

LIVERPOOL HEALTH & ACADEMIC PRECINCT CONTAMINATION MANAGEMENT SUB PLAN

25/05/2021 | Template Issue No: 3.1



Document Template Issue Status

Date	Document Issue (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/03/2017	2	General update including LLB GMR and legislative amendments	Tracey Wallbridge	Brian Falls
21/02/2021	3	General update and review of currency and inclusion of tracking of contaminated waste and heavy vehicle transport requirements	Tracey Wallbridge	Ross Trethewey
25/05/2021	3.1	Updated to include Chain of Responsibility requirements for GVM	Brooke Brittain	Ross Trethewey

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Project Revision Status

Date	Project Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
31/05/2021	DRAFT	New template. LHAP site specific information added	Daisy Badel	Michael Niedzwiecki
07/07/2021	Rev 1	Draft approved. Review only	Lilly Cauchi	Michael Niedzwiecki
05/08/2021	Rev 2	Plan reviewed as per comments from John staff	Lilly Cauchi	Daniel Puljic
17/11/2021	Rev 3	Review only, no changes	Ian Sheils	Daniel Puljic
09/12/2021	Rev 4	Update to implementation table	Ian Sheils	Daniel Puljic
02/03/2022	Rev 5	Review only no changes	Ian Sheils	Daniel Puljic
02/06/2022	Rev 6	Review only no Changes	Dylan Stewart	Daniel Puljic

02/09/2022	Rev 7	Review only no changes	Dylan Stewart	Daniel Puljic
02/12/2022	Rev 8	Review only no changes	Dylan Stewart	Daniel Puljic
2/05/2023	Rev 9	General review & references to LLB removed & LLC inserted	Nigel Rose	Daniel Puljic
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 Contamination Management Sub Plan provides details of control measures relevant to the identification and management of contaminated soil, water, and other materials where they are known to exist or are found unexpectedly during site establishment or construction.</p> <p>Refer to Section 1.1 and 3.1 of the Project EHS Management Plan for clarification on how the EHS Management Sub Plans form part of the Lendlease Construction (LLC) EHS Management System.</p>
Objectives of the Sub Plan	<ul style="list-style-type: none"> • To manage contamination in accordance with legislative and regulatory requirements, management plans and guidelines. • To establish processes for the assessment, handling, and management, including disposal, of contaminated soil/water/materials. • To facilitate the identification of opportunities for the treatment and re-use of contaminated soil and/or groundwater. • To minimise the environmental and health risks associated with the management of contaminated soil, water, and materials. • To ensure proper disposal of contaminated soil, water or other materials to a licenced facility, and traceability of disposal.
Scope of Works	<p>This Management Sub Plan has been prepared based on consideration of the following scope of works</p> <ul style="list-style-type: none"> • Site establishment including office and compound setup and the installation of environmental controls. <p>This Sub Plan has been prepared based on the following scope of works across all stages:</p> <ul style="list-style-type: none"> • Site establishment including vegetation removal, topsoil stripping, office, work zone, amenities, and compound setup. • Demolition of Thomas & Rachel Moore education centre, Alex Grimson, Oncology and Pathology buildings. • Excavation of approximately 10,000m³ of material and backfilling of approximately 4,00m³ of clean fill. • Installation of bored piles and Continuous Flight Auguring (CFA) type piles approx. 2-14 meters in depth • Refurbishment of the Caroline Chisholm building and Clinical Services building
Key Issues and Risks	<p>The Remediation Action Plan (RAP) Report prepared by JK Environments identified that contamination exists on the site, specifically:</p>

- Fill material (imported)
- Historical agricultural use of the area (grazing, markets, gardens, and piggery)
- Hazardous building materials i.e., asbestos, lead and PCB's
- Former off site fuel storage, mechanical workshops, dry cleaning, and printing

SITE CONDITIONS

- The JKE ESA encountered PAHs and friable asbestos (AF/FA) in the fill (soil) at concentrations that exceeded the human health SAC which required remediation. Surface ACM were also identified. Post demolition validation sampling is required to assess the extent of remediation prior to excavation. Based on the Tier 1 risk assessment, the levels of contamination identified in the soils and groundwater at the site above the ecological based SAC were assessed and pose a low risk to the receptors and remediation due to the ecological elevations is not proposed.

The presence and subsequent disturbance of contaminated areas creates the potential for environment and health impacts including off-site pollution, if appropriate control measures are not identified, implemented, and maintained on the site.

