



UNIVERSITY
OF WOLLONGONG
AUSTRALIA

DONALD
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CORKE

Preliminary Construction Management Plan

University of Wollongong – Western Building

(Includes Waste Management Plan)

September 2017



Western Building – Schematic Design (View from South-East)

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I INTRODUCTION

The new Western Building for University of Wollongong will comprise of teaching spaces, staff facilities and offices, gallery, specialist performance theatre spaces, specialist recording studios, specialist facilities for media arts and communications and digital media, and specialist WHS teaching spaces. Interactive outdoor teaching spaces will also be incorporated.

The site currently houses teaching space and general purpose demountables, most which are assigned for relocation prior to this development. The Project when completed will accommodate:

- A site footprint of approximately 3,500m²;
- A four-storey base building, equating to approximately 10,500m² in gross floor area;
- Specialist studio facilities; and
- Academic & Professional Staff Offices.

The proposed site is within the Western Precinct of the Wollongong Campus and is opposite Building 21 - Early Start Facility on the Campus Ring Road and as shown in **Figure I** below.



Figure I: Project Site



2 PURPOSE OF THE PLAN

This Preliminary Construction Management Plan (PCMP) has been prepared for the University of Wollongong (UOW) Western Building project, and accompanies the State Significant Development Application (SSDA).

The plan sets out the minimum provisions for compliance by the principal contractor once the construction contract is awarded. Upon appointment, the Principal Contractor will provide a detailed CMP for the construction phase to meet all legislative, client and stakeholder requirements.

University of Wollongong and the appointed Principal Contractor will comply with all legislative obligations including the *Work Health & Safety Act 2011*, relevant codes of practice and conditions of any future Development Consent.

The anticipated construction commencement is May 2018 and completion by September 2019.



3 AUTHORITY APPROVALS

3.1 Licences and Permits

The Principal Contractor will prepare and submit applications as necessary for Works Zones, Road Openings and Hoarding applications to the relevant Authorities as required.

3.2 Pre-Establishment Planning

Early planning activities will be conducted by the appointed Contractor prior to establishment on site. Early planning activities will include, but are not limited to, the following:

- Dial before you dig;
- RMS required traffic management measures;
- Stakeholder notices;
- Dilapidation surveys;
- Services connections, disconnections and/or capping; and
- Management Plans (WHS, EMP, PMP, CMP, TMP, SSMP, QMP)

3.3 Working Hours

Working Day	Working Hours
Monday to Friday	0700 to 1700*
Saturday	0700 to 1700*
Sunday and Public Holidays	Not Permitted

*or as conditioned by Wollongong City Council or other Consent Authority



4 PRE-CONSTRUCTION PLANNING

4.1 Site Establishment, Entry, Exit & Wayfinding

Upon confirmation of the date for site possession, the Principal Contractor will make arrangements for the connection of temporary services, arrange for deliveries and installation of the site compound, establish vehicle access points, emergency evacuation points, hoarding, gates, and installation of all environmental protection devices. The principal contractor will undertake checks of all temporary installations to ensure that the protective measures are performing as expected. The contractor will also ensure that any required repairs over the course of construction are undertaken.

The site compound will typically comprise the following:

- Site offices;
- Subcontractor lunch rooms/facilities;
- Site ablution facilities;
- Clearly defined material handling zones; and
- Secured entry and exit paths

All visitors to site will be required to be inducted by the Principal Contractor's Representative. Induction processes will be outlined further in the CMP to be developed by the Principal Contractor upon appointment of the Principal Contractor.

4.2 Traffic Management

When developing traffic management measures, the Principal Contractor will take into consideration that the site is located on a University Campus, and that the campus is located within a mixed use area with residential and educational uses.

Construction access will be generally via Robsons Road adjacent to the works. Construction vehicle movements and turning paths within and to the site should be investigated in further detail once a Contractor has been appointed and the site entry is finalised.

If a vehicle is required to enter the site via a reverse manoeuvre, fully manned traffic control procedures shall be implemented. These reversing manoeuvres should be arranged during quiet traffic periods where possible to avoid disruption to the local road network.

Prior to construction starting, a Construction Traffic Management Plan will be prepared by the appointed Contractor will focus on but will not be limited to the following:

- Ensuring safe vehicle and pedestrian access at the Ring Road entrance;
- Maintaining safe access to all adjacent car park areas and pedestrian thoroughfares;
- Fire egresses;
- Existing traffic flow and effects on surrounding road network;
- Truck routes;
- RMS requirements;



- Authority Permits and approvals; and
- Existing Service Infrastructure in and around the site

4.3 Deliveries & Parking

The University operates a Restricted Parking Area Scheme. The Contractor will be responsible for fines issued by the University as a result of Contractor and Sub-Contractor parking infringements.

Deliveries will be accepted within the construction site in the dedicated unloading area. All Contractor delivery vehicles shall at all times observe the safety and traffic control requirements of the University's Traffic & Parking Department.

At all times, on all roads on University owned land, the following speed limits will apply:

- University Ring Road 40 km/h; and
- Car parks and shared zones 10 km/h.

4.4 Construction Staging & Methodology

A detailed Construction Staging & Methodology Plan will be developed by the Principal Contractor upon engagement. When developing this, the appointed Contractor will need to take into consideration that the site is located in an existing, live and operational facility with considerable pedestrian movement in and around it.

Attached, in Appendix A is an indicative Site Plan drawn by Hassell outlining the proposed extent of the boundary of the anticipated site area.

4.5 Site Notices & Signage Board

The Contractor shall provide sign-boards as required to comply with WorkCover and OH&S requirements. The Contractor will be permitted to erect a single signage banner to the hoarding at the main entrance point to identify the site.

4.6 Materials Handling

Material loading and unloading on site will be performed in specific materials loading, unloading and storage areas. No disturbance will occur to neighbouring sites during the loading/unloading of construction materials.

4.7 Hoarding and Fences

Prevention of unauthorised access to the site is a very high priority and will be vigorously managed throughout the construction period. When the Contractor is appointed, the site will be secured with security barriers and hoarding in accordance with construction documentation and code requirements. Alternate pedestrian routes around the project site will be created and clearly signed.



A hoarding is to be provided around the perimeter of the project site in accordance with the requirements of the Occupational Health and Safety Act, and NSW WorkCover. The standard of the hoarding is to be to the University's requirements in terms of its finish.

