LENDLEASE BUILDING PTY LTD | 97 000 098 162

RANDWICK CAMPUS REDEVELOPMENT

MANAGEMENT PLAN – CONSTRUCTION SOIL & WATER

21/03/2019 | Revision No: 2.2

Sub Plan Revision Status				
Date	Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/01/17	2	General update including LLB GMR and legislative amendments.	Tracey Wallbridge	Brian Falls
04/12/2018	2.1	New Project	Chloe Manning	Elliot Hicks
21/03/2019	2.2	Updated Environmental Management Diagram	Chloe Manning	Elliot Hicks

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1. SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	This Stormwater, Erosion and Sedimentation Management Sub Plan provides strategies and mitigation measures to manage disturbed areas of the site. It outlines appropriate measures to ensure that activities including excavated soil, stormwater, erosion, and sedimentation are managed appropriately during site establishment and construction of the project. It describes measures to be implemented during relevant construction activities and defines discharge protocols and treatment procedures that enable control of the impacts of the construction activities on potentially affected areas of adjacent water bodies. 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 avoid erosion, contamination and sedimentation occurring, resulting from construction or demolition activities with a concentration on controls to minimise dust and vehicular mud-tracking. • To control the quality of stormwater leaving the construction site, so that no unacceptable impact will intrude upon the natural watercourses and/or stormwater drains. • To minimise disturbance of the surrounding hydrological regime • To maximise opportunities for stormwater recycling on site. • To effectively manage the bulk excavation and associated dewatering activities to minimise impact on any adjacent water bodies. • Erosion and sediment controls are to be effective and properly maintained at all times. • Water treatment procedures to treat collected /retained stormwater to achieve acceptable water quality criteria. • To monitor the effects of activities and the effectiveness of mitigation measures
Scope of Works	This Sub Plan has been prepared based on consideration of the following scope of works: • Site establishment including ATF and A Class hoarding installation, office and compound setup; • Demolition of 92 existing residences and Eurimbla Avenue situated between High Street, Magill Street, Botany Street and Hospital Road and tree chipping and removal • Infrastructure diversions and/or upgrades including sewer and stormwater divsersions,

	• Site establishment including vegetation removal, topsoil stripping, • Excavation of pits for sewer diversion work, trenching and drilling work. Bulk excavation works will work from the North-East corner of basement excavation pushing the soil to the south west corner, • A contignous pile wall along grid 14, • Construction of a 13 level Acute Services Building adjacent to the existing Prince of Wales Hospital in Randwick. This new build will include a new emergency department, helipad, IPUs, ICU, MAU, expanded rehab and ambulatory care facilities and operating theatres
Key Issues and Risks	The site is situated within High Street, Magill Street, Hospital Road, and Botany Street. The site is positioned directly west of the Randwick Hsopital Campus and east of UNSW. The soils at the site are noted to be: • Well draining It is not expeceted that groundwater will be encountered at the depth that excavation is taking The works required on site will involve significant ground disturbance creating the potential for erosion, sedimentation, runoff and environmental pollution, if appropriate controls are not implemented and maintained. The activities with the greatest potential to impact on the local environment and community from a stormwater, erosion and sedimentation perspective are considered to be: • Site clearing, establishment and operation including storage areas; • Bulk and detailed excavation and spoil generation; • Stockpiling; • The loading and haulage of materials off-site; • Stormwater and groundwater detention and dewatering; and • Waste disposal (spoil, sediment and water). The impacts of these works may include: • Cause of potential flow into stormwater system and/or adjacent surface water bodies from sediment laden water originating from the site. • Pollution of local ecosystems and waterways due to uncontrolled site runoff; • Pollution associated with the discharge of sediment laden or contaminated water during dewatering activities; • Vehicles exiting construction site potentially depositing dust/dirt/mud on public roads after rain periods.

	• Localised flooding during high intensity storm events. The implementation of the control measures identified in the EHS Plan and Stormwater, Erosion and Sedimentation Management Sub Plan are intended to prevent or mitigate these impacts.
Legislation and Guidelines	**Federal/National:** The 'Blue Book' (Managing Urban Stormwater Soils and Construction) – Landcom, Fourth Edition (2004) 'White Books' - IECA 2008. Best Practice Erosion and Sediment Control. Books 1-6.International Erosion Control Association (Australasia) Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 Australian Guidelines for Water Quality Monitoring and Reporting 2000 **State:** Project approval:DA208/2018 **Local:** • Local Government Act 1993 **Lendlease Requirements:** • GMR: 4.13 Degradation or Pollution of the Environment • SLendlease Building Workplace Delivery Code (WDC)

