City One Wynyard

Operational and Construction Traffic, Pedestrian and Parking Report

20 December 2010

Prepared for

Thakral Holdings Limited

Halcrow

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This report has been issued and amended as follows:

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1 Introduction

Halcrow MWT has been commissioned by Thakral Holdings Pty Limited to provide traffic, parking and pedestrian advice in regard to a Part 3a Concept Plan application for a proposed development known as City One Wynyard in George Street, Sydney.

The City One Project is a major redevelopment of Wynyard Station and existing commercial buildings adjacent to and above the station. It encompasses the land comprising Menzies Hotel (including Shell House), Thakral House, Wynyard Station, part of Wynyard Park, the stratum lots above Wynyard Lane, and a number of lots beneath Wynyard Park, Carrington Street and York Street.

This report has been prepared to examine the operational traffic and parking impacts of the Concept Plan. It also addresses pedestrian and construction traffic implications.

The findings in this report will inform the Environmental Assessment, which is required under Part 3A of the Environmental Planning and Assessment Act. The assessment has been guided by the Director General's Requirements (DGRs).

This report examines the external traffic and parking impacts arising from the proposal. Halcrow has produced a separate report that examines the internal operational pedestrian aspects of the application.

The remainder of the report is structured as follows:

Part A Operational Traffic and Parking Study

Chapter 2 describes the existing conditions at the development site and describes the surrounding road network and examines the existing transport provisions;

Chapter 3 provides a description of the development proposal and details provision for transport modes associated with the development proposal;

Chapter 4 provides an analysis of likely operational traffic and parking impacts;

Chapter 5 summarises the operational traffic and parking study.

Part B Construction Traffic Management Plan

Chapter 6 overviews the construction method;

Chapter 7 describes the interface between the proposed building works and the surrounding streets;

Chapter 8 discusses external traffic and pedestrian implications;

Chapter 9 provides conclusions on the construction plan and advises on a process to refine the plan through intensive stakeholder consultation.

A further report undertaken by others will examine the internal pedestrian impacts during construction.

Part C Pedestrian Provisions

Chapter 10 describes existing pedestrian access conditions

Chapter 11 describes future pedestrian capacity requirements

Chapter 12 outlines the proposed scheme and how it will cater for long term pedestrian needs on the City one site

Part A Operational Traffic and Parking Study

2 Existing Conditions

2.1 Site Location

The City One site and the Wynyard Station environs that are affected by this proposal are located between George and York Streets, Sydney. The site comprises the Menzies Hotel (including Shell House), Thakral House, and Wynyard Station, part of Wynyard Park, the stratum lot above Wynyard Lane, Wynyard Park, Carrington Street, and York Street that together form the Wynyard Station Concourse.

2.2 Existing Road Network

The existing road network is described below (see **Figure 1**).

George Street

George Street provides a major north-south arterial traffic route through Sydney CBD. George Street connects Lower Fort Street at its northern end to Railway Square at its southern end. George Street generally provides two traffic lanes in both directions and additional turning lanes upon approach to a number of signalised intersections along its length.

George Street has either bus stops or 'No Stopping' along its length through and on each side of Wynyard. These 'No Stopping' controls are essential to the flow of traffic (particularly buses) along it.

York Street

York Street is a major arterial traffic route into Sydney CBD particularly for vehicles arriving from the north of Sydney across the Harbour Bridge. York Street is one-way in the southbound direction and generally provides four traffic lanes one of which operates as bus lane.

As part of the Wynyard bus interchange, York Street accommodates a number of bus stops for inbound bus services to the city from the Harbour Bridge, northern beaches, Ryde and Chatswood.

Margaret Street

Margaret Street is an east-west major collector road and connects to George Street in the east and Kent Street to the west. It provides one traffic lane and one kerbside parking lane in both directions.

The intersection of Margaret Street and George Street is traffic signal controlled and provides pedestrian crossing facilities on each leg. The right turn from Margaret Street to George Street is prohibited.

Margaret Street and York Street is also controlled with traffic signals with pedestrian crossing facilities on each leg.

Carrington Street

Carrington Street is a local road which connects Margaret Street at its northern end with Wynyard Street at its southern end. Carrington Street is one-way northbound. It provides two northbound traffic lanes and two kerbside parking lanes.

Carrington Street accommodates a number of bus stops on the western side. The bus stops provide access to bus services from the city to the northern beaches, Ryde and Chatswood. Carrington Street has a combination of parking controls including Taxi Stands, No Parking, 5 minute parking, 4 hour parking, loading zone, bus zone for layovers between 7am and 7pm and bus zones between 3pm and 7pm. These parking controls are shown in **Figure 2**.

Wynyard Lane

Wynyard Lane is a rear service lane which connects Margaret Street at its northern end with Wynyard Street at its southern end. Wynyard Lane operates one-way southbound. Predominantly it provides service vehicle access and vehicle access to the Wynyard public car parking areas. It provides a kerb to kerb width of approximately 5 metres and provides no formal pedestrian facilities along it. A zebra crossing is provided mid way

along its length which connects the Wynyard Car Park with George Street through Thakral House.

Wynyard Street
Wynyard Street provides an east-west local road function and provides a short section of two-way carriageway linking Wynyard Lane at is eastern extent to York Street at its western extent.

2.3 Bus and Traffic Operations in the Area

Being located at a major CBD transport node, the site is surrounded by a concentration of bus routes. These include major north south routes on George and York Streets and east west routes on Margaret Street.

York and Carrington Streets operate as the Wynyard bus terminus at which routes originate and terminate. Other routes pass along York Street from the Harbour Bridge to / from the Queen Victoria Building terminus and Central Station.

Of particular relevance to the proposed development is the Wynyard bus terminus (**Appendix A**) which feeds significant pedestrian numbers to and through Wynyard Station. This has set down / pick up stops on the western side of Wynyard Park in York Street and the eastern side of Wynyard Park on Carrington Street. These two streets together with Margaret Street and Wynyard Street provide a clockwise turnaround loop for buses. The other sides of York and Carrington Streets provide part time bus holding areas in which buses can, if necessary, wait between the times of their arrival and departure without occupying an actual pick up stop.

The streets that form Wynyard bus terminus are very heavily used in both the morning and evening peak periods. In the morning peak buses queue back from the Queen Victoria Building terminus along York Street and back across the Harbour Bridge. This appears to occur because of the lack of capacity in the southern section of York Street and at the Queen Victoria building terminus rather than due to operations in and around Wynyard terminus.

