Major Projects

Facilities Management

PRELIMINARY CONSTRUCTION MANAGEMENT PLAN

For the

Biological Sciences Project

UNSW Kensington Campus

21 January 2015

PREPARED FOR AND ON BEHALF OF UNSW
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1. INTRODUCTION

This Preliminary Construction Management Plan (PCMP) has been prepared to address the Secretary's Environmental Assessment Requirement (SEAR) in relation to the construction of the Biological Sciences Project (BSP) on the UNSW Kensington Campus. The PCMP addresses how the UNSW Project Team has planned to address construction impacts associated with implementation of the BSP.
UNSW will not be building the Biological Sciences Project directly but has contracted the building works to a suitably qualified Tier 1 Main Contractor who will be responsible for undertaking the works in accordance with the principles detailed within this Plan.

The Biological Sciences Project Main Contractor (the "Contractor"), once appointed, will prepare a comprehensive Construction Management Plan prior to the commencement of the work that will detail specific methods for the management of the site activities. In addition, the University will ensure that the Contractor will comply with the minimum requirements of this Preliminary Construction Management Plan requirement as well as the conditions of approval to be sought under the Secretary's Environmental Assessment Requirements (SEAR).

1.1 Biological Sciences Project Description

UNSW has identified the need to provide new facilities to accommodate growth in the School of Biological Sciences (the School) at its Kensington Campus. The key objectives of the new facility will be to:

- Provide a point of focus for UNSW's defined research strength of next generation technologies;
- Provide a world class showcase to enable the school to grow;
- Attract funding, academics and students;
- Foster collaboration across faculties and schools;
- Support and encourage learning; and
- Support and showcase UNSW's commitment to leadership in sustainability.

The site of the new facility, located at campus grid reference E27, at Gate 11, adjacent to the Wallace Wurth Building and to the north-east of the Samuels Building.

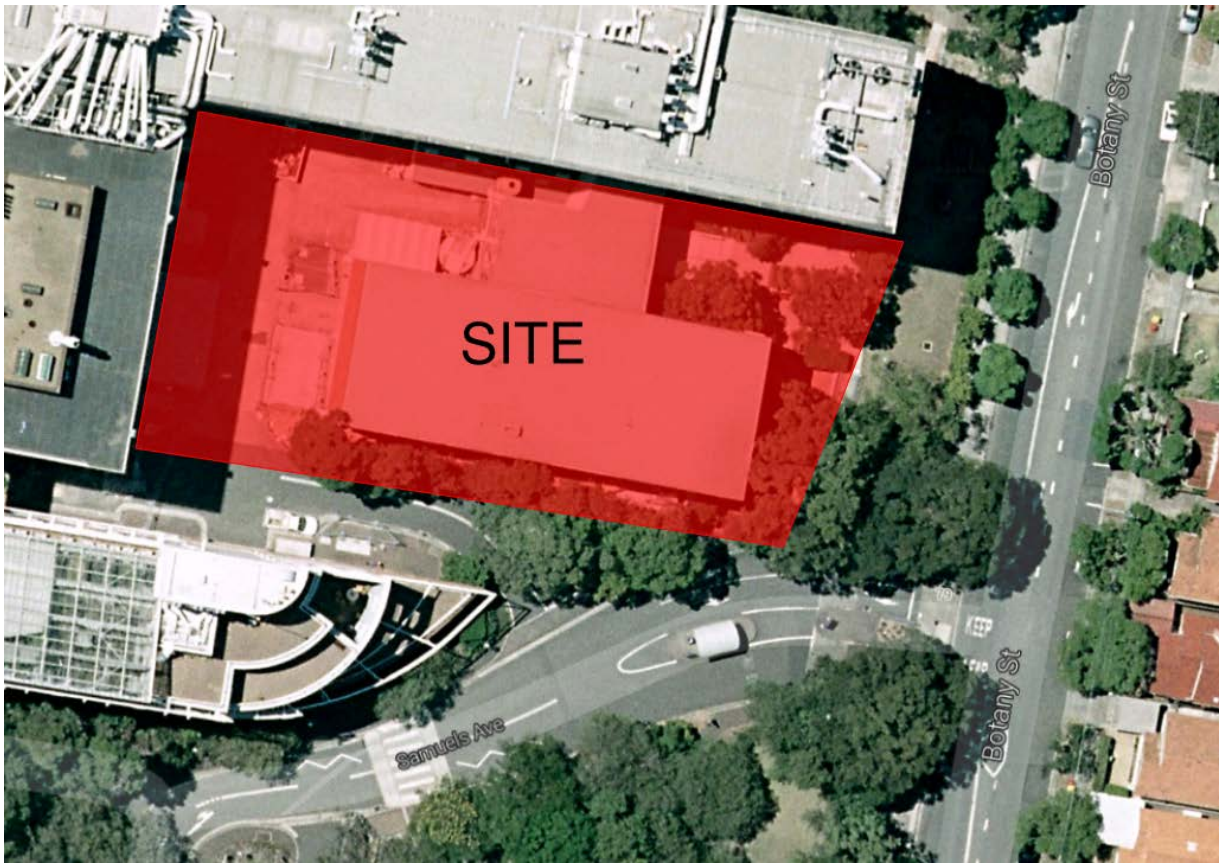

Figure 2: Site E27 (Gate 11 and BioTheatres).

2. PROJECT SCOPE OF WORK

The UNSW Biological Sciences Project (BSP) is comprised of:

- Stage 1 of this spatial provision comprises a nine-storey new building (including plant) constructed on the site of the previous Biomedical Theatres Building, plus a refurbishment of the Lower Ground Floor of BioLink, to provide 20,474sqm of GFA.

- Stage 2 is the renewal of the existing UNSW Biosciences building (D26) and façade for Biological, Earth and Environmental Sciences (BEES), Biotechnology and Biomedical Sciences (BABS) and Biomedical Precinct Functions,

- The spatial provision of Stage 2, if undertaken, may comprise a refurbishment of the North Wing of D26 Biosciences Ground Floor, possibly with optional enhancements to the connectivity between the new and existing buildings. As a minimum, enclosed links and atrium to the North-East corner are proposed to be provided at Levels G to 6 inclusive between the existing Biosciences building and new building E26.