4.8 Temporary Protection

The Contractor is to provide protection to existing building elements potentially impacted by the works, including form concrete, glazing, balconies, paving, access ways and landscaping. Protection should be in the form of drop sheets (taped as required), hoardings or fencing.

The Contractor will be required to undertake a complete dilapidation report on all surrounding buildings, infrastructure, on-grade carparking and road networks, and landscape and vegetation prior to commencing any physical construction activities on site.

4.9 Major Plant and Equipment

During excavation, heavy earthmoving equipment will be active on-site. This work will include tree removal and mulching, top soil removal and it is anticipated rock ripping, loading and removal. As the excavation deepens, the earth walls will be nailed to prevent slippage.

During construction the following equipment will be used:

- Bulldozers, backhoes and excavators;
- Articulated and fixed trucks;
- Mobile / Fixed cranes;
- Concrete delivery trucks;
- Concrete pumps;
- Man and material hoists;
- Scissors and boom lifts; and
- Fork trucks

4.10 Dust, Noise and Vibration Control

Noise and vibration matters are to be detailed in the Construction Noise and Vibration Management plan to be developed by the Principal Contractor upon appointment. Key risks and mitigation will be detailed in the Principal Contractor's CMP. Below is a list of considerations that will be addressed to control noise and vibration:

- Turn off plant that is not being used;
- Induction of all site staff, including Contractors, site managers, temporary equipment operators in the use of low noise producing work practices;
- Avoiding the coincidence of noisy plant working simultaneously adjacent to neighbouring facilities, where practicable;
- Where possible, equipment with directional noise emissions should be orientated away from adjacent facilities;
- Loading and unloading materials should be conducted away from adjacent buildings, where practicable;
- Arrange the work site to minimise the use of movement alarms on vehicles and mobile plant;
- As applicable, install noise and vibration monitors to measure and record discomfort levels;
- Daily monitoring of work activities;



- Investigate noise complaints or causes of excessive noise and implement control measures as required to manage noise emissions; and
- Ensuring that workers on site be made aware of the dangers of long term exposure to excessive levels of noise

Compliance with noise and vibration restrictions as set out in an approved Development Consent will be complied with at all times. Work on site will be monitored in conditions of high wind to mitigate high levels of dust being created. In some circumstances the works creating the dust may cease until more suitable conditions prevail. Areas subject to dust creation will be 'watered down' on a regular basis, where continued periods of high wind exist.

4.11 Air Quality Management

The construction process can lead to the generation of unacceptably high levels of dust or other air pollution. Once appointed, the Contractor will be required to implement a site specific Environmental Management Plan (EMP). The EMP will include systems and procedures that are to be implemented during construction to establish air quality management during the development.

4.12 Erosion & Sediment Management Plan

Soil erosion and sediment control measures will be implemented prior to commencement of work on the site. These control measures will be inspected on a regular basis in accordance with the Principal Contractor's site management plan.

In times of inclement weather site personnel will wash down vehicles leaving the site to further prevent dirt contaminating the surrounding road network. All vehicles leaving the site will be monitored by site personnel to ensure loads are covered before exiting onto the surrounding road network.

4.13 Notification of Commencement of Works

Project Stakeholders will receive written notification of the commencement of the project and will also be given updates on the progress of the works throughout the period of the project, where required. However, it is envisaged that there will be minimal impacts to adjacent properties throughout the duration of construction.

4.14 Community Complaint Handling Procedures

All community or stakeholder correspondences, concerns or complaints, if any, will be addressed by University of Wollongong in the first instance.

4.15 Contractor Construction Management Plan

An indicative contents list for the CMP is included in Appendix B for information.



5 WASTE MANAGEMENT PLAN

The following Waste Management Plan has been prepared for the purposes of outlining the general requirements for a project of similar size and complexity. Upon appointment, the Principal Contractor will provide a detailed Waste Management Plan as part of their Quality Assurance, as to meet all legislative, Client and stakeholder requirements.

5.1 Waste Sources Associated with Excavation and Construction

5.1.1 Statutory Requirements for Waste Management

University of Wollongong and the appointed Principal Contractor will ensure that all generation, storage, treatment and disposal of waste as a result of this project are conducted in accordance with all relevant waste legislation administered by the NSW EPA and work, health and safety requirements under WorkCover NSW. The main legislative requirements and guidelines that will govern the management of waste for this development are:

- *Waste Avoidance and Recovery Act, 2001*;
- *Protection of the Environment Operations Act, 1997*;
- *Wollongong City Council Development Control Plan (DCP), 2014 – Waste Management*; and
- *Work Health & Safety Act, 2011*
- ANY UNIVERSITY GUIDELINES AND REQUIREMENTS

5.1.2 Potential Waste Sources – Classification

An Environmental Advisor will provide advice throughout the excavation process to ensure waste material is classified in accordance with *Part 1 of the Waste Classification Guidelines 2014 by the EPA (NSW)* and removed from site in accordance with the relevant sections of the *Protection of the Environment Operations Act 1997*.

There are several sources of potential waste during the excavation and construction phases, including:

- Resource Recovery Material (Excavated Natural Material/Virgin Excavated Natural Material);
- General Solid Waste (Non-Putrescible);
- General Solid Waste (Putrescible); and
- Special, Restricted or Hazardous Waste Material

5.1.3 Potential Impacts & Methodologies

Excavated Natural Material (ENM) / Virgin Excavated Natural Material (VENM)

Virgin Excavated Natural Material (VENM) is naturally occurring rock and soil that exists in its natural undisturbed state at the time of assessment. Excavated Natural Material (ENM) is naturally occurring rock and soil that has been previously excavated from the ground and contains at least 98% natural material.

In accordance with the principles of Waste Management and the *Waste Avoidance and Recovery Act 2001*, opportunities for ENM and VENM re-use and recycling will be utilised. These materials, if applicable, may be temporarily stored on site for re-use or disposed of offsite at a licensed facility.



General Solid Waste (Non-Putrescible)

Non-Putrescible Waste comprises typical non-organic materials generated by the construction works that do not readily decay under standard conditions. These materials include, but are not limited to; soil, rock, glass, plastic, plasterboard, brick, concrete and metal.

The majority of the non-putrescible waste produced as part of these works will be generated during the construction phase. Best efforts will be made by the Principal Contractor to ensure that these wastes are minimised and recycled where possible. Where these materials cannot be recycled or re-used on site, they will be processed and disposed of at a licensed waste facility.