The following activities are expected to be key risks associated with the handling of contaminated soil, water, or materials:

- Exposure of workers or the community to vapours or chemicals or airborne contaminants.
- The storage or stockpiling of contaminated soil, water or materials resulting in the migration of contaminants into local ecosystems.
- Inadvertent creation of a migration pathway linking the contamination to a sensitive receptor (e.g., services trench).

Inappropriate re-use or disposal without approval and required traceability documentation.

Legislation and Guidelines

Federal/National:

National Environmental Protection (Assessment of Site Contamination) Measure NEPM (1999)

Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites (1992)

AS4482.1:2005 Guide to the Sampling and Investigation of Sites with Potentially Contaminated Soil – Non-volatile and Semi-volatile compounds.

<https://www.saiglobal.com/PDFTemp/Previews/OSH/as/as4000/4400/4482.1-2005.pdf>

Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018

State:

State Government guidelines and contaminated site registers including:

http://www.epa.sa.gov.au/environmental_info/site_contamination

<http://epa.nsw.gov.au/clm/>

State Environmental Planning Policy No. 55 - Remediation of Land

Best Practice Note: Landfarming (NSW EPA April 2014)

Protection of Environment Operations Act 1997

Local:

Liverpool LEP 2008

Lendlease Requirements:

- GMR 1: Investment
- GMR 3: Establishment
- GMR4.10: Occupational Health Exposure
- GMR: 4.13 (4.13.3) Degradation or Pollution of the Environment
- GMR: 4.15 Uncontrolled Release of Stored Energy (non-electrical)
- Lendlease Construction Workplace Delivery Code (WDC)

SSDA – 10389

Site Contamination

A20. Remediation approved as part of this development consent must be carried out in accordance

with the Remediation Action Plan (RAP), dated 29 April 2020, prepared by JK Environments, or any updated RAP, prepared by a Certified Contaminated Land Consultant.

Imported Soil

C28. The Applicant must:

- (a) ensure that only VENM, ENM, or other material approved in writing by EPA is brought onto the site.
- (b) keep accurate records of the volume and type of fill to be used; and
- (c) make these records available to the Certifier upon request.

Site Contamination

D26. The Applicant must submit a Validation Report for the development. The Validation Report must:

- (a) be prepared by a Certified Contaminated Land Consultant.
- (b) be submitted to the Planning Secretary and the Certifier for information within one month after the completion of remediation works; and
- (c) be prepared in accordance with the RAP and the Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites (OEHL,2011).

Site Audit Statement

D27. Prior to the commencement of operation, the Applicant must submit a Site Audit Report and

Section A Site Audit Statement for the relevant part of the site prepared by a NSW EPA accredited Site Auditor. The Site Audit Report and Section A Site Audit Statement must verify the relevant part of the site is suitable for the intended land use and be provided for the information of the Planning Secretary and the Certifier.

Long Term Environmental Management Plan

D28. Where a Long-Term Environmental Management Plan (LTEMP) is identified as required by the RAP, the plan must:

- (a) be prepared by a certified Contaminated Land Consultant.
- (b) be accompanied by a Section B Site Audit Statement prepared by a NSW EPA accredited Site Auditor, that determines the appropriateness of the LTEMP and/or that the land can be made suitable for the intended use if the site is managed in accordance with the LTEMP.
- (c) be provided to the Planning Secretary within one month of the completion of remediation works, unless otherwise agreed by the Planning Secretary.
- (d) include, but not be limited to:
 - (i) a description of the nature and location of any contamination remaining on site.
 - (ii) provisions to manage and monitor any remaining contamination, including details of any restrictions placed on the land to prevent development over the containment cell.
 - (iii) a description of the procedures for managing any leachate generated from the containment cell, including any requirements for testing, pumping, treatment and/or disposal.
 - (iv) a description of the procedures for monitoring the integrity of the containment cell; (v) a surface and groundwater monitoring program.
 - (vi) mechanisms to report results to relevant agencies.
 - (vii) triggers that would indicate if further remediation is required; and

(viii) details of any contingency measures that the Applicant is to carry out to address any ongoing contamination.

Long Term Environmental Management Plan

E3. Upon completion of remediation works, and where a LTEMP has been prepared, the Applicant must manage the site in accordance with the LTEMP approved under condition D28 and any on-going maintenance of remediation notice issued by EPA under the Contaminated Land Management Act 1997.

Summary of Site Controls

Works must be planned and implemented in accordance with the Lendlease Global Minimum Requirements, the Project EHS Management Plan, this Management Sub Plan, and the Lendlease Building Workplace Delivery Code. These documents detail the Lendlease approach and commitment to pro-active and responsible site management of contamination.