In the morning peak Carrington Street is relatively uncongested but there can be delays for buses exiting Carrington Street due to traffic queuing in Margaret Street back from Clarence Street and across York Street.

In the evening peak bus activity is more intensive at the Wynyard terminus because buses take longer to pick up than they do to set down. While York Street flows much better at this time, Carrington Street becomes heavily congested with buses and because of greater numbers, delays in getting out with Margaret Street are higher.

While the proposed development would have minimal impact on bus operations once completed, the bus operations do have implications for construction access as discussed in Part B of this report.

2.4 Pedestrian Facilities

Good width footpaths exist and pedestrian crossing facilities are provided at all traffic signal controlled intersections in the area.

There are three concourse pedestrian routes across the site generally connecting George Street with Wynyard Station. Northern and southern ramps across the site connect George Street directly with the station concourse. The Hunter Connection links Wynyard Station with Pitt Street beneath George Street.

2.5 Bicycle Facilities

City of Sydney Council is implementing a CBD cycle network and has identified sections of cycleway for construction as priority cycle ways (**Appendix B**). In the vicinity of the site cyclists can use the existing bus only lanes on York, Clarence and George Streets. There are no bicycle facilities in Carrington Street or Margaret Street.

The City of Sydney is developing a separated two way cycleway along the eastern side of Kent Street in the CBD. This will run from Druitt Street to Clarence Street near Observatory Hill where it will link to the cycle connection across the Sydney Harbour Bridge. The Kent Street route will also provide access to the inner west via the King Street cycleway currently under construction and the planned Union Street cycleway in Pyrmont.

2.6 Existing Car Park Access

There is an existing entry to a loading area that serves a small Coles supermarket on Wynyard Lane some 15 metres to the south of Margaret Street. Other loading bays have direct access off Wynyard Lane through its length.

Entry into the existing car park access to the Wynyard station public car park is located via Wynyard Lane through the City One site. The public car park egress is located via Cumberland Street.

3 Proposed Development

3.1 Concept Plan

The City One Project is a major redevelopment of Wynyard Station and existing commercial buildings adjacent to and above the station. It encompasses the land comprising Menzies Hotel (including Shell House), Thakral House, Wynyard Station, part of Wynyard Park, the stratum lots above Wynyard Lane, and a number of lots beneath Wynyard Park, Carrington Street and York Street.

Specifically, Concept Plan approval is being sought for the following elements of the City One development project:

- the building envelopes (above and below ground) for the commercial buildings, concourse area, basement car park and new canopy of the Wynyard Park station entrance;
- concept design for the Wynyard station concourse and design objectives for the Wynyard Station upgrades;
- public domain concept design, including Wynyard Park canopy;
- design criteria to guide future detailed design stage;
- a maximum Gross Floor Area (GFA) of 85,000m2;
- land uses consistent with the City Centre zone;
- Ecological Sustainable Development strategy for the project;
- pedestrian and vehicle access arrangements; and
- a maximum 177 car parking spaces to service the tenants of the commercial building.

If approval is granted for the Concept Plan it is proposed that the proponent will submit a subsequent Project Application for the demolition and construction works, including the detailed design of the building and internal layout of facilities. A further Traffic and Parking report will accompany that application. This will address specific design issues.

3.2 Car Park Vehicular Access

The Concept Plan provides for more direct pedestrian access between George Street in the east and Carrington and York Streets in the west via ramped retail access from George Street to Wynyard Lane with escalator access up from Wynyard Lane level to Carrington and York Streets.

This will lead to more intensive pedestrian activity across Wynyard Lane and allow it to become a more active street in accordance with Sydney City council's aspirations. A shared zone would be provided in the lane at the crossing.

In order to minimise traffic movements in the lane across the shared zone, it is proposed to relocate the access to Wynyard public car park to the northern side of the crossing point. This access would also serve a new loading area and underground car park for the new office building. The exit to the car park and loading area would be in Wynyard Lane between the car park entry and Margaret Street.

Because of the relatively narrow width of Wynyard Lane, service vehicles would generally be restricted to a maximum length of 8.8 metres. The current supermarket on the site needs to be serviced by trucks a little shorter than this length.

3.3 Potential Barangaroo Tunnel Connection

The Concept Plan takes into account a future tunnel connection to Barangaroo and to a new western CBD railway line. However the proposed tunnel would not be within the actual development site and would be a matter for Railcorp or others' plans.

3.4 Consultations

Prior to production of this report preliminary consultation were held over the telephone with officers of both the RTA and City of Sydney Council. A record of the telephone conversations is included within **Appendix C**.

In summary, key transports aspect of the development proposal that the officers of both the RTA and City of Sydney indicated were relevant to the construction traffic management issues (including minimising disruption to buses, pedestrians) and the need for convenient pedestrian linkages within and to/from the development.

Subsequently more detailed consultation has been held between Thakral and the Department of Transport. These consultations have set up a consultative process to resolve ongoing construction management and end state interactions between the proposed development and the public domain and critical transport infrastructure and systems in this area.

It is recognised that due to the complexities of the issues involved, and to the need for the State Government to firm up plans for Wynyard Station, that it would not be possible to agree detailed plans for the station and its environs prior to this Concept Plan process.

4 Parking and Traffic Impacts

4.1 Car Parking Impacts

Car parking requirements for developments in Sydney CBD are contained within City of Sydney Councils Central Sydney LEP 1996 and LEP 2005. These documents identify the following maximum levels of parking provision which should not be exceeded:

Other uses*	$\text{Max No} = \frac{\text{Total Other FSA}}{\text{Total FSA within development}} \times \frac{\text{Site Area}}{50}$
(* Other uses are uses not specified above)	

The site provides an area of 8,828 sqm FSA. Therefore, the site could provide a maximum of 177 car parking spaces (8,828/50).

It is proposed to provide these parking spaces in the new basement car park. This provision will be to some extent offset by the loss of at least 40 parking spaces in the existing Wynyard car park due to the structure needed for the new building.