General Solid Waste (Putrescible)

Putrescible Waste comprises organic materials generated by the construction works that decay under standard conditions. These materials include, but are not limited to, organic matter, domestic debris such as food waste and plant matter. Putrescible Waste will be collected and stored separately from other wastes produced during construction and disposed offsite by a licensed Contractor to either a 'green waste' facility or landfill.

Other Waste (Special, Restricted or Hazardous Waste)

Previous studies of the site have identified that there is a low likelihood of the site being affected by contamination that would pose an unacceptable risk to human health or the environment (refer Coffey report).

An unexpected finds protocol (UFP) will be implemented for during construction activities. The UFP would assist to provide direction that if during the excavation work, material is encountered which appears to be potentially contaminated or suspicious, excavation works should cease until inspection is carried out by a competent environmental consultant. In the context of the above, potentially contaminated or suspicious material would include stained or odorous soil, fibrous material, asbestos sheeting, drums, metal or plastic chemical containers or brightly coloured material, septic pits etc.

Any waste oils accumulated during maintenance of heavy machinery will be disposed offsite by the contractor as part of their own licence agreements. Waste oil contractors and maintenance and refuelling contractors will be required to have spill response procedures in place. Refuelling will be carried out at designated areas to control potential spill and maintenance issues. Spill response equipment will be stored at the construction sites in the event of unforeseen spills due to hose breaks, etc. Minor waste and oil spills will be contained, and impacted soils disposed of according to NSW legislation.

5.2 Mitigation Measures

5.2.1 Detailed Waste Management Plan

A detailed Waste Management Plan (WMP) will be developed once a Contractor has been engaged to undertake the built works and will form part of a Construction Management Plan (CMP), which would include:

- Designated stockpiles, recycling areas, bins and a clear indication of the waste streams associated with each one;
- Stripped topsoils, if any, generated through earthworks would be stockpiled for later use;
- Plans of protection measures for waste storage areas;
- Waste handling, management and storage procedures;



- Disposal procedures for each waste stream;
- Training for on-site staff on the contents of the WMP; and
- Emergency plans and contingency plans

5.2.2 Waste Tracking

Waste Management Guidelines

In accordance with the *Protection of the Environment Operations Act 1997*, and the EPA's *Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-liquid Wastes*, waste tracking requirements apply to the generation, storage, transport, treatment or disposal of certain types of wastes. Potential wastes which could be generated on site that will require tracking include:

- Waste oils;
- Oil and fuel filters; and
- Oily water

Waste Register

A register of wastes will be kept throughout the construction project. The register will contain details pertaining to:

- The types and quantity of wastes for each load taken off site;
- The place to which the waste was taken for treatment or disposal; and
- The waste contractor used for each waste load.

5.3 Operational Waste Management

5.3.1 Waste management / Recycling Principles

The Contractor will be required to achieve compliance with the EPA guidelines.

Prior to demolition activities being undertaken, the Contractor is required to review the geotechnical and land contamination investigation reports. If required, any hazardous materials encountered will be removed and disposed of at a licensed waste facility.

As part of the contractual requirements for the Works, the Contractor will be required to provide all transport and disposal documentation for all waste materials.

The key to maximising recycling and minimising waste going to landfills is to effectively separate the individual materials during the demolition phase.

Material generated from the Works will be recycled where appropriate apart from selected soft demolition materials and any encountered hazardous materials such as asbestos, SMF, PCB'S and the like.



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6 APPENDIX A – CONSTRUCTION BOUNDARY



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Preliminary Construction Traffic Management Plan

Arts and Sciences Building

Prepared for University of Wollongong / 16 / October / 2017

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Revision Register

Rev	Date	Prepared By	Approved By	Remarks
0	21/09/2017	GC	JS	Draft
1	29/09/2017	GC	JS	Final
2	16/10/2017	GC	JS	Final updated

1.0 Preliminary Information

This Preliminary Construction Traffic Management Plan (CTMP) addresses the construction of the Arts and Social Sciences Building (Western Building) located within University of Wollongong's Wollongong Campus. It discusses the management of local traffic and construction vehicles related to the project. A Preliminary CTMP is required for this site as part of the Secretary's Environmental Assessment Requirements.

A detailed CTMP cannot be developed without the involvement of a Contractor and consideration of all final design selections. This Preliminary CTMP is intended to provide a framework within which a future CTMP can be developed and implemented and to demonstrate the potential operation of the construction site.

A finalised CTMP will need to be prepared and approved prior to construction once a Contractor has been appointed and details are known about the staging of works.

A CTMP is developed to satisfy the duties of various work, health and safety legislation, regulations and codes of practice. Traffic Control Plans (TCPs) will also need to be developed for the future site to demonstrate the traffic control procedures to be implemented. These must be in accordance with RMS and Australian Standards requirements.

The Contractor shall be responsible for acquiring the necessary certificates, licences, consents, permits and approvals relevant to the construction on this site.

2.0 Introduction

2.1 Site Location

The site of the proposed Arts and Social Sciences Building (Western Building) is located within the University of Wollongong's (UOW) Wollongong Campus. The Campus has three main vehicular access points. Two of these access points (Western and Eastern Entrances) are from Northfields Avenue with the third access point from Robson Road.

The proposed building is located within the Western portion of UOW's Wollongong Campus adjacent to Ring Road, the Western Car Park (P4) and forested areas.

