



RESIDENTIAL BUILDINGS R8/R9

BARANGAROO STAGE 1

MP11_0002

**ENVIRONMENTAL, CONSTRUCTION, AND SITE
MANAGEMENT PLAN**

OCTOBER 2012

**Residential Buildings R8/R9 ECSMP
Barangaroo South**

Document 11_0002

Lend Lease Project Management & Construction

ABN 97 000 098 162

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Please note: Any reference within this report to 'Lend Lease' is intended to refer to either Lend Lease Project Management & Construction or Lend Lease (Millers Point) Pty Ltd.

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Abbreviations

LL:	Lend Lease (Millers Point)
LLPM&C:	Lend Lease Project Management & Construction
BDA:	Barangaroo Delivery Authority
DP&I:	NSW Department of Planning & Infrastructure
ECSMP:	Environmental, Construction and Site Management Plan
EHS:	Environment, Health and Safety
EMS:	Environmental Management System
EPA:	NSW Environment Protection Authority
GFA:	Gross Floor Area
MSDS:	Materials Safety Data Sheet
PM:	Project Manager
RAP:	Remedial Action Plan
RWP:	Remedial Work Plan
SM:	Site Manager
SWMS:	Safe Work Method Statement
WMP:	Waste Management Plan

1 Executive Summary

This Environmental, Construction and Site Management Plan (ECSMP) has been developed by Lend Lease Project Management & Construction for Lend Lease Millers Point (hereafter referred to as Lend Lease) to provide a framework to address environmental issues associated with the *Residential Buildings R8/R9, Planning Application (MP11_0002)*, of Barangaroo South, Millers Point, NSW.

As part of the works associated with this phase of the project, Lend Lease proposes to undertake:

- Construction of low-rise building superstructure;
- Cladding and façade works;
- Building services; and
- Building finishes.

Works are proposed to be undertaken between the hours of 7.00am and 6.00pm Monday-Friday and between 7.00am and 5.00pm on Saturdays. No work will be undertaken on Sundays or public holidays.

The site will be enclosed by hoardings along all frontages. Site vehicular access will be off Hickson Road. Lunch, change and ablution facilities will be provided for the use of all site personnel.

All site personnel, including subcontractors and visitors, will be inducted under Lend Lease's Environment, Health and Safety Management System. Records of all induction, ongoing training and reporting will be maintained.

Cranes will be erected along the western elevation. A materials handling team member will ensure the efficient management of deliveries and removals and hence minimise disruption to traffic around the site.

Site specific environmental management protocols will be established to ensure the company's environmental responsibilities are implemented and documented.

Primary contact(s) to deal with environmental emergencies will be nominated and their 24 hour/day 7 days/week contact details prominently displayed on site.

Management and monitoring of the noise and vibration generated from construction activity will be addressed according to the recommendations of the *Renzo Tonin, Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Noise & Vibration Report*.

Air Quality Management will be addressed in accordance with the recommendations of the *AECOM, Barangaroo South – R8/R9 Residential Buildings: Air Quality Impact Assessment – Project Application*.

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Dust suppression, as well as erosion and sediment control measures, will be installed prior to detailed excavation works and service installations commencing as part of PA1, Basement works, and these shall be maintained for the duration of construction.

Surface and ground water quality, including Harbour water quality, will be assessed and monitored with monitoring in place as part of PA1 Basement works. A Remedial Action Plan (RAP) prepared by AECOM will be implemented for remediation of contaminated soil and water as part of the PA1 Basement works.

Management of construction generated solid and liquid waste will be addressed in accordance with the recommendations of the *Arup, Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Waste Management Plan*.

Appropriate control measures will be implemented, documented and monitored to control the potential for leakage of hazardous substances and dangerous goods during storage and handling.

Vehicular and pedestrian traffic management and controls will be implemented and monitored to minimise disruptions to site activities, the surrounding road network, as well as the ongoing operation of the passenger terminal. The site haulage route and foreshore Promenade will continue to be managed as reported in PA1.

The majority of utility services within the site will be made redundant as part of the PA1, Basement works. Those services within and surrounding the site to remain will be located and protected as necessary during construction.

A comprehensive stakeholder action plan will be implemented to maintain a good neighbour policy with surrounding businesses, residents and special interest groups during construction.

2 Project Understanding

2.1 Introduction

This report supports a Project Application submitted to the Minister for Planning pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Application seeks approval for construction of residential buildings (known as Buildings R8 and R9) and associated works at Barangaroo South as described in the Project Description section of this report.

This ECSMP covers the *Construction of Residential Buildings R8 and R9 (MP11_0002)* and incorporates (but is not limited to) the following general scope:

- Establishment of appropriate environmental protection structures;
- Site establishment including amenities, hoardings, material/waste storage areas;
- Detail excavations for substructure construction;
- Construction associated with substructure components;
- Formwork, falsework and associated construction activities relating to substructure and superstructure construction;
- Construction of columns, beams and post tensioned concrete floor slabs;
- Internal building services, including electrical, hydraulic, mechanical, communications, gas and vertical transportation;
- Fire services systems;
- Façade construction;
- Local detail civil works surrounding the building; and
- Landscape elements within and surrounding the building.

2.2 Background

The 22 hectare Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Stage 2 and Barangaroo Stage 1 (herein after known as Barangaroo South).

Lend Lease was successfully appointed as the preferred proponent to develop Barangaroo Stage 1 (otherwise known as Barangaroo South) on 20 December 2009.

2.3 Purpose of This Report

This report has been prepared to accompany the Project Application for Residential Buildings R8 and R9 and associated works at Barangaroo South. It addresses the relevant Director-General Requirements for the project. These Director-General Requirements are discussed in the Environmental Assessment Report that has been prepared to support the application.

2.4 Planning History and Framework

2.4.1 Concept Plan

On 9 February 2007, the Minister approved a Concept Plan for the site, and on 12 October 2007, the land was rezoned to facilitate its redevelopment. The Approved Concept Plan

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allowed for a mixed use development involving a maximum of 388,300m² of gross floor area (GFA) contained within 8 blocks on a total site area of 22 hectares.

Modification No. 1 was approved in September 2007, which corrected a number of minor typographical errors.

On 25 February 2009, the Minister approved Modification No. 2 to the Concept Plan. The Approved Concept Plan as modified allowed for a mixed use development involving a maximum of 508,300m² of GFA contained within 8 blocks on a total site area of 22 hectares.

On 11 November 2009 the Minister approved Modification No. 3 to the Concept Plan to allow for a modified design for the Headland Park and Northern Cove. The Approved Concept Plan as modified allows for a mixed use development involving a maximum of 489,500m² of GFA across Barangaroo as a whole.

On 16 December 2010 the Minister approved Modification No. 4 to the Barangaroo Concept Plan. The Approved Concept Plan as modified allows for approximately 563,965sqm GFA of mixed use development across the entire Barangaroo site.

This Project Application forms one of a series of individual applications that Lend Lease will be submitting to deliver Barangaroo South. This Project Application is consistent with the established planning framework for the site, including the approved Concept Plan (as modified).

2.4.2 Bulk Excavation and Construction of a Basement Car Park (MP10_0023)

A Project Application (MP10_0023) has been approved for the bulk excavation and construction of a basement car park to accommodate up to 880 car parking spaces and associated services and infrastructure to support the initial phases of the future development of Barangaroo South.

Two Section 75W Modification Applications were subsequently submitted seeking to modify MP10_0023 to extend the area of the approved basement to the south, and to modify the depth of the excavation and change the reduced levels of the basement structure. These modifications were approved by the Minister for Planning on 3 March and 19 April 2011.

Two further Section 75W applications seeking to modify MP10_0023 have been submitted to the Department of Planning and Infrastructure (DP&I) and are currently being assessed. These seek approval to batch concrete on site, and install a harbour heat rejection system, both using similar construction methodologies as detailed and approved as part of the original project application.

2.4.3 Commercial Building C4

A project application for Commercial Building C4 was submitted to DP&I seeking consent for construction and use of Building C4 with a maximum 109,952 m² GFA accommodating commercial and retail uses, a child care centre, bicycle parking and associated use and

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operation of car parking and loading facilities in the basement. Consent was issued by the Minister on 3 March 2011. A Section 75W application was subsequently submitted seeking approval to modify certain elements of the approved C4 building, which was approved on 24 February 2012.

Commercial Building C4 is located to the immediate east of proposed Building R8.

2.4.4 Commercial Building C3

A project application for Commercial Building C3 was submitted to DP&I seeking consent for construction and use of Building C3 with a maximum 115,291 m² GFA accommodating commercial and retail uses, a child care centre, bicycle parking and associated use and operation of car parking and loading facilities in the basement. Consent was issued by the Minister on 24 April 2012.

2.4.5 Commercial Building C5

A project application for Commercial Building C5 was submitted to DP&I seeking consent for construction and use of Building C5 with a maximum 90,567m² GFA accommodating commercial and retail uses, bicycle parking and associated use and operation of car parking and loading facilities in the basement. Consent was issued by the Minister on 24 April 2012.

2.5 Site Location

Barangaroo is located on the north western edge of the Sydney Central Business District, bounded by Sydney Harbour to the west and north, the historic precinct of Millers Point (for the northern half), The Rocks and the Sydney Harbour Bridge approach to the east; and bounded to the south by a range of new development dominated by large CBD commercial tenants.

The Barangaroo site has been divided into three distinct redevelopment areas (from north to south) – the Headland Park, Barangaroo Stage 2 and Barangaroo South.

The Project Application Site extends over land generally known and identified in the approved Concept Plan as Block 2 which comprises Lot 5 in DP 876514.

2.6 Project Description

This Project Application seeks approval for the construction of two predominantly residential buildings within Block X of the approved Concept Plan (as modified), and associated public domain works. The proposed location of Buildings R8 & R9 within Barangaroo South is illustrated indicatively at **Appendix A**.

Buildings R8 & R9 sit entirely within the Lot 5 and Lot 6 of DP 876514, which are owned by the Barangaroo Delivery Authority. The Building R8 & R9 Project Application site has an area of approximately 11,997 m².

The Project Application will seek approval for:

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Building R8

- total GFA of approximately 8,948 m² including predominantly ground floor retail uses (approximately 1,048 m² GFA) and approximately 80 residential apartments;
- maximum height of approximately RL 41.5;

Building R9

- total GFA of approximately 8,400 m² including predominantly ground floor retail uses (approximately 1,050 m² GFA) and approximately 70 residential apartments;
- maximum height of approximately RL 36.7.

Basement car parking spaces for each building's future tenants and servicing and loading dock spaces and bicycle spaces (within the basement car park structure approved under Project Application MP10_0023) will be allocated as part of the proposal.

Landscaping and public domain works within the Buildings R8 & R9 site area will also be undertaken, including landscaping of the waterfront promenade to the west.

Indicative drawings of the proposed built form of Buildings R8 & R9 are included at **Appendix A**.

2.6.1 Project Location

The site is generally described by the Construction Zone Licence plan issued by the Barangaroo Delivery Authority. The supporting plans included in **Appendix A** illustrate the extent of the license area and the location of the Buildings R8 & R9 construction area.

2.6.2 Project Activities

The initial works associated with the project; demolition of above ground structures, demolition of existing pavements and associated disused in-ground services, site establishment, archaeological test pitting, vegetation clearing and trimming, basement excavation and associated stormwater drainage within the Barangaroo South development footprint, and construction of basement car parking, are the subject of a separate planning approval (Bulk Excavation and Basement Car Parking, PA1, MP10_0023).

2.6.3 Project Timing and Scheduling

The expected duration of the project is approximately seventeen (17) months upon initial substructure installation.

2.7 ECSMP Context

This ECSMP links the approval process and the Environment Health and Safety (EH&S) management system to be implemented for construction.

This document generally describes environmental management protocols that will be implemented through the EH&S management system. The ECSMP is a conceptual management tool that will assist in informing suitable high standards of environmental

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protection during construction and will provide guidance for environmental controls to be implemented before and during construction.

It should be noted that a Construction Framework Environment Management Plan (CFEMP), and associated sub-plans, is used to implement the requirements of planning approvals, licences and permits throughout construction. The CFEMP is updated on a regular basis, has been reviewed by the EPA, and approved by the Director General of the Department of Planning & Infrastructure. The CFEMP and associated sub-plans will be updated to include any additional requirements from this planning application.

2.7.1 Project Environmental Studies

The following Studies have been referenced for this plan:

- AECOM, Barangaroo South – R8/R9 Residential Buildings: Air Quality Impact Assessment – Project Application.
- Arup, Barangaroo South – R8/R9 Residential Buildings: Climate Change and Sea Level Rise Report – Project Application.
- Arup, Barangaroo South – R8/R9 Residential Building: Construction Traffic Management Plan – Project Application.
- Arup, Barangaroo South – R8/R9 Residential Buildings: Geotechnical Report – Project Application.
- Arup, Barangaroo South – R8/R9 Residential Buildings: Transport Management and Accessibility Plan (TMAP) – Planning Application.
- Arup, Barangaroo South – R8/R9 Residential Buildings: Travel Demand Management Plan – Project Application.
- Arup, Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Waste Management Plan – Project Application.
- Brown Smart, Barangaroo South – R8/R9 Residential Buildings: Structural Engineering Report – Project Application.
- Cardno, Barangaroo South – R8/R9 Residential Buildings: Stormwater and Drainage Assessment – Planning Application.
- Cardno, Bulk Excavations and Basement Car Parking (PA1) – Barangaroo, South (MP 10_0023): Environmental Construction and Site Management Plan.
- DeFire, Barangaroo South – R8/R9 Residential Buildings: Fire Engineering – Project Application.
- Lend Lease Design, Barangaroo South – R8/R9 Residential Buildings: ESD Report – Project Application.
- Renzo Tonin, Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Noise & Vibration Report – Project Application.