4.2 Service Vehicle Parking

Service parking requirements for development are provided within Central Sydney DCP 1996. The following requirements are identified:

- *Commercial premises 1 space/3,300 sqm FSA or part*
- *Retail 1 space/350 sqm FSA or part*
- *Residential buildings 1 space for first 50 dwellings/*
- *Serviced Apartments serviced apartments 0.5 spaces for every 50 dwellings/apartments thereafter.*
- *Other uses 1 space for 1,750 sqm FSA or part*

The requirements for commercial premises apply to the first 50,000 square metres FSA of any development. Between 50,000 and 100,000 square metres FSA the requirements for the balance above 50,000 square metres FSA may be reduced by 50%. For areas exceeding 100,000 square metres FSA, the requirements may be reduced by 75%.

Where a mixed use development is proposed, the total number of service vehicle spaces is to be calculated on a pro rata basis of spaces required for the relative proportions of different uses within the

building. As indicated above, this total requirement may be reduced for mixed use developments with large FSAs as indicated above for commercial premises.

Provision is to be made for courier parking spaces (including bicycle parking facilities) near vehicle entry points and near lifts.

Application of the proposed FSA with the Central Sydney DCP service vehicle requirements indicate the following level of service vehicle parking provision:

- 65,000 sqm FSA commercial requires 18 bays
- 8,500 sqm FSA retail requires 6 bays
- Development requirement = 24 bays plus a number of additional courier spaces

It is however noted that very large DCP service vehicle requirements tend to over predict the service bays requirements for developments. Based upon our experience of similar developments elsewhere we would suggest the following service vehicle parking rates are more appropriate:

- Retail: one space (8.8m MRV) per 1,500 sqm FSA
- Commercial: one space per 20,000 sqm FSA for 8.8m MRV plus a number of courier bays

Application of these suggested rates indicates the following suggested number of service vehicle parking bays:

- 65,000 sqm FSA commercial requires 4 MRV bays plus a number of courier bays
- 8,500 sqm FSA retail requires 6 MRV bays
- Development requirement = 10 MRV bays plus a number of courier bays

Obviously the proposed loading areas will need to be closely managed and with Thakral controlling all of the retail and commercial space this would be achieved on a matter of good management practice.

The design of loading dock areas and number of servicing bays will be examined during later project application stages.

4.3 Traffic Impacts

An assessment of the traffic generation potential of the development proposal was undertaken in order to assess the effects of changed uses on the site.

As indicated above, the proposal seeks to provide a total of 177 car parking spaces for other uses. It is proposed to retain the existing car parking facility under Wynyard Park. Allowing for the loss of spaces in Wynyard car park, up to 137 new spaces will be provided.

Surveys of the traffic generation rate per space of CBD commercial developments identified the following traffic generation rates per space:

- AM peak hour = 0.26 trips per spaces
- PM peak hour = 0.20 trips per spaces

The traffic generation potential of these 137 additional parking spaces is therefore calculated to be:

- AM peak hour = 36 two-way trips/hour
- PM peak hour = 28 two-way trips/hour

An assessment of the taxi generation potential of the existing Menzies Hotel was undertaken based upon surveys of taxi movements from similar CBD hotels. A survey of the Menzies Hotel was not appropriate because the taxi rank that serves it also serves a variety of other uses and there is no clear area where taxis bringing persons to the hotel set down.

As an alternative taxi surveys were undertaken at the following hotels:

- Sofitel Wentworth, Philip Street
- Four Seasons, George Street

The taxi survey results are shown in Table 1.

Table 1 – Taxi Movements Associated with CBD Hotels

Hotel	AM Peak Hour (taxi movements/hr)			PM Peak Hour (taxi movements/hr)		
	Drop Off	Pick Up	Two-way	Drop Off	Pick Up	Two-way
Sofitel Wentworth	35	6	82	13	22	70
Four Seasons	11	10	42	11	15	52

Note: a single pick up or drop off equates to a two-way movement (inbound and outbound movement combined)

The hotels surveyed provide the following number of rooms:

- Sofitel Wentworth 436 rooms
- Four Seasons 531 rooms

It is noted that the Sofitel Hotel has a second main entrance in Harrington Street on its western side so the survey was not able to capture all taxi movements generated by the hotel. Calculating a taxi movement rate per room at each hotel on the basis of the survey without making allowance for this provides the following:

- Sofitel Wentworth
  - AM peak 0.19 two-way taxis/room
  - PM peak hour 0.16 two-way taxis/room
- Four Seasons
  - AM peak 0.08 two-way taxis/room
  - PM peak hour 0.10 two-way taxis/room
- Average of both sites
  - AM peak 0.135 two-way taxis/room
  - PM peak hour 0.13 two-way taxis/room

The existing Menzies Hotel provides 446 guest rooms. Using the average taxi generation figure it is forecast that the hotel currently generates the following number of taxi movements:

- AM peak hour 60 two-way taxis/hour
- PM peak hour 58 two-way taxis/hour

These trips will be removed from the local road network as a result of the redevelopment proposal.

It is therefore calculated that the development proposal would indicatively reduce traffic volumes associated with the operation of the site by the following number of peak hour movements:

- AM peak hour 60 -36 = 24 trips per hour
- PM peak hour 58 - 28 = 30 trips per hour

The operation of the local road network surrounding the site will therefore benefit from the traffic reductions as a result of the development proposal. In view of this no further assessment of operational traffic impact is considered necessary.

4.4 Wynyard Lane Pedestrian Crossing

The proposed development will open up a pedestrian route and view from George Street to Wynyard Lane and across to Carrington Street. This will mean that pedestrians using the route will need to cross traffic on the lane.

To minimize the amount of traffic that would need to be crossed, the development scheme provides a new entry to the Wynyard car park to the north of the crossing point. This would mean that only the much lighter volume of traffic generated by other properties along the lane would need to cross the pedestrian route. This would all be southbound and thus there would only be on directional way traffic across the crossing.

A survey of traffic using the lane on Tuesday the 19th of October counted the following traffic on the lane.

Period	Through Traffic (vehicles)	Car Park Entry Traffic (Vehicles)
6:30 – 9:30 am	171	242
8:00 – 9:00 am	78	127
3:30 – 6:30 pm	129	47
3:30 – 4:30 pm	54	26

Thus on the basis of the survey there would be 54 to 78 vehicle movements per hour in the lane across the pedestrian crossing. These traffic volumes represent only about one vehicle movement per minute.

It is proposed that the pedestrian crossing be raised above the road level and that pedestrians have priority.

