



University of Technology, Sydney Broadway Precinct - UTS Central Construction Traffic Management Plan

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University of Technology, Sydney

Broadway Precinct - UTS Central

Construction Traffic Management Plan

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1. Introduction

1.1 Background

This construction traffic management plan (CTMP) accompanies a State Significant Development (SSD) application for the redevelopment and expansion of an existing building at the University of Technology Sydney (UTS) City Campus site. The SSD application seeks approval for the redevelopment of Building 2 which would include additional floors above a new podium building and the redevelopment of the Building 1 podium.

UTS has commissioned GTA Consultants to prepare this CTMP to examine the impacts of the construction works on the surrounding road network and to detail the proposed construction traffic and pedestrian management measures.

This CTMP has been prepared in accordance with the City of Sydney (CoS) Standard Requirements for Construction Traffic Management Plans. The CoS standard requirements are attached in Appendix A.

Richard Crookes Construction, the appointed contractor, proposes to undertake all works in accordance with this CTMP.

The overall principles of traffic management during the construction stage include:

- provide an appropriate and convenient environment for pedestrians
- minimise the impact on pedestrian movements
- minimise the impact on cyclist movements
- maintain appropriate capacity for pedestrians at all times on footpaths around the site
- maintain appropriate public transport access
- minimise the loss of parking wherever possible
- maintain access to/from adjacent buildings
- restrict construction vehicle movements to designated routes to/from the site
- manage and control construction vehicle activity in the vicinity of the site, and
- carry out construction activity in accordance with City of Sydney's approved hours of works.

1.2 Purpose of this Report

This report addresses the traffic and transport impacts during the construction phase of the development. The objectives of this report are:

- to provide a detailed description of the project and construction activities
- to examine and consider the proposal's likely impact to traffic on the surrounding road network
- to provide mitigating measures to address any traffic and transport impacts.

This report has been prepared and checked by engineers who hold the RMS Select/Modify Traffic Control Plans (Red Card) certification.

1.3 Secretary's Environmental Assessment Requirements

This CTMP has been prepared with consideration to the issues raised in the Secretary's Environmental Assessment Requirements (SEARs) issued Department of Planning and Environment (DoPE) for this project. The relevant issues raised in the SEARs are summarised as follow:

- traffic and transport impacts during construction, including cumulative impacts associated with other construction activities, including the construction of the CSELR, and
- how the construction impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport operations, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.

In addition, in a meeting with Transport for NSW (TfNSW) an issue was raised relating to the effects to bus operation along the kerbside lane in the eastbound direction on the northern side of Broadway due to construction vehicles accessing Jones Street from the proposed temporary access off Broadway.

The first issue above is addressed in Section 4.9 of this CTMP. The second issue is addressed in Sections 3, 4 and 5. The issue relating to Broadway bus operation is addressed in Section 4.2.

In the meeting with TfNSW, representatives from TfNSW expressed their desires to be kept informed of any issues relating to traffic and transport. In this regard, it is noted that UTS is committed to working with all stakeholders collaboratively and in a constructive manner to resolve any matters during the construction period. Where it is appropriate, UTS will continue to consult with and inform the relevant consent authorities on the progress of the proposed development.

1.4 References

In preparing this report, reference has been made to the following:

- an inspection of the site and its surroundings
- Procedures for use in the Preparation of a Traffic Management Plan (TMP), Roads and Maritime Services (RMS), December 2001 (Version 2.0)
- Traffic Control at Work Sites manual, RMS, June 2010
- Australian Standard AS1742.3 – 2009 'Manual of Uniform Traffic Control Devices – Part 3: Traffic control for works on roads'.

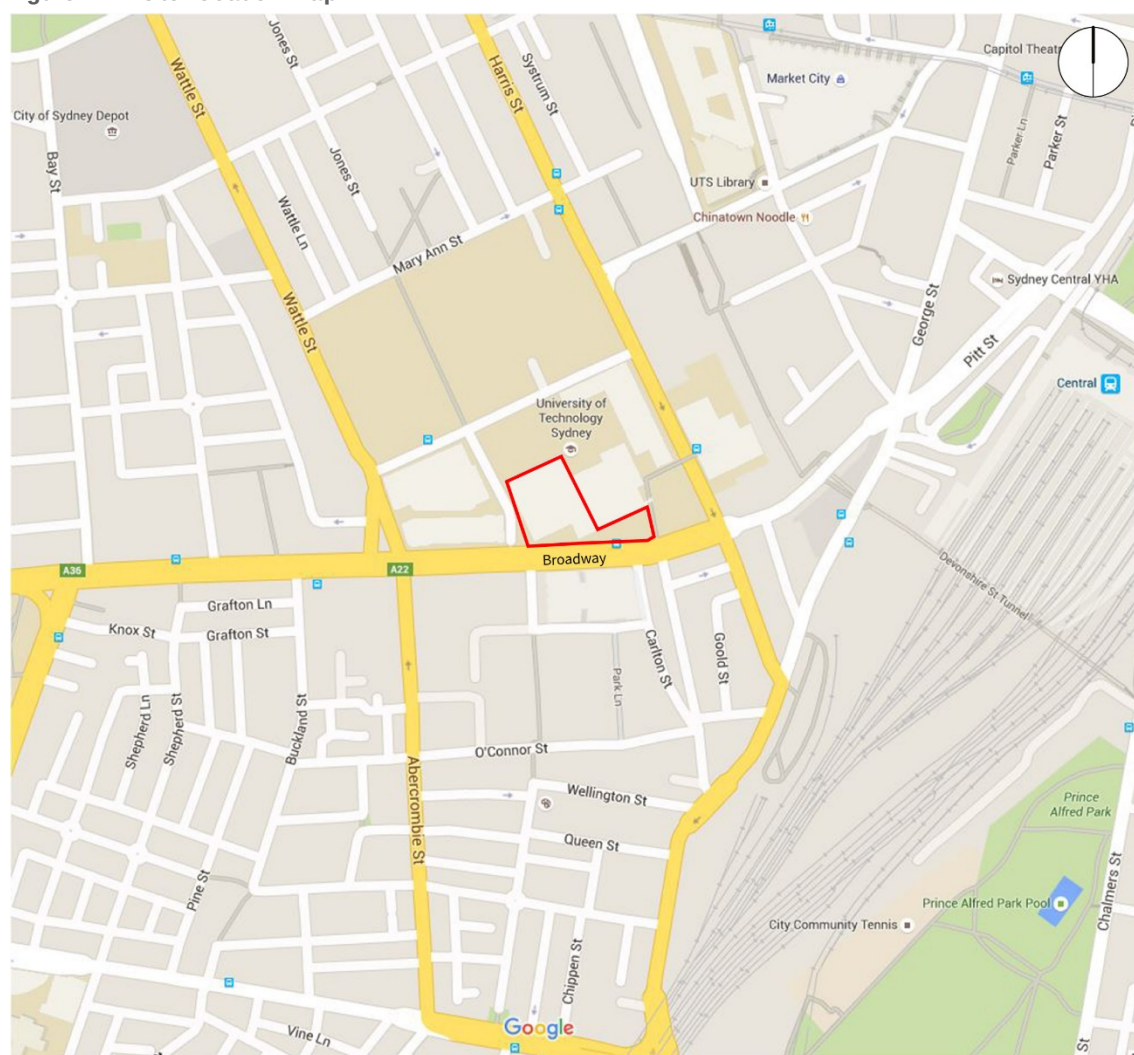
2. Existing Conditions

2.1 Site Description

The Broadway Precinct of the UTS City Campus is located on the southern edge of the Sydney Central Business District with frontages to Broadway, and Thomas, Wattle and Harris Streets. Central Railway Station is located approximately 500m to the east of the subject site.

Figure 2.1 shows the location of the subject site.