2.1 Project Delivery

UNSW has engaged a contractor on an Early Contractor Involvement (ECI) form of contract. Key design consultants engaged by the UNSW will be novated to the ECI Contractor during the design development phase. The ECI Contractor will be responsible for planning, coordinating and delivering the entire project comprising the following components:

- Main building works;
- Civil and landscaping works; and
- Relocation and reinstallation works for the School.

2.2 Timeframe

The key target project dates are:

Item	**Timeframe**
Completion of Concept Design	End October 2014
Lodge Development Application	End December 2014
Completion of Design Development	May 2015
Site Enabling Works Commencement	June 2014
Main Building Approval	July 2015
Main Contractor Engagement	July 2015
Main Construction Commencement	August 2015
Interim Occupation for Teaching	End Jan 2017
Main Construction Completion	March 2017
Relocations Completion & Project Completion	July 2017

3. EXISTING SITE CONDITIONS

3.1 Traffic Movements

Cars and service vehicles currently access the BSP site and surrounding buildings via Gate 11 and exit via Gate 11 off Botany Street.

Cars and service vehicles access car parking and deliveries to buildings in this precinct via Gate 11, Samuels Ave which currently extends through to Library Walk.

Samuels Ave provides delivery access and disabled parking to key buildings including the existing Botany Street Carpark (H25), Mathews Building (F23) and Samuels Building (F25) to name a few. Library Walk is also a significant pedestrian route providing access to all the buildings above and to the Chancellery Walk.

Deliveries to the Lowy, Wallace Wurth, D26 and Samuels Buildings will occur through gate 11, down Library Walk to a loading dock along Chancellery Walk for the duration of construction works.

4. SITE CONSTRAINTS AND OPPORTUNITIES

A key requirement in the implementation of the Biological Sciences Project is to maintain continued vehicular access from Gate 11 to the temporary loading dock off Chancellery Walk to service the buildings located off Samuels Ave and Library Walk. The service vehicles are generally in the range from utilities to 19-metre long articulated trucks which deliver liquid nitrogen to the bulk gas tanks currently located in the existing loading dock.

Waste collection and Fire Brigade access is to be maintained at all times to existing buildings. Generally these vehicles are in the range up to 12.5 metres in length.

The temporary loading dock that currently serves Wallace Wurth, D26 will be relocated to the West of the Biolink Building, temporarily during construction of BSP. This is being done within the enabling works and will be operational by January 2015. Such that operational vehicular movements are not a constraint to the construction site vehicle movement activities.

5. CONSTRUCTION SITE MANAGEMENT

5.1 Site Induction

All contractors engaged to work on UNSW campuses and properties are required to complete a WHS Induction and must have all relevant certificates of competency and/or licenses for the equipment being used or tasks performed. The person engaging the Contractor (the project manager) must ensure that all necessary inductions take place and that all required certificates of competency and licenses are current.

UNSW Site Inductions can be completed online at:
http://unswfminduction.e3learning.com.au/
This induction is required for any works outside of the site hoarding lines on campus or within existing buildings.

Following satisfactory completion of inductions, the Contractor will seek UNSW authorisation to access the site and obtain a UNSW Contractor ID Card from the following location:

UNSW Facilities Management
Mathews Building F23, Level 2 (Pavilions Level)
Botany Street, via Gate 11,
Kensington 2052.

Personnel working under the Contractor must also complete a site specific induction.

5.2 Prior to the Commencement of the Works

The following procedures are required prior to commencing work on site:

- Ascertain all relevant project information, applicable standards, and statutory requirements and conditions, including those of authorities having jurisdiction over the works.
- Obtain all relevant insurances, permits and approvals and pay all associated fees, deposits and the like.
- Ensure all subcontractors have completed site inductions.
- Retain a copy of the development approvals and the construction certificate on site at all times during the progress of the works. Where foreseeable, notify the Consent Authority of proposed variations to project requirements and conditions.
- Undertake a dilapidation report that provides both a photographic record of the site and surrounds as well as a record of existing noise and dust levels for use as a base for ongoing monitoring.

5.3 Hoardings/Protection

Throughout the construction duration, the project will be secured by “A” Class hoardings around the perimeter of the site. Overhead protection hoardings (B-Class) will also be established along Botany Street. The Contractor intends to locate a proportion of the site amenities on the B-Class hoardings, meaning these B-Class hoardings are in place for the project duration.

A-Class hoardings will be 2.4m high painted plywood hoardings and jersey kerbs with plywood linings in locations where hoardings are adjacent roadways. Overhead protection hoardings will be a certified overhead protection system designed to protect pedestrian traffic on Botany Street whilst allowing materials handling from the proposed Botany Street construction zone. Hoardings will comply with authority requirements and will be designed to and installed to relevant standards, including AS1725-2003, AS 1158 -2007, AS1170 Part 1-2002, AS1170, Part 2-2002, AS1742 Part 3 -2008.

Layout of site hoardings will consider the following;

- maintenance of access to D26 and Samuels during Stage 1 works;
- protection of the public and separation of construction works from campus activities; and
- traffic and pedestrian access to the adjacent campus facilities.

The hoarding will be adequately maintained and secured to ensure separation between construction works and the surrounding university campus. Lighting and directional signage will be installed to the perimeter of the hoarding.