At the time of construction conduits would be provided so that if, over time, pedestrian volumes were to increase to the point at which delays to traffic would be too great, the crossing could be signalised. This would only be done if absolutely essential.

In examining the interaction of pedestrians and vehicles at the crossing, consideration was given to closing Wynyard Lane to traffic on each side of the crossing. However there are difficulties in doing this because the lane is used for servicing properties on either side of it and these vehicles would not be able to turn around at the end of the two cul-de-sac so formed. In addition the need for two way traffic flow would mean that service vehicles would not be able to stand in the lane while loading and unloading. Accordingly closure of the lane is seen as a long term aspiration rather than as something that could be implemented immediately.

4.5 Other Considerations

The car park layouts should conform to the requirements of AS2890.1:2004. Parking for mobility impaired persons should be provided on the basis of a minimum of 1-2% of total parking provisions as per City of Sydney Council DCP requirements.

Service vehicle access should accord with the requirements of AS2890.2:2002.

The development should also provide for other transport modes in accordance with the following Central Sydney DCP rates:

- Bicycle parking – equivalent of at least one car parking space for every 100 car parking space or part thereof.
- Motorcycle parking – equivalent of at least one car parking space for every 100 car parking space or part thereof.

These aspects together with possible environmentally sustainable development requirements for increased bicycle parking, provision of recharge facilities for electric cars and allocation of commercially operated share car spaces within the proposed car parking allocation, will be addressed in the project application design.

5 Summary of Operational Traffic Aspects

In summary the above assessment of operational traffic and parking aspects finds the following.

- The Concept Plan will seek approval for:
  - the building envelope (above and below ground);
  - a floor space area (FSA) of approximately 85,000m2;
  - all land uses;
  - pedestrian and vehicle access arrangements;
  - car parking numbers.
- Based upon a site area of 8,828 sqm FSA it is calculated that in accordance with LEP limits the site could provide a maximum of 177 car parking spaces (8,828/50). Access to these basement parking spaces will be from Wynyard Lane.
- The existing public car park under Wynyard Park is proposed to be retained. However, due to structural enhancements through the existing car park it is estimated that at least 40 would be removed as a result of the development proposal.
- The development proposal would therefore result in the provision of up to 137 additional car spaces.
- Using commercial CBD parking rates this level of car parking provision has the potential to generate some 33 and 25 trips during the AM and PM peak hours.
- Surveys of taxi usage associated with CBD hotels comparable to the Menzies Hotel on the site area indicate that the development proposal would remove some 60 and 58 trip during the AM and PM peak periods respectively.
- Overall the development proposal is calculated to reduce traffic flows on the surrounding road network by some 24 and 30 trips per hour during the AM and PM peak hours. This reduction in traffic volumes will bring benefit to the operation of the road network.
- The new design provides for a 'shared zone' on Wynyard Lane which will provide a major new crossing point in a retail arcade between George Street and Carrington and York Streets.

- The proposed entry to the Wynyard car park will be relocated so that traffic entering the car park will not have to cross the 'shared zone' and that traffic movements across the shared zone will be suitably restricted.
- In more detailed design for a subsequent project application it is proposed that:
  - Car parking should conform to the requirements of AS2890.1:2004.
  - Service vehicle access should conform to the requirements of AS2890.2:2002.
  - Bicycle and motorcycle parking should be provided in accordance with the requirements of Central Sydney DCP 1996.

It is concluded that the traffic and parking impacts of the proposed development can be satisfactorily accommodated within the existing road network without requiring any improvement. Detailed designs and appropriate supporting documentation (including construction traffic management plans) will be prepared to support later stages of project applications.

Part B Construction Traffic Management Plan

6 Construction Methodology

6.1 Proposed Construction Works

The development proposal will involve:

- Demolition of the existing buildings which comprise the development site with the exception of Shell House.
- Major works on access approaches to Wynyard Station within the Thakral site.
- A new multi storey office building towers on the land between Carrington Street and George Street.
- Conservation works to former Shell House and its internal refurbishment.
- Retail levels linking George Street and Carrington Street to the Station concourse.
- Retention of the existing Wynyard public car park and construction of tenant basement parking.
- The upgrade of the public domain surrounding the site.
- Upgraded station entry in Wynyard Park.

6.2 Staging of the Works

The staging of works has been described in Concept Construction Methodology Report prepared Brookfield Multiplex (September 2010). A copy of the report is attached in **Appendix D**. In short the construction staging is described below.

Stage 1	Site establishment
Stage 2	Demolition and Excavation of Thakral and Menzies Buildings to Level 2
	Demolition and Excavation of Thakral and Menzies Buildings from Level 2 to new footing on southern half of site
Stage 3	Construction of structure to Level 3 of Thakral and Menzies Buildings
Stage 4	Demolition and Excavation of Thakral and Menzies Buildings from Level 2 to new footing on southern half of site
	Structure to Level 3 on northern half of Thakral and Menzies Building site

Stage 5 Shell House demolition, excavation and construction
Stage 6 Wynyard Park improvements

The construction operations affecting traffic are outlined below:

- Initial works for site establishment including the installation of fencing, hoardings (Carrington, George and Margaret Streets and Wynyard Lane), scaffolding; worker facilities and the like;
- Installation of tower cranes which would be established during demolition;
- Standing or loading / unloading of trucks, mobile cranes, concrete trucks in Carrington Street in a kerbside 'Works Zone', throughout the works; and
- Partial footpath and road closures.

The interface between the works and the road frontage is described in **Chapter 7** while the implication of these works is described below in **Chapter 8**.

7 Interface between Works and Surrounding Streets

7.1 Works Zone

During the initial stage and demolition works, cranes will lift demolition materials from the site onto the trucks waiting in the Works Zone.

During the construction phase, the Works Zone will be used for deliveries including scaffold, formwork, reinforcement, concrete and concrete pumps. It will also be used for façade, services and finishes trades' deliveries.

While the majority of loading, unloading and deliveries would take place using cranes, some loading will be carried out from within the site, via a gate in Wynyard Lane from Margaret Street and via a temporary access in Carrington Street through the Works Zone area.

7.2 Road and Footpath Closures

Activities such as delivery and installation of hoardings, crane deliveries and erection dismantling, installation of major plant and structure and external reconstruction would require the use of road / footpath space on a short term basis.