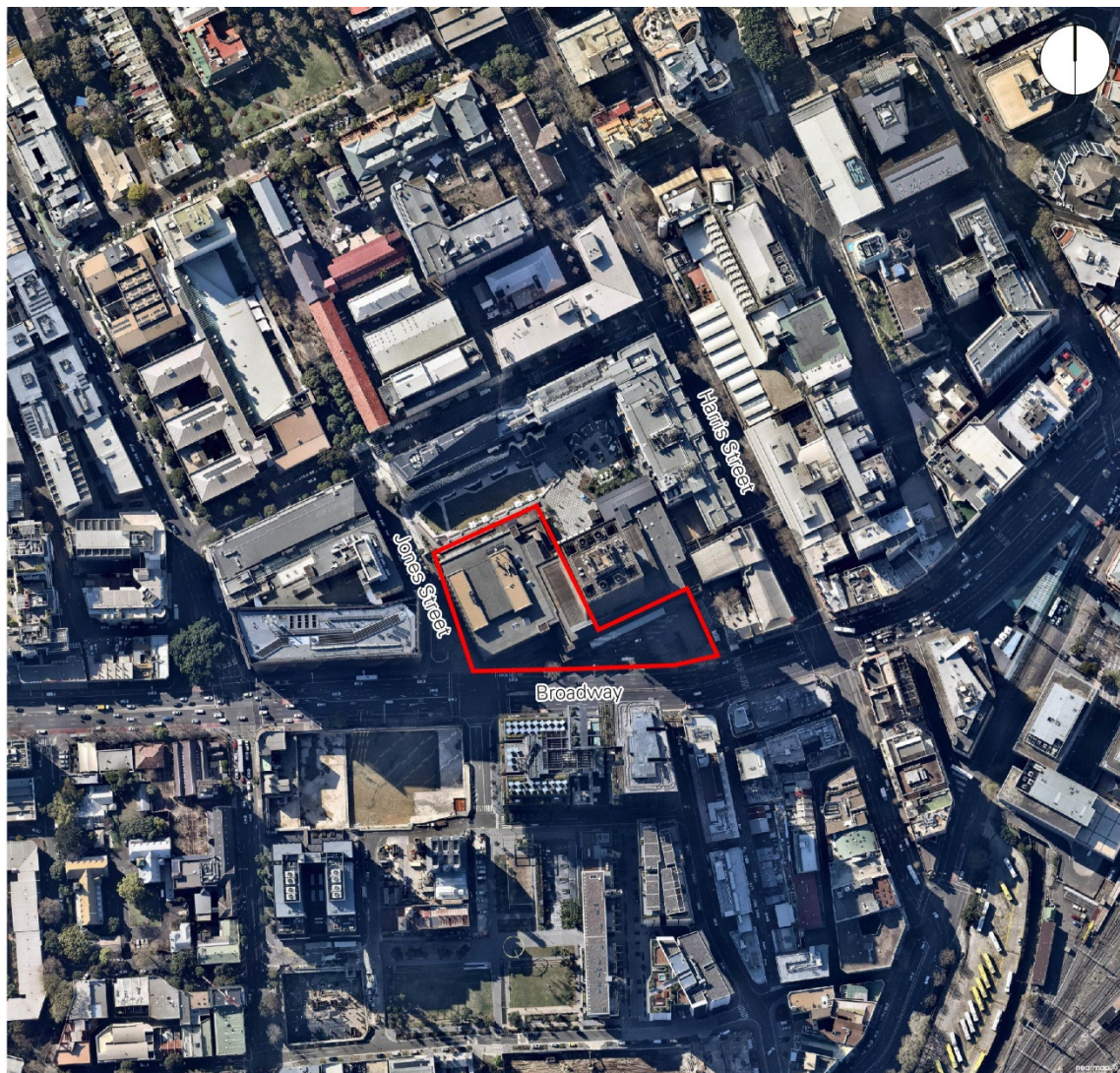
Figure 2.1: Site Location Map



The Site

More specifically, the UTS Central project site relates to Building 1 (excluding the Building 1 tower) and Building 2 of the Broadway Precinct, refer to Figure 2.2.

Figure 2.2: Site Environment and Surrounds



 The Site

2.2 Road Network

2.2.1 Adjoining Roads

Thomas Street

Thomas Street is a local road in the vicinity of the site aligned in an east-west direction. It is a 12.8m wide, two-way road configured with one lane in each direction, set within a 20m wide road reserve (approx.). Kerbside parking is permitted on both sides of Thomas Street subject to time restrictions.

Jones Street

Jones Street is a local road in the vicinity of the site aligned in a north-south direction. It is a 12.8m wide, two-way road configured with one lane in each direction, set within a 21m wide road reserve (approx.). Kerbside parking is permitted on both sides of Jones Street subject to time

restrictions. In the vicinity of the site, Jones Street is a no through road with its connection to Broadway closed.

Wattle Street

Wattle Street is a classified State Road (MR594) in the vicinity of the site is aligned in a north-south direction. It is a one-way northbound road configured with a four-lane, 14m wide carriageway, set within a 24m wide road reserve (approx.). North of Thomas Street, kerbside parking is permitted on both sides of Wattle Street, subject to clearway and time restrictions. Wattle Street carries approximately 26,000 vehicles per day¹.

Broadway

Broadway is a State Road (HW5) in the vicinity of the site and is aligned in an east-west direction. It is a two-way road configured with four lanes in each direction (including one bus lane in each direction) and functions as one of the main routes for traffic into and out of the Sydney CBD. Broadway carries approximately 72,000 vehicles per day¹.

2.2.2 Surrounding Intersections

The following intersections currently exist in the vicinity of the site:

- Wattle Street-Thomas Street (unsignalised)
- Thomas Street-Jones Street (unsignalised)
- Thomas Street-Harris Street (signalised)
- Wattle Street-Broadway (signalised), and
- Broadway-Harris Street (signalised).

2.3 Public Transport

The site is well serviced by high frequency public transport with Central Station Transport Interchange, a key transport hub in Sydney, located approximately 500m east of the site.

2.3.1 Bus Network

The subject site is located in close proximity to several key bus corridors including George Street and Broadway along the southern boundary of Building 1 and 2. Central Transport Interchange features five main bus hubs at Railway Square (200m east of the site), George Street, Eddy Avenue and Chalmers Street which serve destinations across the Sydney Metropolitan Area including Sydney's south, eastern suburbs, inner-west, northern beaches and north-west.

The nearest bus stop to the site is located immediately in front of Building 1 on Broadway. This stop is served by 19 services within the Sydney Buses network and is a major inbound stop in the area. Corresponding outbound bus services from UTS is available from Railway Square, which is approximately 200m to the east of Building 1.

The frequency of bus services at the Broadway bus stops near the UTS site, is summarised in Table 2.1.

¹ Based on 2005 Roads and Maritime Services (RMS) 2005 Annual Average Daily Traffic Data (AADT).

Table 2.1: Bus Frequency Comparison of Bus Stops on Broadway

Period	Inbound	Outbound	Total
Morning Peak Hour (8:00am – 9:00am)	126	70	196
Evening Peak Hour (5:00pm – 6:00pm)	78	99	177

Source: www.transportnsw.info, accessed November 2015

2.3.2 Rail Network

Central Railway Station serves as the key rail hub in Sydney for CityRail services to destinations across the Sydney Metropolitan Area, the Illawarra, Blue Mountains and Central Coast. Central Station is also the hub for interstate rail services in Sydney. Central Station is also the main terminus for the Central to Lilyfield Light Rail Network.

Since the approved Concept Plan in 2009, the rail network has expanded with the South West Rail Link recently opened for service, and the North West Rail Link currently under construction. The expansions provide a wider reach for public transport availability in the wider Sydney.

Table 2.2 summarises the frequency of rail services to and from Central Railway Station.

Table 2.2: Frequency of Rail Services

Rail Line	Morning Peak Hour (8:00am – 9:00am)		Evening Peak Hour (5:00pm – 6:00pm)	
	To City	From City	To City	From City
T1 North Shore & Northern Line	19	20	20	16
T1 Western Line	20	20	14	19
T2 Airport Line	14	8	8	12
T2 Inner West and South Line	12	8	8	11
T3 Bankstown Line	8	6	6	8
T4 Eastern Suburbs & Illawarra Line	12	16	17	18
T6 Carlingford Line	2	1	2	2
Blue Mountains Line	4	1	2	4
Central Coast & Newcastle Line	8	2	2	7
South Coast Line	4	1	3	4
Southern Highlands Line	4	1	4	3
Total	107	84	86	104

2.4 Pedestrian Infrastructure

The pedestrian network surrounding the site is well established with pedestrian paths located on both sides of the surrounding roads.

