RANDWICK CAMPUS REDEVELOPMENT

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Acute Services Building

May 2020

DOCUMENT HISTORY

Version	Date	Issue by	Status
1	May 2019	Lendlease	For CC1
2	March 2020	Lendlease	For CC3 incorporating project updates
3	April 2020	Lendlease	For extended working hours
4	May 2020	Lendlease	Updated Extended working hours strategy

DOCUMENT CONTROL

To ensure the Construction Environmental Management Plan remains relevant and accurate, this document will be continuously reviewed and evaluated throughout the planning and delivery of the ASB.

Any revisions made will be communicated to the project team accordingly.

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Acute Services Building

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1.0 INTRODUCTION

1.1 OVERVIEW

The Prince of Wales Hospital Expansion Stage 1 of the Randwick Campus Redevelopment comprises the construction of an Acute Service Building for NSW Health, in partnership with the University of NSW (UNSW).

The Randwick Campus Redevelopment Acute Service Building (ASB) is a highly complex project with critical early milestone components that must be delivered on time.

The new ASB building is subject to two separate planning approvals:

- SSD9113 - Acute Service Building (ASB) - Bulk earthworks, construction and fit out of a new Acute Services Building to existing hospital buildings, and road works to surrounding streets and landscape works;
- SSD10339 – The integrated Eastern addition to the ASB (the IASB) - Lowering of Hospital Road, construction of the UNSW Eastern Extension (Base Building only, not fit out) and overhead pedestrian links to existing hospital facilities. It is noted that some scope of the SSD9113-ASB development has been superseded by the integrated Eastern addition approved under this DA.

The construction of both approved developments is scheduled concurrently due to their inherently integrated scope.

The objective of this Construction Environmental Management Plan (CEMP) is to ensure that the ASB (the Project) is safely delivered using a robust set of methodologies and zero unplanned disruption to hospital services, and to comply with the regulatory requirements as outlined by the Department of Planning and other Authorities.

This plan has been developed from the approved Development Consent Conditions as outlined in SSD 9113 approved on the 27th February 2019. There are several sub plans which will form the basis of this management plan. During the construction programme, these plans will be reviewed and updated as required.

This plan and its sub-plans operate in conjunction with the plans for the IASB under SSD10339.

The Lendlease construction management processes will provide:

- Seamless performance and accountability from a single responsible entity;
- The works will be managed by a single proven responsible entity; and
- a mechanism to reduce risks during project delivery.

Lendlease has produced this CEMP as the contractor responsible for the delivery of the project. It is envisaged that this CEMP will evolve during the course of the Project as the design develops in conjunction with the design consultant team, project stakeholders, Health Infrastructure (HI), South East Sydney Local Health District (SESLHD) and Price Waterhouse Coopers (PwC).

In the following sections, we have set out how we intend on managing the Project and activities associated with the RCR.

The CEMP also defines the impacts of the proposed construction activities on areas within the RCR site and hospital campus the Prince of Wales (POW) Hospital Campus (Campus). This plan will outline the proposed mitigation strategies to be implemented during the relevant construction activities and outlines contingency measures that will be enacted to minimise any potential risk to HI, SESLHD, its community partners and stakeholders.

Our proactive and collaborative approach to our client NSW Health Infrastructure is underpinned by the following overriding and non-negotiable objectives:

- Maintain business continuity of the campus and adjoining facilities and properties;
- To deliver a world class facility for our client on time to the highest safety and quality standards;

- Safe and timely delivery of the ASB, enabling construction of the RCR;
- Communicate in a timely fashion with all relevant stakeholders what, when and how we are planning to undertake interface works;
- Present a positive public perception of the project during the construction works;
- Use experienced and qualified subcontractors with appropriate resources to deliver their works in the manner we prescribe; and
- Hands on control of subcontractors from experienced Lendlease site supervision.

HI will have four key outcomes from the Lendlease CEMP:

Figure 1: Key outcomes

1.2 CONSENT CONDITIONS

The Department of Planning has issued the approved Development Consent conditions for the SSD-9113.

The Conditions relevant to the CEMP which have been addressed in the CEMP are included in the Compliance Matrix. The CEMP has been developed to include the requirements outlined in Consent Condition B32.

The Applicant is to submit a copy of the CEMP to the Certifier and the Planning Secretary prior to commencing works.

Lendlease will be seeking four Construction Certificates under this SSD-9113. They are as follows:

- CC1 – Services diversions & Piling
- CC2 – Bulk Excavation, Inground Services and Structure up to and including Level 1
- CC3 – Remaining Structure, Façade, Services and Fitout
- CC4 – Remaining Fit Out Works, External Works and Landscaping

The CEMP is requested to be approved for all these components of works.

1.3 COMPLIANCE MATRIX

For ease of reference the following compliance matrix has been prepared to identify relevant sections of the CEMP as outlined in condition B33.

Condition	Requirement	Document Reference
B33	(a) (i) Hours of Work	Section 3.3
	(a) (ii) 24 Hour Contact details	Section 3.5
	(a) (iii) Management of dust and odour to protect the amenity of the neighborhood	Section 11
	(a) (iv) stormwater control and discharge	Section 11
	(a) (v) measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;	Section 11
	(a) (vi) groundwater management plan including measures to prevent groundwater contamination;	Section 11
	(a) (vii) external temporary lighting in compliance with AS 4282-2019 Control of the obtrusive effects of outdoor lighting;	Section 15
	(a) (viii) community consultation and complaints handling;	Section 7
	(a) (ix) measures to ensure the ongoing safe operation of the existing helipad on the site identified in the review undertaken in accordance with Condition B49	Section 16
	(B) Construction Traffic and Pedestrian Management Sub-Plan (see condition B35)	Section 7.1
	© Construction Noise and Vibration Management Sub-Plan (see condition B37)	Section 9
	(D) Construction Waste Management Sub-Plan (see condition B38)	Section 10
	(E) Construction Soil and Water Management Sub-Plan (see condition B39);	Section 11
	(F) Aboriginal Cultural Heritage Management Sub-Plan (see condition B40);	Section 12
	(G) Flood Emergency Response (see condition B41)	Section 13
	(H) an unexpected finds protocol for contamination and associated communications procedure	Section 14
	(I) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure;	Section 14

	(J) waste classification (for materials to be removed) and validation (for materials to remain) be undertaken to confirm the contamination status in these areas of the site;	Section 14

2.0 BUSINESS CONTINUITY

2.1 WORKING WITHIN THE OPERATIONAL HOSPITAL ENVIRONMENT

The Lendlease project team understands the challenging nature of the RCR and the constraints of managing major construction works adjacent and within an operational hospital environment and the non-negotiable requirement of no disruptions to hospital 'business continuity'.

Works areas

The first strategic approach from the site team in addressing live environment works is elimination. This means isolating work areas from operational hospital areas prior to any works being commenced and eliminating a works/hospital operations interface.

This will be the case for the major works to the following areas:

- The identified excavation zones will be enclosed by A Class hoarding and will be secured to ensure no unauthorised access. The A Class hoarding will be maintained for the construction of the new ASB building

When elimination is not feasible, the second approach is to fully isolate the work area through secure hoardings prior to commencing any works and to provide controlled work access through the operational environment. This will be applicable to:

- Services connections to existing infrastructure that are required.

Along with significant works interfaces noted above there will also be planned investigative works, access to plant rooms, minor temporary works and installation of protective measures which will require process and controls to ensure full visibility of all subcontractors for these types of activities. Lendlease will impose a strict regime of consultation on all works outside the site perimeters, regardless of the nature of the intended works.

The Disruption Works Notice process will be followed here. This includes all workers to firstly complete the required hospital worker induction and secondly, Lendlease will institute a 'Permit to Work' process for all works outside of the secured site areas.

The permit system puts hold-points in place, which have to be signed-off prior to permit issue. If workers are found to be working without permits, they will be removed from the Project. The hold points for the 'Permit to Work in the Hospital Area' will be the same as those for the Disruption Works Notice, to ensure a consistent level of compliance from the subcontractors.

Lendlease have identified a 4 step process that we will undertake to ensure that the design and construction methodology mitigates the construction risks inherent in conducting site works within a live Health Campus (refer Figure 2). The planning for health service continuity and risk management 4 step process will underpin all stages of the RCR-ASB project and will be used as the guiding principle for how construction will be undertaken around the campus.

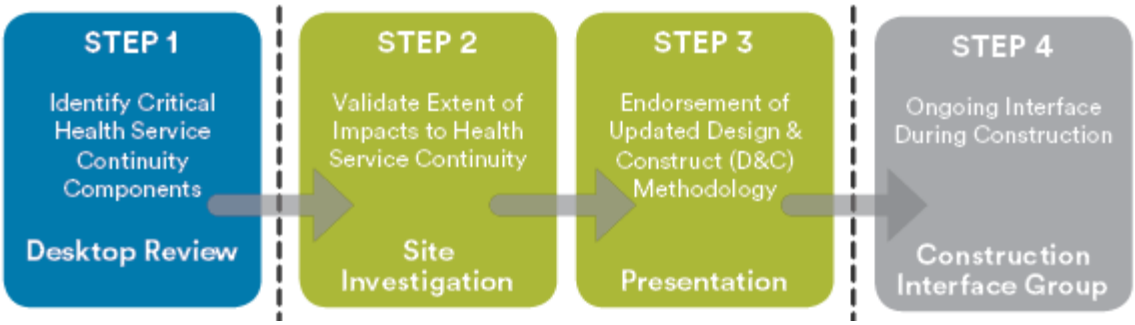


Figure 2: Four step business continuity process

Step 1 has been undertaken during the planning phase by Lendlease and will heavily influence initial construction methodology planning. Examples include but not limited to the following:

Program and staging:

- Analysis of disruptive works staging in the most efficient manner to minimise disruption to the Campus stakeholders; and
- Sequencing construction to ensure handover of completed spaces to the RCR at the best and earliest opportunity.

Site establishment:

- Efficient use of existing redundant facilities and space available for site establishment to minimise space taken by the construction site;
- Off Campus solutions to construction car parking to ensure no disruption to car parking within the precinct; and
- Planning for construction access in controlled zones.

Construction interfaces:

- Strictly controlling where construction will interface with the Hospital nearby residential dwellings or public;
- Implementing airtight, acoustically treated hoardings for all existing building connections to minimise Infection Control risks and reduce construction noise impacts to nearby existing buildings;
- Ensuring sight lines from the construction site are managed so that patient and residential privacy in adjacent buildings are maintained;
- Developing a web based Disruptive Works Notice (LiveOps) system to identify, document and communicate disruptions to stakeholders in a timely, interactive and transparent manner;
- Separation of the construction workers from staff, public and patients by providing discrete site accommodation and amenities within the construction boundaries; and
- Using low impact construction methods to ensure noise and vibration doesn't impact the daily operations of the Hospital and nearby residential properties.

Lendlease will follow steps 2 and 3 to validate these assumptions and further develop them ready for the construction phase.

Step 4 implements ongoing risk assessment, mitigations and controls that have been established through Steps 1-3 and the continual monitoring of changing conditions that may affect our design and construction methodology. Strategies to support Randwick business continuity include but not limited to:

- Regular construction risk assessment using the Interface Strategy principles to identify areas of and manage potential interface risks that may affect the Campus business continuity;
- Utilising the Disruptive Works Notification (LiveOps) process to identify, manage, communicate and collaborate on works that affect the existing Hospital facility in a clear and transparent way;
- Undertake a holistic integrated system testing and commissioning process;
- Undertaking an efficient, transparent Completion and Validation process in collaboration with the SESLHD and principal representatives to ensure that the completed product is seamlessly transitioned into a live hospital environment; and
- Community notices / updates.

2.3 IDENTIFICATION AND MANAGEMENT OF KEY PROJECT RISKS

The Randwick Campus Redevelopment presents a number of challenges that need to be delivered through a planned and structured approach. Prior to commencing with construction activities an extensive analysis of the project documents will be undertaken including multiple site inspections to thoroughly understand and plan the project based on our awareness of the key risks. Within this section an initial assessment of such risks and the proven construction delivery techniques adopted for the project. The key objective is to cause "zero unplanned disruptions" during delivery of the works.

To achieve this objective Lendlease propose using a risk identification strategy built around the key interface points between the construction and the operational Health Precinct. This Interface Strategy will be critical in risk identification and will be used to influence design decisions and dictate construction methodology. The following provides an initial assessment of the key interface risks and mitigations associated with the demolition and site clearance activities associated with the Randwick Campus Redevelopment. These will be developed in meticulous detail during the planning phase to inform the design and construction methodology, eliminate or manage risks appropriately and to ensure a smooth interface with the existing Randwick Health Precinct.

Approach to Risk Management			
Risk, Major Issues and Interface Type	**Details**	**Mitigation**	**Benefit**
Maintain the public's perception of 'business as usual' for the Randwick Hosptials' Campus.	Understand the implications of construction staging on the hospital's operational drivers and the poten ial impacts.	Review he construc ion staging with the hospital to ensure the full understanding and acceptance of the proposals: timing/ durrations, construction impacts, power tools, noise, temporary par itions and access routes etc. All workers will be made aware of their responsibilites towards the understanding what constitutes disruptive works and to understand the time frames associated with preparing to carry out such works.	Minimise impacts of disruption to the hospital's daily activities wherever possible. Separation of construction and Hospital/ public. Workers to be constrantly reminded of he importance of patients and users of the Hospital.
Working adjacent to the Royal Hospital for Women (RHW)	Construction works will take place adjacent to existing RHW facilities with potential disruptions to services.	Privacy screens will be erected to remove direct sigh lines from the RHW into the site. Workers will be made aware of patient privacy within the RHW bedrooms. No unauthorised removal of privacy screens erected on scaffold to prevent direct sigh line within wards from the site. Where there are potential disruputions, extensive planning and consultation will be undertaken prior to commencement of disruptive works.	Increased patient privacy to improve wellbeing. Separation of staff and patients from construction. Workers to be constantly reminded of he importance of patients and users of the Hospital.
Construction workers access and egress affecting daily Hospital Operations.	Construction workers should cause the least amount of disruption possible for staff and patients.	Access to and from site will be defined and out of bounds areas clarified for workers. The induction will focus on the amentites planned for within the construction site boundary which include lunch facilities with a selection of food outlets designed to offer choises to workers to limit their need to exit site at meal times.	Reduce congestion of public areas through separate access routes and social areas. Workers to be constantly reminded of he importance of patients and users of the Hospital
Working around children.	With construction in close proximity to the existing Children's Hospital, workers will need to be aware of working around children.	All workers will be made aware of their responsibili ies towards working adjacent to facilities with children. Any workers involves with direct works inside identified areas will be required to undergo a 'working with children check'.	Children, their parents, and the staff in the childrens hospital are reassured that the increased activity will not have a negative on younger pa ients, and that workers are sensitive to their responsibillites around children. Separation of staff and patients from construction activities. Workers to be constantly reminded of he importance of patients and users of the Hospital

Approach to Risk Management			
Risk, Major Issues and Interface Type	**Details**	**Mitigation**	**Benefit**
Disruption to critical life services.	Disruptions to critical life services for tie-in's between new and existing.	Clear identification of critical building services. Any construction works which could impact there services can only proceed once full works plans and contingency plans are in place and signed off by all parties.	Zero unplanned disruptions to exisiting facility and critical services.
Disruption to Light Rail Operations.	Work in close proximity to energised wire and adjacent work zones.	Clear communication and planning protocols to be set-up and managed to ensure a successfill project outcome.	Nil disruptions to Light Rail external opera ions and the demolition phase can sty on program.
Disruption of the existing hospital pedestrial and vehicle access.	Entry/exit to site will be manned and managed by Lendlease Traffic controllers to mitigate disruption to pedestrian and vehicle access.	The project will be programmed with a fill temporary traffic management system to be established and coordinated with the hospital stakeholders prior to the commencement of construction. Traffic controller management of the entry and exit to existing hospital loading dock. Traffic flow will be assisted and priority given to key hospital deliveries. In consultation with the Principal and Local Council, identify proposed construction vehicular traffic movements and routes. Prepare and agree a detailed traffic management plan that will be implemented on the project.	Pedestrian safety with logical wayfinding, controlled traffic management. Minimise interface between construction and he Health precinct.
Vehicle parking	The commencement of the construction works for he early and main works contracts will see an influx of subcontractor workforce on the Precinct.	We will actively encourage the construction workers to use public transport to commute to and from the site, we do expect that some additional vehicles will be attempting to park near site. We will review opportunity for supplementary offsite parking to alleviate existing parking pressures onsite.	Minimise inderfaces between construction and the Health precinct. Maintains existing carpark numbers for staff, patients and public.
Impact for hospital opera ions	Minimising loss if amenity for patients and staff durring construction, in particular the interface works at the existing facades and refurbishment works adjacent to occupided areas.	Throughout the interface works we expect there will be a need for impact drilling for structural connections and the like. Lendlease will plan and sequence these works to occur at specific agreed times to allow as much respite time as possible, in addition the utilisation of low frequency low impact tools and equipment will be implemented where possible. Core drilling will be utilised as an alternative where practical.	Continuation of regular hospital activities with minimal disruption to staff and patients. Minimise noise, dust and vibration effect on the operational hospital.
Disruption to nearby residen ial and business properties	Minimising loss of amenity for nearby residen ial and business properties during construction, in par icular the interface works at the existing facades and refurbishment works adjacent to occupided areas.	Noise, dust and vibration monitoring proactive notification of disruptive works selection of low impact equipment where possible for public safety.	Minimise noise, dust and vibration impacts on nearby dwellings.

Approach to Risk Management			
Risk, Major Issues and Interface Type	**Details**	**Mitigation**	**Benefit**
Infection control	A major issue whilst undertaking construction work on an operational campus.	Provision of acoustic and dust proof hoardings providing construction containment, he provision of localised dust monitoring, maintenance of negative pressure areas plus the use of air pressure sampling to ensure our construction containment regimes are working. The project specific infection control plan is developed prior to commencing the construction works. In preparing this plan Lendlease will make referenceto the 'Infection Control Principles for the Management of Construction. Renovation, Repairs and Maintenance within Healthcare Facili ies'. The plan will identify the different types and locations of works planned on the RCR and specifiy the level of activity. Identification of existing hospital air intakes and review to determine if additional filtration is required.	Elimination of negative impacts on staff and patients' health and wellbeing. Prevent dust from entering a clean hospital environment with ongoing monitoring to ensure adherence to this policy. Minimise noise and vibration effect on he operational hospital.
Environmental conditions	The site area will require careful management of the site run-off.	Early works perimeter protections to be investigated during the ECI phase	Minimises negative impact of construction to surrounding precinct and green zones.
Removal of poten ially hazardous materials	Removal and disposal of potentially hazardous or contaminated materials or substances.	Clearly communicate our methodologies to the hospital and liase with all stakeholders to ensure visability and understanding of the process.	Containment of the potentially hazardous materials in a controlled manner.
Damage to existing building facades	During construction of link bridges there is a potential for damage to the existing building facades.	Temporary hoarding of glazed facades will be installed to enable continued opera ion of spaces adjacent to the affected areas.	Limit of potential impact of construction to the existing facilities. Continuation of regular hospital activities with minimal disruption to staff and patients.
Con inued compliance of existing fire zones	Fire zones ane egress paths are the be maintained	Maintain all required egress paths in coordination with the au horities. Maintain smoke extraction and relief ar supply through he main entry doors. Undertake works in consultation with the fire engineer, principal certifying authority and HI NSW.	Clear communication of emergancy egress for public and hosptial users.
Unauthorised access to the contruction site	Prevent public/ patients from climbing the perimeter fence	A solid 2.4m "A" class hoarding wall to be installed.	Provision of a safe site environment.

2.3 MANAGING RISKS WITHIN AN OPERATIONAL HOSPITAL ENVIRONMENT

Lendlease is aware of the challenging nature of the RCR works being located in close proximity to the existing Hospital buildings. The project has critical construction and services interfaces and non-negotiable stakeholder requirements to ensure operational continuity is maintained. During the design stage Lendlease will work in a collaborative manner with PWC to develop our stakeholder communication structure and to address all stakeholder requirements and concerns. Through this open partnership collaboration process we will develop solutions that have stakeholder buy-in and document an agreed plan to manage construction delivery through to the completion of the works. The activities below have the potential to significantly impact on the operation of the hospital, the wider Precinct and neighbour, if not managed effectively and communicated proactively with stakeholders:

- Access and traffic management;
- Planning and management of any major shutdowns;
- Minimising and controlling disruptions;
- Protection of existing hospital assets;
- Maintenance of existing patient and staff privacy and security;
- Emergency after-hours call-out;
- Hazardous material identification and removal;
- Noise, dust and vibration control; and
- Out of hours work.

Lendlease will prepare the following Management Plans to develop clear and concise communication channels for each area of interface works and support the ongoing operation of the hospital:

- Stakeholder Management Plan;
- Risk Management Plan;
- Helicopter Management Plan;
- Disruptive Works Notification Procedure; and
- Environmental, Health and Safety (EH&S) Management Plan.

Our integrated Environmental, Health and Safety Management Plan will identify all EH&S risks associated with stakeholders including and not limited to members of the public, hospital staff, hospital clients, and workers on site. The sub plans below will be developed with the collaboration of the relevant stakeholders during the pre-construction phase:

- Traffic and Pedestrian Management Plan;
- Noise and Vibration Management Plan;
- Dust Management Plan;
- Stormwater Management Plan;
- Waste Management Plan;
- Incident Management Plan;
- Emergency Response Plan;
- Crisis Management Plan;
- Hazardous Materials Management Plan; and

- Workplace Relations Management Plan.

2.4 INDUCTIONS

The Lendlease induction will be specifically tailored to inform workers of their obligations working within a live health environment for the Randwick Campus Redevelopment. The content of the induction will be reviewed with the Health project team to ensure the strategies imposed by Lendlease are aligned with the requirements of the precinct. The project induction will train new workers on project specific safety and emergency procedures, however, the key focus will include interface controls, including:

- Working in a live environment: The construction methodology has been designed around maintaining business continuity for the Hospital. This is key to a successful project and will be the underlying theme of the induction procedure for every worker on site;
- Infection control: Content within the induction will focus on the importance of infection control and the risk to the existing Hospital from construction works. It will also focus on work methodologies and quality procedures to ensure the end product delivered to the client has been constructed in accordance with the documentation and without risk of infection to end users;
- Access within Existing Hospital: We will provide clarity regarding no access into existing Hospital
- areas. There will be clear 'no-go' zones identified including the travel path for all emergency vehicles to and from the Hospital;
- Separation of Construction Works from Hospital Operations: Access to and from site will be defined and out of bounds areas clarified for workers. The induction will focus on the amenities planned for within the construction site boundary which include lunch facilities with a selection of food outlets designed to offer choices to workers to limit their need to exit site at meal times;
- Disruptive Works Procedure: All workers will be made aware of their responsibilities towards
- understanding what constitutes disruptive works and understand the time frames associated with
- preparing to carry out any such works; and
- Working around Children: All workers will be made aware of their responsibilities towards working adjacent facilities with children particularly the interface with the Sydney Children's Hospital.

We will also focus on the unique requirements of each stakeholder within the campus to ensure that the information in the induction is up to date and relevant to the specific work areas on site. An example of the specific requirements and locations are:

- Working Adjacent to the Existing Clinical spaces: All workers will be made aware of the need to ensure patient privacy within the facility. No unauthorized removal of privacy screens erected on scaffold to prevent direct sightline into wards will be permitted.
- Working Adjacent to Local Residential and Business Properties: All workers will be made aware of the need to ensure positive contractor behavior at the approach and on site, including minimizing disruptions to local parking and access.

3.0 OPERATIONS & SITE MANAGEMENT

3.1 OVERVIEW

The table identifies the key milestones of the scope of the IASB addition works.

The Randwick Campus Redevelopment project will require precise site establishment, staging and operation, to ensure both safety, appropriate security, interface management and productivity are achieved. Lendlease's nominated delivery team has developed this detailed plan, which is integral to program and construction methodology. Close attention to detail and the quality of the finished product are paramount, particularly on

this multifaceted Healthcare Project. Lendlease believes this focus on quality must be promoted and fostered amongst the workforce on the project. This begins with an efficient site establishment strategy, and clean amenities which will set the standard for a high-quality outcome.The planning and methodology assessment for the project has identified a number of key stages in the general configuration of the site during construction. This section provides an overview of the overall approach adopted with detail description of these stages provided below.

3.2 DILAPIDATION SURVEYS & MONITORING

Prior to commencing works Lendlease will complete an extensive dilapidation survey of existing infrastructure covering roads, footpaths, external and internal areas of the existing buildings adjacent and interfacing with the construction site. Coordinated access to internal hospital areas will be arranged through the Principal. The resulting report will be provided to the Principal as a pre-commencement record of the existing built works on the precinct adjacent to the construction areas. Our team also propose to inspect existing plant and equipment conditions in the initial periods of the ECI to determine the capacity of any plant and equipment that the new works interface with. This is critical to inform design scope and establish key opportunities and risks for consideration during interface planning. Considering the above, we carry out the following works:

- Lendlease has allowed to engage an acoustic consultant during the course of the construction works to provide detailed advice and practical methodologies in the form of a Construction Noise and Vibration Management Plan in order to manage the potential noise issues with the adjacent sensitive receivers. Lendlease has extensive experience in managing these issues on similar health projects and will look to introduce the following measures on this project such as:
- Adopt and modify the protection strategy for any heritage or significant buildings located on the site.
- Positioning major plant away from sensitive receiver boundaries where possible concrete pumping zones, cranage, and loading zones have been positioned away from operational existing facilities. Where applicable treating plant with mufflers and noise mitigating filters.
- The Construction Noise and Vibration Management Plan mentioned previously, will detail the criteria and protocols for vibration and noise protocols to the surrounding properties. This report details a number of sensitive receivers above ground in relation to vibration being:
- Children's Hospital;
- Existing "Core" Facilities; and
- University of New South Wales.

3.3 HOURS OF WORK

The construction hours approved for the development include the current approved ASB General construction hours:

General Construction hours	
Monday – Friday	7:00am to 6:00pm
Saturday	8:00am to 5:00pm
Sunday	No work

In addition to regular working hours, there will be occasional short periods when out of hours works are required. In accordance with the Integrated Acute Services Building, SSD-10339, there are extended weekend working hours for that development. These are detailed in the CEMP for this development project.

Lendlease will agree the process with HI, LHD, TMC, TfNSW, SCO and Randwick City Council to address the approvals and additional measures required prior to scheduling any out of hour's works. The nature of these works would typically include erection of hoardings, works to footpaths, services connections and other works that interface with the surrounding operational hospital.

With the impact of Covid-19 and the Government legislation introduced with requirements to comply with social segregation, construction works, and productivity could be impacted. Hence Lendlease is preparing for extended working hours. The nominated extended working hours in addition to the General construction hours include the following:

Extended Construction hours	
Monday – Friday	6:00am to 7:00am
Monday – Friday	6:00pm to 10:00pm
Saturday	7:00am to 8:00am
Sunday	No work

These extended working hours during Monday to Friday is to allow Lendlease to effectively manage the construction site with the new Statutory requirements with respect to Social segregation. The request to commence site opening from 6:00am in lieu of 7:00am is to facilitate the movement of personnel onto the construction site and to their work areas. As the number of personnel on site increase it will be necessary to introduce staggered start times for the various subcontractors to ensure Social segregation is managed. Traditionally up to 12 workers could ride in the builders hoist. New management requirements limit this to 5 personnel at a time. Hence the need to start earlier to ensure workers can efficiently get to their location on the site in a safe and timely manner.

Traditional breaks such as mid-morning break and lunch break are already staggered and will need to continue. With working hours extended into the evening, this allows for staggered completion of workers shifts. Further Site Management details explaining the justification for the Extended working hours is in section 5.5.

3.4 PROPOSED SITE PLAN

During the course of Randwick Campus Redevelopment Demolition and Site Clearance Works, see below proposed site establishment to be completed in the following stages:

- Stage 2 - Piling & Bulk Excavation
- Stage 3 - Main Works

This plan highlights the location of the site accommodation, project office inclusive of clients office, this plan also demonstrates how the site will be accessed by delivery drivers and couriers on a day by day.

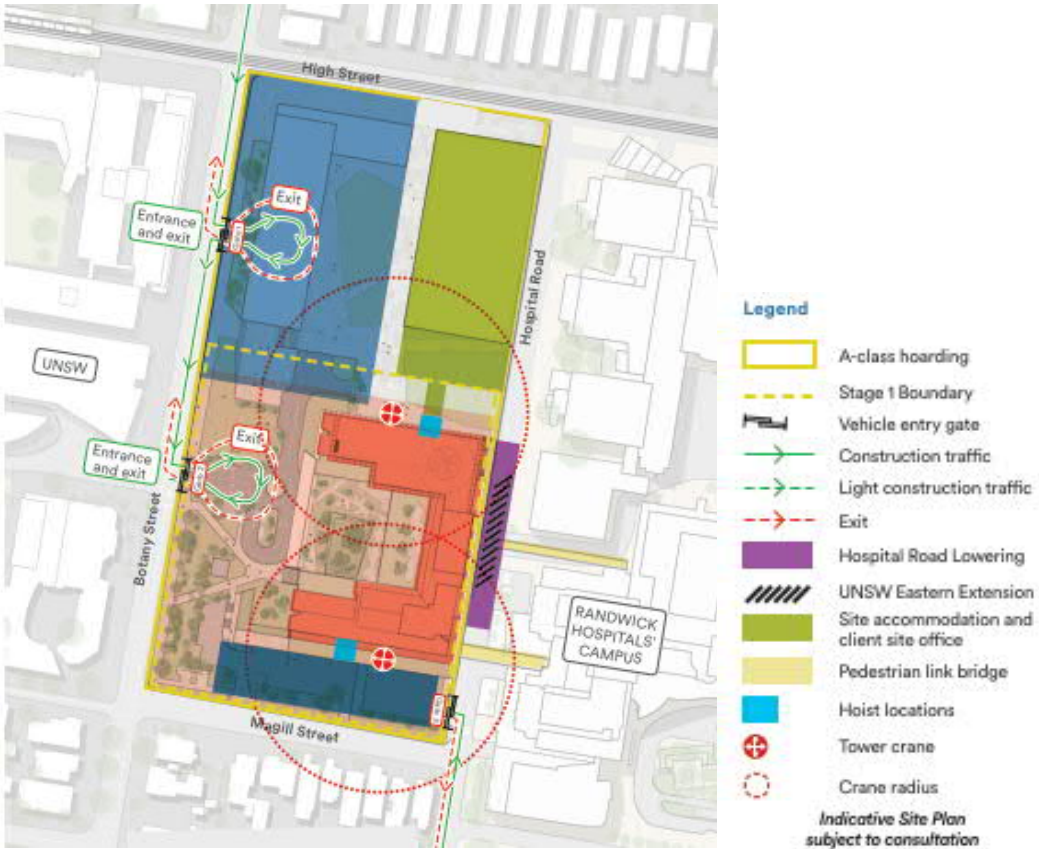


Figure 3 –Lowering of hospital road and UNSW Extension

3.5 CONSTRUCTION WORKFORCE

Figure 5 Labour Histogram identifies the workforce numbers. At its peak the project will engage a workforce of approximately 500 individuals. It is anticipated that this peak will be reached in late 2020. All workers will undergo mandatory inductions to understand their responsibilities when working on the RCR project site and in close proximity to a live Hospital environment. This is inclusive of parking restrictions, dedicated parking facilities, transportation options and available on site storage facilities. Planning for construction workforce transportation and parking management will be aligned with projected workforce counts and associated parking demands. It is understood that a portion of the site worker population will elect to travel to site using private vehicles. Construction workers driving to sites in constrained parking environments, similar to the
RCR, typically carpool reducing traffic impacts on the local road network. The project site is well serviced by public transport providing site workers with alternative travel options.

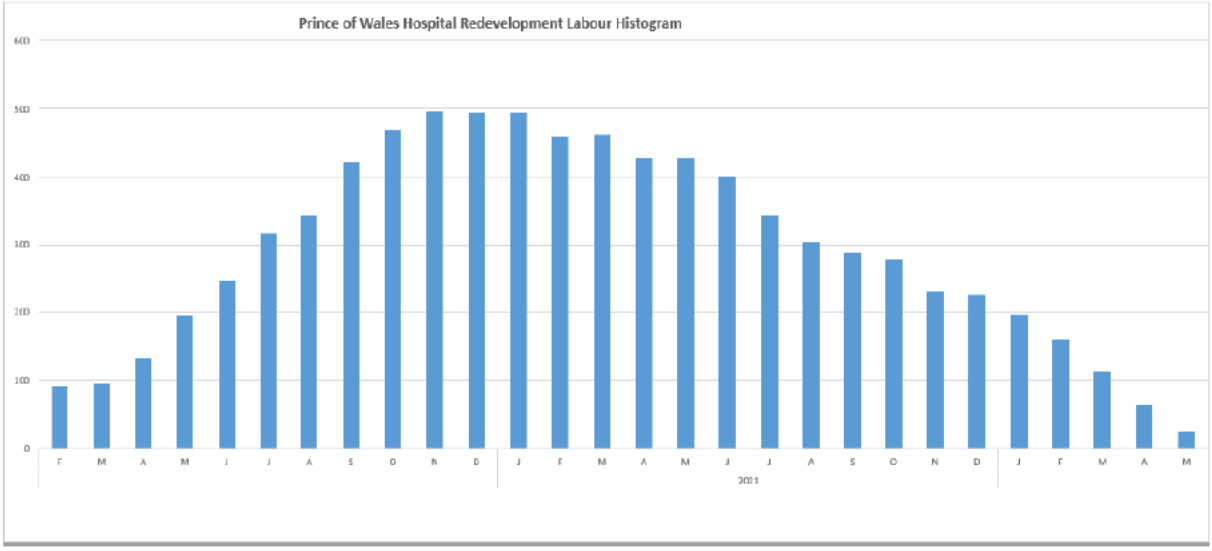


Figure 5 –Labour histogram

3.6 SITE CONTACTS

A list of key contacts, phone (business and after hours) will be maintained and available on site.

Organisation	Contact Name	Contact Number
Lend Lease – RCR Project	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	[redacted]	[redacted]
	RCR Site 24 Hour Project Contact/Complaints	1800 571 866

CBD South East Light Rail	Liz Davidson, Community Relations Manager Randwick, Kensington and Kingsford Sydney Light Rail Projects	0414 754 308
Prince of Wales Hospital	Trish Wills – Manager RCR, General Managers Unit	0408 115 856
	David Loy – Corporate Services Manager, Finance and Corporate Services	(02) 9382 1308
The Royal Hospital for Women	Vanessa Madunic – General Manager	(02) 9382 6501
	Jo-anne East – Executive Assistance to General Manager	
Prince of Wales Private Hospital	Nerida Russell-Green, Acting General Manager, Prince of Wales Private Hospital	
Fire and Rescue NSW	Matthew Watkin	000
	Craig Bennett, Crew Superintendent	
NSW Ambulance	Deborah Smith - Randwick Hospitals Campus Interface Manager	
Eastern Beaches Local Area Command	Sergeant Grayson Withers – Traffic Office	0402 298 246
	Senior Constable Corrine Dawes – Traffic Office	
Bicycle NSW	Ray Rice	0419 495 150
La Perouse Local Aboriginal Land Council	Chris Ingrey – CEO La Perouse LALC	
Randwick City Council	Kerry Kyriacou	9093 6894
EPA Pollution Hotline		131 555 or (02) 9995 5555 (if calling from outside NSW).
Ministry of Health		(02) 9391 9000
SafeWork NSW		13 10 50
City of Sydney Council		(02) 9265 9333
South Eastern Sydney Local Health District	Jennie Barry - POWH & SSEH General Manager	9382-2012

The Lendlease project team organizational chart is located in Appendix 1. This shows the key roles on the project and those responsible.

3.7 SITE CONSIDERATIONS

Lendlease has carefully planned and considered the staging requirements for the demolition and site clearance works. These established strategies are to best manage logistics of the project within a live hospital campus. In doing so we have identified the following key considerations for management of the site:

- Site establishment schedule;
- Worker transport and parking;
- Pedestrian access and circulation routes;
- Site evacuation / major incident response;
- Site compound and amenities;
- Temporary services;
- Site temporary services;
- Fencing and hoarding for site segregation;
- Site access points, construction traffic and
- deliveries;
- Materials storage and handling;
- Working adjacent to residential and business
- properties;
- Site management controls;
- Business continuity of Randwick Hospital,
- Sydney Children's Hospital, and the University of
- New South Wales, Royal Hospital for Women;
- Risk management;
- Construction methodology; and
- Project completion.

3.8 SITE ACCESS POINTS, CONSTRUCTION TRAFFIC & DELIVERIES

Lendlease has carefully planned and considered the staging requirements for the demolition and site clearance works. These established Lendlease understand that one of the keys to the successful delivery of the demolition and site Clearance works for the RCR will be the flow of materials and equipment into and out of the construction site. We believe it is imperative that our planning considers and successfully manages:

- The maintenance of pedestrian and traffic flows to the surrounding roads
- The unimpeded continued use of existing vehicular and pedestrian entry and exit points to the Randwick Precinct; and 24-hour access to the ambulance drop off area.

To achieve this, an extensive Traffic and Pedestrian Management Plan will be developed giving specific focus to:

- Carpark entry and egress: Carpark operations will be maintained at all times, including all car park services and emergency egress. Particular focus will be on peak flow access and egress during hospital shift change overs and strategies will be employed to ensure flows are maintained.
- Supplementary offsite parking: LendLease have identified supplementary parking for hospital staff,

visitors, contractors, and consultants which could potentially alleviate Current parking pressures over the 3 year life of the redevelopment.

- Disabled pedestrian access and paths of travel: Throughout all activities, disabled pedestrian access will be maintained with details of alternate routes and distances of paths of travel.
- All swept paths to be updated through the design phase with our coordination with the TfNSW.
- Lendlease will consult with all suppliers to ensure the correct size and weight vehicles are allocated to the project and are cognisant of carriage weight constraints.
- Ambulance entry: No works or vehicle movements will be allowed to affect the access of ambulance entry and parking area.
- Construction Vehicles: Mitigating impact to the Hospital precinct and surrounding roads will be considered along with a detailed analysis of delivery frequency in conjunction with the program and access routes to the site from the various approaches. Procedures for timely delivery notification will be developed (e.g. call prior to arrival and also advise on aborted deliveries).

3.9 FENCING & HOARDING FOR SITE SEGREGATION & SAFETY

We understand the critical importance of maintaining a secure and safe perimeter hoarding line to Protect the public and staff from construction activities and prevent unauthorised access into the Construction site 24 hours a day. Segregation of the site accommodation compound from the main site is equally important for worker safety.

Site security is paramount for public safety and we will implement security turnstiles on the entry to the site to prevent unauthorised access. Vehicle management will be managed by Traffic Controllers and security guards will be utilised out of working hours during the later stages of the works. An “A Class” plywood hoarding and any sections of permanent chain wire fencing will be covered with Randwick Campus Redevelopment shadecloth and will be updated and maintained throughout the project in line with the project requirements.

3.10 SITE SECURITY AND GATES

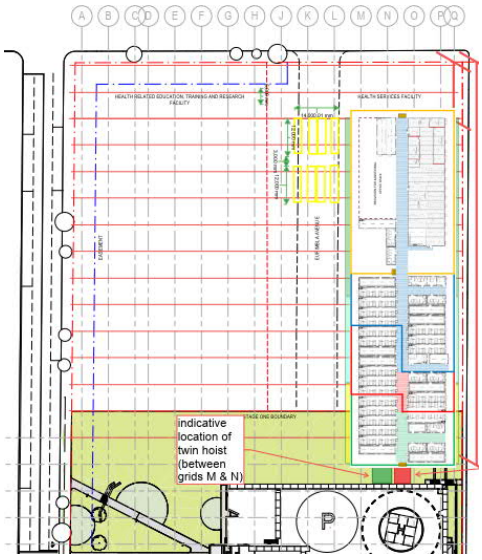
The site perimeter will be secure at all times with no unauthorised access permitted. As detailed above the perimeter of the site will be secure with full height plywood A Class hoarding. Out of Hours security patrols will be utilised during the shutdown periods, Christmas and Easter will also be monitored by external security services. CCTV with active motion sensors will be used on the tower cranes to track any unauthorised access. Construction worker access to the site will be strictly controlled through our secured gate system.

Individuals will require a personalised identity swipe card to gain access to site. This also creates a live record of who is on site at any given time in order to provide check list if the site is ever evacuated in case of emergency. The above and below ground areas will be further segregated by an additional secure line to ensure the appropriate time that only rail accredited staff can access the areas designated as such.

3.11 SITE COMPOUND AND AMENITIES

Lendlease places emphasis on the quality and amenity of the project and accommodation facilities. Quality facilities set a standard and a level of expectation that we expect our staff and subcontractors to take with them to the workface on site. Accommodation and amenities for the construction workforce will be provided in demountable site sheds. These site sheds will be erected in stages to cater for fluctuating workforce demand and moving work areas.

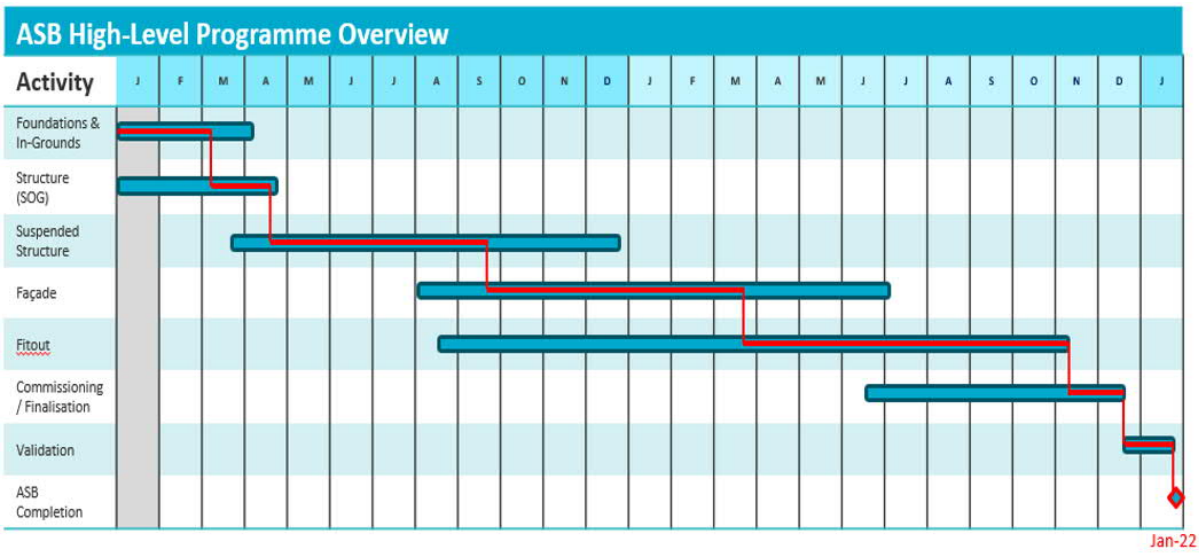
The location of the Site accommodation facilities for the ASB development is in accordance with the following layout.



4.0 CONSTRUCTION PROGRAMME

4.1 PROGRAMME OVERVIEW

The programme below identifies the key stages of the scope of the ASB works.



4.2 CONSTRUCTION STAGING OVERVIEW

The Lendlease project team fully appreciate the disruption and change the construction works will bring to hospital operations and understand the challenges the HI, SESLHD and Randwick Hospital Precinct management will have in communicating the staging sequences and the program of the works to the staff and public. The better hospital staff and public understand the timing and reasoning of the staging of the works, the more comfortable they will be with the temporary inconveniences.

We have completed a review of our construction program and methodology and documented a draft set of staging plans covering the works phases, these will provide the basis for a full set of staging control plans, which will be developed in conjunction with detailed design development during the Planning Phase in consultation with HI, SESLHD and Randwick Hospital Precinct Management.