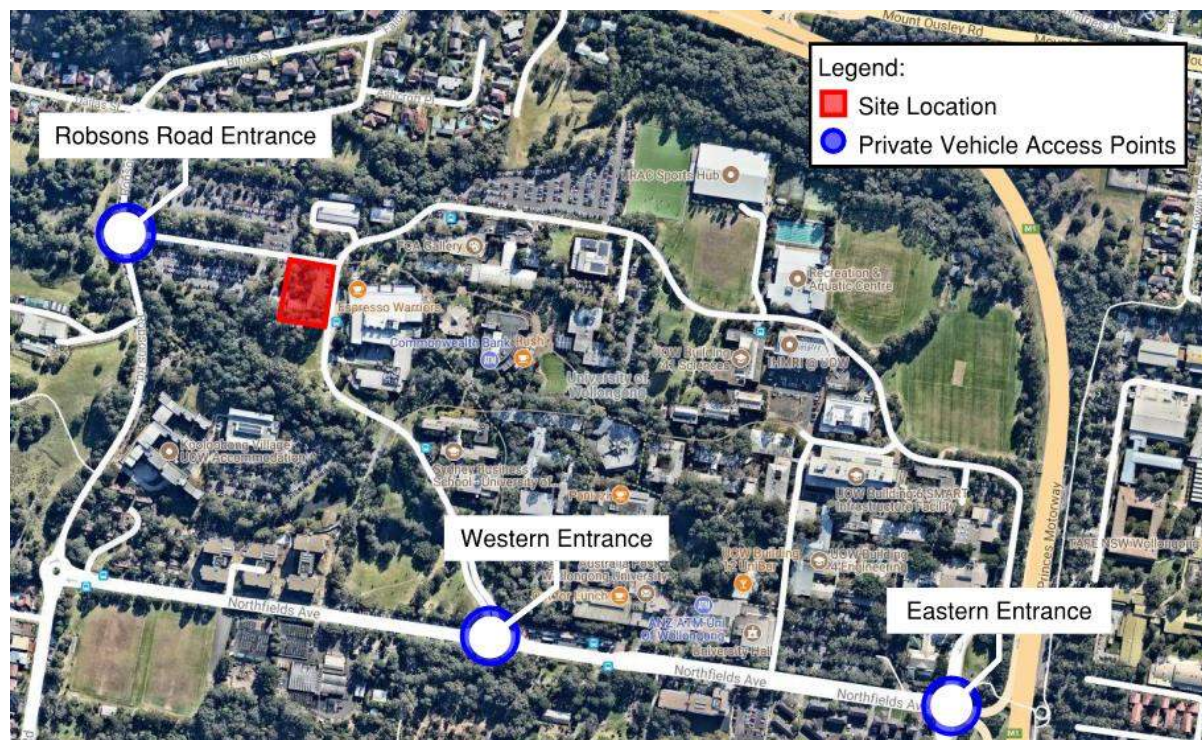


Figure 1: Site Location

2.2 Scope of Works

The existing site is currently occupied by existing demountable buildings, at grade carparking, footpaths and landscaped areas. Construction activities will include the following:

- Demolition of the existing facilities within the site.
- Construction of the proposed Western Building.
- Construction of landscaping and footpaths.
- Construction of the proposed loading facility.
- Construction of in-ground services and stormwater.

2.3 Construction Activities

The proposed works are anticipated to be undertaken in 2018-2020 and to be completed over a timeframe of 15 to 18 months. This construction timeline will need to be confirmed once a Contractor has been appointed.

2.4 Hours of Operation

It is anticipated that site works will be undertaken during standard hours of operation as follows:

- Monday to Friday 7:00am to 5:30pm
- Saturdays 7:30am to 3:30pm
- Sundays and Public Holidays None

Note that these hours have been approximated and are subject to approval by Wollongong City Council. Any works outside of these hours will require approval from Wollongong City Council.

3.0 Traffic Environment

3.1 Road Network

Ring Road is a two way local road internal to the Campus with one travelling lane in each direction. A number of traffic calming devices (including raised speed humps) are located along the road with at grade pedestrian crossings.

Northfields Avenue is a local road providing connection to the major entries to the Campus and connecting local traffic to the arterial road network.

Robsons Road is oriented in a north-south direction with one travelling lane in each direction and on street parking located along the western kerbside in a section of the road.

The site is connected to the arterial road network via the **Princes Motorway** which is accessed via the roundabout located at Northfields Avenue and Irvine Street. The Princes Motorway is a state road.

A number of other minor local roads are situated in the nearby area however these will not be subject to any construction traffic or operational changes.

3.2 Transport Facilities

3.2.1 Public Transport

Bus Services

UOW operates free shuttle buses that service the Campus and link with nearby train stations. Additionally, public bus services operate that link the Campus to further locations. Refer to Table 1 for a summary of the bus routes that service the Campus and Figure 2 for a map showing the bus routes within Wollongong.

Table 1: Bus Routes Servicing the Site

Route Number	Areas Served	Frequency During Weekdays
Free UOW Shuttle Buses		
55A and 55C (Gong Shuttle)	Wollongong Station, North Beach and the Innovation Campus	Every 10 minutes 7am to 6pm and every 20 minutes 6pm to 10pm
9 and 9N (North Gong Shuttle)	North Wollongong Station, International House, Ring Road and the Wollongong Campus	The service operates regularly between 7:30am and 9:50pm and aims to match the train schedule
GK (Gwynneville Keiraville)	Keiraville, Northern West Wollongong, Gwynneville, Smiths Hill and the Wollongong Campus	Every 15 minutes during peak times and every 30 minutes between the hours of 7:45am to 1pm and 3:30pm to 10pm
Public Bus Services		
1U	Austinmer to UOW via Thirroul, Woonona, Bulli, Corrimal and Fairy Meadow	Limited
4U	Bulli to UOW via Pendlebury Loop and Woonona	Limited
11	UOW to Wollongong via Keiraville, Westfield Figtree and Coniston	Every hour
53	Stockland Shellharbour to UOW via Flinders Shell Cove, Shellharbour Beach, Warilla, Primbee, Warrawong and Five Islands Road	Every hour
887	Campbelltown to UOW and Wollongong via Appin	Every hour



Figure 2: Bus Routes

Train Services

North Wollongong Station is located roughly 20 minutes' walk away from the Campus or a 10 minutes bus ride on the free shuttle bus (Gong Shuttle). The station is serviced by the South Coast Line. Travel time from Central Station in the Sydney CBD is approximately 90 minutes to North Wollongong Station. The location of North Wollongong Station is shown in Figure 2.

3.2.2 Cycling Facilities

Cycleways connect the Campus to Fairy Meadow, North Wollongong and Wollongong Train Stations. Northfields Avenue bordering the south of the Campus has a dedicated shared path. Pathways throughout the main Campus are all shared between cyclists and pedestrians.

There are approximately 1,000 bicycle racks throughout the Campus located outside most buildings. Refer to Figure 3 for the location of bicycle parking within the Campus and Figure 4 for the cycleways network.