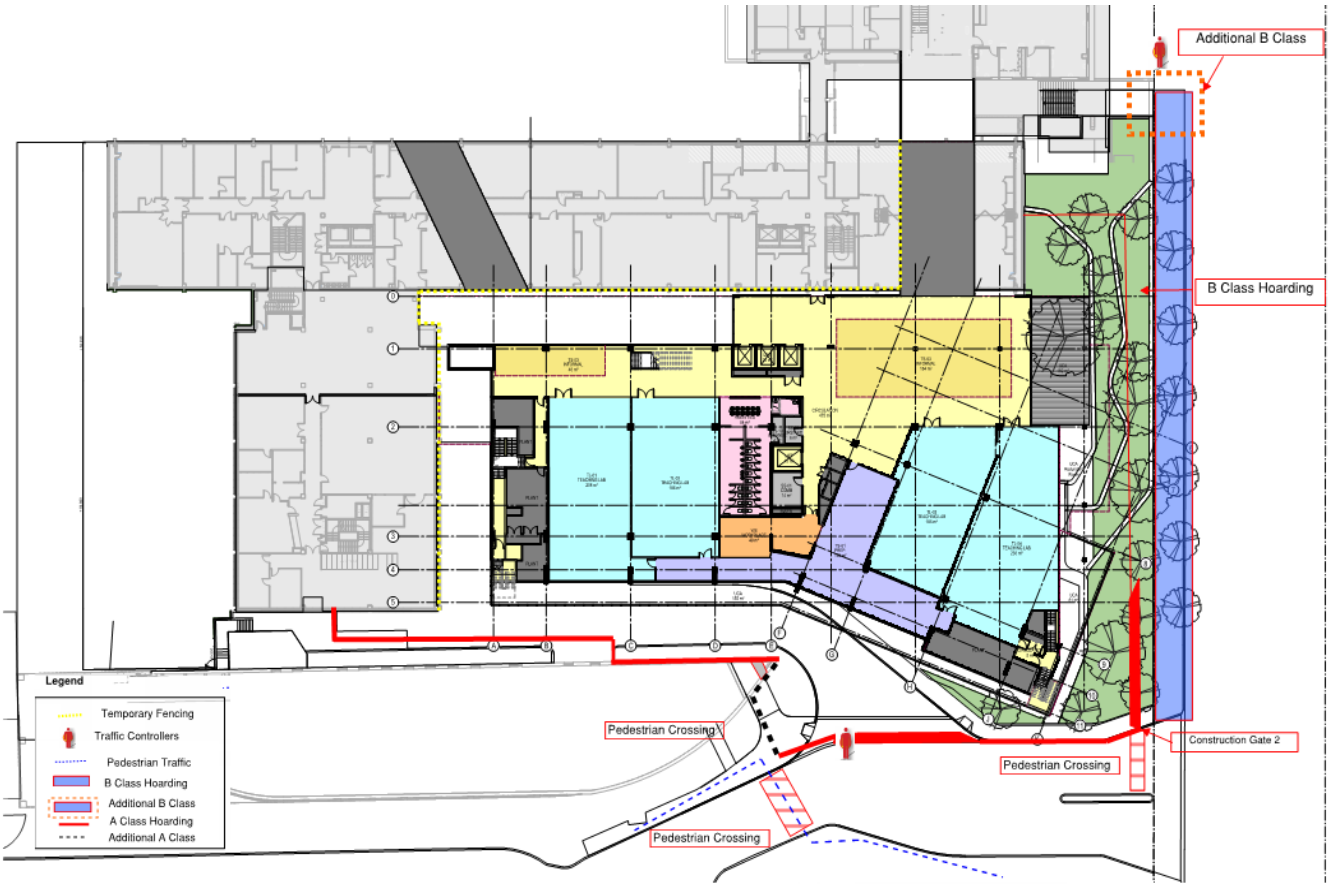

Figure 3: Site Establishment

5.4 Temporary Site Accommodation

The site amenities will be installed over three phases:

- Phase 1 will be installed at site establishment. The site accommodation will be mounted on top of the B-Class hoarding along Botany Street and on-grade site sheds east of D26 (Biosciences Building) accommodating 130 people which will be sufficient from project commencement and completion of the building superstructure.
- Phase 2. Upon commencement of building façade, services and finishing trades, additional site accommodation will be positioned along the southern face of D26 accommodating an additional 120 workers.
- Phase 3. A provision for overflow amenities during peak workforce periods for another 50 workers will be temporarily located in the Lower Ground Floor store room area.

The site office will be located elevated on a B Class hoarding over the Botany Street car parking station. Please note some car parking spaces will be lost due to B Class hoarding column locations.

