LENDLEASE BUILDING PTY LTD | 97 000 098 162

ONE SYDNEY HARBOUR
AIR QUALITY - MANAGEMENT SUB PLAN

7/06/2021 | Revision No: 20

Sub Plan Revision Status				
Date	Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
27/02/2020	15	Revised to include R2 requirements	Toby Pritchard	Sam Trickett
25/05/2020	16	No changes	Toby Pritchard	Sam Trickett David Elliott
11/08/2020	17	Updated to Issue No2 format. App 1 updated.	Toby Pritchard	Sam Trickett David Elliott
09/12/2020	18	Section 1. removed Public Domain from scopeof works App 1, updated. App 2, removed PD.	Toby Pritchard	Sam Trickett David Elliott
03/03/2021	19	Removal of basement references. Now formed under R1 & R2	Toby Pritchard	David Elliott Paul Allen
10/06/2021	20	Minor changes to appendix 1.	Serena Quek Toby Pritchard	David Elliot Nathan Smith

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1. SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	This Air Quality Management Sub Plan provides strategies and mitigation measures to minimise and control the generation of dust, odour and emissions to the environment during site establishment, demolition activities and construction of the project. Refer to Section 1.1 and 3.1 of the Project EHS Management Plan for clarification on how the EHS Sub Plans form part of the Lend lease Building (LLB) EHS management system.
Objectives of the Sub Plan	● To prevent emissions to the environment (air). ● To maintain current levels of local air quality during construction activities. ● To provide an adequate monitoring regime to allow real-time assessment of various dust/odour generating construction activities on the site. ● To prevent nuisance and ecological impacts (associated with air emissions) on the local community and environment. ● To achieve compliance with the project approval.
Scope of Works	This Sub Plan has been prepared based on the following scope of works: **Tower R1 (SSD 6964) & R2 (SSD 6965)** ● Construction of the building and facade. ● Internal fitout

Key Issues and Risks	The works described above have the potential to generate dust, odour and emissions primarily associated with ● Ground disturbance, site clearing and grubbing; ● Traffic movements and plant operation; ● Spoil handling and stockpiling; ● Storage and handling of waste materials; and ● Disturbance/remediation of contaminated soil or groundwater (odour). ● Construction will involve diesel-powered plant and equipment, which generates pollutants such as oxides of nitrogen (NO_X), carbon monoxide (CO) and particulates. Compliance with the Project EHS Plan and this Air Quality Management Sub Plan is intended to mitigate the risks and potential impacts of these activities on air quality. If appropriate controls are not implemented and maintained on the site, the potential exists for construction related air emissions to: ● Cause a nuisance or health effects to the local community; ● Result in complaints; ● Impact on the natural environment; or ● Create unsafe working conditions. The closest receptors are located approximately 20m east of the site, in a multilevel residential building at 38 Hickson Road. Childcare centres are located at 37 High Street in Millers Point, under the AON building in Kent Street, and within the T1 tower at Barangaroo South. The final stage of the Hickson Road remediation are directly adjacent to 30, 36 & 38 Hickson Road. Commercial development is located approximately 20m east of the site at 30 Hickson Road. A number of finger wharves containing a mix of residential and commercial developments are 350m west of the construction area in Pyrmont, while residential areas in Balmain East are located approximately 400m west of the construction area. The set out of the site compound including the location of the site access, internal roads, carparking, waste collection, storage and stockpile areas, and the planning of new works will consider the proximity of these receptors and the potential impacts of construction activities on their operation and property. Modelling of potential impacts was undertaken as part of air quality impact assessments and recommended implementation of a number of measures, which are described in the 'Mitigation Measures' table in this sub-plan.
Legislation, Project Approval and Guidelines	**Federal/National:** • National Environment Protection (Ambient Air Quality) Measure (NEPM) 1998

	• AS 3580.14:2014 Methods for Sampling and Analysis of Ambient Air – Meteorological monitoring for ambient air quality monitoring applications • DR 102288 CP Methods for sampling and analysis of ambient air Part 14 - Meteorological monitoring for ambient monitoring applications • AS 3580.1.1:2007 Methods for Sampling and Analysis of Ambient Air - Guide to Siting Air Monitoring Equipment **State:** Air quality is regulated by the EPA and the Conditions of Approval (COA) requirements. Protection of the Environment Operations Act 1997 (POEO Act) (NSW): • Section 129 provides that the applicant must not cause or permit the emission of any offensive odour from the premises, apart from where the emission is identified in an EPL as a potentially offensive xodour and the odour was emitted in accordance with the condition of a licence directed at minimising odour. • Sections 124/125 require that no air pollution is caused by failing to maintain/operate plant, or carry out maintenance work on plant, in a proper and efficient manner. • Section 126 states that soil or dust must not be deposited or blown onto a public place. • Protection of the Environment Operations (Clean Air) Regulation 2010 (NSW): • Vehicles must not emit visible air impurities for a continuous period of 10 seconds or more (clauses 8 & 9). **Local:** **Approvals** The Planning Approval conditions of approval requirements are listed in Appendix 2. Lendlease requirements: • GMR 4.13: Degradation or Pollution of the Environment • GMR 4.15: Uncontrolled Release of Stored Energy (non-electrical)) • Lendlease Building Workplace Delivery Code (WDC)