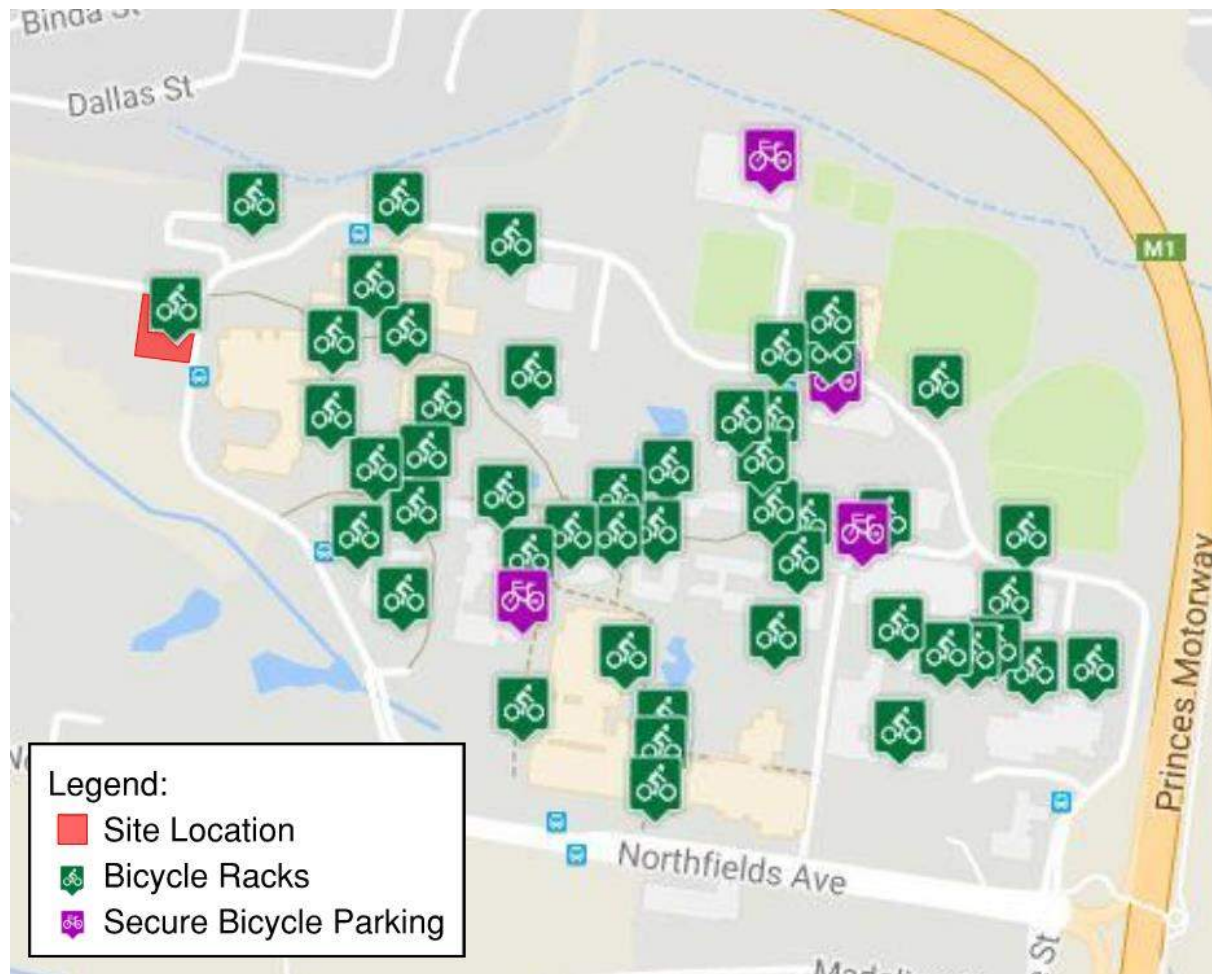


Figure 3: Bicycle Parking Locations

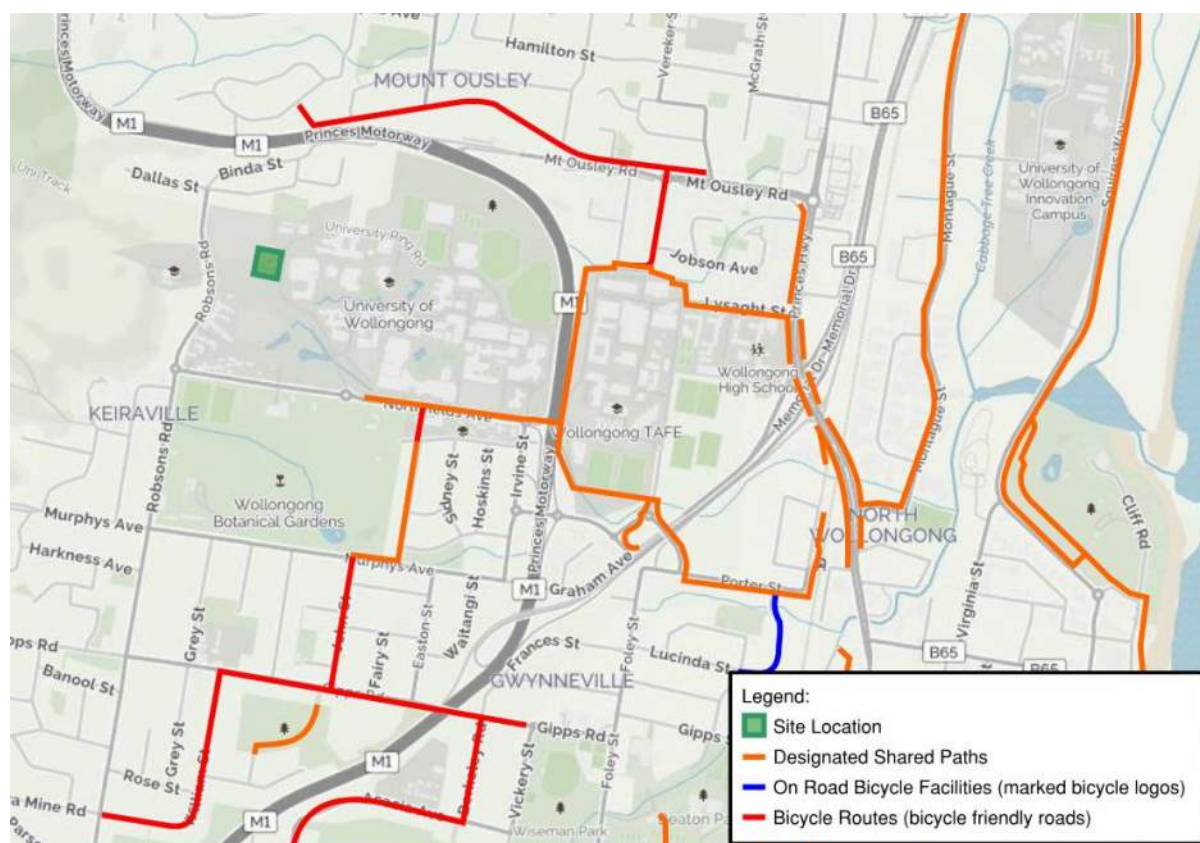


Figure 4: Bicycle Routes Near to the Site

3.2.3 Pedestrian Movements

Currently pedestrian access to the site is through the existing P4 car park. An at grade pedestrian zebra crossing is provided across Ring Road from the central Campus, however pedestrians are subsequently required to cross the access road of the car park to reach the site. Kerb ramps are provided to assist pedestrians in crossing this road.