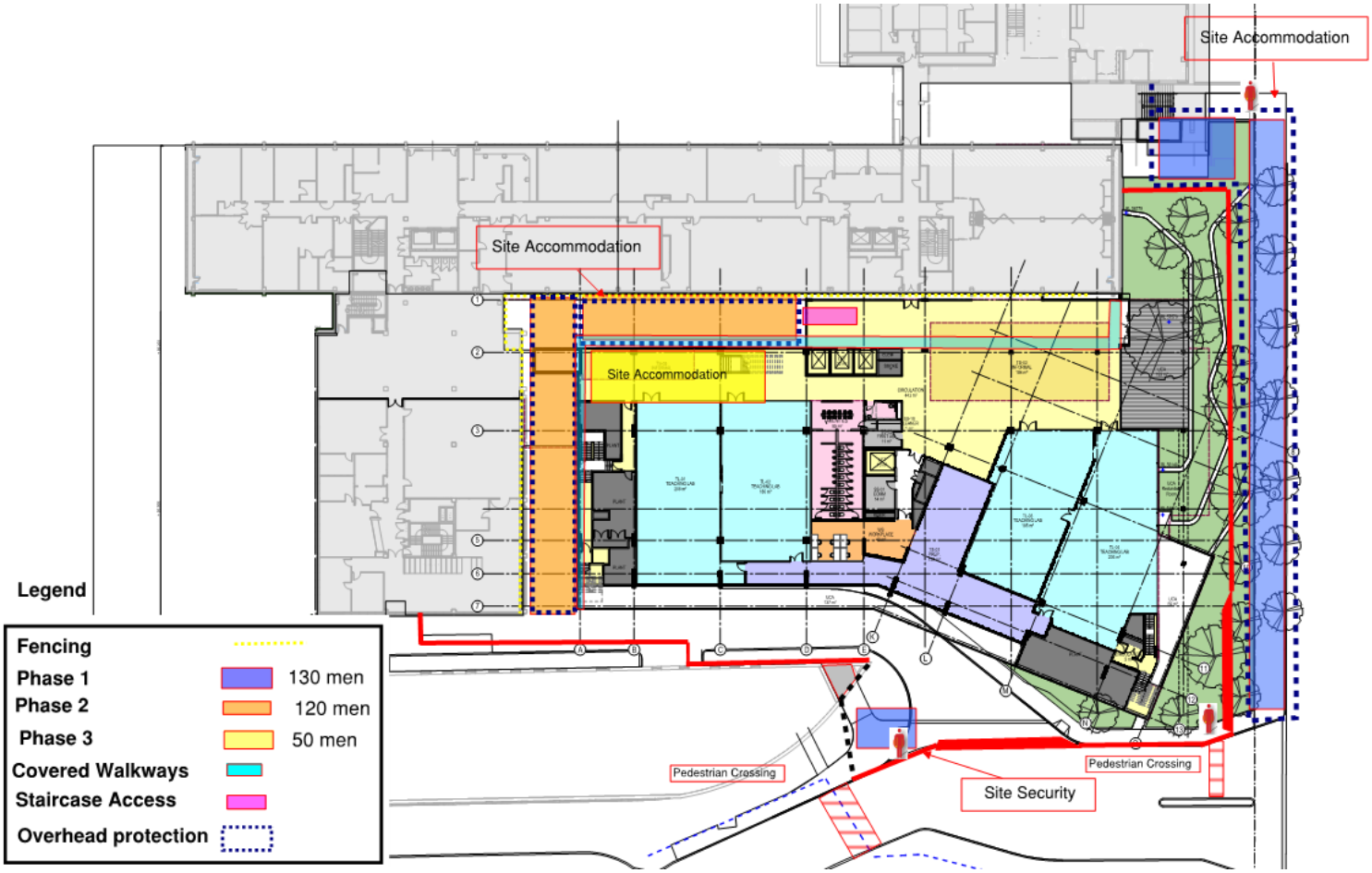

Figure 4: Site Accommodation

5.5 Location of Tower Crane

Following advice from Sydney Airport Corporation Limited (SACL), anything exceeding a height of RL 85.00 will require approval and consents from SACL. The Contractor will be using a hammer head crane with 60m boom length to construct the works. The RL of the crane is 117.270, which exceeds RL85.00, therefore approval from SACL will be required.

This crane will be erected at the commencement of superstructure and positioned on the north-eastern side of the project adjacent to existing Building D26.

Mobile cranes will be required for the installation and removal of the tower crane and for any heavy lifting above the capacity of the tower crane. The use of mobile cranes, given the traffic movements on the surrounding streets and within the University campus, will need to be limited and carefully reviewed and approved by UNSW.

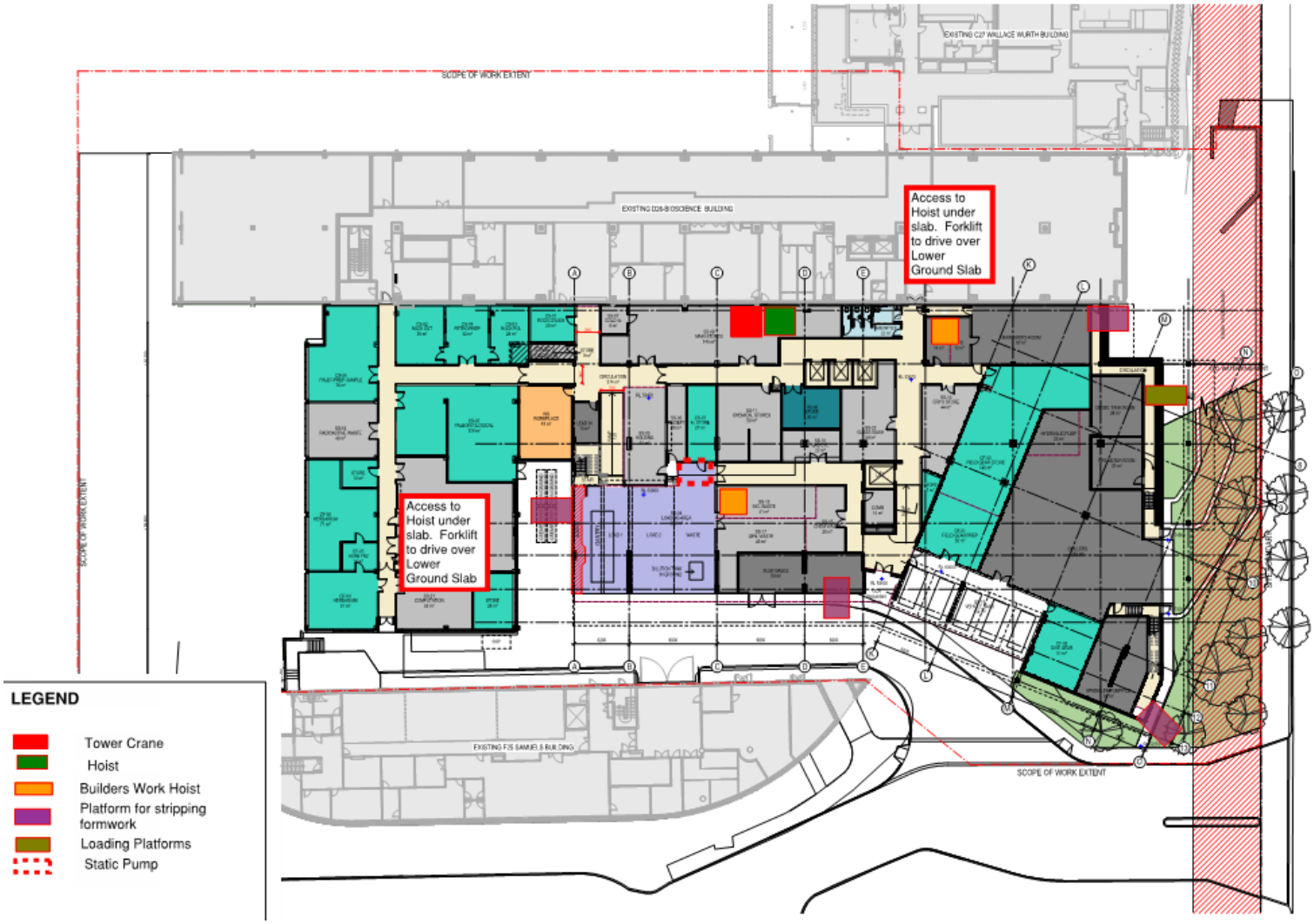

Figure 5 Location of Tower Crane

Builders Hoist

One twin low speed man and materials hoist will be located on lower ground slab next to the tower crane once the level 2 slab is constructed. The hoist will provide temporary vertical transportation throughout the structure, services and finishes stages until the internal goods lift and one passenger lift is available for use as a temporary builder's lift to service the construction works.

Loading Platforms

Loading platforms will be installed progressively as the formwork is stripped, for removal of formwork, façade delivery, sprinkler pipe work, plasterboard and localised building plant and equipment. The loading platforms will be serviced by the tower crane and will be removed progressively as the façade and finishes are completed on each level.

5.6 Materials Handling and Storage

A 50m construction zone is required along Botany Street where all crane lifted materials and semi-trailers will be unloaded. The construction zone, will result in approximately 7 car parking spaces on the eastern side of Botany Street to be temporarily lost. This will enable existing north bound traffic and the dedicated east turning lane into High Street to be diverted around the construction zone. Existing line marking will need to be temporarily changed and reinstated upon removal of the construction zone. This is subject to agreement with Randwick Council and RMS.