Summary of Site Controls	Works must be undertaken in accordance with the Lendlease GMRs, the Project EHS Plan, this Sub Plan and the Lendlease Building WDC. These documents detail Lendlease's approach and commitment to pro-active and responsible site management. Site specific controls, monitoring, reporting and performance measures have been identified in this Sub Plan to prevent or minimise the impacts of construction related air emissions on the environment and community. These may include but are not limited to: LLB will utilise existing Air quality data provided by the Sydney Air Quality Forecast to determine air quality and confirm background levels or if deemed appropriate and necessary will conduct baseline air quality monitoring prior to construction work commencing and may engage an consultant to monitor air quality during its activities. ● Preventing dust generation through minimal ground disturbance and the stabilisation of disturbed areas; ● Controlling dust close to its source by installing sprays and sprinkler systems to prevent off-site migration; and ● Maintaining the site access to prevent dust generation and tracking off-site. Demolition, excavation and construction stage dust, odour and emission management requirements must be included in relevant specifications, contract agreements, quality assurance documents, and subcontractor work method statements. Site inspections, monitoring and reporting will be undertaken by Lendlease and subcontractors as detailed in the Project EHS Plan and the following implementation table.

2. IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Responsibilty	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Include information in the Site Induction about the risks and potential impacts of dust and emissions on the environment and community.	Before works commence and ongoing	Revise Lendlease induction package to include site specific information.	CM/SM	Subcontractor WMSs address dust, odour and emissions control	Site induction delivered to all workers on site.
Prepare a site specific Air Quality Management Diagram.	Completed	Prepare diagram showing sensitive receivers, monitoring locations, device type, waste/ storage/contaminated areas etc.	CM	Diagram referenced in the planning of the site and new works. Review of diagram prior to works commencing.	Diagram covers all key areas and site-specific operation.
Limit ground disturbance to the area/s required for immediate construction.	Prior to works commencing	Identify and fence off areas to be left undisturbed. Incorporate requirements into WMS prepared by relevant subcontractors.	SM/ Foreman	Daily surveillance. Weekly/monthly inspection checklist.	Acceptable dust levels.
Install solid hoardings (if required) at the site perimeter and wind barriers at internal excavation boundaries.	Site establishment and ongoing	Identify and install hoardings/ shadecloth giving consideration to the location of neighbours, key work zones and prevailing winds. Mark on Air Quality Environmental Management Diagram (Appendix 1). Use portable barriers to allow relocation to all work faces.	SM/ Foreman	Daily surveillance. Weekly/monthly inspection checklist.	No reported dust monitoring exceedances. Number of complaints.
Seal or construct the site access, roads, turning and parking areas using gravel or non-dust generating materials.	Prior to construction commencing	Retain hardstand areas where existing.	SM	Pre-construction inspection.	No dust generation associated with vehicle movements.

		Construct new stable areas using road base as a minimum.		Weekly/monthly inspection checklist.	No tracking of materials onto public roads.
Dust Control During Construction					
Limit speed to 20km/hr on internal roads and access ways to reduce dust and vehicle emissions.	During construction	Seal haul roads outside the bulk excavation area. Install speed limit signage.	SM	Daily surveillance to monitor vehicle speed.	Minimal dust generated by traffic on construction roads/access. No speeding vehicles.
Maintain the site access and traffic routes in a clean, dust free condition.	Ongoing	Engage sweeper. Limited hosing of hard surfaces only. Clean up spilled soil immediately.	SM	Daily inspection of site access and local roads. Weekly/monthly inspection checklist. Inspections immediately after rainfall events.	No complaints from public or authorities. No dust generated on public roads.
Avoid excavation and handling during periods of high wind and extreme (wet) weather conditions.	As required	Only enter areas that need to be worked. Work in areas away from sensitive receptors. Maintain site access controls and clean roadways. Stop work until conditions are more favourable if dust and/or tracking cannot be controlled.	SM	Constant surveillance during unfavourable conditions. Monitor meteorological reports.	No works performed during high wind or rainfall events. No complaints.
Reduce requirements for the handling and stockpiling of excavated materials.	At all times	Pre-test and validate soils to enable direct transport off-site (rather than stockpiling). Dampen down materials during handling.	SM/ Foreman	Include requirements in tenders for subcontractors. Daily surveillance of activities.	Controls maintained and effective.
Locate and maintain stockpiles to minimise wind erosion and dust.	At all times	Locate stockpiles away from sensitive receptors.	SM	Daily surveillance.	No visible dust from stockpiles.