2.7.2 Key Issues of the Director General's Requirements

Key Issue 15 of the Director General's Requirements describes the Minister of Planning's requirement for an Environmental, Construction and Site Management Plan:

15. Environmental, Construction and Site Management Plan

The EA shall provide an Environmental and Construction Management Plan for the proposed works, and is to include:

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- *Community consultation, notification and complaints handling;*
- *Impacts of construction on adjoining development and proposed measures to mitigate construction impacts;*
- *Noise and vibration impacts on and off site;*
- *Air quality impacts on the neighbourhood;*
- *Odour impacts;*
- *Water quality management for the site; and*
- *Waste and chemical management.*

The sections where each of the above requirements are addressed in the ECSMP are shown in **Table 2.1**.

Table 2.1 – Key Issues

Key Issue	Item to be Addressed	Where Addressed
Community Consultation, Notification and Complaints	How the proponent intends to address consultation, notification and complaints	Section 5.1.10
Construction Impacts	Impacts of construction on adjoining developments and measures to mitigate impacts	Section 5
Noise and Vibration Impacts	Impacts of noise/vibration on and off site	Section 5.1.1, 5.1.2
Air Quality Impacts	Air quality impacts on surrounding neighbourhoods	Section 5.1.3
Odour Impacts	Impacts of odour on the surrounding environment	Section 5.1.3
Water Quality	Water quality management controls for the site	Section 5.1.4, 5.1.5, Appendix A
Waste Management	Waste management controls for the site	Section 5.1.6
Chemical Management	Chemical management controls for the site	Section 5.1.7
Traffic Management	Traffic management controls	Section 5.1.8

2.8 Lend Lease Environment Health and Safety Management System

2.8.1 Background information

LLPMC's construction management will be implemented through the Environment Health and Safety (EH&S) management system. This ECSMP is intended to integrate the requirements of the environmental impacts noted at concept assessment with the operational systems process of the EH&S management system.

The EH&S Management System is based on the ISO 14000 model and has been accredited under the NSW Government Environmental Management Systems Guidelines. The management system translates the LLPMC Environment, Health and Safety Policy into processes so that environmental responsibilities and performance can be monitored, reported and improved. The processes for monitoring procedures to ensure continual improvement in environmental performance are part of the EH&S Management System and are referred to as EH&S throughout this document.

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2.8.2 Lend Lease Environment Health & Safety (EH&S) Management System

The LLPMC EH&S Management System has been developed to focus on the production of a project specific EH&S Plan, which is where the majority of construction activity risks must be identified and managed. Both project environmental and safety issues are planned and managed within the EH&S Plan, prepared specifically for each project based on a template. Mandatory company procedures (i.e. risk assessment, reporting, auditing, and emergency / incident management etc), standard forms and minimum company standards are all included in the template. While there are common management procedures and forms used for environmental and safety assessment, a specific CFEMP and associated environmental management sub-plans are prepared for project specific conditions.

2.8.3 EH&S Standards

Company EH&S Standards and requirements apply to all personnel on the project. Project specific rules are to be developed in accordance with Company EH&S Standards. Project specific requirements will be explained in tender packages and clarified in site inductions.

A visitor's register will be maintained on site at all times with all visitors to sign the register before accessing site with a site inducted person.

2.8.4 Roles and Responsibilities

Project Roles and Responsibilities for EH&S will be detailed in the EH&S Plan.

Key staff and service provider responsibilities for the delivery of the Environment, Health and Safety Policy will be detailed in the EH&S Plan.

More specific Site Management Issues are discussed in **Section 3** and Environmental issues discussed in **Section 4**.

3 Site Management

3.1 Site Establishment

3.1.1 Introduction

The site for Buildings R8 & R9 is illustrated in the drawings in **Appendix A**. A general arrangement site plan is included with the documentation in **Appendix A**.

3.1.2 Site Working Hours

Works are proposed to be undertaken during the following hours:

- 7am to 6pm Monday to Fridays.
- 7am to 5pm Saturdays.
- No work will be undertaken on Sundays or public holidays.
- Out of hours works would be undertaken as required in emergency situations to ensure safety and environmental protection is maintained, such as the maintenance of environmental protection structures and the like.
- Dewatering and groundwater treatment operates on a 24 hour basis to manage groundwater from the site. These activities are relatively quiet and the treatment equipment will be located on site to ensure it is located away from sensitive receivers.

3.1.3 Contact Details

Contact details for the senior site representative will be displayed on site.

3.1.4 Parking

No on-site parking is proposed to be made available for general tradespersons or site personnel.

3.1.5 Security and Hoarding Management

The site will be enclosed by A Class hoardings for the construction phase as follows:

Hickson Road:

Class A painted hoarding along Hickson Road Work zone extending north from the Shelley Street intersection. Vehicle gates will be located up the northern end for access to and from site, typically to coincide with existing crossovers associated with the former Port use. This area will be secured by gateman and stop/go personnel to control pedestrian and vehicle traffic.

Shelley Street:

Shelley Street will be protected by a 3m high 'A Class' Hoarding until its redevelopment into the Margaret Street extension.

Western Frontage, (along the Promenade):

Class A hoarding will be erected along the Western Frontage with agreed allowance for a public thoroughfare through King Street Wharf.

Public access along the foreshore promenade will be reduced to a minimum 6m wide corridor to suit major construction activities such as piling, bulk excavation and the basement structure. When necessary, the foreshore promenade will be closed to the public in order to facilitate construction activities such as harbour intakes, outlets and promenade

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works. The Class A hoarding will be placed between the pedestrians and construction activities with an appropriate buffer zone from the works.

Northern Frontage:

The Northern Frontage will be protected by a Class A hoarding of minimum 2.4m height. It is anticipated that the temporary Cruise Terminal would be relocated to permanent facility at White Bay prior to R8 & R9 construction works commence.

Access Control:

To ensure controlled access is maintained on the project, a security swipe card system will be implemented. All construction workers and visitors will be issued with a swipe card at their induction. This will allow Lend Lease to monitor all onsite personnel at any given time.

3.1.6 Site Sheds and Amenities

Lunch, change and ablution facilities will be provided for the use of all site personnel. Workforce accommodation will be located on the northern side of the site. An indicative location for the site compound and amenities is shown on the drawings in **Appendix A**.

3.1.7 Safety Information

All employees on site must first complete the site induction in accordance with the Lend Lease EH&S management system.

In addition, all subcontractors must induct their employees into their specific safe work procedures and submit evidence of appropriate management mechanisms to Lend Lease.

Lend Lease will periodically conduct its own internal safety audits. The audit team will consist of:

- Lend Lease Safety Manager;
- Site EH&S Safety Coordinator; and
- Subcontractor Representative.

An EH&S information board will be erected and a copy of the Lend Lease EH&S policy will prominently be displayed on the board.

3.1.8 First Aid Facilities

Lend Lease will ensure First Aid Facilities are provided in accordance with WorkCover requirements. Occupational First Aid facilities will be established on site once the workforce numbers exceed 100. Subcontractors are to provide a First Aiders for their individual company works. A nominated first aider will be on site whenever work is being carried out. This will be either a Lend Lease or Subcontractor representative.

3.1.9 Approved plans to be on-site

In accordance with the conditions of consent, Lend Lease will maintain a copy of the approved and certified plans, specifications and documents incorporating conditions of approval and certification on site at all times.

3.1.10 Dilapidation Survey

A dilapidation survey has been completed for adjacent structures, domains and services infrastructure prior to overall works commencing

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3.1.11 Site Notice

In accordance with the conditions of consent, Lend Lease will display, at the boundaries of the site, the project's certifier and the relevant emergency contact name and contact Number.

3.1.12 Neighbours

Lend Lease has developed a Stakeholder Engagement Strategy (**Appendix B**) as part of ongoing engagement with the local community and key stakeholders. The main objective of this strategy is to provide a process that engages the community and key stakeholders in the delivery of Barangaroo South. The objectives are to:

- Ensure all stakeholders and affected community members are well informed about the Barangaroo South development and are given an opportunity to provide input into the project;
- Minimise impacts to affected residents and stakeholders; and
- Create opportunities for stakeholders to access transparent information on the project and provide forums for feedback and enquires.

Lend Lease has a commitment to an inclusive and pro-active community and stakeholder engagement process, which will be both responsive (to complaints) and proactive (with provision of information). The engagement will take many forms and will be agreed upon in conjunction with the Barangaroo Delivery Authority to align with their existing communications program.

3.2 Construction Methodology

3.2.1 General

The piling for footings and associated foundation works for the R8/R9 residential buildings below finished level will be undertaken in conjunction with the Bulk Excavation, Basement and Car Parking, PA1 works. The foundation and structure works for the buildings will involve the completion of one row of bored piers to the west of the marine wall outside the previously approved basement structure. A concrete beam is to provide the required structural foundation support system for a ground slab extension and service elements. The construction of the bored piers will involve the excavation of material from the site below the current approved basement loading dock level. These excavations may extend to a depth of in excess of 20 metres.

The methodology hereinafter is limited to the works associated with the substructure and superstructure for the buildings above the foundations and footings. All works will be carried out to satisfy the Consent Authority's requirements, ensuring safety and continuity of the works. Facilities, hoardings, notices, entrances, etc. will have already been established as part of the PA1 works.

3.2.2 Substructure Construction

On completion of the installation of the foundations and footings for the buildings, crane bases shall be prepared with reinforced concrete pads. Cranes will be erected using mobile cranes operated from within the site.

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Temporary services (electricity, water, stormwater and nurse call) will be installed along with the installation of permanent in-ground services via the already constructed basement structure.

Concrete pumps shall be positioned on site as necessary to best serve the element being poured.

3.2.3 Superstructure Construction

The tower construction will follow typical construction methodologies. Conventional low-rise formwork systems will be utilised for the falsework to the suspended levels, some structural precast may be used for some vertical elements such as the lift core. Suspended floors will be constructed with typical falsework / formwork systems progressively recycled up the tower floors as construction proceeds. Any ancillary formwork or falsework material will be loaded out of the lower floors and recycled onto the upper floors using high speed man and materials hoists / formwork hoists.

3.2.4 Building Services

Installation of building services will proceed in association with the progress of the superstructure. Access and materials handling will be undertaken via high speed man and materials hoists.

3.2.5 Building Cladding and Façades

Construction of building cladding and facades will proceed in association with the progress of the superstructure, making use of the trailing screens from the jump forms.

3.2.6 Building Finishes

Installation of building finishes will proceed in association with the progress of preceding programming items. Access and materials handling will be undertaken via high speed man and materials hoists.

3.2.7 Materials Handling

The key to the construction of the buildings will be well managed and efficient materials handling. A dedicated materials handling team member will manage and supervise deliveries to the project to alleviate congestion of the materials handling areas and ensure minimum disruption to the surrounding road networks. Key aspects of materials handling for the project are as follows:

- Craneage for basement and podium areas will be provided by mobile cranes and / or tower cranes;
- Mid-speed dual man and materials hoists shall be installed to move persons and materials between all levels of the project;
- Multiple tower cranes will be installed to support the construction of the building superstructures;
- Rubbish will be delivered to the on grade materials handling area via cranes or hoists. Forklifts with a rotator attachment shall be used to empty rubbish skip bins into larger 15 – 18 m³ bins;
- A series of loading platforms will be employed to assist with the delivery and removal of materials and rubbish from the tower; and

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- A formwork hoists may be installed to facilitate formwork materials recycling on the tower floors.

4 Environmental Management

4.1 General

This Environmental, Construction and Site Management Plan has been prepared with reference to available project environmental documents, applicable standards and guidelines.

4.2 Environmental Management Structure and Responsibility

The relevant ECSMP responsibilities are presented below in **Table 4.1**. Responsibilities will be implemented as part of the Project EH&S Plan.

Table 4.1 - ECSMP Responsibilities

Individual	Responsibility
All Staff including Sub-Contractors	<p>All staff have a responsibility for their own environmental performance and the impact they have on the environmental performance of the development. In particular, all staff should:</p> <ul style="list-style-type: none"> • Undertake all activities in accordance with the agreed plans of management, procedures and work methods. • Ensure that they are aware of the contact person(s) regarding environmental matters. • Report any activity that has resulted, or has the potential to result, in an environmental incident. • Ensure they attend the environmental training provided.
Lend Lease	<p>Lend Lease has the following responsibilities under the ECSMP:</p> <ul style="list-style-type: none"> • Provide clear guidance under the Lend Lease EH&S Management System so that work undertaken is consistent with legal and contractual requirements. • Provide adequate resources to allow effective development, implementation and maintenance of the EH&S Management System. • Participate and provide guidance in the regular review of the EH&S Management System and associated documents.
Lend Lease Project Manager	<p>The contractor's project manager will nominate the Environmental Manager. The EM will have responsibility for environmental management in accordance with relevant requirements, including:</p> <ul style="list-style-type: none"> • Prepare documents for the operational deployment of the guidelines of the ECSMP, CFEMP and related documents. • Provide environmental advice on matters specified in the conditions of approval, project contracts, licences and permits. • Comply with the requirements of the environmental documents. • Facilitate induction and training programs for all persons involved in the construction works. • Liaise with all relevant government authorities such as the EPA and DP&I. • Implement and review compliance with the EHS management system and associated environmental documents. <p>In addition, the Lend Lease Project Manager is responsible for:</p> <ul style="list-style-type: none"> • Apprise the Site Foreman of requirements of the EHS management system, and their responsibilities within them.