Safe crossing points in vicinity of the site include the following pedestrian crossings:

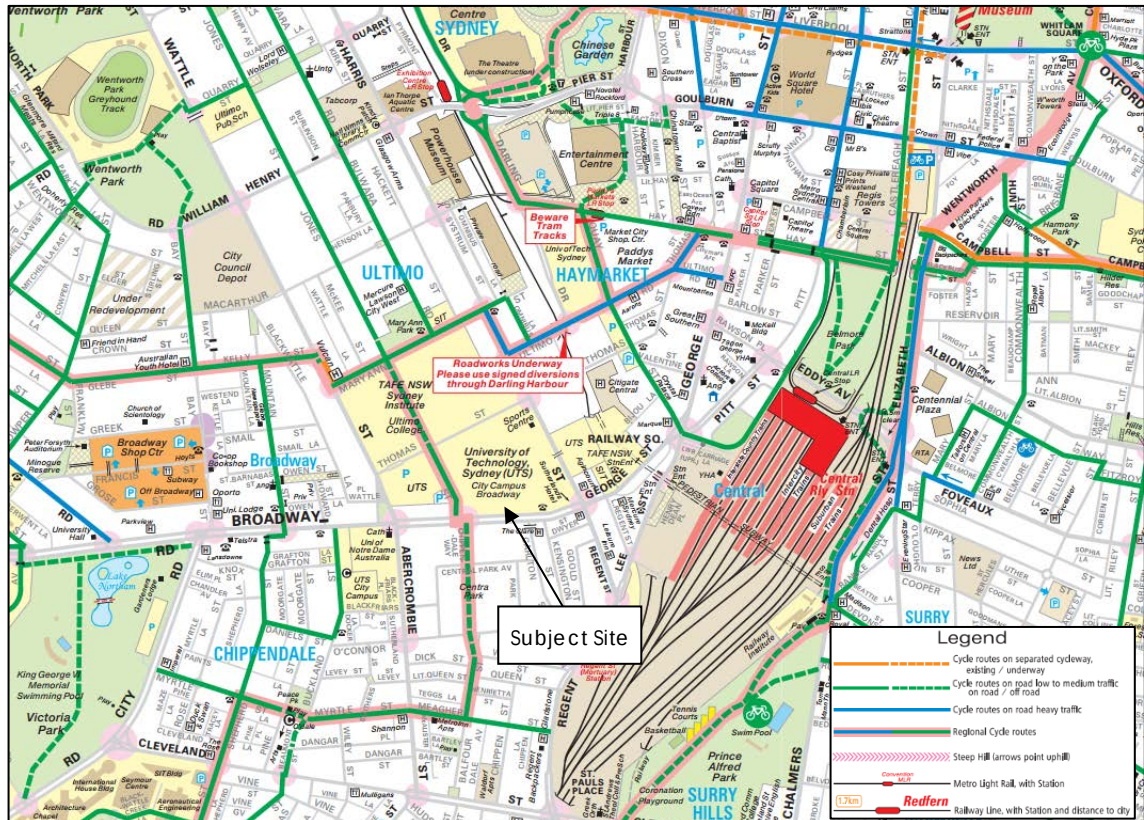
- two pedestrian crossings at the frontage of Building 2 as part of the Chippendale Way-Broadway signalised intersection
- all legs of the George Street-Harris Street-Regent Street intersection.

Within the Campus, UTS has proposed and implemented several pedestrian links as part of the original City Campus Masterplan to enable the connection of key hubs across its City Campus. The Masterplan included the plan to close Jones Street to vehicular traffic from Broadway, which has been implemented.

2.5 Cycle Infrastructure

The site is located within close proximity to both on and off-road cycling facilities as indicated in an extract from the City of Sydney's cycle network map shown in Figure 2.3. The nearest dedicated cycle facility surrounding the site is the 4m wide shared path along Jones Street between Thomas Street and Mary Ann Street. This section of Jones Street is closed to vehicular traffic and is a key thoroughfare for the TAFE Sydney Institute.

Figure 2.3: Cycle Network



Source: City of Sydney Cycling Map, 2015

3. Overview of Construction Activities

3.1 Description of Construction Activities

The following works are to be undertaken under this project:

- site preparation works, including demolition and clearance of the existing building services,
- construction of a 17 storey educational building with four basement levels, and
- construction of a new Building 1 podium.

The project is scheduled to be carried out in two phases, with Phase 1 involving the construction of a new, 17-storey Building 2 and Phase 2 involving the construction of the Building 1 podium. Phase 1 is to be carried out in nine stages between July 2016 and December 2018 and Phase 2 is to be carried out in eight stages between January 2020 and June 2021. The description and duration of each stage of construction is detailed in Table 3.1, Figure 3.1 and Figure 3.2.

Table 3.1: Construction Description and Duration

Stage	Description	Date	Duration
Phase 1 – Building 2 Construction			
1. Enabling Works	○ Services disconnection and relocations ○ Bathroom relocations ○ Construct new LRS fire escape ○ Relocate supply and exhaust air	July 2016	4 months
2. Site Establishment	○ Install B-Class hoardings to footpaths using hiab trucks and mobile cranes ○ Install A-Class hoardings and perimeter fencing to footpaths ○ Install internal A-Class hoardings to secure site	July 2016	2 months
3. Hazardous Materials Removal	○ Remove hazardous materials including asbestos	July 2016	3 months
4. Structural Strengthening	○ Temporary Structural strengthening of existing structure to allow demolition to proceed ○ Permanent Structural strengthening of existing structure	August 2016	7 months
5. Demolition	○ Demolition of the existing Building 2 structure including excavation of new lift pits	July 2016	8 months
6. Structure	○ Formwork ○ Concrete Place	October 2016	17 months
7. Façade	○ Façade Installation ○ Installation of glazing elements	July 2017	10 months
8. Fitout	○ Services Installations ○ Masonry ○ Internal linings and joinery ○ Floor finishes including tiling	July 2017	18 months
9. External Works	○ Install inground Services ○ Landscaping	March 2018	10 months
Phase 2 – Building 1 Podium			
1. Site Establishment	○ Install B-Class hoardings to footpaths using hiab trucks and mobile cranes ○ Install A-Class hoardings and perimeter fencing to footpaths ○ Install internal A-Class hoardings to secure site	January 2020	1 month
2. Hazardous Materials	○ Remove hazardous materials including asbestos	January 2020	2 months

Stage	Description	Date	Duration
Removal			
3. Structural Strengthening	○ Permanent Structural strengthening of existing structure	February 2020	5 months
4. Demolition	○ Demolition of the existing Building 1, Level 4 structure	February 2020	7 months
5. Structure	○ Formwork ○ Concrete Place	July 2020	5 months
6. Façade	○ Façade Installation ○ Installation of glazing elements	November 2020	5 months
7. Fitout	○ Services Installations ○ Masonry ○ Internal linings and joinery ○ Floor finishes including tiling	November 2020	8 months
8. External Works	○ Install inground Services ○ Landscaping	March 2020	3 months

Figure 3.1: Project Stages and Duration – Phase 1 Commencing in July 2016

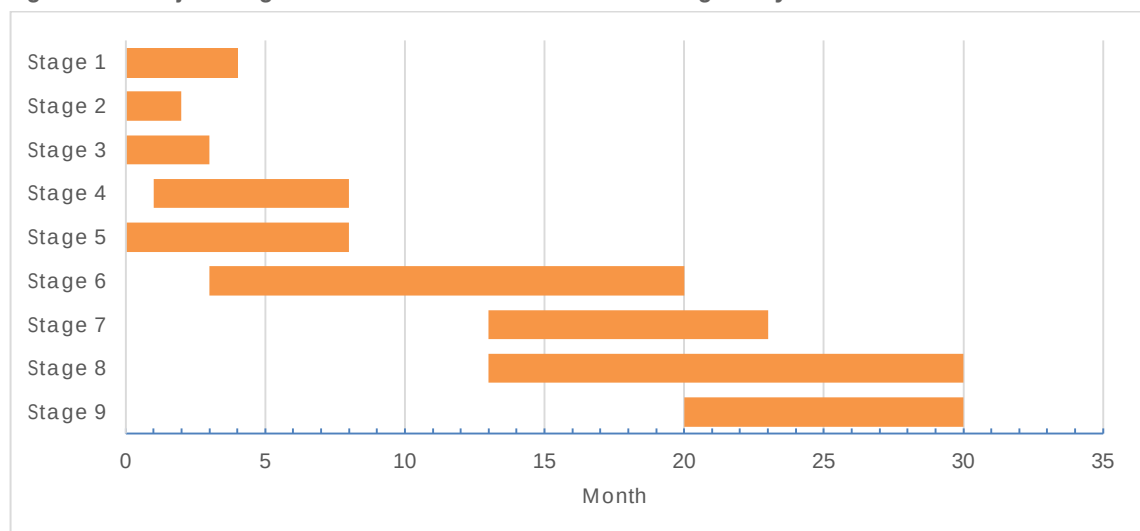
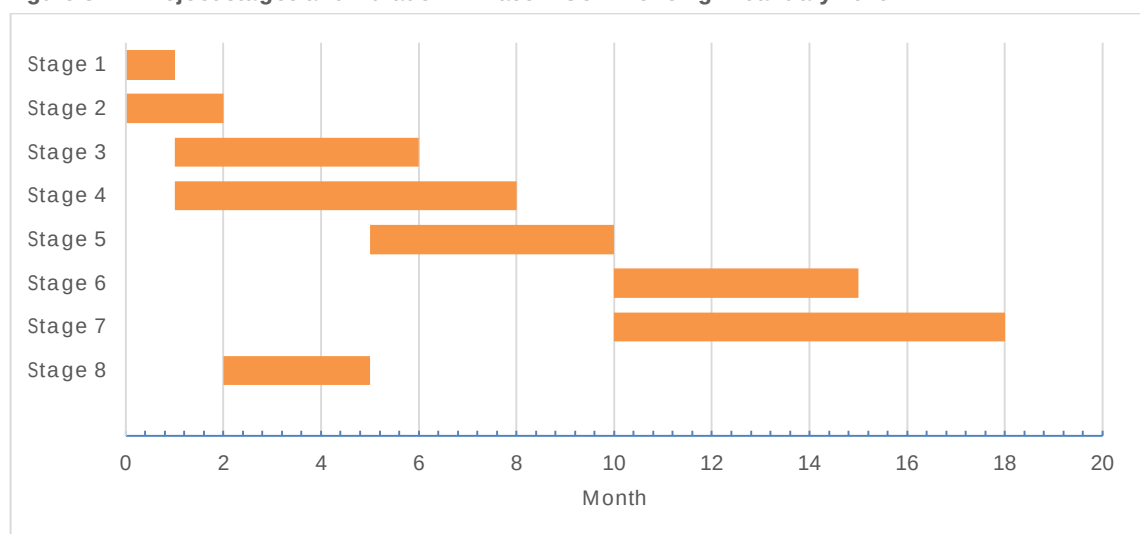