Summary of Site Controls	Works must be planned and implemented 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 measurements have been identified in this Sub Plan to prevent or minimise the impacts of construction on the environment and community. These include but are not limited to: ● Preventing erosion through minimal ground disturbance; ● The installation of erosion and sedimentation controls; ● Covering of stockpiles; ● The use of controls to trap sediment close to its source and prevent migration off site; ● The control and maintenance of site access and egress points to prevent tracking and off-site pollution; and ● The identification of acceptable detention, testing, treatment and dewatering processes. A Stormwater, Erosion and Sedmentation Management Diagram (EMD) will be prepared prior to any site activities commencing including clearing and earthworks. Construction stage stormwater, erosion and sedimentation 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 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 stormwater runoff, erosion and sedimentation on the local environment and community.	Prior to works commencing and ongoing	Revise Lendlease standard induction package to include site specific information. Deliver induction material.	CM SM	WMS prepared by subcontractors to address stormwater, erosion and sedimentation	Site induction delivered to all workers on site.
Prepare a stormwater, erosion and sediment Environmental Management Diagram (EMD) showing the location of stormwater inlets, drains, stockpile locations and erosion and sediment control measures.	At site establishment and prior to works commencing	Review Environmental Management Diagram (EMD Appendix 1). Prepare diagram showing details of stormwater infrastructure and controls. Provide controls for all disturbed areas of the site and around/ within existing stormwater infrastructure.	CM SM	EMD reviewed. Diagram prepared prior to works commencing. Diagram updated every 6 weeks.	Diagram prepared containing all relevant details and communicated. Diagram updated to reflect changes in site conditions. Controls implemented in accordance with the EMD.
Limit ground disturbance to the area required for immediate construction.	Areas of clearing identified prior to works commencing	Detail excavation requirements on staging/sequencing program. WMS prepared by subcontractor. Identify and fence off trees/vegetation to be retained. Communicate details.	SM/Foreman /EHS	Review of program. Daily surveillance to assess condition of fencing. Weekly/monthly inspection checklist. Inspection after a rain event.	No unnecessary land disturbance. Vegetation protection fencing and signage maintained.

Install stormwater, erosion and sediment controls as per the EMD.	Prior to works commencing	Undertake a site inspection to verify the correct location of controls. Install controls in accordance with EMD, design/engineers documentation.	SM	Daily surveillance to assess effectiveness and condition. Weekly/monthly inspection checklist.	EMD reviewed very 6 weeks. Controls modified or new controls installed as required.
Establish stable site exit points, parking areas, internal roads and turning areas to prevent the tracking of material off-site onto public roads.	Prior to works commencing. Maintain at all times	Retain existing hard surfaces where possible. Construct stable site entry/exit points and roadways using appropriate materials. Obtain clearance certificates for any imported (stabilising) material before receiving it on site.	SM Foreman	Daily surveillance and maintenance. Weekly/monthly inspection checklist. Inspection of imported materials.	No tracking onto public roads or dust. Clearance certificates for all imported materials.
Install a vehicle/wheel washbay or shaker facility at the site exit.	Prior to construction commencing	Assess requirement in IHRA. Maintain shaker grid/wheel wash or employ high pressure drive-thru washbay for site heavy duty plant. WMS to be prepared by subcontractor including a maintenance program. Engage sweeper. Limited hosing of hard surfaces only.	SM/Foreman	Daily surveillance. Weekly/monthly inspection checklist.	No mud/silt tracked onto roadways.
Provide sediment basins/detention areas/tanks to capture/store site runoff.	Prior to commencing works	Size and construct sediment basins/detention areas to meet authority requirements (ie project approval or Blue Book) as required.	CM/SM	Daily surveillance to assess condition and capacity.	Appropriately designed and maintained detention areas/facilities.