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Individual	Responsibility
	<ul style="list-style-type: none"> • Allocate resources to meet the requirements of the EHS management system. • Investigate complaints to determine effective resolution. • Nominate appropriate pollution control measures for proposed works. • Maintain all necessary monitoring records and reports. • Take action in the event of an emergency and allocating the required resources to minimise the environmental impact. • Report any activity that has resulted, or has the potential to result, in an environmental incident.
Site Foreman	<p>The Site Foreman is responsible to the Project Manager and has responsibilities under the EHS management system that include:</p> <ul style="list-style-type: none"> • Management of the works in accordance with the requirements of the environmental management system, work instructions, and associated documents including the implementation of environmental controls. • Undertake environmental duties as defined by the Project Manager. • Identify environmental risks. • Attend to spills or environmental incidents that may occur on site. • Report activity that has resulted, or has the potential to result, in an environmental incident immediately to the Project Manager. • Issue instructions and related information to employees that relate to environmental risks on site. • Where necessary, coordinate environmental inspections and maintain environmental records as defined by the EHS management system and work instructions.
Sub-Contract Personnel	<p>All sub-contract personnel must carry out the work in accordance with contract instructions and shall conduct their activities in an environmentally sound manner. All sub-contract personnel will undergo environmental induction before they commence any work on the construction site.</p>

4.3 Reporting

Reporting for environmental issues will generally be undertaken for:

- pre-construction compliance;
- construction monitoring;
- non-compliance;
- corrective action;
- complaint management;
- auditing.

The EH&S Management System will address and provide detail on safeguards outlined in this ECSMP. The EH&S Management System will coordinate and consolidate the appropriate protection and / or mitigation controls and directions before, during and after construction. The following items shall generally be considered as part of the EH&S Management System:

- community consultation;
- general hazards and risk mitigation;
- noise and vibration management;

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- air quality and odour control;
- contaminated soil and water management;
- stormwater and erosion management;
- waste management; and
- hazardous goods and chemical management.

4.4 Environmental Training

4.4.1 Site Induction Training

Site induction will be undertaken in accordance with the EH&S Management System.

Prior to commencing work on the project, all staff and subcontractors shall receive induction training that shall include the following environmental information as a minimum:

- Overall EH&S Management System structure;
- Developer's and Contractor's Environment Health and Safety Policy;
- Roles and responsibilities and site management contact details;
- Relevant legislation as may be deemed appropriate;
- Key environmental issues and controls (covering environmental issues related to air quality, water quality, erosion and sedimentation, noise, traffic and access as necessary);
- Hazards, Risks and Emergency Response Plans, and
- Incident Reporting.

Those elements of the EH&S Management System that directly relate to the work to be carried out by the person or persons being inducted, shall be covered as part of the induction.

Records detailing the attendees and content of the induction / training shall be maintained.

4.4.2 Specialist Environmental Training

In addition to the induction program, specialised training shall be provided to personnel, when deemed necessary, to present them with the knowledge, skills and awareness to minimise impact of site activities on the environment.

4.4.3 Training Records

Training Records will be maintained to include information on:

- Who was trained;
- When the training was undertaken;
- Name of trainer;
- General description of training content.

4.5 Emergency Contacts and Response

4.5.1 General

An environmental incident is an unplanned event, such as an oil or chemical spill that occurs on site and could cause significant adverse environmental impacts. The EH&S

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Management System will nominate specific persons to be the primary contact for environmental emergencies. The nominated persons will be available 24-hours/day, 7-days/week.

4.5.2 Emergency Contacts

Emergency contacts are to be clearly displayed within the Site Office and to be accessible by the project team, e.g. Project Noticeboard. The accident and corresponding contact will be clear and concise as shown below in **Table 4.2**

Table 4.2 – Example Emergency Contacts

Accidents and Emergencies	Contact Telephone Number
Fire Brigade	000
Police	000
Ambulance	000
EPA Pollution Line	131 555
Dangerous Good Licensing Hotline	131 050
Work Cover	(02) 9827-8600

4.5.3 Site Information for Hazardous Materials

Specific guidance for storage and handling of hazardous materials on site will be implemented as part of the Project EH&S Plan. Management of hazardous substances and dangerous goods is discussed in **Section 5.2.7**.

5 Implementation

5.1 Construction Environmental Management

5.1.1 Noise

Management of noise generated by construction of the R8 and R9 residential buildings will be addressed in accordance with the recommendations of the *Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Noise & Vibration Report* prepared by Renzo Tonin. This assessment will be used to manage impacts from construction activities, with particular reference to those activities that might generate emissions greater than the targets outlined in the assessment.

The processes adopted in the assessment are intended to minimise noise emissions, to meet the objectives of EPA's Interim Construction Noise Guideline, minimising and ameliorating impacts caused by these activities to the extent that it is feasible and reasonable.

A survey of potentially affected sensitive commercial and residential receivers has been conducted and the following locations have been identified:

- King Street Wharf – Commercial premises including offices and outdoor restaurants/cafes;
- Napoleon Street – Commercial premises including Aon Australia and Symantec; and
- Hickson Road – Residential receivers.

In all commercial premises considered as part of the survey, such as office buildings with closed windows and air conditioning, the predicted worst case noise levels would not exceed the Noise Affected Management Level and therefore do not adversely affect the receivers.

However, in the case of commercial premises with external activities / occupancies having operable windows or external spaces and residential receivers; the predictions indicate, in worst case situations, some of the construction activities may exceed the noise goals.

Exceedences of noise controls would primarily be caused by sheet (and other forms of) piling and hydraulic hammering operations during the excavation and foundation stages; the management of these types of activities is discussed in the ECSMP for PA1, Barangaroo South. Typical exceedences over the general construction phase of works would primarily be caused by the cumulative effect of general construction activities on site. The assessment notes that the exceedences predicted are relatively small and would occur for only limited periods.

Management Controls and Mitigation Measures

The noise goals for the proposed construction activities are in the assessment.

Should noise emission exceed these control limits, the assessment applies a dynamic decision tree management approach to addressing exceedence of noise limitation requirements..

The assessment also provides specific abatement guidance for the cumulative construction noise condition, which is the most likely process to exceed control limits.

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Monitoring

Noise monitoring would be conducted:

- Intermittently, as an ongoing indicator of noise emissions from the site;
- In response to complaints; and
- Where specific monitoring is needed. For example, where noise emission is produced near sensitive structures to confirm safe working distances.

Attended or unattended long term monitoring may be used as appropriate.

5.1.2 Vibration

The scope of works for the construction of the R8 and R9 residential buildings include works above foundation structures. Activities associated with the excavation of the basement car park have been addressed in previous ECSMPs for PA 1 Barangaroo South.

Management of vibration associated will be addressed in accordance with the recommendations of the *Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Noise & Vibration Report* prepared by Renzo Tonin. This assessment will be used to manage impacts from all construction activities, with particular reference to those activities that might generate emissions greater than the targets outlined in the NVMP.

The processes adopted in the assessment are intended to minimise vibration emissions, to meet the objectives of the EPA's Assessing Vibration technical guideline. The aim of these processes is to minimise and ameliorate any impacts caused by construction activities to the extent that it is feasible and reasonable.

Management Controls and Mitigation Measures

The vibration goals for the proposed construction activities are the assessment.

Predictions made within the assessment indicate that the recommended vibration levels will not be exceeded given the distance separating the construction activities from most sensitive structures or occupancies. The assessment also notes that typical site activities associated with the construction of the buildings will not cause significant vibrations which would affect the amenity or integrity of nearby structures.

Monitoring

Vibration monitoring would be conducted:

- Intermittently, as deemed appropriate, to provide an ongoing indication of vibration emissions from the site; and
- In response to complaints.

5.1.3 Air Quality and Odours

An Air Quality Impact Assessment (AQIA) has been prepared in accordance with the EPA's Approved Methods for the Modelling and Assessment of Air Pollutants in NSW to assess potential air and odour issues generated during the excavation, construction, and remediation works. This assessment makes reference to the following guidance documents:

- *Assessment and Management of Odour from Stationary Sources in NSW: Technical Framework* (DEC 2006); and
- *Management of Odour from Stationary Sources in NSW: Technical Notes* (DEC 2006).

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According to the findings of the AQIA, air quality management will address the following key issues as appropriate:

- Air quality impact sources and minimisation/mitigation thereof;
- Controls for air quality impact sources;
- Air quality management response procedures;
- Progressive contingency measures; and
- Monitoring;

Odour from construction of buildings R8 and R9 are not expected to be significant.

Management of wind-blown dust is not expected to be as significant as that for PA1, Basement works.

Management Controls and Mitigation Measures

The minimisation of air-borne pollution is a key component for environment management of the site. Construction phase air quality impacts shall be minimised or avoided by incorporation of appropriate air quality control measures as directed by the AQIA.

The installation and application of air quality controls during the construction phase shall be in accordance with the following principles:

- All equipment used and all facilities erected on site are to be designed and operated to control the excessive emission of smoke, dust, fumes and any other air impurity into the atmosphere;
- Spray earthworks, roads and other surfaces as necessary with water to reduce dust generation;
- Maintain the condition of temporary haul roads, as appropriate, which will be in use for prolonged periods;
- Provide adequate truck wash down and wheel washing facilities on site to prevent tracking of muds / sediment onto public roadways and generation of dust;
- Transport routes and traffic areas shall be clearly defined by marker posts or other suitable barriers to prevent unnecessary vehicle movement onto other areas. These roads shall operate under defined speed limits;
- A water cart will be employed, as required, to dampen work areas and exposed soils to prevent the emission of excessive dust from the site;
- Trucks transporting material from the site shall be covered after loading to prevent windblown dust emissions and spillages;
- All access roads shall be surfaced in appropriately selected materials;
- Subcontractors will maintain all construction equipment to reduce exhaust emissions;
- No waste material shall be burnt on the site.

Monitoring

The Site Manager (SM) will visually monitor levels of dust deposition and air quality, the effectiveness of dust emission controls and the construction site and the impacts of any nuisance on adjoining properties.

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5.1.4 Stormwater and Erosion

The majority of erosion and sediment controls will be implemented as part of the PA1, Basement works. Supplementary erosion and sediment controls will be implemented, as required, to facilitate collection and treatment of surface run-off to temporary sediment basins during construction.

Stormwater from the site will be collected and treated in an on-site water treatment plant, prior to discharge to Darling Harbour under Environmental Protection Licence 13336.

Treated water will be recycled, where possible, for dust suppression or for other site operations including wheel washing and truck washing.

Dewatering and treatment of ground water will be undertaken as part of the bulk excavation works for the PA1 Basement works.

Management Controls and Mitigation Measures

Prior to any detailed earthworks or building works commencing on site, all erosion and sediment control measures will be implemented. These measures shall generally include supplementary erosion and sediment controls implemented as part of the PA1, Basement works as deemed necessary:

- Installation of additional sediment fencing;
- Installation of silt arrestors to collect site runoff and retain suspended particles; and
- Placement of hay bales around and along proposed catch drains and stormwater drainage pits.

Surface water collected on site will be directed to the water treatment plant.

Diversion works associated with external stormwater drainage systems traversing the site will be undertaken to ensure basement excavations are not affected by external stormwater surface and piped flows. These works shall form part of PA1, Basement works.

Sediment filters placed around drainage structures within Hickson Road, Sussex Street and Shelley Street to capture sediments from the surrounding road network as part of the PA1, Basement works will be adequately maintained and / or replaced throughout the project duration.

A truck wash down facility will be utilised during the project duration. All trucks and construction vehicles exiting the site to Hickson Road will undertake cleaning, as required, prior to accessing the public road network. Water from the wash down area shall be reticulated to a treatment and storage system for reuse.

Retention walls will be installed to minimise groundwater infiltration into excavations as part of the development. Dewatering and control of groundwater seepage will also be required. Groundwater collected from the excavations will be transferred to the on-site water treatment plant prior to discharge to Darling Harbour.

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Monitoring

Discharge from the water treatment plant, and ambient harbour water will be monitored and results compared to licence and approval requirements.

5.1.5 External Catchments and Drainage

A discussion of the external catchment and drainage network has been provided in the ECSMP for PA1, Basement works, including:

- Temporary diversion of the existing trunk drainage network traversing the site from the external upper catchment areas of Kent and Margaret Streets. It is not proposed to upgrade the in-ground pipe or overland flow route capacity of the existing road network as part of the temporary works; however, this will be addressed during the detail design and documentation phase; and
- Ultimate drainage network amendments may be required to ensure the drainage system surrounding the development has adequate capacity to convey design events, both piped and overland, as nominated by the City of Sydney and Sydney Water. A detailed drainage assessment shall be undertaken as part of the detail design and documentation process.