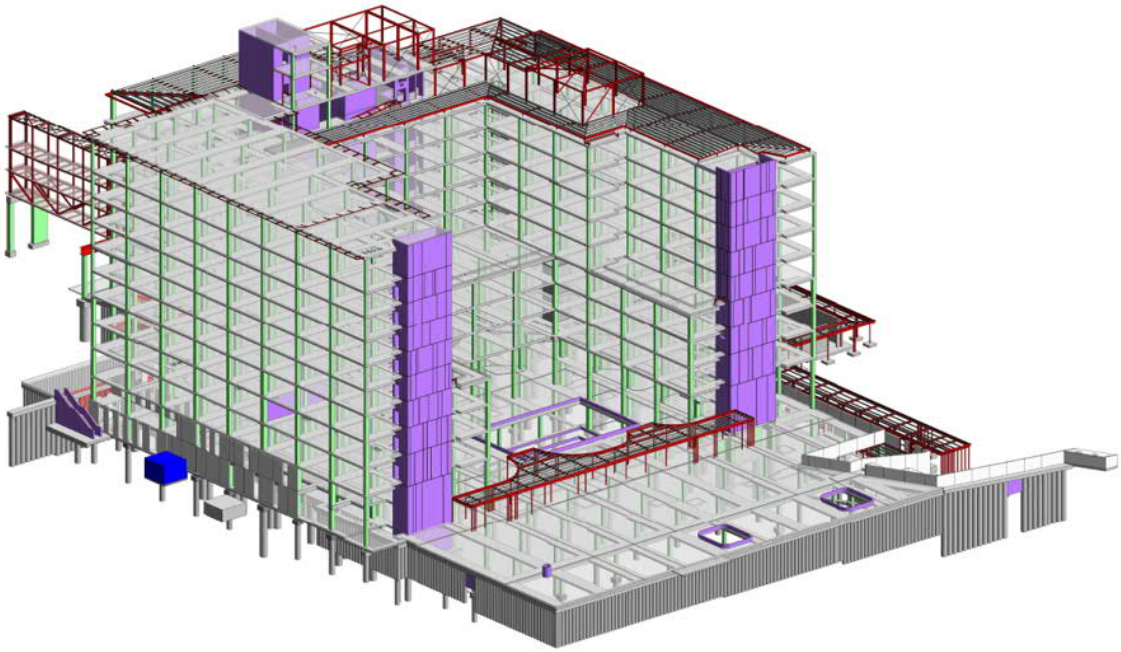
The staging plans will be developed to include:

- All site establishment items;
- Changed or modified egress paths;
- Pedestrian and vehicle circulation route changes;
- Temporary signage requirements; and
- Upcoming changes to works areas including approximated program dates.

4.3 CONSTRUCTION SEQUENCING

The bulk excavation and piling works are now complete. The next key stages of construction of the ASB include the following:

- Form, Reinforcement and concrete pouring of the suspended concrete structure;
- Erection of the steel roof and cladding;
- Installation of the prefabricated façade system and precast panels
- Fit out and services works to all levels of the building
- Energization of services and pre commissioning
- Cleaning and Validation
- Integrated testing and Commissioning



The above figure is an isometric view of the ASB structure indicating its structure configuration.

5.0 PURPOSE OF THE CEMP

5.1 OVERVIEW

This CEMP has been developed for the RCR IASB works and provides a management system and procedures to ensure that Lendlease establish and maintain best practice controls to manage potential environmental impacts and risks during the Project and are aligned with the Environmental performance outcomes. Lendlease is committed to providing its services in a manner that conforms to the contractual requirements and to all relevant regulatory and legislative requirements. To achieve this, Lendlease will plan, implement and control an integrated management system that facilitates the management of the environmental aspects of the Project.

The Construction Environmental Management Plan (including all sub plans) is compliant and consistent with:

- ISO 14001:2015;
- NSW Ministers Conditions of Approval SSD 10339
- Environmental Impact Statement (EIS) and Submissions and
- Department of Planning and Infrastructure (known now as the Department pf Planning and Environment, DPE) Guideline for the Preparation of Environmental Management Plans, 2004.

This CEMP has been prepared to specify the actions and environmental controls required during construction works associated with the Project. The primary purpose of the CEMP is to provide a framework reference document detailing how Lendlease will manage and control environmental aspects of the Project during the construction phase. The CEMP will be used as a working document to ensure that obligations and commitments provided in the MCoA, and EIS, and other licences, permits and approvals are made known to all staff (including sub-contractors) and implemented effectively as an integral part of project construction.

It also aims to detail processes to minimise impacts associated with the construction of the project on adjacent sensitive areas in particular Hospital operations.

The CEMP contains core Environmental Management System (EMS) elements and follows the principles of ISO 14001 – 2015. This CEMP has been developed to satisfy the requirements of the Guidelines for the Preparation of EMP's (Department of Planning and Infrastructure (DP&I) 2004). The CEMP will be reviewed when necessary to reflect new processes, controls and procedures.

The CEMP, including the environmental management sub plans and procedures will be applicable to all staff and sub-contractors during the construction phase.

5.2 OBJECTIVES AND TARGETS OF THE CEMP

The environmental objectives for the CEMP in the construction period are:

- To satisfy key requirements contained within the Planning Approval conditions;
- To satisfy key commitments contained in the EIS, SPIR and in other planning documents;
- To ensure compliance with relevant legislation and regulatory requirements;
- To develop, implement and maintain effective management systems for the environmental aspects of construction works;
- To monitor environmental impacts relating to the project as identified in this document and related sub plans; and
- To be consistent with the elements of the Australian / New Zealand Standard 14001: 2015 – Environmental Management Systems (referred to as AS/NZS ISO 14001).

Lendlease will adopt the following objectives and targets:

Objective	Target
To comply with applicable legal and other requirements (environmental laws, regulations, statutory requirements and instruments of approval)	Nil instances of non-compliance with environmental statutory requirements (e.g. infringement notices, clean-up notices, etc.)
To implement a rigorous and comprehensive CEMP that meets the requirements of AS/NZS ISO 14001, and continuously monitor and improve environmental performance	Weekly Environmental Inspections completed; All Environmental Audits completed as per the Lendlease EMS and Environmental Audit program required under MCoA A37; 6 monthly CEMP reviews completed; and All Non-Conformances closed out in specified timeframes.
To minimise waste to land fill, maximise the recycling of waste and ensure traceability	At least 95% of inert and non-hazardous construction and demolition waste, excluding spoil, and at least 60% of office waste is recycled or alternatively beneficially reused.
To provide training and information on environmental aspects/impacts and controls for the project to workers	All workers complete an environment induction prior to commencement of works on site and attend environmental training as per Section 7 of this CEMP
To minimise the impacts of noise and vibration from construction activities.	Maintain noise and vibration levels within project goals, human comfort and structural damage criteria.
To minimise the impacts of dust from construction activities.	Prevent fugitive dust emissions from the construction site.
To protect all heritage items that will be impacted by the Project.	Maintain vibration limits within structural damage criteria. No damage to known 'relics' or heritage items unless consent has been obtained. Protect and manage heritage sites as per the Construction Heritage Management Plan.

5.3 PREPARATION OF THIS CEMP AND SUB PLANS

All environmental management requirements specified as being the responsibility of Lendlease, including those stipulated in the environmental documents, have been considered and addressed in preparing this plan, as have requirements of Lendlease's EMS which is accredited to AS/NZS ISO14001. This plan draws on the extensive knowledge Lendlease has acquired from successful environmental management of multiple and varied projects in a range of locations.

This CEMP has been developed in consultation with the relevant Authorities including Department of Planning, TfNSW, Randwick City Council, UNSW, and the SELHD. The Sub plans have been prepared in consultation where required with the above departments and records have been kept and maintained. This CEMP will be reviewed and revised as per the requirements of CoA B33 and B34. This includes:

- In response to internal Environmental Audits as per the requirements of AS/NZS 19011:2014 Guidelines for Auditing Management Systems;
- Consultation with required agencies, authorities and relevant stakeholders;
- Any new or changed environmental risks identified during the project;
- Changes to regulatory requirements;
- Results of corrective or preventive actions;
- Opportunities for improvements identified; and
- Requests by the NSW Department of Planning and Environment (DPE).

The CEMP is the key management tool in relation to environmental performance during the design and construction phases. The CEMP describes the construction environmental management requirements for the Project and Lendlease's system for minimising and managing environmental risks associated with the construction phase of the Project. The CEMP is a dynamic document that will be reviewed and amended to incorporate additional requirements as required, changes to the project team, organisational structure and responsibilities or as improvements to procedures and methodologies develop.

The CEMP will be issued to the project Certifier and a copy provided to the Planning Secretary.

5.4 ENVIRONMENTAL POLICY

Lendlease's Environmental Policy is provided below. Lendlease will seek to ensure that this policy, environmental procedures and construction methods are understood, implemented and maintained by personnel at all levels involved with the Project.

Policy
Environment Health and Safety
Building, Australia

Lendlease Building is part of the Lendlease Corporation, an international property and infrastructure group with core expertise in shaping cities and creating strong and connected communities. Our national delivery capability and sector focused approach enables innovative and industry leading project management, design and construction services driven by detailed sector knowledge and experience.

We are committed to our vision 'to create the best places' through workplaces free of incident and injury wherever we have a presence. Our vision is supported by an uncompromising culture which holds the health and safety of people and the protection of the environment as first in all our business reviews and decisions.

To achieve our vision we are committed to:

- Setting objectives and measurable targets for continual improvement aimed at eliminating work related environment, health and safety (EHS) impacts and incidents associated with our operational construction activities, products and services.
- Complying with applicable legislation, codes of practice, compliance standards, obligations and guidelines.
- Defining roles, responsibilities and accountability for clarity, consistency and predictability across our workforce.
- Understanding the needs and expectations of workers and other parties; including suppliers, subcontractors, clients, the community and regulatory authorities; through partnerships and consultative forums.

Key strategies to achieve our vision include:

- Implementing and maintaining an EHS Management System.
- Integrating risk identification and risk management principles into core planning and delivery activities.
- Considering and taking action on risks, impacts or opportunities that may affect (positively or negatively) the ability of the management system to deliver its intended outcomes, including enhanced EHS management at our workplaces.
- Reviewing objectives and targets regularly to promote continual improvement in EHS performance.
- Promoting senior leadership engagement in assessing the effectiveness of the management system and its implementation.
- Undertaking strategic review of system procedures, policies and annual performance outcomes to reflect current business operations, legal and other requirements.
- Engaging with external stakeholders, including government and industry, to develop and promote leading practices and innovation.
- Developing planning, design and construction delivery solutions that reduce reliance on individual behaviours and the potential for injury and impact.
- Investigating incidents, reviewing the effectiveness of corrective and preventative actions and sharing outcomes to prevent recurrence.
- Planning and implementing timely and effective health and safety, and environmental management remediation strategies.
- Facilitating timely and effective injury management and return to work / rehabilitation for injured workers.
- Consulting regularly with our workforce and key internal and external stakeholders to improve, communicate and seek feedback on EHS initiatives, risks, impacts and outcomes.
- Communicating environment, health and safety information, policies, procedures, alerts and lessons learned to employees, workers and other interested parties.
- Implementing learning and development initiatives to increase EHS skills, awareness and competencies.
- Implementing initiatives to promote the health and wellbeing of employees and other workers.
- Reviewing resources and system documents regularly to ensure effective and pro-active management of EHS.
- Recognising, rewarding and sharing excellence in EHS with internal and external stakeholders.

I commit all of our project management, design and construction services across Australia to this policy and the achievement of our vision, to create the best places.

Dale Connor
Chief Executive Officer, Building

Other Languages

Current as at 03 Sept 2019 Uncontrolled when printed

5.5 COVID-19 MANAGEMENT AND CONSTRUCTION CHANGES

5.5.1 WORKING HOURS

With the impact of Covid-19 and the Government legislation introduced with requirements to comply with social segregation, construction works, and productivity could be impacted. Hence Lendlease is preparing for extended working hours. The nominated extended working hours include the following:

Extended Construction hours	
Monday – Friday	6:00am to 7:00am
Monday – Friday	6:00pm to 10:00pm
Saturday	7:00am to 8:00am
Sunday	No work

5.5.2 SITE MANAGEMENT OF THE EXTENDED HOURS

These extended working hours during Monday to Friday is to allow Lendlease to effectively manage the construction site with the new Statutory requirements with respect to Social segregation. The request to commence site opening from 6:00am in lieu of 7:00am is to facilitate the movement of personnel onto the construction site and to their work areas. As the number of personnel on site increase it will be necessary to introduce staggered start times for the various subcontractors to ensure Social segregation is managed.

Traditionally up to 12 workers could ride in the builders hoist. New management requirements limit this to 5 personnel at a time. Hence the need to start earlier to ensure workers can efficiently get to their location on the site in a safe and timely manner.

Traditional breaks such as mid-morning break and lunch break are already staggered and will need to continue. By introducing an earlier start and staggered start times for the workers, these breaks will be effectively managed at those times. Similarly at completion of the days works, the staggered start time will provide for staggered completion of shits and effective management of segregation as workers come down the building in the hoists.

As the construction programme advances, multiple trades will establish on site. Lendlease has anaylsed the staggered shifts and the trades break up to ensure productivity of the trades. For example its necessary to ensure the 'structure trades' are working together more than the 'services trades'. The suggested split is as follows:

- Structure Trades commencement between 6:00am and 6:45am
- Services Trades commencement between 6:45am and 7.05am
- Fitout Trades commencement between 7:05am 7:20am.

As programme advances and structure trades decrease Lendlease will analyse start times and adjust to suit based on number of resources per trade.

In addition to managing workers and segregation in the hoists, the extended working hours into the evening will assist with construction activities that may be further impacted by ensuring segregation of workers on the construction site. This is for trades where sometimes working in close proximity is required. Primarily, effective PPE will be implemented to reduce the risk of Covid spread, however reducing the number of workers on a activity may be required. Consequently, work activities could take longer requiring flexibility to work longer hours. These

activities that could continue into the evening hours include:

- Steel reinforcement
- Formwork related activities
- Post-tensioning
- Materials handling
- Concrete pour
- Cores (but jump height is limited to suspended structure access)
- General deliveries for structure trades
- Block workers
- Primary Services installation
- Hospital road civil works
- Bulk Oxygen storage upgrade works

Lendlease will be required to alter the Site Supervision structure to effectively and safely manage the proposed extended working hours. Site Foreman and construction worker presence will be required to start earlier to ensure the gates are opened and attendance at Builders briefs and pre starts are maintained. Construction worker personnel will be required to operate hoists earlier to assist with the staggered starts. Dependent on construction programme activities, secondary supervision crews will be required to facilitate those working into the evening. Workers fatigue will need to be closely managed to ensure safety of all management and workers during the project. These additional resources include:

- Night foreman
- Crane crew and second driver
- Occupational First Aider
- General labourers
- Gate crews/ Traffic Controllers
- Hoist drivers
- Nipper
- Forklift driver

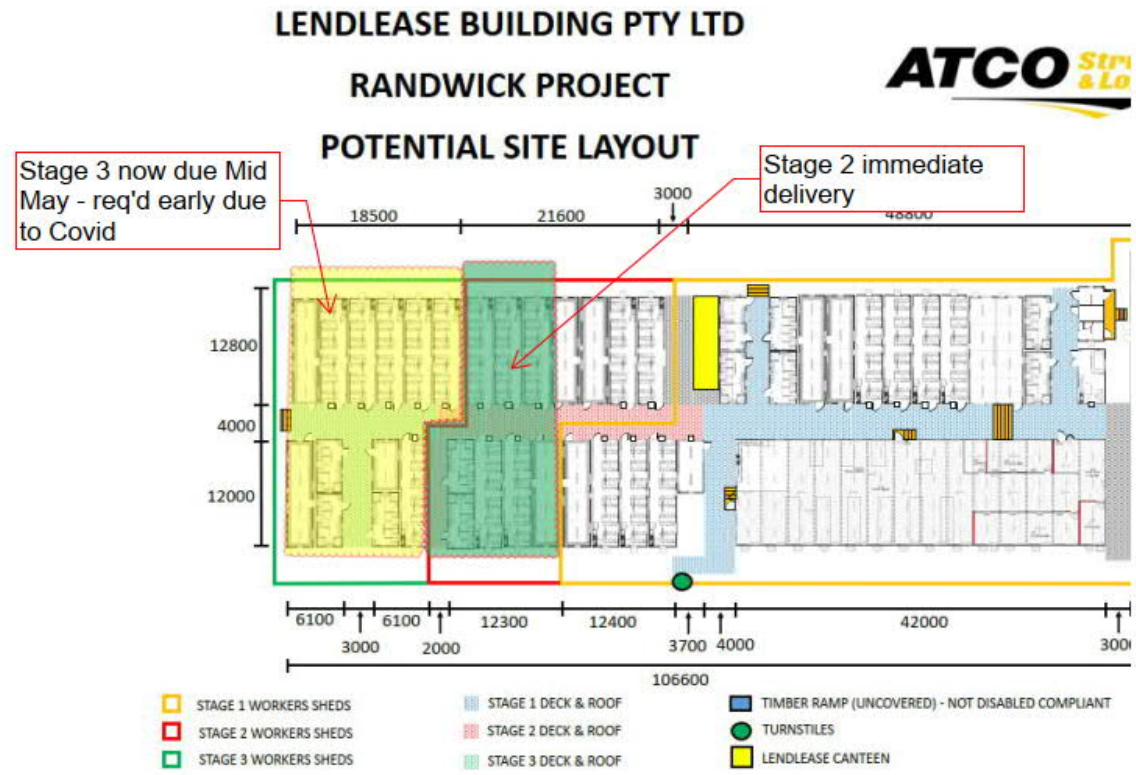
Initial discussions with subcontractors have been undertaken to review resource availability, and the subcontractors own resource structure to effectively supervise their works through extended working hours. Most of the key subcontractors have the resource pool to provide supervision and provision of resources to effectively manage social segregation as identified above. The Construction Award imposes penalty rates for ‘afternoon’ shifts. This is a key consideration into the strategy and to ensure adequate resources are made available to ensure evening works are productive.

5.5.3 SITE AMENITIES PROVISIONS

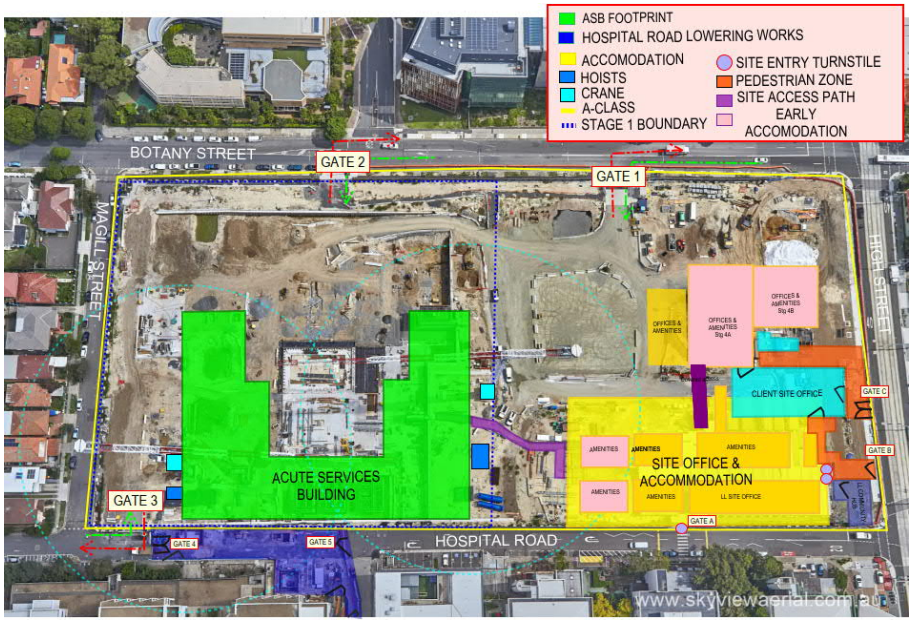
The impacts of Covid-19 extends to the quantum of site accommodation facilities for both site management and site workers. Traditionally a ‘lunch’ shed can provide for 25 workers per shed. Social segregation requirements have reduced this number to 9 workers per shed. 1.5m separation or 4m2 per worker.

Not only does this impose a requirement for additional lunch, change, and ablution sheds, but also a requirement for more social gathering space when workers congregate for daily Builders Briefs, lunch breaks and wet weather containment requirements. Lendlease has had to look at the existing provisions allowance for site amenities and has now developed a new scheme in response to Covid-19 to ensure sufficient and safe provisions are provided. Whilst the duration of the spread of Covid-19 is not yet known and the social segregation requirements, the plan is based on the current legislative requirements remaining in force for the next 12 months.

The construction of the IASB allowed for a three stage amenities compound. In light of Covid-19 Stage 2 and 3 have been accelerated to provide additional accommodation to meet Social segregation requirements. The below figure identifies the three stages of accommodation.



With the workforce expected to reach 250 workers by August 2020, it will be necessary to provide additional site workers accommodation. When selecting site workers accommodation, its important to locate the accommodation in close proximity to the workfront to minimise overhead wa kways. Space provisions only allow the new compound to expand in a west direction from the current compound which will extend on both the future SCH site and UNSW HTH site. By expanding in this direction, workers will have access from the turnstyles in a PPE/covered environment, then access to their accommodation. From the Stage 4 accommodation they will be able to access the workfront through the main corridor of Stages 1-3 accommodation. Refer to the below figure identifying the new compound.



Stage 4 workers site accommodation will be installed in two stages. Preliminary assessment identifies approx. 10 lunch sheds to be established in July 2020 to provide accommodation for approximately 100 workers. The second stage will be established in September 2020 with provision for another 100 workers. This will bring a total of accommodation for 450 workers in September.

Reassessment will be undertaken at this time for requirements for additional accommodation. This will be dependent on Government regulation on Social distancing and overall functioning of the site. Further opportunities may be required to expand west of this complex to provide additional accommodation. The peak workforce is expected at approximately 550 workers in December which suggests additional accommodation requirements.

On the assumption that the Government Social distancing requirements remain until project completion, the Stage 4 compound will not be able to be decommissioned until November 2021. This will be when our resource level decreases to below 250 workers where we will be accommodated with the existing Stage 1-3. Hence this land use for HTH would be available from this time.

Lendlease will be monitoring the workforce numbers to ensure there is always safe and sufficient accommodation facilities.

With the Government Social segregation requirements, the Lendlease Site office has had to undergo changes. The management team, which is inclusive of Project managers, Commercial team, Engineers & Foreman have been split into two groups. The Community Hub has been temporarily adjusted to provide as a secondary site office to allow sufficient team segregation. This will continue until such time as the Government retracts the new restrictions. Furthermore, to facilitate the increase participants in daily inductions, these are now being undertaken in the Baan Bann training room. This can accommodate safely up to 16 at a time. This now requires daily booking in of inductions to ensure no overcrowding.

5.5.4 ENVIRONMENTAL MANAGEMENT OF EXTENDED WORKING HOURS

The application for Extended Working hours requires careful consideration of external environmental factors. Lendlease is always cognisant of the Community and potential impact of construction works. Randwick Campus Redevelopment has very strong relations with sensitive receivers and the extended community in local area. With a strong Stakeholder engagement strategy and plan, the project has always successfully engaged to ensure the best outcome for the project and community.

In continuing this effort, Lendlease has analyzed those key environmental factors that may be impacted by the construction site working longer hours. This includes:

- Lighting strategy
- Noise and Vibration consideration
- Traffic Management consideration
- Construction Workers Transportation Strategy

These key environmental controls have been addressed in each detailed sub plan.

The key to success of the extended working hours is the Stakeholder engagement. Lendlease will utilize its existing Stakeholder Engagement Plan which identifies sensitive receivers and the engagement approach to ensure the community is consulted with these changes.

Lendlease's dedicated Stakeholder Engagement Manager will lead this communication.

Management of fatigue will be integral to the extended working hours to ensure safety is not compromised. Where there is a cross over of Lendlease Supervision, it will be necessary to ensure LL personnel work a standard shift and not extended hours with the risk of fatigue. Subcontractor rotation will be monitored to ensure workers are not exceeding 10-12-hour shifts.

6.0 INSPECTION, MONITORING, AUDITING AND REPORTING

6.1 ENVIRONMENTAL INSPECTIONS

A compliance monitoring tracking program must be developed and implemented during construction works in order to monitor compliance with the terms of the project approval. Compliance tracking will be undertaken in accordance with the Tracking Program.

A compliance matrix has been established for the works incorporating MCoA, licence conditions, permits and other approvals relevant to the ASB works to track issues and ensure compliance issues are addressed and closed out.

In addition to reporting required under the CTP, the Lendlease Environmental Manager will also prepare a summary report or supply relevant documentation on environmental matters to Sydney Metro on a monthly basis, with a detailed report on environmental performance prepared quarterly.

The Report will include details on:

- Summary of works undertaken for the relevant reporting period;
- All cases of non-compliance with environmental obligations and the CEMP;
- Inspections by agencies and actions resulting from the inspection;
- Actioning and reporting of all incidents;
- Frequency of environmental checklists and actioning of concerns;
- Any client issues not addressed after two months.
- Monitoring results;
- Environmental complaints;
- Audits conducted (internal and external); and

The effectiveness of environmental protection measures described in this CEMP and sub plans will be assessed on a weekly basis by the relevant team members. A checklist will be used to:

- Provide a surveillance tool to ensure that safeguards are being implemented;
- Identify where problems might be occurring;
- Identify where sound environmental practices are not being implemented; and
- Facilitate the identification and early resolution of problems.

Weekly environmental inspections will monitor aspects including;

- Review of relevant works approvals and permits
- Erosion and sediment controls and review of associated plans
- Drainage protection
- Air quality, dust emissions and mitigating controls
- Heritage impacts
- Noise and vibration management including approved working hours, required respites and safe working distances
- Hazardous substances and dangerous goods
- Waste management, recycling and recovery

Any non-conformances identified through the checklist process will be highlighted and an environmental inspection report (minor issues) or an environmental improvement notice/environmental incident report will be completed by the Environment Manager.

The checklist will remain 'open' until:

- The issue has been resolved;
- A new or revised procedure has been established and implemented; or
- Training has been provided to relevant personnel/ sub-contractors.

Site Activity/Description	Frequency	By Whom	Form
Site inspections to ensure site controls operating as required	Daily	Site Supervisor/Foreman	Visual
Lendlease environmental site inspection of activities	Weekly/Monthly	Site Supervisor, Site Foreman, Site Manager, EHS coordinator, Construction Manager, Client Authorised personnel	Environmental Inspection checklist

6.2 ENVIRONMENTAL MONITORING

Environmental monitoring will involve collecting and interpreting data to provide quantification of the effectiveness of the CEMP and sub plans. As required under approved conditions , Construction Monitoring Programs are required to be prepared in consultation with the relevant government agencies. The following monitoring programmes will be implemented;

- A Construction Noise and Vibration Monitoring Program is incorporated within the Construction Noise and Vibration Management Plan (CNVMP) and includes provision of 'realtime' noise and vibration monitoring. This program has been developed in compliance with MCoA B37 and associated conditions during construction with all 'realtime' noise and vibration monitoring data being made available to DPE, EPA, the construction team, and other parties.
- A Groundwater Monitoring Program is incorporated within the Groundwater Management Plan (GWMP) and includes provisions to undertake monitoring of groundwater levels and quality.
- Waste monitoring reporting is incorporated within the Construction Waste Management sub plan (CWMSP). in accordance with the

These aspects will be managed by the site environmental management, inspection and auditing procedures.

The timing, frequency, methodology, locations and responsibilities for the proposed environmental monitoring programs are specified in the respective Sub plans. The monitoring programs range from those involving formal sample collection, analysis and measurement, to those involving a more qualitative assessment.

Irrespective of the type of monitoring conducted, the results will be used to identify potential or actual problems arising from construction processes. Where monitoring methods permit, results will be obtained at the time of the assessment and analysed immediately by the Environmental Manager. This will allow a prompt response to be initiated should an exceedance of accepted levels/criteria be identified.

Where this cannot be achieved, preliminary results will be requested as soon as possible following the monitoring episode with a full report to follow.

Where a non-conformance is detected or monitoring results are outside of the expected range, the process described in Section 10.4 will be implemented, which would include:

- The results will be analysed by the Environmental Manager in more detail with the view of determining possible causes for the non-conformance;
- A site inspection will be undertaken by the relevant personnel;
- Relevant stakeholders will be contacted and advised of the problem.
- An agreed action will be identified; or
- Action will be implemented to rectify the problem.

A non-conformance Environmental Incident Report and/or Environmental Improvement Notice may be issued by the Environmental Manager in response to the problem if it is found to be construction related. The timing for any improvement will be agreed between the Construction Manager and Environmental Manager based on the level of risk e.g. a significant risk will require immediate action.

Monitoring Requirement	Frequency
Noise monitoring	Continuous 'realtime' monitoring and attended monitoring at the commencement of each work activity to confirm forecasts in the CNVIS
Vibration monitoring	Continuous 'realtime' monitoring and attended monitoring at the commencement of each work activity to confirm forecasts in the CNVIS
Dust monitoring	Visual monitoring completed throughout duration of works and during weekly environment inspections
Erosion and Sediment Control Monitoring	Weekly by environmental staff and as soon as practicable after any major rainfall event; i.e. 10mm in 24 hours

6.3 ENVIRONMENTAL AUDITS

6.3.1 INTERNAL LENDLEASE AUDITS

Internal environmental compliance audits will be conducted by the Environmental Manager. Elements to be audited include:

- Compliance with the conditions of approval;
- Compliance with the EIS;
- Compliance with the CEMP & associated sub plans;
- Compliance with approval, permit and licence obligations;
- Compliance with method statements;
- Complaint response;
- Sub-contractor activities;
- Training records;
- Non-conformances;

- Monitoring results; and
- System documentation such as checklist completion.

Regional environmental system compliance audits will be completed by the Lendlease Regional Environment and Sustainability Manager to monitor compliance with the Lendlease Environmental Management System. Frequencies are outlined in the table included in section 5.3.2.

6.3.2 EXTERNAL AUDITS

External audits may be conducted by Health Infrastructure and an Independent Environmental Auditor. The outcomes of any audit, if reported to Lendlease, will be documented. Corrective Action Requests (CAR) and

Observations of Concern (OOC) will be addressed through the same mechanisms as non-conformances. Resolution of CARs and OOCs will be documented and filed with the Audit Report.

As required by CoA A29 and C35-41, Independent Environmental Audits will be undertaken. A schedule for these audits is to be prepared and issued to the Planning Secretary and Certifier.

Audit Type	Auditor	Timing
Internal Environmental Compliance Audit	Site Construction/Environmental Manager	Pre construction and 3 monthly during construction
Lendlease Regional Environmental System compliance audit	Lendlease Regional Environment and Sustainability Manager	Initial audit within 3 months of construction commencement, then 6 monthly during construction
External Audits	Independent Environmental Auditor	Initial within 12 weeks of commencement, and subsequently 26 weeks.

6.4 COMPLIANCE REPORTING

Reports on compliance with the planning approval or any other statutory requirements will be submitted to DoP in the Compliance monitoring report (CoA B30). The Reports will include:

- A results summary and analysis of environmental monitoring;
- The number of any complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;
- Details of any review of, and minor amendments made to, the CEMP as a result of construction carried out during the reporting period;
- A register of any consistency assessments undertaken and their status;
- Results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;
- A summary of all environmental incidents; and
- Any other matter relating to compliance with the terms of this approval or as requested by the Secretary.

The Compliance Tracking Reports will be provided to the Environmental Representative for endorsement.

7.0 COMMUNITY CONSULTATION & COMPLAINT MANAGEMENT

7.1 PURPOSE

This Construction Communications Strategy has been prepared for the Acute Services Building (ASB) and defines the approach to stakeholder engagement for construction and delivery of the ASB.
This plan has been developed to align with the RCR Communications and Engagement Strategy (RCR CSES) and overarching RCR Construction Communications Strategy.

For the extended working hours, community Consultation & Complaint management will be administered in accordance with the following sections. When the extended hours are approved, consultation will occur with all relevant stakeholders in accordance with this strategy. Lendlease has a dedicated Stakeholder Engagement Manager who works closely with Health Infrastructure to ensure communications are aligned and in a timely manner.

7.2 STAKEHOLDER ENGAGEMENT

Guiding principles for ASB Stakeholder Engagement

Throughout all stages of ASB construction the project will remain committed to early, coordinated, proactive and transparent stakeholder engagement. Extensive planning and engagement has been undertaken to identify and develop collaborative and productive relationships with key stakeholders to support planning and delivery of the new Acute Services Building, and these have been and will continue to be leveraged throughout planning, design and delivery of the ASB.

Lendlease has a full time Stakeholder Engagement manager allocated to the project to be the direct point of contact for Stakeholder related issues.

The following principles underpin the project's approach to stakeholder engagement for the delivery of ASB:

- **Purposeful:** Engagement is meaningful to stakeholders and provided in a clear and consistent manner.
- **Timely:** Information is provided, and available, to stakeholders at the appropriate time and in the appropriate format.
- **Inclusive:** Engagement activities are accessible to all relevant interested and impacted stakeholders.
- **Respectful:** Stakeholders diverse, needs and perspectives are acknowledged and respected.
- **Transparent:** Engagement is open and honest with expectations clearly set.

Objectives

The success of this plan will be monitored as the project progresses. The successful implementation of this strategy can be articulated through the achievement of the objectives outlined below.

1. Deliver a high quality, consistent and integrated stakeholder engagement approach that supports and aligns with RCR planning and objectives.
2. Implement and maintain effective coordination and communication channels between the project and key stakeholders throughout planning and delivery of the project.
3. Effectively manage and mitigate potential impacts to Randwick Hospitals Campus business continuity and nearby residential and commercial neighbors.
4. Minimise construction impacts to ensure there is minimal impact on the staff, patient and visitor hospital service and experience.

5. Provide a transparent and pro-active consultation process that meets and exceeds best practice stakeholder engagement.
6. Build commitment to, and a shared understanding among project team and stakeholders on the benefits of the Project.

ASB engagement approach

In line with the Project's overarching communication and stakeholder engage plan and the Construction Communication Strategy, coordinated and transparent communications will be integral to the success of this plan.

The below table outlines key objectives that have been set for each main phase of ASB construction.

Project Phase	Objective	KPI
Planning	Identify and build collaborative relationships with impacted stakeholders.	Early identification of issues and modification to the construction methodology that responds to issues or concerns.
	Engage Campus and community stakeholders to analyse construction staging to ensure the methodology pro-actively responds to stakeholder needs.	Early identification of key construction impacts and development of mitigation strategies. Stakeholders are given the opportunity to provide input into the planning and design of the IASB Addition within communicated parameters Stakeholders are listened to and understand how their feedback has been used
	Anticipate and respond to potential issues or concerns transparently.	Provide quick and mutually agreeable resolutions to matters which may impact stakeholders.
Site establishment and construction	Deliver accurate and timely information that address the needs of each stakeholder group.	Stakeholders understand key stages of construction and how impacts are managed Build and maintain project awareness and support Early identification of issues and concerns Issues are managed promptly with transparency
	Deliver a comprehensive communications program that ensure stakeholders are pro-actively notified of and clearly understand changes to site conditions.	Stakeholders understand how the construction activities affects them. Stakeholders clearly understand how to provide feedback or lodge complaints regarding construction activities.
	Provide stakeholders with clear communication channels to raise issues and provide project feedback.	Stakeholders feel valued and confident their feedback is received. Stakeholders receive timely responses to complaints and enquiries.

	Utilise notification platforms to document and communicate potential disruptions for Hospital campus.	Disruptions are communicated in a timely, interactive and transparent manner Disruptive works are approved by key campus stakeholders Stakeholders are provided with advance notice of disruptions Disruption to Hospital campus operations are minimised and effectively coordinated
	Deliver site specific inductions to all workers engaged in the IASB project	All site workers conduct their business in a respectful manner and understand their responsibilities when working in a live Hospital environment and in close proximity to sensitive receivers.
Commissioning and opening of ASB & IASB Addition	Communicate information about the benefits to community, site changes. Consistent enhanced reputation of all project partners across the life of the Precinct.	Stakeholders understand the features of the project and how it benefits them

Stakeholder Analysis

The Project's stakeholder environment is complex and extensive. The ongoing proactive identification of issues and sound analysis of stakeholders' needs have been critical factors in successfully managing the Project's interface with staff, health consumers and the community.

The Project team has developed a deep understanding of stakeholders and the engagement environment which has informed the timing, method and level of engagement across all stages of the redevelopment.

In communicating and engaging with stakeholders, the Randwick Campus Redevelopment project team aims to ensure:

- Stakeholders are aware of the ASB and its purpose within the broader redevelopment
- Stakeholders understand the impacts, benefits and drivers
- Stakeholders understand how they can find out more, ask questions and provide feedback about the works
- Stakeholders are listened to and understand how their feedback has been used

ASB Project Stakeholders

Figure 17 – Stakeholder wheel

Table of Stakeholders – Communication Objective – Method of Engagement

Stakeholder Group	Communication objectives	Typical methods of engagement
Hospital - Prince of Wales Hospital Executive, Board, staff, patients, suppliers, visitors, unions, volunteers	Build awareness Show staff they are valued partners Ensure accurate and timely information to staff and other stakeholders, including regular updates, pop-up stalls and briefings where required Highlight benefits and drivers for the IASB Addition, including future health, educational and employment opportunities	Project Governance Staff Forums, Ward updates, Pop-Up Stands Communications materials – signage, newsletters, intranet, noticeboard, email
Randwick Health and Education Precinct Executives (UNSW, HI, SESLHD, SCHN)	Involved in project Governance Actively participate in strategic development Project and Precinct Champions - representing the vision and engaging other stakeholders to participate	Project and Precinct Governance Briefings – formal and informal Collaboration workshops Email
Randwick Hospitals Campus - Royal Hospital for Women, Sydney Children's Hospital, Randwick, Prince of Wales Hospital, Prince of Wales Private Hospital, Eastern Suburbs Mental Health Service, and other health and research institutions	Build project awareness Ensure accurate and timely information to staff and other stakeholders, including regular updates Highlight benefits and drivers for the IASB Addition, including future health, educational and employment opportunities	Briefings - Staff Forums, Ward Updates Communications materials – newsletters, intranet, noticeboard, email Pop-Up information stands
University of New South Wales – executives, other staff, students of UNSW	Build project awareness Ensure accurate and timely information, including regular updates and briefings Highlight role of UNSW as key IASB Addition proponent and funding source Highlight benefits and drivers for the IASB, including future health, educational and employment opportunities	Precinct Governance Briefings – formal and informal UNSW Newsletter Pop up information stands Signage

Randwick City Council – General Manager, planning, traffic and engineering staff, Communication Manager, Councillors	Build project awareness Ensure accurate and timely information, especially around the planning process and potential impacts on Magill Street Be available for briefings as required Collaborate during planning to ensure feedback, technical requirements are adequately considered in building design and construction staging	Formal and informal briefings Written correspondence
Precinct (other) – Transport for NSW CBD and South East Light Rail, community, local schools, bicycle users	Build project awareness Collaborative approach to planning and vision Regular meetings, focused on interface issues, traffic and access and construction management	Briefings – formal and informal Communications materials – newsletters, email, signage
NSW Government (Ministry of Health and Departments)	Collaborative approach to planning and vision Collaborate during planning to ensure feedback, technical requirements are adequately considered in building design and construction staging	Project and Precinct Governance Regular briefings – formal and informal
Consumers – Members of the community, actively participating in planning for the Redevelopment	Build project awareness Keep informed	Website, phone and email Briefings – formal and informal Signage, factsheets, project website
Indigenous community – La Perouse Local Aboriginal Land Council	Engaged in planning throughout project development for ASB.0	Briefings – formal Engaged regarding Aboriginal Archaeology
Community – immediate neighbours	Build project awareness, keep regularly informed about developments Understand key impacts and mitigations proposed as part of the project Regular contact to discuss project developments	Place Manager to perform regular consultation by door knock as project information becomes available with immediate neighbours Construction impact notifications Regular community updates Website, phone and email

		Community information drop in session
Community – commercial, business	Provide engaging and informative content that promotes accurate information and reiterates IASB Addition drivers and benefits	Construction impact notifications Regular community updates Website, phone and email Community information drop in session
Community – wider community	Provide engaging and informative content that promotes accurate information and reiterates IASB Addition drivers and benefits	Regular community updates Website, phone and email Community information drop in session

Communication tools

The following communication tools will be used to facilitate stakeholder engagement during delivery of the ASB.

Tool	Purpose	Frequency	Targeted Stakeholders
24/7 community information phone	A key channel for stakeholders to raise issues, ask questions and speak directly to a member of the Lendlease project team.	Prior to commencement of works onsite	All impacted stakeholders
Site signage	To inform the community about who is responsible for the construction activities and the contact details for further information about the work.	Prior to commencement of works onsite	All impacted stakeholders
Disruptive Works Notice (Live Ops)	Our LiveOps system, a collaborative digital platform, will be utilised to effectively plan and program works which affect live operations	Issued for approval at least 10 days prior to works commencing	RCR project team
Construction Notices - Community	To inform the community about upcoming works on site and outline how to contact the project.	Generally issued monthly/ as required in advance of works	Community stakeholders

Site Coordination Meetings	To provide information related to upcoming activities as well discuss onsite issues coordination of design and delivery	Weekly / Fortnightly (as directed)	Prince of Wales Hospital
Construction Coordination Meetings	To help ensure works and materials handling on and around the Hospital campus are coordinated with all neighbouring contractors Opportunity to provide project status updates for the respective projects	Fortnightly / monthly (as required)	RCR project team Site contractors
Subcontractor Induction	Educate staff and workers about the correct protocols and procedures when dealing with stakeholders.	Prior to commencing works onsite	Onsite contractors and staff
Project Updates	To provide an update on the project's overall progress, key achievements and next stages. Updates to be distributed via email, phone or in person	Monthly As Required	To be disseminated via RCR project team
Virtual Superintendent	A digital platform used to assist in the management of materials through the strategic routing of construction traffic, minimising disturbance to surrounding intersections and traffic flows. Efficient traffic flows will support Major Events within the surrounding Randwick community during construction periods.	As required	RCR project team

7.3 COMMUNICATION AND ENGAGEMENT PROTOCOLS

Stakeholder and community notification periods

Stakeholder engagement and community notification will:

- outline the reason that the work is required
- outline the location, nature, and duration of the proposed works
- outline work hours
- be written in plain English
- include a diagram that clearly identifies the location of the proposed works, where required
- include 1800 community contact number, project email address and website details

The below table outlines minimum notification periods that will be targeted for stakeholder and community notification. Notification periods prescribed within development approvals or by approving bodies will be adhered to.

		Communication classification				
Construction activity classification	**Notification period**	A	B	C	D	E
Monthly project resident update (general work)	3 days	•	•			
Out of boundary works (low impact)	3 days	•	•			
Out of hours work (low impact)	3 days	•	•			
Out of hours work (high impact work that may cause sleep disturbance)	5 days	•	•	•	•	
Disruptions to public access (traffic and pedestrian diversions)	7 days	•	•	•	•	•
Significant disruptions (I.e. Road closure, disruption to services, closure of access)	7 – 14 days	•	•	•	•	•

A	Community notice
B	Project website
C	Email to impacted stakeholders
D	Door knock to impacted residents (including calling card)
E	Stakeholder Briefing

Stakeholder contact and complaints

Stakeholder contact is any communication with an external stakeholder or community member that results in a transfer of, or request for information. A contact may be a complaint, an enquiry, a comment or a compliment.

All stakeholder contact will be responded to in a professional and timely manner. All stakeholder contact will be documented and captured within the Project's record management system. A complaints register is maintained on the project's website to document complaints received and responses provided by the project team.

The following stakeholder contact categorisation matrix will be used to guide the approach to stakeholder contact.