3.3 Car Parking

3.3.1 Off Street Parking

A number of off street car parking spaces are located along the perimeter of the Campus as shown in Figure 5. There are currently eight parking location on the Campus, with additional parking along Ring Road. Parking within the Campus is ticketed.

The site is located adjacent to the P4 car park which is accessed by Robsons Road and Ring Road.

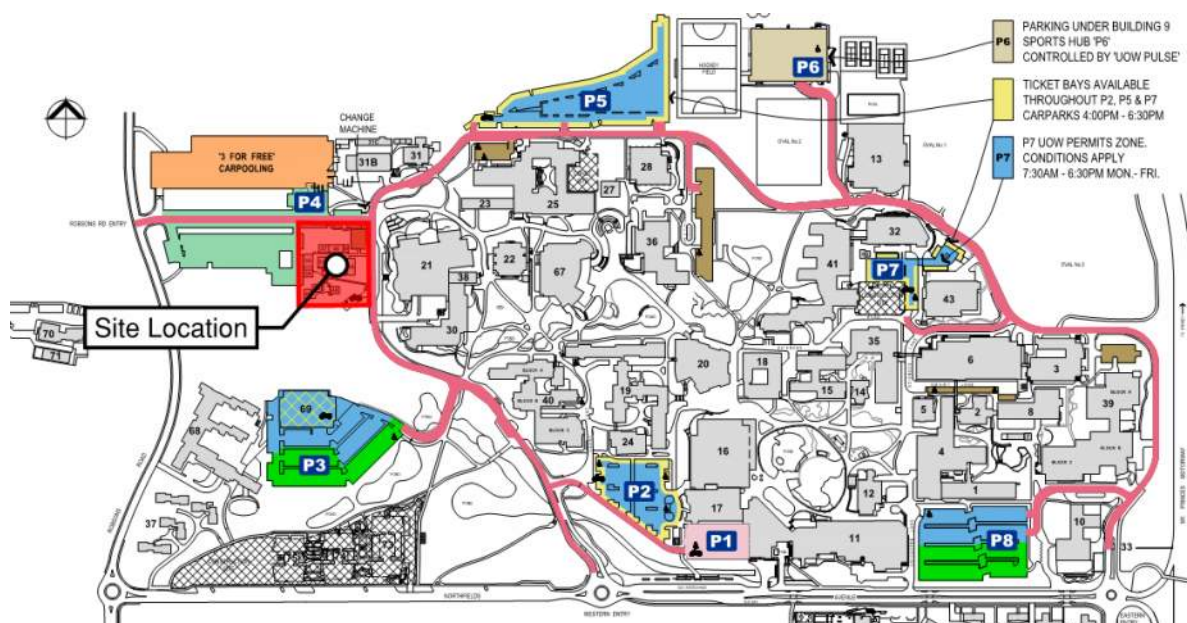


Figure 5: Locations of Off Street Parking

3.3.2 On Street Parking

There are available unrestricted on street parking spaces along Robsons Road and Northfields Avenue, two bordering roads of the Campus. Additionally there are over 2,000 parking locations in surrounding neighbourhood streets.

4.0 Management of Construction Vehicles

4.1 Truck Routes to/from Site

It is likely that site access will occur from Robsons Road. This would need to be confirmed once a Contractor has been appointed. Following this, access to the site is suggested to be via the following routes (refer to Figure 6):

From/To the North

- From the Princes Motorway
- Take the Gwynneville and Keiraville exit to the left
- Turn right at the roundabout onto University Avenue
- Turn right at the roundabout onto Irvine Street
- Turn left onto Northfields Avenue
- Turn right onto Robsons Road
- Turn right onto the P4 carpark access road
- Turn right into the site
- Turn around within the site
- Turn left out of the site
- Turn left onto Northfields Avenue
- Continue onto the Princes Motorway northbound entry ramp at the Irvine Street and Northfields Avenue intersection

From/To the South

- From the Princes Motorway
- Take the Gwynneville and Keiraville exit to the left
- Continue straight onto Northfields Avenue at the Irvine Street and Northfields Avenue intersection
- Turn right onto Robsons Road
- Turn right onto the P4 carpark access road
- Turn right into the site
- Turn around within the site
- Turn left out of the site
- Turn left onto Northfields Avenue
- Turn right onto Irvine Street
- Turn left onto University Avenue
- Turn right onto the Princes Motorway southbound entry ramp at the University Avenue roundabout

The routes proposed have been chosen to reduce the distance that construction vehicles are required to travel on roads internal to the Campus. A secondary access route may be implemented that requires travel through Ring Road to the site. This secondary route has been indicated on Figure 6.