5.1.6 Waste Management

Management of construction generated solid and liquid waste will be addressed in accordance with the recommendations of the *Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Waste Management Plan* (WMP) by Arup. The WMP will be used to manage impacts from all construction activities, with particular reference to those activities that might generate waste outcomes outside the recommended control levels.

The WMP identifies waste sources during construction and proposes measures to manage waste in a way that satisfies all legislative requirements.

The key purposes of the WMP are to:

- Address the waste management requirements for the proposal to a standard suitable for approval;
- Provide guidance for the project in waste minimisation from construction activities;
- Nominate effective waste separation, recycling and re-use measures;
- Develop management requirements for construction and operation.

The objectives of the Waste Management Plan are based on the hierarchy of avoidance/reduce, re-use, recycle, treat and dispose as outlined in the National Waste Minimisation and Recycling Strategy. Waste Materials generated on site are to be managed such that recycling is maximised and waste disposal is minimised.

Excavation

Waste management of the site during excavation works is addressed in the WMP for the Bulk Excavation and Basement Car Parking Planning Application (MP10_0023), which is included in the ECSMP for PA1, Basement works.

Construction

The goal for construction waste management is primarily the reduction of waste generated. Waste reduction is the responsibility of all on site, as it relates to materials procurement, handling, storage and use. Waste generated during construction will be reused, recycled or disposed to landfill.

Waste collection during building works will be appropriately managed through the staged nature of construction and the use of known quantities of materials. The majority of recyclable material that could be recovered during construction is likely to be off cuts and discards of concrete reinforcement (steel), metal off cuts, drainage pipes, telecommunication and electrical cabling, plastics, paint and timber.

5.1.7 Hazardous Substances and Dangerous Goods

Hazardous materials and chemical management will be undertaken in accordance with Lend Lease's standard site policies. All chemicals and hazardous materials will be received, stored, utilized, handled and disposed of in an environmentally appropriate manner in order to prevent any contamination of site work areas and adjoining property, including aquatic ecosystems, by chemicals and fuel used on the construction site.

Hazardous material on the project site will exist in solid, gaseous and liquid forms. These materials may include bulk fuels and chemicals used or stored during the construction.

Appropriate management measures will be instituted to prevent environmental incidents such as:

- Leak/spill from site storage containers of dangerous goods such as fuels that breaches the site boundary or remains within the site;
- Exposure of site workers or personnel to dangerous goods or hazardous substances; and
- Inappropriate disposal of dangerous goods.

As an associated issue, limitations on truck parking and re-fuelling are noted in **Section 5.1.8**.

5.1.8 Traffic Management

Access to the site amenities and general access to the construction zone is proposed from entry and exit locations along Hickson Road with deliveries associated with construction works accessing the site from these controlled entry and exit points. The access locations shall be managed in accordance with the staging of construction works, and it is envisioned that the most northern access point will be maintained for the duration of construction activities with the southern access point ultimately being removed as construction progresses.

As part of construction activities, traffic management and controls shall be implemented both within and surrounding the development site.

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Refuelling performed on site will be for the excavators and other plant / equipment operating on site. Haulage or delivery trucks will be refuelled on site. Delivery vehicles will be permitted to park overnight on site.

The following minimum goals have been identified in relation to site and surrounding traffic management:

- Provide a safe environment during construction for those associated with construction activities;
- Provide a safe environment for motorists, cyclists and pedestrians utilising the existing road network;
- Provide a safe environment for activities associated with the temporary passenger terminal; and
- Limit delay times within the surrounding road network.

Traffic management and control measures shall be implemented within the site to clearly identify proposed haul road location(s). The placement of water filled barriers and fencing shall provide a safe environment for construction vehicles and pedestrians. Associated signage will supplement physical structures within the site..

Adequate directional and warning signage shall be installed surrounding the development site to clearly inform motorists, cyclist and pedestrians of the approaching changes within Hickson Road, Sussex Street and Shelley Street. Signage shall also inform delivery drivers of the proposed entry and exit gate locations.

All proposed traffic management and controls shall be documented in the detailed design stage by accredited Roads and Maritime Services (RMS) traffic control designers and where required, the approval obtained by the necessary statutory approval organisations. Road occupancy certificates shall be obtained prior to any works commencing where appropriate.

5.1.9 Management of Existing Services

Existing services within the development area consist of electrical, communications, gas and stormwater drainage conduits. The majority of these services shall be made redundant and shall be removed as part of the demolition works for the PA1, Basement works. Existing electrical services to structures remaining, north of the Barangaroo South construction area, shall be investigated and alternative supply feeds implemented prior to the decommissioning and demolition of the existing substation located within the Barangaroo South construction area. Associated drainage, sewer and communication services shall be diverted from within the construction area with temporary connections made, as required.

5.1.10 Consultation Strategy and Management

A comprehensive action plan to engage with stakeholders in relation to the construction works programme will be developed to establish appropriate processes for engaging stakeholders and managing complaints and enquiries. Management of stakeholders will be

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undertaken in accordance with the Lend Lease Stakeholder Engagement Statement of Commitment (**Appendix B**) in order to maintain a good neighbour policy with the existing adjoining properties and other local facilities, residents and special interest groups by reducing disturbances and confining any potential loss of amenity.

The proposed works are expected to generate social and economic benefits to the local and broader metropolitan community through provision / creation of this world-class mixed-use precinct. The potential for negative environmental and amenity impacts during construction, although over a relatively short duration, needs to be managed through environmental monitoring during construction, ongoing community engagement of environmental performance and provision of project information such as operating hours and traffic circulation routes.

Due to the nature of the proposed construction works and the proximity of the site to the local community, appropriate mitigation measures and safeguards are required to avoid the potential for impacts such as:

- Noise and vibration generated during construction activities, which affects adjoining properties;
- Dust generated from construction activity, which affects adjoining properties; and
- Vehicles leaving the construction site depositing dirt/mud on public roads.

Existing properties directly affected by the construction program will be advised of works and provided with contact details, which will be supported by a community relations team that will provide:

- A contacts database for registering, managing and reporting complaints & enquiries;
- A 1300 number for enquiries & complaints;
- A website with a dedicated email address and feedback forms; and
- Specific information in the form of letters, fact sheets and newsletters for the local community.

The intent is for all works to be conducted within approved working hours; however, if works are expected to extend beyond these hours, appropriate stakeholders will be notified prior to these activities.

5.2 Environmental Management Plans

The CFEMP outlines the following sub-plans:

- Air Quality & Odour;
- Noise & Vibration;
- Spoil & Waste;
- Water & Stormwater;
- Acid Sulfate Soil.

The plans and drawings included in **Appendix A** generally identify the following, as appropriate:

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- construction areas;
- stormwater drains;
- works areas, machinery or vehicle parking, spoil dumps, fuel and chemical stores;
- restrictions on traffic movements;
- monitoring locations.

The plans inform the discussions of the previous sections of this document, and they have been referenced where applicable.

The plans will be updated with further details added and additional plans added as necessary during construction and as part of the implementation of the Lend Lease EH&S Management System procedures.

A general site layout is included with the drawings in **Appendix A**.

The indicative location of the site compound is shown on drawings **DA-131** and **DA-132**. The compound is generally located to the northern extent of the development site adjacent Hickson Road, and shall include:

- site sheds;
- meeting room facilities;
- ablutions;
- kitchen and lunchroom facilities;
- canteen.

6 Auditing, Monitoring and Review

6.1 Environmental Monitoring

Monitoring of environmental activities will be undertaken according to the procedures outlined in the EH&S Management System.

The environmental monitoring protocols will be incorporated into the EH&S Management System for the project.

Monitoring records shall be collated, distributed, and stored as part of the EH&S Management System.

6.2 Environmental Auditing

Auditing will be undertaken to review the effectiveness and implementation of the Lend Lease EH&S Management System at regular intervals.

Audit methodology will be a review of written procedures and implementation activities on site to assess the effectiveness of the management system and control activities.

Audit results will be reviewed and corrective action taken, as necessary. Where corrective action or updates are required, subsequent auditing will be undertaken to confirm the appropriateness of the corrections or updates.

7 References

AECOM, *Barangaroo South – R8/R9 Residential Buildings: Air Quality Impact Assessment* – Project Application.

Arup, *Barangaroo South – R8/R9 Residential Buildings: Climate Change and Sea Level Rise Report* – Project Application.

Arup, *Barangaroo South – R8/R9 Residential Building: Construction Traffic Management Plan* – Project Application.

Arup, *Barangaroo South – R8/R9 Residential Buildings: Geotechnical Report* – Project Application.

Arup, *Barangaroo South – R8/R9 Residential Buildings: Transport Management and Accessibility Plan (TMAP)* – Planning Application.

Arup, *Barangaroo South – R8/R9 Residential Buildings: Travel Demand Management Plan* – Project Application.

Arup, *Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Waste Management Plan* – Project Application.

Brown Smart, *Barangaroo South – R8/R9 Residential Buildings: Structural Engineering Report* – Project Application.

Cardno, *Barangaroo South – R8/R9 Residential Buildings: Stormwater and Drainage Assessment* – Planning Application.

Cardno, Bulk Excavations and Basement Car Parking (PA1) – Barangaroo, South (MP 10_0023): *Environmental Construction and Site Management Plan*.

DeFire, *Barangaroo South – R8/R9 Residential Buildings: Fire Engineering* – Project Application.

Lend Lease Design, *Barangaroo South – R8/R9 Residential Buildings: ESD Report* – Project Application.

NSW DIPNR (2004) *Guidelines for Preparation of Environmental Management Plans*.

Renzo Tonin, *Barangaroo South – R8/R9 Residential Buildings: Construction and Operation Noise & Vibration Report* – Project Application.

Standards Australia (2010), *AS/NZS ISO 31000:2009: Risk Management -- Principles and Guidelines*, Adopted 16 October 2009.

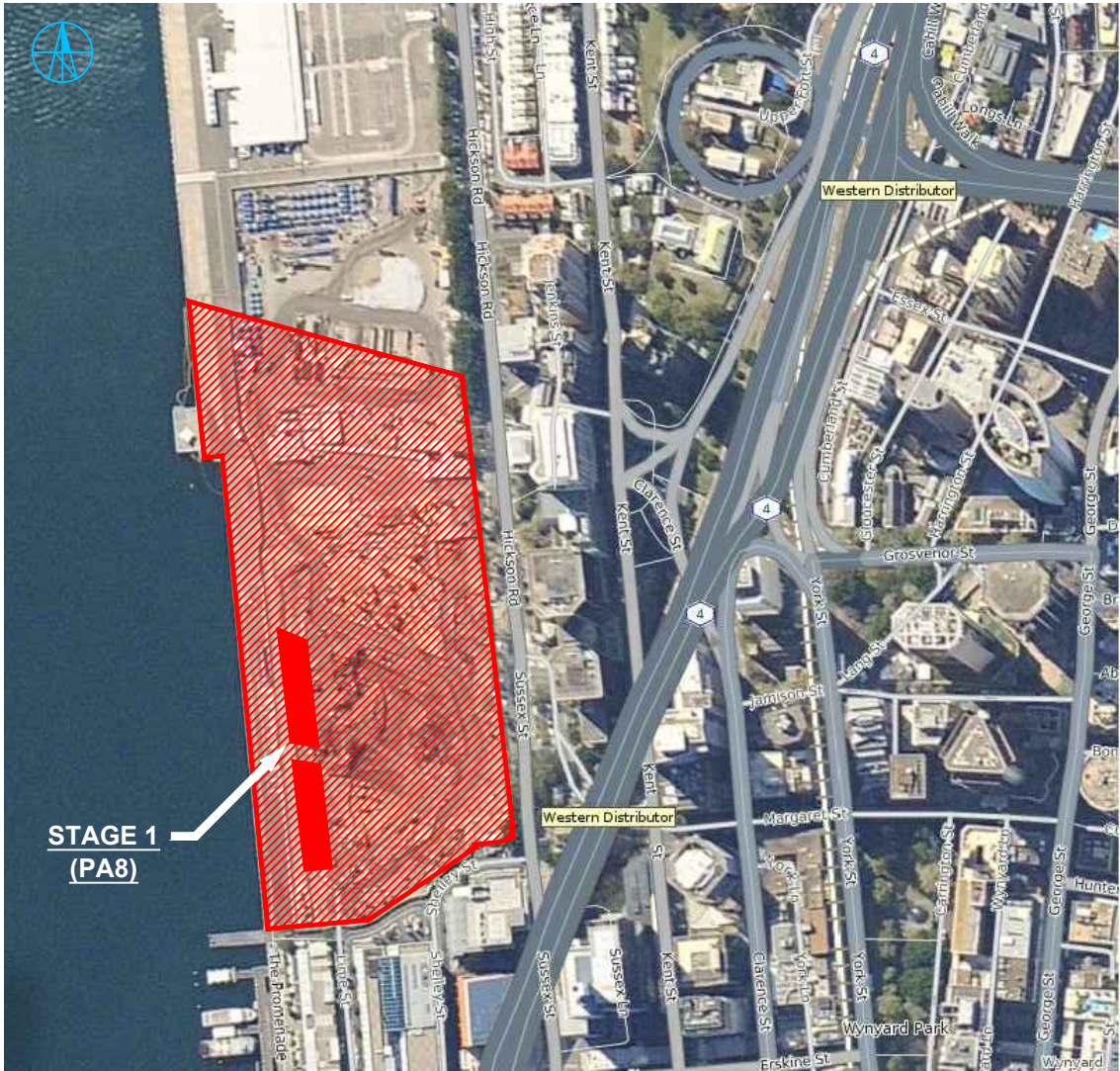
Appendix A

SUPPORTING

DRAWINGS

BARANGAROO SOUTH

R8 AND R9 RESIDENTIAL BUILDINGS (PA8)