Upon removal of formwork back propping from Lower Ground Floor level, Lower Ground Floor will become a secondary materials handling zone and larger concrete pumping zone within the site boundary which will reduce site delivery congestion to the construction zone.

Concrete Handling

A truck mounted boom pump will be established within the site boundary to pour the Lower Ground superstructure. Concrete pours up to Level 2 will be serviced from a concrete static pump located at construction gate 1.

Due to site access restrictions, concrete pours up to Level 2 will be restricted to a one concrete truck feed. Once the secondary Lower Ground Floor materials handling area is available, the static concrete pump will be relocated to this location to enable additional concrete truck delivery staging area and two concrete truck feed. The uppers floors slabs will be divided into four slab pours.

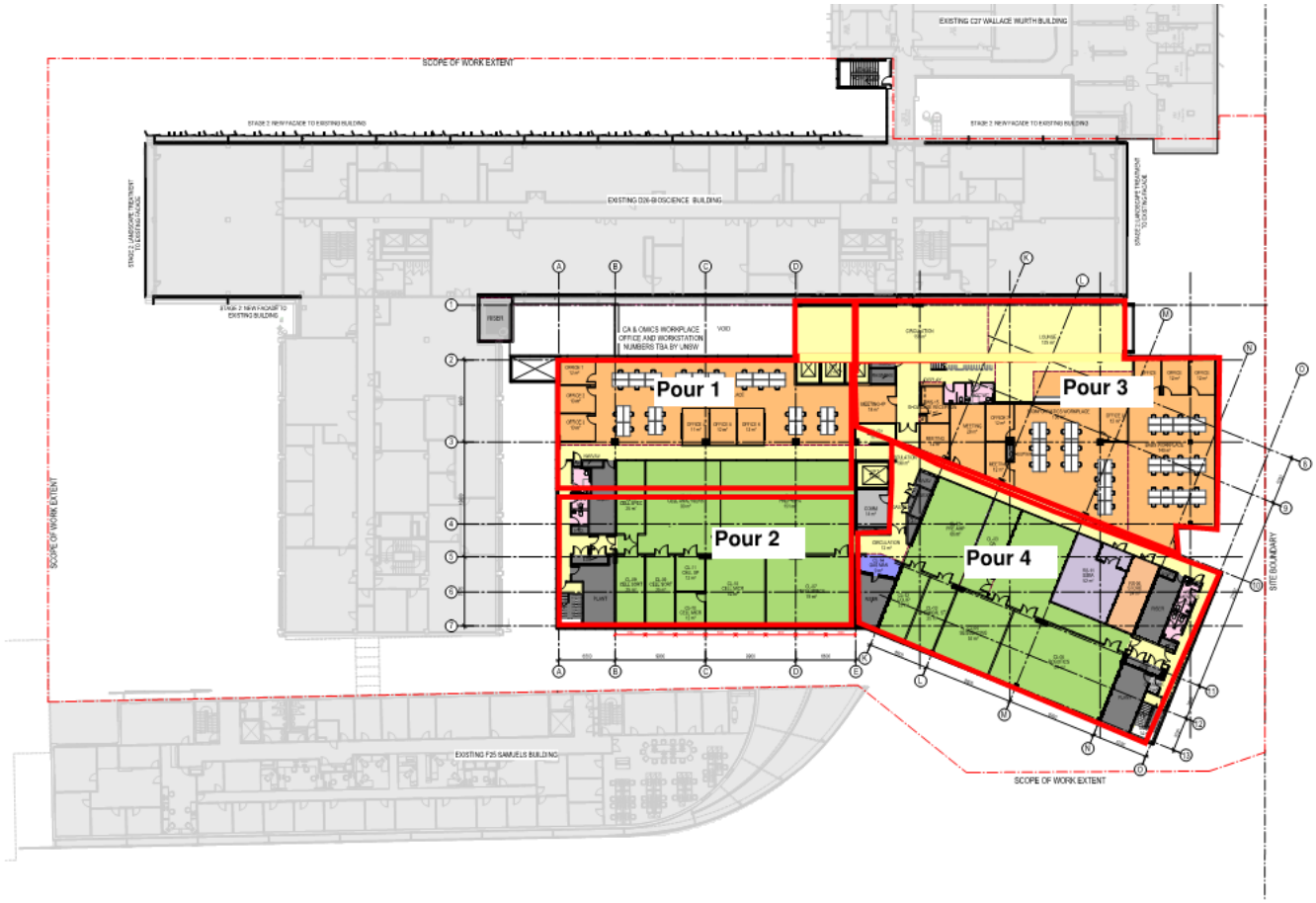

Figure 6 Pour Sequence Upper Floors

Six concrete lift cores are to be constructed as well as stair and services risers. Two concrete placing tower booms will be required to cover the extended building footprint to facilitate safe concrete placement. Refer to Figure 7 Jump Form and Concrete Pump Layout.