Site specific controls, monitoring, reporting and performance measures have been identified in this Management Sub Plan to manage contamination encountered on the site. These include but are not limited to:

- Appointing a suitably qualified consultant to conduct a contamination assessment and related testing.
- Asbestos air monitoring to be in place
- Obtaining a preliminary waste classification report for contaminated spoil proposed for removal from site.
- Implementing an Unexpected Find Protocol should contamination be identified or suspected.
- Making provision for the segregation of soils and temporary stockpiling.
- Classifying soil and waste prior to removal off site.
- Verifying that destination facilities are appropriately licenced/approved to receive the waste classification of the contaminated soil, waste, or material.
- Verifying the Contractor appointed for contaminated waste removal has a system to accurately verify heavy vehicle loads are the correct mass, contained appropriately and within dimension limits as prescribed by heavy vehicle transport legislation (refer Chain of Responsibility Management Sub Plan).
- Accurately validating that contaminated waste quantities removed from site match those quantities disposed of at the approved licenced facility(s) with documented evidence retained by the project for audit purposes.
- Minimising the exposure of workers and the community to contamination; and
- Validating the site after the removal of contaminated material.

Requirements for contamination identification, management and disposal will be included in relevant specifications, contract agreements, subcontractor work method statements and quality assurance processes.

	<p>Site inspections, monitoring and reporting will be undertaken by Lendlease, and subcontractors as detailed in the Project EHS Management Plan and the following implementation table.</p>
<p>Unexpected Find Protocol</p>	<p>If suspected contaminated soil, water or other materials are discovered during site establishment or excavation in an area previously identified as being uncontaminated (clean), the following protocol must be followed:</p> <ol style="list-style-type: none"> 1. Cease work and evacuate the area immediately (to the upwind side of the contamination). 2. Contact the EHS Coordinator, Site Manager or Construction Manager immediately to report the issue. 3. Construction Manager to notify Principle (JSP) 4. Erect barricades to isolate the area. Where possible a minimum distance of 10m should be established between the suspect material and the barrier. 5. Engage a suitably qualified environmental specialist. 6. Notify the appropriate regulatory authority as soon as possible (where applicable, i.e., the find is confirmed as contaminated material and imminent or immediate risk of serious harm to a worker(s) is a potential outcome). 7. Prevent access to the barricaded area. A Clearance Certificate or written approval from the environmental specialist must be obtained prior to re-gaining entry to the area. 8. Arrange sampling of the suspect material by the environmental specialist (as advised by the LLC Construction Manager). 9. In consultation with the environmental specialist, LLC senior site personnel and/or relevant authorities, determine if further remedial action is necessary based on the sample results to enable reuse, treatment, or disposal. 10. Obtain permits to carry out remedial works and implement appropriate environmental and health controls. Obtain a written clearance certificate from the environmental specialist before re-entering the area. Remove the barricade at the completion of the remedial works and resume activities under the direction of the LLC Construction Manager.

IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Undertake a Preliminary Contamination Assessment (PCA) for the site OR obtain a copy of existing (relevant) contamination reports and determine the current site conditions.	Prior to works commencing	<p>Appoint a suitably qualified consultant to assess the work area, determine the extent and nature of the contamination and the risk of harm to human and environmental health.</p> <p>Assess potential risks, address unexpected finds in the construction program and identify acceptable work methods.</p> <p>Review any existing data available.</p> <p>Include relevant requirements into this Management Sub Plan, subcontractor WMSs and contract documentation.</p>	<p>CM</p> <p>SM</p>	<p>PCA prepared.</p> <p>WMSs prepared.</p> <p>Requirements incorporated into subcontract documentation.</p>	<p>No works performed in areas within PCA.</p> <p>Need for remedial works identified.</p> <p>No unlawful disposal of contaminated materials.</p> <p>No adverse impact on the health of workers or the community.</p>
Review sample location plan (Appendix 1) which outlines the locations of potential contaminated areas, stockpile locations, and sensitive receptors.	Prior to works commencing	Review sample location plan	<p>CM</p> <p>SM</p>	<p>Diagram reviewed prior to works commencing.</p> <p>Storage areas/stockpiles controlled to prevent runoff.</p>	<p>Storage areas located away from sensitive receivers.</p> <p>No spills or incidents.</p>
Undertake preliminary waste classification testing to facilitate the identification of remediation and disposal options	Prior to works commencing	<p>Engage a specialist.</p> <p>Arrange for the testing and classification of soil and groundwater (if risk is identified)</p>	<p>CM</p> <p>SM</p>	<p>Waste classification details available.</p> <p>Suitable treatment and/or disposal sites identified.</p>	Waste disposed of in accordance with the waste classification report.