Footpath closures during the installation of hoarding would occur at night to minimise the impact on pedestrians. It is not anticipated that any footpath closures would be required whilst the hoarding was in place. Pedestrian diversions would occur in accordance with the relevant Australian Standard.

Occupation of the kerbside space would be required whilst work was occurring on the footpath or kerb or during the establishment of the hoardings. Traffic control would be used to close the lane for the protection of workers and to provide adequate clearance to the work area from the travel path.

There would be period when Wynyard Lane is closed to allow works to be carried out below and above the roadway. During this time each end of Wynyard Lane will need to

be two way to allow vehicles to pass and / or turn around safely. Provision would be made for vehicles to turn around within each section.

The proposed new canopy over the station entrance in Wynyard Park would project closely towards the Carrington Street bus stops. The construction plans indicate an 'A Class' hoarding around this which would close off part of the Carrington Street footpath adjacent to the bus stops.

This footpath closure would take place only during a very short time and in a manner agreed with the State Transit Authority so as to minimise the impacts on their operations. For the rest of the time the hoarding would be set back behind the footpath so as to leave bus operations unimpeded.

7.2.1 Truck Routes

Construction vehicles will be required to approach the site via either York Street off the Harbour Bridge or via Margaret Street via the Western Distributor, Sussex Street or Napoleon Street.

Trucks will be required to depart via Margaret Street to either Clarence Street or the Harbour Bridge or to Napoleon and Sussex Streets to the Western Distributor.

Construction vehicles will not be allowed to use George Street or York Street south of Jamison Street except for the purposes of hoarding placement and removal or to do related works on the footpaths of George or Margaret Streets.

7.2.2 Truck Numbers

The peak numbers of trucks per day differ during each stage of the construction works. An estimate of trucks numbers to be as follows.

Table 7.1 Estimated Truck Numbers

Stage	Truck Movements per day	Construction Site Personnel per day	Expected Duration per week
Demolition	25	60	41
Excavation	60	60	32
Structure	90*	200	55
Finishes	60	450	67

* maximum number during large concrete pours only

At the peak of activities, it is estimated that there would be a maximum of 12 trucks per hour visiting the site during concrete pours.

The estimated truck generation of 12 trucks per hour is low when compared to the existing volume of traffic on roads in the area. The peak hour traffic generation would be lower than the existing traffic loads from the use of the existing buildings (to be demolished) as an office building and hotel and car park. These businesses generate deliveries, passenger pick up and drop off (including taxis), traffic and parking movements.

The car park has around 400 car spaces which would typically overturn 0.2 trips per car space in the AM or PM peak hour. This would equate to 80 vehicles per hour albeit car trips rather than truck trips. Thus the total construction vehicle trips would be somewhat less than the traffic currently generated by the site.

7.2.3 Pedestrians

As the site is located in Sydney's CBD, pedestrian volumes are high. Pedestrian crossing facilities are provided at all legs of the signalised intersections in the vicinity of the site. These signalised facilities and the footpaths would only be minimally affected by the demolition and construction activities.

Pedestrians would be affected when trucks crossed the footpath to enter the construction site. Other pedestrian which use Wynyard Lane may also be affected. To improve safety of pedestrians, RTA accredited traffic controllers will be used to manage pedestrians while trucks were moving in and out of the site across the footpath. Flashing lights would also be installed when trucks cross the footpath.

Should there be a need for trucks to occasionally reverse into the site off Carrington Street then pedestrian protection would be provided using traffic controllers to guide trucks and assist pedestrians whilst trucks crossed the footpath.

7.2.4 Taxi Spaces

Installation of the Works Zone will displace some 15 metres of taxi zone. A significant amount of daytime demand for these taxis is generated by the Menzies Hotel which would not be operating throughout the construction. However it is accepted that some demand would be generated by other users in the area.

In consultation with the Taxi Council and Sydney City Council there are two options which could cater for the loss of taxi spaces. The options include the following.

1. Relocation of the taxi rank to an alternate location in vicinity of the site.
2. Retention of the taxi rank between 7pm and 7am (subject to a hoarding design that would afford satisfactory sight lines between passengers and taxis).
3. Increase the number of spaces at alternate taxi ranks near Martin Place, in York Street and Kent Street. As these spaces are located some distance from the existing rank, this option may be used in conjunction with one of the above options.

7.2.5 Parking

The Works zone would displace 22 metres of No Parking and 15 metres of 5min parking. The No Parking and 5 minute parking are predominately used for the hotel and would not be needed during construction.

The works zone would also displace a 22 metre section of bus zone near Margaret Street which operates between 7am to 7pm. This is a layover position for buses waiting between services. From observations it is used by single buses during both morning and evening periods.

Transport NSW, Sydney City and STA have developed a number of changes in the Wynyard and mid city precinct to improve the management of buses and traffic flows during the AM and PM peaks. These changes include clearways, No Stopping, additional bus zones and bus lanes. The replacement of this bus layover area would need to be considered in conjunction with the Wynyard and mid city precinct plan and resolved in consultation with the STA, Sydney City and Transport NSW.

8 Impacts of Construction Traffic

8.1 Traffic Impacts

8.1.1 Carrington Street

As indicated above in Section 7.2.2, the cessation of normal activities on the site would lead to a significant reduction in traffic generation. This would more than offset the effects of construction traffic in terms of the general operation of the CBD road system.

However construction traffic would impact locally on Carrington Street. In particular bus operations would need to continue unhindered during weekday peak periods. In this regard the most critical time for Carrington Street is the afternoon peak period and so no loading or unloading would take place on weekdays between 4:00 pm and 6:30 pm.

As indicated above in Chapter 2 of this report, morning peak traffic conditions on Carrington Street are not as busy as in the evening but York Street is extremely congested and there can be delays to traffic exiting Carrington Street into Margaret Street. In view of this it would be appropriate to minimise construction traffic use between about 7:30 am and 9:30 am. To achieve this there would be no general deliveries or collections during this period. However it may be necessary at times to start concrete pours during this time in order to allow sufficient time for the finishing of the concrete within specified daytime working hours.

With concrete truck arrivals and departures spaced 5 minutes apart and reduced traffic in Carrington Street due to the cessation of normal activity in the Menzies Hotel, Thakral House and in the station retail outlets, the effects of this traffic would be very low.

