

# LIVERPOOL HEALTH & ACADEMIC PRECINCT AIR QUALITY MANAGEMENT SUB PLAN

15/09/2021 | Template Issue No: 3.0



Document Template Issue Status				
Date	Document Issue (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/07/2017	2.0	General update including LLB GMR and legislative amendments.	Tracey Wallbridge	Brian Falls
15/09/2021	3.0	General review and update	Tracey Wallbridge	Ross Trethewey

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Project Revision Status				
Date	Project Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
05/08/2021	Rev 2	Plan reviewed as per John Staff Comments	Lilly Cauchi	Daniel Puljic
17/11/2021	Rev 3	Template change	Ian Sheils	Daniel Puljic
09/12/2021	Rev 4	EMD update and general update	Ian Sheils	Daniel Puljic
02/03/22	Rev 5	Review only no changes	Ian Sheils	Daniel Puljic
02/06/22	Rev 6	Update Appendix 1 diagram to show site changes	Dylan Stewart	Daniel Puljic
02/09/2022	Rev 7	Update Appendix 1 diagram to show site changes	Dylan Stewart	Daniel Puljic
02/12/2022	Rev 8	Update Appendix 1 diagram to show site changes	Dylan Stewart	Daniel Puljic
2/05/23	Rev 9	General review & references to LLB removed & LLC	Nigel Rose	Daniel Puljic

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		inserted, updated EMD & Infection prevention & control checklist		
7/11/2023	Rev 10	General review & updated EMD	Nigel Rose	Daniel Puljic

## SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	<p>This Air Quality Management Sub Plan provides details of control measures relevant to the minimisation and management of dust, odour, and emissions (pollutants) to the environment during site establishment, demolition, and construction of the Liverpool Health &amp; Academic Precinct (LHAP) project.</p> <p>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 Lendlease Construction (LLC) EHS management system.</p>
Objectives of the Sub Plan	<ul style="list-style-type: none"> <li>• To identify controls to prevent emissions to the environment (air).</li> <li>• To identify processes to manage emissions to the environment that cannot be prevented.</li> <li>• To minimise the nuisance, health and ecological impacts associated with air emissions on the community, workers, and environment.</li> <li>• To achieve compliance with regulatory and legislative requirements.</li> <li>• To provide an adequate monitoring regime to allow real-time assessment of various dust/odour generating construction activities on the site</li> </ul>
Scope of Works	<p>This Sub Plan has been prepared based on the following scope of works across all stages:</p> <p>Site establishment including vegetation removal, topsoil stripping, office, work zone, amenities, and compound setup.</p> <ul style="list-style-type: none"> <li>• Demolition of Thomas &amp; Rachel Moore education centre, Alex Grimson, Oncology and Pathology buildings.</li> <li>• Excavation of approximately 10,000m<sup>3</sup> of material and backfilling of approximately 4,00m<sup>3</sup> of clean fill.</li> <li>• Installation of bored and Continuous Flight Auguring (CFA) type piles</li> <li>• Construction of new Integrated Services Buildings over 2 stages, including basements to each,</li> <li>• Refurbishment of numerous areas within the existing Caroline Chisholm and Clinical Services Building of the Hospital</li> <li>• Construction of Campbell St shared Zone</li> <li>• On Grade Car Park Works</li> <li>• External works</li> </ul>

Key Issues and Risks

- Internal works adjacent to clinical areas

The works described above have the potential to generate dust, odour, and emissions (**pollutants**) primarily associated with:

- Ground disturbance, site clearing and grubbing in stage 1 and stage 2 works
- Demolition of existing structures; including within the refurbishment areas of the CSB, Caroline Chisholm Building.
- Traffic movements and plant operation.
- Rock cutting and hammering.
- Concrete cutting and hammering particularly around the cut line of stage 1
- CFA piling.
- Spoil handling and stockpiling.
- Storage and handling of waste materials; and
- Internal works adjacent to clinical areas

Compliance with the Project EHS Plan, OHHMP 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 nuisance or health effects to the local community or workers.
- Result in complaints.
- Impact on the natural environment; or
- Create unsafe conditions.