		Assess options for remediation, reuse, and recycling of spoil. Identify waste types, volumes and landfill facilities approved for disposal.			
Include information in the Site Induction about the risks and impacts of unexpected contamination.	Prior to works commencing	Revise Lendlease standard induction package to include site specific information. Deliver induction material.	CM SM	WMSs prepared by subcontractors address contaminated material identification, storage, handling, and disposal.	Site induction delivered to all workers on site.
Implement the Unexpected Find Protocol if contaminated material is exposed or suspected during works.	As required during early works	Implement protocol immediately.	CM SM	As per the protocol (above). Report to RBU EHS Manager.	Protocol followed. Minimal disturbance to suspected contaminated material. No impact on the environment or workers due to exposure.

During Construction: Approvals, handling, and storage

Establish storage/stockpile areas in appropriate locations within the site.	Prior to works commencing	Make provision for the on-site temporary storage of soil pending waste classification or advice from the Client. Contractor to prepare areas based on specification with appropriate environmental controls (e.g., sealed, banded and drained appropriately to prevent leachate to the environment). Segregate soils pending re-use, remediation and/or off-site disposal.	SM	Daily inspection to assess stockpile conditions. Weekly/Monthly inspection	No uncontrolled on site or off-site pollution associated with material storage. Capacity appropriate for volumes expected.
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Obtain relevant approvals and permits for remediation and transport, reuse and/or disposal of contaminated soil and/or water prior to removal from site.	Prior to any material leaving site	<p>Identify suitable waste transport contractors that verify compliance with heavy vehicle transport legislation.</p> <p>Obtain details of civil works contractor licences and approvals to transport contaminated or hazardous materials.</p> <p>Check landfill/disposal facility licence details to confirm their suitability to accept the material and its classification.</p>	CM Engineer	<p>Copies of licences and approvals reviewed.</p> <p>Disposal/weighbridge documents retained, and waste details captured in FOOTPRINT</p>	<p>No waste leaving site without approval.</p> <p>Copies of permits/approvals kept on site.</p> <p>All loads transported off site accounted for at destination facility and quantity verified against quantity leaving site.</p> <p>System to accurately verify heavy vehicle loads are the correct mass leaving site.</p>
Undertake environmental monitoring (i.e., VOC, asbestos, dust)	Establish prior to works commencing and maintain during works	Engage a suitably qualified consultant to identify the extent, frequency, and duration of monitoring requirements.	CM Specialist consultant	Daily surveillance and analysis of results.	Results available and acceptable.
Segregate contaminated soil/water from other wastes to prevent cross contamination.	At all times	<p>Based on advice from the consultant, segregate soils and provide identification signage.</p> <p>Ensure spoil and water storage areas are secure and environmental controls (bunds and dewatering collection points) have been established to prevent uncontrolled discharges or mixing with clean materials.</p>	SM Engineer Specialist consultant	<p>Daily inspection of stockpiles and water storage facilities.</p> <p>Weekly/monthly inspection</p> <p>Testing by NATA accredited laboratory.</p>	<p>Waste classified.</p> <p>Cross contamination avoided.</p> <p>Signage present.</p> <p>Stockpiles stable and no uncontrolled discharge evident.</p>
Minimise worker and community exposure to contaminated materials.	At all times	Contractor to prepare WMS.	SM Specialist consultant	Daily inspection of work areas.	No elevated monitoring events.

		Provide appropriate PPE, instruction, and training on contaminated material handling.		Weekly/monthly inspection	Required personal protective equipment being used by workers. SWMS followed.
During Construction: Remediation, Disposal and Validation (including transport)					
Identify EHS risks associated with the transport of contaminated soil/water/materials to off-site receiving facilities and document requirements.	Prior to material being removed from site	<p>Contractor to provide details on transport route.</p> <p>Assess route and risks and advise drivers of safe transport and agreed route.</p> <p>Licensed contractors used with tracking documentation prepared/logged.</p> <p>Quantity of waste (contaminated material) removed from site accurately determined and verified against tracking and disposal documentation.</p> <p>Contractors engaged to removal and haul contaminated water, soil, or material can verify compliance with heavy vehicle transport legislation.</p>	SM	<p>Inspect contractor licences, approvals, insurance, and vehicle condition.</p> <p>Weighbridge docketts assessed against site records for the removal of waste.</p>	<p>No use of unauthorised traffic routes.</p> <p>No transport incidents or loss of materials onto public roads.</p> <p>All loads accounted for at destination facility and quantities verified against quantities leaving the site.</p> <p>System to accurately verify heavy vehicle loads are the correct mass leaving site.</p>
Verify compliance with Heavy Vehicle National Legislation (HVNL) for heavy vehicle load mass	At all times	<p>For contaminated waste removal heavy vehicle operators (including Drivers), must have an accurate way of demonstrating that the loaded Heavy Vehicle is within the legal permissible Gross Vehicle Mass (as required by Heavy Vehicle (and COR) legislation).</p> <p>As a primary measure this should involve determining the heavy</p>	CM/SM Contractors Drivers / Carriers / Heavy Vehicle service providers	<p>Monitor Compliance (Safe or At-Risk Observations)</p> <p>Secondary measure confirmation of mass (i.e., docketts)</p>	<p>Sampling of mass controls</p> <p>Secondary review of confirmation of mass (i.e., docketts)</p> <p>Overmass load event must be recorded as an incident in Enablon and an Action Plan assigned</p>