Classification	Description	Action
High Issue cannot be resolved by the project team.	Involves media attention/coverage Involves political and/or government agencies Relates to safety or security incident.	Immediate report to the HI Communications Director No comment to be provided
Medium Issue cannot be immediately resolved	Involves an individual or group expressing negative sentiments towards the project with risk of further action. The stakeholder raising the issue is not satisfied with the response provided.	Project Stakeholder Manager engages the broader project team to investigate further, determine a suitable outcome and respond appropriately Issue is reported on following reporting protocols
Low Issue can be responded to immediately.	Involve an individual or group expressing negative sentiments towards the project Involves an individual or group expressing concern for project impacts and outcomes There is no threat of further action.	Project Stakeholder Manager provides the appropriate response and notifies the broader project team as required Records of low-level issues to be tracked and reported on following reporting protocols

Response Times

The following response times will be targeted for any external stakeholder feedback received (excluding media).

ACTIVTY	RESPONSE TIMEFRAME
Email enquiry acknowledgment	1 business day
Email / onsite enquiry response	5 business days
Site phone line	30 minutes
Website contact form	3 business days

Incident Management

Health Infrastructure's Incident and Communications and Stakeholder Management Plan has been developed for the purposes of providing an incident-specific, proactive framework for the management of incidents and issues with the potential to arise in the construction of major capital works.

The project will comply with the Incident Management Framework as outlined within the Plan. All incidents will be managed by the Project.

7.4 KEY MESSAGES

Key messages form part of the core information provided to stakeholders to remember and respond to. Their inclusion within project communications and accurate reporting in external publications will be important to ensuring consistency and transparency in the delivery of all communications.

Planning

- Design of the ASB has occurred in close consultation and coordination with key project stakeholders.
- Planning and delivery of the ASB aims to minimise disruption to campus operations and prioritises the safety of staff, patients and the community, and the maintenance of business continuity.
- Careful and considered planning of construction activity and related road usage has occurred in ongoing consultation with Randwick City Council, Hospital campus and relevant road and transport authorities.

Construction

- The health and safety of patients, families, visitors, staff and the community is our top priority.
- We are working closely with Transport for NSW, CBD and South East Light Rail, UNSW and Randwick City Council to coordinate construction in the Randwick Precinct.
- All stages of the Randwick Campus Redevelopment, we will comply with strict environmental and planning controls. Mitigation measures are in place to manage noise, dust and vibration.
- With the exception of trucks moving in and out of site, machinery and equipment will be used and housed behind site hoarding.
- The site perimeter will be secured at all times with no unauthorised access permitted. Construction worker access to the site will be controlled through a secure gate system.
- A hording wall will be installed around the site perimeter. Hoarding is a temporary protective structure designed and installed to allow safe movement around the site vicinity.
- Changes to Hospital Road access will be required during construction. Affected stakeholders will be consulted on all access changes.
- Access to the Hospital car park and loading dock will be maintained.

Workforce management

- Site workers will undertake induction training to make sure they are highly aware and considerate of their presence within the local community and live hospital precinct.
- The IASB construction workforce is provided with dedicated onsite worker amenities and facilities. Construction worker parking will be provided off-site along with a shuttle bus service.
- Littering, idling vehicles, loud or offensive language will not be tolerated by site workers.
- Lendlease works with the entire supply chain to ensure a clean, clear and safe working environment.

Commitment to stakeholders

- Throughout all stages of ASB construction the project will remain committed to early, coordinated, proactive and transparent stakeholder engagement.
- Any impact to the operations and business continuity of Hospital Road stakeholders and Hospital campus will be communicated and coordinated in consultation with key campus representatives
- During ASB delivery the project team will continue to engage with residents, the wider community and associated stakeholders to ensure that an open, honest, clear and consistent messaging is delivered.
- Regular CIG (Construction Interface Meetings) will be established and held to ensure that any interface to the hospital or affected stakeholders is done is in a controlled and timely manner.

7.5 ISSUES ANALYSIS

Due to the high-profile nature of the Project, its location within a prominent precinct in Sydney's east, and the vast number of stakeholders involved, it is important to identify potential issues that could arise throughout any phase of the project and proactively develop and implement mitigation strategies wherever possible.

	THEME	DETAILS	MITIGATION STRATEGIES
PLANNING	Stakeholder requests have not been accommodated	During construction planning users request haven't been actioned or addressed.	To hold open, engaging and collaborative working group sessions and outline the parameters so the users understand where, and why, changes can and cannot be accommodated.
CONSTRUCTION	Operational capacity of the Randwick Hospital Campus	Management of disruption to essential services and/or infrastructure disruption.	Develop a detailed services disruption process that is approved and communicated to all relevant parties prior to works commencing All services disruptions are planned, approved, carefully coordinated, and communicated in a timely manner Disruption Works Notices are disseminated in a timely fashion to ensure works are planned in a considerate and timely manner.
		Vibration, noisy works and/or dust arising from site.	Disruptive Works Notices are disseminated in a timely fashion to ensure works are planned in a considerate and timely manner Noise, dust and vibration control measures are to be implemented inside and outside the Hospitals and Community Health Centres.
		Unapproved obstruction and use of Hospital Road.	No unapproved obstruction or parking of plant and/or equipment within dedicated hospital parking zones or access ways All onsite contractors to be advised of no parking areas within signage to be displayed in and around site office.

	Site Interface	Avoid or minimise any construction impacts (such as noise, dust, mud) to owners or surrounding building occupants.	Employ reasonable methods of noise and dust suppression on all compressors, jack-hammers, and other high-noise impact machinery
			Disruption Works Notices are disseminated in a timely fashion to ensure works are planned in a considerate and timely manner Regularly clean public roads which the site sits on as required or when conditions call for it and/or at the request of local authorities.
		Security of Site.	Employ proper and adequate precautions to prevent unauthorised access to the site.
	Project Communications	Impacted/interested stakeholders are communicated with in a timely and accurate manner	Disruptive Works Notices and/or Community Construction Notices are disseminated in a timely fashion to ensure works are planned in a considerate and timely manner. Project signage to link to a project information website which provides details on upcoming activities and project progress. Project communication material is provided to stakeholders in advance of works occurring.
		Coordination impacts from adjacent construction sites	Facilitate a monthly Precinct Construction Coordination Group with representatives of contractors from the adjacent building sites Ensure there is clear delineation and timed communication between projects to minimise construction fatigue and accuracy of information.
	Transportation and Movement	Changes to pedestrian and/or vehicular access to Randwick campus and/or adjacent neighbouring properties	Any changes are carefully planned in coordination with the project team, Authorities and Randwick Hospital Campus management. Changes are then clearly communicated via onsite signage, briefings, letterbox drops, and the Disruptive Works Notice.
		Wayfinding difficulties	Display of temporary signage and wayfinding.

7.6 MONITORING & REPORTING

The project promotes a culture of continuous improvement, constantly striving for better outcomes for the project, our reputation, the community and our stakeholders. The following channels will be used to monitor and review the effectiveness of stakeholder engagement.

CHANNEL	OBJECTIVE	DETAILS
Governance	To provide a summary of the stakeholder engagement and communication performance for inclusion in Governance reports.	Outline key engagement activities for the period Highlight key stakeholder issues and strategies implemented to address them Provide visual updates on status of project (i.e. progress photos) Report on complaints and enquiries response rates
Construction interface meetings with impacted stakeholders	To provide key project stakeholders and Hospital campus representatives with a summary of stakeholder engagement and communications activities underway. This forum acts as a mechanism to ensure key project stakeholders receive timely and relevant communications.	Outline key engagement activities for the period Highlight key stakeholder issues and strategies implemented to address them Provide an opportunity for stakeholders to provide feedback on effectiveness of engagement Provide stakeholders with an opportunity to share their engagement and communication needs
Communications Working Group (CWG)	To provide a summary of stakeholder engagement activities and issues raised and addressed.	Outline key engagement activities for the period Highlight key stakeholder issues and strategies implemented to address them Reporting on key stakeholder issues, complaints and actions taken Seeking advice on the engagement and communication needs of key stakeholder groups

8.0 CONSTRUCTION TRAFFIC AND PEDESTRIAN MANAGEMENT SUB – PLAN

8.1 OVERVIEW

Lendlease has developed the Construction Traffic and Pedestrian Management Subplan (CTPMSP) in conjunction with a qualified expert company, Arup Pty Ltd.

The CTPMSP has been prepared in consultation with Sydney Coordination Office and Sydney Light rail team within TfNSW and RMS. The CTPMSP is in accordance with the approved SSD 9113 Conditions and has been endorsed by the applicable Authorities. The plan addressed all traffic and pedestrian details in accordance with the staging and construction of the Randwick Campus Redevelopment Acute Services Building.

This assessment has been conducted in accordance with the requirements below:

- Conditions B35, B42, B43, B44, B58, C9, C10, C11, C36 of the Development Consent from the Minister for planning and Public Spaces (SSD 9113).

8.2 MONITORING & CONSULTATION

During the construction works, Lendlease will continue to monitor the effectiveness of the CTPMSP and the controls in place and update the plan as required. In accordance with Condition C36 regular consultation is occurring with SCO, TfNSW, SLR, RMS and other construction developments to monitor cumulative impacts of the concurrent developments and any implications on the surrounding traffic network operations.

The Construction Worker Transportation Strategy (CWTS) has been prepared in accordance with conditions outlined in SSD 9113 and SSD 10339. This is a combined document which identifies the measures in place to safely and effectively manage workers transportation. This strategy has been updated to include the requirements for the Extended working hours application.

8.3 CTPMSP

The CTPMSP is located in the Appendix 2A

The CWTS is located in Appendix 2B.

9.0 CONSTRUCTION NOISE & VIBRATION MANAGEMENT SUB-PLAN

9.1 OVERVIEW

Lendlease has engaged a suitably qualified expert company, Acoustic Logic Pty Ltd to prepare the Construction Noise and Vibration Management sub plan (CNVMSP).

The CNVMSP has been prepared in accordance with the approved SSD 9113 Conditions to assess the potential noise and vibration impacts associated with the earthworks, excavation and construction components of the Randwick Campus Redevelopment Acute Services Building.

This assessment has been conducted in accordance with the requirements below:

- Conditions B37, C15, C16, C17, C18, C19, C20 and C21 of the Development Consent from the Minister for planning and Public Spaces (SSD 10339);
- NSW EPA Interim Construction Noise Guideline (ICNG);
- A consideration of the procedures and requirements set out Australian Standard 2436-2010 “Guide to Noise Control on Construction, Maintenance and Demolition Sites”;
- The requirements to control noise emissions from the construction site to levels which does not cause undue disturbance to the identified receiver locations;
- The noise mitigation measures available;
- German Standard DIN 4150-3 (1999-02) “Structural Vibration Effects of Vibration on Structures”;
- Environmental Noise Management Assessing Vibration, a technical guideline (DEC 2006)
- British Standard BS 6472 – ‘Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz)

The CNVMSP provides detailed baseline data and identifies measures to be implemented to comply with the requirements of the plan.

9.2 MONITORING & CONSULTATION

Condition B37 requires consultation and monitoring of the effectiveness of the CNVMSP.

Due to the sensitive receivers and adherence with the CNVMSP, the plan will be monitored for its effectiveness during the works and updated to suit changing methodology or site conditions. Any new versions of the plan will be submitted to the required Authorities.

Residents, Stakeholders and other relevant parties were invited to the two Community forums held by Health Infrastructure NSW to provide consultation on the upcoming works. Lendlease representatives were present during this time to discuss construction methodology of the works and associated impacts such as noise and vibration. No identified concerns or issues were raised at this time by those that attended impacting the development of the CNVMSP.

Following these forums, Lendlease identified that the key community consultation for developing the CNVMSP included the Hospital buildings adjacent to the proposed ASB works.

This included the:

- Royal Woman's Hospital (RHW)
- Sydney Children's Hospital (SCHN)
- Prince of Wales Private Hospital (PoWP)
- South East Sydney Local Health District (SESLHD)
- Healthshare

A dedicated Hospital Road Control Group (HRCG) has been formulated to bring together the key Community Stakeholders, along with Health Infrastructure, PwC and Lendlease to consult on the proposed works and impacts. Noise and vibration impacts and strategies have been identified and proposed as follows:

- Each individual Hospital operations identifying hazards and risks of the works
- Detailed presentations on the construction works and techniques at each stage of the programme and the proximity to the buildings
- Adopting construction techniques to suite access requirements for the works
- Describing predicted noise and vibration levels
- Implementation of hoardings to provide noise separation
- Advanced warning of noisy works
- Implementation of live monitoring
- Dedicated on site engineers during the works to provide consultation on exceedances.

For the Extended working hours application, Lendlease has engaged a qualified Consultant, Acoustic Logic to prepare a dedicated plan to provide assessment of the noise and vibration impacts associated with construction activities during the extended working hours. The plan is included in Appendix 3B

9.3 CNVMSP

The CNVMSP for the ASB is in Appendix 3A.

The CNVMSP for Extended working hours application is in Appendix 3B

10.0 CONSTRUCTION WASTE MANAGEMENT SUB-PLAN

10.1 OVERVIEW

Lendlease Building operates an integrated management system where the functions and requirements of environment management and work health and safety (WHS) /occupational health and safety (OHS)/occupational safety and health (OSH) management are integrated.

The LLB EHS MS Manual provides the overall framework for EHS management at LLB workplaces including construction projects. Within this manual there are specific sub plans. The Construction Waste Management Sub Plan (CWMSP) is a sub plan which is prepared in accordance with relevant Legislation and Guidelines. It is then adapted to the site specific requirements identifying waste streams and disposal locations and methodologies.

The CWMSP has been prepared in accordance with the approved SSD 9113 Condition B38. The plan has been prepared by the Construction Manager and reviewed by the Regional EHS Manager for Lendlease.

10.2 MONITORING & CONSULTATION

As part of the Lendlease Building EHS Manual, the plan is required to be updated 3-monthly. This will require a review of the scope, and the compliance with the plan. Monthly waste stream statistics will be received to monitor effectiveness of the methodologies, and streams of waste and volume generated. Consultation will occur with the relevant stakeholders if non conformances are identified.

The CWMSP will be issued to the subcontractors to ensure adherence and compliance throughout the project.

10.3 CWMSP

The CWMSP is located in the Appendix 4.

11.0 CONSTRUCTION SOIL AND WATER MANAGEMENT SUB-PLAN

11.1 OVERVIEW

Lendlease Building operates an integrated management system where the functions and requirements of environment management and work health and safety (WHS) /occupational health and safety (OHS)/occupational safety and health (OSH) management are integrated.

The LLB EHS MS Manual provides the overall framework for EHS management at LLB workplaces including construction projects. Within this manual there are specific sub plans. The Stormwater and Erosion Management Sub Plan (SEMSP) is a sub plan which is prepared in accordance with relevant Legislation and Guidelines. It is then adapted to the site-specific requirements identify strategies and mitigation measures to be implemented during construction activities and defines discharge protocols and treatment procedures to enable control of the impacts of the construction activities on potentially affected areas of adjacent water bodies.

The SEMSP has been prepared in accordance with the approved SSD 9113 Condition B11, B14, B18, C26 & C28. The plan has been prepared by the Construction Manager and reviewed by the Regional EHS Manager for Lendlease.

Lendlease has further engaged Douglas Partners, to develop a Dewatering Management plan to support the SEMSP and is included in the appendix of the SEMSP. This has been developed by site sampling of the strata and topography conditions.

11.2 MONITORING & CONSULTATION

As part of the Lendlease Building EHS Manual, the plan is required to be updated 3-monthly. This will require a review of the scope, and the compliance with the plan. Weekly and monthly environmental inspections will be carried out by Lendlease site personnel. After significant rain events inspections will take place. Following these inspections consultation will occur if any changes are required to the controls in place.

The SEMSP will be issued to the subcontractors to ensure adherence and compliance throughout the project.

The Dewatering Management Plan and SEMSP has been issued to Randwick City Council for consultation and commentary.

11.3 SEMSP

The SEMSP is located in the Appendix 5.

12.0 ABORIGINAL CULTURAL HERITAGE MANAGEMENT SUB-PLAN

12.1 OVERVIEW

The Aboriginal Cultural Heritage Management Sub Plan (ACHMSP) is a sub plan prepared by a qualified expert, Mary Dallas from MDCA. The sub plan has been prepared in consultation with the La Perouse Local Aboriginal Land Council.

The ACHMSP has been prepared in accordance with the approved SSD 9113 Condition B17, B40, C29 & C30.

12.2 MONITORING & CONSULTATION

Monitoring of this plan has been undertaken by MDCA and the team. Ongoing consultation with the La Perouse Local Aboriginal Land Council continues with site visits during the required stages of works.

As part of the construction phases, should excavation activities be undertaken, consultation occurs between Lendlease and MDCA.

The sub plan has adopted the recommendations as outlined in the Aboriginal Cultural Heritage Assessment Report, prepared by Mary Dallas Consulting Archaeologists, dated October 2018

The sub plan was submitted to the Planning Secretary prior to construction.

MDCA has carried out significant investigations of the ASB site since 2019 All areas under the ASB building footprint have been completed. The remaining area associated with the SSD9113 condition of investigation is identified in green. Due to the change in staging of site remediation activities advised by Health Infrastructure there is a section of the existing Eurimbla Avenue that has not been excavated. It is envisaged that these works will occur later in the project at which time MDCA will provide surveillance on site whilst continuation of the excavation of this remaining portion of Eurimbla avenue.

12.3 ACHMSP

The ACHMSP is located in the Appendix 6.

13.0 FLOOD EMERGENCY RESPONSE SUB PLAN

13.1 OVERVIEW

Lendlease has engaged a suitably qualified expert company, BMT to prepare a Flood Report to be read in conjunction with the Emergency Response Plan as part of the Lendlease EHS management system.

Lendlease Building operates an integrated management system where the functions and requirements of environment management and work health and safety (WHS) /occupational health and safety (OHS)/occupational safety and health (OSH) management are integrated.

The LLB EHS MS Manual provides the overall framework for EHS management at LLB workplaces including construction projects. Within this manual there are specific sub plans. The Emergency Response Sub Plan (ERMSP) is a sub plan which is prepared in accordance with relevant Legislation and Guidelines. It is then adapted to the site-specific requirements identify strategies and mitigation measures to be implemented during construction activities and defines discharge protocols and treatment procedures to enable control of the impacts of the construction activities on potentially affected areas of adjacent water bodies. The BMT report is appendix to this sub plan.

The ERMSP has been prepared in accordance with the approved SSD 9113 Condition B41, and address the provisions of the Floodplain Risk Management Guideline (OEH, 2007).

13.2 MONITORING & CONSULTATION

The ERMSP identifies measures in place for effective monitoring of flood management during construction and required Consultation. Monitoring rteh effectiveness of this plan will be after significant rain events and comparing against the modelled data from the report.

BMT will remain engaged as an expert consultation throughout all stages of the project.

13.3 GMP

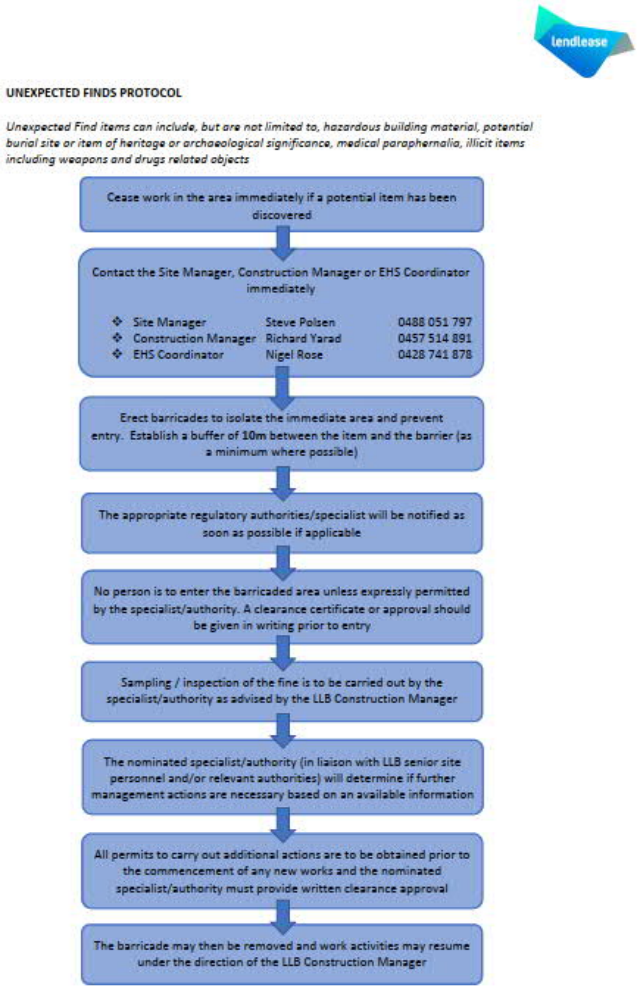
The ERMSP is located in the Appendix 7.

14.0 UNEXPECTED FINDS PROTOCOL

14.1 OVERVIEW

Lendlease Building operates an integrated management system where the functions and requirements of environment management and work health and safety (WHS) /occupational health and safety (OHS)/occupational safety and health (OSH) management are integrated.

The following protocol is developed from the EHS manual which can utilized for finds relating to contamination, Aboriginal, and non-Aboriginal heritage associated works.



14.2 MONITORING & CONSULTATION

From the known conditions of the Site, and from the EIS reports prepared the following monitoring will be taking place during excavation works:

- Aboriginal heritage monitoring provided by the Local Land Council as directed by the Heritage Consultation, Mary Dallas and Associates. This is in accordance with the Aboriginal Cultural Heritage Assessment Report dated October 2018.
- Possible Unexpected finds relating to asbestos in soils, as noted in the Douglas Partners DSI report. Within the Remediation Action Plan (RAP) a project specific detailed Unexpected Finds Protocol is outlined in section 10 of the RAP for compliance outlining the protocol and associated communications requirements.

- In accordance with Consent condition B33 and B34, the Douglas Partners Remediation Action Plan includes a detailed Asbestos management plan. This plan along with the RAP has been reviewed by the NSW EPA Accredited Site Auditor, Senversa for its completeness and compliance with legislation. This review is outlined in the Auditors statement included in the Appendix
- Waste classification of materials is carried out in accordance with the RAP prepared by Douglas Partners. A Geotechnical engineer will be present during excavation works to monitor the material excavated and provide classification as required.

14.3 Remediation Action Plan

The RAP is located in the Appendix 8.

15.0 EXTERNAL TEMPORARY LIGHTING

15.1 OVERVIEW

Throughout the construction planning of the ASB works there has been no identified requirement for external temporary lighting.

Upon construction, should there be a requirement to install external temporary lighting caused by a change in sequence, methodology or request by others, Lendlease will engage a suitable Electrical Consultant to ensure that the lighting is design in compliance with AS4282-2019. Ensuring control of obtrusive effects of outdoor lighting.

With the application for Extended working hours due to the Covid-19 pandemic, there will be a requirement to provide external temporary lighting. Lendlease has engaged a qualified Electrical consultant, Fredon Electrical, to prepare a lighting design for provision of construction lighting to facilitate the extended working hours.

15.2 MONITORING & CONSULTATION

Fredon Electrical have been engaged by Lendlease to provide design guidance advice for temporary construction lighting to facilitate the extended construction hours being sought for approval. Appendix 10 identifies the lighting design prepared to facilitate these works. The lighting design has been prepared in accordance with AS4282-1997.

16.0 EXISTING HELIPAD OPERATIONS

16.1 OVERVIEW

The existing Randwick Campus Redevelopment has a functioning Helipad used for patient transfer services and emergencies. Lendlease has engaged a suitably qualified and experienced aviation professional, Avipro Pty Ltd. To undertake an assessment of the Helipad operations and the construction impact requirements to be mitigated in accordance with SSD 9113 condition B49.

16.2 MONITORING & CONSULTATION

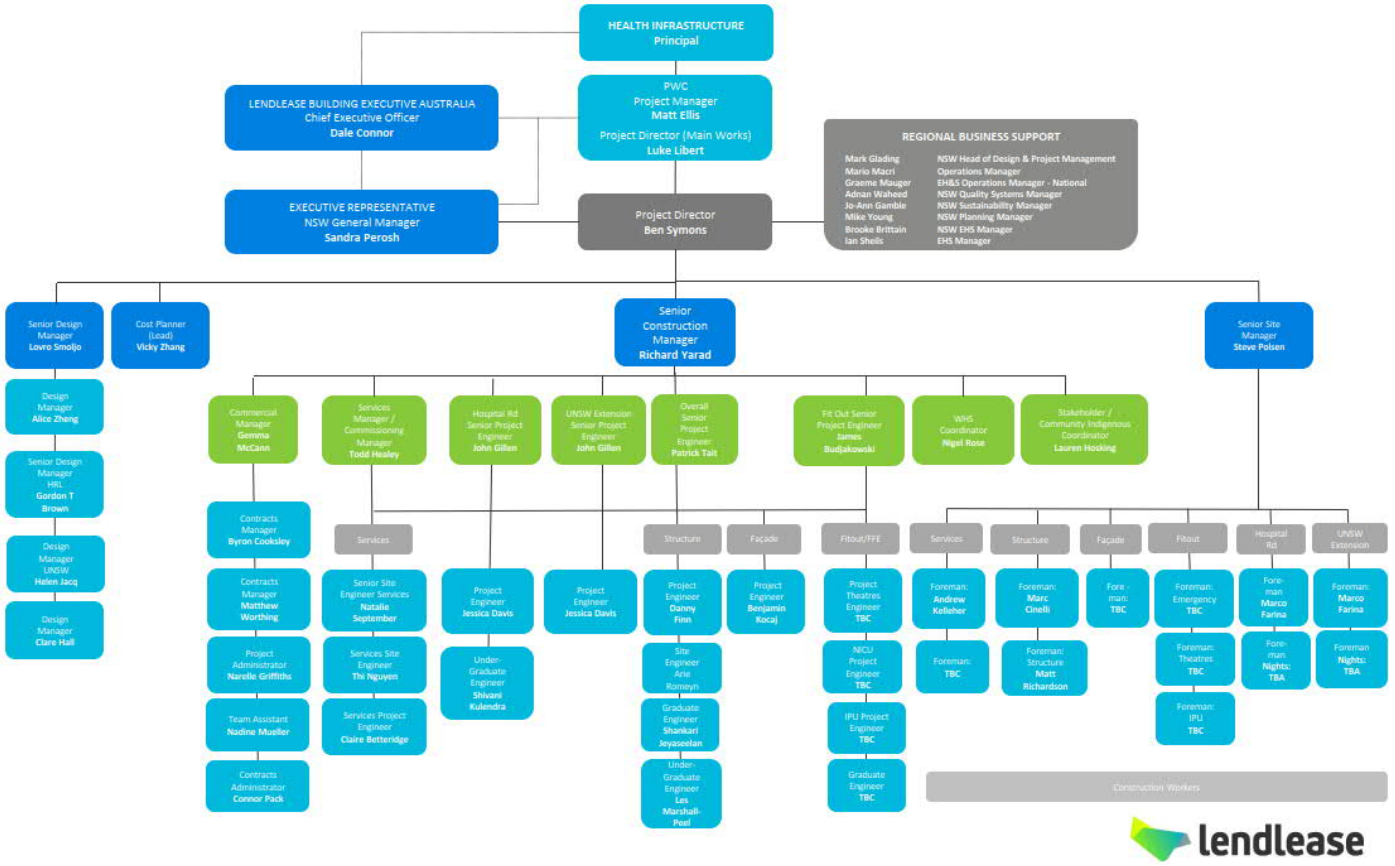
Avipro have been engaged by Lendlease to provide design guidance advice for the new Acute Service Building and to assist manage construction impacts during the build to not interfere with existing flight operations.

The Avipro report has been prepared in consultation with the LHD to ascertain frequency, travel path and other key requirements.

Avipro assist Lendlease with tower crane permits and other construction impacts.

17.0 APPENDICES

APPENDIX 1 – PROJECT ORGANISATIONAL CHART



APPENDIX 2A – CTPMSP

APPENDIX 2B – CWTS

APPENDIX 3A – ASB CNVMSP

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RANDWICK CAMPUS REDEVELOPMENT MANAGEMENT PLAN - NOISE AND VIBRATION

17/09/2020 | Revision No: 2.7

Sub- Plan Revision Status				
Date	Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
30/11/16	2	General update including LLB GMR and legislative amendments.	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	
21/05/19	2.2	Regular three month review, updated EMD	[redacted]	[redacted]
12/09/19	2.3	Regular three month review, updated EMD	[redacted]	R[redacted]
12/12/19	2.4	Regular three month review, updated EMD	[redacted]	[redacted]
18/03/20	2.5	Regular three month review, updated EMD	[redacted]	[redacted]
17/06/20	2.6	Regular three month review, updated EMD	[redacted]	[redacted]
17/09/20	2.7	Regular three month review, updated EMD	[redacted]	[redacted]

*Note that all printed paper/hard copies of this document remain uncontrolled. The controlled copy of this document is found either in the project collaboration tool, within the Project Management Plan section, or other project specific database/server approved by the Regional EHS Manager / Head of EHS Integrated Project.

1. SCOPE OF PROJECT AND SUB PLAN

Project Details	
Scope of the Sub Plan	This Noise and Vibration Management Sub Plan provides strategies and measures to minimise and control the generation of noise and vibration. It outlines appropriate measures to ensure that identification of noise and vibration, are managed appropriately during the construction phase including the site establishment, demolition, construction, fit out and commissioning of a project. It describes measures to be implemented during relevant construction activities, which enables control of the impacts of construction activities on potentially affected receivers, and contingency measures that may be implemented if complaints are received or measured limits exceeded. 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 Building (LLB) EHS management system.
Objectives of the Sub Plan	• To achieve compliance with regulatory requirements and standards for noise and vibration management. • To avoid excessive noise and vibration generation through site planning and the adoption of appropriate work methods and site management practices. • To prevent or minimise to the greatest extent, the impact of construction noise and vibration on neighbours and the community. • To establish and maintain positive relationships with project stakeholders.
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 diversions, • 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 contiguous pile wall along grid 14,

Project Details	
	• 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 • Hospital Road Lowering and Construction of the UNSW extension building to the ASB.
Key Issues and Risks	The works described above have the potential to generate noise and vibration at levels, or at times, that may affect nearby residents, businesses and other community facilities. The closest sensitive receivers to the site have been identified as: • Randwick Hospital Campus (including Sydney Children's Hospital, Royal Women's Hospital, Prince of Wales Public Hospital, Prince of Wales Private Hospital • UNSW • Local residents, including High Street and Magill Street The activities with the greatest potential to create noise and/or vibration include: • Demolition of structures and removal and chipping of trees • Land clearing including vegetation removal, topsoil stripping; • Bulk excavation work from the North-East corner of basement excavation pushing the soil to the south west corner. • Contiguous piling, temporary sheet piles, bored piles; • The loading and haulage of materials off-site; • The transport of materials to and from site on local roads; • Servicing of waste management and storage areas; • The use of hand tools, small generators and compressors; • Concreting works; and • Out of hour works. High or prolonged levels of construction noise and vibration can cause annoyance to local receivers and damage to adjacent structures. The main risks associated with the works that will be conducted on this site are identified as: • Noise affecting residents' use of their property or causing annoyance and resulting in complaints and negative comment; • Noise disrupting local events, the use of public facilities or educational programs and exams;

Project Details	
	• Vibration affecting medical equipment located at the Randwick Hospital Campus i.e. calibration; • Noise affecting local businesses including cafes with outdoor areas; and • Noise occurring outside of normal or approved construction hours; • Vibration affecting structures or causing concerns/fright within the community. A noise/acoustic assessment including background noise monitoring has been prepared for this project. The assessment concluded that: • Noise associated with early and enabling works activities is expected to have an impact on the surrounding areas and the recommendations of the assessment have been addressed in this Sub Plan; The implementation of the control measures identified in the EHS Plan and this Sub Plan are intended to mitigate the risks and any potential impacts of noise and vibration on the environment and local community.
Legislation, Approval and Guidelines	**Federal/National:** ANZECC Guidelines Technical Basis for Guidelines to minimise Annoyance due to Blasting Over pressure and Ground Vibration Australian Standard AS2436 (1981) Guide to Noise Control on Construction, Maintenance and Demolition Sites Australian Standard AS2601 (1991) Demolition of Structures. AS 1055.1-1997 Acoustics – Description and measurement of environmental noise – General Procedures AS 1055.2-1997 Acoustics – Description and measurement of environmental noise – Application to specific situations **State:** Project Approval: SSD 9113 ASB C4. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours: (a) between 7am and 6pm, Mondays to Fridays inclusive; and (b) between 8am and 5pm, Saturdays. No work may be carried out on Sundays or public holidays.

Project Details	
	C7. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours: (a) 9am to 12pm, Monday to Friday; (b) 2pm to 5pm Monday to Friday; and (c) 9am to 12pm, Saturday. Project Approval: SSD 10339 UNSW Ext & HRL C4. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours: (a) between 7am and 6pm, Mondays to Fridays inclusive; and (b) between 8am and 5pm, Saturdays. No work may be carried out on Sundays or public holidays. C7. Construction activities may be undertaken outside of the hours in condition C4, in accordance with the schedule of out of hours work nominated at section 3.4.2 and table 3.3 of the EIS to maintain operation of the hospital loading dock, unless directed otherwise by the Planning Secretary, and must be restricted to the following times and type of works: (a) Friday: 6:00 pm to 10:00 pm (limited to site establishment activities in preparation for weekend works).

Project Details	
	(b) Saturday: 5:00 pm to 10:00 pm (general construction activities excluding excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). (c) Sunday: 8:00 am to 5:00 pm (general construction activities including excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). (d) Sunday: 5:00 pm to 10:00 pm (general construction activities excluding excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). Interim Construction Noise Guideline NSW EPA 2009 Acoustic Logic construction Noise & Vibration Management Plan **Local**: • Local Government Act 1993 Lendlease Requirements: • 4.13 Degradation or Pollution of the Environment • 4.15 Uncontrolled Release of Stored Energy (non-electrical)) • Lendlease Building Workplace Delivery Code (WDC)
Summary of Site Controls	This Sub Plan must be read in conjunction with the Lendlease GMRs, Project Environmental Impacts and Hazards Assessment (IHRA), the Project EHS 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 minimise and where possible prevent, the impacts of construction noise and vibration on the environment and community. These include but are not limited to: • Performing and monitoring works in accordance with the project approval; • Restricting works to approved construction hours; • Assessing the potential impact of works that may be required or extend outside of approved construction hours (e.g. delivery of plant, large concrete pour) and seeking approval; • Selecting appropriately sized plant, equipment and tools;

Project Details	
	• Retrofitting plant with noise silencing devices; • Substituting noisy processes or plant with less noisy options; • Restricting the times and/or duration of noisy works; • Communicating with project neighbours on a regular basis and providing advanced notification of noisy works; and • Installing acoustic barriers or enclosures where they are deemed to be feasible and effective. **Vibration**: The project will make all practical efforts to protect vibration sensitive buildings and the amenity of the occupiers of the buildings. The project will apply a practical and economical combination of vibration control measures to manage vibration impacts such as: • Substitution by an alternative process • Restricting times when work is carried out • Screening or enclosures • Consultation with affected residents. During leisure hours, vibration disturbance from construction operation must be kept to a minimum. The basis for this vibration management strategy will be to limit the times that certain vibration producing activities may be carried out. Generally, this will be accomplished by performing such work during (nominate daylight or after hours) No construction or demolition works is permitted within 50m vicinity of any heritage listed items or features of cultural significance. Any activities potentially resulting in vibrations should be at greater distances to avoid disturbance to any protected items located on the site. A Noise and Vibration Impact and Monitoring Environmental Management Diagram will be prepared prior to any site activities commencing (Appendix 1). Construction stage noise and vibration minimisation and monitoring requirements will be included in relevant specifications, contract agreements, plant supply 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.

Project Details	
	Acoustic Logic has been engaged as a specialised Consultant to develop a specific Construction Noise & Vibration Management Plan to provide compliance with DoP conditions. Refer to appendix.

2. IMPLEMENTATION OF THE SUB PLAN

Control Measure	Timing	Methodology	Responsibility	Monitoring and Reporting	Performance Measurement
Planning and Site Establishment					
Undertake dilapidation surveys of nominated properties, utilities and structures.	Prior to works commencing	Appoint a consultant to undertake dilapidation surveys pre- and post-construction and review findings.	CM/SM	Surveys reviewed and works planned with consideration of the findings (as relevant).	No damage to properties or buildings.
Address noise minimisation, management, plant noise monitoring and maintenance as part of risk assessments and work planning.	Prior to commencing works	WMSs prepared by major subcontractors to identify high noise and vibration generating activities, compliance with approved work hours, the duration of works, and the selection, substitution and use of appropriate plant.	SM	Discussion in planning sessions. Addressed in IHRA and WMS. Inspection of work activities. Noise monitoring results. Complaints.	No complaints from the community. No work outside of hours without approval.
Prepare a Noise and Vibration Impact and Monitoring Environmental Management Diagram (EMD) identifying the location of potentially affected receivers, monitoring locations and work areas where noise will be generated.	Prior to works commencing	Prepare EMD. Plan works with consideration to the location of sensitive receivers. Position noisy plant and equipment away from sensitive receivers and as far apart as practicable. Assess whether altering the orientation and/or location of the plant will reduce noise impacts.	PM/CM	Diagram prepared and communicated.	Sensitive receptors identified so that communication can be maintained.

Include information in the Site Induction about noise and vibration minimisation, management and monitoring.	Prior to works commencing	Revise Lendlease induction package to include site specific risks and information. Deliver induction material.	CM/SM	WMSs prepared by subcontractor's address noise and vibration minimisation, work hours, duration and the selection and use of plant.	Site induction delivered to all workers on site.
Install a noise barrier/hoarding along project boundaries (as feasible).	Prior to works commencing	Identify the location of project neighbours and assess the feasibility and benefits of installing a barriers/hoarding to reduce noise transmission.	CM/SM	Noise monitoring results. Number of complaints.	No complaints. No exceedances of predicted levels.
Design the site entry and internal roads to minimise and regulate truck movements and ensure vehicles enter and exit in a forward direction (to reduce noise from travel alarms).	Prior to works commencing	Address in site setup design. Include this requirement in the Traffic Management Plan.	CM/SM	Continuous monitoring of traffic movements during construction.	No complaints from adjoining residents or authorities.
Provide advanced notification of the commencement of work.	Prior to works commencing	Establish a list of project stakeholders including potentially affected neighbours, community, health and business facilities Prepare appropriate information and distribute to the community.	CM/SM	List established and maintained. Feedback recorded.	No community complaints. Positive relationship established with project neighbours.
Issue appropriate PPE for use on site where noise exceeds 85dB(A).	Prior to commencing and at all times	Identify areas of the site where PPE is required. Install appropriate signage. Monitor compliance.	SM	Daily surveillance. Weekly inspection checklist.	PPE consistently worn.
Establish a Plant & Equipment Register with details of approved equipment, noise compliance certificates and relevant restrictions/conditions of use (if any) if applicable.	Prior construction	Subcontractor to address in WMS and submit Plant & Equipment Register or service records.	GF	Included in subcontractor work method statements. Sub-contractor audit.	All operators licensed. No inappropriate use of plant or equipment.

Work Hours

Comply with approved work hours. **Activity** / **Permitted working hours** All demolition, site vegetation clearance, remediation and site works, including site deliveries (except as detailed below): • Monday to Friday - 6.00am to 6.00pm • Saturday - 8.00am to 5.00pm • Sunday & public holidays - No work permitted Excavating or sawing of rock, use of jack-hammers, pile-drivers, vibratory rollers/compactors or the like: • Monday to Friday - 8.00am to 5.00pm only • Saturday No work permittedSunday & public holidays - No work permitted Additional requirements for all development: • Saturdays and Sundays where the preceding Friday and/or the following Monday is a public holiday - No work permitted **Construction Hours** C4. Construction, including the delivery of materials to and from the site, may only be carried out between the following hours: (a) between 7am and 6pm, Mondays to Fridays inclusive; and (b) between 8am and 5pm, Saturdays. No work may be carried out on Sundays or public holidays. C5. Construction activities may be undertaken outside of the hours in condition C4 if required: (a) by the Police or a public authority for the delivery of vehicles, plant or materials; or (b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or (c) where the works are inaudible at the nearest sensitive receivers; or (d) for the delivery, set-up and removal of construction cranes, where notice of the crane-related works is provided to the Planning Secretary and affected residents at least seven days prior to the works; or (e) where a variation is approved in advance in writing by the Planning Secretary or his nominee if appropriate justification is provided for the works. C6. Notification of such construction activities as referenced in condition C5 must be given to affected residents before undertaking the activities or as soon as is practical afterwards. C7. Construction activities may be undertaken outside of the hours in condition C4, in accordance with the schedule of out of hours work nominated at section 3.4.2 and table 3.3 of the EIS to maintain operation of the hospital loading dock, unless directed otherwise by the Planning Secretary, and must be restricted to the following times and type of works: (a) Friday: 6:00 pm to 10:00 pm (limited to site establishment activities in preparation for weekend works).	At all times	Identify and communicate approved work hours/days. Plan works and complete within approved hours. Provide notification to the community.	CM/SM	Documented approval received for work outside of approved hours. Monitoring of work outside of approved hours.	Timely approval of work outside of hours. No complaints. No work outside of approved hours without prior impact assessment and approval from the relevant regulatory authority. No fines.