Figure 3.2: Project Stages and Duration – Phase 2 Commencing in January 2020



3.2 Work Hours

The permitted hours of work would be set by the City of Sydney in the conditions of consent of the approval. However, at the time of preparing this CTMP, the development has not yet been approved. It is anticipated that approval would stipulate construction works to be carried out between the following hours:

- Monday to Friday 7:00am – 7:00pm
- Saturday 7:30am – 5:00pm
- No work will be carried out on Sundays and Public Holidays.

Works outside these times (or any other approved times stipulated in the approval) would be subject to agreement and approval by Council and/or the relevant approving authority.

3.3 Contact Details

Richard Crookes representatives will be on-site during all construction works. The roles and contact details of key Richard Crookes personnel are detailed in Table 3.2.

Table 3.2: Contact details

Organisation	Project Role	Contact Name	Contact Number
Richard Crookes	Construction Manager	Peter Paranthyras	02 9902 4700
Richard Crookes	Foreman	TBC	TBC
Emergency			000
NSW Police (Sydney City LAC)			02 9265 6499
NSW Fire and Rescue (Glebe Fire Station)			02 9660 7156

3.4 Works Zone

Construction activities will involve the delivery to site of facade panels, construction materials and the removal of building waste. An on-street works zone will be required for the site for the delivery of these materials for Phase 1 works.

During Phase 1 works, Richard Crookes proposes to undertake construction loading and unloading activities from a proposed work zone on Jones Street. Jones Street is currently a cul-de-sac at the Broadway end and therefore is only accessible from Thomas Street only. To enable the use of Jones Street for construction loading, Richard Crookes proposes to close Jones Street to general traffic near Thomas Street. An area would be provided between the works zone and Thomas Street, to allow other vehicles to access the adjacent UTS building accesses.

Jones Street is currently configured with two traffic lanes and two kerbside parking lanes. Jones Street has a typical carriageway width of approximately 12m. At this width, it is not sufficient for large construction vehicles to turn around.

Therefore, to facilitate the efficiency operation of the work zone, it is proposed that construction vehicles enter the work zone from Broadway into the work zone within Jones Street and then exit via Thomas Street. This will require a temporary egress driveway be provided at Broadway.

Approval will be required from Roads and Maritime Services to have a temporary access off Broadway. This approval will be sought following the approval of development application and before the issue of construction certificate.

The loading operation for the construction site would utilise three traffic lanes allowing one 3m wide lane for construction vehicles and emergency services access past the works zone if required. The proposed works zone arrangement is shown in the traffic control plan (TCP) prepared by EVS Group which is contained in Appendix B.

As this section of Jones Street is a no-through road, the proposed work zone would not have any adverse impacts upon traffic in the local area.

Outside of construction work hours, removable barriers will be installed at the intersection of Broadway to maintain the existing no-through operation of Jones Street. The location of the proposed road closure is shown in the TCP in Appendix B.

The closure would require the removal of parking on Jones Street. It is expected that approximately 20, 2-hour time restricted car parking spaces would be removed from Jones Street to allow the works zone and associated road closure.

Phase 2 works involves the construction of the new Building 1 podium. However, on-road works zone is not anticipated for Phase 2 works. Loading operation would instead utilise the existing footpath area and existing UTS shuttle bus area at the front of Building 1. Pedestrian access would be maintained via a temporary, secure path passing in between Building 1 and Broadway. Class B hoarding will be provided above the relocated pedestrian path.

A separate application will be submitted to council if required, for use of the frontage of Building 1 for loading operations and for the installation of hoarding to secure a temporary pedestrian path.

For both Phases 1 and 2, it is also proposed to permit deliveries made by small vehicles (less than 6.4m long) to utilise the existing loading facility off Thomas Street beneath Building 1. Small construction vehicles are also permitted to access the works zone from Thomas Street.

3.5 Site Access

As discussed, Phase 1 construction activities would utilise Jones Street as a works zone with vehicles entering Jones Street from the south via Broadway, and exiting on to Thomas Street to the north. In this regard, new temporary vehicle laybacks would be required on the Jones Street side and Broadway side of the footpath crossing Jones Street.

As Broadway is a State Road under the jurisdiction of the RMS, a separate application is to be submitted to RMS prior to the commencement of the construction works for approval to install a temporary vehicle layback on Broadway.

Swept path assessments would be carried out during design development of the proposed vehicle laybacks on Jones Street to ensure that the largest construction vehicle (12.5m) is able to undertake a left turn from Broadway into Jones Street.

During Phase 2 works, construction vehicles would access the loading area at the frontage of Building 1 from Broadway with entry and egress in a one-way eastbound direction. Existing entry and egress vehicle laybacks are currently present, providing separate entry and egress points to the site. A traffic controller would be present at the work site/loading area to manage construction vehicle egress by identifying suitable gaps in traffic on Broadway to ensure that there is no impediment to traffic movement along Broadway. In addition, the traffic controller will also manage the safe and efficient flow of pedestrians along Broadway.

3.6 Plant and Equipment

The materials and equipment's required for the subject construction works are generally as follows:

- rigid truck (up to 12.5m) for the exportation of demolition material off site
- concrete trucks for delivery of ready mix concrete
- mobile cranes, of various size, for erection of site amenities, tower cranes and miscellaneous lifting – separate crane permit applications would be lodged for such works when required
- rigid trucks(up to 12.5m) for delivery of materials
- medium rigid vehicles, small rigid vehicles, vans and couriers to deliver smaller materials.

From the above, the largest truck would be a 12.5m long rigid truck. Use of any larger vehicles will require approval from the City of Sydney in a separate application.

3.7 Construction Workers

It is anticipated that up to 400 workers would access the site during peak construction activities. No parking would be provided for construction staff. It is expected that with its close proximity to frequent public transport, the workers of the proposed construction site would travel to and from work via public transport.

4. Construction Traffic Assessment

4.1 Construction Traffic Volumes

The estimated number of (two-way) construction vehicle movements and type of vehicle is detailed in Table 4.1 for each construction stage in Phase 1 of the works and in Table 4.2 for Phase 2 of the works.

Table 4.1: Construction Traffic Volumes – Phase 1

Construction Stage	Start Date/ Duration	Average No. of Trucks Per Day	Average No. of Truck Movements Per Day	Cumulative Truck Movements Per Day [1]	Cumulative Truck Movements Per Hour [1]	Vehicle Type/ Size
1. Enabling Works	July 2016/ 4 months	3	6	6	1	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
2. Site Establishment	July 2016/ 2 months	10	20	80	8	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
3. Hazardous Materials Removal	July 2016/ 3 months	5	10	80	8	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
4. Structural Strengthening	August 2016/ 7 months	5	10	90	9	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
5. Demolition	July 2016/ 8 months	25	50	80	8	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
6. Structure	October 2016/ 17 months	20	40	110	11	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
7. Façade	July 2017/ 10 months	3	6	62	6	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
8. Fitout	July 2017/ 18 months	8	16	62	6	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
9. External Works	March 2018/ 10 months	1	2	64	6	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks

[1] Cumulative truck movements are of commencement of each stage.

Table 4.2: Construction Traffic Volumes – Phase 2

Construction Stage	Start Date/ Duration	Average No. of Trucks Per Day	Average No. of Truck Movements Per Day	Cumulative Truck Movements Per Day [1]	Cumulative Truck Movements Per Hour [1]	Vehicle Type/ Size
1. Site Establishment	January 2020/ 1 months	5	10	12	1	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
2. Hazardous Materials Removal	January 2020/ 2 months	1	2	12	1	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
3. Structural Strengthening	February 2020/ 5 months	5	10	34	3	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
4. Demolition	February 2020/ 7 months	10	20	34	3	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
5. Structure	July 2020/ 5 months	10	20	40	4	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
6. Façade	November 2020/ 5 months	2	4	32	3	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
7. Fitout	November 2020/ 8 months	4	8	32	3	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks
8. External Works	March 2020/ 3 months	1	2	32	3	8.8m Medium Rigid Trucks 12.5m Large Rigid Trucks

[1] Cumulative truck movements are of commencement of each stage.