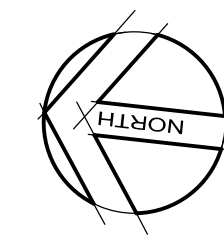
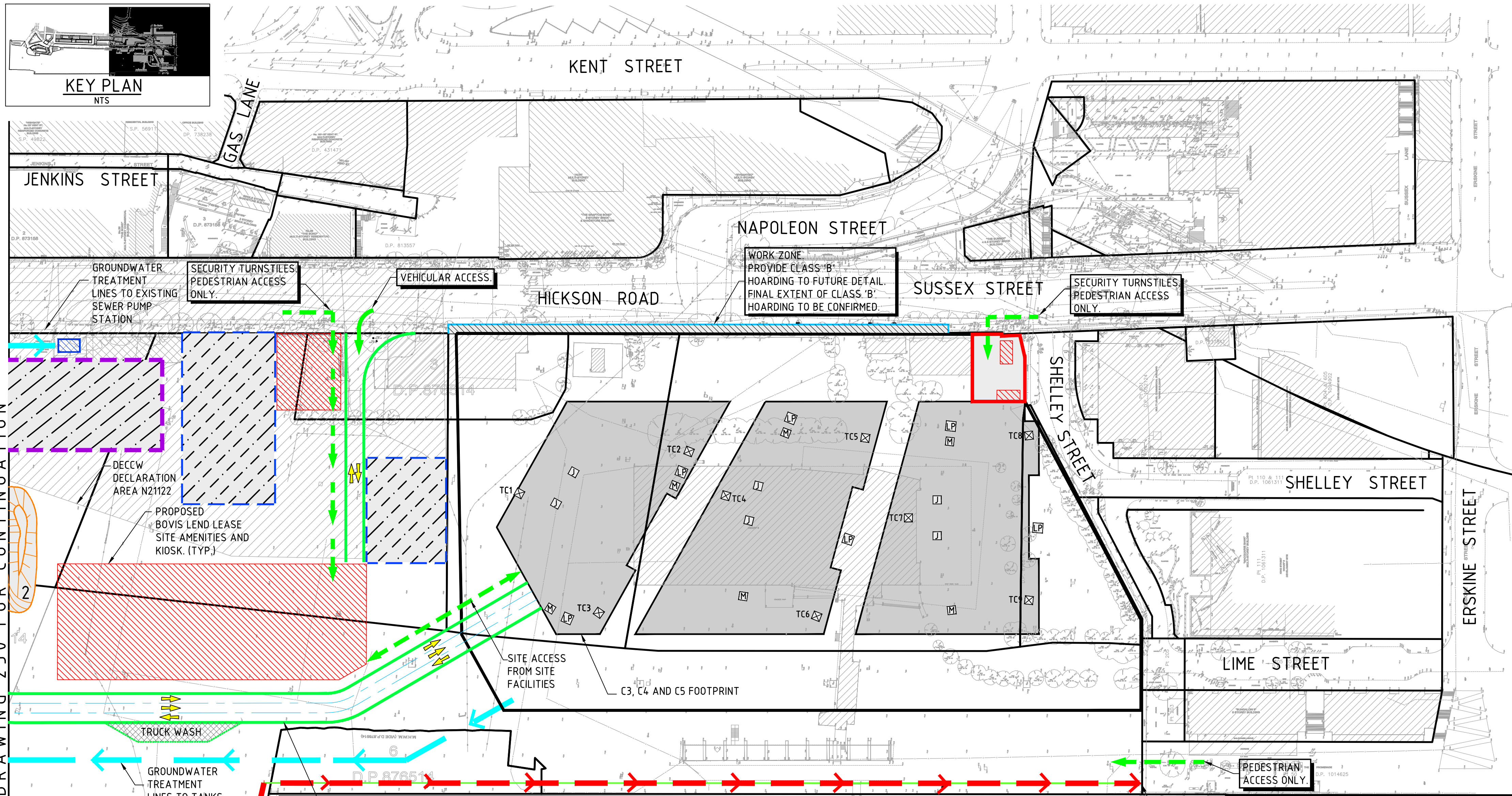


LOCALITY PLAN
N.T.S

DRAWING LIST

210025-DA-800	COVER SHEET
210025-DA-810	GENERAL ARRANGEMENT SITE PLAN
210025-DA-815	BULK EARTHWORKS EROSION AND SEDIMENT CONTROL PLAN
210025-DA-821	GENERAL DETAILS
210025-DA-825	WATER MONITORING CONTROL PLAN
210025-DA-830	SITE STAGING PLAN SHEET 1
210025-DA-831	SITE STAGING PLAN SHEET 2
210025-DA-832	SITE STAGING PLAN SHEET 3
210025-DA-833	SITE STAGING PLAN SHEET 4

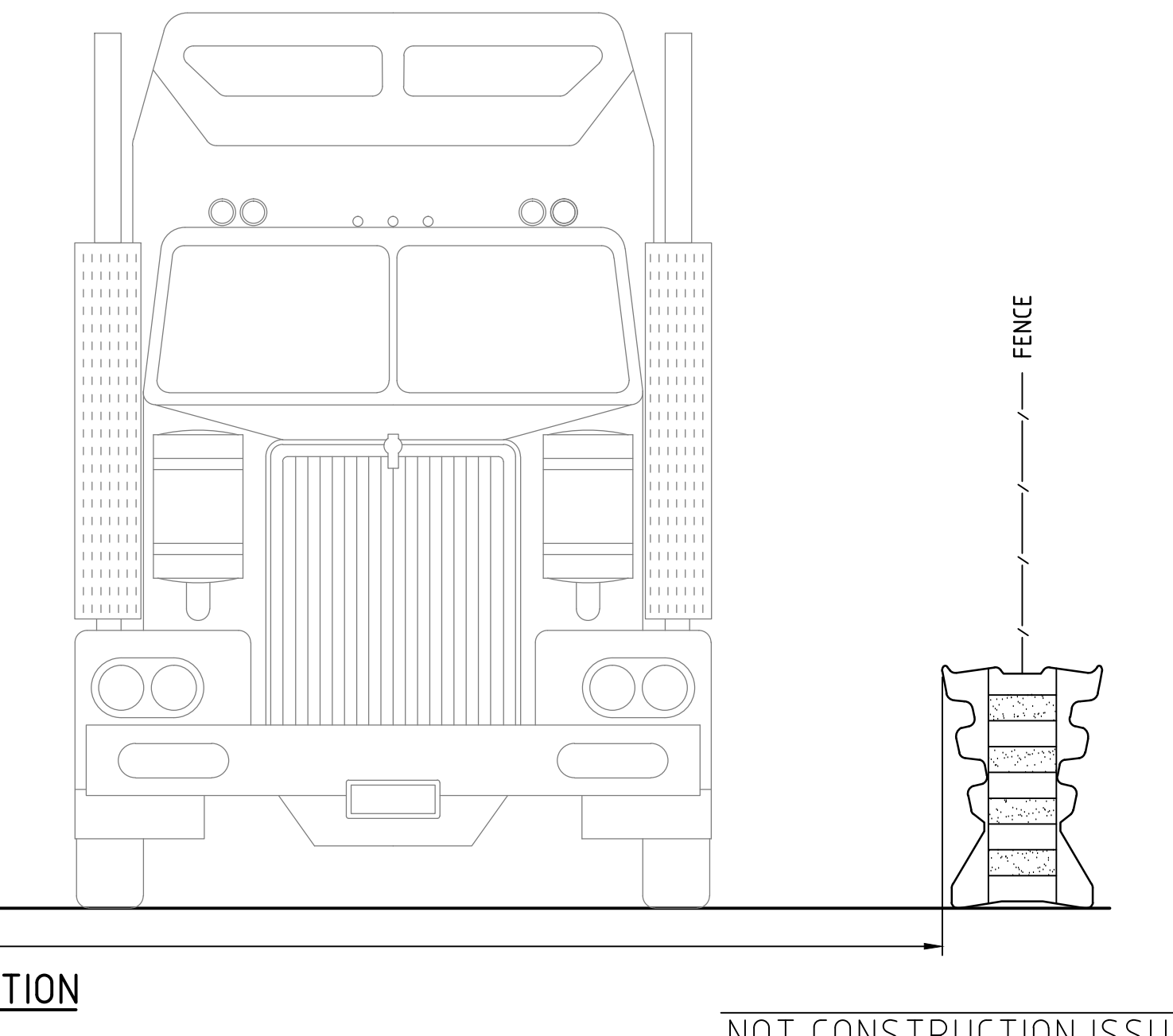
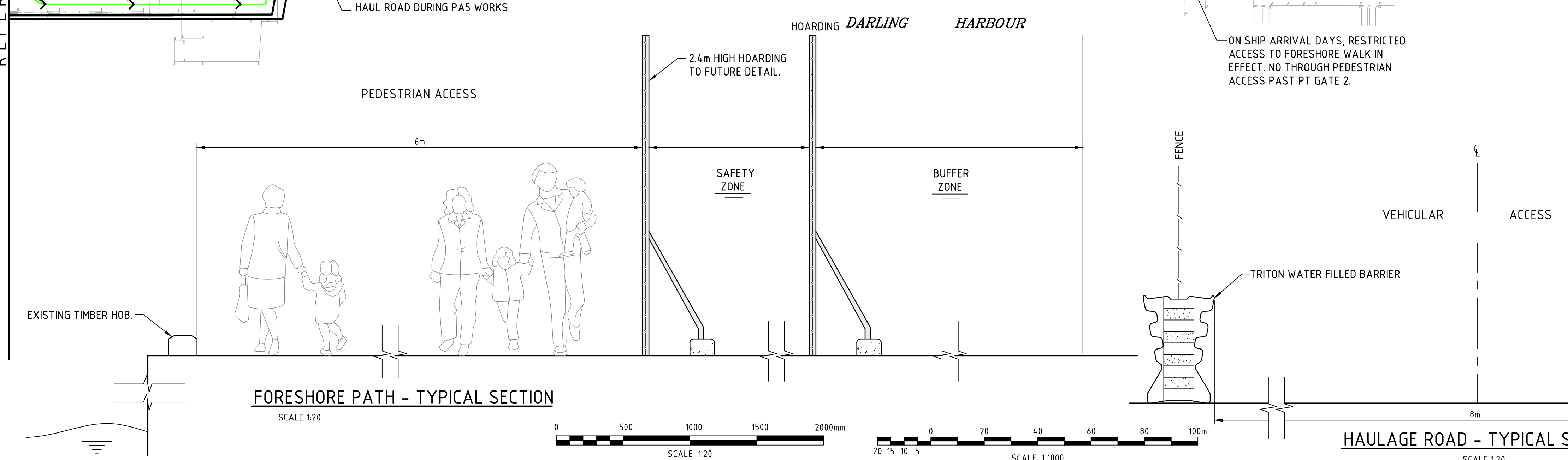
REFER DRAWING 230 FOR CONTINUATION



STAGE 1C ACTIVITIES LEGEND

SITE ACTIVITIES:
1. BULK EXCAVATION
2. HAULAGE

- DEWATERING TANKS
- DEWATERING TANKS
- EXISTING SEWER PUMP STATION
- STOCKPILE:
1 - CRUSHED CONCRETE
2 - EXCAVATED MATERIAL
- SOIL TREATMENT STRUCTURES
- HAULAGE ROAD
- PEDESTRIAN ACCESS & FORESHORE PATH
- VARIABLE PEDESTRIAN ACCESS & FORESHORE PATH DURING PASSENGER SHIP ARRIVALS
- INDICATIVE TOWER CRANE LOCATION
TC1
TC2
TC3
- LOADING PLATFORM
- MAN & MATERIALS HOIST
- JUMPFORM HOIST
- MOBILE CRANE ZONE
- DELIVERY / LAYDOWN AREA
- MATERIAL STORAGE ZONE
- CONCRETE BATCHING PLANT



Rev	Date	Description	Drawn	Appr.
C	07.11.12	ISSUED FOR INFORMATION	AG	MKH
B	26.10.12	ISSUED FOR INFORMATION	AG	MKH
A	24.10.12	ISSUED FOR INFORMATION	AG	MKH