In order to further reduce the effects on construction traffic on Carrington Street, it may be appropriate to allow construction loading and unloading to be undertaken between 6:00 and 7:30am. This would be a matter for agreement.

8.1.2 York Street

In order to redevelop the upper level of the Wynyard Park Station access it will be necessary to provide truck access from York Street. This will be necessary for the delivery of materials and concrete. It is proposed to provide a gate at the access and to have traffic controller management of trucks entering and exiting the site.

To minimise interference with bus operations, access to this gate on weekdays would be restricted to the hours before 7:30 am and between 9:30 am and 4:00 pm.

8.1.3 Wynyard Lane

As indicated above in the previous chapter, vehicular use of Wynyard Lane would be greatly reduced during construction as Thakral house, the Menzies Hotel and the various retail stores in the station would not be operational. Thus the lane would only be needed for access to the buildings fronting the lane each way on both sides of the lane south of the site and on the eastern side of the lane opposite Shell House.

When the lane was closed to allow construction above and below its central sections, each remaining section would be converted to two way operation with "no stopping" controls applying to allow two way traffic flow.

To avoid conflicts and expedite entry and exit movements at each open end, traffic controllers would regulate traffic during business hours. In addition to this, signs would be erected advising that access was only available to building occupants and authorised vehicles.

Railcorp also uses Wynyard Lane to access a goods delivery lift. The use and access to this lift or an alternate lift would be negotiated with Railcorp.

8.1.4 George and Margaret Streets

Traffic on these streets would only be impacted while hoardings were erected or removed or during any footpath works. In accordance with normal CBD practice, it is proposed that where possible this work would take place at night.

During this work it would be necessary for one or more trucks to stand in the kerbside lane while delivering or removing material. Appropriate traffic management measures would be implemented to safely manage traffic and pedestrians while these works were in progress.

9 Construction Traffic Management Plan

A detailed construction traffic management plan will be prepared for agreement by the relevant authorities prior to the issue of a Construction Certificate for any work involving truck access to the site.

It is anticipated that the following items would be incorporated into the plan.

Truck Management

- Designated transport routes will be communicated to all personal and enforced.
- Construction vehicles are to radio site office on approach to the site to ensure access to the site is available.
- Strict scheduling of vehicle movement will occur to minimize off site waiting times.
- There would be designated peak hour and non peak hour delivery vehicle waiting areas within the construction zone or otherwise outside of the CBD environs as appropriate.
- Vehicle movements will be compliant with conditions of Consent and broader road-use regulations, particularly with regard to hours of work, materials loading and unloading, and over size deliveries and installation.
- Drivers should be aware of speed limits in the area.

Detailed Planning

- Advisory road signage in accordance with AS 1742.3 Manual of uniform traffic control devices - Traffic control devices for works on roads and the RTA's Traffic Control at Worksites must be installed and maintained throughout the construction stages.
- Detailed Traffic Control Plans (TCPs) would be prepared and controlled by traffic controllers with the appropriate work tickets in accordance with the measures set out in this CTMP.
- The selection and specific implementation of traffic control plans would be carried out by qualified traffic control personnel with RTA red and orange (where applicable) cards.

Staff Parking

- On-site parking would not be provided. A Green Travel Plan would be prepared to encourage site workers to utilize public transport and car sharing wherever possible.

Stakeholder Agreement and Feedback

- Stakeholder feedback will be incorporated into the traffic management plan.
- No neighbouring driveways or pedestrian access would be blocked during the works without specific agreement / notification.

Hours of Operations

- Work to be undertaken during DA approved construction hours and any work outside of the approved hours shall only occur in accordance with the Conditions of Consent with separate approval.

Road closures

- Use of kerbside lanes involving lane closures will occur within the terms of the RTA road occupancy approvals.
- Any lane closure will occur with traffic control is in place.

Pedestrians

- Flashing lights would also be installed when trucks cross the footpath.
- Work on footpaths and roadway shall be restricted to days / hours when pedestrian and vehicle interaction were low where possible.
- Any footpath closure must occur within whilst traffic control was in place.
- Traffic controllers to be used to assist with pedestrians and bicycles as required.
- Drivers are to be mindful of the pedestrians and bicycles when entering and exiting the site.

Part C Pedestrian Provisions

10 Existing Situation

Wynyard station is the third busiest station in the CBD and as such is subject to extended periods of congestion particularly in the morning and evening peak periods.
The station is underground and has seven major entrances: two on George Street, the Hunter Connection Arcade, York Street, Margaret Street Arcade (Met Centre), Clarence Street Arcade and Wynyard Park. Importantly the linkages through the station also provide for movements of pedestrians across the city. These can be seen on diagrams in Appendix E.

At present the station concourse areas and arcades have retail around the perimeter with some retail located in the main concourse area.

The main issues in relation to pedestrian movements are summarised as follows:

- Poor wayfinding
- Unclear sitelines resulting from concourse clutter
- Indirect access arrangements e.g. concourse to Carrington Street
- North west (Westpac Link) passageway – capacity constraint
- AM peak issue
    - Queues at ticket gates exiting the station
    - Cross-flow conflicts e.g. western ticket gates and proximity to vertical transport to Platforms 3 and 4
- PM peak
    - Platform congestion

11 Pedestrian Analysis and Performance Specification

In the formulation of its concept design, Thakral has commissioned extensive pedestrian analysis and modelling. This was input to the sizing of pedestrian walkways, lifts and escalators to ensure that the existing deficiencies outlined above were remedied and that sufficient capacity would be available until after 2030. In fact the analysis allowed capacity for pedestrian demands to increase from 24,000 to 49,000 persons per hour.

Subsequent to the conduct of the Thackral investigations, Transport NSW separately examined station capacity needs and determined that to cater for future needs up until the year 2060, the station access capacity should be effectively doubled.

Rather than provide guidance for a particular scheme, it decided to provide a generic performance specification for pedestrian access that would achieve the required capacity.

In doing so, Transport NSW recognised that it would be responsible for planning and delivering access upgrades for areas generally west of Carrington Street and from north of the paid concourse. The specification for pedestrian route widths is as follows:

- 20m to the east (i.e. to George Street)
- 25m to the west (i.e. towards York Street and Barangaroo)
- 10m to the north
- 10m to the south
- 20m clear width for eastern unpaid concourse area

12 Concept Plan

The concept plan proposes the following works to Wynyard Station. These are illustrated on the figures in Appendix E which compare existing and proposed layouts of different levels and sections through the site.