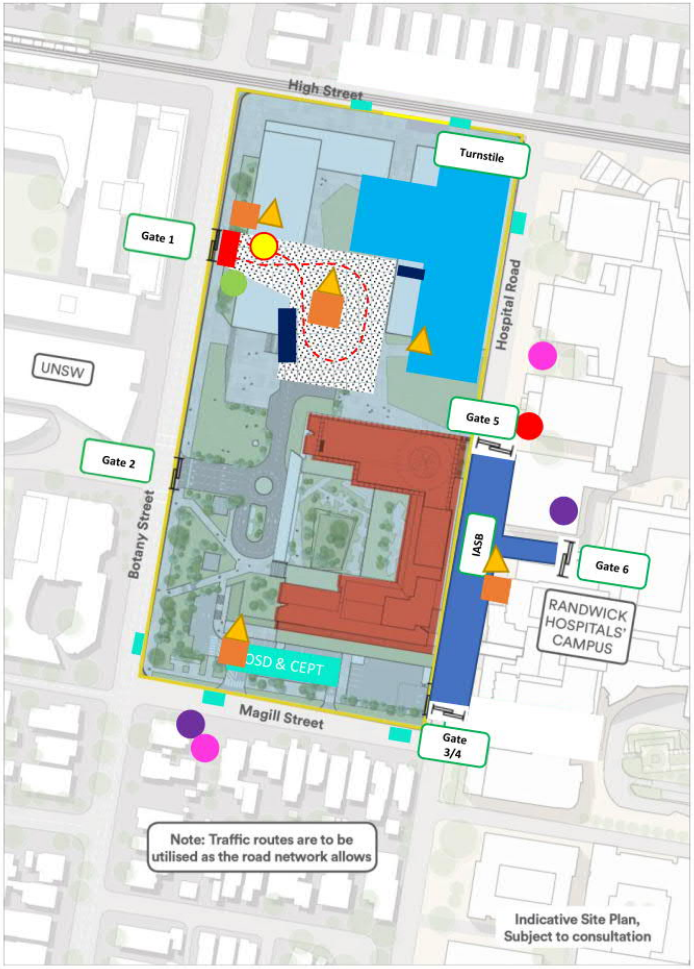
(b) Saturday: 5:00 pm to 10:00 pm (general construction activities excluding excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). (c) Sunday: 8:00 am to 5:00 pm (general construction activities including excavation, sawin of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). (d) Sunday: 5:00 pm to 10:00 pm (general construction activities excluding excavation, sawing of rock, jack hammers, pile drivers, vibratory rollers/compactors of the like). C8. The work permitted under condition C7: (a) may be undertaken for a trial period of four weekends to monitor the effectiveness of the Construction Noise Vibration Management Plan (CNVMP) for the out-of-hour works required by condition C9, with a start date and the weekends notified in writing to the Planning Secretary 14 calendar days prior to commencement. At the conclusion of the trial period, the Applicant must submit a written report as required by condition C11 with 14 calendar days. (b) may continue in accordance with the schedule in accordance with C7 if the Planning Secretary does not advise within two weeks of submission of the trial period report that the works must cease. (c) must be supported by respite days where continuous days of construction exceed 13 days. A respite day must be provided after 14 consecutive days of working. C9. In undertaking any out-of-hours works under condition C7, the Applicant must comply with the following: (a) prepare a CNVMP for the out-of-hours work that is to include: (i) a description of the proposed out-of-hours works; (ii) predictions of LAeq (15 minute) noise levels at noise sensitive receivers from thes works and activities, where noise levels are predicted to be greater than the construction noise management level s in EPA's *Interim Construction Noise Guideline* (DECC, 2009); and (iii) a monitoring plan to validate the noise predictions, based on monitoring at the boundary of representative sensitive receivers during noise generating activities that are representative of the out-of-hours works; (b) the Applicant must submit the CNVMP to the Planning Secretary 14 calendar days prior to any work commencing for the duration of the trial period; and C10. In undertaking any out-of-hours works under condition C7, the Applicant must notify potentially affected noise sensitive receivers of works outside of standard construction hours not less thar five calendar days and not more than 14 calendar days before those works are to be undertaken. (a) the notification must be: (i) undertaken by letterbox drop or email; and (ii) be detailed on the project website. (b) the notification required by this condition must: (i) clearly outline the reason that the work is required to be undertaken outside the hours specified in condition C7; (ii) include a diagram that clearly identifies the location of the proposed works in relation to nearby cross streets and local landmarks; (iii) include details of relevant time restrictions that apply to the proposed works; (iv) clearly outline in plain English, the location, nature, scope and duration of the proposed works; (v) detail the expected noise impact of the works on noise sensitive receivers; (vi) clearly state how complaints may be made and additional information obtained; and					

(vii) include the number of the telephone complaints line, which must also be the after hours contact phone number specific to the works undertaken outside the hours specified in condition C7, and the project website address. C11. For out-of-hours works permitted under condition C7, a validation report must be submitted to the Planning Secretary within 14 calendar days of the completion of the trial that includes the following detail: (a) a copy of the community notification required under condition C10; and (b) noise monitoring undertaken during the out of hours works; and (c) details of any exceedances of noise levels predicted in the CNVMP; and (d) details of the noise and vibration mitigation measures that were implemented during the out-of-hours works; and (e) a summary of any community complaints received by the project during the trial period. C12. Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours: (a) 9am to 12pm, Monday to Friday; (b) 2pm to 5pm Monday to Friday; and (c) 9am to 12pm, Saturday. C13. Where high noise impact activities are undertaken in accordance with the schedule of weekend closures of the loading dock nominated at section 3.4.2 and table 3.3 of the EIS to maintain operation of the hospital loading dock, the requirements of condition C12 do not apply provided that all high noise impact activities are undertaken prior to 5pm where reasonable and feasible.					
If work needs to be performed due to unforeseen circumstances (e.g. concrete pour) outside the hours nominated, consent from the Sydney Eastern City Planning Panel must be obtained.	At all times	Prior notice and approval from the Sydney Eastern City Planning Panel must be sought.	GF	Continuous as required.	No complaints from public or adjoining residents or authorities.
Provide advanced notification to potentially affected community stakeholders of out of hour's work/deliveries and high noise or vibration activities.	Prior to works commencing	Prepare appropriate information and distribute to the community at least 3 days prior to the works occurring.	CM/SM	Feedback recorded.	No community complaints. Positive relationship established with project neighbours.
Where applicable if work activities involve noisy works, controls measure MUST be detail as part of the Work Method Statement	Prior to works commencing	In accordance with the Noise and Vibration Management Plan.	Contractor	Continuous	Work Method Statement to contain details of schedule of work and equipment being used.
Noise and Vibration Minimisation – Plant and Equipment					
Ensure that public address systems are not used (except in emergencies)	During construction	Orientate speakers away from sensitive receivers.	SM	Monthly inspection. Review of effectiveness during emergency drills.	No complaints.
Operate plant and equipment in a proper and efficient manner and avoid unnecessary idling or engine noise.	At all times	WMS prepared by subcontractor to address proper operation of plant and	SM	Ongoing inspection of operators and operations.	All operators are licensed.

		equipment and education of operators.	Sub-contractor		No inappropriate use of plant or equipment.
Ensure plant is fitted with silencers, acoustical enclosures or other noise attenuation measures.	At all times	Subcontractor to address the risk based selection of appropriate plant and equipment in WMS. Include requirement in subcontracts. Subcontractor to submit Plant & Equipment Register or service records.	SM/ Foreman	Ongoing inspection of operators, activities and plant. Daily surveillance of noise levels.	All operators are licensed. No inappropriate use of plant or equipment.
Avoid rock-hammering where feasible and use alternative methods such as rock-saws and rippers where possible.	At all times	Subcontractor to address in WMS. If the use of rock-hammers is unavoidable, use smaller rock breakers with quiet 'city hammers'.	SM/ Foreman	Detailed SWMS prepared and communicated. Ongoing inspection of operators, activities and plant. Weekly inspection checklist	All operators are licensed. No inappropriate use of plant or equipment.
Consider the merits of different construction activities (e.g. piling techniques) in relation to noise and vibration impacts.	At all times	Subcontractor to address in WMS and submit Plant & Equipment Register or service records. E.g. Use non-percussive piling techniques where practicable. If impact piling is required, consider hours of operation, lowering hammer height, shielding with equipment or using acoustic shrouding and resilient dollies.	SM/ Foreman	Detailed SWMS prepared and communicated. Ongoing inspection of operators, activities and plant. Weekly inspection checklist.	All operators are licensed. No inappropriate use of plant or equipment.

Ensure that vibratory compactors are not used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with specified criteria.	At all times	Included in subcontractor tenders. Subcontractor to submit Plant & Equipment Register or service records. 'Buffer zones' clearly marked out to prevent entry of plant.	SM/ Foreman	Ongoing surveillance.	All operators licensed. No inappropriate use of plant or equipment.
Turn off vehicles and plant when not in use and avoid queuing and idling outside the site, particularly prior to the construction start time.	At all times	Address in site induction. Subcontractors to address in WMS and communicate to all personnel.	SM/ Foreman	Daily surveillance Weekly inspection checklist.	No complaints from local community.

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
- Sprinklers and water carts to reduce dust Ring main water around inside of hoarding with hose connections to control work zones
- Sprinklers set up over waste bins for dust suppression when emptying smaller bins
- Sealed hard stand area for materials handling
- Coconut logs for sediment control on Hospital Rd works

KEY CONTACTS PERSONS

Senior Construction Manager
Richard Yarad 0457 514 891

Senior Site Manager:
Steve Polsen 0488 051 797

Emergency Services:
000

EHS Coordinator:
Nigel Rose 0428 741 878

General Foreman:
Marco Farina 0409 685 587

LEGEND

Icon	Descriptions
	Perimeter A-Class Hoarding
	Vehicle Entry Gate
	Site Accommodation and Offices
	Spill Kits
	Tyre cleaning run off pond (inclement weather)
	Vibration Monitors
	Acoustic Monitors
	Stormwater inlet
	Delivery vehicle movement
	Shaker grid
	Hazardous Materials and Dangerous Good Storage
	Dust Monitor
	Two coat chip seal hard stand area
	Refuel area for wheeled vehicles
	Waste bins

APPENDIX 2: Typical Noise Levels of Major Plant

Item	Typical Plant or Equipment	Max Noise Level (at 7 metres)
Bulldozer	Caterpillar D7, D9	88
Bulldozer	Caterpillar D10	93
Front End Loader	Wheeled	90
Jack Hammers	With silencing bags	85
Air Track Drill	800 CFM Compressor	96
Scraper	Caterpillar 631	89
Scraper	Caterpillar 651	85
Grader	Caterpillar 16	85
Compactor	Caterpillar 825	85
Compactor	Vibrating Plate	92
Vibratory Roller	10-12 Tonne	89
Water Cart	Diesel	88
Dump Trucks	35 Tonne	96
Excavator	Kato 750	86
Rock Breaker	Hydraulic on Kato 750	97
Truck	Diesel	80
Crane	Truck Mounted	85
Compressor	600 CFM	75
Compressor	1500 CFM	80
Backhoe	Diesel	88
Spreader	Asphalt, concrete	70
Asphalt Truck	Diesel	92
Asphalt Paver	Diesel	89
Tip Truck	Diesel	83
Generator	Diesel	79
Spraying Machine	Diesel	75
Mechanical Broom	Diesel / LPG	83
Piling Hammer	For piles and casing	93
Concrete truck	Diesel	83
Concrete Pump	Diesel	84
Concrete Vibrators	Petrol	80
Drill	Air	85
Drill	Pneumatic	85
Welders	Diesel	85

APPENDIX 3: Guideline for Roller Use near Structures

Roller Class & Weight Range	Centrifugal Force Range	Example of Rollers	Distance from Building A	Distance from Building B	Remarks
Very Light Less than 1.25 tonnes	10-20kN	Coates 32RD tandem Daveco 32CR tandem	3m	--	Maintenance and patching rollers. Generally not restricted for normal
Light 1 to 2 tonnes	20-50kN	Coates 42RD tandem Pannell 54T drawn	5m	--	Generally not restricted for normal road use.
Medium 2 to 4 tonnes	50-100kN	Coates 66Tdrawn Daveco 66 drawn	6m	12m	
Medium-Heavy 4 to 6 tonnes	100-200kN	Coates 72Tdrawn Daveco 72 drawn Pacific V12 drawn Raypo Rascal 400	12m	24m	Not advised for city and suburban streets.
Heavy 7 to 11 tonnes	200-300kN	Coates 78Tdrawn Pacific V24D drawn Raypo Rascal 600	25m	50m	Restricted. Not advised built-up areas.
Very Heavy 12 tonnes and over	Over 300kN	Coates 96Tdrawn Pacific V36D drawn	25m	50m	Restricted to major construction areas away from structures and buildings.

MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

Randwick Hospital Redevelopment

Main Works Construction Noise and Vibration Managment Plan

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Project ID	20191464.6
Document Title	Main Works Construction Noise and Vibration
Attention To	Lend Lease Building Pty Ltd ABN: 97 000 098 162

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	15/04/2020	20191464.6/1504A/R0/GK	GK		GW
1	11/05/2020	20191464.6/1105A/R1/GK	GK		GK
2	13/05/2020	20191464.6/1305A/R2/GK	GK		GW

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1 INTRODUCTION

This Construction Noise and Vibration Management Plan applies to the Prince of Wales Hospital Expansion Stage 1, comprising:

- Bulk earthworks;
- Construction and operation of a 13 level Acute Services Building, including the following facilities: an emergency department; operating theatres; central sterilising service department; intensive care unit; patient units; and ambulance bays;
- Overhead pedestrian links to existing hospital buildings;
- A helipad on the uppermost roof of the building;
- Magill Street road works, Botany Street signalised intersection, internal roads and drop-off/pick up areas; and
- Utility, site infrastructure and landscaping works.

1.1 PURPOSE OF THIS MAIN WORKS CNVMP

Development consent for this project is subject to conditions. The consent states that the conditions are required to:

- Prevent, minimise or offset adverse environmental impacts;
- Set standards and performance measures for acceptable environmental performance;
- Require regular monitoring and reporting; and
- Provide for the ongoing environmental management of the development. Condition B33 of the development consent requires NSW Health Infrastructure, on behalf of Health Administration Corporation, as the applicant, to prepare a Construction Environmental Management Plan (CEMP). The CEMP must include a Construction Noise and Vibration Management Sub-Plan (condition B33 (c)). Condition B37 specifies that the CNVM Sub-Plan must address, but not be limited to, the following:

a) be prepared by a suitably qualified and experienced noise expert;
b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);
c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers;
d) include strategies that have been developed with the community for managing high noise generating works;
e) describe the community consultation undertaken to develop the strategies in condition B37(d); and
f) include a complaints management system that would be implemented for the duration of the construction.

Acoustic Studio has been engaged by NSW Health Infrastructure to prepare this CNVMP Sub-plan. Its purpose is to fulfil the relevant conditions of the development consent.

This document is the Construction Noise and Vibration Management Sub Plan required by approval condition B33 (c). It addresses the requirements specified in approval condition B37.

Table 1 replicates the conditions above, with the corresponding section(s) of this CNVMP where each condition is addressed.

Approval Condition	Completed?	CNVMP Reference
Be prepared by a suitably qualified and experienced noise expert	Yes	Section 1.4
Describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009)	Yes	Section 7
Describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers	Yes	Section 6.2.1
Include strategies that have been developed with the community for managing high noise generating works	Yes	Section 7.6
Describe the community consultation undertaken to develop the strategies in condition B37(d)	Yes	Section 7.6
Include a complaints management system that would be	Yes	Section 7.7

implemented for the duration of the construction.		

Operation of Plant and Equipment

C3. All plant and equipment used on site, or to monitor the performance of the development must be:

a) maintained in a proper and efficient condition; and
b) operated in a proper and efficient manner.

C4: Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

a) between 7am and 6pm, Mondays to Fridays inclusive; and
b) between 8am and 5pm, Saturdays.
No work may be carried out on Sundays or public holidays.

C5: Activities may be undertaken outside of the hours in condition C4 if required:

a) by the Police or a public authority for the delivery of vehicles, plant or materials; or
b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
c) where the works are inaudible at the nearest sensitive receivers; or
d) where a variation is approved in advance in writing by the Planning Secretary or her nominee if appropriate justification is provided for the works.

C6: Notification of such activities must be given to affected residents before undertaking the activities or as soon as is practical afterwards.

C7: Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

a) 9am to 12pm, Monday to Friday;
b) 2pm to 5pm Monday to Friday; and
c) 9am to 12pm, Saturday.

Construction Noise Limits

C15: The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.

C16: The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C4.

C17: The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use audible movement alarms of a type that would minimise noise impacts on surrounding noise sensitive receivers.

C18: Any noise generated during construction of the development must not be offensive noise within the meaning of the Protection of the Environment Operations Act 1997 or exceed approved noise limits for the site.

Vibration Criteria

C19: Vibration caused by construction at any residence or structure outside the site must be limited to:

a) for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (German Institute for Standardisation, 1999); and
b) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).

C20: Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C19.

C21: The limits in conditions C19 and C20 apply unless otherwise outlined in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B37 of this consent.

1.2 RELEVANT CODES AND STANDARDS

In preparing this plan we have considering the following:

- [1] The Development Consent ref: SSD9113.
- [2] Randwick Campus Redevelopment, Noise and Vibration Impact Assessment for State Significant Development (SSD) – Acute Services Building, ref:20180808 AUR.0003.Rep, prepared by Acoustic Studio
- [4] NSW Department of Environment and Climate Change (DECC) "Interim Construction Noise Guideline", 2009
- [5] NSW Department of Environment and Conservation (DEC) "Assessing Vibration: A Technical Guideline", 2006
- [6] Australian Standard "AS 2436: Guide to Noise Control on Construction, Maintenance & Demolition Sites", 1981
- [7] Australian Standard "AS 2670.2: Evaluation of human exposure to whole-body vibration – Part 2: Continuous and shock-induced vibration in buildings (1 to 80 Hz)", 1990
- [8] British Standards Institution "BS 6472 – Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz)", 1992
- [9] German Institution for Standardisation "DIN 4150.3 : Structural vibration – Effects of vibration on structures", 1999

1.3 OTHER APPROVAL CONDITIONS RELATING TO CONSTRUCTION NOISE AND VIBRATION

The Approval also includes other conditions relating to construction noise and vibration, including plant condition, time restrictions and specific noise and vibration conditions:

Protection of Public and Private Property and Infrastructure

B6. Before the commencement of construction, the Applicant must:

a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;
b) prepare a dilapidation report identifying the condition of all public infrastructure in the vicinity of the site (including roads, gutters and footpaths);
c) prepare a dilapidation report identifying the condition of all adjoining and nearby premises including the residences on the south side of Magill Street and the heritage item located at 4 Hay Street, Randwick;
d) prepare a report by a professional engineer detailing the proposed methods of excavation, shoring or pile construction, including details of potential vibration emissions, and demonstrating the suitability of the proposed methods of construction to overcome any potential damage to nearby premises including the residences on the south side of Magill Street and the heritage item at no.4 Hay Street, Randwick.
e) submit a copy of the dilapidation report and engineers report to the Certifying Authority and Council.

1.4 QUALIFIED PERSONS PREPARING THIS PLAN

Persons involved in preparation of this plan and their qualifications are in Table 2. Details of their experience is available on request.

Person	Qualifications	Involvement in Plan
George Wei	Member of AAAS, BE Mech	Project Director
George Kinezos	BEng(Sound)	Project Engineer

Table 2: Qualifications of persons preparing this plan.

1.5 RESPONSIBILITIES

Health Infrastructure and Lendlease are responsible for implementation of this plan:

- Working in accordance with the requirements of this CNVMP.
- Ensuring that any complaints regarding noise and vibration are investigated and appropriately responded to in accordance with the recommendations provided in this document.
- Ensuring project personnel and sub-contractors employed are aware of their responsibilities in regard to the management of noise and vibration during construction and assume the responsibilities assigned to them within this Plan.
- Monitoring and managing noise and vibration impacts on receivers, in accordance with the requirements of the relevant guidelines and standards listed in Section 4.
- Consulting with the occupants of neighbouring premises and buildings to inform them of the nature of the work, to determine any specific noise and vibration sensitivity they may have and to negotiate respite times during noisier works.

2 SUMMARY OF NOISE MANAGEMENT PROCEDURES

No Blasting and no percussive (impact) piling

Construction for this project is typical of infrastructure building sites in the Sydney Urban area. There will be CFA piling but no percussive (impact) piling. There will be no unusual excavation works, such as blasting.

Construction only in approved hours

Construction, including deliveries of materials to and from the site, is to occur only from:

- 6am to 6pm, Mondays to Fridays inclusive; and
- 8am to 5pm, Saturdays.
- No construction is allowed on Sundays or public holidays.

Activities outside of the hours above are allowed only if required:

a) by the Police or a public authority for the delivery of vehicles, plant or materials; or
b) in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
c) where the works are inaudible at the nearest sensitive receivers; or

where a variation is approved in advance in writing by the Planning Secretary or her nominee if

Respite for noisy activities (Consent Condition C7)

Rock breaking, rock hammering, sheet piling, pile driving and similar activities may be done only between the following hours:

a) 9am to 12pm, Monday to Friday;
b) 2pm to 5pm Monday to Friday; and
c) 9am to 12pm, Saturday.

Proper and efficient operation and maintenance of plant and equipment

Plant and equipment used on site, or to monitor the performance of the development must be:

a) maintained in a proper and efficient condition; and
b) operated in a proper and efficient manner.

Non-tonal Movement Alarms ("Reversing Beepers")

Where practicable and without compromising the safety of construction staff or members of the public, audible movement alarms on dedicated site plant and equipment will be of a type that will minimise noise impacts on surrounding noise sensitive receivers This could be achieved through the use of broadband alarms, reversing cameras, a combination of these, or a system of work that excludes personnel from the active work area and allows audible reversing alarms to not be used on the site.

Construction vehicles not to arrive outside approved construction hours

Construction vehicles, including concrete agitator trucks, are not to arrive at the site or surrounding residential precincts outside of the approved construction hours. Trucks importing and removing materials from the site will be road-registered vehicles which will travel to and from the site via specific routes, avoiding local roads. They will enter and leave the site in a forward direction, minimising the need for reversing alarms. Trucks will be loaded and unloaded within the site, which will minimise noise from truck loading and unloading.

Noise and Vibration Monitoring

Noise levels and vibration will be monitored at two locations, and the results used to guide management and mitigation of noise and vibration.

Vibratory compactors not to be used within 30 metres of residences.

Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with vibration criteria.

Community to be kept informed

Neighbours are notified and informed at intervals of the project hours, duration and site management contact details.

Workers and drivers to minimise noise

Contractors and visitors to site are required to complete an induction. This includes training and regular tool box talks. These talks include, as relevant, providing awareness of this plan; the approved project hours; specific noise mitigation measures; being respectful and considerate of neighbours and minimising noise. Minimising noise includes trucks avoiding using exhaust braking when approaching the site, not using vehicle horns for signalling, keeping radio volumes to a reasonable level, and not shouting.

Site to be surrounded by solid hoarding

The site is surrounded by solid (plywood) hoarding, to a height of approximately 2 metres, other than for access gates and adjacent to the site offices. This hoarding provides noise barrier attenuation for the ground floors of surrounding buildings and is to be retained and maintained in good condition for the duration of construction.

Vehicles to access the site only via site gates

Construction vehicles are to access the site only via the site gates, two of which is on Botany Street, and another on Hospital Road (Gate 3).

3 OVERVIEW OF MAIN WORKS

Main works, which are the subject of this CNVMP includes:

- bulk earthworks;
- Construction and operation of a 13 level Acute Services Building, including the following facilities: an emergency department; operating theatres; central sterilising service department; intensive care unit; patient units; and ambulance bays;
- overhead pedestrian links to existing hospital buildings;
- Magill Street road works, Botany Street signalised intersection, internal roads and drop-off/pick up areas; and
- utility, site infrastructure and landscaping works.

3.1 CONSTRUCTION HOURS APPROVED IN STATE SIGNIFICANT DEVELOPMENT (SSD) 9113

The work hours for the project (as per Consent Condition C4) are:

- 7:00am to 6:00pm Monday to Friday
- 8:00am to 5:00pm Saturday

Rock breaking, rock hammering, sheet piling, pile driving and similar activities will be restricted to (as per consent Condition C7):

a) 9am to 12pm, Monday to Friday;
b) 2pm to 5pm Monday to Friday; and
c) 9am to 12pm, Saturday.

These hours provide 1 hour of respite for every 3 hours of noise, which is a standard condition of many EPA Environment Protection Licences and Department of Planning and Environment Planning Approvals. Activities will be considered for restriction to these hours if they generate noise greater than 75dBA, including any penalties for potentially annoying characteristics, at any property boundary across Hospital Road or High, Botany, or Magill streets.

Activities outside of the work hours will only occur;

- If required by the Police or a public authority for the delivery of vehicles, plant or materials; or
- in an emergency to avoid the loss of life, damage to property or to prevent environmental harm; or
- where the works are inaudible at the nearest sensitive receivers; or
- where a variation is approved in advance in writing by the Planning Secretary or her nominee if appropriate justification is provided for the works.

This CNVMP will be revised appropriately in the event that a variation is approved by the Planning Secretary.

3.2 SEQUENCE, TIMING AND DURATION OF WORKS

Table 1 is an indicative construction works program from the project EIS that outlines the key activities in each particular location. Based on this, it is anticipated that the key activities to occur for each area / stage are as follows:

Stage of Works (Period)	Main Tasks	Itemised Activities[2]	Typical Plant
Piling (May to August 2019)	Piling works		Piling Rigs
Capping Beam Installation (July to September 2019)	Capping beam installation		Hand tools / drill / mobile crane
Excavation & Foundation (August to December 2019)	Bulk excavation and Detail excavation		Excavators / bobcat / skip trucks
	Foundation		Forklift / demo saw / mobile crane / concrete mixer truck/ concrete vibrator
Structure and Concrete Cores (November 2019 to September 2020)	Structure		Tower crane / mobile crane / hand tools / drill
	Concrete cores		Concrete mixer / concrete pump / concrete vibrator
Floors, Façade & Roof (November 2019 to December 2020)	Stripping floors		Hand tools / angle grinders
	Installation of façade and glazing		Drill / hand tools / mobile crane / tower crane
	Roofing		Hand tools / drills / tower crane / angle grinders / circular saw
Internal Works (April 2020 to June 2021)	Essential services		Hand tools / hammer drill / concrete mixer / demo saw / circular saw / angle grinder
	Fitout and finishes		Cement mixer / masonry saw / Hand tools / circular saw / angle grinders
Landscaping & External Works (June 2020 to August 2021)	Landscaping		Excavators / bobcats / skip trucks
	External works		Demo saw / excavators / hand tools / drills / angle grinders / hammer drill / mobile crane / tower crane

Note: Items shaded in grey are works to be carried out internally within the building

4 ENVIRONMENT SURROUNDING THE SITE

4.1 SITE DESCRIPTION

The site is located within an urban environment in Randwick, characterised by medium to high levels of activity throughout the day / evening and low levels of activity in the night.

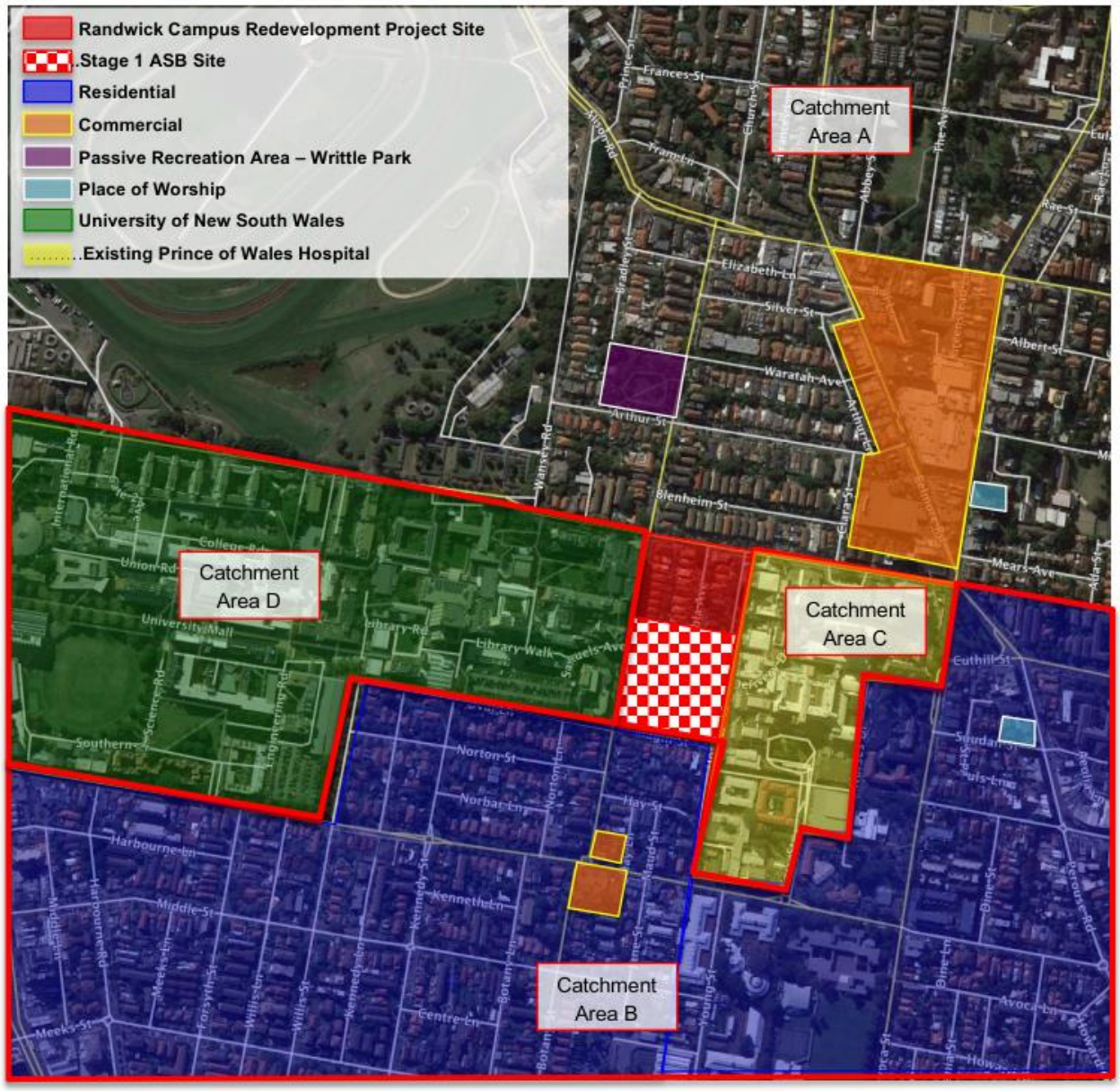


Figure 1: The Project site in relation to noise-sensitive receivers

The following land-uses surround the Project site:

- Catchment Area A
    - Residential dwellings to the north along High Street.
    - Commercial buildings to the northeast.
    - Writtle Park to the north.
    - Our Lady of the Sacred Heart Church to the northeast.
- Catchment Area B
    - Residential dwellings to the south and southwest.
    - Residential dwellings to the east and southeast adjacent to the POW Hospital.
    - Commercial buildings to the south.
    - Randwick Baptist Church to the east.
- Catchment Area C
    - POW Hospital to the east across Hospital Road. This receiver includes sensitive research laboratories and equipment as well as general hospital accommodation and administration activities.
- Catchment Area D
    - UNSW campus to the west. This receiver includes sensitive research laboratories and equipment as well as residential accommodation, learning, teaching and administration activities.

4.1.1 Nearest Noise and Vibration Sensitive Receivers

The nearest sensitive receivers to the Project site that will be potentially affected by noise and vibration are surrounding residential, educational, and hospital premises:

Site investigation indicates that the nearest noise/vibration receivers are below:

Receiver 1 – Randwick prince of Wales Hospital Complex located along the eastern boundary of the project site;
Receiver 2 – UNSW Building situated along the Western Boundary of the project site across Botany Street, Randwick.
Receiver 3 – Residential Dwellings situated along the Northern Boundary of the project site from 46 Botany Street to 18 High Street, Randwick.
Receiver 4 – Residential Dwellings situated along the Southern boundary of the project site from 103 Botany Street to 15 Magill Street, Randwick.

Buildings surrounding the site are set back various distances from their property boundaries but the distances above are from the receiver property boundary to the construction site property boundary.

Please see site map below for further detail.

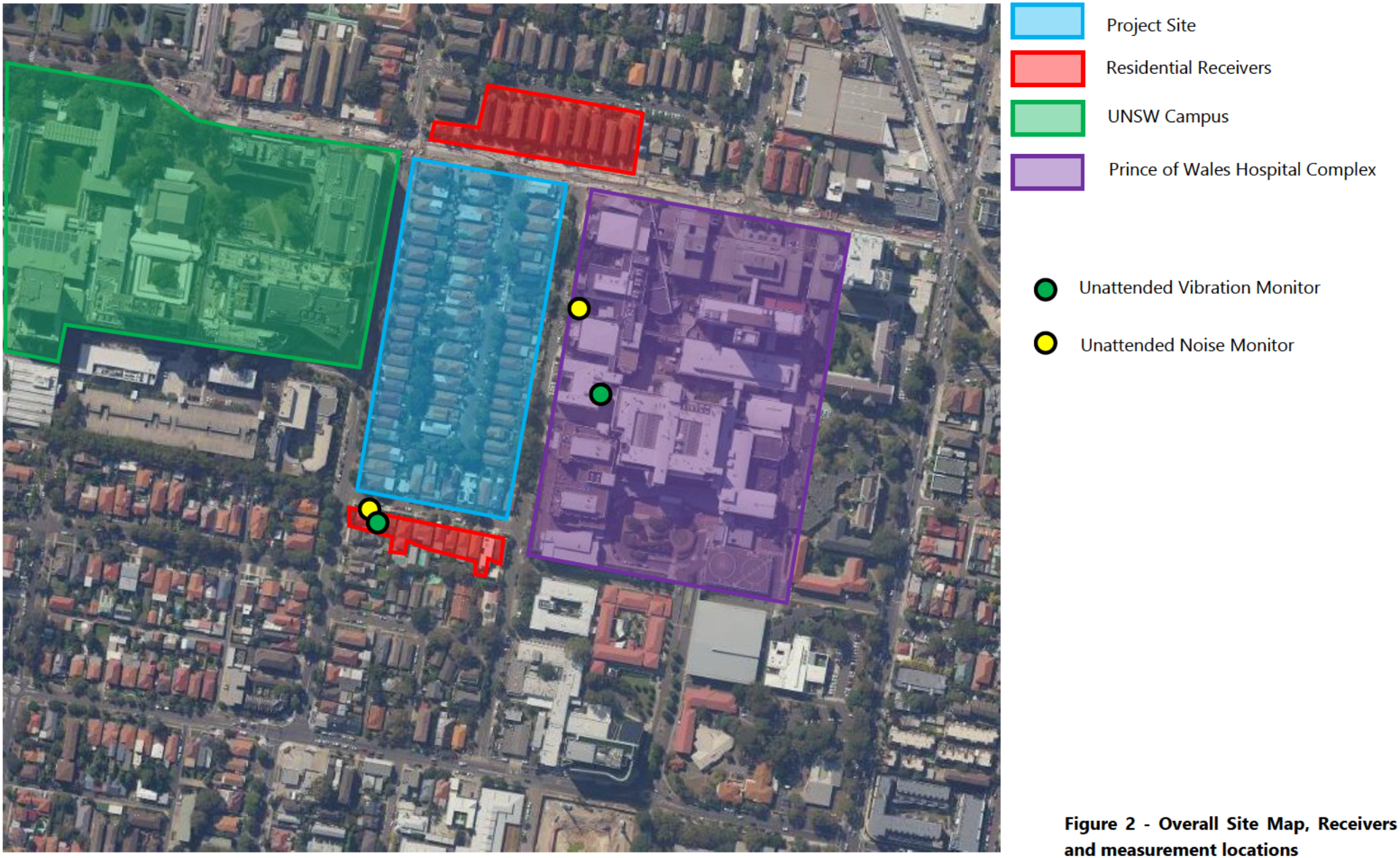


Figure 2 - Overall Site Map, Receivers and measurement locations

5 BACKGROUND NOISE LEVELS

Acoustic Studios background noise logging has been used in conjunction with Acoustic Logic Consultancies background logging data to determine the rating background noise level for the project site and surrounding receivers.

Background Noise levels which will be used as a basis for this assessment are detailed below.

5.1 NOISE ENVIRONMENT

The pre-existing noise environment was measured during the SSD application stage and is documented in Section 4 of the EIS / SSD [2]. This has been used to establish the relevant construction noise criteria for the project.

5.2 MEASUREMENT EQUIPMENT

Unattended noise monitoring was conducting using one Acoustic Research Laboratories Pty Ltd noise logger. The logger was programmed to store 15-minute statistical noise levels throughout the monitoring period. The equipment was calibrated at the beginning and the end of each measurement using a Rion NC-73 calibrator; no significant drift was detected. All measurements were taken on A-weighted fast response mode.

5.3 MEASUREMENT LOCATION

An unattended noise monitor was installed on ground level along the southern boundary of the proposed project site at 103 Botany Street, Randwick.

5.4 MEASUREMENT PERIOD

Acoustic Logic Consultancy conducted unattended noise monitoring from Friday the 22nd of November to Friday the 6th of December 2019.

5.5 MEASURED BACKGROUND NOISE LEVELS

The background noise levels established from the unattended noise monitoring are detailed in the Table below.

NSW EPA's RBL assessment procedure requires determination of background noise level for each day (the ABL) then the median of the individual days as set out for the entire monitoring period.

This report provides detailed results of the unattended noise monitoring. Weather affected data was excluded from the assessment. The processed Rating Background Noise Levels (lowest 10th percentile noise levels during operation time period) are presented in Table below.

Unattended and attended noise measurements have been undertaken as per the procedures outlined in Fact Sheet A and B of the NSW EPA Noise Policy for Industry.

Weather affected data (rain fall and wind speeds above 5m/s) have been excluded from the assessment as per Fact Sheet A and B. Where interval periods (day, evening and night) have 18%, 13% and 11% respectively, these periods have been excluded from the assessment.

Table 1 – Unattended Noise Monitor – Logger Location 1 – Rating Background Noise Level

Date	dB(A)$L_{90(Period)}$ [1]		
	Day (7am-6pm)	**Evening (6pm-10pm)**	**Night (10pm-7am Next Day)**
22nd November 2019	44	45	42
23rd November 2019	44	43	42
24th November 2019	42	43	42
25th November 2019	50	43	43
26th November 2019	48	47	44
27th November 2019	47	43	42
28th November 2019	50	45	42
29th November 2019	48	47	44
30th November 2019	44	48	43
1st November 2019	43	43	41
2nd November 2019	45	44	42
3rd November 2019	44	44	42
4th November 2019	45	44	42
5th November 2019	46	45	43
6th November 2019	45	-	-
Median	**45**	**44**	**42**

Table Notes:

1. Periods marked "-" above did not collect the enough data to be considered valid as the monitor as either installed before, during or after the interval.

The following table provides a summary of the background noise data applicable for the subject site:

Table 2 – Summarised Background Noise Levels

Project Site	Monitor Location	Acoustic Logic Measured Noise Data	Monitor Location	Acoustic Studio Measured Noise Data	Adopted RBL*
Randwick Campus Redevelopment	103 Botany Street, Randwick	Day – 45	7 Magill Street, Randwick	Day – 46	45
		Evening – 44		Evening – 44	44
		Night - 42		Night - 43	42

*Note: The lowest background noise levels have been adopted for this assessment

6 NOISE MANAGEMENT TRIGGER LEVEL

Noise emissions from the bulk earthworks, excavation and construction of should satisfy the following:

- Requirements of the SSD 9113 from the minister of planning and public spaces;
- NSW EPA Interim Construction Noise Guideline (ICNG) 2009; and
- Australian Standard AS2436:2010.

6.1 REQUIRMENTS BY NSW INTERIM CONSTRUCTION NOISE GUIDELINE

The NSW EPA Interim Construction Noise Guideline (ICNG) 2009 details specific construction noise and vibration management levels applicable to construction sites within NSW.

Where feasible and practical measures may be applied to the construction site is to endeavour to comply with the noise management levels outlined in the guideline. A summary of the code is detailed below.

6.1.1 NSW EPA Interim Construction Noise Guideline (ICNG) 2009

NSW EPA INCG adopts different management levels depending on the applicable receiver type, each is discussed below.

6.1.2 Residential Receivers

EPA guidelines adopt differing strategies for noise control depending on the predicted noise level at the nearest residences:

- "Noise affected" level. Where construction noise is predicted to exceed the "noise effected" level at a nearby residence, the proponent should take reasonable/feasible work practices to ensure compliance with the "noise effected level". For residential properties, the "noise effected" level occurs when construction noise exceeds ambient levels by more than:
    - 10dB(A)Leq(15min) for work during standard construction; and
    - 5dB(A)Leq(15min) for work outside standard construction hours.
- "Highly noise affected level". Where noise emissions are such that nearby properties are "highly noise effected", noise controls such as respite periods should be considered. For residential properties, the "highly noise effected" level occurs when construction noise exceeds 75dB(A)Leq(15min) at nearby residences. Highly noise affected level only applies during standard construction hours.

Table 3 – Construction Noise Management Level

Receiver Type	"Noise Affected" Level dB(A)$L_{eq(15\ minutes)}$	"Highly Noise Affected" Level dB(A) $L_{eq(15\text{-}minutes)}$
Residential Receivers	Background + 10dB(A) (Standard Construction Hours)	75
	Background + 5dB(A) (Outside Standard Construction Hours)	-

6.1.3 Other Sensitive

Other sensitive land uses, such as schools and hospitals typically consider noise from construction to be disruptive when the properties are being used. The table below presents management levels for noise at other sensitive land uses based on the principle that the characteristic activities for each of these land uses should not be unduly disturbed.

External noise levels are to be assessed at the most affected point within 50m of the area boundary. Where internal noise levels cannot be measured, external noise levels may be used. A conservative estimate of the difference between internal and external noise levels is 10 dB for buildings other than residences. Some buildings may achieve greater performance, such as where windows are fixed (that is, cannot be opened)

Table 4 – Noise at Sensitive Land Uses

Land Uses	Management Trigger Level $L_{Aeq(15min)}$
Hospital Wards and Operating Theatres	Internal noise level 45dB(A)

6.1.4 Outside Recommended Standard Hours

As outlined in Table 2 of the Interim Construction Noise Guideline 2009 works conducted outside the recommended hours must not exceed the noise trigger level of background plus 5dB(A). The proponent should apply all feasible and reasonable work practises to meet the noise affected level. Where all feasible and reasonable practises have been applied and noise is more than 5dB(A) above the noise affected level, the proponent should negotiate with the community.

6.2 AUSTRALIAN STANDARD AS 2436:2010 "GUIDE TO NOISE CONTROL ON CONSTRUCTION, MAINTENANCE AND DEMOLITION SITES"

Australian Standard AS 2436 provides guidance on noise and vibration control in respect to construction and demolition sites, the preparation of noise and vibration management plans, work method statements and impact studies.

The standard states that:

- "Some construction and demolition activities are by their very nature noisy. The authorities responsible for setting noise level criteria for essential works will take note of the constraints imposed by such activities, especially when they are of short duration."
- Construction, demolition and maintenance works pose different problems of noise and vibration control when compared with most other types of industrial activity, since (a) they are mainly carried on in the open; (b) they are often temporary in nature although they may cause considerable disturbance whilst they last; (c) the noise and vibration arise from many different activities and kinds of plant, and their intensity and character may vary greatly during different phases of the work; and (d) the sites cannot be separated by planning controls, from areas that are sensitive to noise and vibration.

The standard provides advice and guidelines for the prediction of impacts and the methods available to manage impacts. The guideline promulgates feasible and reasonable mitigation strategies and controls, and stakeholder liaison, in the effort to reach a realistic compromise between site activities and impacts on neighbouring properties.

6.3 CONSTRUCTION TRAFFIC NOISE

The RNP provides criteria for traffic noise from new roads or additional traffic generated on roads from land use development. The criteria apply to additional traffic generated on public roads from construction vehicles / traffic.

When considering land use redevelopment and the impact on sensitive land uses (residential / schools / hospitals / recreational) the RNP guideline states that ". In assessing feasible and reasonable mitigation measures, an increase of up to 2 dB" in relation to existing noise levels "represents a minor impact that is considered barely perceptible to the average person.

6.4 SUMMARISED CONSTRUCTION NOISE MANAGEMENT TRIGGER LEVELS

Construction noise management levels applicable to the development have been determined based on the minimum background noise level recorded and the construction noise guidelines detailed in 7of this report. Construction noise management levels of the site are detailed in Table 4 below.

Table 5 – External Construction Noise Management Levels

Receiver	Category	Time of Day	Background Noise Level dB(A) $L_{90(Period)}$	Construction Noise Management Trigger Levels dB(A) $L_{eq(15\ Minute)}$
Receiver 3 and 4 (Residential)	Monday to Friday	7am to 6pm (BG + 10)	45	55
	Saturday	8am to 1pm (BG + 10)	44	54
		1pm to 5pm (BG + 5)	44	49
	Sunday	No works on Sunday	-	-
Receiver 1, 2 (Other Sensitive Land Uses)	Monday – Sunday	Applies when properties are being used (Internal)	-	45 (internal)

7 VIBRATION CRITERIA

7.1 CONSTRUCTION VIBRATION

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

- For structural damage vibration, German Standard DIN 4150-3 Structural Vibration: Effects of Vibration on Structures; and
- For human exposure to vibration, British Standard BS 6472 – 'Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz).
- For sensitive equipment

The criteria and the application of this standard are discussed in separate sections below.

7.2 STRUCTURE DAMAGE CRITERIA

German Standard DIN 4150-3 (1999-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1999-02) are presented in Table 2.

It is noted that the peak velocity is the absolute value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 6 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

Type of Structure		Peak Particle Velocity (mms^{-1})			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

7.3 HUMAN EXPOSURE TO VIBRATION

The British Standard BS 6472 – 'Guide to Evaluate Human Exposure to Vibration Buildings (1Hz to 80Hz) will be used to assess construction vibration for human comfort.

This guideline provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings. The recommendations of this guideline should be adopted to assess and manage vibration from the site. Where vibration exceeds, or is likely to exceed, the recommended levels then an assessment of reasonable and feasible methods for the management of vibration should be undertaken.