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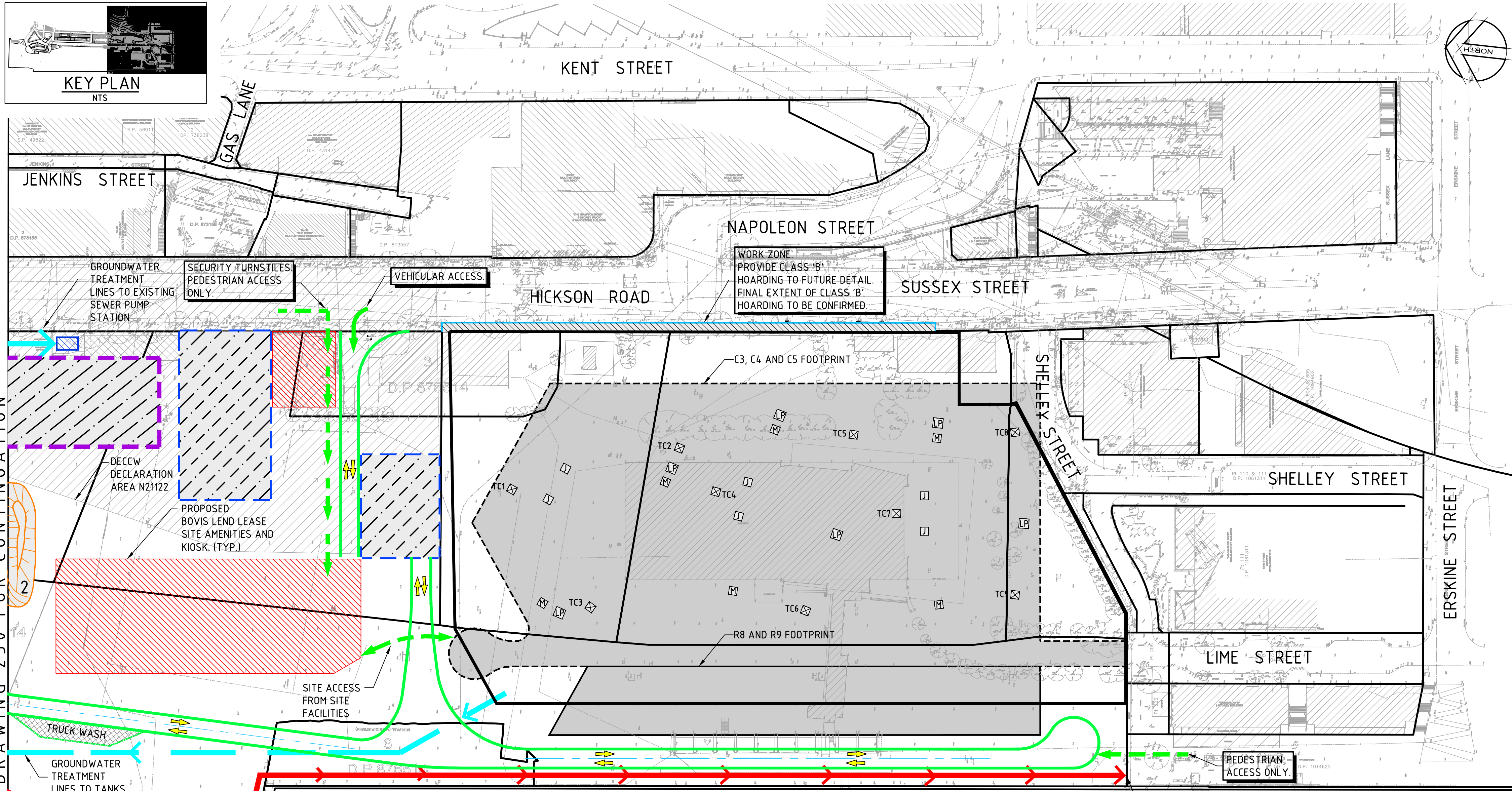
Drawn	AG	Date	OCT'12
Checked	DW	Date	OCT'12
Designed	MKH	Date	OCT'12
Verified	MKH	Date	OCT'12
Approved	MKH	Date	OCT'12

Client **LEND LEASE (Millers Point) PTY. LTD.**
BARANGAROO SOUTH
R8 AND R9 RESIDENTIAL BUILDINGS (PA8)

SITE STAGING PLAN SHEET 2

FOR INFORMATION				
Date	OCT'12	Datum	AHD	Scale
AS SHOWN		Size	A1	
Drawing Number	210079-DA-831			Revision
				C

REFER DRAWING 230 FOR CONTINUATION



STAGE 1C ACTIVITIES LEGEND

SITE ACTIVITIES:
1. BULK EXCAVATION
2. HAULAGE

T

←

DEWATERING TANKS

EXISTING SEWER PUMP STATION

STOCKPILE:
1 - CRUSHED CONCRETE
2 - EXCAVATED MATERIAL

HAULAGE ROAD

PEDESTRIAN ACCESS & FORESHORE PATH

VARIABLE PEDESTRIAN ACCESS & FORESHORE PATH DURING PASSENGER SHIP ARRIVALS

INDICATIVE TOWER CRANE LOCATION

LOADING PLATFORM

MAN & MATERIALS HOIST

JUMPFORM HOIST

DEWATERING TANKS

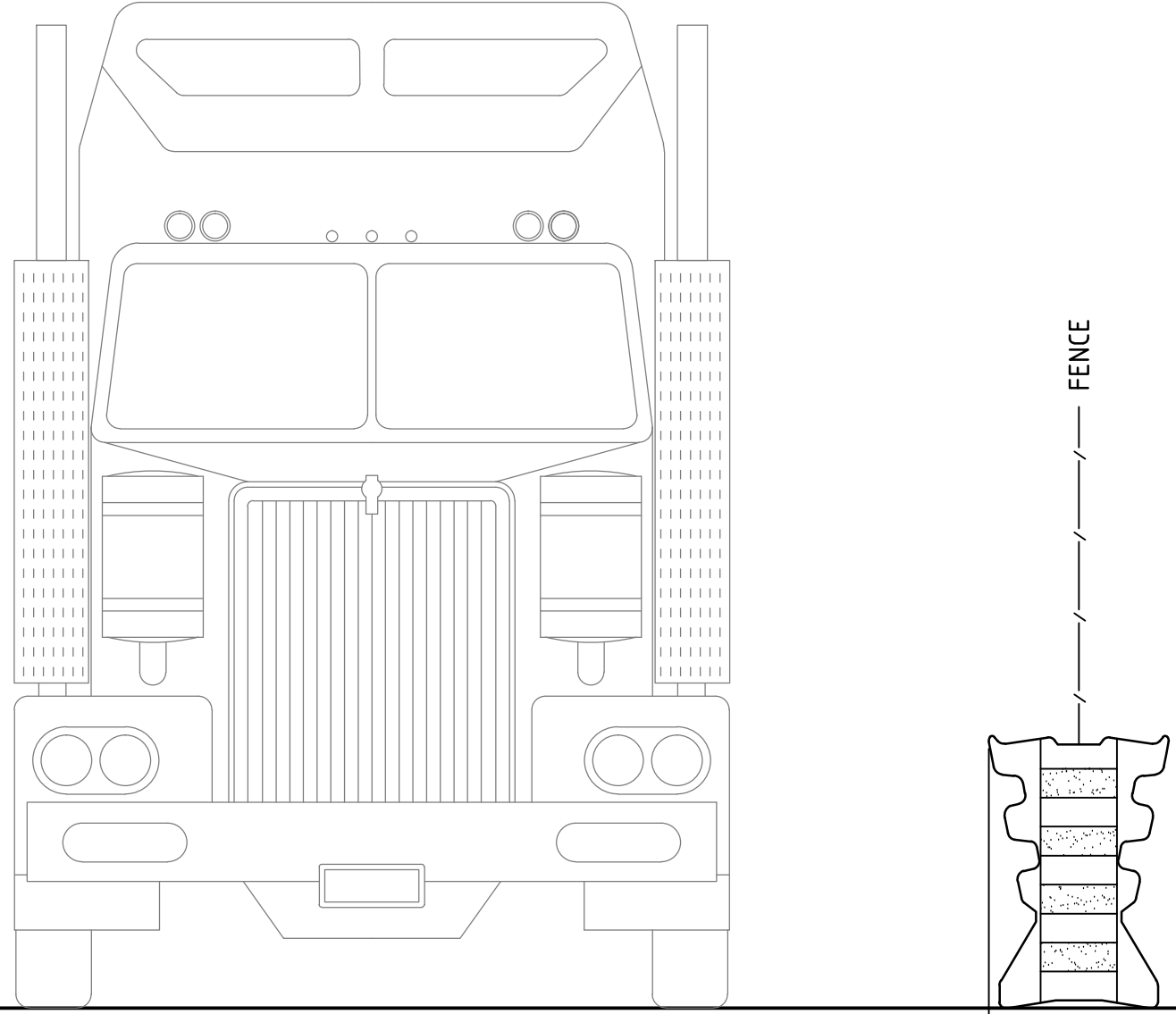
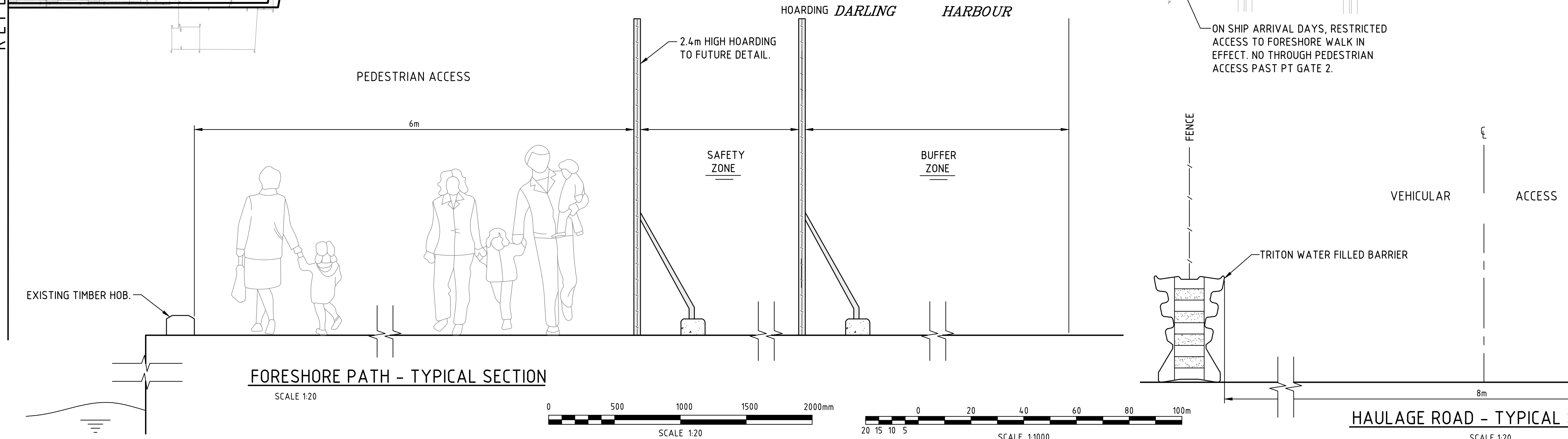
MOBILE CRANE ZONE

DELIVERY / LAYDOWN AREA

MATERIAL STORAGE ZONE

CONCRETE BATCHING PLANT

SOIL TREATMENT STRUCTURES



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BARANGAROO SYDNEY AUSTRALIA

Lend Lease

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Quality System

Quality Endorsed Company

AS 9001, Ltd. 990
Standard Australia

Drawn AG
Checked DW
Designed MKH
Verified MKH
Approved MKH

Date OCT'12
Date OCT'12
Date OCT'12
Date OCT'12
Date OCT'12

Client LEND LEASE (Millers Point) PTY. LTD.

BARANGAROO SOUTH
R8 AND R9 RESIDENTIAL BUILDINGS (PA8)

SITE STAGING PLAN SHEET 4

Status

FOR INFORMATION

Date OCT'12

Datum AHD

Scale AS SHOWN

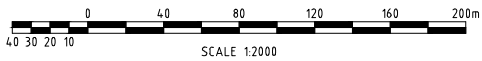
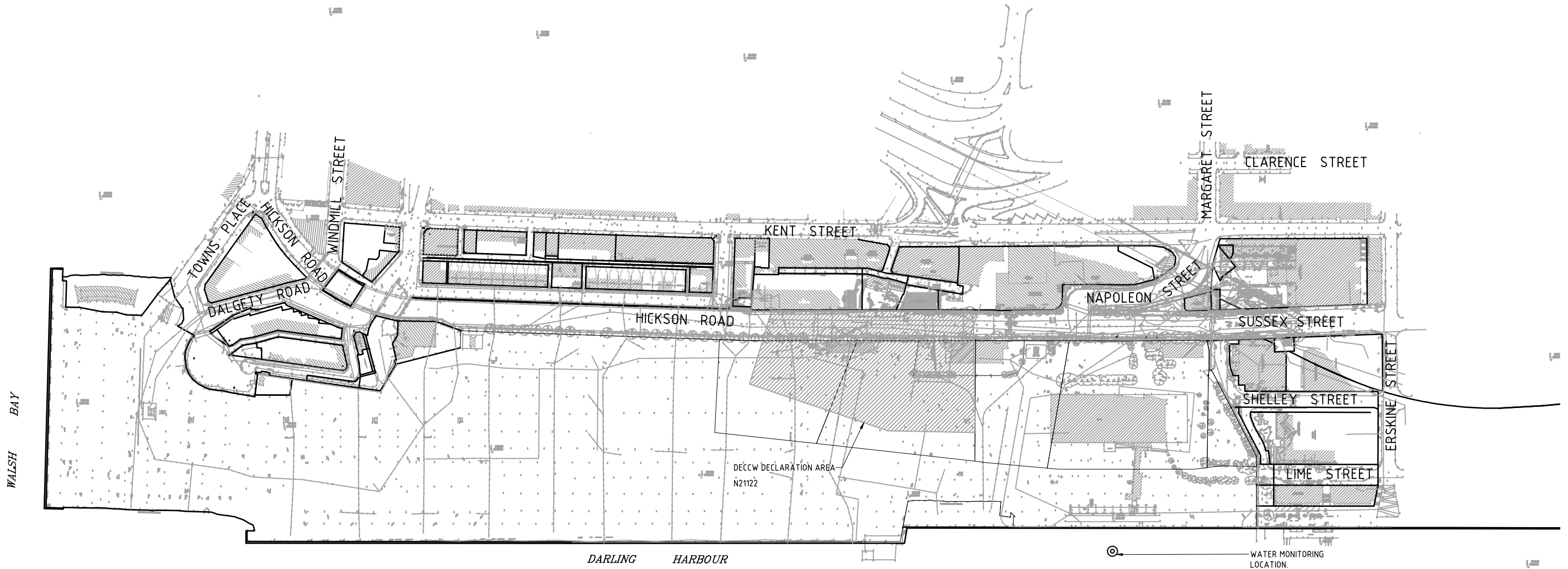
Size A1

Drawing Number 210079-DA-833

Revision C

DATE PLOTTED: 26 October 2012 11:25 AM BY: RICHARD TU (SYDNEY)

CAD FILE: \\AUSYDCFS01\CD-Data\210079-DA-825\B-1-WATER MONITORING CONTROL PLAN.dwg



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Verified	MKH	Date	OCT'12
Approved	MKH	Date	OCT'12

Client

LEND LEASE (Millers Point) PTY. LTD.