The cumulative truck movements for Phase 1 and Phase 2 are shown diagrammatically in Figure 4.1 and Figure 4.2 respectively.

Figure 4.1: Cumulative Trucks per day throughout Construction period – Phase 1 Commencing in July 2016

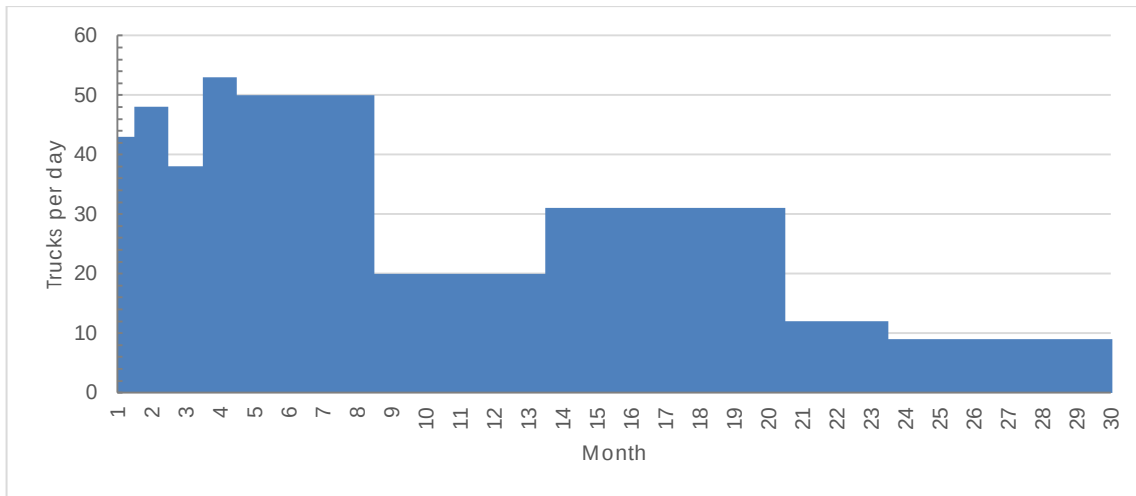
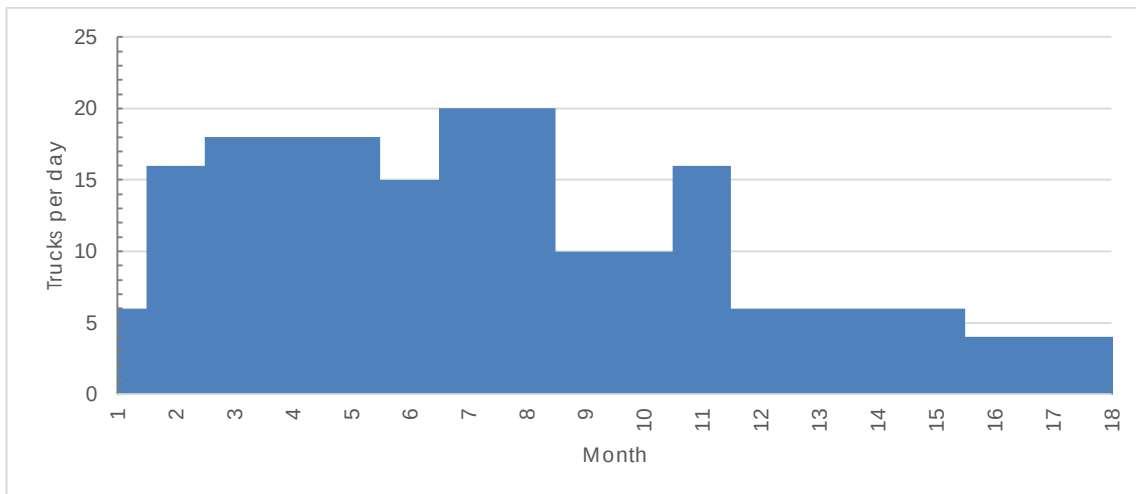


Figure 4.2: Cumulative Trucks per day throughout Construction period – Phase 2 Commencing in January 2020



Based on the above, on average, maximum vehicle volumes per day would be 110 two-way vehicle movements per day (or 55 vehicles per day) from the cumulative activities of Phase 1 of the subject construction site. On average, this equates to approximately 11 vehicle movements per hour or approximately one vehicle movement every five minutes.

Phase 2 of the construction works would contain notably lower construction vehicle volumes with, on average, maximum vehicle volume of 40 two-way vehicle movements per day (or 20 vehicles per day) from cumulative activities.

It is not expected that this low level of traffic movements would create any adverse impact on the surrounding road network.

4.2 Effects to Bus Operation on Broadway

4.2.1 Phase 1

In a meeting with TfNSW, a specific issue relating to effects to bus operation along Broadway due to construction vehicles was raised. TfNSW was concerned that construction vehicles using the proposed temporary access off Broadway would have an adverse impact to bus operation along Broadway.

Bus services operating in front of the subject development site in the eastbound (inbound) direction includes 20 services with a maximum of approximately 126 bus movements (which occurred in the morning peak hour).

During peak construction activity, it has been estimated that the cumulative daily truck movements (see Table 4.1 above) would be approximately 110 two-way truck movements per day. This equates to approximately 11 two-way truck movements per hour on average.

In addition, the proposed temporary access is proposed to permit ingress movement into Jones Street only, therefore the above truck movements would be 55 trucks per day or 6 trucks per hour using the proposed temporary access to turn left into Jones Street from Broadway. This equates to one truck per 10 minutes. This is considered to be relatively low.

On this basis, the construction vehicles turning into Jones Street from Broadway would not have any effects to bus operation along Broadway. Bus services would continue to operate satisfactorily without any issues.

4.2.2 Phase 2

An existing bus stop is present at the frontage of Building 1, in close proximity to the proposed loading area for the Phase 2 construction activities. Up to 18 bus services operate at this bus stop.

Given that Phase 2 works is not anticipated to occur until 2020, it is recommended that prior to the commencement of Phase 2 works, the contractor is to consult the relevant stakeholders including TfNSW, STA, CoS and RMS to investigate the potential impacts to existing bus stop operations arising from Phase 2 activities. UTS and the appointed contractor are committed to working with the relevant stakeholders to resolve any identified issues.

Notwithstanding the above, it is anticipated that any issues arising from Phase 2 works affecting bus operation would be manageable, given the low vehicle volumes generated by the Phase 2 works. As discussed in Section 4.1, on average, a maximum 40 vehicle movements per day are anticipated for the works with some vehicles to utilise the Thomas Street access.

Any plan of management would be determined through negotiation with relevant stakeholders.

4.3 Staff Traffic and Parking

All staff will be encouraged to utilise public transport to access the site. The following measures will be in place to encourage staff to use public transport:

- during the induction and regular management meetings, staff will be informed of restricted parking conditions on site and the surrounding streets
- during the induction and regular management meetings, staff will be instructed to use public transport to access the site and public transport timetable information will be made available and displayed at prominent locations

- the above measures will be included in contract documents between Richard Crookes Construction and its subcontractors.

As such, it is not expected there would be any staff generated traffic during the construction stage.

4.4 Construction Vehicle Routes

Generally, construction vehicles will have origins and destinations from a wide variety of locations throughout Sydney. However, all construction vehicles will be restricted to the State and Regional Road network, where possible.

As such, dedicated construction vehicle routes have been developed with the aim to provide the shortest distances to/from the arterial road network whilst minimising the impact of construction traffic on streets within the vicinity of the site.

No dog trailers or articulated vehicles are to be used on local roads (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).

Truck drivers will be advised of the designated truck routes to/ from the site. No queuing or marshalling of trucks will be permitted on public roads.

The truck routes are detailed below and shown in Figure 4.3.