The closest sensitive receivers and land uses to the site are located at approximately:

- Zero meters for existing active operations of the remainder of the Liverpool Hospital which along several sections is only separated by a single wall.
- Twenty metres to existing residential and commercial properties located across Goulburn, Elizabeth, and Campbell Streets.
- Fifty meters to Liverpool Girls & Boys High Schools and 100 metres to Liverpool TAFE.
- Fifty metres to Bigge Park.
- General adjacent foot paths

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.

**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:**

- SSI 15\_7400 conditions A18(b), A20, E5
- REMMs AQ1-AQ9
- Protection of the Environment Operations Act 1997
- Protection of the Environment Operations (Clean Air) Reg 2002

**Local:**

- Liverpool LEP 2008

**Lendlease requirements:**

- GMR 4.13: Degradation or Pollution of the Environment
- GMR 4.15: Uncontrolled Release of Stored Energy (non-electrical))
- (Building) Workplace Delivery Code (WDC)

**SDDA-10389**

**Air Quality**

**C25.** The Applicant must take all reasonable steps to minimise dust generated during all works authorised by this consent.

**C26.** During construction, the Applicant must ensure that:

- (a) exposed surfaces and stockpiles are suppressed by regular watering.
- (b) all trucks entering or leaving the site with loads have their loads covered.
- (c) trucks associated with the development do not track dirt onto the public road network.
- (d) public roads used by these trucks are kept clean; and

Summary of Site Controls

(e) land stabilisation works are carried out progressively on site to minimise exposed surfaces.

Works must be undertaken in accordance with the Lendlease GMRs, the Project EHS Plan, this Sub Plan and the Lendlease Construction 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:

- LLC will obtain existing Air quality data 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 a consultant to monitor air quality during its activities.
- Installing site perimeter dust protection measures on Goulburn St, Elizabeth St and Campbell St as well as monitors near adjacent hospital entry / egress points.
- Preventing dust generation through minimal ground disturbance and the stabilisation of disturbed areas with either a stabilisation spray on material such as spray grass or geo-spray or by using geofabric laid over stockpiles.
- Controlling dust close to its source by installing sprays and sprinkler systems to prevent off-site migration.
- Maintaining the site access to prevent dust generation and tracking off-site.
- No blasting will be performed as part of the proposed construction works program.
- Construction site layout and placement of plant would consider air quality impacts to nearby receivers, pedestrian, commercial receivers, public and road traffic
- Spraying exposed work areas to suppress dust using water cannons, misters, or other suitable equipment.
- Minimise traffic on exposed areas – designated haul routes will be installed to ensure ground surfaces are well stabilised to minimise dust and tracking of material.
- Cover haul vehicles loads & ensure tail gates are closed when operating on public roads.
- Remove dirt from haul vehicles prior to entering public roads.
- Remove any spilt material by construction equipment or vehicles on public roads immediately. Street sweepers to be engaged as required to ensure roads are clean.
- Reprogram dust generating work during periods of high wind or when fugitive dust emissions cannot be controlled.
- Regular visual monitoring of dust generation will be undertaken by the site supervisors.

- Water suppression will be used for active earthwork areas, stockpiles, unsurfaced haul roads and loads of soil/quarried material being transported to reduce wind-blown dust emissions.
- Any stockpiles will be suitably stabilised or covered (geofabric or similar) to ensure fugitive dust emissions are not created.
- Respond immediately to community concerns or monitoring exceedances. Complaints to be monitored and captured via the complaints register.
- The engines of all on-site vehicles and plant would be switched off when not in use for an extended period.
- Plant would be well maintained and serviced to minimise emissions. Emissions from plant would be considered as part of pre-acceptance checks.
- Infection Prevention and Control regular inspections to be completed in refurbishment areas to ensure safe methods of work are in place to minimise dust from construction operations. All information has been prepared in conjunction with the Australian Health Facility Guidelines and PRA Infection Control Plan.
- Protection of air handling units and intake from dust during construction works
- Fume reduction strategies during operation of machinery where practical
- Protection of air handling units/ plan is currently being developed and requires a site inspection to finalise strategy with noise and vibration consultant.