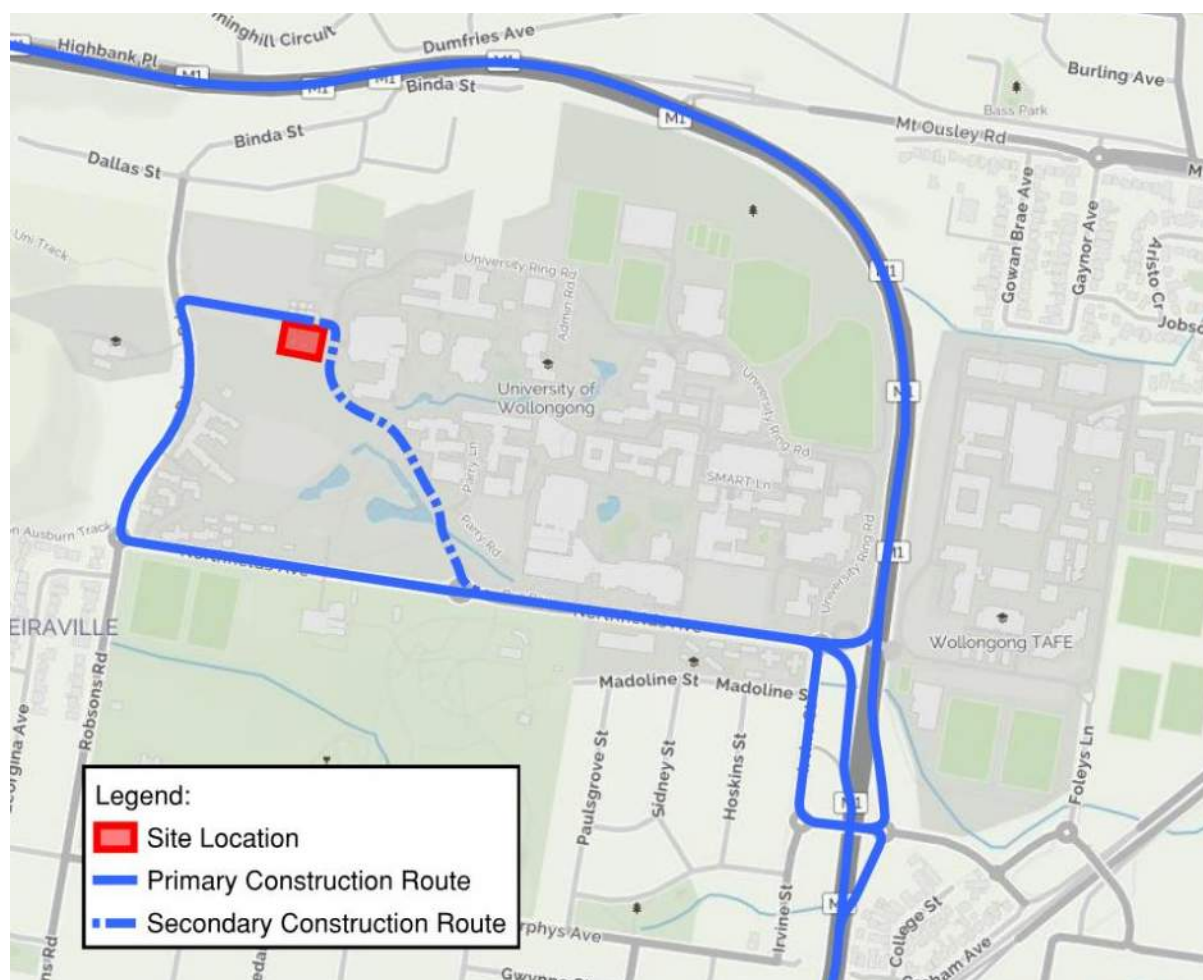


Figure 6: Construction Vehicle Access Routes

4.2 Construction Vehicles

Proposed truck types to be used during the works are expected to be various small delivery trucks, concrete trucks, truck and trailers, and semi-trailers. It is anticipated that the majority of construction vehicles will be 12.5m heavy rigid vehicles (HRV) with 19m semi-trailers required for larger deliveries. These vehicle sizes will need to be confirmed and finalised once a Contractor has been appointed.

During days of high estimated vehicle movements, it is expected that communication between the site, concrete batching plant and/or vehicles will be maintained to stagger vehicle arrivals. This will allow for vehicles to be accommodated within the worksite and for traffic disruptions to be minimised.

Truck loading and unloading shall occur wholly within the site. All deliveries will be made within the approved work hours, with emphasis made on deliveries outside of peak hours where possible to reduce the impact on traffic flows.

SIDRA modelling conducted of the existing traffic volumes through intersections within the vicinity of the site has indicated that the surrounding road network is currently operating at a high level of service "A" or "B". It is not expected that additional construction vehicle traffic will have a severe impact on the operation of these intersections.

The majority of intersections involved in the construction route are roundabouts with mountable truck aprons. It is anticipated that larger vehicles can be accommodated within this construction route, however when a contractor is appointed and the largest sized vehicle

to be used is confirmed, a turning path analysis should be conducted to ensure vehicles can access the site safely.

4.3 Site Layout

The site layout will need to be finalised once a Contractor has been appointed.

4.4 Site Movements

Vehicles will likely enter the site via Robsons Road adjacent to the works.

Construction vehicle movements and turning paths within and to the site should be investigated in further detail once a Contractor has been appointed and the site entry is finalised.

If a vehicle is required to enter the site via a reverse manoeuvre, fully manned traffic control procedures shall be implemented. These reversing manoeuvres should be arranged during quiet traffic periods where possible to avoid disruption to the local road network.

4.5 Work Zones

It is not anticipated that a Work Zone will be required for this site as all deliveries should be accommodated within the site boundary. However, this will be finalised once a Contractor has been appointed.

5.0 Impact of the Redevelopment

5.1 Local Traffic

5.1.1 Traffic Flow

Traffic impacts from the construction works are expected to be limited to the truck routes detailed in this report. These routes are likely to experience only minor impacts due to the presence of additional truck movements. These truck movements are not expected to cause delays on local roads, or create flow-on impacts to other streets.

Local traffic patterns during construction are expected to remain consistent with the existing conditions.

All deliveries and construction works are likely to take place on site, with no Works Zone, lane closures or other traffic impacts. Traffic will flow as per the existing scenario, with all lanes generally operating at full capacity.

Traffic impacts from the construction works are expected to be limited to the volume of construction vehicles only. The number of daily vehicles is expected to be minimal in comparison to the total volumes of daily traffic on local roads.

It is unlikely that there will be changes to local public transport routes and services as a result of this construction.

Access to all adjoining properties will be maintained throughout the works.

5.1.2 Parking Impacts

The proposed building upon completion is expected to impact 130 spaces within the University Campus. The additional demand as a result of these spaces is expected to be relocated into the extension of the P5 carpark and temporary parking located at the adjacent NSW TAFE Wollongong.

During different stages of construction, consideration should be given to minimise the short term loss of parking during the construction stages, although it is noted that parking loss is expected.

In addition, construction worker parking should be provided within the site where possible to limit the impact of these vehicles on staff and student parking supply.

5.1.3 Traffic Safety

As all construction works and operations are expected to be contained within the site, there should be no safety concerns for passing traffic adjacent to the site on Ring Road or the carpark.