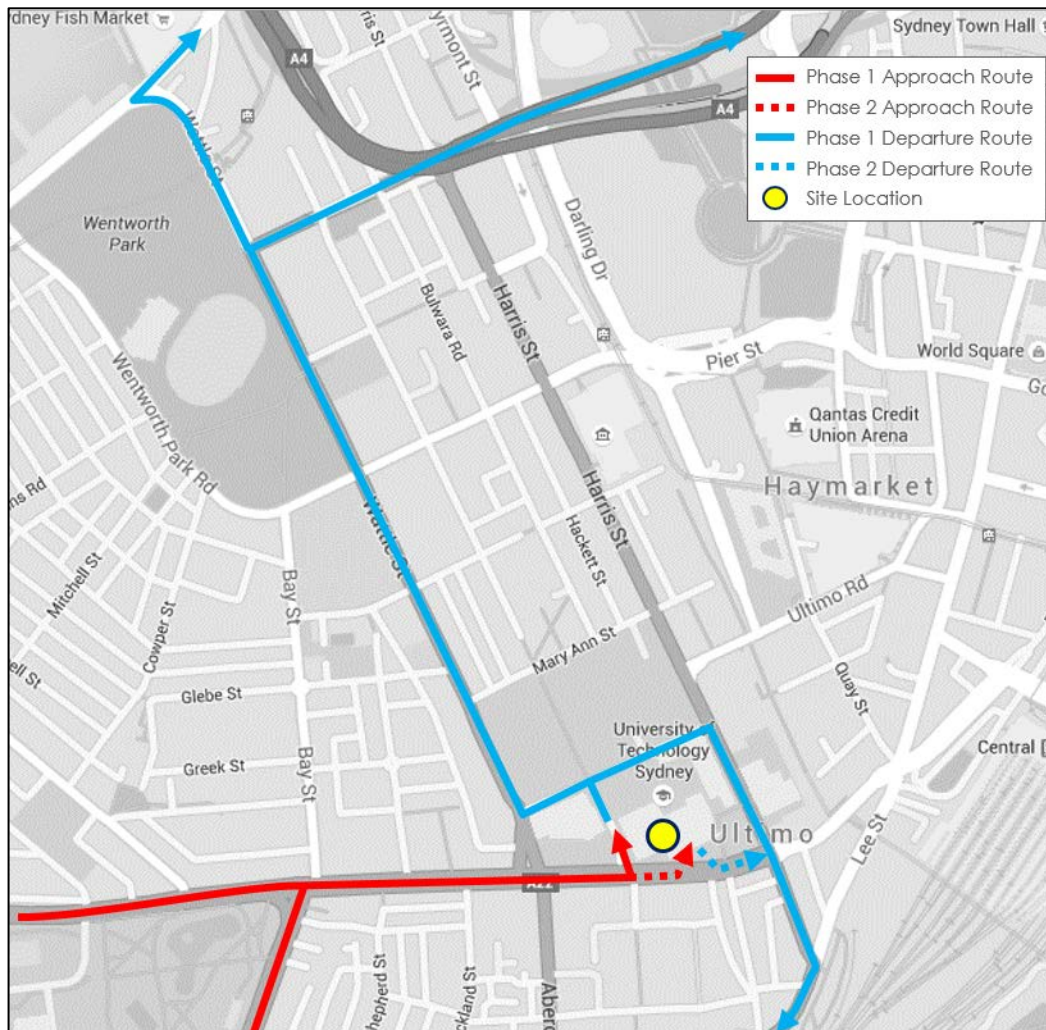
The approach routes for both Phase 1 and Phase 2 works would be:

- Parramatta Road, Broadway, Jones Street
- Princes Highway, Broadway, Jones Street.

The departure routes would alter between Phase 1 and Phase 2 of the works as detailed below:

- Phase 1
 - Jones Street, Thomas Street, Wattle Street, Fig Street, Western Distributor Freeway
 - Jones Street, Thomas Street, Wattle Street, Pyrmont Bridge, Western Distributor
 - Jones Street, Thomas Street, Harris Street, Regent Street.
- Phase 2
 - Broadway, Regent Street.

Figure 4.3: Construction Traffic Routes



Basemap Source: Google Maps Australia

4.5 Public Transport Services

The proposed construction works will not affect public transport services in the vicinity of the site.

Most workers of the site would utilise public transport to access the site outside the peak commuter periods and therefore construction worker patronage would not have any negative impacts on the capacity of the transport systems.

4.6 Pedestrian and Cyclist Access

Pedestrian and cyclist facilities around the site will be maintained as much as practical during the construction stage.

During Phase 1 of the construction works, the shared path located on the western side of Jones Street is to be maintained allowing continued access for both pedestrians and cyclists along Jones Street. Class A hoarding would be installed around the works zone to separate works activities from pedestrian movement.

At the access to the works zone on Jones Street, trucks would be required to cross the pedestrian path along Broadway on entry. Traffic controllers will be present at this access to ensure safe pedestrian and cyclist passage past the site. A traffic controller on either side of the entry to Jones Street would utilise extendable barriers across the pedestrian path while construction vehicles enter the site. The extendable barriers would be used to ensure pedestrian safety and would not impede pedestrian movements for long periods. Pedestrians would have right of way at all times.

At the egress of the works zone, an additional traffic controller would be present to ensure safe passage of pedestrians as they cross Jones Street and the works zone egress, to access the eastern side of the road.

Pedestrian wayfinding and warning signs would be installed on either side of the works zone to alert pedestrians to approaching construction traffic and direct them around the works zone on Jones Street.

During Phase 2 of the works, pedestrians would be directed around the construction site via a temporary pedestrian path. Class B hoarding would be provided to ensure safe and secure passage of passing pedestrians.

Pedestrian wayfinding signage would be installed to instruct pedestrians of the redirected path past the construction site.

The above measures are shown in the TCPs provided in Appendix B.

4.7 Emergency Vehicle Access

Access to the neighbouring sites by emergency vehicles would not be affected by the proposed works zone on Jones Street. If required, emergency vehicles can access the closed section of Jones Street from either Thomas Street or Broadway. Adjacent properties on Jones Street are UTS buildings which contain alternative access points.

Emergency access to the subject site will also be maintained.

Emergency protocols on the site would include a requirement for the traffic controller to assist with emergency access from the street. All truck movements to the site works zone and/or incident point would be suspended and cleared. Consequently, any potential impacts on emergency access would be effectively managed throughout the works.

Liaison would be maintained with the police and emergency services agencies throughout the construction period and a 24-hour contact would be made available for 'out-of-hours' emergencies and access.

Thus, there would be no adverse impacts on the provision of existing emergency vehicle access to the subject site or to other neighbouring properties as a result of the proposed construction activities.

4.8 Traffic Control Plan

The proposed traffic control plan (prepared by EVS Group) for the construction works is included in Appendix B. The plan presents the principles of traffic management and is subject to WorkCover requirements and modification to suit latent conditions.

Detailed information for work site operations is contained in the Traffic Control at Work Sites manual (RMS, 2010). The control of traffic at work sites must be undertaken with reference to

WorkCover requirements and the contractor/ builder's own Workplace Health and Safety manuals.

The proposed traffic control plan for the work site (see Appendix B) includes the following considerations:

- Warning signage for vehicles and pedestrians at site entry and exit points to alert presence of construction traffic.
- Construction vehicle activity, including the loading/ unloading of trucks to be conducted within the works zone on Jones Street.
- A traffic lane will be maintained within the works zone, adjacent to the loading area, for construction traffic to pass through.
- Traffic controllers to manage pedestrians and control activity on the individual site accesses.
- The movement of trucks to/ from the works zone will be under normal traffic conditions.
- Pedestrians will maintain priority at all times.
- Clear definition of the work site boundary to be provided by erection of Class B construction hoarding/ fencing around the site boundary.
- Clear boundary around the proposed works zone is to be provided by the erection of Class A hoarding around the boundary.
- Pedestrians to be guided around the vicinity via existing footpaths or diverted using Class B hoarding.
- All signage will be clean, clearly visible and not obscured.
- All construction vehicle activity will be minimised, where possible, during peak periods.

It is noted that traffic controllers are not to stop traffic on public streets to allow construction vehicles to exit the site. Instead they are to assist construction vehicles leaving the site by seeking a suitable gap in the traffic.

4.9 Cumulative Impacts from Other Construction Activities

Construction of the proposed buildings is expected to start in second quarter of 2016 and is expected to last for a period of approximately 33 months. Construction works would be undertaken over nine stages. Peak construction activity is expected to occur in Stage 6 during the erection of the structure which is expected to occur over a period of 17 months.

During the construction period of the proposed development, it is expected that there would be construction activities associated with other developments that being constructed at the same time. Most notably of these is the construction of the Proposed CBD and South East Light Rail (CSELR) Project.

Publicly available information relating to the assessment of traffic and transport impacts during the construction of the CSELR project is provided in the *CBD and South East Light Rail Project Environmental Impact Statement Volume 2 Technical Papers Construction Traffic Management Plan* prepared by Booz & Co./AECOM dated 7 November 2013.

From a review of this document, the construction scenario implications in the vicinity of the subject site is summarised as follows:

- George Street would be closed to general traffic with only local and emergency access permitted. The majority of intersections along George Street would remain open, however full intersection closures would occur on weekends but in accordance with Transport Management Centre approvals

- Chalmers and Devonshire Streets would be closed to general traffic with only local and emergency access permitted, and
- the coach station and bus lane along Eddy Avenue would be relocated.