Table 7 – BS 6472 Vibration Criteria

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	**Time**	**Preferred**	**Maximum**	**Preferred**	**Maximum**	**Preferred**	**Maximum**
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices		0.02	0.04	0.4	0.8	0.56	1.1
Workshops		0.04	0.08	0.8	1.6	1.1	2.2
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices		0.64	1 28	13.0	26.0	18.0	36.0
Workshops		0.64	1 28	13.0	26.0	18.0	36.0

Note 1: Continuous vibration relates to vibration that continues uninterrupted for a defined period (usually throughout the daytime or night-time), e.g. continuous construction or maintenance activity. (DECC, 2006)

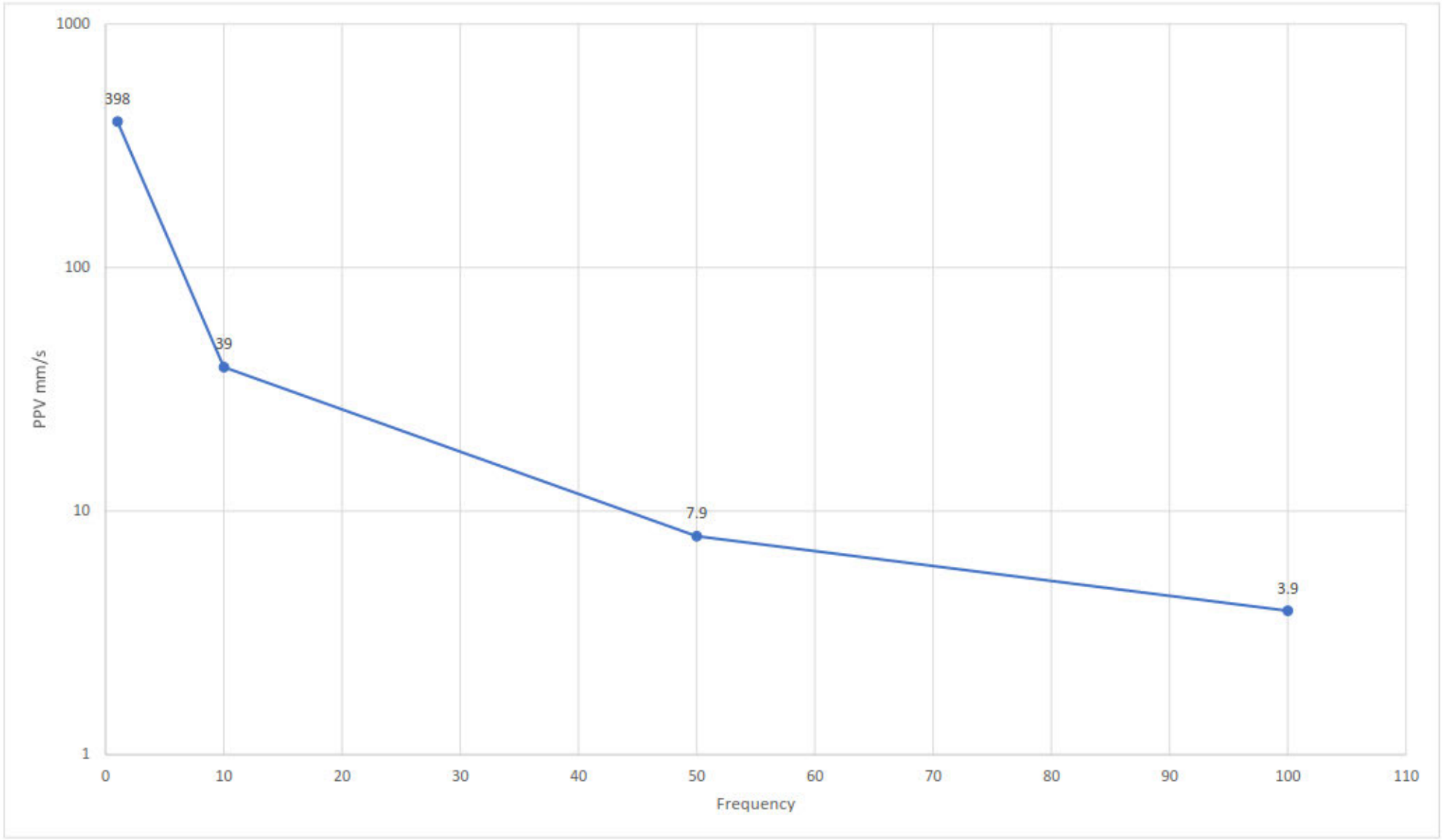
Note 2: Impulsive vibration relate to vibration that builds up rapidly to a peak followed by a damped decay and that may or may not involve several cycles of vibration (depending on frequency and damping), with up to three occurrences in an assessment period, e.g. occasional loading and unloading, or dropping of heavy equipment (DECC, 2006).

7.4 SENSITIVE EQUIPMENT VIBRATION CRITERIA

Acoustic Logic Consultancy have been advised that sensitive equipment is located within The Prince of Wales Hospital Foundation building with a nominated criterion of 2.5 m/s2. The corresponding Peak Particle Velocity has been calculated and is presented in the table and graph below.

Table 8 – Vibration Limit to Vibration Sensitive Machines

Sensitive Equipment	Peak Particle Velocity (mms-1)				
	At a Frequency of				Recommended Limit
	1Hz	10Hz	50Hz	100Hz	
	398	39	7.9	3.9	3.9


Sensitive Equipment Vibration Criteria PPV
1000
100
10
1
PPV mm/s
398
39
7.9
3.9
0
10
20
30
40
50
60
70
80
90
100
110
Frequency

8 MAIN WORKS NOISE AND VIBRATION ASSESSMENT

Potential sources of vibration and ground-borne noise during the Project works include:

- Construction and excavation plant including rock-breakers and jack hammers.
- Grinding, cutting and drilling of building structures.

Vibration and ground-borne noise impacts are likely to be highest during the excavation and piling work stages of the Project, when equipment such as rock breakers, jackhammers and piling rigs are used.

8.1 NOISE AND VIBRATION SOURCES

8.1.1 Construction Noise Assessment Methodology

A preliminary assessment of the likely noise impacts of the proposed works on the most-affected receivers surrounding the site was included in the project EIS <update for revised construction details>.

The assessment considered the following:

- Typical activities considered in the noise impact assessment are as detailed in Section 3.2.
- Noise management levels at sensitive receiver location as outlined in Section 3.2.
- Noise level predictions calculated using the noise data provided in Table 8.
- Noise level predictions considering distance attenuation only. This is appropriate because of the small distances between the site and surrounding receivers.
- The noise level predictions are based on assumptions that represent reasonable worst-case scenarios:
    - LAeq noise levels are predicted for the operations of the nearest works area on the site to each of the nearest sensitive receiver location.
    - The predictions consider a range from individual tasks and associated equipment up to the cumulative noise contribution from all key activities and corresponding equipment with plant running simultaneously for each phase and main task.
    - The predictions assume continuous operation of equipment / plant over the 15-minute assessment period, unless otherwise stated.

8.2 NOISE ASSESSMENT RESULTS

Noise from the worst-case construction works for each phase of the development have been predicted to the nearest most affected sensitive receivers. The predicted noise levels are presented in this section.

The following presents the predicted noise levels for each item of typically louder plant. Noise has been predicted to surrounding sensitive uses. The loudest typical appliances for each phase has been included and presented as a cumulative assessment.

The proposed construction works proposed for the site will include the following:

- Bulk Earthworks;
- Construction Phase.

The proposed works have been divided into a number of main work phase, along with the main noise producing equipment and activities likely to occur in each phase.

Table 9 – Excavation and Construction Activities

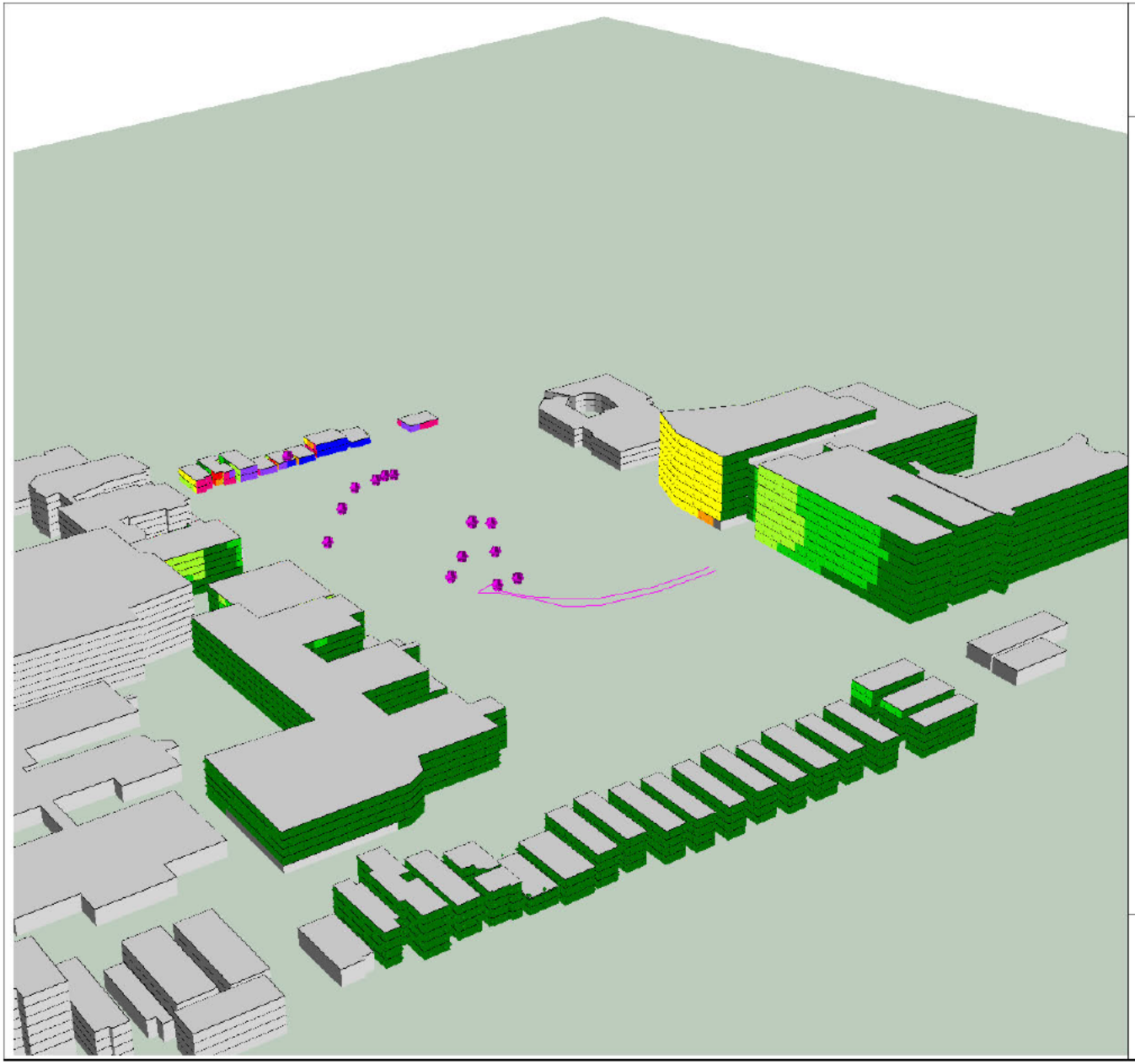
Construction Activity	Equipment	Sound Power Level dB(A)L_{max}
Bulk Excavation/Excavation Phase	Excavator Hydraulic Hammer	120
	Excavator Bucket	110
	Saw Rock Cutting	105
	CFA Piling	105
General Construction Works	Trucks	105
	Concrete Pumps	110
	Crane	105
	Concreting Helicopter	105
	Powered Hand Tools	94

The noise levels presented in the above table are derived from the following sources:

1. Table D2 of Australian Standard 2436-1981;
2. Data held by this office from other similar studies.
3. Noise from the worst-case construction works for each phase of the development predicted to the nearest most affected sensitive receiver.

8.3 SOUND PLAN MODELLING

Acoustic Logic Consultancy has undertaken sound plan modelling to predict the noise emitted from the main works on site to the surrounding most affected receivers. Please see the figures below for further detail.



Randwick Campus Redevelopment

7am to 6pm Construction Noise Prediction

1xExcavator Hydraulic Hammer	- 120dB(A) SWL
1xExcavator Bucket	- 110dB(A) SWL
1xConcrete Pump	- 110dB(A) SWL
2xCrane (North & South)	- 105dB(A) SWL
2xConcreting Helicopter	- 105dB(A) SWL
1xTruck Engine @ 10km/h	- 105dB(A) SWL
1x Saw Rock Cutting	- 105dB(A) SWL
1xCFA Piling	- 105dB(A) SWL
4xPowered Hand Tools	- 94dB(A) SWL

Prepared by: S. Giannikopoulos
Date: 16/04/2020

Noise Level
L_{eq}
in dB(A)

- < 65
- 65 - 67
- 67 - 69
- 69 - 71
- 71 - 73
- 73 - 75
- 75 - 77
- 77 - 79
- 79 - 81
- 81 - 83
- 83 - 85
- >= 85

Signs and symbols

- Surface
- Receiver
- Point source

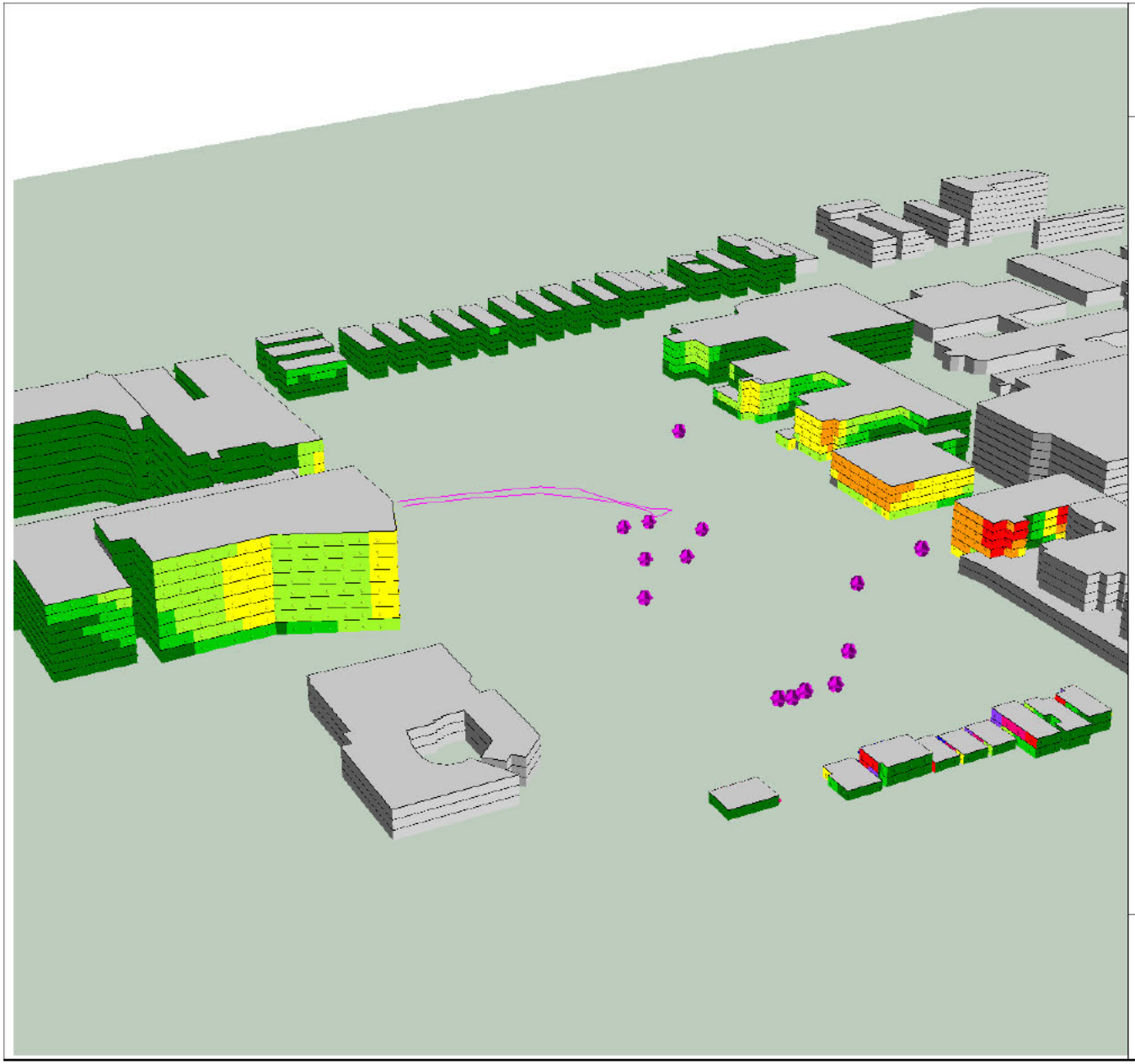
Facade Noise Map

- Facade point
- Line source

Length scale 1:5796

0 30 60 120 180 240 m

ACOUSTIC LOGIC



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2xConcreting Helicopter	- 105dB(A) SWL
1xTruck Engine @ 10km/h	- 105dB(A) SWL
1x Saw Rock Cutting	- 105dB(A) SWL
1xCFA Piling	- 105dB(A) SWL
4xPowered Hand Tools	- 94dB(A) SWL

Prepared by: S. Giannikopoulos
Date: 16/04/2020

Noise Level
L_{eq}
in dB(A)

- < 65
- 65 - 67
- 67 - 69
- 69 - 71
- 71 - 73
- 73 - 75
- 75 - 77
- 77 - 79
- 79 - 81
- 81 - 83
- 83 - 85
- >= 85

Signs and symbols

- Surface
- Receiver
- Point source

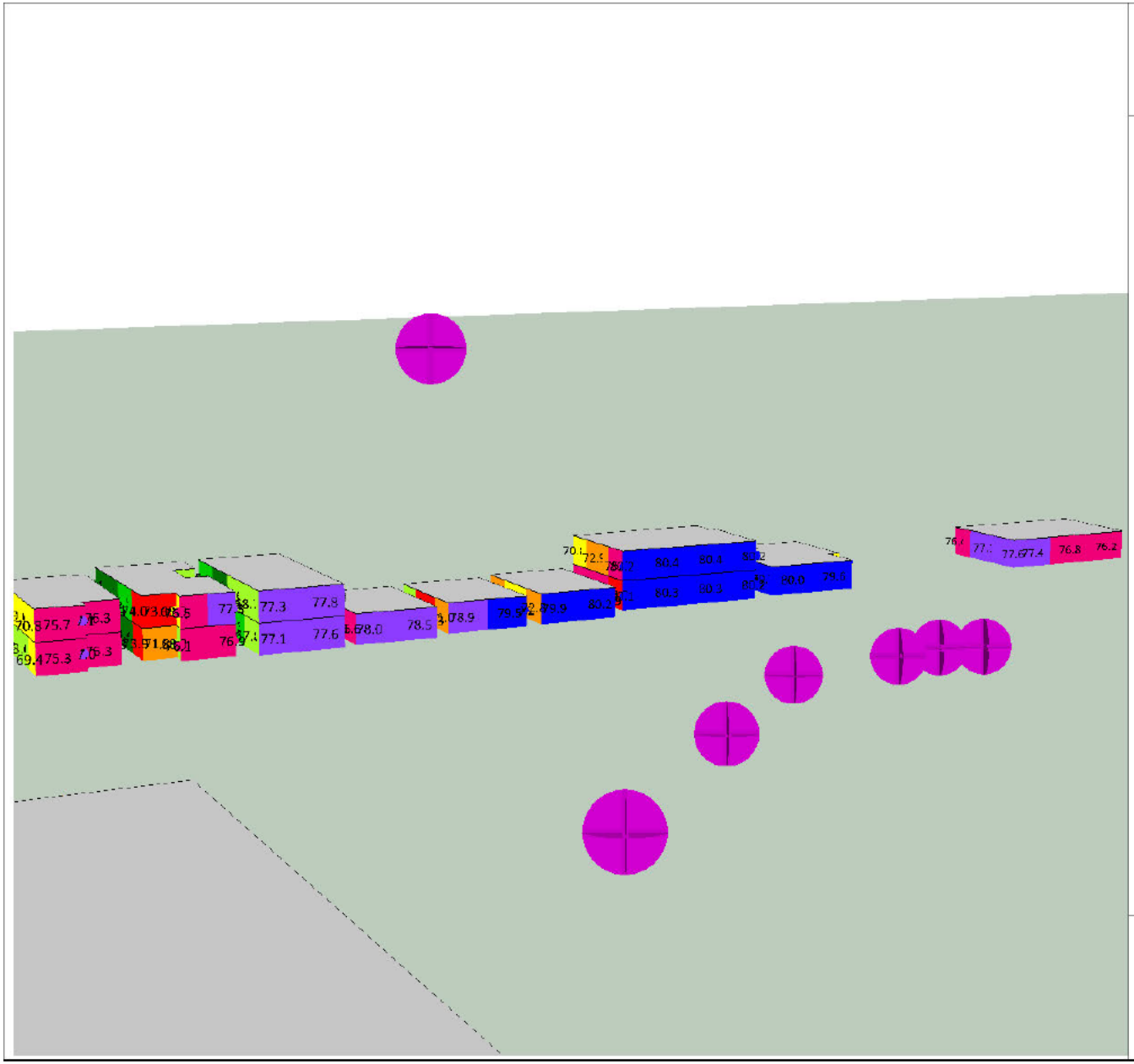
Facade Noise Map

- Facade point
- Line source

Length scale 1:5796

0 30 60 120 180 240 m

ACOUSTIC LOGIC



Randwick Campus Redevelopment

7am to 6pm Construction Noise Prediction

1xExcavator Hydraulic Hammer	- 120dB(A) SWL
1xExcavator Bucket	- 110dB(A) SWL
1xConcrete Pump	- 110dB(A) SWL
2xCrane (North & South)	- 105dB(A) SWL
2xConcreting Helicopter	- 105dB(A) SWL
1xTruck Engine @ 10km/h	- 105dB(A) SWL
1x Saw Rock Cutting	- 105dB(A) SWL
1xCFA Piling	- 105dB(A) SWL
4xPowered Hand Tools	- 94dB(A) SWL

Prepared by: S. Giannikopoulos
Date: 16/04/2020

Noise Level

L_{eq} in dB(A)

- < 65
- 65 - 67
- 67 - 69
- 69 - 71
- 71 - 73
- 73 - 75
- 75 - 77
- 77 - 79
- 79 - 81
- 81 - 83
- 83 - 85
- >=85

Signs and symbols

- Surface
- Receiver
- Point source

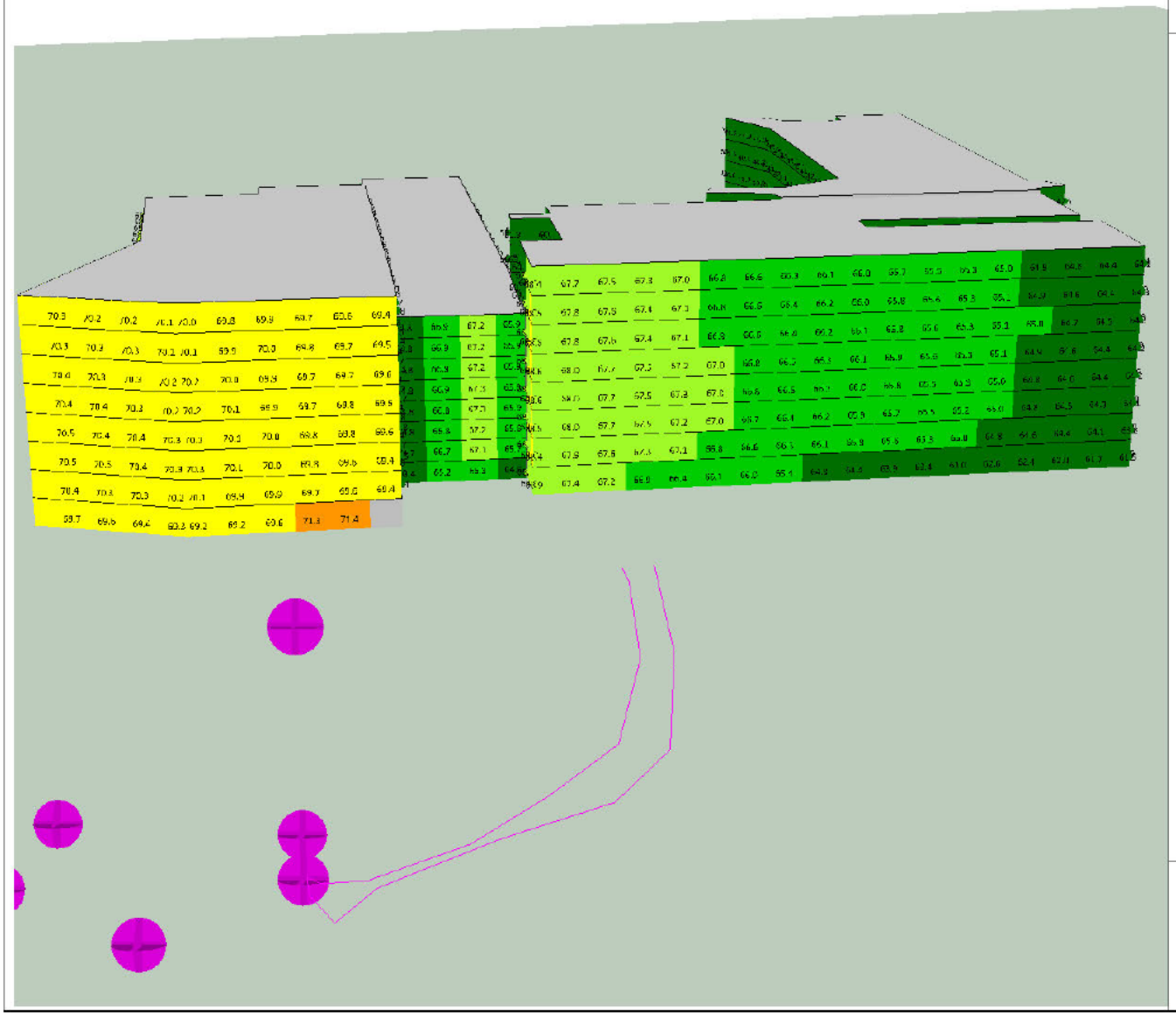
Facade Noise Map

- Facade point
- Line source

Length scale 1:5796

0 30 60 120 180 240 m

ACOUSTIC LOGIC



Randwick Campus Redevelopment

7am to 6pm Construction Noise Prediction

1xExcavator Hydraulic Hammer	- 120dB(A) SWL
1xExcavator Bucket	- 110dB(A) SWL
1xConcrete Pump	- 110dB(A) SWL
2xCrane (North & South)	- 105dB(A) SWL
2xConcreting Helicopter	- 105dB(A) SWL
1xTruck Engine @ 10km/h	- 105dB(A) SWL
1x Saw Rock Cutting	- 105dB(A) SWL
1xCFA Piling	- 105dB(A) SWL
4xPowered Hand Tools	- 94dB(A) SWL

Prepared by: S. Giannikopoulos
Date: 16/04/2020

Noise Level
L_{eq} in dB(A)

- < 65
- 65 - 67
- 67 - 69
- 69 - 71
- 71 - 73
- 73 - 75
- 75 - 77
- 77 - 79
- 79 - 81
- 81 - 83
- 83 - 85
- >=85

Signs and symbols

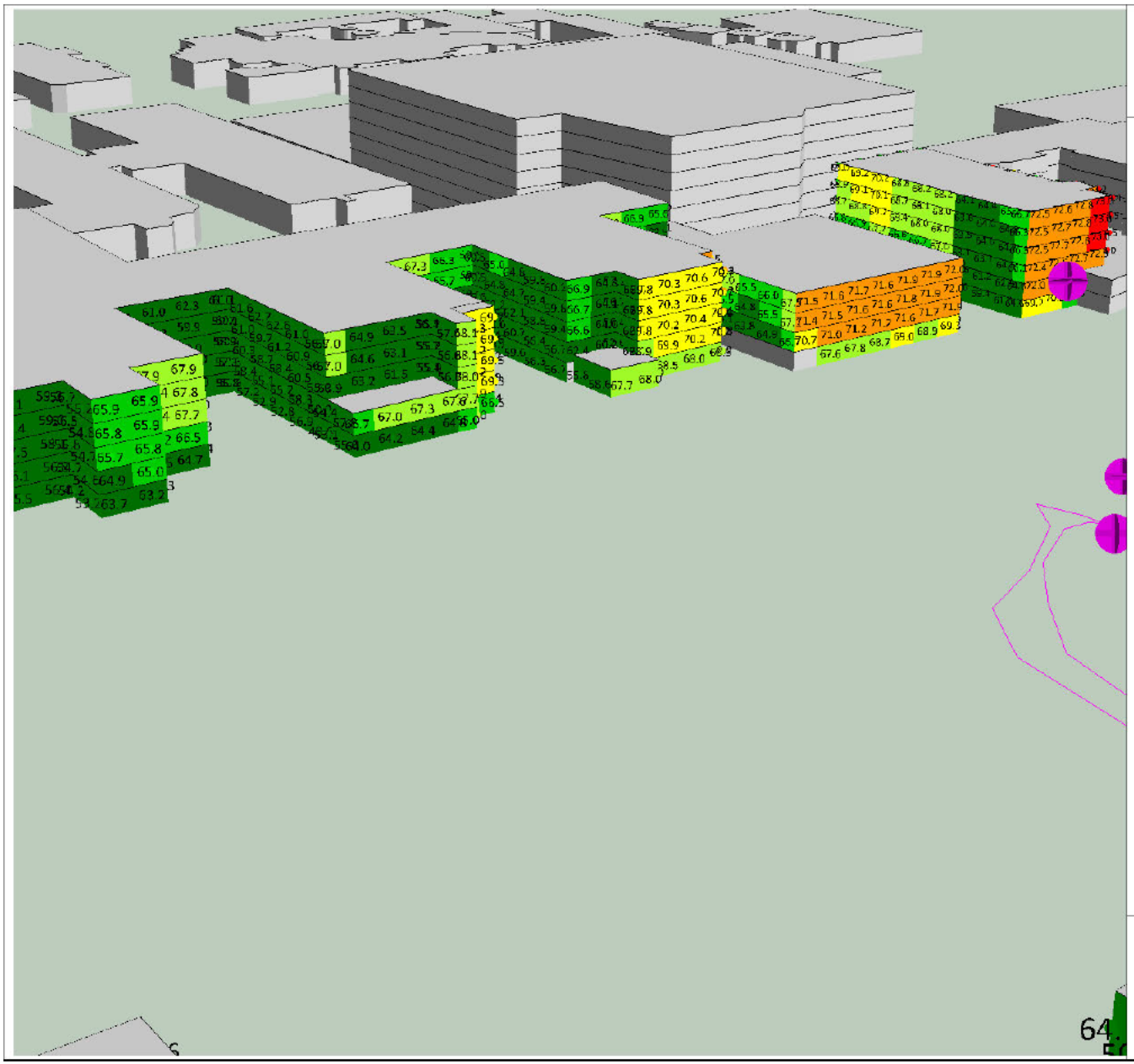
- Surface
- Receiver
- Point source

Facade Noise Map

- Facade point
- Line source

Length scale 1:5796
0 30 60 120 180 240 m

ACOUSTIC LOGIC



Randwick Campus Redevelopment

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1x Saw Rock Cutting	- 105dB(A) SWL
1xCFA Piling	- 105dB(A) SWL
4xPowered Hand Tools	- 94dB(A) SWL

Prepared by: S. Giannikopoulos
Date: 16/04/2020

Noise Level

L_{eq} in dB(A)

- < 65
- 65 - 67
- 67 - 69
- 69 - 71
- 71 - 73
- 73 - 75
- 75 - 77
- 77 - 79
- 79 - 81
- 81 - 83
- 83 - 85
- >=85

Signs and symbols

- Surface
- Receiver
- Point source

Facade Noise Map

- Facade point
- Line source

Length scale 1:5796

0 30 60 120 180 240 m

ACOUSTIC LOGIC

The following tables presented noise levels for each item of typically loudest plant

Table 10 – Noise Emission Assessment Receiver 1 (Prince of Wales Hospital Foundation)

Activity	Sound Power Level	Predicted Internal Noise Level dB(A)$L_{eq(15\ minute)}$	Management Trigger Level dB(A)$_{Leq(15\text{-}minute)}$	Management Required
Excavator Hydraulic Hammer	120	61-51	45 (Internal Criteria)	Yes
Excavator Bucket	110	51-41	45 (Internal Criteria)	Yes
Saw Rock Cutting	105	45-36	45 (Internal Criteria)	No
CFA Piling	105	45-36	45 (Internal Criteria)	No
Builders Hoist	105	45-36	45 (Internal Criteria)	No
Trucks	105	45-36	45 (Internal Criteria)	No
Concrete Pumps	110	51-41	45 (Internal Criteria)	Yes
Crane	105	45-36	45 (Internal Criteria)	No
Concreting Helicopter	105	45-36	45 (Internal Criteria)	No
Powered Hand Tools	94	35-25	45 (Internal Criteria)	No

Table 11 – Noise Emission Assessment Receiver 2 (Educational Facility UNSW Building)

Activity	Sound Power Level	Predicted Internal Noise Level dB(A)$L_{eq(15\ minute)}$	Management Trigger Level dB(A)$_{Leq(15\text{-}minute)}$	Management Required
Excavator Hydraulic Hammer	120	56-38	45 (Internal Criteria)	Yes
Excavator Bucket	110	46-28	45 (Internal Criteria)	Yes
Saw Rock Cutting	105	41-23	45 (Internal Criteria)	No
CFA Piling	105	41-23	45 (Internal Criteria)	No
Builders Hoist	105	41-23	45 (Internal Criteria)	No
Trucks	105	41-23	45 (Internal Criteria)	No
Concrete Pumps	110	46-28	45 (Internal Criteria)	Yes
Crane	105	41-23	45 (internal)	No
Concreting Helicopter	105	41-23	45 (internal)	No
Powered Hand Tools	94	30-12	45 (internal)	No

8.3.1 Managing noise impacts from dominate noise sources and equipment

There will be times / situations when early works demolition activities are likely to exceed the applicable criteria, particularly when works involving the dominant noise sources (as identified in Table 9 for each activity) occur in the areas closest to sensitive receivers and where there is a direct line-of-sight between the work area and the receiver.

Noise monitoring will be undertaken at or near the most affected receiver locations during the early works activities. If these activities are found to exceed the noise criteria, then the noise control measures described in Section 7 will be implemented wherever reasonable and feasible.

For the dominant noise sources or equipment causing exceedances in Table 9, all reasonable and feasible noise controls measures, together with construction best practices presented in Section 8, will be implemented.

Specifically, where reasonable and feasible, the control measures listed below will be implemented:

Excavators / Piling / Jackhammering

- These activities will be behind hoarding around the perimeter of the site. The hoarding will act as a noise barrier except for elevated residences overlooking the site. As excavation progresses the walls of the excavation will provide some noise barrier effect for overlooking residences, depending on the location of the residence and the location of the plant operating within the excavation.
- Regularly inspect and maintain acceptable lubricant levels and engine performance. Use existing and temporary site buildings plus material stockpiles as noise barriers.
- Schedule use of this equipment during periods when people are least affected. Provide respite periods, including restricting very noisy activities to daytime, restricting the number of nights that after-hours work (if required) is conducted near residences, or by determining any specific receiver requirements - particularly those needed for noise sensitive receivers such as sleeping / rest, teaching, study, etc.
- Schedule noisy activities to coincide with high levels of neighbourhood noise (such as traffic noise from Botany Street and High Street) so that noise from the activities is partially masked and not as intrusive.

Truck Traffic Noise Minimisation

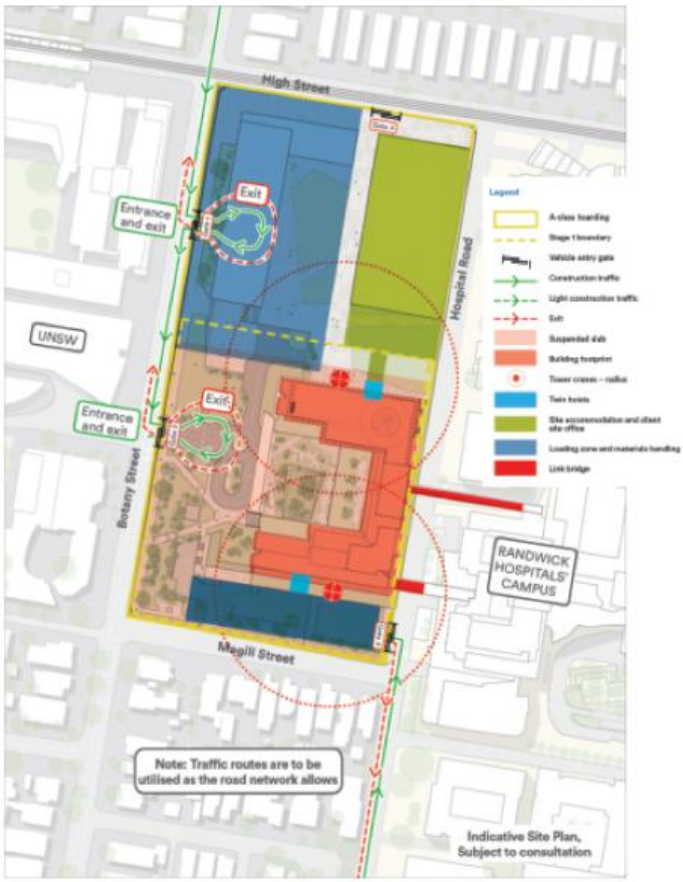
An average 50 trucks per day will access the site for removal of demolition and excavation material. This equates to a maximum of around two trucks per hour, which will result in a negligible increase in road traffic noise levels. Truck loading may be done in campaigns, for example during the one hour respite breaks for noisy works during the demolition and excavation. This will be possible and result in noise less than 75dBA when truck loading is inside the building site for the demolition and Stage 1 of the excavation.

Noise from truck traffic should be dealt with by appropriate management measures that minimise noise impact. This includes:

- Restricting demolition and excavation, and therefore truck traffic, to within appropriate hours;
- Staging and managing arrival of trucks to avoid queueing and idling on public streets;
- Arriving at, and departing from, the site via designated routes that avoid or minimise the use of local roads;
- Minimising reversing to minimise the use of movement alarms ("reversing beepers");
- Reasonable instructions from the project applicant and site manager to minimise the use of engine braking; and to avoid noise actions such as slamming doors, loud radios, shouting or the use of truck horns for signalling.

Traffic routes (green and red lines in Figure 2) for construction vehicles accessing the site will be:

- Entry via Botany Street for all vehicles.
- Exit via Botany Street for heavy vehicles, Hospital Road for light vehicles.



Truck traffic noise impact will be minimised by trucks using the designated routes described above, during project hours only.

8.4 VIBRATION ASSESSMENT RESULTS

The levels of vibration generated by the construction activities will be site-specific and will depend upon the type of activity, the particular equipment used, and the proximity of the construction activity to the nearest occupied spaces within the affected properties and heritage structures.

A detailed vibration assessment has not been carried out at this stage, as actual vibration levels experienced will be dependent upon;

- Site characteristics, and
- Specific construction equipment used.

Vibration monitoring will be carried out at surrounding vibration sensitive receivers, at the nearest affected locations (where practical and accessible).

In addition attended monitoring will be carried out as required for heavy construction activities / equipment determine whether the vibration levels justify a more detailed investigation, confirm monitoring locations or provide transfer functions, and the exact requirements for ongoing vibration monitoring.

The Contractor will carry out an ongoing review of vibration generated by the construction activities, and assess these against the criteria for human comfort, building damage and vibration-sensitive equipment provided in Section 5.5

Vibration will be monitored against trigger levels for damage at two locations. If vibration exceeds the trigger levels works will cease, the building inspected and appropriate action taken, such as changing the work method.

These locations will be relocated as required. At the commencement of works the monitoring locations include:

- 103 Botany Street.
- Ainsworth Building, POW Hospital.

9 NOISE AND VIBRATION MANAGEMENT PROCEDURES

Section 6.2.1 describes the control measures that will be implemented for any noise sources or equipment that is found to exceed the construction noise limits.

Noise and vibration monitoring will be carried out at or near the most affected receiver locations during the main works activities as described in Section 7.5

If any work activities are found to exceed the noise and/or vibration criteria, then the noise and/or vibration control measures detailed in Section 6.2.1 and the following sections will be implemented wherever reasonable and feasible.

9.1 GENERAL CONTROLS FOR NOISE AND VIBRATION

As a general rule, minimising noise and vibration will be applied as universal work practice at any time of day, but especially for noise sources or equipment that is found to exceed the construction noise limits plus any construction works to be undertaken at critical times outside normal daytime/weekday periods.

The reduction of noise and vibration at the source and the control of the transmission path between the construction site and the receiver(s) will be the preferred options for noise minimisation. Providing treatments at the affected receivers will only be considered as a last resort.

When any plant/activity exceeds the noise emission limits (as outlined in Table 9) the following strategies will be implemented, where reasonable and feasible, to manage construction noise and vibration impacts:

- Plant and equipment. In terms of both cost and results, controlling noise and vibration at the sources is one of the most effective methods of minimising the impacts from any work site activities. The following work practices will be implemented to reduce noise and vibration at the source:
- Employ quieter techniques for all high noise activities such as rock-breaking, concrete sawing, and using power and pneumatic tools.
- Use quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks.
- Where possible, select alternative construction equipment that are quieter in order to avoid the generation of excessive noise, particularly considering the dominant noise sources for the activities identified in Table 9.
- Select plant and equipment with low vibration generation characteristics.
- Operate plant in the quietest and most effective manner.

Where appropriate, limit the operating noise of equipment.

- Regularly inspect and maintain plant and equipment to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively. The allowable LA avmax (equivalent to LA10) noise levels for construction appliances provided in Page 3 of the City of Sydney "Construction Hours / Noise within the Central Business District – Code of Practice" (1992) will be used as a reference for indicative acceptable noise levels from various construction equipment.
- Where appropriate, obtain acoustic test certificates for equipment.

- On site noise management. Practices that will be implemented to reduce noise from the site include:
    - Maximising the distance between noise activities and noise sensitive receivers. Strategically locating equipment and plant.
    - Undertaking noisy fabrication work off-site where possible.
    - Avoiding the use of reversing beeping alarms or providing for alternative systems, such as broadband reversing alarms, particularly during night or out-of-hours works.
    - Maintaining any pre-existing barriers or walls on the site as long as possible to provide optimum sound propagation control.
    - Constructing barriers that are part of the project design early in the project to afford mitigation against site noise.
    - Using existing and temporary site buildings plus material stockpiles as noise barriers.
    - Installing purpose built noise barriers, acoustic sheds and enclosures wherever possible and where required to ensure construction noise limits are met.
- Work scheduling. Scheduling work during periods when people are least affected will be an important way of reducing adverse impacts. The following scheduling aspects will be implemented to reduce impacts wherever construction activities or equipment are found to exceed the construction noise limits:
    - Provide respite periods - including restricting very noisy activities to daytime, restricting the number of nights that after-hours work (if required) is conducted near residences, and by determining any specific requirements needed for noise sensitive receivers such as sleeping / rest, teaching, study, etc.
    - Schedule activities to minimise impacts by undertaking all possible work during hours that will least adversely affect sensitive receivers and by avoiding conflicts with any other scheduled noise-sensitive events. Works will be scheduled to only occur during the approved hours in accordance with Development Consent Conditions C4 and C7.
    - Where possible schedule noisy activities to coincide with high levels of neighbourhood noise (such peak traffic hours or in the middle of the day) so that noise from the activities is partially masked and not as intrusive.
    - Plan deliveries and access to the site to occur quietly and efficiently and organise parking only within designated areas located away from sensitive receivers.
    - Optimise the number of deliveries to the site by amalgamating loads where possible and scheduling arrivals within designated hours.
    - Designate, design and maintain access routes to the site to minimise impacts.
    - Include contract conditions that include penalties for non-compliance with reasonable instructions by the principal to minimise noise or arrange suitable scheduling.
- Consultation, notification and complaints handling
    - Information will be provided to neighbours before and during construction.
    - Good communication will be maintained between the community and project staff.
    - A documented complaints process will be maintained, along with a register of complaints.
    - Complaints will be given a fair hearing, and a quick response provided.
    - All feasible and reasonable measures to address the source of complaint will be implemented.