Manoeuvring and merging of heavy vehicles exiting the site is to be managed carefully such that traffic safety is maintained. Due to the relatively quiet nature of the streets internal to the Campus, it is expected that vehicles exiting the site will be able to use suitable gaps of traffic.

Should vehicles have difficulty exiting the Campus management through traffic control should be provided at key locations.

5.1.4 Communication of Works

Prior to any site works taking place, notification of commencement of the works shall be distributed to the neighbourhood. Notification is to include information on the type of works, hours of operation and contact numbers for further information or comment. Community notification will be undertaken as per a Construction Management Plan that will be prepared once the Contractor has been appointed.

Traffic control advance warning signage in accordance with Roads and Maritime Services guidelines and Australian Standards is to be in place to notify motorists of roadwork and when traffic controllers are present. Sign size is to be size "A" and is to be monitored throughout the works to ensure they are clearly visible.

As part of the site induction procedures, all contractors will be made aware of the finalised Construction Traffic Management Plan, the Traffic Control Plans and their responsibility to adhere to these plans.

5.1.5 Public Infrastructure Impacts

While it is anticipated that the site will utilise existing driveway crossovers, it is possible that some mounting or crossing of adjacent kerbs may be necessary. As these crossovers are internal to the University Campus, it is not expected that damage to public infrastructure will occur as part of the works.

5.1.6 Cumulative Local Impacts

The P5 carpark extension within the Campus is expected to be completed by April/May 2018 and therefore will have no overlap with the proposed construction.

Construction of the proposed Molecular Life Sciences Building is expected to commence in January 2018 and be completed by August 2019 according to the Environmental Impact Statement submitted in response to the SEARs. The Preliminary Construction Management Plan indicates that construction vehicle routes internal to the Campus will not conflict with those required for the Western Building. Overlapping construction vehicle routes will occur from the intersection of Northfields Avenue and Irvine Street towards the Princes Motorway.

According to NSW Major Projects, there are no other state significant developments expected to occur aside from those developments occurring internally to the Campus which have been discussed.

5.2 Pedestrians

Public pedestrian movements through the site shall be prohibited at all times during construction. The site will be secured from pedestrian access with site fencing provided.

Appropriate pedestrian traffic measures will be in place such as signage, traffic controllers and barriers to control access. This will be detailed in a Traffic Control Plan that will be prepared for the site once a Contractor has been appointed.

It is anticipated that pedestrian access to the site will be restricted by site fencing and boarding. Directional signage will be provided to guide pedestrians around the site and access will be maintained to adjacent operational buildings. Designated access points will be further discussed and reviewed by the University during development of the finalised Construction Management Plan.

Particular care will need to be taken to facilitate the existing pedestrian desire line from the P4 car park to the central Campus. Protection via site hoardings and fencing will be required to protect pedestrians travelling from the car park to the central part of the Campus.

5.3 Cyclists

No dedicated cycleways are adjacent to the site and cycling activity is expected to be limited. Cyclists on other roadways will continue to follow the same routes.

5.4 Emergency Services

Emergency services access to local properties will be retained as no road closures or major lane changes are expected.

5.5 Construction Workers Transport

The number of daily construction workers will be finalised once a Contractor has been appointed.

6.0 Construction Requirements

6.1 Cranes

It is expected that cranes will be required to facilitate construction. Crane locations and radii will be further developed once a Contractor has been appointed.

6.2 Traffic Control Plans and Signage

Temporary construction traffic related signposting will need to be developed in accordance with AS 1742.3 – Traffic Control Devices for Works on Roads. These Traffic Control Plans will need to be developed once a Contractor has been appointed and further construction details are known.

During construction the contractor shall each morning, prior to work commencing, ensure all signage is erected in accordance with the TCP and is clearly visible. Each evening, upon completion of work, the contractor is to ensure relevant signage is removed as required. A review of the TCPs can be undertaken as required to determine any need for future amendments.

6.3 Certificates and Approvals

Approval may need to be obtained from Roads and Maritime Services, Wollongong City Council and other relevant authorities. Approval may be required for items including, but not limited to:

- Road occupancy approvals
- Hoarding/fencing approvals
- Oversized vehicle use on local roads

Only certified personnel will be used on site to implement, monitor and carry out the Traffic Control Plan.

Responsibility for acquiring the necessary certificates, permits and/or approvals rests with the Contractor and must be completed prior to commencement of the associated works.

6.4 Environmental Control

Vehicle inspection and wash areas in accordance with industry standards will be provided. Construction vehicle wheels shall be cleaned prior to leaving the site to prevent transport of dust, dirt or gravel from the worksite onto the road network or pedestrian footpaths.

All loads are to be sealed or covered when entering or leaving the site. Loading of disposable material into vehicles leaving the site is to occur only within the site.

A suitable location for material lay-down and spoil storage will be contained near the site amenities and around the buildings.

7.0 Further Information

7.1 Construction Traffic Management Plan

Once a Contractor has been engaged, a finalised Construction Traffic Management Plan shall be prepared. This will include, but is not limited to, the following:

- Details on the construction staging and the length of each stage.
- Expected vehicle volumes by size of vehicle during each stage of works.
- Expected number of workers during each construction stage.
- Expected parking management for vehicles driving to the site.
- Site establishment plan showing vehicle entry and exit points and any areas for manoeuvring.
- Traffic Control Plans.

7.2 Emergency Services

In the event of an incident related to construction traffic on the public road network it will be the responsibility of the Site Manager to ensure that emergency services are notified. Contact "000" in cases of emergency to advise the relevant emergency service.

Furthermore, it is the responsibility of the Site Manager to advise the emergency services of any restriction of vehicular access to the public and private areas a minimum of one week prior to its implementation.

7.3 Responsibilities

The Site Manager is responsible for, but not limited to:

- Implementing the Construction Traffic Management Plan and TCPs

- Informing contractors of the requirements of the Construction Traffic Management Plan
- Undertaking site inspections to ensure all signage is clearly visible and not damaged
- Monitoring the Construction Traffic Management Plan
- Reporting on incidents
- Obtaining permits

Prepared by
**TAYLOR THOMSON WHITTING
(NSW) PTY LTD**



GRACE CARPP
Traffic Engineer

Authorised By
**TAYLOR THOMSON WHITTING
(NSW) PTY LTD**



JASON SCOUFIS
Traffic Manager

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