From the above, it is noted that the construction activities associated with the CSELR project is generally restricted to George Street, Rawson Place/Eddy Avenue and Devonshire Street which forms part of the final alignment of the light rail project, and construction activities are unlikely to extend further south than Eddy Avenue and as such would not intrude into the general vicinity of the subject site.

However, in accordance to the EIS documentation for the CSELR project the construction of the light rail project would involve construction vehicles associated with the CSELR project travelling along streets in the vicinity of the subject site. It is noted that construction haulage routes for the CSELR project would be restricted to Parramatta Road, Broadway and Wattle Street. Figure 4.4 presents an extract from the EIS construction traffic management plan showing the proposed construction vehicle routes associated with the CSELR project.

Table 4.3 presents a table of expected construction vehicles extracted from the construction traffic management of the CSELR project. The expected peak daily heavy vehicle trips has been estimated to be less 100 vehicles per day per site.

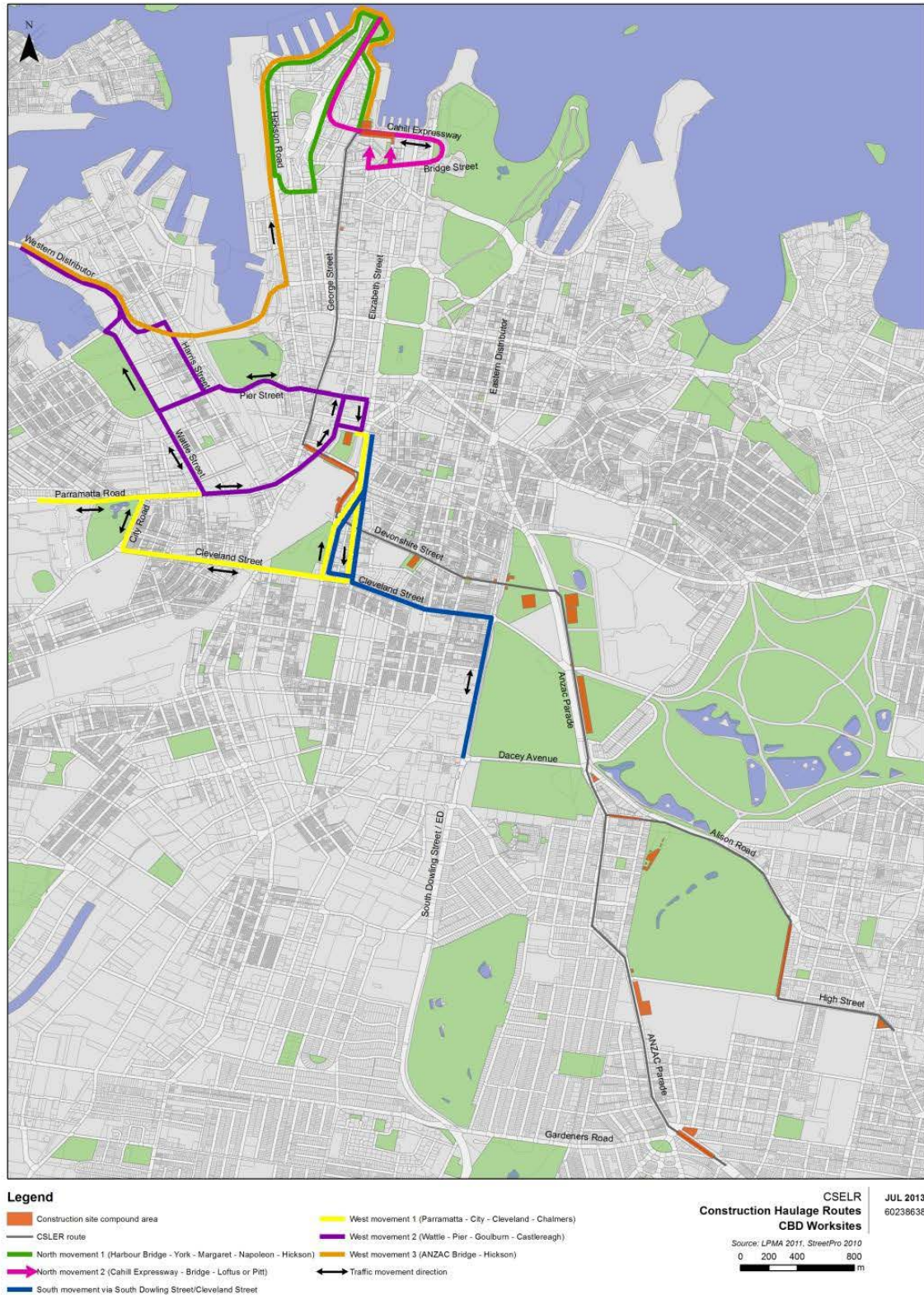
Table 4.3: CSELR Project Construction Traffic Volumes

CBD Route							
Route	Street Start	Street End	Total Duration *	Average Daily Heavy Vehicle Trips * (Day)	Peak Daily Heavy Vehicle Trips* (Day)	Total Number of Peak Activity Shifts	Peak Activity
Chalmers Street	Eddy Avenue		8 months	3	87	3	Concrete delivery
Eddy Avenue	Chalmers Street	Pitt Street	9 months	3	84	4	Concrete delivery
Rawson Place	Pitt Street	George Street	11 months	1	87	1	Concrete delivery
George Street	Rawson Place	Hay Street	7 months	2	86	1	Concrete delivery
George Street	Hay Street	Goulburn Street	7 months	3	87	2	Concrete delivery
George Street	Goulburn Street	Liverpool Street	4 months	4	87	2	Concrete delivery
George Street	Liverpool Street	Bathurst Street	8 months	3	93	2	Concrete delivery & CSR backfill
George Street	Bathurst Street	Druitt Street	4 months	4	87	2	Concrete delivery
George Street	Druitt Street	Market Street	8 months	3	88	3	Concrete delivery

Source: CBD and South East Light Rail Project Environmental Impact Statement Volume 2 Technical Papers Construction Traffic Management Plan prepared by Booz & Co./AECOM dated 7 November 2013

Figure 4.4: CSELR Project Construction Traffic Routes

AECOM



Source: CBD and South East Light Rail Project Environmental Impact Statement Volume 2 Technical Papers Construction Traffic Management Plan prepared by Booz & Co./AECOM dated 7 November 2013

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Intersection analysis conducted by the CSELR project team to assess the effects of construction vehicles on the affected intersections included an analysis of the George Street intersection with Pitt Street (this is the closest assessed intersection to the subject site). The analysis indicates that this intersection would operate with improved level of service during construction.

As indicated previously, the proposed construction works relating Buildings 1 and 2 would generate a cumulative hourly volume of 11 truck movements per hour at the peak of construction activity. This is considered to be very low.

This low additional volume when entered into any current analytical modelling tools is unlikely to register any noticeable changes in intersection performance. As such, when considering the cumulative effects of construction activities arising from the subject proposed development and that from the CSELR project, it is expected this intersection would continue to operate with the same performance as that assessed in the CSELR construction traffic management plan. Given the low construction vehicle volumes generated by the subject proposed development, it is also expected that similar conclusion could be drawn at other nearby intersections.

In addition to CSELR project, there may be other construction activities from other nearby developments. However, at the time of preparing this CTMP it is not clear which developments these would relate to. It is the intention of UTS to continue to liaise and consult with TfNSW to manage these as they become known.

5. Construction Traffic Management Mitigation Measures

5.1 Traffic Management Measures

The following construction traffic management mitigation measures will be applied during the construction period at UTS.

5.1.1 Traffic Signs and Devices

- Advisory road signage would be installed on approach to the work zone in accordance with the RMS 'Traffic control at Work Sites' guidelines.

5.1.2 Hours of Operation

- Work is to be undertaken only during the approved construction hours as conditioned in the development approval which are expected to be between 7:00am and 7:00pm weekdays and between 7:30am and 5:00pm Saturdays.
- Any work outside of the approved hours shall only be undertaken if work cannot be achieved during approved hours and will require a separate approval.

5.1.3 Vehicle Access

- All construction vehicles including all trucks must enter and exit the site in a forward direction. As such, one-way entry and exit is proposed through the works zone. No trucks are to reverse on to a public road.
- Construction vehicles are to make radio contact with the site on approach to ensure access to the work site is available.
- Access along all public roads will be maintained at all times.
- Construction vehicles must not block accesses along all public roads.
- Any materials or spoil spilled onto the road must be rectified with appropriate equipment and qualified personnel, subject to appropriate WH&S provisions.
- Construction vehicles will not queue on state roads on approach to the construction works site.