		Keep stockpiles to a manageable size and cover. Keep exposed surfaces moist and compacted to reduce erosion potential. Stabilise or cover stockpiles left for >4 weeks.		Weekly/monthly inspection checklist.	No reported dust complaints or exceedances.
Dampen down exposed areas and activities with the potential to create dust (eg excavation faces, handling areas, stockpiles etc)	At all times	Identify the risk of dust/nuisance impacts (IHRA) associated with key activities/areas. Establish appropriate watering/ fogging/misting/spray systems to control dust at the source.	CM/SM	Daily surveillance. Weekly/monthly inspection checklist. Monitoring results.	Limited dust generation. No complaints.
Cover trucks transporting loose material to prevent dust generation and spills.	At all times	Include in relevant subcontractor WMS. Cover all loads. Clean up spills immediately.	SM/ Foreman	Vehicle inspection prior to entering and leaving the site.	No visible loose material. No community complaints.
Undertake progressive stabilisation and landscaping of disturbed areas.	Ongoing	Incorporate rehabilitation activities into the construction program if possible. Apply temporary and/or permanent vegetation and mulch to stabilise.	CM/SM	Weekly/monthly inspection checklist. Project planning and design meetings.	Disturbed areas stabilised. No areas left exposed for prolonged periods.
Air Quality Controls (Contamination/Hazardous materials)					
Prevent potentially contaminated dust being generated during the disturbance and handling of contaminated soil.	At all times	Identify contaminated areas on the Air Quality Management Diagram (required above). Engage a specialist environmental consultant (as required).	SM	Dust monitoring results. Soil test results.	Dust controlled. No contaminants detected in dust monitoring samples.

		Implement recommended controls eg spray systems.			
Implement controls for the removal and handling of hazardous building materials (eg asbestos or lead-based paints)	At all times.	Engage a specialist hygienist/environmental consultant (as required). Install appropriate dust control devices/sprays. Install appropriate monitoring equipment. *Refer to Hazardous Substances and Dangerous Goods Management Sub Plan.*	CM/SM	Air quality monitoring during and after works. Clearance by occupational hygienist.	Building and area cleared of hazardous dust. Non-detection of asbestos/ lead dust during monitoring.
Control odour generation related to contamination including Volatile Organic Compound (VOC) vapours within work areas.	At all times	Engage a specialist hygienist/ environmental consultant (as required). Implement dampening and monitoring as recommended.	CM/SM	Air vapour monitoring (and personal air monitoring if required) during and after works.	No elevated VOCs detected during works. No works performed whilst elevated VOCs are detected in work areas.
Combustion Emission Controls (TSP, PM10, NOx, CO and BTEX)					
Burning of waste on site is banned.	At all times	Address in site induction.	SM	Daily surveillance.	No fires or incineration on site.
Fit plant and equipment with emission control devices and maintain.	At all times	Include requirements in subcontractor documents. Documented plant condition inspections by subcontractors. Verify than plant/equipment has been regularly maintained to minimise visible smoke and emissions. Use mains power where available and suitable	SM	Routine and random inspections of plant. Emissions not visible for >10secs (as a general rule).	Copies of service records and/ or inspection to be supplied. No complaints from site personnel or neighbours.
Turn equipment and plant engines off when not in use for extended periods.	At all times	Address in contractors WMS.	SM	Daily surveillance.	No excessive (visible) emissions or odour.

showing:

- Project Office (purple).
- Perimeter hoardings and dust controls: Blue (external facing hoardings), Orange (internal facing hoardings), Red (access gate). *Sourced from: OSH R1 review logistics and material handling*
- Stabilised site access: The entire site is stablisied with 2 x loading zones adjacent road networks.
- Waste management and material storage areas (odour): Remaining bin locations (light blue).Plant locations (parking and start up): Tower cranes, alimak towers and mobile plant (light green).

TOWERS

No.	Original Ref.	Relevant Requirement	Reference
1.	C4	AIR QUALITY AND ODOUR MANAGEMENT SUB-PLAN Prior to the commencement of works, an updated Air Quality and Odour Management Sub-Plan for Barangaroo South prepared by a suitably qualified person shall be submitted to the Environment Protection Authority (EPA) for review and submitted to the PCA. The Sub-Plan must comply with Environment Protection Licence number 13336, where relevant. A copy must be provided to the Secretary.	This plan Mitigation measures EPL surrendered
2.	D15	DUST CONTROL MEASURES Adequate measures shall be taken to prevent dust from affecting the amenity of the neighbourhood during construction. In particular, the following measures should be adopted: a) 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; b) 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; c) 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; d) the surface should be dampened slightly to prevent dust from becoming airborne but should not be wet to the extent that run-off occurs; e) 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; f) all equipment wheels shall be washed before exiting the site using manual or automated sprayers and drive-through washing bays; g) gates shall be closed between vehicle movements and shall be fitted with shade cloth; and h) cleaning of footpaths and roadways shall be carried out regularly."	This plan Mitigation measures Excavation complete