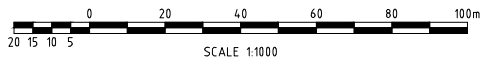
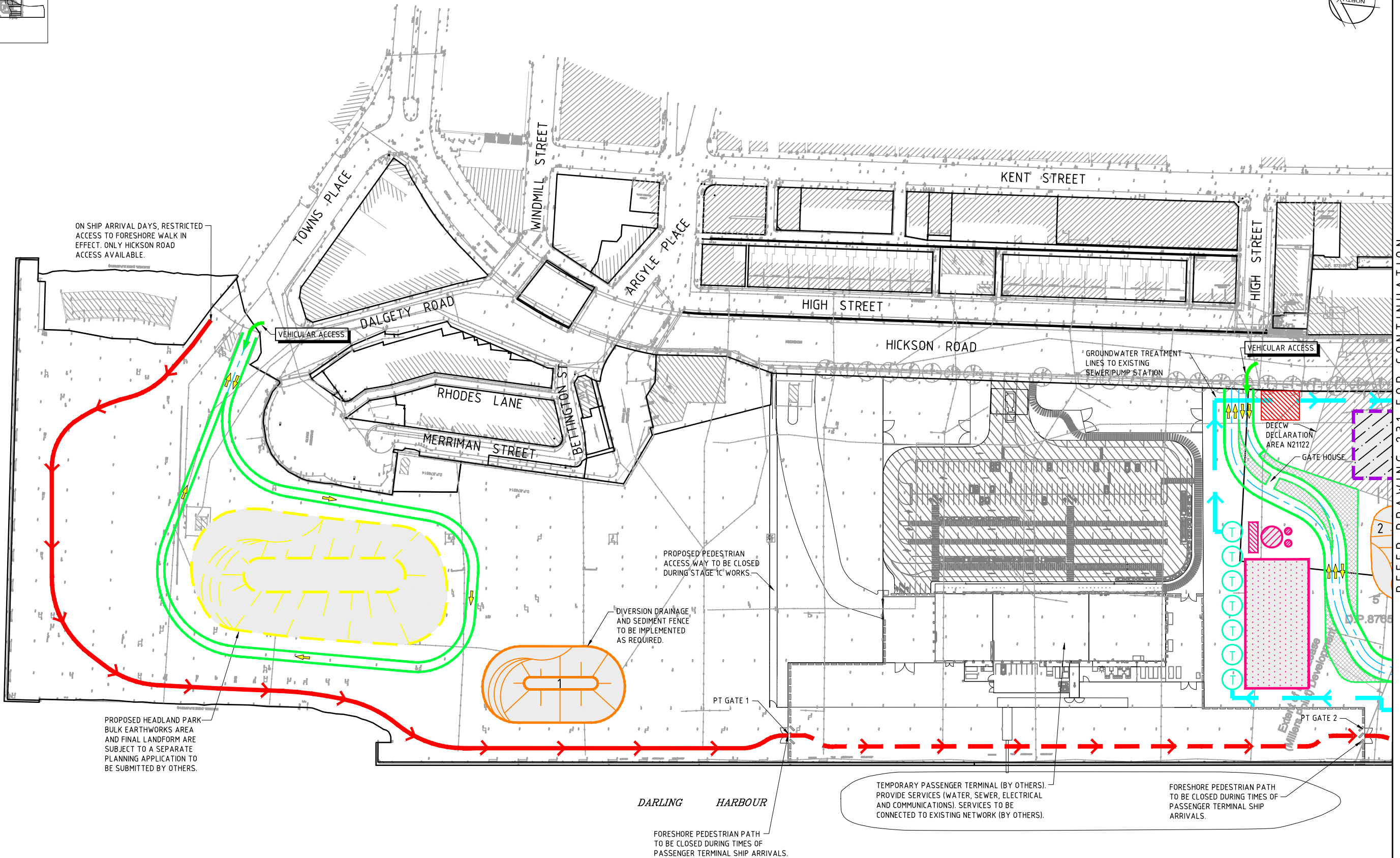
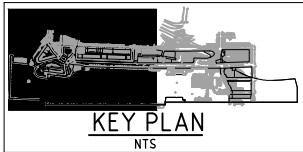
BARANGAROO SOUTH
R8 AND R9 RESIDENTIAL BUILDINGS (PA8)

WATER MONITORING CONTROL PLAN

FOR INFORMATION			
Date	Datum	Scale	Size
OCT'12	AHD	1:2000	A1
Drawing Number			Revision
210079-DA-825			B

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DATE PLOTTED: 26 October 2012 11:25 AM BY: RICHARD TU (SYDNEY)



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Approved	MKH	Date	OCT'12

Client: LEND LEASE (Millers Point) PTY. LTD.
BARANGAROO SOUTH
R8 AND R9 RESIDENTIAL BUILDINGS (PA8)
SITE STAGING PLAN SHEET 1

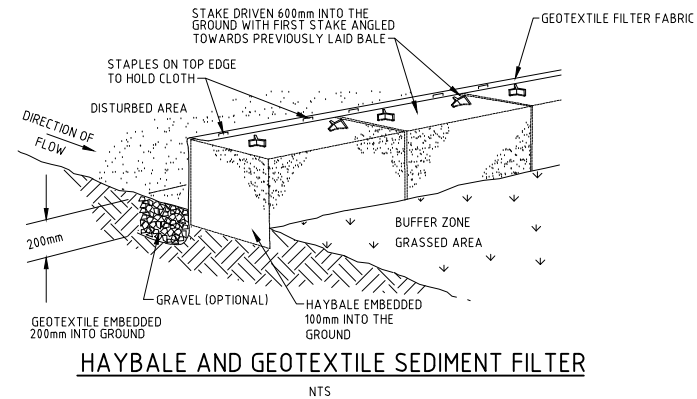
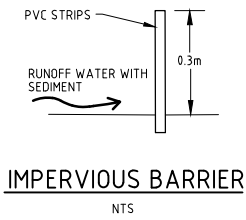
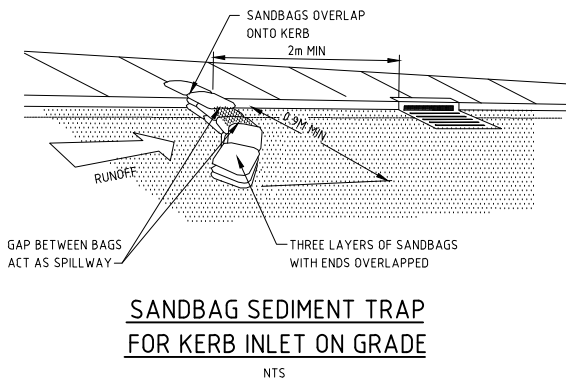
FOR INFORMATION				
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Drawing Number	210079-DA-830			Revision
				B

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REFER DRAWING 231 FOR CONTINUATION

DATE PLOTTED: 26 October 2012 11:24 AM EY - RICHARD TU (SYDNEY)

CAD FILE: \\AUSYDCFS01\CD-Data\210075 - Barangaroo\Drawings\Civil\PA2-Tower Buildings\R8 and R9 Residential Tower\210075-DA-821B1-GENERAL DETAILS.dwg



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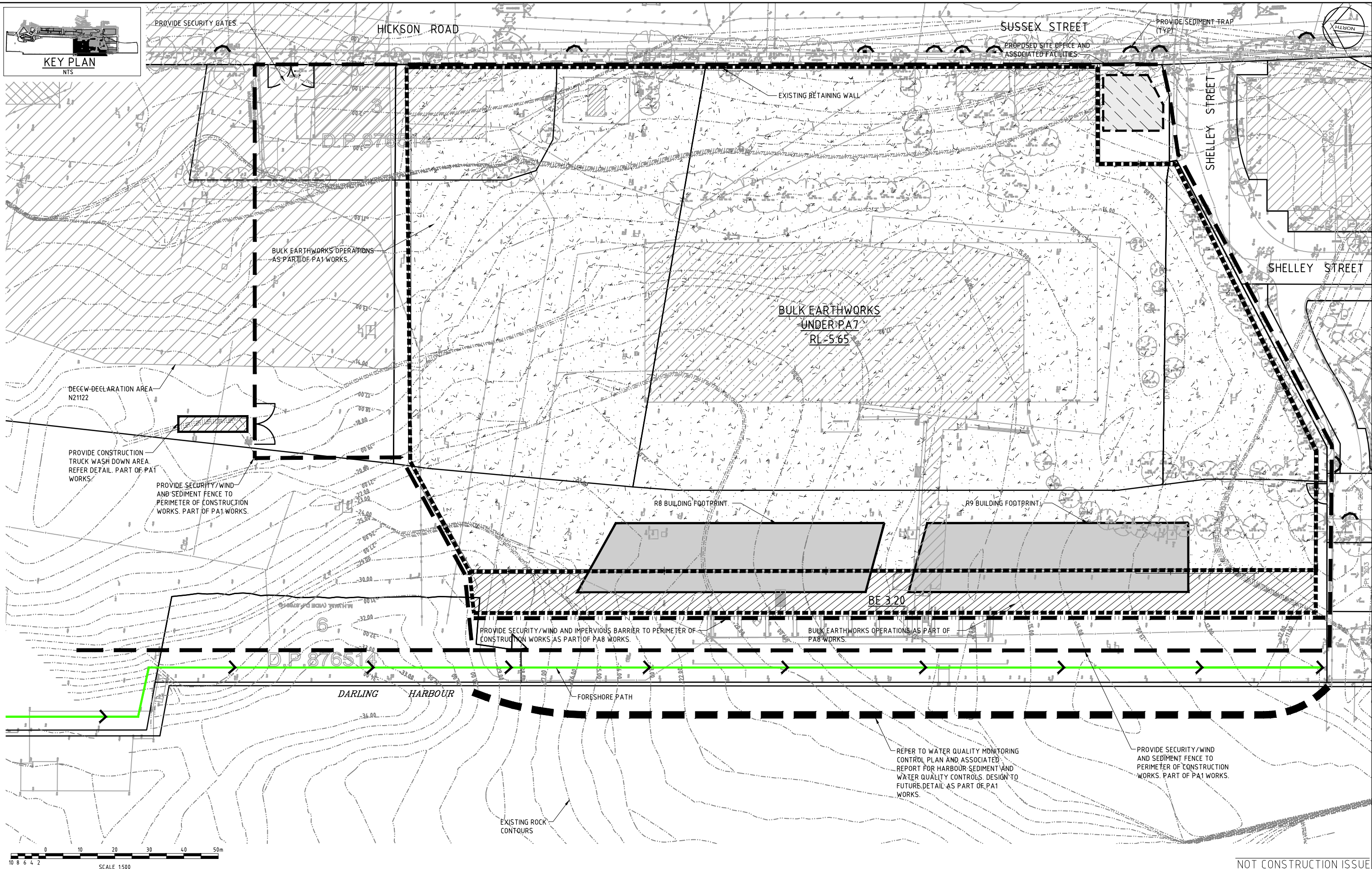
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	BARANGAROO SOUTH R8 AND R9 RESIDENTIAL BUILDINGS (PA8)		
GENERAL DETAILS			

Status FOR INFORMATION			
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OCT'12	AHD	AS SHOWN	A1
Drawing Number			Revision
210079-DA-821			B

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DATE PLOTTED: 26 October 2012 11:24 AM BY: RICHARD TU (SYDNEY)

CAD FILE: \AUS\DCFS\01\CD-Draft\210079-DA-815\B-Detail Excavation, Erosion and Sediment Control Plan.dwg