As a general approach, when noise goals cannot be met due to safety or space constraints, all reasonable and feasible mitigation measures will be implemented for all works to ensure that any adverse noise impacts to surrounding receivers are minimised.

9.2 SPECIFIC CONTROLS FOR AIRBORNE NOISE

Based on the findings from the noise and vibration assessment, and following discussions with Lendlease and HI, some specific airborne noise controls have already been agreed to be implemented and are included in the CMP:

- In accordance with Condition C7, heavy noise and vibration intensive works (Rock breaking, rock hammering, sheet piling, pile driving and similar activities) will be restricted to:
    - (a) 9am to 12pm, Monday to Friday;
    - (b) 2pm to 5pm Monday to Friday; and
    - (c) 9am to 12pm, Saturday.
- Where practical and available for equipment and without compromising the safety of staff or members of the public, audible movement alarms of the type that minimise noise impacts at surrounding receivers will be used (such as broadband or "quacker" alarms instead of beepers).
- Hoarding is provided around the site to provide screening however due to topography of site, some areas will have a direct line of site with residential receivers. For the majority of the intensive works (excavation and piling) the hoarding will provide shielding to the noise-sensitive receivers.
- The following works will be carried out in locations such that the existing hoarding will provide shielding to the nearest receivers:
    - Parking and loading of tipper trucks / skip trucks
    - Works that can easily be strategically located (including, carpentry areas, temporary works, etc)
- Employees will receive training which will enable them to recognise areas where noise levels are likely to exceed 85dBA;
- A noise assessment of the site will be undertaken prior to or at the commencement of works on site with ongoing monitoring in strategic locations determined through consultation with HI during the construction period;
- As the work environment changes, additional assessments may be conducted, the timing of which will be determined in consultation between the site management, Site Safety Committee and the Principal;
- Use of acoustic barriers during concrete pours, demolition works, in particular at façade break ins required for installation of new link bridges at the Women's Hospital and Randwick Hospital.
- Implementing acoustic mufflers to impact driven equipment;
- Use of core holing rather than impact hammer drilling into concrete structures of existing buildings, in particular at façade break ins
- Introduce engineering controls within the methodology, such as acoustic panels to surround concrete pumps for attenuation;
- In conjunction with HI NSW, developing acceptable periods when specific "noisy works" can occur;
- Managing works within the approved site working hours;
- Planning and notification of noisy works via the Disruptive Works Notice procedure and in general consultation with HI;
- Warning signs shall be erected in areas where 85dBA is exceeded; and
- Where additional personnel protection equipment is required, the areas shall be identified by signage. The appropriate noise protection devices are to be issued to the effected personnel.
- Noise emissions will be managed in accordance with the regulatory requirements and Lendlease management procedures, complying with the following:
    - National Code of Practice for Noise
    - Management and Protection of Hearing at Work [NOHSC:2009];
    - AS/NZS 1269.0:2005: Occupational noise management – Series ofseveral Standards;
    - AS 2012.2: Acoustics - Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors - Stationary test condition - Operator's position;
    - AS 2436: Guide to noise control on construction, maintenance and demolition sites;

- AS 2221.1: Methods for measurements of airborne sound emitted by compressor units including prime movers and by pneumatic tools and machines;
- AS 3781: Acoustics – Noise labelling of machinery and equipment.

9.3 SPECIFIC CONTROLS FOR VIBRATION

We do not consider that controls will be required to control vibration to surrounding off-site buildings. The need to control vibration to the heritage buildings on site (plus the associated mitigation measures) is expected to ensure that vibration to surrounding off-site buildings will meet the relevant limits / criteria.

Notwithstanding the above, the Contractor will carry out a preliminary attended vibration assessments at the commencement / during use of intensive vibration generating plant to determine whether the existence of significant vibration levels justifies a more detailed investigation or vibration measurements / monitoring in areas other than those identified in this plan (refer to Section 7.5 for monitoring program).

If a more detailed investigation is required, this will involve methods of constraining activities generating high vibration levels. A method of monitoring vibration levels will then be put in place. Vibration mitigation measures and a review of vibration criteria may then be necessary.

Notwithstanding the above, all practical means will be used to minimise impacts on the affected buildings and occupants from activities generating significant levels of vibration on site.

Where vibration levels are found to exceed the relevant criteria, one or more of the following measures will be taken:

- Modifications to demolition equipment used.
- Modifications to methods of demolition.

If the measures given above cannot be implemented or have no effect on vibration levels or impact generated, a review of the vibration criteria will be undertaken and the vibration management strategy amended.

The following considerations will be taken into account:

- The layout of the site, including the location of static sources of vibration.
- Modifications to construction equipment used.
- Techniques used in construction to minimise generated vibration levels, including saw cutting and removal of structure wherever possible – as an alternative to hammers and hydraulic crushers.

- Hours of work with regard to the nature of operations in the affected buildings and the duration of the works.

As per the Consent Conditions, the following will be adhered to:

- B6.Before the commencement of construction, the Applicant must:
  (a) consult with the relevant owner and provider of services that are likely to be affected by the development to make suitable arrangements for access to, diversion, protection and support of the affected infrastructure;
  (b) prepare a dilapidation report identifying the condition of all public infrastructure in the vicinity of the site (including roads, gutters and footpaths);
  (c) prepare a dilapidation report identifying the condition of all adjoining and nearby premises including the residences on the south side of Magill Street and the heritage item located at 4 Hay Street, Randwick;
  (d) prepare a report by a professional engineer detailing the proposed methods of excavation, shoring or pile construction, including details of potential vibration emissions, and demonstrating the suitability of the proposed methods of construction to overcome any potential damage to nearby premises including the residences on the south side of Magill Street and the heritage item at no.4 Hay Street, Randwick.
  (e) submit a copy of the dilapidation report and engineers report to the Certifying Authority and Council. This Consent Condition was addressed prior to demolition works.
- Consent Condition C30, vibratory compactors (if used) will not be used closer than 30 m from residential buildings – unless vibration monitoring confirms compliance with the vibration criteria in Section 5.5.

If the measures given above cannot be implemented or have no effect on vibration levels or impact generated, a review of vibration criteria will be undertaken and the vibration management strategy amended.

9.4 PLANT AND EQUIPMENT MAINTENANCE PROGRAM

The Contractor will prepare and implement a regular plant and equipment inspection and maintenance program to ensure that "noisy" equipment or tools are not used. "Noisy" equipment or tools are those with defective mufflers or other fitted noise attenuation features or devices that are not working as intended.

9.5 MONITORING PROGRAM

9.5.1 Noise monitoring

The builder will monitor environmental noise and vibration at or near the most affected noise receivers at locations to assess noise levels against those predicted in this document.

Noise is to be monitored continuously at 2 locations, with access to be obtained by Health Infrastructure, as follows:

- 103 Botany Street.
- Ainsworth Building, POW Hospital.

As works progress and work locations change, the noise monitors will need to be relocated close to the most affected noise sensitive receiver as appropriate. If the noise monitoring indicates noise levels exceeding the levels predicted in this document, mitigation measures will be reviewed. Also, if noise monitoring indicates noise levels are less than the levels predicted in this document then opportunities will be considered to increase activity and reduce the overall duration of the works.

9.5.2 Vibration Monitoring

Vibration monitoring is critical to the success of this plan. Monitoring of vibration at the nearest affected receivers should be carried out at the commencement of heavy main works.

The purpose of this monitoring is to assess the risk of potential structural damage to the buildings of concern.

This monitoring will be used for specific activities generating significant levels of vibration, in situations where there are changes in equipment and activities or work procedures that might affect existing vibration control measures.

Vibration is to be monitored continuously at 2 locations, with access to be obtained by Health Infrastructure, as follows:

- 103 Botany Street
- Ainsworth Building, POW Hospital

As works progress and work locations change, the vibration monitors will need to be relocated close to the most affected vibration sensitive receiver as appropriate. These locations will be supplemented with attended monitoring required for heavy construction activities / equipment to determine whether the vibration levels justify a more detailed investigation, confirm monitoring locations or provide transfer functions, and the exact requirements for ongoing vibration monitoring (including relocation with progression of works). Ongoing vibration monitoring requirements to be reviewed following each stage of works.

Measured levels will be compared to the trigger levels nominated in this plan to assess whether additional respite or mitigation measures should be considered.

If vibration levels generated by the works approach the trigger values, then Lendlease shall monitor the situation and carry out the following:

- Liaise with plant operators and advise that criteria is being approached. Try to understand the cause of the vibration level and mitigate where practical.

Where the trigger value is exceeded the following process will be applied:

- Work shall stop as soon as practicable.
- Values reviewed to confirm frequency content against relevant targets and standards.
- Nearby properties will be inspected for cracks or other signs of damage against dilapidation reports.
- If no damage is identified, then the criteria may be increased to be agreed with Acoustic Logic, Lendlease and the engaged structural engineer.
- If there are signs of damage then:
    - the work method will be reviewed for an alternative method generating less vibration; or
    - the work method will continue and the situation monitored to ensure damage remains at a level that is repairable (minor cracks and other cosmetic effects).

9.5.3 Reporting

Lendlease will maintain records on site of:

- Noise and vibration monitoring;
- Remedial actions taken to minimise, reduce or eliminate noise and vibration;
- Daily and weekly inspections of plant and equipment, hoarding and other noise management measures;
- A monthly Construction Noise and Vibration report will be prepared by Acoustic Logic.

9.6 COMMUNITY CONSULTATION AND ENGAGEMENT REGARDING NOISE AND VIBRATION

The project team is committed to an early, coordinated, proactive and transparent communications and consultation whilst developing strategies to manage noise and vibration (as required by Condition B37).

The project identified a broad range of stakeholders and community members who had varying degrees of involvement and interfaced with the project staging and associated construction activity.

With a strong commitment to stakeholder and community consultation, the project has benefited from stakeholder input into the design and planning of the ASB. The following activities have been undertaken to inform the community, build relationships and provide an opportunity for input and feedback into project delivery.

Prior to any construction activities the following strategies were put into place:

- Community information sessions held.
- Formal and informal briefings and feedback sessions held.
- Where required face-to-face engagement with neighbouring residents and businesses.
- Distribution of project community information resources
- Established communication channels for feedback including project community contact number and project email account

The following highlights stakeholder and community consultation outcomes for managing high noise generating works (Condition B37):

- Stop works procedures and lines of communication where works may affect sensitive receivers or continuity of Hospital Campus operations
- Programming of works to acknowledge periods of increased sensitivity for receivers i.e. exam periods for UNSW and local schools
- Identification of sensitive receivers within neighbouring buildings to inform mitigation planning i.e. sensitive medical or research equipment
- Consultation with Hospital Campus on appropriate location for noise and vibration monitoring devices
- Complaints management processes for noise and vibration
- Identification of preferred communication channels with key stakeholders and neighbouring residents for works notification

The noise sensitive receivers listed and described in the CNVMP: Section 4.1.1 – Nearest Noise & Vibration Sensitive Receivers and any other impacted stakeholders have been notified of the project. They will be kept informed of the project status and key activities throughout the project duration.

- Construction briefings – regular briefings and presentations to affected stakeholders to provide advance notice of noise generating works, work hours and construction impacts management strategies. Construction briefings are utilised to gain feedback and input into construction planning and minimise impacts to stakeholders.
- Community notification – notifications circulated via letter box drop, email and project website to communicate upcoming construction activity to the local community and affected stakeholders.

- Construction Interface Meetings – regular meetings with key project stakeholders to communicate upcoming works, impacts and mitigate strategies.
- Site hoarding or notices on the hoarding will also identify Health Infrastructure and Lendlease as the site operators.

These channels will be used to inform residents and business owners, describing the construction hours, potential high noise works/hours, the noise management measures being implemented and providing contact details for further information or complaints.

9.7 COMPLAINTS AND NON-COMPLAINTS

The development of the CNVMP has been consulted with the project stake holders in accordance with the projects Community Communication strategy. This strategy outlines the key consultation that has been and continues to be undertaken

Complaints will be logged and response actions documented.

Upon receipt of a complaint the Contractor will decide whether the complaint is in relation to offensive noise. Offensive noise is described in legislation and discussed in the Noise Guide for Local Government. In the context of this proposal, offensive noise is noise from this proposal that is as a result of:

- Works outside the work hours in Section 6.1. Offensive noise includes noise outside of the work hours as a result of arrival or departure of trucks and any site personnel or contractors parking on the surrounding streets and not entering or leaving the hotel parking, dedicated to project vehicles.
- Works generating noise above 75dBA that extends for longer than 3 hours without a minimum one hour respite break.
- Works generating noise above the levels predicted in this document;
- plant or equipment not maintained or operated in a proper and efficient manner, for example with defective mufflers or other fitted noise attenuation devices;
- loud radios, shouting (particularly swearing), and other unnecessary noise;
- site gates left open other than for entry or exit of a vehicle.

On receipt of a complaint of offensive noise, or of becoming aware of offensive noise, the contractor will take immediate action to stop the offensive noise.

For complaints about noise from this proposal other than offensive noise, the contractor will;

- Direct consultation with any affected stakeholders where noise and vibration is a planned part of construction activity. Timely communication provides stakeholder awareness, opportunity for forward community and implementation of mitigations prior to works occurring. The project team remains cognisant of nearby sensitive receivers and vigilant in providing advanced notification.
- Ongoing consultation with key stakeholders to understand and document the location of any sensitive receivers including medical and research equipment.
- Consultation with key project stakeholders to determine suitable locations for loggers that provide effective readings and limit disruption to Hospital Campus.
- Regular doorknocking of neighbouring residents to notify of planned construction activity and associated impacts.
- Construction Community Notices distributed to local businesses and residents to notify of planned construction activity and potential impacts. Noise and vibration generating activities are communicated in a timely fashion through Construction Community Notices.
- Maintenance of 24/7 Community Contact phone number and project email address for stakeholder contact and complaints.
- Maintenance of project Complaints Register detailing complaints related to noise and vibration and project response. The Complaints register is updated monthly and remains accessible via the project's website.
- Circulation and approval of Disruptive Works Notification detailing planned construction activity, associated impacts and mitigations.
- Try to ascertain from the complainant which activity is causing the problem (i.e. inside or outside the site and in what position).
- If required, establish from the monitoring equipment and or attended noise monitoring if the predicted noise levels have been exceeded. Attended noise monitoring may be required to determine this.
- Check that the activity and equipment are being operated in a proper and efficient manner.

- Immediately rectify any faulty equipment.

9.8 TRAINING AND AWARENESS

The Contractor shall provide all project personnel and subcontractors with training on the environmental obligations through project inductions, toolbox talks and through Safety Works Methods (SWMS).

Project personnel and subcontractors shall undergo a general project induction prior to commencing work. This will include a noise component reinforcing that works should be done in a manner that minimises noise and is respectful of neighbours and mindful of their amenity.

10 CONCLUSION

This report presents an assessment of noise and vibration impacts associated with the bulk earthworks and construction activities to be undertaken for the potential noise and vibration impacts associated with the Randwick Hospital Redevelopment to satisfy the requirements of the development consent from the Minister of Planning and Public spaces – SSD9113.

The assessment of construction noise and vibration indicated that management and engineering measures will be required to limit the buildings adjacent to the site.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,

Acoustic Logic Consultancy Pty Ltd
George Kinezos

APPENDIX 3B – EXTENDED WORKING HOURS CNVMSP

APPENDIX 4 – CNWMSP

APPENDIX 5 – SEMSP

LENDLEASE BUILDING PTY LTD | 97 000 098 162

RANDWICK CAMPUS REDEVELOPMENT MANAGEMENT PLAN - STORMWATER AND EROSION

20/08/2020 | Revision No: 2.8

Sub Plan Revision Status				
Date	Revision (in numbers)	Purpose and Summary of Amendments	[redacted]	Approved by
30/01/17	2	General update including LLB GMR and legislative amendments.		[redacted]
04/12/2018	2.1	New Project	g	
21/03/2019]	2.2]	Updated Environmental Management Diagram]	g]	
21/05/2019]	2.3]	Regular three month review]	g]	
13/09/19]	2.4]	Regular three month review, updated EMD and dewatering mgt plan]		
12/12/19]	2.5]	Regular three month review, updated EMD]		
18/03/20]	2.6]	Regular three month review, updated EMD]		
17/06/20]	2.7]	Regular three month review, updated EMD]		
17/09/20]	2.8]	Update for RCC approval]		[redacted]]
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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 Lendlease Building (LLB) EHS management system. Testing and classification to be in accrdoance with the *ANZECC Fresh and Marine water Quality Guidelines 2018.* Coates Engineers have been engaged to prepare a water treatment regime with the CEPT unit as outlined below.
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 diversions, • 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 contiguous 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 • The UNSW eastern expansion (base building only) • Associated modifications within the IASB • Lowering of Hospital Road • Landscaping
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 Hospital Campus and east of UNSW. The soils at the site are noted to be: • Well-draining It is not expected 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: • 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 SSD 9113 SSD 10339 **Local:** • Local Government Act 1993 **Lendlease Requirements:** • GMR: 4.13 Degradation or Pollution of the Environment • 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 Sedimentation 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	Responsibility	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 3 months.	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/engineer's documentation.	SM	Daily surveillance to assess effectiveness and condition. Weekly/monthly inspection checklist.	EMD reviewed every 3 months. 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 shaker facility at the site exit and a high-pressure water wand (Gerni or similar) for rinsing off tyres during inclement weather.	Prior to construction commencing	Assess requirement in IHRA. Maintain shaker grid/wheel rinsing facilities (Gerni) for vehicles leaving site. 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 (i.e. project approval or Blue Book) as required.	CM/SM	Daily surveillance to assess condition and capacity. Weekly/monthly inspection checklist.	Appropriately designed and maintained detention areas/facilities. No overtopping under design conditions.

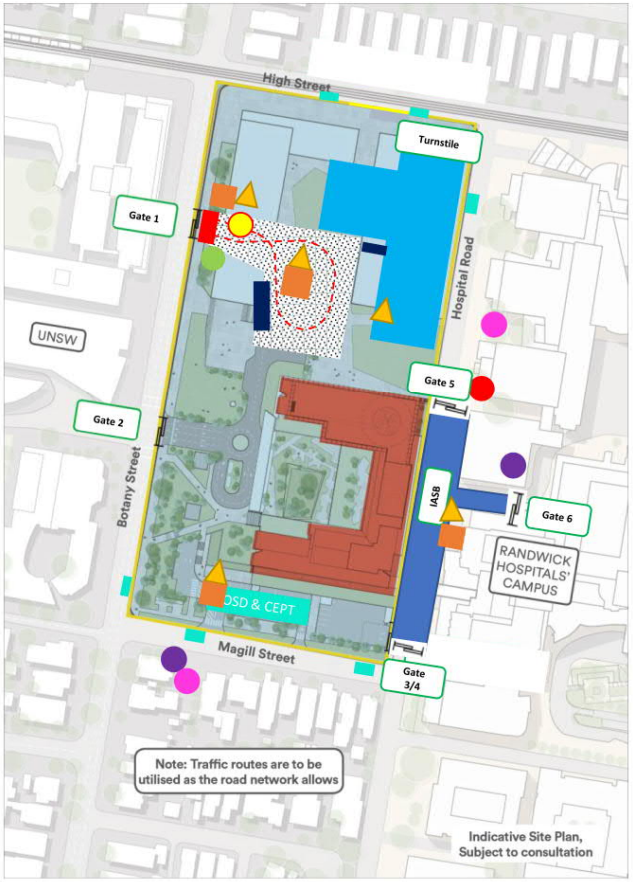
		Operate and maintain in accordance with design/ engineering documentation.		Inspection during and immediately after rain.	
Erosion and Sediment Control During Construction					
Maintain erosion and sediment controls in an operable condition.	At all times and after rain events	Check the condition of controls. 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 (e.g. 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 stockpile 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.

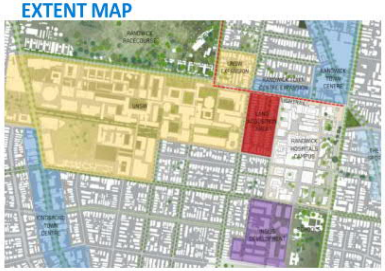
Stormwater Detention and Dewatering					
Inspect basins/tanks, detention facilities and stormwater treatment devices and remove any build-up of debris.	Ongoing. Within 24hrs of a rain event	Retain capacity in detention facilities for storm events. Inspect the site within 24hrs of a 1 in 5-year Average 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. In accordance with Guidelines prior to discharge. RCC consent provided on management plan for ongoing use.
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	SM Sub-contractor	Water quality test results from a NATA accredited laboratory. Dockets for off-site disposal where the water	Water treatment and dewatering undertaken in accordance with documented site procedure and Workplace Delivery Code.

		requirements of the relevant statutory authority. Undertake water quality testing and treatment of stormwater in accordance with Argus recommendations 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 are less than 50 mg/L, To discharge to offsite / stormwater system		is not acceptable for discharge.	No discharge of non-compliant water or off-site pollution.
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
- Sprinklers and water carts to reduce dust Ring main water around inside of hoarding with hose connections to control work zones
- Sprinklers set up over waste bins for dust suppression when emptying smaller bins
- Sealed hard stand area for materials handling
- Coconut logs for sediment control on Hospital Rd works

KEY CONTACTS PERSONS

Senior Construction Manager
Richard Yarad 0457 514 891

Senior Site Manager:
Steve Polsen 0488 051 797

Emergency Services:
000

EHS Coordinator:
Nigel Rose 0428 741 878

General Foreman:
Marco Farina 0409 685 587

LEGEND

Icon	Descriptions
	Perimeter A-Class Hoarding
	Vehicle Entry Gate
	Site Accommodation and Offices
	Spill Kits
	Tyre cleaning run off pond (inclement weather)
	Vibration Monitors
	Acoustic Monitors
	Stormwater inlet
	Delivery vehicle movement
	Shaker grid
	Hazardous Materials and Dangerous Good Storage
	Dust Monitor
	Two coat chip seal hard stand area
	Refuel area for wheeled vehicles
	Waste bins

Appendix A – Dewatering Management Plan & Diagram

Remedial Measures

The RCR site has established sedimentation controls around all surround kerb inlet and any surface drainage pits. This is inaccordnace with Blue Book recommendations.

The construction of the Onsite Storage Tank has been fast tracked to provide a suitable basin to be used on the site during construction. This 600,000L tank is required as the concrete structure utilizes the majority of the site, not providing any other suitable area for water collection. With this size tank, this provides suitable means for holding water in order to carry out testing prior to discharge during construction activities. Towards the end of the project, and when all hardstand areas are construted, the tank will be connected to the Council stormwater infrastructure. The tank will be certified for use at this time.

Dewatering Plan

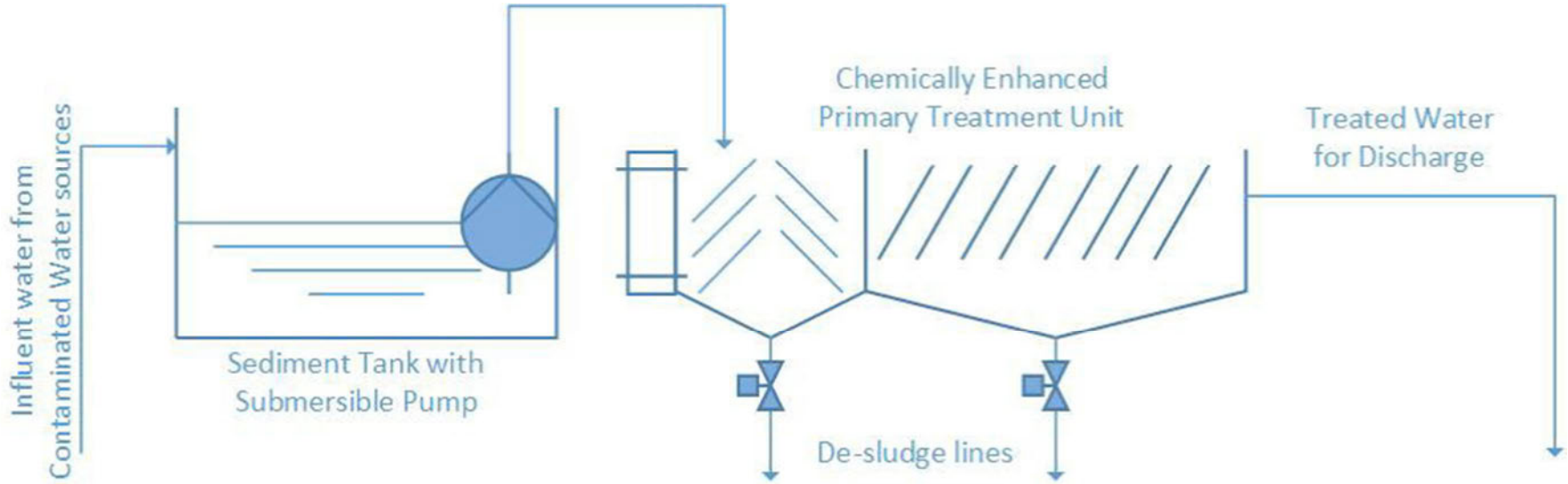
Lendlease has engaged Coates Hire to provide a Chmically enhanced primary treatement (CEPT) unit and associated ancillaries to facilitate site dewatering in accordance with Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000). The initial testing of water has been undertaken by an environmental consultant, ALS Environmental, to demonstrate water quality. Water testing will be identifying results for Turbidity, Total Suspended Solids, pH, Oil & Grease. The range is identified in the below table:

Contaminant	Unit	Discharge Objectives
pH	pH units	6.5-8.5
Total Suspended Solids	mg/L	50

Initial testing has been undertaken by an accredited laboratory. Refer to the results in Appendix B.

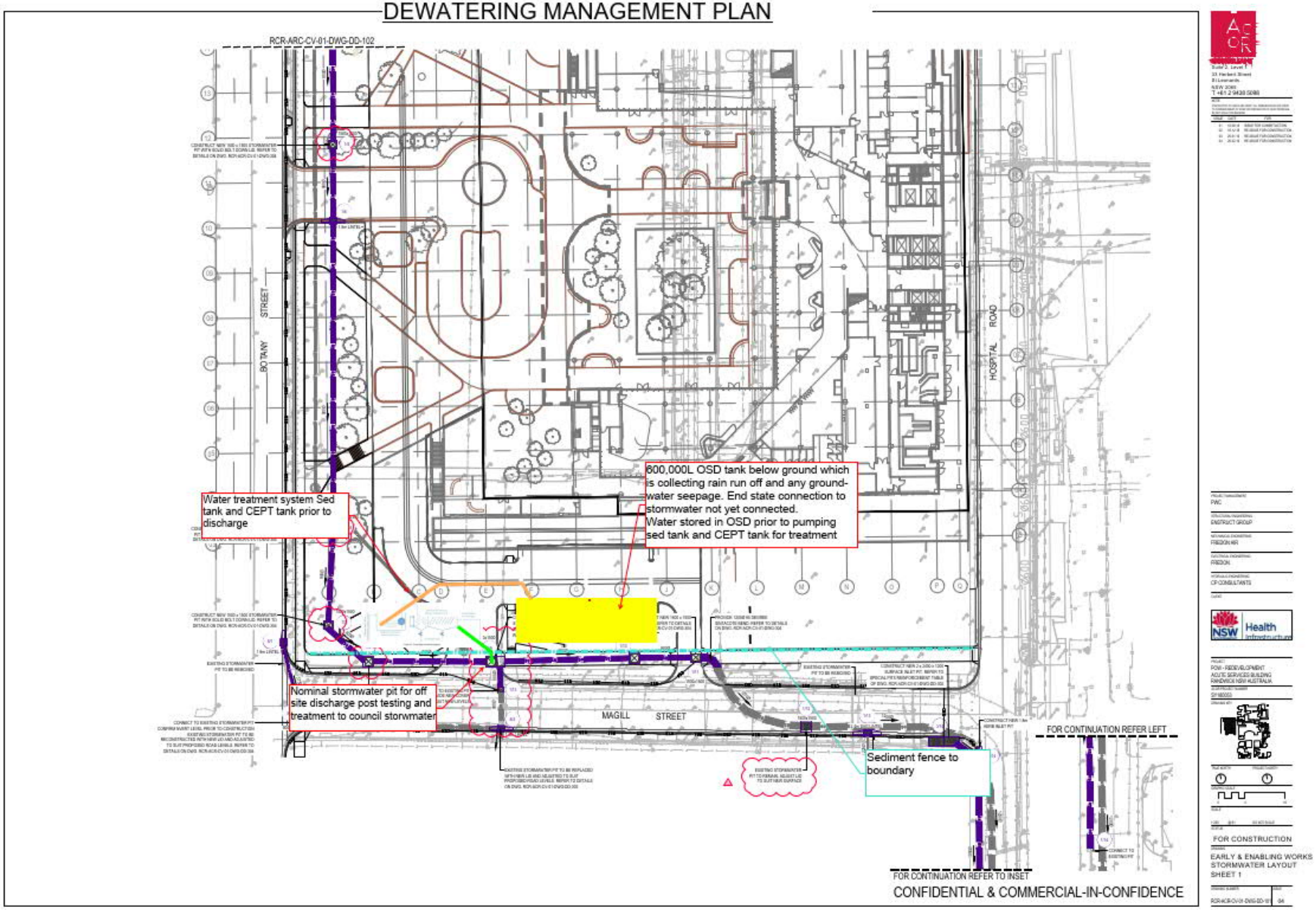
Influent water will be pumped into a sediment tank where heavy solids will settle and flow will be stabilized. Partially clarified water will then be transferred by a submersible pump into a chemically enhanced primary treatment (CEPT) unit, where pH correction, coagulant, and flocculant chemicals will be added to correct the pH and enhance the settling of suspended solids. The treated water will then overflow to a nominated discharge point. The CEPT unit has an automatic gravity operated desludge valves that will operate every 15-30 minutes, and requires an area to desludge into, such as a pit dug next to the unit. The sludge accumulated in the sediment tank and CEPT unit shall be managed on site by the client, if left in the unit for an extended period of time the clarification process will be affected. This treatment system has a typical maximum treatment capacity of up to 1.5 L/s. The actual treatment flowrate will be dependent on the influent water quality received onsite and may vary.

The diagram indicates the process for storing and testing of influent water prior to discharging. This is provided by Coates Engineering department.



The Site plan below indicates the location on site of the OSD tank and CEPT arrangement proposed, with discharge point to existing stormwater.

DEWATERING MANAGEMENT PLAN



Discharge Frequency
Frequency of discharge will be dependant on rain events. With the utilisiation of a submersible pump in the OSD tank, the transfer of water to the 15,000L Sediment tank and CEPT will occur once the OSD tank is a 50% capacity with the use of a float pump. Weekly inspection of tank will be undertaken to monitor levels and water quality. Post significant rain events inspection will be undertaken to ensure funcitiong of system. to review levels and prepare for discharge as inspection ofIt is determined this will be after a significant rain event or be periodic

Storwmater Connection
The location of the stormwater drain to be used for the receiving discharged water has been identified on the Dewatering Mangement Plan diagram. This stormwater drain is located within the site boundary which provides close connection and has no impact on surrounding properties.

Location of Pump
The location of the pump that will transfer the discharged water from the CEPT into Council's stormwater drainage system is identified on the Dewatering Management Plan diagram. This is located adjacent to the OSD tank which is at the southern end of the site boundary. It will be located on an hardstand platform with power and connections.

Hydraulic Engineering
Coates Water Engineering services has designed the size of the CEPT system based on the 600,000L capacity OSD tank. This treatment system has a typical maximum treatment capacity of up to 1.5 L/s. The actual treatment flowrate will be dependent on the influent water quality received onsite at the time of testing. The size of the sedimentation tank connect to the CEPT system is 15,000L.

Monitoring and Implementing
A qualified environmental consultant will undertake weekly checks of the CEPT system and as required take water samples for quality of water prior to testing. In addition to this weekly test, a daily inspection of the OSD tank will be undertaken to review water levels and to ensure the Dewatering equipment is in a safe operating mode.
The Consultant will provide training of our site operatives into the process of water checks for turbidity and PH’s levels in the event of a large rainfall.

Appendix B – NATA Test results

APPENDIX 6 – ACHMSP

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RANDWICK CAMPUS REDEVELOPMENT MANAGEMENT PLAN - STORMWATER AND EROSION

20/08/2020 | Revision No: 2.8

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.	[redacted]	[redacted]
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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 3 months.	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/engineer's documentation.	SM	Daily surveillance to assess effectiveness and condition. Weekly/monthly inspection checklist.	EMD reviewed every 3 months. 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 shaker facility at the site exit and a high-pressure water wand (Gerni or similar) for rinsing off tyres during inclement weather.	Prior to construction commencing	Assess requirement in IHRA. Maintain shaker grid/wheel rinsing facilities (Gerni) for vehicles leaving site. 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 (i.e. project approval or Blue Book) as required.	CM/SM	Daily surveillance to assess condition and capacity. Weekly/monthly inspection checklist.	Appropriately designed and maintained detention areas/facilities. No overtopping under design conditions.

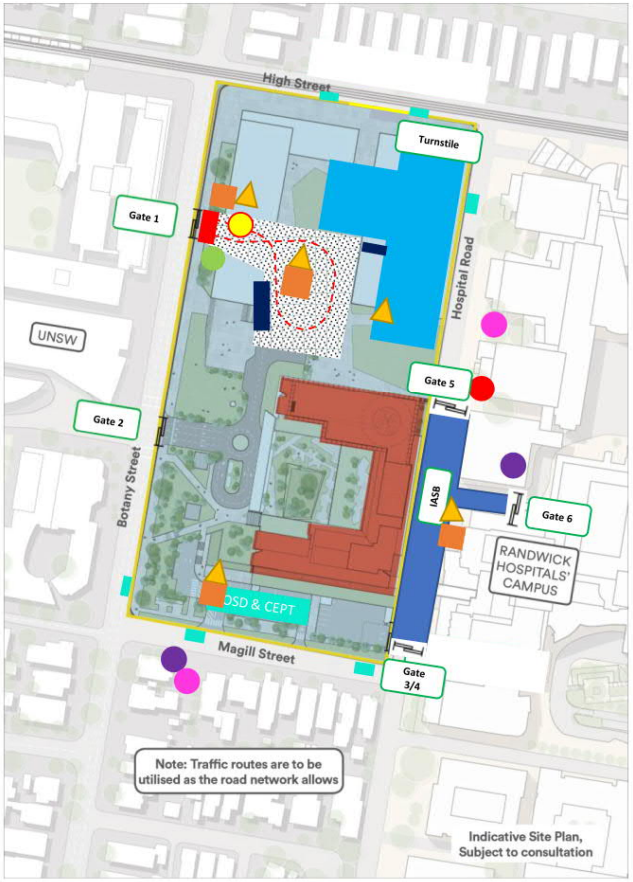
		Operate and maintain in accordance with design/ engineering documentation.		Inspection during and immediately after rain.	
Erosion and Sediment Control During Construction					
Maintain erosion and sediment controls in an operable condition.	At all times and after rain events	Check the condition of controls. 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 (e.g. 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 stockpile 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.

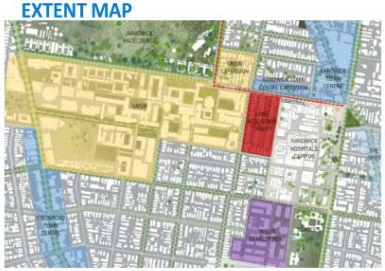
Stormwater Detention and Dewatering					
Inspect basins/tanks, detention facilities and stormwater treatment devices and remove any build-up of debris.	Ongoing. Within 24hrs of a rain event	Retain capacity in detention facilities for storm events. Inspect the site within 24hrs of a 1 in 5-year Average 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. In accordance with Guidelines prior to discharge. RCC consent provided on management plan for ongoing use.
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	SM Sub-contractor	Water quality test results from a NATA accredited laboratory. Dockets for off-site disposal where the water	Water treatment and dewatering undertaken in accordance with documented site procedure and Workplace Delivery Code.

		requirements of the relevant statutory authority. Undertake water quality testing and treatment of stormwater in accordance with Argus recommendations 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 are less than 50 mg/L, To discharge to offsite / stormwater system		is not acceptable for discharge.	No discharge of non-compliant water or off-site pollution.
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
- Sprinklers and water carts to reduce dust Ring main water around inside of hoarding with hose connections to control work zones
- Sprinklers set up over waste bins for dust suppression when emptying smaller bins
- Sealed hard stand area for materials handling
- Coconut logs for sediment control on Hospital Rd works

KEY CONTACTS PERSONS

Senior Construction Manager
Richard Yarad 0457 514 891

Senior Site Manager:
Steve Polsen 0488 051 797

Emergency Services:
000

EHS Coordinator:
Nigel Rose 0428 741 878

General Foreman:
Marco Farina 0409 685 587

LEGEND

Icon	Descriptions
	Perimeter A-Class Hoarding
	Vehicle Entry Gate
	Site Accommodation and Offices
	Spill Kits
	Tyre cleaning run off pond (inclement weather)
	Vibration Monitors
	Acoustic Monitors
	Stormwater inlet
	Delivery vehicle movement
	Shaker grid
	Hazardous Materials and Dangerous Good Storage
	Dust Monitor
	Two coat chip seal hard stand area
	Refuel area for wheeled vehicles
	Waste bins

Appendix A – Dewatering Management Plan & Diagram

Remedial Measures

The RCR site has established sedimentation controls around all surround kerb inlet and any surface drainage pits. This is inaccordnace with Blue Book recommendations.

The construction of the Onsite Storage Tank has been fast tracked to provide a suitable basin to be used on the site during construction. This 600,000L tank is required as the concrete structure utilizes the majority of the site, not providing any other suitable area for water collection. With this size tank, this provides suitable means for holding water in order to carry out testing prior to discharge during construction activities. Towards the end of the project, and when all hardstand areas are construted, the tank will be connected to the Council stormwater infrastructure. The tank will be certified for use at this time.

Dewatering Plan

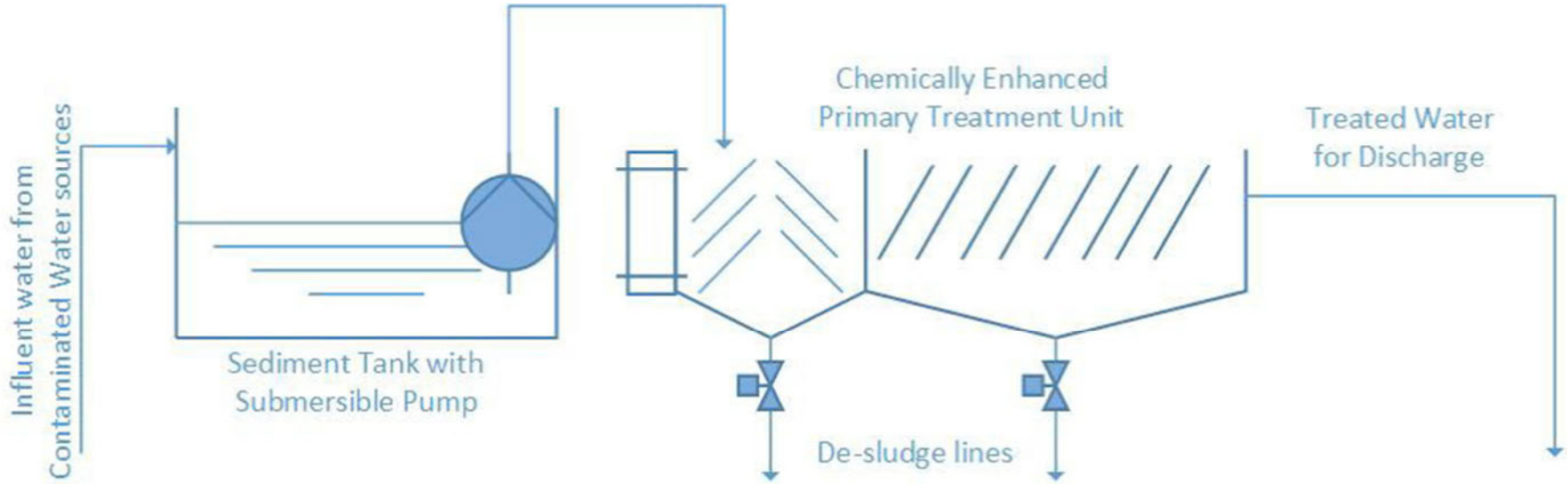
Lendlease has engaged Coates Hire to provide a Chmically enhanced primary treatement (CEPT) unit and associated ancillaries to facilitate site dewatering in accordance with Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000). The initial testing of water has been undertaken by an environmental consultant, ALS Environmental, to demonstrate water quality. Water testing will be identifying results for Turbidity, Total Suspended Solids, pH, Oil & Grease. The range is identified in the below table:

Contaminant	Unit	Discharge Objectives
pH	pH units	6.5-8.5
Total Suspended Solids	mg/L	50

Initial testing has been undertaken by an accredited laboratory. Refer to the results in Appendix B.

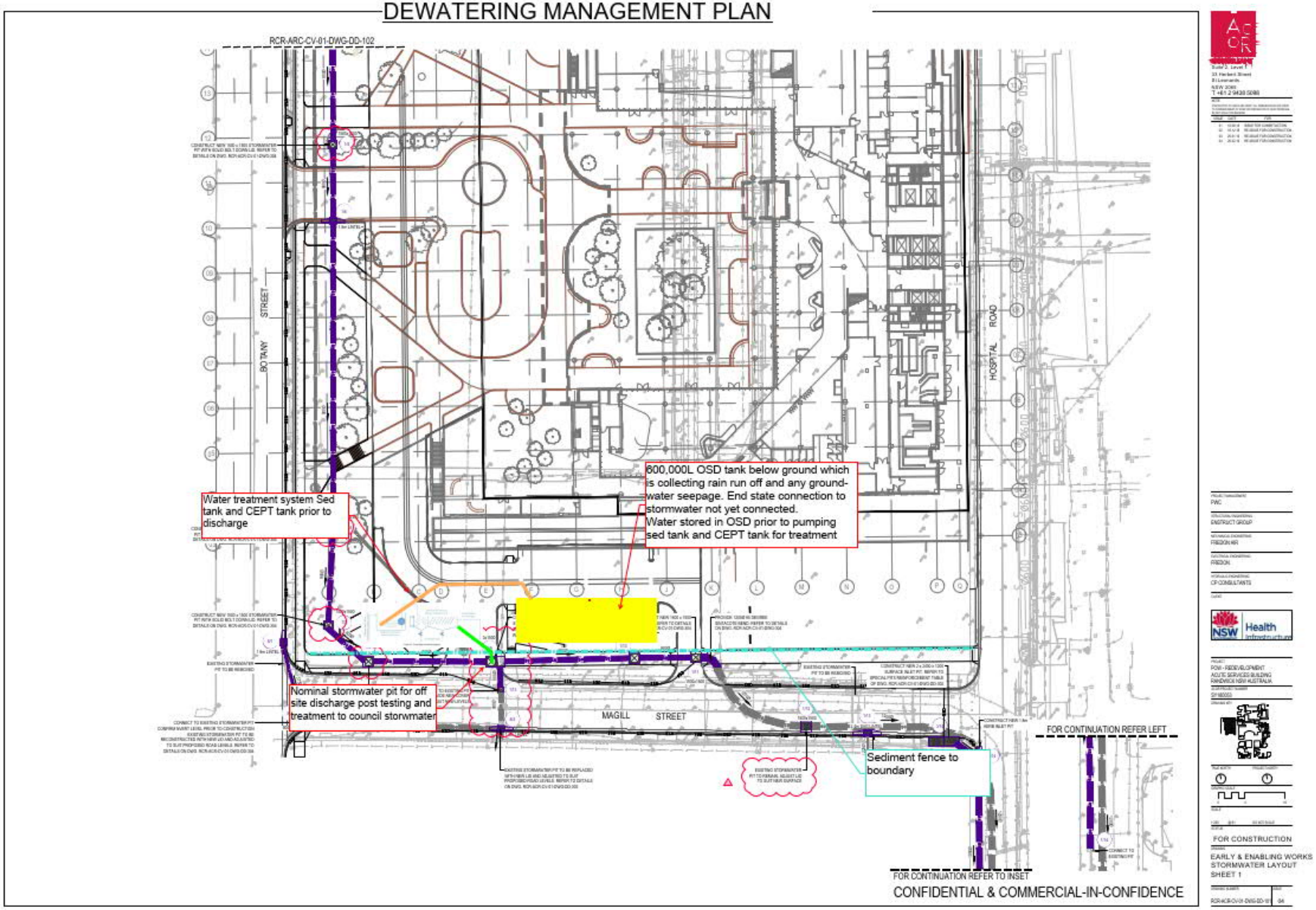
Influent water will be pumped into a sediment tank where heavy solids will settle and flow will be stabilized. Partially clarified water will then be transferred by a submersible pump into a chemically enhanced primary treatment (CEPT) unit, where pH correction, coagulant, and flocculant chemicals will be added to correct the pH and enhance the settling of suspended solids. The treated water will then overflow to a nominated discharge point. The CEPT unit has an automatic gravity operated desludge valves that will operate every 15-30 minutes, and requires an area to desludge into, such as a pit dug next to the unit. The sludge accumulated in the sediment tank and CEPT unit shall be managed on site by the client, if left in the unit for an extended period of time the clarification process will be affected. This treatment system has a typical maximum treatment capacity of up to 1.5 L/s. The actual treatment flowrate will be dependent on the influent water quality received onsite and may vary.

