated materials removed from site as per strict controls.

Table 8.3: Summary of Requirements for Respirable Fibre Monitoring

Parameter	Respirable Fibres
Location	At least three locations in close proximity of the Harbour Control Tower demolition works
Frequency	Daily during site operations involving the handling of asbestos containing materials
Technique	Sampling in accordance with NIOSH Method 7400. Sampling undertaken for a minimum period of four hours. Analysis for fibres by PCM by NATA accredited laboratory. Re-analysis of fibres in exceedance of action criteria by scanning electron microscope (SEM) by NATA accredited laboratory to confirm asbestos fibres.
Criteria	0.01 fibres/ml as asbestos fibres and attributable to site works.
Reporting	Daily report on receipt of laboratory results to Environmental Manager
Responsibility	Environmental Manager
Duration	All Construction Works.

8.4 Meteorological Data

A weather station was formerly established for the duration of the entire project works at the south west corner of the Headland Park work site. A local weather station shall be established on the project site for the purposes of collecting meteorological data to assist in the potential interpretation of future air quality monitoring data. The weather station shall comprise as a minimum:

- An anemometer to measure wind speed and direction;
- Measuring instruments appropriate to assess temperature, humidity, air pressure and rainfall;
- Data logging capabilities to allow collection of at least hourly readings.

Meteorological data shall be monitored throughout the Harbour Control Tower demolition works and shall be considered in the assessment of monitoring results from the works.

8.5 Reporting

Air monitoring reports will be prepared by Liberty. This shall include daily reports of all air monitoring undertaken and monthly reports summarising all air quality monitoring for the purposes of NSW EPA review / comment.

Each monthly report requires a 2 page summary of major findings / measurements as appropriate for public issue. All reports are certified by the appointed environmental monitoring consultant as being appropriately accurate and representative of all measurements undertaken.

Monthly reports include:

- All 'raw data';
- Identification of any air quality exceedances and description of 'reactive management' strategy implemented; and
- Identification of any correlations between meteorological conditions and potential exceedances of air quality criteria.

Data requires to be presented in accordance with the requirements of **Section 4**.

As consistent with the Headland Park works, implementation of reactive management actions, and/or exceedances of air quality criteria, as related to the Harbour Control Tower works require to be reported to the NSW EPA within two days.

8.6 Responsibility

All monitoring shall be undertaken by specialised and appropriately qualified environmental consultants / technicians as engaged by Liberty and controlled by the Environmental Manager.

8.7 Duration

Air quality monitoring shall be undertaken for the duration of the tower removal works and any associated earthworks that may also be carried out in the area.

9 Reactive Management Strategy

A monitoring program has been developed in **Section 8** which will be sufficient to identify potential conditions where air quality exceedances may occur. **Table 9.1** following identified each of the conditions which may trigger a reactive management action, and the proposed management actions to be considered.

The Site Superintendent, Environmental Manager, Project Engineers and/or Site Foreman will be responsible for the assessment of the potential air quality exceedance and selection of the appropriate management action(s). As outlined in the monitoring requirements, where a particulate measurement has triggered a reactive action, the management approach must be assessed within 30 minutes of implementation by an additional measurement.

Table 9.1: Summary of Reactive Management Strategy

Parameter / Emission	Trigger Condition	Measurement Method	Management / Mitigation Actions
Particulates	50 µg/m ³ PM10 averaged over 10s and attributable to site	DustTrak	Management in accordance with demolition / soil excavation / stockpiling mitigation measures. Increase in frequency of water application. Decrease in extent of working area and covering of remaining exposed areas. Construction of temporary wind breaks / covered batters. Cessation of works until favourable meteorological conditions.
Wind speed	Wind speed >8m/s during site operation	Meteorological Station	Site inspection with DustTrak measurements downwind of active works area.
Wind speed and direction	Average wind speed (1 hour) > 8m/s and wind direction to east	Meteorological Station	Site inspection with DustTrak measurements downwind of exposed areas on site.
Friable Asbestos	Identification of areas of friable asbestos in demolition of control tower	Respirable fibre monitoring. Asbestos Consultant (Licensed Asbestos Assessor) inspection	Asbestos removal works consistent with Asbestos Management Plan (Appendix A). Offer to site workers to undertake additional airborne monitoring for respirable fibres, including personal monitoring. Cessation of general demolition / removal works to isolate and remove all areas of friable asbestos, and certification of asbestos removal by clearance inspection prior to re-commencement of works

10 Training and Resources

Potential air quality issues will require to be included in the site induction for the site workforce engaged in the tower removal works. The site is politically sensitive and the induction must be cognisant of the public perception of air emissions from the site.