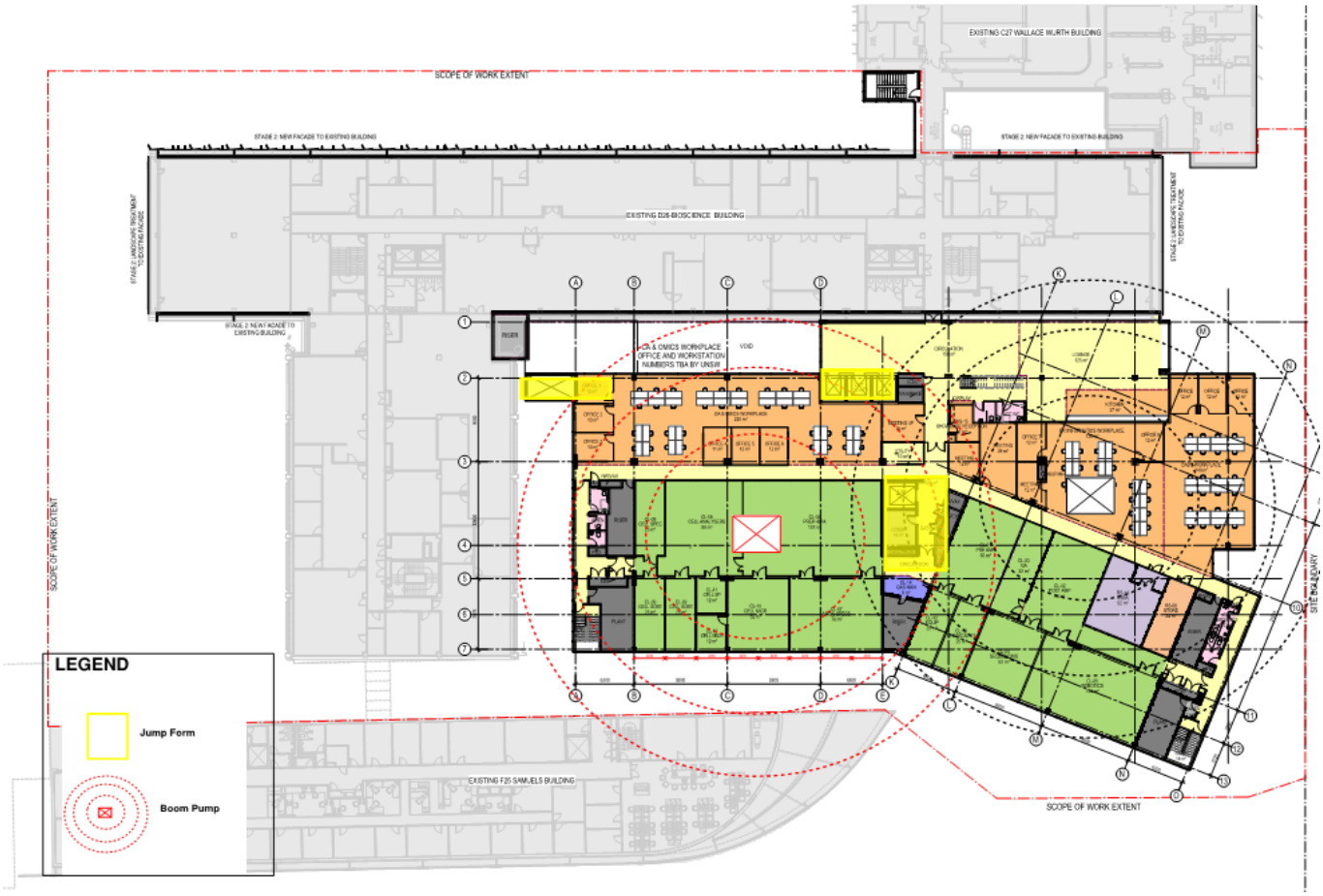

Figure 7 Jump Form and Concrete Pump Layout

5.7 Construction Traffic Management

As part of the Traffic Management Plan, construction vehicles will have to approach the site from the south via Barker Street to north bound traffic flow into the Botany Street Construction Zone. Two licensed traffic controllers will be positioned on Botany Street construction zone and one traffic controller located at construction gate 1 to control delivery vehicle entry and exit.

All deliveries will need to be booked in at least 24 hours prior to the delivery with our dedicated materials handling coordinator. A delivery schedule will be produced each morning for that day , this will be monitored by the materials handling coordinator and traffic controllers as required throughout the course of the day, taking into account any change of circumstances on site, inclement weather or any other unforeseen delays.

In addition to this, there will be an allocated holding area off site, which will be utilised, when the site area is busy. Delivery drivers will be instructed to temporary relocate to this area, by our material handling coordinator. Sub-contractors will be made aware of this at the pre start meetings so they can inform their haulage contractor of the allocated area. This will all be included in the Traffic and Pedestrian Plan

Refer to Figure 8 below for the Traffic Management and Pedestrian Access for Phase 1 and Phase 2.