		<p>vehicle mass at the point of loading or pending departure from site using in vehicle telematics including heavy vehicle on-board mass measurement scales; OR the provision and use of a weighbridge; OR the use of portable axle load scales at random intervals, OR the use of scales on loading equipment such as excavators.</p> <p>As a secondary measure confirmation through a waste facility weighbridge unloading/delivery destination (i.e., dockets) is required to verify the mass of each heavy vehicle that has departed a project or other LLB workplace.</p>			to the subcontractor to address the overweight load issue and verified in Enablon as closed by Lendlease.
Dispose of contaminated soils/water/materials lawfully at an appropriately licensed landfill or facility.	Where remediation and on-site reuse is not feasible	<p>Confirm classification of the waste.</p> <p>Engage licenced waste contractors.</p> <p>Contractor to prepare and communicate WMS addressing the handling, transport, and disposal of contaminated materials.</p> <p>Contractor to obtain disposal approvals, permits and licence details and retain waste disposal documentation.</p>	<p>SM</p> <p>Contractor Specialist consultant.</p>	<p>Inspect permits, approvals, and transport vehicles.</p> <p>Waste reports/copies of waste dockets to verify disposal to an approved facility.</p> <p>Capture waste data in FOOTPRINT.</p>	<p>No loss of material onto public roads.</p> <p>No illegal disposal of waste.</p> <p>Waste dockets correspond with expected waste volumes/types.</p>
Decontamination and Validation					
Validate excavations/materials.	At the completion of excavation	Engage a specialist to perform and validate remediation and reuse areas and materials.	<p>CM</p> <p>Specialist consultant</p>	Validation report.	<p>Re-used remediated materials validated.</p> <p>Areas deemed fit for use.</p>

<p>Establish worker decontamination areas.</p>	<p>Prior to and during remediation and removal activities</p>	<p>Seek specialist advice.</p> <p>Contractor to prepare a WMS and instruct workers.</p> <p>Establish suitable facilities for worker decontamination, the removal of coveralls and the cleaning of masks and boots.</p> <p>Dispose of used clothing and equipment as contaminated waste.</p>	<p>SM Contractor</p>	<p>Daily surveillance of decontamination operation.</p> <p>Personal monitoring or testing (as recommended by the specialist hygienist).</p> <p>Waste dockets/reports.</p>	<p>Monitoring implemented and resulted available and assessed.</p> <p>No exceedance of monitoring criteria.</p>
<p>Establish plant and equipment decontamination areas.</p>	<p>Prior to and during remediation activities</p>	<p>Seek specialist advice on the set-up of wash out/decontamination areas.</p> <p>Contractor to prepare a WMS and instruct workers.</p> <p>Identify designated parking areas within the contaminated zone for the washdown of excavators/trucks, plant, and tools.</p> <p>Contractor to provide suitable PPE for activity.</p> <p>Provide environmental controls to capture wash-water and transfer to a truck outside the contaminated zone.</p> <p>Arrange for testing and classification of the waste prior to disposal.</p>	<p>SM</p>	<p>Daily surveillance.</p> <p>Weekly/monthly inspection</p> <p>Waste dockets/reports.</p> <p>Waste captured in FOOTPRINT.</p>	<p>No uncontrolled discharge of wash water.</p> <p>No waste to leave site until classified.</p>

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

Senior Construction Manager Daniel Puljic 0477 393 259	Senior Site Manager Damien Smith 0437 559 361	General Foreman James Hall 0429 801 618	Senior EHS Coordinator Nigel Rose 0428 741 878	Emergency Services 000
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