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.



## IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
<b>Planning and Site Establishment</b>					
Include information in the Site Induction.	Before works commence and ongoing	Revise Lendlease induction package to include site specific information about the potential impacts of dust and emissions on the environment and community.	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 (EMD).	Prior to works commencing  Ongoing review.	Prepare diagram (Appendix 1) showing sensitive receivers, monitoring locations, device type, waste/ storage/ contaminated areas etc.	CM Engineer	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.  Detail excavation requirements on staging program.  Undertake progressive clearing/disturbance.  Incorporate requirements into WMS prepared by relevant subcontractors.	SM Foreman	Daily surveillance.  Weekly/monthly inspection  Review of program.	Staged clearing/disturbance effectively implemented.  Acceptable dust levels.
Install hoardings/screen barriers at the site perimeter at internal excavation boundaries.	Site establishment and ongoing	Install hoardings/ shade cloth considering the location of neighbours, key work zones and prevailing winds.  Mark on Air Quality Environmental Management Diagram (Appendix 1).	SM Foreman	Daily surveillance.  Weekly/monthly inspection	No reported dust monitoring exceedances.  Number of complaints.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
<b>Planning and Site Establishment</b>					
		Use portable barriers to allow relocation to all work faces.			
Seal or stabilise the site access, roads, turning, and parking areas using gravel or non-dust generating materials.  (NOTE: recycled materials are not permitted due to the potential for contamination)	Prior to construction commencing	Retain hardstand areas where existing.  Construct new stable areas.  Install wheel wash/shaker facility (using recycled water where possible).	SM	Pre-construction inspection.  Weekly/monthly inspection	No dust generation associated with vehicle movements.  No tracking of materials onto public roads.
<b>During Construction</b>					
Limit speed to 20km/hr or less 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	Maintain shaker grid/wheel wash or employ high pressure drive-thru wash bay for site heavy duty plant.  Engage wet sweeper. Limited hosing of hard surfaces only.  Clean up spilled soil immediately.	SM	Daily inspection of site access and local roads.  Weekly/monthly inspection  Inspections immediately after rainfall events.	No complaints from public or authorities.  No dust generated on public roads.
Avoid excavation and handing during periods of high wind and extreme (wet) weather conditions.	As required	Only enter areas that need to be worked (mud tracking/dust).  Work in areas away from sensitive receptors (dust).  Maintain site access controls and clean roadways (tracking).	SM	Constant surveillance during unfavourable conditions.  Monitor meteorological reports.	No works performed during high wind or rainfall events.  No complaints.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
<b>Planning and Site Establishment</b>					
		Stop work until conditions are more favourable if dust and/or tracking cannot be controlled.			
Minimise 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 Engineer	Daily surveillance of activities.	Controls maintained and effective.
Locate and maintain stockpiles to minimise dust.	At all times	Locate stockpiles away from sensitive receptors. 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.	SM	Daily surveillance. Weekly/monthly inspection	No visible dust from stockpiles. No reported dust complaints or exceedances.
Dampen down exposed areas and activities with the potential to create dust (e.g., excavation faces, cutting, ripping, 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 Monitoring results.	IHRA identifies risk for management. No complaints.
Check plant and equipment emission control devices and maintenance.	At all times	Include requirements in subcontractor documents. Documented plant condition inspections by subcontractors. Verify than plant/equipment has been regularly maintained to	SM	Routine and random inspections of plant. Emissions not visible for >10secs (as a rule).	Copies of service records and/ or inspection to be supplied. No complaints from site personnel or neighbours.

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
<b>Planning and Site Establishment</b>					
		minimise visible smoke and emissions.			
Turn equipment and plant engines off when not in use for extended periods.	At all times	Include in contractors WMS.	SM	Daily surveillance.	No excessive (visible) emissions or odour.
Cover trucks transporting loose material to prevent dust generation and spills.	At all times	Include in 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.