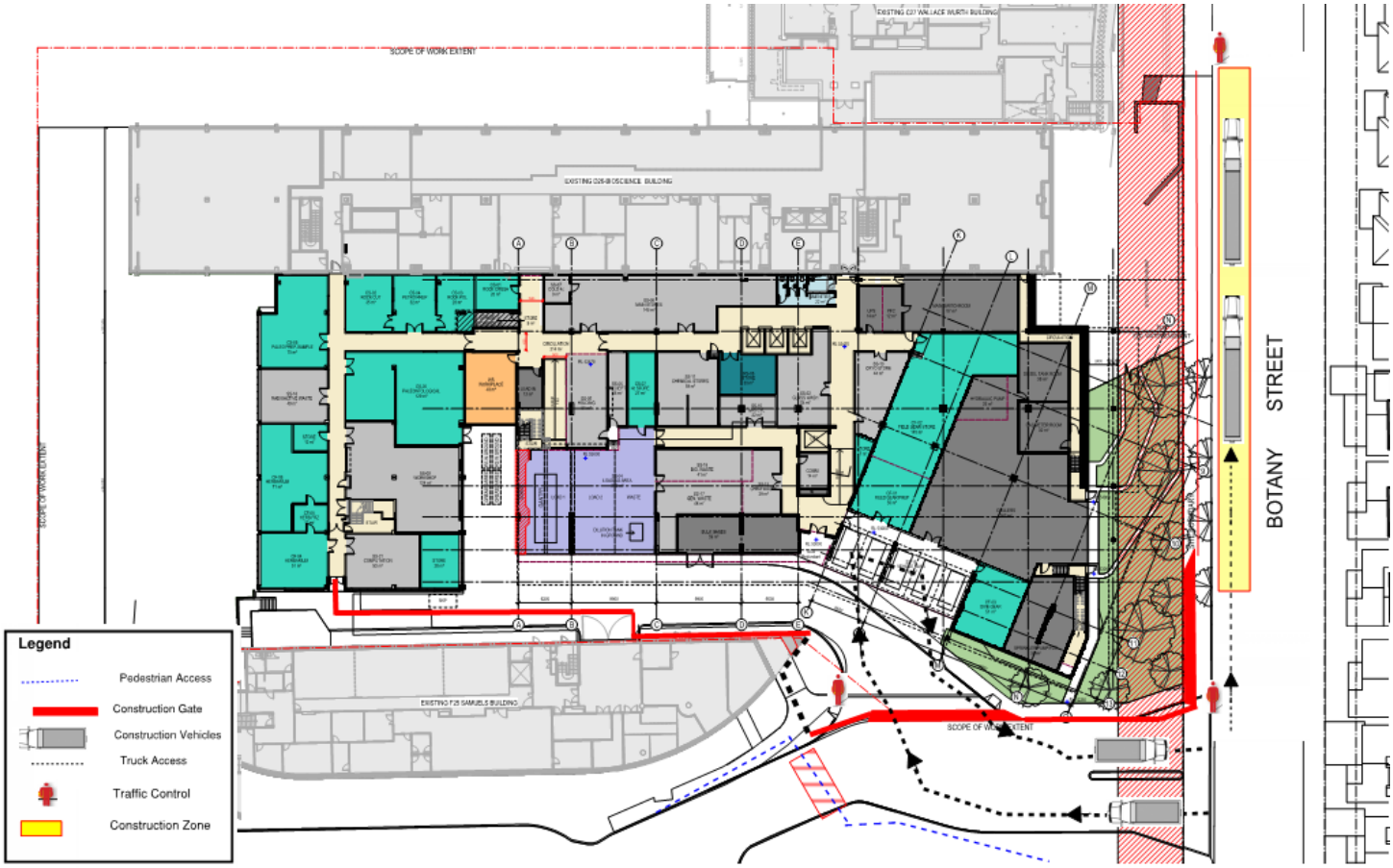

Figure 8 Traffic Management & Pedestrian Access for Phase 1 and Phase 2

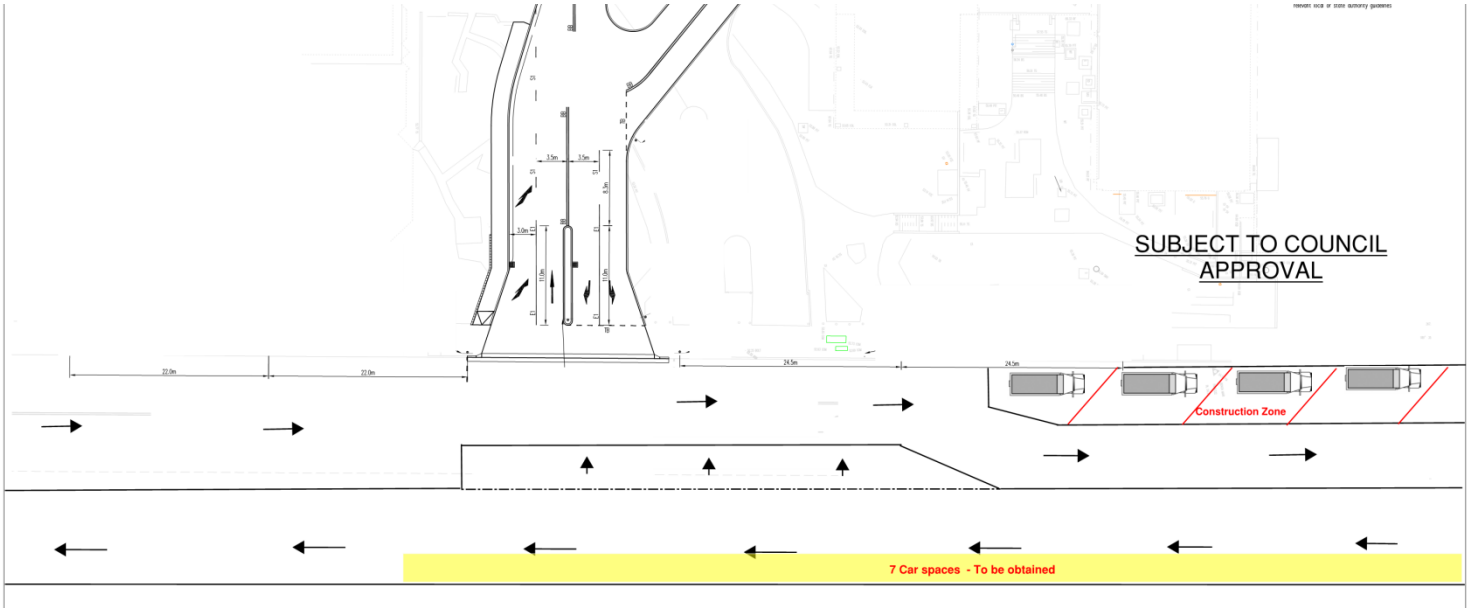

Figure 9 Line Markings Botany Street

5.8 Pedestrian and Vehicle Access

The current pedestrian routes on Botany Street and Library Walk will be maintained with overhead protection employed as an additional safety measure anywhere the site boundary adjoins either road. There will be traffic controllers located at both construction gates 1 and 2 to ensure any vehicle entering or exiting the site does so safely and with due care for pedestrians.

5.9 Road Signs

All temporary roadwork signs shall comply with AS1742.2-2002 and shall be suitable for use on RTA roads.

5.10 Waiting Zones

Waiting zones for construction vehicles will be coordinated within the Construction Zone on Botany Street or in designated areas within the local district (subject to the Contractor obtaining necessary approvals from UNSW, Randwick City Council and RTA (if applicable). Under no circumstances are construction vehicles permitted to wait in UNSW road network, on UNSW marked loading zones or UNSW parking spaces without the prior approval of UNSW.

5.11 Construction Personnel Access

All construction personnel will be inducted to enter the site via the Gate 11 site compound. Provision will be made for an emergency exit gate on the western side of the construction compound to allow construction personnel to meet at a safe emergency evacuation point.

5.12 Neighbour Management

In order to ensure that UNSW neighbours are fully informed and aware of the proposed construction activities the Contractor will provide regular updates to the project's nominated UNSW Communications Officer who will also be available to respond to specific issues that may be raised by UNSW tenants and the general public. The Contractor will nominate a site liaison officer to maintain a high level of dialogue is maintained between UNSW and the Contractor and that project communications protocols are enforced.

5.13 Site Security

The contractor will employ a licensed security firm to provide security services on site. This will include the following:

Static Guarding – A fully compliant and professional static security officer will be provided during construction hours. During the early stages of the project, visiting security patrols will ensure that the site is secure outside of working hours. As the works progress, the frequency and duration of the security patrols will be increased as necessary. Standard operating procedure is to engage a security firm to provide security services from 6am to 6pm. Security Guards will be located at the main site entry in view of the exit gate, thus providing a controlled and secure site.

Compliance Management – The security subcontractor will provide a compliance operator to operate the SMARTEK compliance system that is proposed to be commissioned. The operator inputs all induction paperwork for each person entering the site and provides an ID card with passport style photograph once the person has been inducted. This card carries all their company and personal details including insurances, industry green card and induction details. This card is to be presented each time that person enters the site allowing the Contractor to have a record of who has come to the site. It also acts as a way of preventing personnel from entering the site without the necessary insurances. Plant and equipment is also documented in the same way and insurances and maintenance records entered in the system to ensure that all plant is suitable for working on the site.