- Redevelopment of the concourse layout (non-paid) areas, railway station entries and circulation thoroughfares (from George Street to York Street);
- Provision of new station entries in Wynyard Park;
- Upgraded access for persons with a disability; and
- A capital contribution towards upgraded station facilities, ticketing areas, services, lifts and amenities; and fire and life safety systems to the upper and lower platforms (Platforms 3-6).

In doing these the City One Project will revitalise the Wynyard Station precinct by extending its functional life by significantly increasing passenger capacity, comfort and amenity. The proposed upgrades will provide for significantly greater capacity – to 2060. The development will importantly, accommodate future connections and passenger growth resulting from the future Barangaroo development and future rail infrastructure projects.

Future changes to the station access arrangements in Wynyard Park will also enhance integration with bus transport in Carrington and York Streets and will improve existing interchange arrangements.

The revised concourse layout (subject to detailed design resolution) will improve emergency evacuation times through the removal of concourse clutter, relocation of retail to the edges of the concourse and improvements to signage.

A particular feature of the concept design is that as well as providing the necessary capacity between George Street and the station concourse, it will provide a much more direct link from George Street to Carrington Street and the York Street bus stops across Wynyard Lane.

As well as improving significantly the quality of the route for pedestrians moving across the station, it will remove the need for these pedestrians to move through the station's unpaid concourse, thus yielding more capacity for rail passengers.

Otherwise the Concept Plan will provide the necessary pedestrian capacity within the Thakral development site as per the Transport NSW's specification.

It is noted that upgraded station facilities, ticketing areas, services, lifts and amenities; and fire and life safety systems to the upper and lower platforms (Platforms 3 – 6) are proposed by Transport NSW under a separate approval process.

The City One Concept Plan shows an indicative location for proposed future new station accesses at the northern and southern ends of Wynyard Park. It is noted that the proposed new station accesses will be the subject of a separate approval process and be constructed by Transport NSW as part of the future station upgrade works west of Carrington Street.

Similarly, the City One Concept Plan is compatible with the proposed Barangaroo Pedestrian tunnel which will connect into the western side of the stations concourse. This will be constructed as a separate exercise and neither its timing nor that of the City One proposal depends on the other.

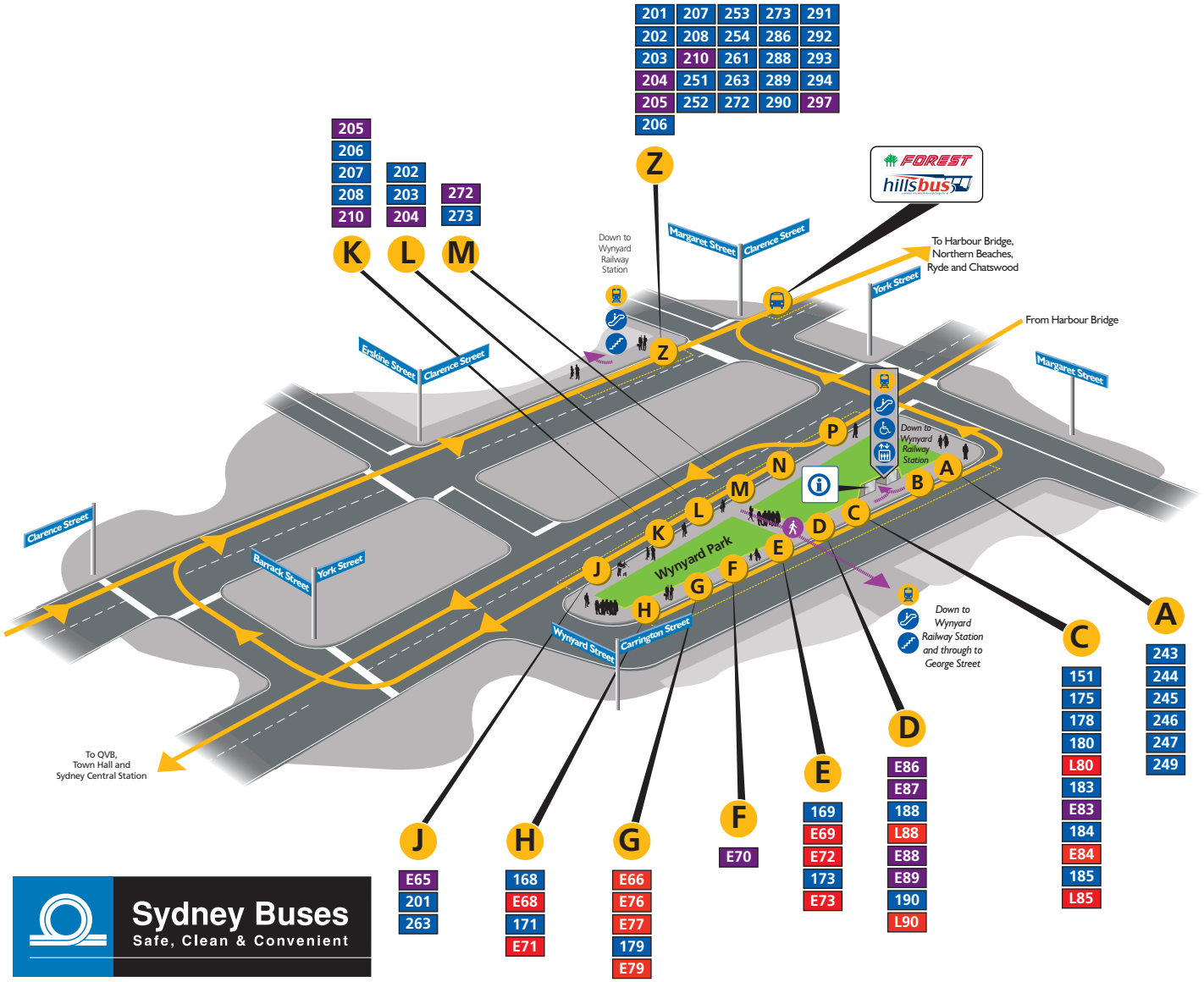
On top of the station pedestrian works that will do directly through the City One Project, Thakral has made an offer to the State Government to contribute towards the upgrading of both the paid and unpaid areas of Wynyard Station, including the carrying out of works within the unpaid areas of the station and a contribution for works within the paid areas of the station.