A summary of training and resource requirements to implement the AQMP is provided in **Table 10.1** following.

Table 10.1: Summary of Training and Resource Requirements

Training
<p>Induction to address:</p> <ul style="list-style-type: none"> • Personnel obligations. • Air quality goals and air emission mitigation procedures. • Relevant matters in the mitigation measures section. <p>Environmental Manager to provide specific briefing/instruction to:</p> <ul style="list-style-type: none"> • Designers and Project Engineers – monitoring program and selection of mitigation measures. <p>Toolbox talks to be conducted on:</p> <ul style="list-style-type: none"> • Ongoing housekeeping requirements and effectiveness / requirement for mitigation measures. • Previous days air quality results (including respirable fibres).
Resources
<ul style="list-style-type: none"> • Air Quality Monitoring Consultant / Technicians • Air quality and meteorological monitoring equipment • Asbestos identification (hazardous materials building survey) • Water supply for dust control • Water sprays / misting systems • Plastic covers / tarpaulins for stockpile covering • Tippers / dump trucks with bin covers

11 Consultation and contacts

Table 11.1: Summary of Regulatory Authorities / Stakeholders

Consultation	
Agencies / Stakeholders	Details / Outcomes
Environmental Protection Authority	Comments to be considered in revision of sub-plan.
Barangaroo Delivery Authority	Comments on draft incorporated into Revision 2 of this management plan.
Department of Planning	Final approval required. Review and approval of JBS (2012) required.

Table 11.2: Summary of Contact Details

Contact details			
Position / Role	Organisation	Name	Phone
Environmental Manager	Liberty	Todd Solomon	0488 288 221
Environmental Monitoring Consultant	TBC	TBC	TBC

12 Complaints handling and incident response

Strategies for dealing with community issues, including complaints, shall be addressed in the Communication Management Plan (CMP) prepared and adopted for the site works. This plan shall detail the process for receipt, management, address and actioning the various forms of communication from stakeholders to the project.

As described in the former CMP for the Barangaroo Headland Park construction work and anticipated to be consistent with these additional works at the boundary of the site, all community enquiries will be registered in the BPL database. Any actions that cannot be managed immediately are assigned to the appropriate construction personnel, and will become an outstanding action in the database. The action remains outstanding until it is closed off by a team member.

Enquiries including complaints will be received through any one of the communication channels available, which include:

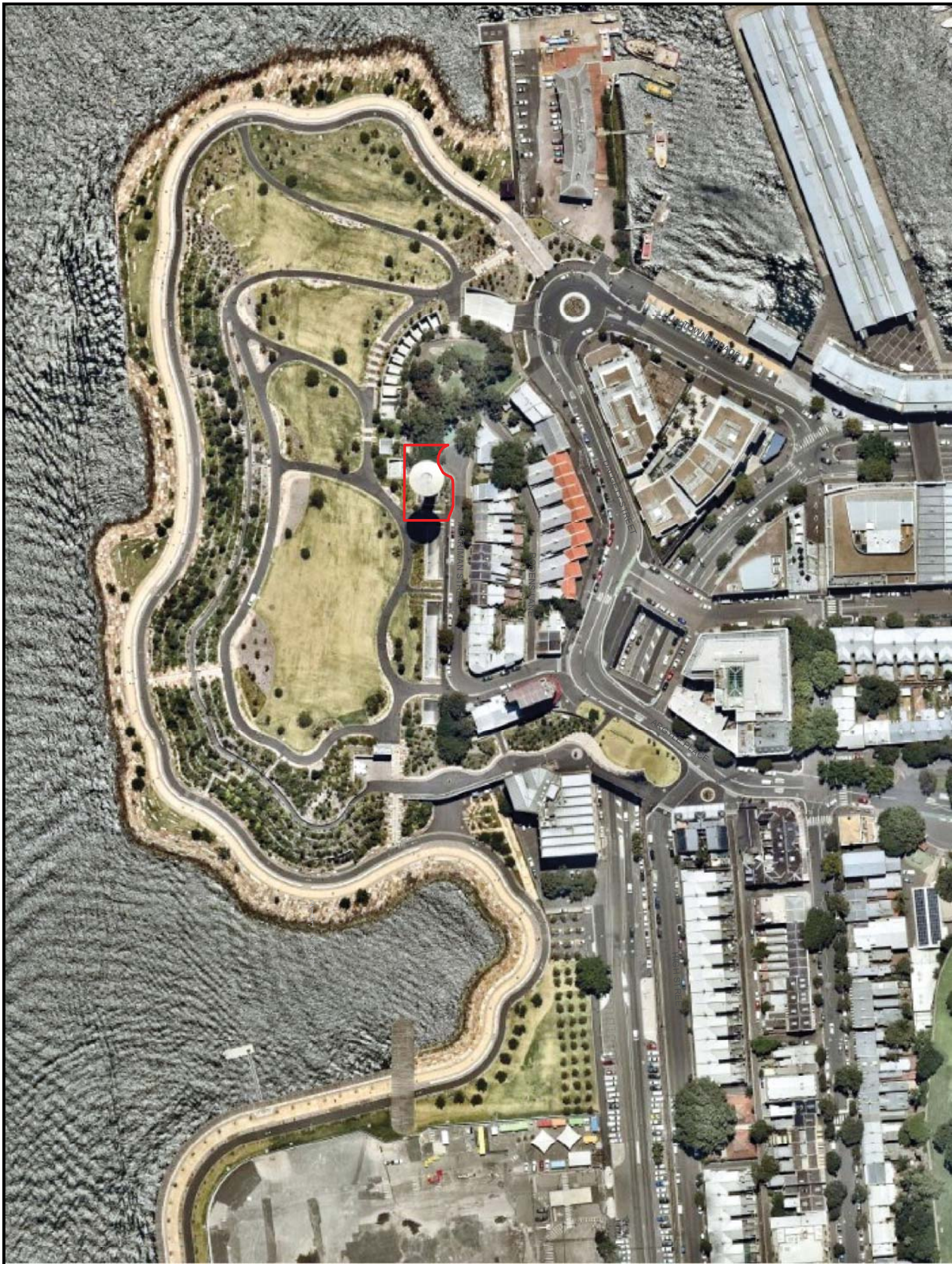
- The project telephone line;
- The project email address;
- The project website that has a comment form that people can readily complete to make an enquiry, comment or complaint; and/or
- Approach to workers operating around the site boundaries or on the streets or contact with project staff that they come to know through the project.

Potential air quality 'incidents' and proposed responses are summarised in **Table 12.1** following.

Table 12.1: Summary of Incidents and Proposed Responses

Incident type	Response	Responsibility
<p>Environmental incidents including:</p> <ul style="list-style-type: none"> • Improper handling of asbestos containing material • Inadequate application of air quality controls and visible air emissions from site. • Potential breach of licence, permit or approval requirement. • Potential breach of legislative requirements. 	<p>Implement the Emergency and Response Plan which should provide references to:</p> <ul style="list-style-type: none"> • Criteria for classifying of environmental incidents. • Processes for systematically responding to and managing emergency situations. • Processes for notification of an environmental incident internally within the project team, to the BDA and in accordance with s.147 of the POEO Act. • The requirements of Part 5.7A of the POEO Act. <p>All environmental incidents will be followed up and investigated to ensure that all agreed actions are appropriately completed and closed out.</p>	<p>Construction Manager Superintendent Environmental Manager</p>
<p>Unexpected find of potentially contaminated fill</p>	<p>The material is to remain in-situ and the Environmental Manager contacted immediately. The unexpected finds procedures are to be implemented. Depending on the time between testing and the provision of results, this may require segregation of the material by the installation of a temporary bund and the placement of a cover to ensuring the potential for chemical / malodorous emissions is minimised.</p> <p>The material will be tested and classified in accordance with Waste Classification Guidelines. Subject to the outcome of testing and classification, targeted air quality controls will be designed for the storage / handling of the material as required.</p> <p>In the event widespread contamination (such as the occurrence of friable asbestos) is encountered during the site works, protocols outlined in the Asbestos Management Plan (AMP) provided as Appendix A will require to be implemented to ensure that potential exposures to ACM products are managed appropriately.</p>	<p>Construction Manager Superintendent Environmental Manager</p>

Figure



Source: Base Image - www.nearmap.com Imagery 19-Jan-2016

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0 25 50 100 Scale: 1:2,250 Datum: MGA94 Zone 56 - AHD			
A4			
A	Issue - R01	RF	14-03-2016
Rev	Description	Drm.	Date


Legend:
 Approximate Site Boundary



Figure 1: Control Tower Area Demolition

Client: Liberty Industrial

Project: Barangaroo HTC Demolition Project

Job No: 51541

File Name: 51541_01