Access Control – Security guards will be stationed at the open entry gates to provide access control to the site. Each individual entering the site will have his/her ID card scanned by the compliance system hand held scanner, those without an ID card will have to provide an alternate form of ID to verify their identity prior to entering site. Visitors will be required to provide identification and sign the visitors' register at the main site entrance.

5.14 Protection of trees

The site has a number of trees of varying sizes that are proposed to be removed to allow construction of the new building. The exact number and extent of trees to be removed will be subject of an arborist's assessment and recommendations.

Where possible, trees in the vicinity of the new building will be retained and integrated into the adjacent landscaping or building external works. Trees designated to be "retained" within proximity to the vehicular and pedestrian access ways, are to be fully protected from damage during construction in accordance with the recommendations of the arborist's report. Trees are to be identified by signage as being "retained" and physical barriers are to be installed to prevent damage to the truck or root zone.

5.15 Waste Disposal

The Contractor will reduce, recycle, and reuse a minimum of 80% of construction waste from the site, aiming to maximize the quantities of materials diverted from landfill by avoiding, reusing, recycling, reprocessing and recovering. The Contractor is also committed to the on-going monitoring, tracking and reporting of waste and waste emissions reduction. Rubbish bins will be centrally located within the site.

A specific Waste Management Plan will be developed in accordance with the Contractor's Environmental Management System to ensure optimum waste management initiatives are implemented.

The waste management subcontractor will provide monthly reports detailing the overall percentage of rubbish being recycled from this project. This information will enable the Contractor to monitor the effectiveness of the implemented waste management strategies and take appropriate steps to improve if necessary.

Every subcontractor will be required to recycle, return, re-use, and reduce the waste materials produced as a result of the Project.

They will be required to provide bins on the floors and to clear their rubbish as it accumulates. These bins will be brought down the building in the construction hoists and loaded via forklift into the large skips for removal from site. In addition, all subcontractors are responsible for removing their own packaging and other re-useable items such as pallets from site; this policy promotes recycling by subcontractors and suppliers and removes unnecessary packaging at the source rather that at site. In this way, the amount of rubbish being sent to landfill will be minimised.

Methods involving off-site fabrication and assembly of certain construction elements will be developed and initiated where ever possible on the project.

5.16 Hazardous Materials Disposal

In the event that hazardous materials are uncovered once site works have commenced the removal and disposal of hazardous materials will be carried out strictly in accordance with Work Health and Safety Act and Regulations 2011.

5.17 Dust Control

By its very nature the construction process will at times create inconvenience in the form of dust. In keeping with the requirements of the tender documents the Contractor will take steps to ensure that instances of inconvenience are minimised. A dust mitigation strategy will be put in place during construction activities. The contractor will minimise the dust created by construction activities by utilising suppression methods such as;

- encapsulating our work zones through the construction of 2.4m plywood hoardings and bulkheads within the work zone;
- wetting down to suppress local dust-generating activities;
- reviewing all work methods prior to commencing to ensure dust-generating works are managed accordingly;
- being diligent in our approach to general housekeeping and rubbish removal;
- reviewing tool and plant selection in an attempt to select plant with local vacuum extraction system fitted if suitable;

- reviewing the option of off-site manufacturing of finished elements to reduce dust-generated construction related works onsite;
- progressive mechanical sweeping of hardstand areas to clear debris and dust;
- monitor weather conditions assess commencement of specific works if the above controls cannot control the dust especially during windy times; and
- a road sweeper may be employed to reduce the dust and debris from any site vehicles entering or exiting the site.

5.18 Noise Control and Hours of Operations

In order to help meet the noise and vibration requirements of the site the Contractor will engage an acoustic consultant to assist in the compilation of a Construction Noise and Vibration Management Plan and to undertake noise and vibration monitoring for the duration of the project. Local environmental monitors will be located in nominated areas to monitor the impact of the works on a daily basis. This monitoring will be conducted in conjunction with the Contractor's systems and procedures.

Work practices that minimise noise and vibration will be used wherever possible. These include but are not limited to the following:

- plant and equipment selection to reduce noise where possible, with plant and equipment fitted with silencers;
- methodology development aimed at finding alternatives capable of reducing noise and vibration where possible;
- location of major plant such as cranes and concrete booms away from noise and vibration sensitive areas where possible;
- noise levels shall be measured and reported in accordance with AS1055.1, 2&3 and ISO 1999.1,2 & 3 and in accordance with the Design Brief Section 31.3.3;
- noise monitors will be located in nominated areas to monitor the impact of noise on a daily basis;
- a weekly inspection to be carried out on site to ensure all plant is well maintained;
- vibration levels shall be measured and reported in accordance with AS2670.1 & 2 and ISO 2631-1,2 & 3 and as outlined in the Design Brief Section 31.3.3; and
- vibration monitors will be located in nominated areas. Measurements will be performed using an accelerometer.

Hours of work will be restricted in accordance with the conditions of consent.

6. EROSION AND SEDIMENT CONTROL

Prior to commencement of construction works, a sediment control management plan will be submitted. Sedimentation controls include:

- establish silt fence on all down gradient boundaries. The silt fence will be constructed from a geo-textile fabric and posts. The geo-textile will be dug into the ground for a depth of 200mm and the supporting posts are to be no further than 3m apart.
- existing storm water inlets on the site are to be maintained and protected using geo-textile fence as above.
- inspect all vehicles for residual mud and remove before leaving site.
- road sweeper to be employed to reduce sediment on roads.
- all stockpiles are to be located away from drainage areas.
- weekly inspections are to be carried out and recorded to ensure control measures are effective and maintained.
- kerb side drains are to be protected through the use of geo-textile sausage filled with blue metal

Any material that is inadvertently dragged on to the road is to be cleaned up immediately

7. COMPLAINTS MECHANISM

From the commencement of site activities until completion of the works the Contractor will be required to maintain a site liaison officer on the project. This officer with be contactable by both a mobile phone and email and the contact details will be clearly advertised on site hoardings, community updates and the like. Any members of the community with complaints or concerns regarding construction activities will be able to contact this officer to express their concerns. The Contractor will be required to maintain a register of complaints and to report on the status of complaints on a monthly basis. In addition the University will provide site signage that clearly notes the relevant contact within the University with responsibility for addressing complaints during the construction phase