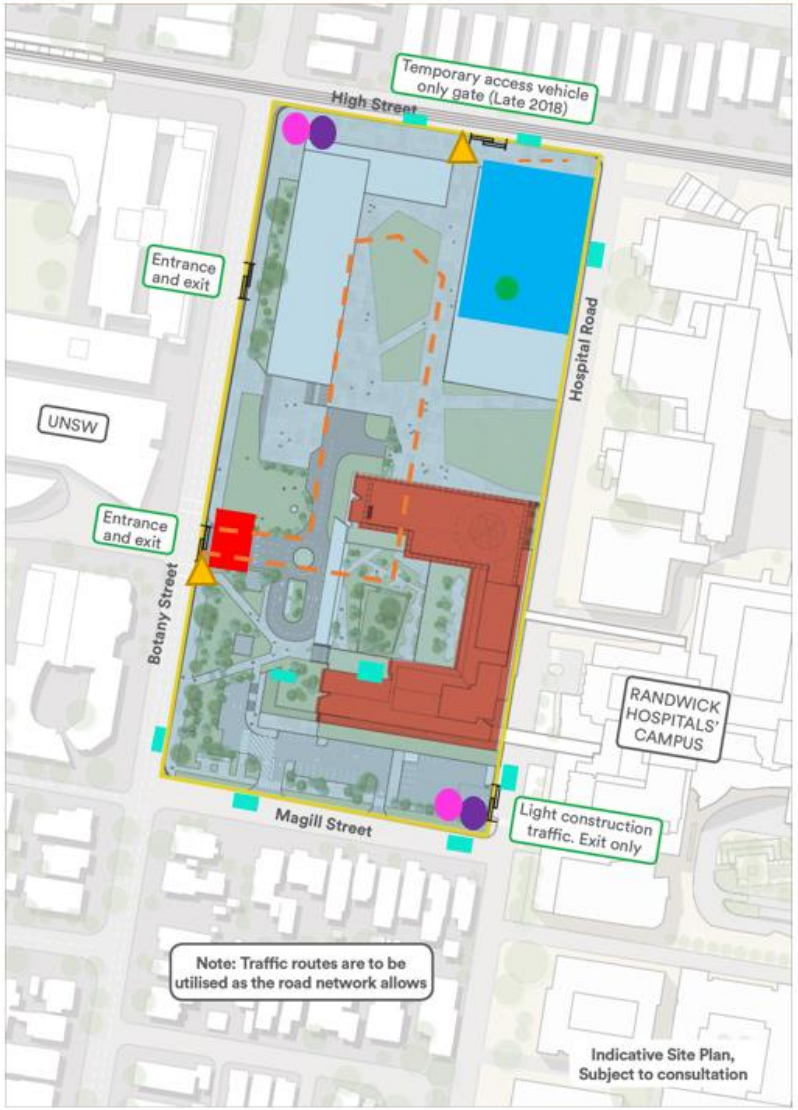
		Operate and maintain in accordance with design/ engineering documentation.		Weekly/monthly inspection checklist. Inspection during and immediately after rain.	No overtopping under design conditions.
Erosion and Sediment Control During Construction					
Maintain erosion and sediment controls in an operable condition.	At all times and after rain events	Check the condition of controls. Remove accumulated sediment and debris and dispose. Undertake maintenance as required. Install new controls as new work areas open.	SM/Foreman	Daily surveillance. Weekly/monthly inspection checklist. Post rain inspections. EMD updated.	Silt collected at base of fence. No breach of fence line.
Maintain stormwater pipes, pits and other controls (eg plugs).	At all times	WMS prepared by subcontractor. Check the condition and operation of stormwater infrastructure and controls. Remove debris and sediment and dispose. Monitor for blockages.	SM/Foreman	Daily surveillance. Weekly/monthly inspection checklist.	Free flowing pipes capable of discharging maximum flows.
Cover all loads leaving site to minimise the potential for spillage and tracking.	At all times	WMS prepared by subcontractor to address covering of loads and prevention of tracking. Loads and the condition of trucks/tailgates checked by subcontractor before leaving site.	SM/Foreman	Daily surveillance. Weekly/monthly inspection checklist	No uncovered loads No non conformances identified.

Locate stockpiles away from drainage lines, watercourses, sensitive ecosystems and flood prone areas.	At all times	Stockpile locations identified on EMD diagram. WMS prepared by subcontractor addresses stockile management.	SM/Foreman	Daily surveillance. Weekly inspection checklist.	No uncontrolled stockpiles. No stockpiled material runoff into the stormwater system.
Cover soil stockpiles and provide bunding and sediment controls around the base.	At all times	WMS prepared by subcontractor to address. Subcontractor to implement as part of soil management and monitoring on site.	SM/Foreman	Weekly/monthly inspection checklist.	Pre-construction check. No release of material.
Stabilise stockpiles with a soil binder, sealant or sterile cover crop (grass).	Maximum 1 month after stockpile placement (if the material is remaining on site)	Establish appropriately located and sized stockpiles in designated areas only. Stabilise in accordance with manufactures specifications and application procedures. Stabilise or cover stockpiles left for >4 weeks.	SM/Foreman	Weekly/monthly inspection checklist.	No erosion or dust generated from stockpiles.
Maintain erosion and sediment controls until the potential for erosion and sedimentation has been eliminated.	At all times	Maintain controls in accordance with SESC diagram. Do not remove controls prior to any area being deemed stable.	SM/Foreman /EHS	Weekly/monthly inspection checklist Inspections during rain events.	Controls effective and in good condition. No uncontrolled discharges of sediment off-site or into waterways.