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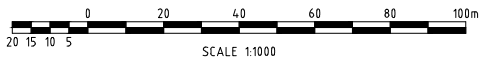
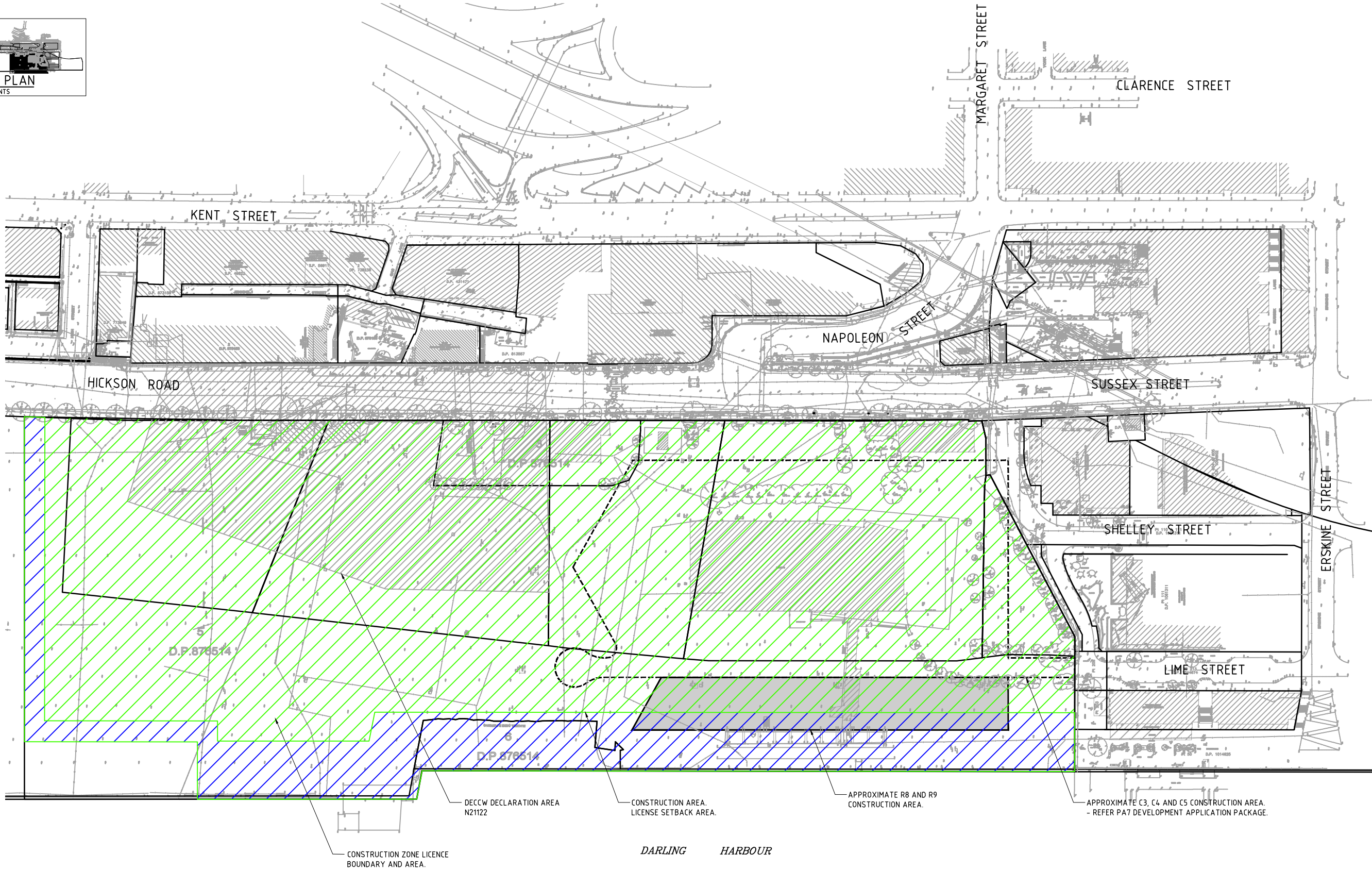
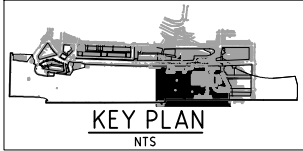
Drawn	AG	Date	OCT'12
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Designed	MKH	Date	OCT'12
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Approved	MKH	Date	OCT'12

Client: LEND LEASE (Millers Point) PTY. LTD.
BARANGAROO SOUTH
R8 AND R9 RESIDENTIAL BUILDINGS (PA8)
DETAIL EXCAVATION, EROSION AND SEDIMENT
CONTROL PLAN

FOR INFORMATION				
Status	Date	Datum	Scale	Size
	OCT'12	AHD	1:1000	A1
Drawing Number	210079-DA-815			Revision
				B

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DATE PLOTTED: 26 October 2012 11:24 AM BY: RICHARD TU (SYDNEY)



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Client	LEND LEASE (Millers Point) PTY. LTD.
	BARANGAROO SOUTH R8 AND R9 RESIDENTIAL BUILDINGS (PA8)
	GENERAL ARRANGEMENT SITE PLAN

FOR INFORMATION			
Status			
Date	OCT'12	Datum	AHD
Scale	1:1000	Size	A1
Drawing Number	210079-DA-810	Revision	B

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Appendix B

STAKEHOLDER

ENGAGEMENT

STRATEGY

STAKEHOLDER ENGAGEMENT - STATEMENT OF COMMITMENT

Lend Lease recognises the importance of positive relationships with our stakeholders and seeks to proactively engage with them in the communities in which we operate.

This statement of commitment covers project level stakeholder engagement, meaning our interactions with individuals and/or groups that have an interest in or are affected by our projects.

Objective

Our objective is to:

- Ensure that our business has a positive impact on communities and other stakeholders

Approach

Our approach is to:

- Be proactive in our engagement in order to understand the needs of our stakeholders and be in a position to respond to these needs and meet them wherever possible
- Provide accurate, up to date and accessible information to our stakeholders as early as possible and at regular intervals throughout the project
- Be open, honest, fair and realistic in all dealings with our stakeholders
- To treat the communities in which we work with respect
- Recognise diversity and seek to inform all stakeholders in the decisions affecting them in a way so that they can understand the nature of our operations and ensure that they have an opportunity to be engaged

Delivering Stakeholder Engagement

Our commitment is that we will:

- Assess the requirement for a stakeholder Engagement Strategy on all projects
- As required, prepare a Stakeholder Engagement Strategy and Action Plan outlining who our stakeholders are and how we will engage with them on projects
- Strive to add value (where appropriate) to the communities in which we operate by developing initiatives that positively contribute to the community and surrounding environment; in consultation with all relevant stakeholders
- Treat our stakeholders, in particular our neighbours with respect and take reasonable steps to minimise impacts where possible

- Be aware of, and acknowledge, any engagement undertaken prior to our involvement in the project; and work with our client to seek solutions that balance the needs of all stakeholders
- Provide training for all employees involved in stakeholder engagement processes and include relevant information in subcontractor inductions
- Ensure that all public concerns and complaints are documented, acted upon promptly and resolved, where possible, with outcomes communicated back to the relevant affected groups
- Ensure that all subcontractors and consultants are aware of and adhere to our Statement of Commitment

Monitoring and Reviewing

In order to evaluate and review the success of Stakeholder Engagement, each project will have as part of the regular Project Reviews process:

- An assessment of how stakeholders have been engaged in accordance with the project's stakeholder engagement plan and how stakeholder's feedback has been integrated into the project's development
- A review of comments expressed by stakeholders (via customer feedback and complaints process) and how they have been genuinely acted upon/responded to within agreed periods

Consultation Strategy – Barangaroo South				
Key Stakeholders	Relationships/rationale	Aim of Engagement	Strategy	Timeline
Local Residents e.g.: <ul style="list-style-type: none"> - Kent St. Residents Group - Millers Point Resident Action Group - Walsh Bay Precinct Committee - Pyrmont - Hickson Road - Millers Point Estates Action Board – Housing NSW 	<ul style="list-style-type: none"> Neighbours and surrounding community living in local area. Local businesses in surrounding area 	<ul style="list-style-type: none"> • Inform community of proposed design and gain feedback • Develop positive relationships • Provide regular updates on proposal 	<ul style="list-style-type: none"> • Participated in large scale Community Forums organised by the Barangaroo Delivery Authority • Smaller community forums run by Lend Lease for local and surrounding residents that may have been impacted by or have an interest in the development. Providing updates on proposed plans and progress of planning submissions • Provide fact sheets with details of the proposed plans • Provide feedback forms to gain feedback and understand the concerns of the community • Leverage existing and develop relationships with the local resident and business groups attending existing meetings or forums to provide updates on proposed plans and progress on planning submissions. • Provide notifications to local residents and groups when planning submissions are taking place 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Local Businesses e.g. <ul style="list-style-type: none"> - Hickson Road - Walsh Bay - Kent Street - Kent street Wharf 				

			<ul style="list-style-type: none"> • Provision of email address for enquiries • Developing a contact management system (incl.) <ul style="list-style-type: none"> - Contacts database for registering, managing and reporting complaints & enquiries - Provision of a 1300 number for enquiries and complaints - Provision of a Barangaroo South community relations team to manage complaints/enquiries, feedback and engage with the community 	
Councils & Chamber of Commerce e.g. <ul style="list-style-type: none"> - City Of Sydney - Sydney Cove Rotary - Rocks Chamber of Commerce 	Local Councils and Chambers of Commerce	<ul style="list-style-type: none"> • Develop positive relationships • Provide regular updates on the proposal and the proposed timeline of commencing 	<ul style="list-style-type: none"> • Regular briefing meetings with key representatives • Provide presentations to all key staff on proposed development • Notification prior to planning submissions taking place 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Agencies/Utilities e.g. <ul style="list-style-type: none"> - Sydney Ports - Sydney Water - NSW Maritime - Sydney Ferries 	Key agencies with an interest in the project	<ul style="list-style-type: none"> • Ensure agencies are kept updated on the progress of the proposal and pending works • Develop positive relationships • Promote positive messages about the project 	<ul style="list-style-type: none"> • Provide updates on key works and upcoming construction activities via: <ul style="list-style-type: none"> - 1-1 meeting where required - Website - Letters - Newsletters • Participation in Technical Working Groups 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Government Departments e.g. <ul style="list-style-type: none"> - Department of Environment, Climate Change and Water (DEEC-W) - Housing NSW - RTA 	Government departments with an interest or role in the project	<ul style="list-style-type: none"> • Provide regular updates on the proposal and the proposed timeline of commencing • Joint initiatives and projects 	<ul style="list-style-type: none"> • Provide updates on proposal and upcoming construction activities that may interface with these agencies • Offer regular meetings to ensure agencies are briefed on the project • Ensure these stakeholders are kept up to date with status of pending works • Advise of potential impacts and mitigation measures being implemented • Notification prior to works commencing & links to complaints management system 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Local Educational Institutions e.g. <ul style="list-style-type: none"> - Fort Street Public School - Observatory Hill Environmental & Education Centre 	Local Schools and educational institutions	<ul style="list-style-type: none"> • Use this landmark project as an educational opportunity • Encourage schools and universities to become involved in the project • Ensure the positive project 	<ul style="list-style-type: none"> • Provide updates on proposal and upcoming construction activities via: <ul style="list-style-type: none"> - 1-1 meeting where required - Website - Letters - Newsletters • Engage with local school to organise opportunities to involve children in activities i.e. photography, art and student 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages

		messages get out to the educational community	based traineeships. Organise site tours to be provided as part of educational development.	
General Public	People commuting/working in the area, pedestrians who use Hickson Road, general road users and cyclists.	<ul style="list-style-type: none"> • Provision of information & upcoming traffic changes & transport links • Minimise disruption and complaints • Maintain safety on and around the site • Promote positive messages about the project 	<ul style="list-style-type: none"> • Provide up to date information on works, access and transport impacts via: <ul style="list-style-type: none"> - Site signage - Factsheets • Establish information channels for stakeholders including: <ul style="list-style-type: none"> - 1300 information line - Website - Email address - Community Relations Tea, to manage enquiries and feedback 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Local Cultural Groups & Facilities e.g.	Cultural groups & organisations within the local community	<ul style="list-style-type: none"> • Provision of information on upcoming traffic changes and any modifications to key transport links • Develop positive relationships 	<ul style="list-style-type: none"> • Provide updates on proposal and upcoming construction activities via: <ul style="list-style-type: none"> - 1-1 meeting where required - Invitation to Community Forums - Letters - Factsheets 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Interest & Action Groups e.g.	Local interest and action groups with an interest or stake in the project	<ul style="list-style-type: none"> • Be open and transparent with project information • Minimise disruption and complaints by being responsive to concerns 	<ul style="list-style-type: none"> • Provide updates on proposal via: <ul style="list-style-type: none"> - 1-1 meeting or community forum where required - Letters - Factsheets • Address concerns and feedback in a timely and comprehensive manner 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages
Media	Key public opinion influencers regarding this project	<ul style="list-style-type: none"> • Be open and transparent with project information as appropriate • Facilitate a positive working relationship with media 	<ul style="list-style-type: none"> • Provide updates on proposal and upcoming construction activities • Respond to media enquiries where appropriate • Ensure project spokesperson is available for comment when required 	<ul style="list-style-type: none"> • During planning phase • Ongoing Project/Precinct stages