The diagram indicates the process for storing and testing of influent water prior to discharging. This is provided by Coates Engineering department.



The Site plan below indicates the location on site of the OSD tank and CEPT arrangement proposed, with discharge point to existing stormwater.

DEWATERING MANAGEMENT PLAN



Discharge Frequency
Frequency of discharge will be dependant on rain events. With the utilisiation of a submersible pump in the OSD tank, the transfer of water to the 15,000L Sediment tank and CEPT will occur once the OSD tank is a 50% capacity with the use of a float pump. Weekly inspection of tank will be undertaken to monitor levels and water quality. Post significant rain events inspection will be undertaken to ensure funcitiong of system. to review levels and prepare for discharge as inspection ofIt is determined this will be after a significant rain event or be periodic

Storwmater Connection
The location of the stormwater drain to be used for the receiving discharged water has been identified on the Dewatering Mangement Plan diagram. This stormwater drain is located within the site boundary which provides close connection and has no impact on surrounding properties.

Location of Pump
The location of the pump that will transfer the discharged water from the CEPT into Council's stormwater drainage system is identified on the Dewatering Management Plan diagram. This is located adjacent to the OSD tank which is at the southern end of the site boundary. It will be located on an hardstand platform with power and connections.

Hydraulic Engineering
Coates Water Engineering services has designed the size of the CEPT system based on the 600,000L capacity OSD tank. This treatment system has a typical maximum treatment capacity of up to 1.5 L/s. The actual treatment flowrate will be dependent on the influent water quality received onsite at the time of testing. The size of the sedimentation tank connect to the CEPT system is 15,000L.

Monitoring and Implementing
A qualified environmental consultant will undertake weekly checks of the CEPT system and as required take water samples for quality of water prior to testing. In addition to this weekly test, a daily inspection of the OSD tank will be undertaken to review water levels and to ensure the Dewatering equipment is in a safe operating mode.
The Consultant will provide training of our site operatives into the process of water checks for turbidity and PH’s levels in the event of a large rainfall.

Appendix B – NATA Test results

APPENDIX 7 – ERMSP

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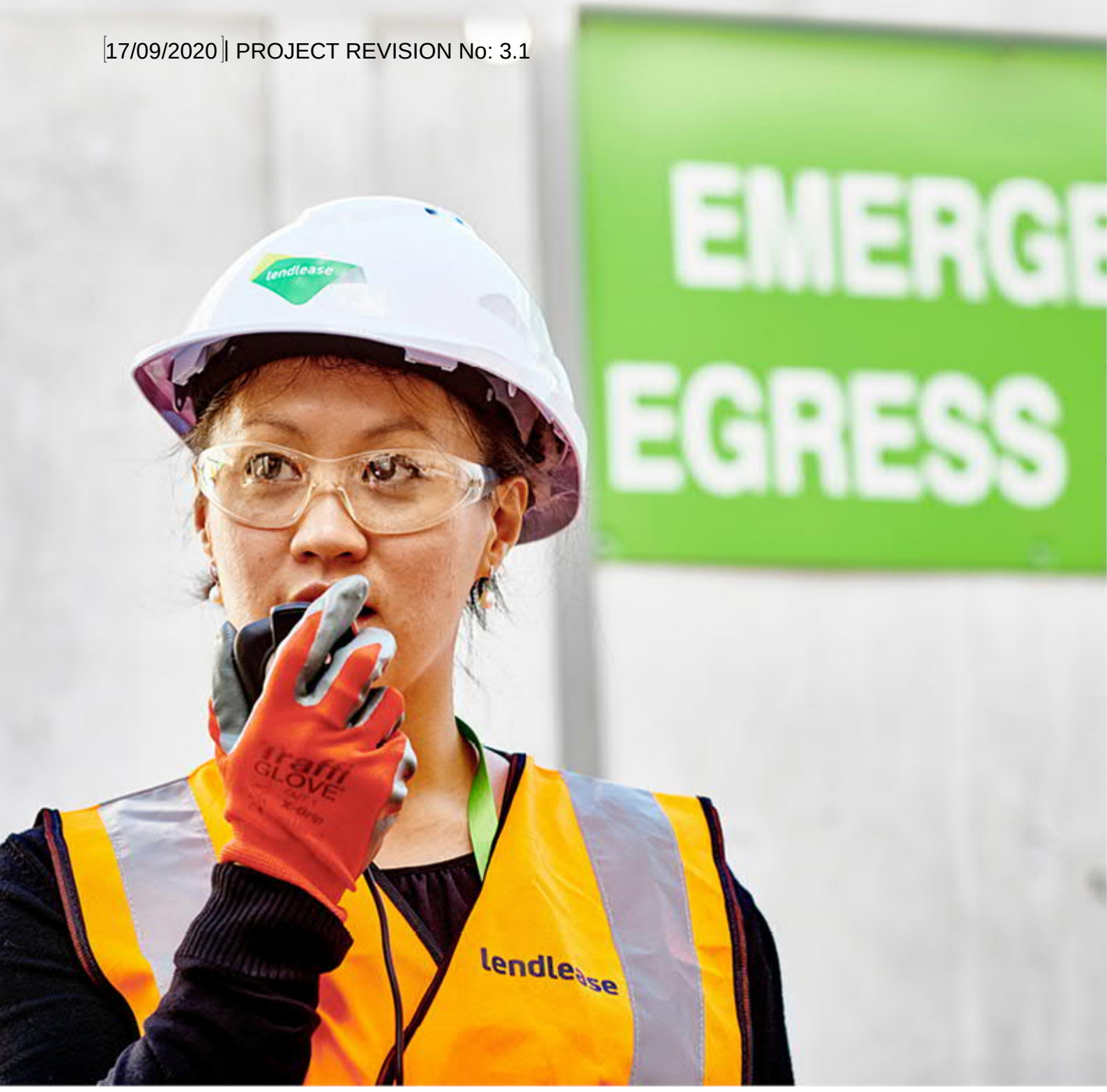
RANDWICK CAMPUS REDEVELOPMENT EMERGENCY RESPONSE MANAGEMENT SUB PLAN

17/09/2020 | PROJECT REVISION No: 3.1



Plan Revision Status

Date	Revision (in numbers)	Purpose and Summary of Amendments	Reviewed by	Approved by
[12/03/2018]	[2]	[Initial ERP]	[redacted]	[redacted]
[4/12/2018]	[2.1]	[Review]		
[21/03/2019]	[2.2]	[Updated Evacuation Diagram]		
[21/05/2019]	[2.3]	[Regular three-month review, updated Evacuation Diagram, updated Appendix 1]		
[03/06/2019]	[2.4]	[Updated Reference for Flooding Emergency Response as per SSD 9113 Condition B41]		
[12/09/2019]	[2.4]	[Updated muster point and emergency & ECO contact list]		
[12/12/2019]	[2.5]	[Updated ECO contact list]		
[18/03/2020]	[2.6]	[Updated ECO contact list & nurse call location]		
[17/06/2020]	[2.7]	[Updated ECO contact list & nurse call location]		
[30/04/2019]	[3.0]	[Change to Plan title to align all sub-plans, change to section 8 scenarios, change in plan title throughout.]		
17/09/2020]	[3.1]	[Adopt latest revision of plan for project use]		
[ ]	[ ]	[ ]	[ ]	[ ]
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Plan Distribution List

Issue Number	Issued To	
	Name	Organisation
[ ]	[ ]	[ ]

[3.1]	[RCR Project Team – G Drive]	[LLB]
[3.1]	[Aconex – Builder Brief Distribution List]	[Subcontractors]
[ ]	[ ]	[ ]
[ ]	[ ]	[ ]
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*Note that all printed paper/hard copies of this document and related procedures are uncontrolled. The controlled copy of this document is found either in Project Web, within the Project Management Plan section, or other project specific database/server approved by the Regional EHS Manager.

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1.0 INTRODUCTION

This Emergency Response Management Sub Plan (ERMSP) outlines the general requirements for initiating an emergency response that could occur as a result of a workplace incident, condition, external threat or natural causes. This plan also outlines the subsequent management and communications response planned for any potential and actual emergencies which may occur on or impact this Project/Workplace.

2.0 SCOPE

This ERMSP applies to all personnel at the workplace identified above including all employees, contractors, visitors or other workers.

3.0 RELATED DOCUMENTS

- Background documents that support the detail outlined in this Emergency Response Management Sub Plan are: Emergency Response Procedure
- Emergency Call Ambulance Poster
- Evacuation / Emergency Drill Evaluation form
- Emergency Planning Committee Charter
- AS3745 Planning for Emergencies in Facilities
- First Aid in the Workplace – Code of Practice (Safe Work Australia)
- First aid facilities and services; Workplace amenities and facilities; Personal protective clothing – Code of Practice (Worksafe WA)
- First Aid in the Workplace – Compliance Code (WorkCover Victoria)

4.0 DEFINITIONS

Emergency Control Organisation (ECO)

Workplace Manager and nominated representative(s) responsible to direct and control the implementation of the emergency response plan.

Emergency Response Team (ERT)

Specialist personnel appointed to attend specific incidents, to contain, control or eliminate the emergency using emergency response equipment, e.g. fire brigade, ambulance service or paramedic.

Emergency Planning Committee (EPC)

HOSF persons responsible for the documentation and maintenance of the pro-forma emergency plan.

HOSF

Means the EHS Head Office Service Function located within the LLB head office.

Workplace Manager

Means Construction Manager (construction site), Project Manager, General Manager, Practice Manager (Lendlease Applied Insight), or any other workplace or department specific manager of Lendlease Building with the responsibility for day-to-day management or control of a workplace(s).

5.0 PROTECTION PRIORITIES

Lendlease have the following protection priorities in the event of an emergency:

- Safety of People; then
- Protection of the Environment; and finally

- Safeguarding of commercial considerations

6.0 EMERGENCY RESPONSE

Lendlease has an Emergency Response Management Sub Plan and a nominated Emergency Control Organisation Leader at each of its workplaces. The primary role of the workplace ECO Leader is to direct and control the implementation of the emergency response management sub plan and render personnel and facilities safe by the application of local resources and liaison with the Emergency Response Team, i.e. external emergency services.

The initial response to an emergency and the implementation of the emergency response management sub plan may include the following actions:

R **Remove** workers from immediate danger (if safe to do so)

A Raise the **Alarm** by contacting appropriate emergency services advising the nature, status and exact location of the incident/condition/external threat and advise what action has been taken or is underway

C **Contain** the incident and its effects and make the area safe – preserve the scene for investigation; and

E **Evacuate** workers if required and undertake a head count

7.0 RESPONSIBILITIES

Various sections of this ERMSP detail roles and responsibilities allocated to specific position holders for different activities to be undertaken at a specific time or in response to specific events. Principal responsibilities are as follows:

Role	Responsible Person
Emergency Planning Committee (EPC)	Chaired and managed by HOSF
Emergency Control Organisation (ECO)	Chaired and managed by the Workplace Manager
Emergency Response Team (ERT)	Emergency Services e.g. fire brigade, ambulance service or paramedic.

8.0 EMERGENCY SCENARIOS

The Project/Workplace Impacts and Hazards Risk Assessment has identified emergency response at this Project/Workplace as high risk. The following have been identified as credible emergency scenarios:

Type of emergency	Credible Emergency Yes	No
Bomb threat	[☒]	[☐]
Contact with overhead wires	☐	☒
Contact with in-ground services	☒	☐
Excavation failure, e.g. partial collapse, ingress of water, contaminated air	☒	☐
External threat (e.g. terrorist activity, hostages, demonstration or civil unrest)	☐	☒
Failure of temporary containment structure (e.g. erosion and sediment control)	☒	☐
Fall arrest - Rescue from a suspended safety harness	☒	☐
Fire or explosion	[☒]	[☐]
Flooding	☒	☐
Ground or other major subsidence	☒	☐
Immersion of a person(s) in water or a water-body	☒	☐
Internal emergency - electrical power failure, water supply failure, hoist/lift/plant failure or structural collapse, odour/gas leak/toxic emission	☒	☐
Medical emergency	[☒]	[☐]
Natural disaster (e.g. cyclone, bushfire, earthquake);	[☐]	[☒]
Personal Threat / Robbery / Intruder	☒	☐
Pollution or the potential for pollution, e.g. significant leaks or spills	☒	☐
Roll over of mobile plant	☒	☐
Rescue from tower crane	☒	☐
Rescue from jump form	☒	☐
Rescue from swinging stage scaffold	☐	☒
Storage of dangerous goods and hazardous substances	[☒]	[☐]
Stretcher access/ egress and first aid	☒	☐
Structural collapse, e.g. tilt up/precast/prop failure or formwork collapse;	☒	☐
Vehicular/plant collision (public or project)	☒	☐
Other (List) – [ ]	[☐]	[☒]

Refer to Section 20 for specific emergency response details for the above emergency scenarios. These response details may be printed and placed on notice boards at the workplace at the discretion of the ERT Leader.

9.0 TRAINING

Training requirements for members of the ECO listed in Appendix One shall be reviewed by the Workplace Manager when this plan is first established and thereafter at maximum 12 monthly intervals for offices and plant yards and maximum 6 monthly intervals for construction projects using the LLB Learning and Development Training Matrix. The Workplace Manager is responsible for ensuring that the ECO members are competent to fulfil their appointed ECO roles related to the direction and control of the implementation of the emergency response plan

10.0 PERIODIC DRILLS

This ERMSP shall be tested to determine its effectiveness at maximum (delete non-applicable)

- 2 monthly intervals for offices
- plant yards.
- Construction projects
    - maximum 6 monthly intervals for evacuation; and
    - formally evaluate at least two separate credible emergency scenarios selected from your project Emergency Response Management Sub Plan; e.g. medical emergency; trench cave in; spill to the environment – (preferred at least one) or other as outlined in the Table below or your Project Emergency Response Management Sub Plan. or
    - Alternatively, a project could take the opportunity to formally evaluate a couple of 'actual' incident events and emergency response scenarios.

Each emergency exercise shall:

- Consistent with GMR 3.2.6 requirements and the above, all projects are required to formally test and evaluate a credible emergency scenario at least twice a year; and separately to evaluate a site emergency evacuation or partial evacuation of an area at least twice a year.
- Test emergency planning and preparedness and response to a particular predetermined scenario that has been identified in this Plan including at least one environmental scenario every 24 months during the life of a construction project or occupancy of the asset.
- Include a documented description of the scenario which is communicated to all emergency exercise participants
- Evaluation of the drill is to be documented on the Emergency Event Evaluation Form in the Enablon Inspection App. Alternatively, for non-App users the hardcopy form on Source - Emergency Event Evaluation Form can be used or equivalent where the exercise is managed by a 3rd party.

*Examples of Emergency Events:

Contact with overhead services	Immersion of a person(s) in water or water body
Contact with in-ground services	Internal emergency
Dangerous goods and hazardous substances	Natural disaster/hazard
Excavation failure	Personal threat/ Robbery/ Intruder
External threat	Pollution actual or the potential
Failure of temporary containment structure	Rescue from height
Failure of fixtures or fittings	Roll over of plant, equipment or materials
Fall arrest in a Safety Harness	Structural collapse
Fire or explosion	Vehicular/Plant collision
Medical Emergency	

11.0 EMERGENCY CONTACT NUMBERS

Emergency contact numbers are listed in Appendix Two of this ERMSP and must be displayed in prominent locations at this Project/Workplace.

12.0 EVACUATION DIAGRAM, ROUTES AND ASSEMBLY AREAS

An emergency Evacuation Diagram that complies with AS3745 must be displayed in prominent locations where workers and visitors can view the diagram. A copy of this Evacuation Diagram is contained in Appendix Three of this ERMSP.

Evacuation Diagrams shall be reviewed at maximum monthly intervals for all construction workplaces and updated to reflect any change. Evacuation Diagrams shall comply with the Evacuation Diagram Checklist contained in Appendix Three.

13.0 EMERGENCY EQUIPMENT AND FIRST AID LOCATIONS

An Emergency Equipment Diagram that details the location of fire-fighting and spill response equipment plus first aid facilities shall be displayed in prominent locations where workers and visitors can view the diagram. A copy of this diagram is contained in Appendix Four of this ERMSP.

At the discretion of the ECO Team Leader, the emergency Evacuation Diagram and Emergency Equipment Diagram may be combined.

A First Aid Risk Assessment shall be conducted upon commencement of works at the workplace and reviewed at maximum 3 monthly intervals for construction projects and where material changes occur at offices or plant yards using the pro-forma included in Appendix Six. This risk assessment will assist in determining the requirements for first aid facilities and the number of competent first aiders to be provided at the workplace.

The inspection and testing of first aid facilities and equipment shall be undertaken as outlined in Section 19.

14.0 ACTIVATION OF THIS PLAN

This plan may be activated by:

- A member of the ECO at any time
- The sounding of the workplace emergency siren
- The advent of an emergency of the kind identified within this plan

In deciding whether to notify the Lendlease Building Crisis Management Team, the site ECO Team Leader must consider the following:

1. Is external help required beyond project/workplace resources e.g. emergency services?

2. Could the public image of the Company be affected?
3. Could the incident impact on the Company's business or relationship with clients or government?
4. Could the incident have a major adverse impact on the environment?

If the answer to any of the above is "YES" then the requirements of the Lendlease Building Australia Crisis Management Handbook should be followed.

The decision of whether to activate the Lendlease Crisis Management Plan is the responsibility of the Lendlease Building ECO Leader.

15.0 TERMINATION OF AN EMERGENCY

An emergency may be terminated by one of the following:

- By the ECO Team Leader; or
- By the Emergency Response Team Leader; e.g. Fire Brigade Commander
- If the emergency has been escalated to LLB Crisis Management Team, by the LLB Crisis Management Team.

16.0 NOTIFICATION TO EXTERNAL AUTHORITIES

Formal notification to external authorities / regulators (other than emergency services) must be timely and undertaken by the ECO Team Leader after consultation with the relevant Regional EHS Manager and/or Head of EHS.

17.0 PERSONAL EMERGENCY EVACUATION PLAN

The ECO is responsible for developing, implementing and testing at regular intervals, Personal Emergency Evacuation Plan(s) (PEEPs) for people identified at the workplace with disabilities. These plans are attached where applicable at Appendix Five.

18.0 LOG OF EVENTS

The ECO Team Leader shall be responsible for appointing a Communications Officer who shall be responsible for completing the log of events during an emergency as contained in Appendix Seven.

This log shall be used to recording the following events:

- Time emergency was declared
- Time 000 call made to emergency services
- Time head count of workers at evacuation assembly point was finalised
- Time emergency services arrived at the workplace
- Time and detail when incident control was handed over to emergency services
- Time and detail of incoming calls from emergency services, LLB, client and other 3rd parties
- Time and detail of all outgoing calls to emergency services, LLB, client and other third parties
- Time and detail when Regulators attended the workplace
- Time and detail when union or other third parties attended the workplace
- Other actions taken relevant to the emergency scenario
- Time and details when emergency services handed back the workplace or incident control
- Time the emergency was terminated

19.0 ACTION SUMMARY

The ECO Team Leader is responsible for ensuring the following actions are undertaken in line within the designated timeframe:

Action Required	Other	Monthly	Quarterly	6 Monthly	Annually
Review this plan (as per requirements of Project/workplace EHS Management Plan)			☒		
Emergency Control Organisation Member Training Needs Analysis Offices/Plant Yards					☒
Emergency Control Organisation Member Training Needs Analysis Construction Projects				☒	
Conduct emergency scenario drills Offices/Plant Yards					☒
Conduct emergency evacuation scenario drills Construction Projects				☒	
Conduct emergency event scenario drills Construction Projects				☒	
Conduct emergency scenario drills Construction Projects				☒	
Review and update Evacuation Diagram, Routes and Assembly Areas Offices/Plant Yards					☒
Review and update Evacuation Diagram, Routes and Assembly Areas Construction Projects		☒			
Review First Aid Risk Assessment Construction Projects			☒		
Routine Check of Evacuation Alarm/Siren (minimum requirement)		☒			
Check of Evacuation Alarm/Siren after relocation, repair or the like	☒				
Check Nurse Call system (minimum requirement)		☒			
Check fire-fighting equipment	Refer to Project EHS Management Plan				
Weekly Cyclone Checklist	Required weekly during cyclone season by Projects/Workplaces situated within cyclone affected regions (refer Cyclone Plan section 20)				

20.0 EMERGENCY SCENARIOS RESPONSE

Bomb Threat

IF YOU RECEIVE A BOMB THREAT

REMAIN CALM	▪ Always treat the call as genuine. ▪ Prolong the conversation & **do not hang up.**
ATTRACT ATTENTION OF SECOND PERSON	▪ Do not alert the caller to your actions. ▪ Get a second person to call your Manager or Emergency Control Organisation Member.
BE ATTENTIVE	▪ Note any distinguishing background noises, music, traffic/other. ▪ Note the voice characteristics of the caller. ▪ Does the caller indicate knowledge of your workplace or building?
RECORD	▪ As soon as possible the details are to be recorded in the **Bomb Threat Checklist**
NOTIFY	▪ Your Direct Manager. ▪ The Manager of the Project/Workplace ▪ Emergency Services [where determined necessary]. ▪ (Enter other here or delete this text)
PREPARE	▪ To follow instructions from the Emergency Control Organisation Team Leader, security, Emergency Response Team, e.g. police or other emergency service personnel. ▪ To evacuate if necessary. ▪ To assist in a search if necessary (i.e. only staff trained to do so). The aim of any search is to look for: > a suspiciously labelled object; > an object like that described in the threat; > an object of unusual size, shape and sound; OR > the presence of pieces of tape, wire or explosive wrapping, or other unfamiliar wrappings.
IF OBJECT FOUND	▪ Do not touch it. ▪ Report that you have found a suspicious object.
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪

Bomb Threat Checklist

Exact wording of threat

Sex of Caller

☐ Male ☐ Female

Question to ask

When is it going to explode (release the substance)?

What will make it explode (release the substance)?

What does it look like?

Where did you put it?

Did you put it there?

When did you put it there?

Why did you put it there?

Callers voice

Accent	☐ Asian	☐ English	☐ European
	☐ Australian	☐ American	☐ NZ
	Other:		
Voice	☐ Loud	☐ Soft	
	Other:		
Speech	☐ Fast	☐ Slow	
	☐ Clear	☐ Muffled	
	Other:		
Impediment	☐ Lisp	☐ Stutter	
	Other:		
Manner	☐ Calm	☐ Emotional	
	Other:		

Additional information

Threat relating to chemical, biological or radiation

What kind of substance is in it?

How much substance is in it?

How will the substance be released?

In what form is the substance (liquid, gas or powder?)

Bomb threat questions

What type of bomb is it?

What is in the bomb?

Did you recognise the voice? ☐ Yes ☐ No

If Yes who do you think it was?

Was the caller familiar with the building or workplace? ☐ Yes ☐ No

Threat language

Well Spoken	☐ Yes	☐ No
Incoherent	☐ Yes	☐ No
Taped	☐ Yes	☐ No
Message read by caller	☐ Yes	☐ No
Abusive	☐ Yes	☐ No

Other:

Background sounds

☐ Local Call	☐ STD	☐ Music
☐ Voices	☐ Street Noise	☐ Aircraft
☐ House Noise	☐ Machinery	

Other:

Call taken

Time: Date:

Duration of call:

Number called:

Recipient

Name:

Recipient Telephone No.

Checklist completed by

Name:

Signature: Date:

Fire or Explosion

IF YOU SEE FIRE OR SMOKE DO NOT PANIC OR SHOUT!

REMAIN CALM & REMEMBER R.A.C.E.

RESCUE PEOPLE	**From immediate danger – if safe to do so.**
ALARM	**Alert Emergency Control Organisation Team Member** **Sound the Alarm.**
CONTAIN FIRE & SMOKE	**If safe to do so, close all doors and windows.**
EXTINGUISH	**Only attempt to extinguish the fire if trained and safe to do so by using the appropriate firefighting equipment, e.g. an extinguisher suitable for the type of fire encountered. Workers should not attempt to use firefighting water hoses unless special training has been provided.**

- Prepare to evacuate if necessary to the Evacuation Assembly Area/ Muster Point(s).
- Follow instructions from Emergency Control Organisation Members, security or other Emergency Response Team, e.g. emergency services personnel.
- Ensure any visitors are accompanied from the workplace when evacuation is ordered.
- Do not allow people to enter the building/ structure/project until the all clear is given.
- Do not allow vehicles to enter/leave the car park of the building/structure/project until the all clear is given.
- Leave lights on.
- **Obey all instructions – do not return to the workplace until the all clear is given.**

THE ORDER IN WHICH THESE ACTIONS ARE PERFORMED WILL DEPEND UPON THE PARTICULAR FIRE OR SMOKE INCIDENT.

Note: In the event of witnessing evidence of a fire any employee may call the fire brigade – such action does not need another person's permission.

OTHER WORKPLACE SPECIFIC	▪ Report to HI in line with Incident Management Framework

Evacuation

EVACUATION IS THE RAPID REMOVAL OF PEOPLE FROM IMMEDIATE OR THREATENED DANGER IN A SAFE AND ORDERLY MANNER.

NOTICE TO EVACUATE IS INDICATED BY:	▪ Evacuation Signal – (Enter Alarm Sound).
REMAIN CALM	▪ Do not panic, calm persons around you who appear agitated.
NOTIFY	▪ ECO Leader/ Warden in charge of the area. ▪ Fire Brigade where instructed.
EVACUATION ASSEMBLY AREA	▪ Inform staff and other personnel of the location of the Emergency Evacuation Assembly Area/Muster Point. ▪ Mobility, vision or hearing-impaired personnel are to be assigned to a Warden or other. ▪ Contact any contractors or others working in remote/isolated areas. ▪ Visitors are to be accompanied by their host to the Assembly Area. ▪ Deputy ECO Leader to retrieve any visitor/induction/diary/register/floor lists to assist in a head count.
EVACUATE	▪ Evacuation of personnel and visitors to the Emergency Assembly Area is to be carried out in the following staged order: > From immediate danger [e.g. out of the room or area or floor]. > Total evacuation of the building/structure/workplace. **Note:** People in immediate danger first, then in the following order: > Able bodied personnel, visitors and their hosts; > Accompanied mobility, vision or hearing-impaired persons.
CHECK	▪ All rooms, especially change rooms, toilets, behind doors, storage areas or other concealed or remote areas.
HEADCOUNT	▪ Conduct a head count at the Emergency Evacuation Assembly Area. ▪ Assigned personnel to account for contractors or visitors. If person(s) are missing, report this immediately to the person in charge, i.e. security, floor warden/manager/supervisor. ▪ Do not re-enter the workplace until the 'All Clear' is given.
REPORT	▪ To the ECO Team Leader at the Emergency Evacuation Assembly Area. ▪ Notify the Fire Brigade of any persons remaining unaccounted. ▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪ Report to HI in line with Incident Management Framework

Medical Emergency

Medical/first aid incident or emergency call:

FIRST AID OFFICER/AMBULANCE SERVICE

IN THE EVENT OF MEDICAL/FIRST AID INCIDENT OR THE NEED FOR URGENT MEDICAL ASSISTANCE

REMAIN CALM	Do not panic!
ASSESS	**Danger** – to you, to others, to the patient. **Response** – conscious or unconscious? **Send** - for help as early as possible. **Airway** – clear of objects and open? **Breathing** – chest rising/falling? hear/feel air from mouth/nose? **Circulation** – do they have a pulse? **Defibrillation** – apply Automated External Defibrillator (AED)
NOTIFY	▪ Alert the First Aid Officer(s). ▪ Alert your Manager. ▪ Alert the Ambulance Service where instructed.
CONDITIONS	Advise your exact location, nearest cross street, number of patient(s) age/sex, symptoms & signs, any prior medical illness or medication.
ACTION PLAN	▪ Make patient comfortable and area safe [if required barricade area]. ▪ If no breathing/pulse and trained to do so undertake Cardio Pulmonary Resuscitation (CPR) or other first aid as required. ▪ Apply a Defibrillator and follow voice prompts. ▪ Direct someone to wait at the escort point to accompany the emergency services to the exact location of the patient or emergency. ▪ ECO Team Leader to consult with Regional EHS Manager to determine if the incident area needs preservation for investigation by Authorities. ▪ Manager to consult with Regional EHS Manager to determine the requirement for Counsellors.
REPORTING	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪ Report to HI in line with Incident Management Framework

External Threat/Incident

NAME: Steve Polsen
PHONE: 0488 051 797

IN THE EVENT OF AN ANNOUNCEMENT OF AN EXTERNAL THREAT

REMAIN CALM	Do not panic!
AWAIT ADVICE	**Do not** leave the workplace – shelter in place. **Await** advice of the ECO Team Leader.
ASSESS	**Danger** – to people.
NOTIFY	Alert ECO Team Leader Alert Regional EHS Manager. Alert workers.
CONDITIONS	Advise Workers of exact location where the incident has occurred and the nature of the incident if known.
ACTION	Alert All Staff of any required action which may include: ▪ Shelter in Place (remain in the building/project until further notice); OR ▪ Evacuate when directed to a safe location
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure
OTHER WORKPLACE SPECIFIC	▪

Environmental Spill/Incident

NAME: Steve Polsen
PHONE: 0488 051 797

REMAIN CALM	Do not panic!
ASSESS	**Danger** – to people or the environment. **Potential** – for material harm (not trivial) or serious irreversible harm to people or the environment resulting from a leak, spill or escape of a substance, or circumstances in which this is likely to occur.
NOTIFY	▪ Alert your Manager and ECO Team Leader. ▪ Alert Workplace Manager and Regional EHS Manager. ▪ Alert Environment Protection Authority or Local Government Officer [when instructed]. ▪ Alert Emergency Services [fire brigade when instructed]. ▪ Alert others who may be affected, e.g. neighbours.
CONDITIONS	▪ Advise the exact location where the pollution is occurring or is likely to occur, the nature, the estimated quantity or volume and the concentration of any pollutants involved, the circumstances in which the incident occurred (including the cause of the incident if known), the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution.
ACTION	▪ Make the area safe [if required barricade area]. ▪ Install temporary bunding or other environmental barriers to contain/slow the effect of the spill [contained in a Spill Kit]. ▪ If safe any close valve or tap where relevant. ▪ Select appropriate personal protective equipment from Safety Data Sheet information. ▪ Remove all sources of ignition e.g. smoking or mobile telephone. ▪ Instigate all necessary action to minimise the size, spread and any adverse effects of actual/potential environmental harm if safe to do so. ▪ Supervisor/manager to determine if the incident area needs preservation for investigation by Authorities.
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪

Internal Emergency

NAME: Steve Polsen
PHONE: 0488 051 797

AN INTERNAL EMERGENCY (OTHER THAN FIRE/SMOKE), COULD BE CAUSED BY AN:
ELECTRICAL POWER FAILURE
WATER SUPPLY FAILURE
ALIMAK/HOIST/LIFT/PLANT FAILURE
STRUCTURAL COLLAPSE

ELECTRICAL POWER/WATER SUPPLY FAILURE	▪ Notify your Manager and the ECO Team Leader.
HOIST/LIFT/PLANT FAILURE – PERSONS TRAPPED	▪ Notify your Manager and the ECO Team Leader. ▪ Identify hoist/lift/plant number and location and likelihood or number of persons trapped.
STRUCTURAL COLLAPSE	▪ Remain calm ▪ Evacuate the immediate area. ▪ Make the area safe (if required barricade area to prevent further inadvertent access). ▪ Notify your Manager and the ECO Team Leader. ▪ Prepare to evacuate the building/structure immediately if instructed.
ODOUR / GAS LEAK / TOXIC EMMISSION	▪ Notify your Manager and the ECO Team Leader ▪ Advise if persons are injured. ▪ Evacuate the immediate area. ▪ Contain the area – close doors & windows if possible. ▪ Identify the substance and obtain its Safety Data Sheet (SDS) if available. ▪ If persons are injured remove them from affected area and treat appropriately with first aid as detailed in the Safety Data Sheet. ▪ Isolate injured person(s) from other non-affected persons and call emergency services. ▪ Prepare to evacuate the building if instructed.
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

DO NOT ATTEMPT ANY ACTION WHICH PUTS YOU OR OTHERS IN DANGER

- Follow the Instructions of the SCO Team Leader
- Prepare to evacuate if necessary

OTHER WORKPLACE SPECIFIC	▪ Report to HI in line with Incident Management Framework

Personal Threat/Robbery/Intruder

CALL DIRECT MANAGER/POLICE SERVICE

PERSONAL THREATS INCLUDE ASSAULT, ARMED HOLD-UPS, ROBBERY OR OTHER.

STAND STILL	▪ Keep your hands where they can be seen and do not make any sudden or quick movements. ▪ Stand slightly side on [submissive] to the robber/assailant/offender.
OBEY INSTRUCTIONS	▪ Do exactly what you are told. ▪ Do not volunteer any other information. ▪ Handover whatever is requested without question and let the offender leave.
REMAIN CALM & QUIET	▪ Do not panic or shout, **avoid staring and making eye contact.**
DO NOT TAKE RISKS	▪ Do not do anything which may antagonise the offender(s). ▪ **Do not chase** the offender(s).
OBSERVE THE OFFENDER'S CHARACTERISTICS, SUCH AS	▪ Sex, height, weight, eyes/hair colour, facial appearance, voice, clothing, tattoos, speech pattern, type of weapon, jewellery, what they are carrying and items touched. ▪ If safe to do so note the make and colour of any vehicle used, its registration number if possible and last known direction.
NOTIFY	▪ Retain emergency contact list at hand. ▪ Your Direct Manager. ▪ Police Service and ask any witnesses to remain. ▪ Other staff if safe to do so without risk. ▪ Contain yourself in a secure area, by locking your office door, closing blinds and staying out of sight. ▪ Consult with Regional EHS Manager to determine the requirement for Post Trauma Counsellors.
RECORD	▪ Seal off the area to preserve evidence. ▪ Immediately report the offender's description, what they may have taken, models and serial numbers, descriptions of any distinguishing items they may have, or any other relevant details.
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪

Threat/Robbery/Intruder Identification

Threat/Robbery/Intruder Identification Form

Fill out this form to assist the police with their investigation.
First impressions are important.
Fill out the form alone.
Do not discuss the offence with anyone else first [this may alter your observations and first impressions of what happened].

Witness Details:	**Lendlease Building**
Surname:	Location:
Given names:	Address:
Address:	
Post code:	Post code:
Phone (work):	
Phone (home):	
Mob:	

Details of Event [Include every detail of the offence from start to finish]

Date: Time:

Details:

Description of Offender

Physical		**Clothing/Other**
Height:	Age:	Upper body:
Weight:		Lower body:
Hair:		Shoes:
Eyes:		Glasses:
Eyebrows:		Weapon/item carried:
Race:		Other:
Skin:		
Scars/Tattoos:		
Speech:		

Vehicle Description

Make:	Licence Plate No:	Year:
Colour:	Direction of travel:	

Distinctive Features: [e.g. dents, roof racks, bull bar, colour]

Identification completed by

Name: Signature: Date:

Cyclone Planning

GENERAL

CYCLONE SEASON	▪ Officially runs from November 1 to April 30 ▪ Refer Cyclone Information Bulletin
BUREAU OF METEOROLOGY ADVICE	▪ A tropical cyclone watch is issued for coastal communities when the onset of gales is expected within 48 hours, but not within 24 hours. ▪ A tropical cyclone warning is issued for coastal communities when the onset of gales is expected within 24 hours, or are already occurring ▪ While the threat remains, a tropical cyclone advice will be issued every six hours, increasing to every three hours when cyclone warnings are required. In some circumstances, when a cyclone approaching the coast is under radar surveillance, the advices may be issued hourly.
WEEKLY CYCLONE CHECKLIST REQUIRED DURING CYCLONE SEASON	▪ Projects/Workplaces in or north of Exmouth in Western Australia and <50km from the coast ▪ Projects/Workplaces located in within 50 kilometres of the Northern Territory coast ▪ Projects/Workplaces in or north of Bundaberg and <50km of coast

CYCLONE CATEGORIES

CATEGORY 1 (TROPICAL CYCLONE)	▪ Negligible house damage. Damage to some crops, trees and caravans. Craft may drag moorings. ▪ GALES with typical gusts over open flat land of 90 - 125 km/h.
CATEGORY 2 (TROPICAL CYCLONE)	▪ Minor house damage. Significant damage to signs, trees and caravans. Heavy damage to some crops. Risk of power failure. Small craft may break moorings. ▪ DESTRUCTIVE winds with typical gusts over open flat land of 125 - 164 km/h.
CATEGORY 3 (SEVERE TROPICAL CYCLONE)	▪ Some roof and structural damage. Some caravans destroyed. Power failures likely. ▪ VERY DESTRUCTIVE winds with typical gusts over open flat land of 165 - 224 km/h.
CATEGORY 4 (SEVERE TROPICAL CYCLONE)	▪ Significant roofing loss and structural damage. Many caravans destroyed and blown away. Dangerous airborne debris. Widespread power failures. ▪ VERY DESTRUCTIVE winds with typical gusts over open flat land of 225 - 279 km/h.
CATEGORY 5 (SEVERE TROPICAL CYCLONE)	▪ Extremely dangerous with widespread destruction. ▪ VERY DESTRUCTIVE winds with typical gusts over open flat land of more than 280 km/h.

CYCLONE PLANNING

MONITOR Cyclone Watch Issued	Assign personnel to monitor via internet, radio & TV. Consider subscribing to the National Alert System - http://www.emergencyalert.gov.au/
PREPARE – CODE BLUE Cyclone Warning Issued	Continue to Monitor. Commence tie-down checklists contained in Appendices Eight – Eleven Maintain communications with Client, workers and subcontractors Non-essential workers demobilised from the project/workplace Ensure workers have access to suitable cyclone proof shelters
TIE-DOWN – CODE YELLOW Gale-force winds to impact within 12 hours.	Ensure tie-down checklists are complete Non-essential travel to cease Photographs of at risk construction areas to assist any subsequent insurance claims Close project/workplace
SHUT-DOWN – CODE RED Gale force winds to impact within 6 hours	Project/Workplace Closed All workers at home or in nominated secure location – no one outside Only trained Emergency Personnel are permitted to leave secure buildings.
RE-OPEN – ALL CLEAR	All Clear given by authorities Site safety inspection conducted Site toolbox conducted prior to recommencement of works

OUT OF HOURS RESPONSE

Where a Cyclone Warning is issued out of normal working hours for a workplace, the Workplace Manager shall be responsible for ensuring the planning as detailed above is completed.