Stormwater Detention and Dewatering					
Inspect basins/tanks, detention facilities and stormwater treatment devices and remove any build up of debris.	Ongoing. Within 24hrs of a rain event	Retain capacity in detention facilities for storm events. Inspect the site within 24hrs of a 1 in 5-year Average Recurrence Interval (ARI) event including sediment basins/detention areas and stormwater treatment devices. WMS to be prepared by sub-contractor to address inspection, testing and dewatering.	SM	Inspection within 24hrs of nominated rain event. Weekly/monthly inspection checklist.	Detention areas and capacity of facilities maintained in operational condition. No uncontrolled discharges under design conditions.
Test, treat and reuse collected stormwater on-site for dust suppression, truck and plant washing (in designated areas only).	Ongoing	WMS prepared by subcontractor to address this option. Undertake water quality testing and treatment of stormwater. Meet required water quality criteria prior to reuse.	CM	Metering and recording of stormwater reused on site. Water quality test results from a NATA accredited laboratory.	Water treatment and dewatering undertaken in accordance with documented site procedure and Workplace Delivery Code. No discharge to exceed authority criteria.
Test, treat and discharge collected stormwater off-site if it cannot be reused on site.	Ongoing	WMS prepared by subcontractor to address this option. Confirm that water quality testing, treatment and dewatering methods satisfy the requirements of the relevant statutory authority. Undertake water quality testing and treatment of stormwater.	SM Sub-contractor	Water quality test results from a NATA accredited laboratory. Dockets for off-site disposal where the water is not acceptable for discharge.	Water treatment and dewatering undertaken in accordance with documented site procedure and Workplace Delivery Code. No discharge of non-compliant water or off-site pollution.

		Meet specified water quality criteria prior to discharge. As a minimum : No chemical contamination and water quality must comply with any specific requirements of the Statutory Authority criteria. Water quality must meet the following criteria: • pH is between 8.5 and 6.5 • Suspended solids is less than 50 mg/L, To discharge to offsite / stormwater system			
Site Stabilisation					
Implement site stabilisation works and landscaping progressively to rehabilitate disturbed ground.	Progressively during construction	Stabilise and seal disturbed areas in accordance with the design/engineering/landscape plans and scope of works.	CM/SM/EHS	Weekly/monthly inspection checklist Project planning and design meetings.	Stabilisation of all disturbed work areas. No uncontrolled runoff containing sediment or contaminants.

ENVIRONMENTAL MANAGEMENT DIAGRAM– RANDWICK CAMPUS REDEVELOPMENT PROJECT



EXTENT MAP

KEY ENVIRONMENTAL ISSUES

- Dust both within site and leaving the site perimeter
- Unexpected finds
- Noise to general public
- Water Run Off
- Sediment Run Off

SENSITIVE RECEPTORS

- UNSW
- Randwick Hospital Campus (including Sydney Children's Hospital, Royal Women's Hospital, Prince of Wales Public & Private Hospital
- Local Residents (High Street & Magill Street)

KEY CONTROL MEASURES

- Soil is to be managed in accordance with the RAP
- Silt barriers consisting of geotextiles with secondary filtering material will be established at one meter offsets from drains
- Geotextile to cover over drains to filter water along with sand bags when required
- Additional dust monitors in place within the Hospital Buildings along Hospital Road
- Wheel wash bay to be implemented
- Sprinklers and water carts to reduce dust
- Dust Glue to be used for unconsolidated material

KEY CONTACTS PERSONS

Construction Manager:
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Site Manager:
Dane Lalic 0411 406 559

Emergency Services:
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EHS Coordinator:
Chloe Manning 0427 563 644

LEGEND

Icon	Descriptions
	Perimeter A-Class Hoarding
	Vehicle Entry Gate
	Site Accommodation and Offices
	Spill Kits
	Dust Monitors
	Vibration Monitors
	Acoustic Monitors
	Stormwater inlet
	Haul Road
	Wheel Wash Bay