APPENDIX 1 ENVIRONMENTAL MANAGEMENT DIAGRAM (EMD)



**ENVIRONMENTAL MANAGEMENT DIAGRAM – LIVERPOOL HEALTH & ACADEMIC PRECINCT PROJECT**



**EXTENT MAP**



**LEGEND**

Icon	Descriptions
	Site Accommodation
	A-Class Hoarding
	Shaker Grid
	Spill Kit
	HS / DG Storage
	Tree Protection Zone
	Stormwater Inlet
	Radiation Monitor
	Noise Monitor
	Ground Vibration Monitor
	Rubbish Skip

**KEY ENVIRONMENTAL ISSUES**

- Unexpected finds
- Noise to general public / Hospital
- Water run off
- Sediment run off

**SENSITIVE RECEPTORS**

- Local Residents in Goulburn & Campbell Streets
- Alex Grimson Building
- Caroline Chisholm Building
- Existing Clinical Services Building
- Liverpool TAFE – College Street Campus
- Ingham Institute

**KEY CONTROL MEASURES**

- Blue metal to cap exposed soil
- Geofabric under pit grates to stormwater inlets to filter water
- Radiation monitoring of cancer bunker
- Shaker grid located inside of gates 2 & 3
- High pressure washer to clean tyres in inclement weather

**KEY CONTACTS**

<b>Senior Construction Manager</b> Daniel Puljic 0477 393 259	<b>Senior Site Manager</b> Damien Smith 0437 559 361	<b>General Foreman</b> James Hall 0429 801 618	<b>Senior EHS Coordinator</b> Nigel Rose 0428 741 878	<b>Emergency Services</b> 000
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# INFECTION PREVENTION AND CONTROL CHECKLIST



LIVERPOOL HEALTH & ACADEMIC PRECINCT

## INFECTION PREVENTION AND CONTROL CHECKLIST

- This checklist must be completed daily
- ALL non-compliant issues must be reported to the Site Manager and rectified immediately

Project	Liverpool Health & Academic Precinct
Name	
Specific Location	
Date	

Project Checklist	Class I	Class II	Class III	Class IV
<b>Risk Rating</b>				
Safe work methods in place to minimise raising dust from constructions operations				
Replace any ceiling tile displaced for visual inspection as soon as possible				
Provide active means to prevent air-borne dust from dispersing into atmosphere				
Seal unused doors with duct tape.				
Contain construction waste before transport in tightly covered containers.				
mop and/or vacuum with HEPA filtered vacuum.				
Place dust-mat at entrance and exit of work area and replace or clean when no longer effective.				
Isolate HVAC system in area where work is being done to prevent contamination of the duct system.				
Wipe casework and horizontal surfaces at completion of project.				
Complete all construction barriers before construction begins.				
Maintain negative air pressure within work site utilising HEPA filtered ventilation units or other methods of maintaining negative pressure. In each jurisdiction, the relevant public safety officers will monitor air pressure.				
Do not remove barriers from work area until complete project is thoroughly cleaned.				
Wet mop or vacuum twice per eight-hour period of construction activity or as required in order to minimise tracking.				
Remove barrier materials carefully to minimise spreading of dirt and debris associated with construction.				
Contain construction waste before transport in tightly covered containers.				
Seal holes, pipes, conduits, and punctures to prevent dust migration.				

LIVERPOOL HEALTH & ACADEMIC PRECINCT  
INFECTION AND PREVENTION CONTROL CHECKLIST  
05/05/2023



LIVERPOOL HEALTH & ACADEMIC PRECINCT

Barrier material should be wet wiped, HEPA vacuumed, or water misted prior to removal.				
Construct Anteroom and require all personnel to pass through the room. Wet mop or HEPA vacuum the Anteroom daily.				
During demolition, dust producing work, or work in the ceiling, disposable shoes and coveralls are to be worn and removed in the Anteroom when leaving work area.				
Keep work brooms clean and remove debris daily				
Wet mop hard surface areas at completion of project, HEPA vacuum carpeted surfaces at completion of project.				

**Action Required:**

Sign: \_\_\_\_\_