TIE DOWN KIT

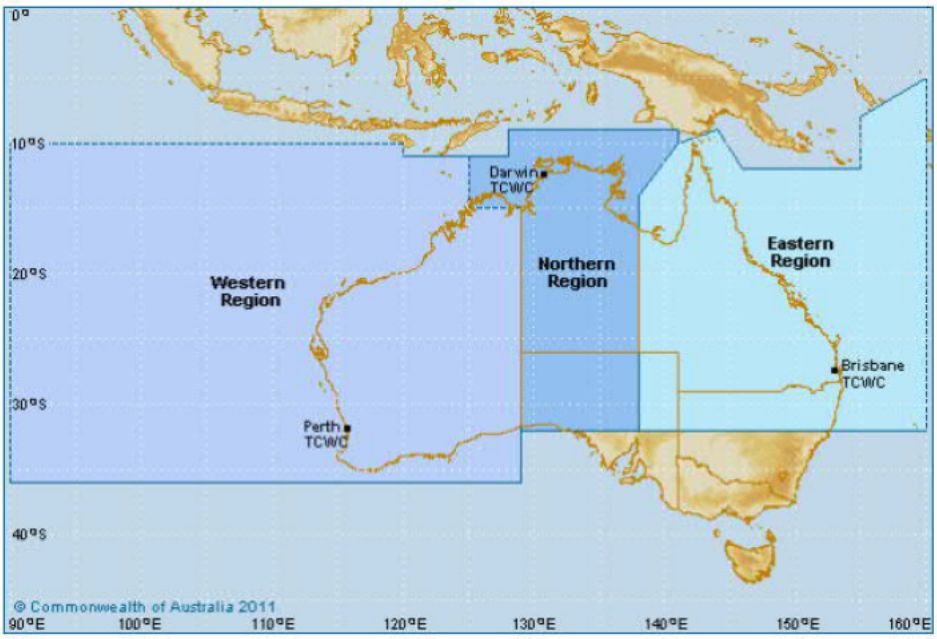
Workplaces that are required to complete the Weekly Cyclone Checklist shall ensure adequate supplies of the following are maintained to assist with preparation and clean-up efforts:

- **Rope – various sizes**
- **Chain – various lengths**
- **Cargo nets**
- **Plywood for window covers**
- **Masking tape**
- **Light plastic sheeting**
- **Tarpaulins of various sizes**
- **Plastic bags**
- **Tie down blocks e.g. concrete blocks, filled 200litre drums.**

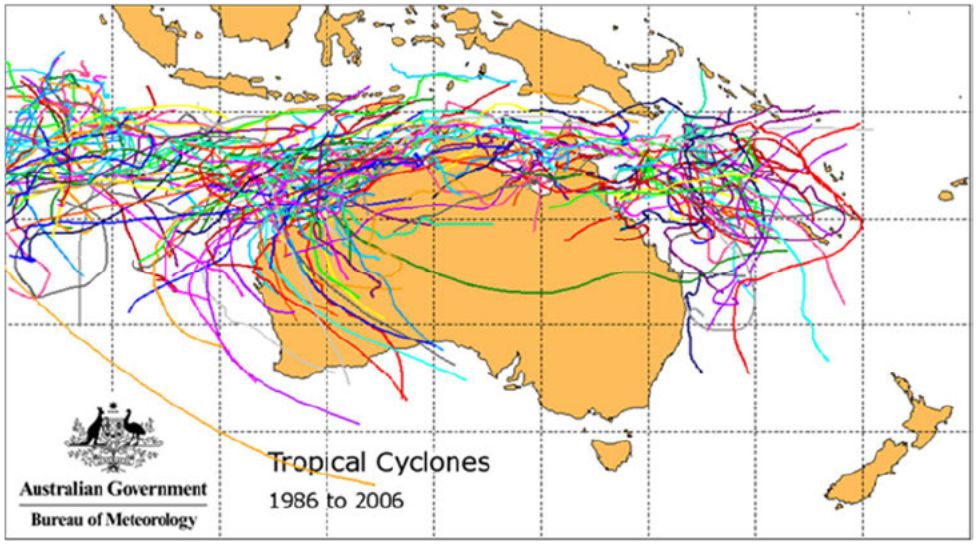
For further information:

http://www.bom.gov.au/cyclone/index.shtml
http://www.abc.net.au/news/emergency/
http://www.abc.net.au/radio/frequency-finder/

Cyclone Zones



Cyclone Track History



Bushfire

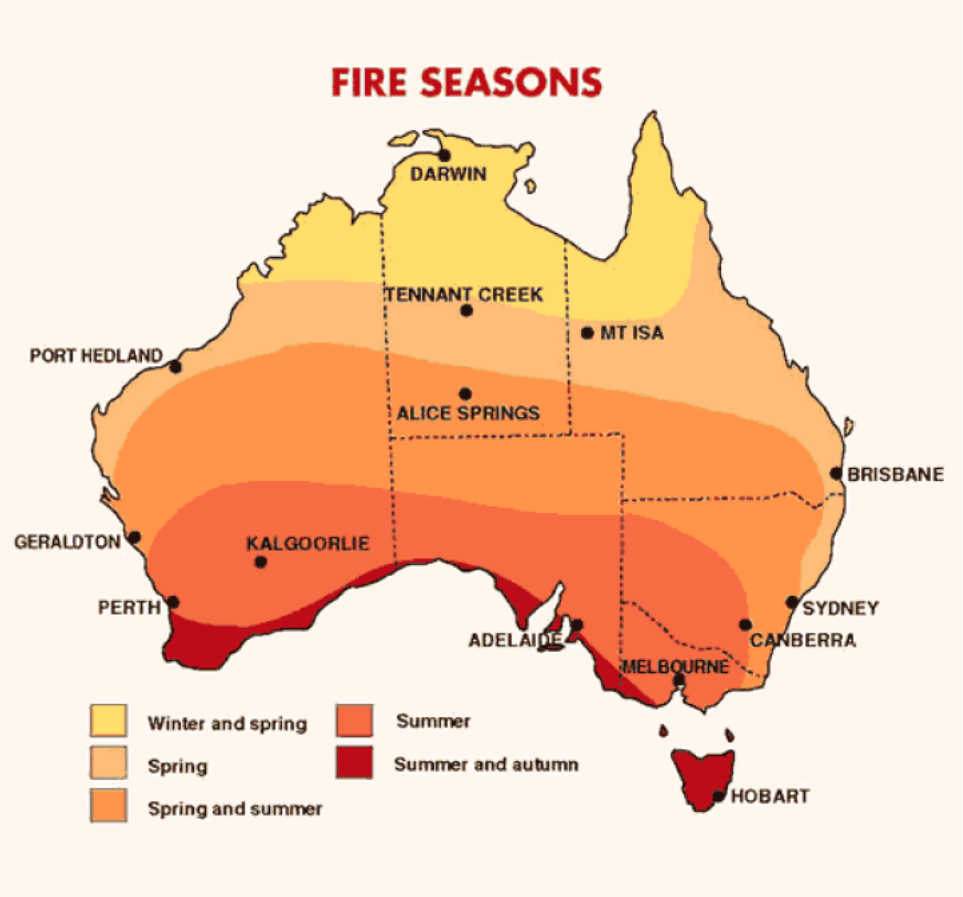
PLANNING	▪ Contact the local council / shire and confirm their bushfire planning requirements ▪ Download the bushfire planning guide appropriate to your region/state and implement requirements ▪ Ensure all workers are briefed on bushfire risk during workplace inductions and at other appropriate times ▪ Subscribe to the National Alert System: http://www.emergencyalert.gov.au/
OBEY INSTRUCTIONS	▪ Do exactly as you are advised via the National Alert System

STAGES OF BUSHFIRE RESPONSE AT WORKPLACES

CATASTROPHIC / CODE RED	For your survival, leaving early is the only option. Leave bush fire prone areas the night before or early in the day – do not just wait and see what happens. Make a decision about when you will leave, where you will go, how you will get there and when you will return.
EXTREME	Leaving early is the safest option for your survival.
SEVERE	Leaving early is the safest option for your survival.
VERY HIGH **HIGH** **LOW MODERATE**	Keep yourself informed and monitor conditions - Be ready to act if necessary. Subscribe to the National Alert System: http://www.emergencyalert.gov.au/
OTHER WORKPLACE SPECIFIC	▪

For further information:
http://www.bom.gov.au/weather-services/bushfire/about-bushfire-weather.shtml
http://www.abc.net.au/news/emergency/
http://www.abc.net.au/radio/frequency-finder/

Australian Fire Seasons



Flooding

PLANNING	▪ Contact the local council / shire and confirm flooding risk and planning requirements Check Geoscience Australia website: http://www.ga.gov.au/flood-study-web/#/searchApp/searchBasic ▪ Download the flooding planning guide appropriate to your region/state and implement requirements ▪ Ensure flood response materials are available for immediate use e.g. sand and sandbags, plastic sheeting, loudhailer first aid kit ▪ Ensure all workers are briefed on flooding risk during workplace inductions and at other appropriate times ▪ Subscribe to the National Alert System: http://www.emergencyalert.gov.au/ ▪ Ensure the dangerous goods and hazardous materials register is up to date and all storage is located in non-flood prone areas ▪ Ensure the workplace can be effectively secured from intruders if abandoned during a flood event ▪ Ensure all IT systems are backed up regularly to off-site servers ▪ Ensure all isolation points for water, electricity and gas are communicated to all ECO members and included on the Evacuation Diagram or Emergency Equipment Diagram
OBEY INSTRUCTIONS	▪ Do exactly as you are advised via the National Alert System ▪ Follow ***Evacuation*** guidelines as outlined in this ERMSP. ▪ Isolate all services when leaving site ▪ Eliminate unnecessary travel

For further information: http://www.abc.net.au/news/emergency/
http://www.abc.net.au/radio/frequency-finder/

OTHER WORKPLACE SPECIFIC	▪

Immersion of a Person(s) in Water or Water Body

PLANNING	▪ A work specific rescue plan must be developed and appended to this document that accounts for the following as a minimum: ▪ The nature of the water body e.g. lake, river, lagoon, bay or ocean ▪ The likely impact of wave, wash and wind action ▪ Water turbidity and ability to locate a submerged worker ▪ PPE to be worn e.g. personal flotation devices, their rating and safety boot types ▪ Weather workers proposed to undertake the works are able to swim ▪ The nature and duration of the work activity including time of day and length of shift ▪ The nature of work platform that will be used e.g. jetty, work boat, scow, pontoon or the like ▪ Equipment to be used when undertaking the task and effect on the risk of a worker becoming immersed in water ▪ Availability of third party emergency services e.g. Water Police or Harbour Authority ▪ Reference should be made to relevant Council/Shire/Harbour regulations on required safety equipment; emergency response equipment could include: ▪ Rubber non-motorised rescue dinghy with grab ropes, two oars and life buoy with lanyard attached moored adjacent to work face ▪ Gotcha rescue kit complete with retrieval hook, retrieval rope and carabineers, extension pole and load reducing pulley located and is set up ready for use at the nominated rescue point ▪ Ladder located within 10m of work face of a length such that at least the last 2 rungs are under water at low tide ▪ Life buoy with lanyard affixed located within 10m of work face ▪ Identified unobstructed rescue point ▪ Identified alternative means of access/egress ▪ First aid kit at workplace ▪ Defibrillator located at workplace ▪ Fully charged mobile phone at workplace ▪ Stretcher at work site
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

A WORK SPECIFIC RESCUE PLAN IS APPENDED TO THIS DOCUMENT:	☐
ALL ECO MEMBERS HAVE BEEN BRIEFED ON THIS WORK SPECIFIC RESCUE PLAN:	☐

Rescue from Tower Crane

IN THE EVENT OF MEDICAL/FIRST AID INCIDENT OR THE NEED FOR URGENT MEDICAL ASSISTANCE IN A TOWER CRANE

PLANNING	▪ Preparation for an emergency of this kind should commence in advance of the use of a tower crane and the appropriate emergency scenario tested and preparations made for a response immediately upon commencement of tower crane operations
RESPOND	▪ Refer to the ***Medical Emergency*** Procedure contained in this EPG

Single Crane Project

RECOVER	▪ Contact emergency services; or ▪ Use Gotcha Kit[1] (or similar proprietary system) to lower worker to ground level for further medical attention if determined necessary
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

Multiple Crane Project

RECOVER	▪ Use other crane to manoeuvre medical work box[2] to the crane where worker is located and evacuate worker into the workbox using a stretcher or similar
	▪ Lower workbox to ground level for further medical attention if determined necessary
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

[1]Use of a rescue kit requires a permit to work to ensure that there are no unintended consequences for the worker being lowered
[2]Use of a workbox requires a permit to work to ensure that there are no unintended consequences for the rescue party.

OTHER WORKPLACE SPECIFIC	▪

Rescue from Jump Form

IN THE EVENT OF MEDICAL/FIRST AID INCIDENT OR THE NEED FOR URGENT MEDICAL ASSISTANCE IN A JUMP FORM

RESPOND	▪ Refer to the ***Medical Emergency*** Procedure contained in this EPG
RECOVER	▪ Use crane to manoeuvre medical work box[1] to the jump form where worker is located and evacuate worker into the workbox using a stretcher or similar
	▪ Lower stretcher to ground level for further medical attention
PROCEDURE	▪ Report in line with the requirements contained within the Incident Reporting and Management Procedure

[1]Use of a workbox requires a permit to work to ensure that there are no unintended consequences for the rescue party.

OTHER WORKPLACE SPECIFIC	▪

Rescue from a Swinging Stage Scaffold

PLANNING	▪ A work specific rescue plan must be developed and appended to this document that accounts for the following as a minimum: ▪ The nature of the works ▪ The work height ▪ Accessibility for rescue ▪ Equipment required for rescue ▪ Number of workers required to participate in the rescue team ▪ Training requirements for rescue party
RESPOND	▪ Refer to the work specific rescue plan appended to this document ▪ Refer to the ***Medical Emergency*** guidelines contained in this ERMSP
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

A WORK SPECIFIC RESCUE PLAN IS APPENDED TO THIS DOCUMENT:	☐
ALL ECO MEMBERS HAVE BEEN BRIEFED ON THIS WORK SPECIFIC RESCUE PLAN:	☐

Note:
Rescue capability at the workplace must be considered in the developed workplace rescue plan e.g. via workbox. It is not sufficient to rely upon emergency services.

Rescue from a Suspended Safety Harness

PLANNING	▪ A work specific rescue plan must be developed and appended to this document that accounts for the following as a minimum: ▪ The nature of the works ▪ The likely suspension height ▪ Accessibility for rescue ▪ Equipment required for rescue ▪ Number of workers required to participate in the rescue team ▪ Training requirements for rescue party
RESPOND	▪ Refer to the work specific rescue plan appended to this document ▪ Refer to the ***Medical Emergency*** guidelines contained in this ERMSP
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

A WORK SPECIFIC RESCUE PLAN IS APPENDED TO THIS DOCUMENT:	☐
ALL ECO MEMBERS HAVE BEEN BRIEFED ON THIS WORK SPECIFIC RESCUE PLAN:	☐

Storage of Hazardous Substances and Dangerous Goods

PLANNING	▪ Ensure that the requirements of the Hazardous Substances and Dangerous Goods Procedure are in place ▪ Ensure hazardous substances and dangerous goods are not stored in flood prone areas
RESPOND	▪ Follow ***Evacuation*** guidelines as outlined in this ERMSP. ▪ Follow ***Medical Emergency*** guidelines as outlined in this ERMSP. ▪ Follow the ***Fire or Explosion*** guidelines as outlined in this ERMSP ▪ Follow the ***Environmental Spill / Incident*** as outlined in this ERMSP
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure
OTHER WORKPLACE SPECIFIC	▪

Vehicle / Plant Collision (Public or Project)

REMAIN CALM	Do not panic!
ASSESS	**Danger** – to people or the environment. **Potential** – for material harm (not trivial) or serious irreversible harm to people or the environment resulting from the accident e.g. fire, explosion, fuel spill.
NOTIFY	▪ Alert your Manager and Emergency Team Leader. ▪ Alert Manager or Premises & Facilities and Regional EHS Manager. ▪ Alert Emergency Services [ambulance, fire brigade police when instructed]. ▪ Alert others who may be affected, e.g. neighbours.
CONDITIONS	▪ Advise the exact location of the incident, the number of vehicles and people involved, and nature of any injuries or damage to property.
ACTION	▪ Make the area safe [if required barricade area]. ▪ Follow ***Medical Emergency*** guidelines as outlined in this ERMSP. ▪ Follow the ***Fire or Explosion*** guidelines as outlined in this ERMSP ▪ Follow the ***Environmental Spill / Incident*** as outlined in this ERMSP ▪ Supervisor/manager to determine if the incident area needs preservation for investigation by Authorities.
PROCEDURE	▪ Report in line with the requirements containing within the Incident Reporting and Management Procedure

OTHER WORKPLACE SPECIFIC	▪

Other

THE FOLLOWING ADDITIONAL EMERGENCY SCENARIOS HAVE BEEN IDENTIFIED AND THE FOLLOWING EMERGENCY RESPONSE PLANS ARE APPENDED TO THIS DOCUMENT:

[ ]	
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ALL ECO MEMBERS HAVE BEEN BRIEFED ON THESE SCENARIO EMERGENCY RESPONSE PLANS:	[☐]

APPENDIX ONE – EMERGENCY CONTROL ORGANISATION (ECO) RESPONSIBILITIES AND MEMBERSHIP

Role	Responsibilities
Emergency Control Organisation Team Leader	▪ Ensure this Plan is completed, regularly reviewed, implemented and tested. ▪ Review and approve all modifications to the emergency response system, facilities and ECO team members (including action on any post incident or exercise report recommendations) ▪ Establish and maintain an Emergency Control Centre (ECC) and support facilities ▪ Establish an emergency response exercise schedule as required by this plan. ▪ Integrate the emergency response exercise schedule with the Lendlease ECO and workplace EHS Committee/EHS Consultation Group in order to ensure the effectiveness of site - ECO communications interface ▪ Ensure any third party (non-Lendlease) personnel who may be co-opted in an emergency response are fully aware of expectations on them and are prepared to become immediately effective in an Emergency ▪ Promote the Lendlease Emergency Response arrangements to all site personnel ▪ Maintain familiarisation with obligations under this plan including reporting requirements, notifications etc. ▪ Ensure that all Lendlease Project Managers, Supervisors and ECO members receive an awareness session on their roles, responsibilities and requirements of this plan ▪ Provide single point of contact with the Emergency Response Team; i.e. Emergency Services and any related Client ▪
Deputy ECO Team Leader	▪ Undertake duties delegated by the ECO Team Leader; and ▪ In the absence of the ECO Team Leader, fulfil the role of ECO Team Leader ▪
Communications Officer	▪ Responsible for managing all incoming calls ▪ Responsible for managing outgoing calls as delegated by ERO Team Leader ▪ Completing log of events ▪
Area Warden(s)	▪ Ensuring the safe evacuation of all site personnel in the event of an emergency. ▪ Conduct a head count and advise the ECO Team Leader/Deputy of the results ▪ Establish a watch for arriving emergency vehicles and provide an initial brief to the responding agency Emergency Response Team Controller ▪ Undertake traffic control duties ▪
First Aider	▪ Proceed to the Emergency Assembly Area/Muster Point and provide first aid as required ▪

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APPENDIX TWO – EMERGENCY CONTACT NUMBERS

Name	Workplace Position	Contact Number
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Name	Workplace Position	Contact Number
SES	[ ]	132 500
Gas	[Jemena]	131 909
Electricity	[Ausgrid]	[13 13 88]
Hospital	[Prince of Wales Public Hospital]	[(02) 9382 2222]
Medical Centre	[Randwick Doctors Medical Centre]	[(02) 8047 0988]
Poisons Information	[ ]	131 126
EPA	[ ]	131 555
[Randwick City Council]	[ ]	[(02) 9093 6000]
[LLB Injury Management Hotline]	[ ]	[1800 825 055]
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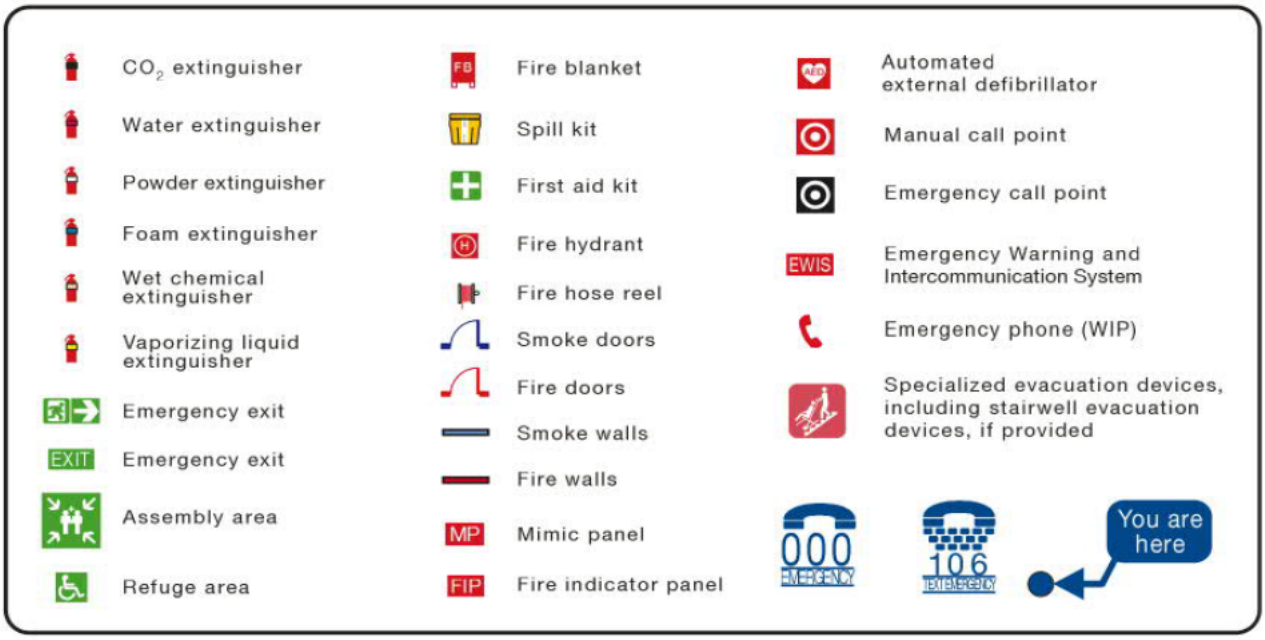
APPENDIX THREE – EVACUATION DIAGRAM

Symbols used in evacuation diagrams



EVACUATION DIAGRAM CHECKLIST

This checklist provides information to enable compliance evaluation of Evacuation Diagrams displayed at Lendlease Building workplaces in the event of an emergency. The checklist outlines the minimum requirements set out in AS3745 Planning for Emergencies In Facilities and AS/NZS1841.1 Portable Fire Extinguishers General Guide.

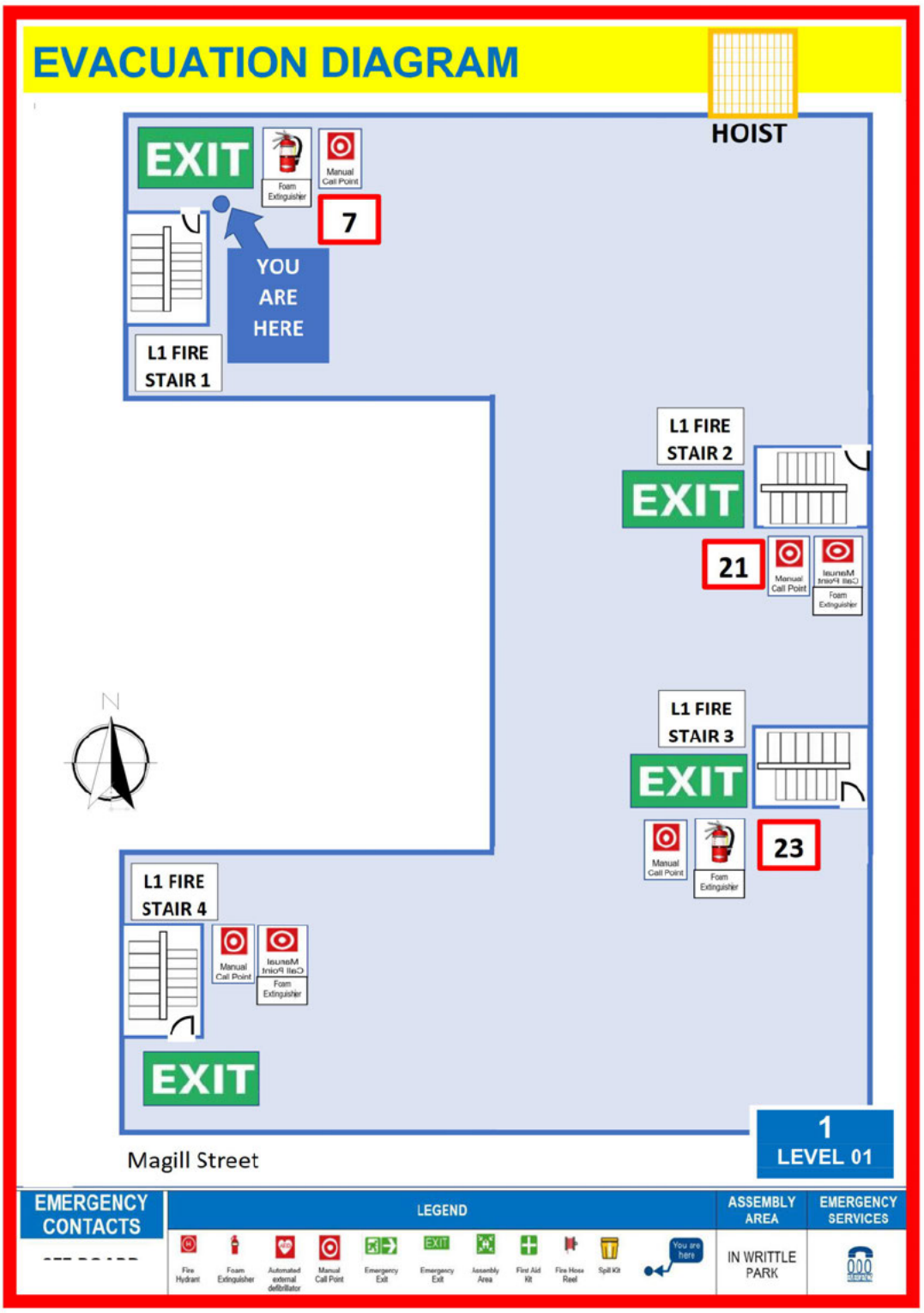
Minimum Requirements		Yes
Position of Diagram		
Between 1200mm to 1600mm above the finished floor surface		[☒]
Visible to visitors/workers		[☒]
Correct orientation to the direction of egress (i.e. not upside down), it must reflect the building/site layout regarding the direction of egress		[☒]
Size of Diagram		
Floor plan size in diagram is min. (200mm x 150mm)		[☒]
Overall size of diagram is min (210mm x 297mm) (i.e. A4)		[☒]
Written Words on Diagram		
Title must be: EVACUATION DIAGRAM		[☒]
Workplace name and address of the premises displayed		[☐]
Date Issued: Date diagram is authorised for use		[☐]
Validation Date: Date diagram no longer valid for use (max 5 years from date of issue)		[☐]
Required identification points (written words) on diagram		
YOU ARE HERE – with correct orientation		[☒]
Required identification points (the use of diagrams with a legend on the bottom)		
Hose reel locations identified – symbol in red		[☒]
Hydrant locations identified – symbol in red		[☒]
Extinguisher locations identified (as per AS/NZS 1841.1)		[☒]
Designated exit locations identified - symbols in green		[☒]
Where installed and applicable the following are located on the Diagram:	**N/A**	
Warden Intercommunication Points (WIPs) – symbol in red	[☒]	[☐]
Manual Call Points (MCP) including nurse call – symbol in red	[☐]	[☒]

Emergency Call Points (ECPs) – symbol in red	[☒]	[☐]
Emergency Warning & Intercommunication System (EWIS) – symbol in red	[☒]	[☐]

Minimum Requirements (continued)	N/A	Yes
Warden Intercommunication Points (WIPs) – symbol in red	[☒]	[☐]
Manual Call Points (MCP) including nurse call – symbol in red	[☐]	[☒]
Emergency Call Points (ECPs) – symbol in red	[☒]	[☐]
Emergency Warning & Intercommunication System (EWIS) – symbol in red	[☒]	[☐]
Fire Blanket locations identified - symbol in red	[☒]	[☐]
Fire Indicator Panels (FIP) – symbol in red	[☒]	[☐]
Refuge locations identified – (refuge definition - an area on a floor that is specifically designed to protect people from heat, smoke & toxic gases & which provides direct access to an exit)	[☒]	[☐]

Additional Non-Mandatory Items Included		
Floor Plan size in diagram is min A4 (210mm x 297mm)	[☒]	[☐]
Total size of diagram is min A3 (297mm x 420mm)	[☒]	[☐]
Direction of opening doors on designated exits	[☒]	[☐]
North	[☐]	[☒]
First Aid Stations and/or Kits, white cross on green background	[☒]	[☐]
Hazardous chemicals storage location	[☒]	[☐]
Spill Kits	[☒]	[☐]
Emergency information i.e. 000	[☐]	[☒]
Warden Details	[☐]	[☒]
Paths of travel, coloured green	[☒]	[☐]

Example of a (compliant) Evacuation Diagram with minimum elements listed: (Size A4)]



APPENDIX FOUR – FIRST AID LOCATIONS

APPENDIX FIVE – PERSONAL EMERGENCY EVACUATION PLAN

Nil

APPENDIX SIX – FIRST AID RISK ASSESSMENT

The size and location of the workplace	
Scope of workplace	New 13 storey Acute Services Building
Access between floors	Stairs
Geographic size of workplace	65,000 m2
Nearest Hospital	Prince of Wales
Maximum time to medical service	5 minutes
The number and composition of the workers and other persons at the workplace.	
Number of workers	Currently averaging 200 – peak at 500
Number of other persons	Visitors - averaging approximately 6 a day
Shifts worked	One
Overtime worked	Yes
Remote or isolated workers	No
Known health conditions effecting risk	COVID 19
Injuries, illnesses and incidents	
Last 12 months incident data	6 X MTI, 3X LTI
Incidents not resulting in injury	3
Other	20 first aid treatments / report only

Nature of the work carried out and the nature of the hazards at the workplace		
Hazards	**How the hazard could cause harm**	**Likelihood of occurrence and degree of harm**
Work at Height	Falls of material/people	Possible risk of daily exposure. Major injuries
Electricity	Electric shock, electrocution	Possible risk of daily exposure.
Hazardous chemicals: • Solvents • Hydrocarbons • Disinfectants • Cement slurries	Respiratory illness, cancer, dermatitis, chemical burn/other SDS confirms a first aid response is required	Possible risk of daily exposure to hazardous chemicals or substances.
Plant & Equipment	Contact with, operator error, failure of, exposure to flash or grinding sparks or other	Possible risk of daily exposure.
Manual handling	Muscular strain, cuts lacerations, puncture wounds and the like	Possible risk of daily exposure.
Housekeeping	Slips/Trips/Falls	Possible risk of daily exposure.

Afternoon shift	Worker fatigue Reduced visibility (hours of darkness)	Possible risk of daily exposure. Major injuries
Radiation	Welding activities; and Work in direct sunlight	Possible risk of daily exposure.
Infection risk for First Aiders	Application of first aid	Risk of exposure to infectious disease
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Required First Aid	
Number of first aid personnel needed	Currently 6 Lendlease occupational first aiders on site
Training and competencies for LLB first aid personnel	Occupational first aid & apply first aid
Number and location of kits	5 full kits – 4 in first aid, 1 on top of main jump
Contents of first aid kits and modules	[ ]
Other First Aid Items	2X Defibrillators – 1 in grab & go, 1 in first aid, Oxygen Resuscitator, 2X eye wash kits
Kit maintenance	First Aiders to check all First Aid Kits

Consultation Arrangements	
Risk Assessment	Conducted with EHS Committee
Subcontractors	Requirements for subcontractor first aid confirmed during Works to Proceed meeting
Workers	Via workplace induction

APPENDIX SEVEN – LOG OF EVENTS

Workplace:	[ ]	**Date:**	[ ]
Time	**Details of Action / Activity**		
	Emergency declared by _____or Alarm sounded (delete whichever N/A)		

APPENDIX EIGHT – CYCLONE CHECKLIST OFFICE

Location:		**Date:**		**Time completed:**	

Person Responsible:		**Complete**	**Hours Required**
1.	Check perimeter of building for loose items.		
2.	Fire extinguishers stored inside buildings.		
3.	Rubbish bins emptied and stacked.		
4.	All windows closed and locked.		
5.	Close air conditioners vents.		
6.	Refrigerators emptied.		
7.	Close all internal doors.		
8.	All desks cleared and tidied.		
9.	Records and drawings of significance removed from site or stored in waterproof containers.		
10.	Computers turned off, may need to remove from site.		
11.	Phone and email manned until site evacuates.		
12.	All electrical equipment turned off and power leads pulled out of wall sockets. Isolate power at the main switch box. (Electrician to isolate all power in compound under Lendlease Workplace Manager's instructions).		
13.	On evacuation close and lock all doors.		
14.			

Other / Comments

Signature:	

APPENDIX NINE – CYCLONE CHECKLIST MEALS ROOMS AND TOILETS

Location:		**Date:**		**Time completed:**	
Person Responsible:				**Complete**	

1.	All windows locked.		
2.	Air conditioners turned off and vents closed.		
3.	Tie down drink machines and ice machines, or empty and move inside buildings.		
4.	Rubbish bins emptied and stored inside building.		
5.	Fire extinguishers to be stored inside.		
6.	Refrigerators to be emptied.		
7.	All outside furniture to be placed inside (Note: except for concrete furniture).		
8.	Noticeboards to be removed and placed inside buildings.		
9.	All electrical equipment turned off and power leads pulled out of wall sockets. Isolate power at the main switch box. (Electrician to isolate all power in compound under Lendlease Workplace Manager's instructions).		
10.	On evacuation close and lock all doors.		
11.			
12.			
13.			
14.			

Other / Comments

Signature:

APPENDIX TEN – CYCLONE CHECKLIST LAYDOWN, CONTAINER & WORK AREAS

Location:		Date:		Time completed:	

Person Responsible:		Complete	Hours Required
1.	All vendor equipment secured.		
2.	Light steel work and pipes to be secured.		
3.	Generators removed from site or placed in containers.		
4.	All small pieces of equipment/material stored in containers.		
5.	All tarpaulins to be removed and stored in containers.		
6.	Welding machines to be placed together and secured, or removed from site.		
7.	All oil / fuel drums to be removed from site.		
8.	Formwork assessed (on an individual basis) and secured		
9.	All fire extinguishers removed and placed in containers.		
10.	Floor plate/grid mesh secured.		
11.	All loose scaffolding removed and placed in stillages and secured. Scaffold tag to be removed and re-inspected after event. Hand rails, planks and kick plates to be secured. All mobile scaffolding to be dismantled and removed from site or stored in containers. All shade cloth removed.		
12.	All materials and equipment that can suffer water damage raised from floors, ground, or stored in containers.		
13.	Gas cylinders placed in containers or removed from site, all hoses and valves to be disconnected.		
14.	Signage, star pickets and barricading to be removed and stored (only if area is within fenced construction zone)		
15.	Rubbish skips to be emptied and removed from site, or removed to central collection point and secured.		
16.	All loose material to be bundled together and secured. If possible store in a container, including pallets.		
17.	Traffic management road signage collected and placed in containers – ensure removal of does not create a hazard for road users.		
18.	Chain blocks removed and not left insitu		

19.	All temporary power boards disconnected and stored in a container, unless installed inside a secure structure.		
20.	All electrical leads rolled up and stored in container. All electrical equipment turned off. All electrical equipment turned off and power leads pulled out of wall sockets). Isolate power at the main switch box. (Electrician to isolate all power in compound under Lendlease Workplace Manager's instructions).		

Other / Comments

Signature:

APPENDIX ELEVEN – CYCLONE CHECKLIST PLANT

Location:		Date:		Time completed:	

Person Responsible:		Complete	Hours Required
1.	Plant parked on high ground or removed from site.		
2.	Loose items of rigging gear stored.		
3.	Cabs closed and secured.		
4.	Slew brake and pin locked in position.		
5.	Hooks secured.		
6.	Boom down, hydraulic crank – stow job away.		
7.	All equipment lowered.		
8.	All vehicle fuel tanks full.		
9.	Brakes applied and set.		
10.	Electrical isolator off or battery disconnected.		
11.	Contact numbers for personnel with keys to be recorded below in comments section		
12.			
13.			
14.			

Other / Comments

Signature:

APPENDIX TWELVE – CYCLONE CHECKLIST WEEKLY

Location:		Date:		Time completed:	

Person Responsible:		Complete	Hours Required
1.	Redundant scaffold removed.		
2.	Redundant barricading removed and star pickets in container.		
3.	Redundant materials removed off site.		
4.	Areas clear of rubbish and general housekeeping completed.		
5.	Timber stacked or placed in skip.		
6.	Stocks of *tie down materials* held on site		
7.	Containers tied down.		
8.	Redundant material removed from site.		
9.	Employee and sub contract supervisor contact details current?		
10.			
11.			
12.			
13.			
14.			

Other / Comments

[redacted]:

[APPENDIX THIRTEEN]– PLAN INDUCTION RECORD

Name	Date	Signature
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(Print additional pages as required)

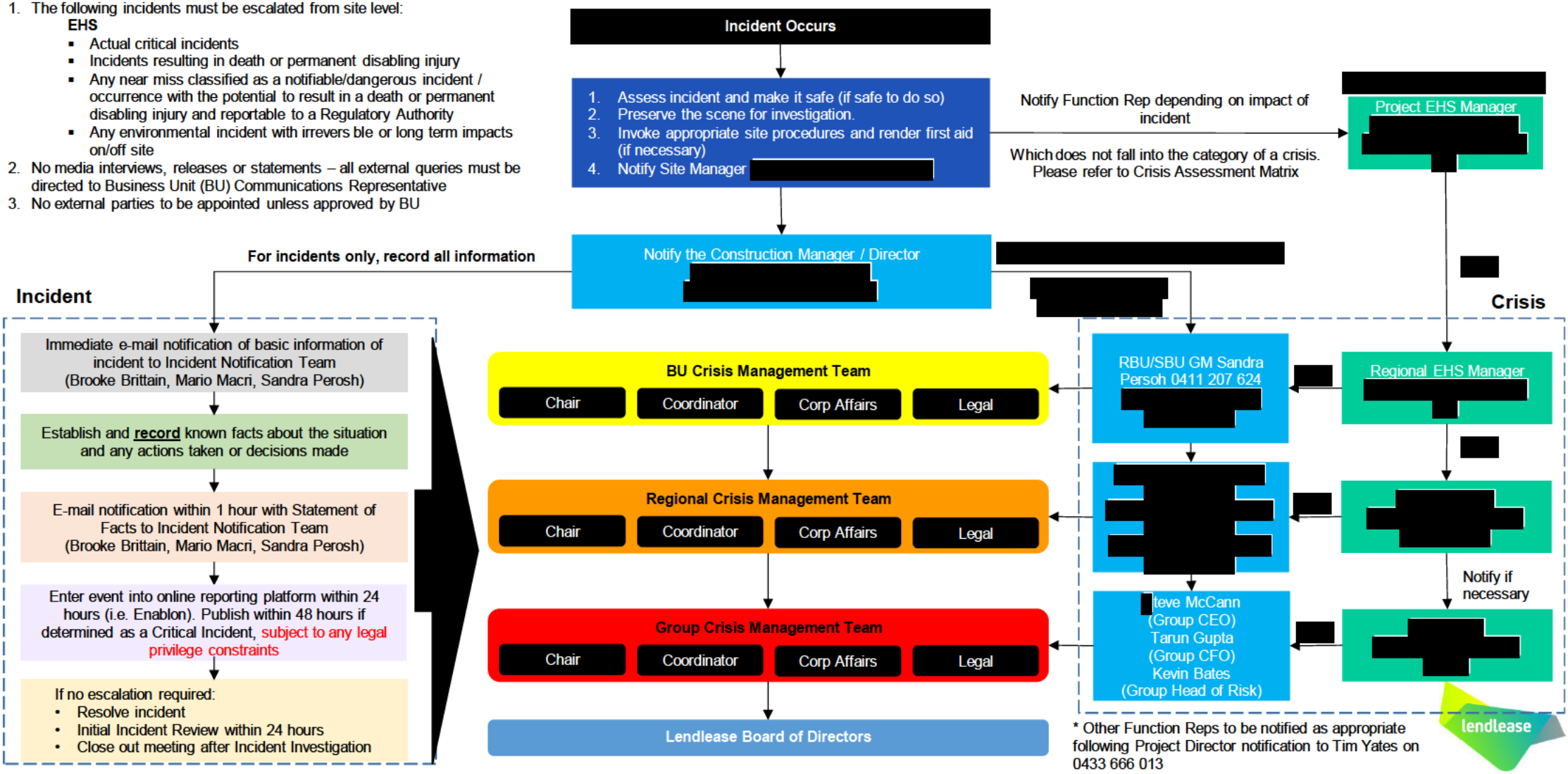
APPENDIX FOURTEEN – CRISIS ESCALATION PROTOCOL

Crisis Incident Escalation Protocol

V1.3 - 20/08/2020

Mandatory Rules

1. The following incidents must be escalated from site level:
   EHS
   - Actual critical incidents
   - Incidents resulting in death or permanent disabling injury
   - Any near miss classified as a notifiable/dangerous incident / occurrence with the potential to result in a death or permanent disabling injury and reportable to a Regulatory Authority
   - Any environmental incident with irrevers ble or long term impacts on/off site
2. No media interviews, releases or statements – all external queries must be directed to Business Unit (BU) Communications Representative
3. No external parties to be appointed unless approved by BU



Incident Escalation Protocol

Crisis Assessment Matrix

		HEALTH SAFETY & WELLBEING	FINANCIAL	LEGAL / REGULATORY	REPUTATION & BRAND	ENVIRONMENT	PEOPLE	BUSINESS CONTINUITY	TECHNOLOGY, DATA & ASSET PROTECTION	PERFORMANCE
RED	GROUP CRISIS TEAM	• Fatality due to Injury or Occupational Illness. • Kidnapping of an employee. • Evacuation of employees due to threat of fatality.	• Rest of life Margin on Revenue <10% for a Development Project. • Current or forecast peak capital >=A$30m for a Development Project. • Project with Forecast Gross Margin negative variance from Strike >A$20m for a Construction Project. • Project with Forecast Gross Margin loss of >A$5m for a Construction Project. • Hostile takeover bid received. • Loss of support of multiple key investors (eg loss of > 1 ASX-defined significant security holders). • Credit rating changes	• Breach of contract, law or regulation resulting in legal action incurring a very large impact. • Fraud involving bribery or corruption committed by a Lendlease employee. • Extortion. • Class action lawsuit. • Criminal investigation leading to a subpoena. • ASX (Australian Stock Exchange) suspends LLC share trading. • Loss of regulatory authorisation for an LLC entity.	• Global or regional reputation impact. • Adverse global or regional media coverage. • Government inquiry. • Public or major stakeholder outcry.	• Irreversible on-site and/or off-site damage. • On-site and/or off-site damage with clean up or remedy work incurring a very large impact • Negative mentions from powerful Green organisation	• Multiple key executives or directors leave the company – unplanned. • Industrial dispute incurring >10 days lost time at a very large site, or > 5 days if affects a region or multiple business units. • Levels of unplanned attrition are greater than 15% in any team in a quarter.	• Damage to a large office or facility or other event requiring relocation for > 10 days. • Unable to operate critical processes in a region or a large business unit for > 5 days.	• LLC Data Centre unavailable for > 5 days. • Critical IT system unavailable for > 5 days. • Data security breach (or suspected breach) or virus resulting in global/multiple regional impact to Lendlease or related parties, including individuals. • Loss of market sensitive confidential information or proprietary data	• Milestone, deadline or agreed level of quality / performance not achieved incurring a very large likelihood of liquidated damages (or other damages) being applied, or likely termination of contract.
ORANGE	REGIONAL CRISIS TEAM	• Injury or Occupational Illness that results in permanent disability.	• Rest of life Margin on Revenue <12% for a Development Project. • Current or forecast peak capital of A$20m-A$30m for a Development Project. • Project with Forecast Gross Margin negative variance from Strike of A$10m-A$20m for a Construction Project. • Project with Forecast Gross Margin loss of >A$2.5m for a Construction Project. • Loss of support of key investor (eg loss of an ASX-defined significant security holder). • Credit rating outlook changes.	• Breach of contract, law or regulation resulting in legal action incurring a large impact. • Fraud committed by a Lendlease employee of a nature other than bribery or corruption. • Criminal investigation not leading to a subpoena. • Regulatory disciplinary action against an LLC entity. • Immediate unplanned disclosure required to ASX or other regulatory body.	• National reputation impact. • Adverse national media (including social media) coverage. • ASX requires press statement. • Major public or stakeholder concern.	• Treatable on-site and/or off-site damage with clean up or remedy work incurring a large impact.	• Key executive leaves – unplanned. • High staff turnover in critical areas. • Not considered an 'employer of choice'. • Industrial dispute incurring 5-10 days lost time at a large site or a single business unit, or < 5 days if affects a region or multiple business units. • Levels of unplanned attrition are greater than 10% in any team in a quarter.	• Damage to a large office or facility or other event requiring temporary relocation for < 10 days. • Damage to a small to medium office or facility or other event requiring temporary relocation for > 10 days. • Unable to operate critical processes in a region or a large business unit for > 1 day or a small business for > 5 days.	• Data centre unavailable for 2-5 days. • Critical IT system unavailable for 2-5 days. • Data security breach (or suspected breach) or virus resulting in regional impact to Lendlease or related parties, including individuals. • Loss of non-market sensitive confidential information or proprietary data or customer information. • Any breach or suspected data security breach impacting Department of Defence or related government entities or departments.	• Milestone, deadline or agreed level of quality / performance not achieved incurring a large likelihood of liquidated damages (or other damages) being applied, or potential termination of contract.
YELLOW	BU/LOCATION CRISIS TEAM	• Injury or Occupational Illness that results in Lost Time.	• Direct loss or lost opportunity of A$2.5-10M. • Return on investment changed by A$2.5-10M.	• Breach of contract, law or regulation resulting in legal action incurring a medium impact that does not lead to a criminal investigation.	• Local reputation impact. • Adverse local media coverage	• Treatable on-site and/or off-site damage with clean up or remedy work incurring a medium impact.	• Key operational director / manager leaves – unplanned. • High staff turnover in critical areas. • Industrial dispute incurring < 5 days lost time at a large site or multiple sites within a single business unit. • Levels of unplanned attrition are greater than 5% in any team in a quarter.	• Damage to a small to medium office or facility or other event requiring temporary relocation for < 10 days. • Damage to an office or facility requiring repairs of a medium impact but still operable with appropriate personnel arrangements in place. • Unable to operate critical processes in a small business unit for > 1 day.	• Data centre unavailable for < 2 days. • Critical IT system unavailable for < 1 day or suffers a series of prolonged outages over a period of time. • Data security breach (or suspected breach) or virus resulting in limited impact to Lendlease or related parties, including individuals.	• Milestone, deadline or agreed level of quality / performance not achieved incurring a medium likelihood of liquidated damages (or other damages) being applied.

APPENDIX 8 – RAP

APPENDIX 9 – CEMP FOR IASB

APPENDIX 10 – OUTDOOR LIGHTING ASSESSMENT FOR EXTENDED WORKING HOURS