5.1.4 Truck Routes

- The site induction must include procedures for heavy vehicles accessing the site.
- Drivers must adhere to nominated truck routes illustrated in Figure 4.3.
- Drivers must be aware of the local area's traffic, pedestrian and cyclist activity.
- Drivers must be aware that the local road speed limit in the area is 50 km/h. State Roads have a speed limit of 60km/h.

5.1.5 Site Inspections and Record Keeping

The construction operation would be monitored to ensure that it proceeds as set out in the Contractor's Construction Management Plan provided by the Head Contractor. A daily inspection before the start of the construction activity should take place to ensure that conditions accord with those stipulated in the plan and there are no potential hazards. Any possible adverse impacts would be recorded and dealt with if they arise.

5.2 Staff Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. The agreed works zone arrangements and work hours must be included as part of this induction.

All new staff will be informed that there is no parking available within the site and that they are not to park on the surrounding roads. The measures described in Section 4.2 will be presented to all new staff during the staff induction.

6. Conclusion

This CTMP has been prepared to document the associated construction traffic management measures necessary to facilitate the proposed construction works at the UTS Building 2 site.

Based on the findings of the report, it is concluded that:

- Phase 1 works involving the construction of Building 2 and the new podium would commence in July 2016 and will take approximately 30 months to complete.
- Phase 2 works involving the construction of the new Building 1 podium would commence in January 2020 and will take approximately 18 months to complete.
- Part of Jones Street, south of Thomas Street is proposed to be closed to traffic and converted to a works zone for construction activities.
- Richard Crookes, the appointed contractor will utilise one-way entry (from Broadway) and egress (to Thomas Street in Phase 1 and to Broadway in Phase 2) routes through the site works zone to reduce traffic congestion on the surrounding roads. However, small vehicles such as utility vans, would be permitted to enter Jones Street from the north (Thomas Street) to allow the temporary Broadway entry to be closed during quiet periods and reduce trucks egressing on to Broadway traffic.
- During Phase 1, vehicle access to the construction site includes entry from eastbound Broadway into Jones Street, and exit from Jones Street into Thomas Street. During Phase 2, vehicle access would include entry and egress to eastbound Broadway.
- Traffic controllers would be present to manage vehicle access into the site to ensure traffic movement on roads is not required to stop.
- Construction routes would not adversely affect the safety of motorists, pedestrians, cyclists and the amenity of local residents.
- Class A hoarding will be installed around the works zone to protect pedestrians from construction activities.
- Class B hoarding will be installed at the frontage of Building 1 to direct pedestrians past the site during Phase 2 of the works.
- Traffic controllers would be present to ensure safe pedestrian passage past the entry and egress access to the Jones Street works zone. Extendable barriers would be utilised along Broadway during the entry of a construction vehicle to prevent vehicle and pedestrian conflict.
- Average construction vehicle movements to and from the site can be satisfactorily accommodated by the surrounding road network.
- Construction activities are to be undertaken during approved working hours.
- Large, medium and small rigid trucks up to 12.5m long will be required to access the site.
- Emergency vehicles will have access to the site via all existing roads. Where emergency access on Jones Street is required, construction vehicles would be cleared off the site.

Overall, the construction traffic arrangements are considered to be acceptable for this project.

Appendix A

CoS Standard Requirements

The City of Sydney Standard Requirements for Construction Traffic Management Plan

This report has been prepared taking into consideration the CoS requirements for a construction traffic management plan. The table below provides a checklist and summary of this CTMP's compliance with Council requirements.

The Applicant or contractor undertakes to follow and abide by the following requirements at all times during the demolition, excavation and construction works at Building 2, University of Technology Sydney.

Requirement	Compliant	Comment/ Reference
i Details of any roads that may not be used by construction traffic – site specific	Yes	Section 4.3
ii Details of roads that may be excluded from use by construction traffic i.e. roads with load limits, quiet residential streets or access/turn restricted streets – site specific	Yes	Section 4.3
iii The approved truck route plan shall form part of the contract and must be distributed to all truck drivers.	Yes	Section 5.2
iv All vehicles must enter and exit the site in a forward direction (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).	Yes	Section 5.1.3 Appendix B - TCP
v Trucks are not allowed to reverse into the site from the road (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).	Yes.	Section 5.1.3
vi The Applicant must provide the City with details of the largest truck that will be used during the demolition, excavation and construction. NOTE: No dog trailers or articulated vehicles (AV) to be used on local roads (unless specific approval for a one-off occasion is obtained from the City's Construction Regulation Unit).	Yes	Section 3.6
vii Oversize and over-mass vehicles are not allowed to travel on Local Roads (unless approval for a one-off occasion is obtained from the City's Traffic Operations Unit). Requests to use these vehicles must be submitted to the City 28 days prior to the vehicle's scheduled travel date. For more information please contact the National Heavy Vehicle Regulator (NHVR) on 1300 696 487 or www.nhvr.gov.au .	Yes	Section 3.6
viii No queuing or marshalling of trucks is permitted on any public road.	Yes	Section 4.3 Section 5.1.3
ix Any temporary adjustment to Bus Stops or Traffic Signals will require the Applicant to obtain approval from the STA and RMS respectively prior to commencement of works.	NA	Adjustments to Bus Stops or Traffic Signals are not anticipated at this stage, however, if required a separate application will be submitted
x All vehicles associated with the development shall be parked wholly within the site. All site staff related with the works are to park in a designated off street area or be encouraged to use public transport and not park on the public road.	Yes	Section 4.2
xi All loading and unloading must be within the development site or at an approved "Works Zone".	Yes	Section 3.4
xii The Applicant must apply to the City's Traffic Works Co-ordinator to organise appropriate approvals for Work Zones and road closures.	Yes	A separate application will be submitted
xiii The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for partial road closures.	Yes	A separate application will be submitted

Requirement	Compliant	Comment/ Reference
xiv The Applicant must apply to the Transport for NSW's Transport Management Centre for approval of any road works on State Roads or within 100m of Traffic Signals and receive an approved Road Occupancy Licence (ROL). A copy of the ROL must be provided to the City.	NA	Road works to any public road is not anticipated however, if required, a separate application will be submitted
xv The Applicant must apply to the City's Construction Regulations Unit to organise appropriate approvals for temporary driveways, cranes and barricades etc.	Yes	Section 3.4
xvi The Applicant must comply with development consent for hours of construction.	Yes	Section 3.2
xvii All Traffic Control Plans associated with the CTMP must comply with the Australian Standards and Roads and Maritime Services (RMS) Traffic Control At Work Sites Guidelines.	Yes	Appendix B - TCP
xviii Traffic Controllers are NOT to stop traffic on the public street(s) to allow trucks to enter or leave the site. They MUST wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - the vehicles already on the road have right-of-way.	Yes	Section 5.1.3 Appendix B - TCP
xix Pedestrians may be held only for very short periods to ensure safety when trucks are leaving or entering BUT you must NOT stop pedestrians in anticipation i.e. at all times the pedestrians have right-of-way on the footpath not the trucks.	Yes	Section 4.5
xx Physical barriers to control pedestrian or traffic movements need to be determined by the City's Construction Regulations Unit prior to commencement of work.	NA	No physical barriers are proposed however, if required, a separate application will be submitted
xxi The Applicant must obtain a permit from the City's Construction Regulation Unit regarding the placing of any plant/equipment on public ways.	Yes	A separate application will be submitted for a works zone permit
xxii The Applicant must apply to the City's Building Approvals Unit to organise appropriate approvals for hoarding prior to commencement of works.	Yes	A separate application will be submitted
xxiii The CTMP is for the excavation, demolition and construction of building works, not for road works (if required) associated with the development. Any road works will require the Applicant or the contractor to separately seek approval from the City and/or RMS for consideration. Also WorkCover requires that Traffic Control Plans must comply with Australian Standards 1742.3 and must be prepared by a Certified Traffic Controller (under RMS regulations).	NA	Road works to any public road is not anticipated however, if required, a separate application will be submitted
xxiv Please note that the provision of any information in this CTMP will not exempt the Applicant from correctly fulfilling all other conditions relevant to the development consent for the above site.	-	Noted

Appendix B

Traffic Control Plans

Melbourne A Level 25, 55 Collins Street PO Box 24055 MELBOURNE VIC 3000 P +613 9851 9600 E melbourne@gta.com.au	Brisbane A Level 4, 283 Elizabeth Street BRISBANE QLD 4000 GPO Box 115 BRISBANE QLD 4001 P +617 3113 5000 E brisbane@gta.com.au	Adelaide A Suite 4, Level 1, 136 The Parade PO Box 3421 NORWOOD SA 5067 P +618 8334 3600 E adelaide@gta.com.au	Townsville A Level 1, 25 Sturt Street PO Box 1064 TOWNSVILLE QLD 4810 P +617 4722 2765 E townsville@gta.com.au
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