Thus the City One concept plan will materially contribute to resolution of existing pedestrian shortcomings at Wynyard Station.

Appendix A Wynyard Bus Interchange

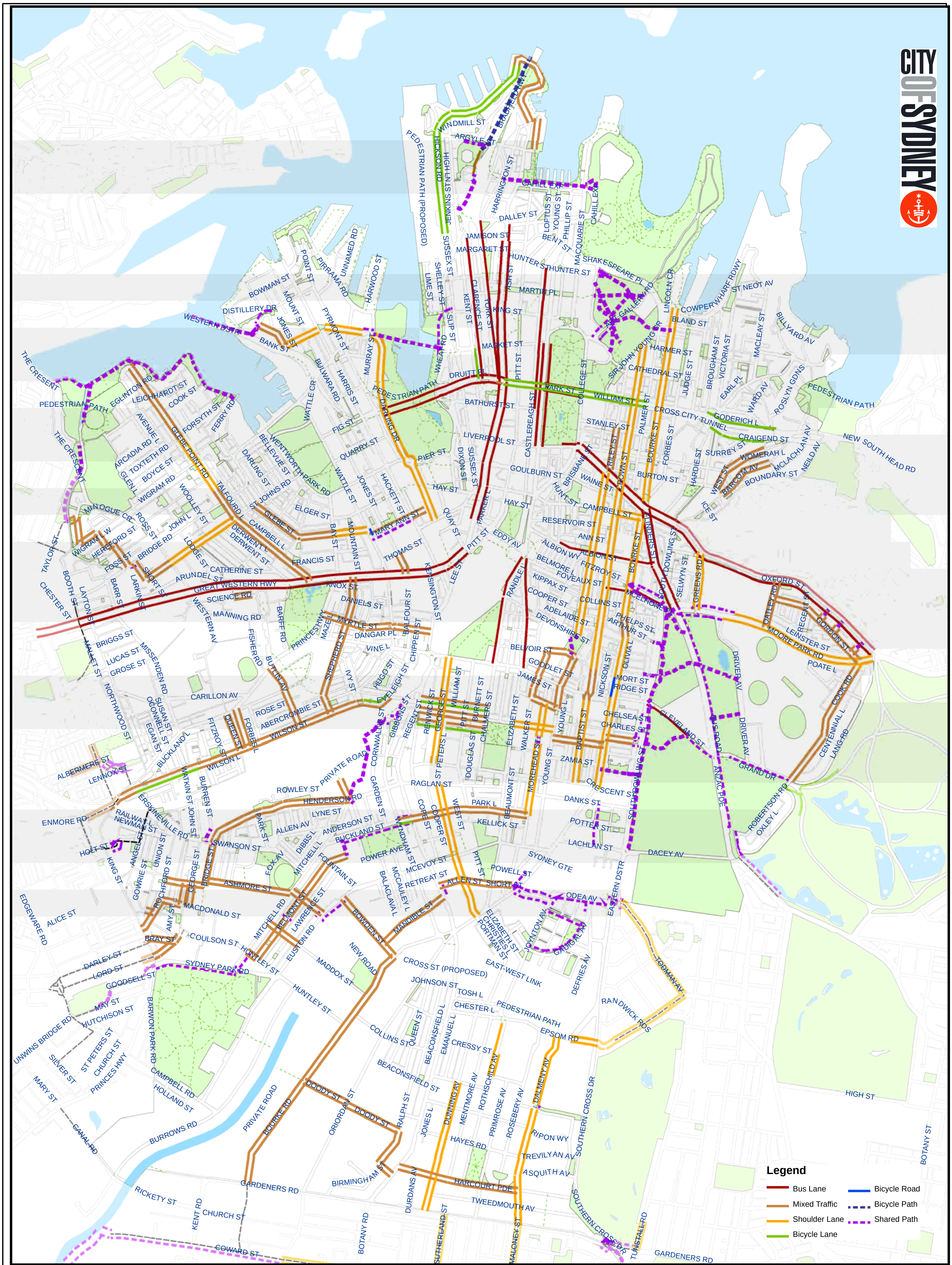
Wynyard
Stand Information

▶ Departure Guide



Sydney Buses
Safe, Clean & Convenient

Appendix B Sydney City Bicycle Plan



Cycle Strategy and Action Plan 2007-2017
Existing cycle network

250 125 0 250 500 Meters

Prepared By: gmccabe
Printing Date: July 23, 2007
Scale 1:30,000 @ A4

Appendix C Consultation Notes

Halcrow MWT

TELEPHONE

~~Calculation~~/Record

Job No: HALMWT086

Sheet No: 1

Prepared By: AB

Date: 5/5/09

Project: City One Wynyard.

Task: TELEPHONE CONSULTATION - RTA

OFFICER: GARY KENNEDY T: 02 8849 2029.

- HMWT DESCRIBED DEVELOPMENT PROPOSAL.
- RTA HAD RECIEVED DEPARTMENT OF PLANNING INFO ALTHOUGH NO DETAILED ANALYSIS UNDERTAKEN TO DATE
- HMWT ANALYSIS SUGGESTS DEVELOPMENT WOULD REDUCE AM & PM HR VOLUMES
- RTA CONSIDERED CONSTRUCTION & PEDESTRIAN ISSUES AS MORE IMPORTANT THAN TRAFFIC ISSUES.

THE FOLLOWING ITEMS REQUIRE CONSIDERATION:

- PEDESTRIAN LINKAGES (INCLUDING TO CLARENCE ST & BARANGAROO)
- MINIMISE DISRUPTION TO BUSES ON CARRINGTON ST.

Comments:

Halcrow MWT

TELEPHONE

Calculation/Record

Job No: HALMWT086
Sheet No: 2
Prepared By: AB
Date: 5/5/09

Project: CITY ONE WYNYARD

Task: TELEPHONE CONSULTATION - CITY OF SYDNEY COUNCIL

OFFICER: COL WARNE (CoS) T: 02 9265 9333

- HMWT DESCRIBED DEVELOPMENT PROPOSAL
- CoS CONSIDERED THE ISSUES OF 'HOW TO GET TO THE FINAL DEVELOPMENT' AS THE MAIN FOCUS PARTICULARLY:
  - CONSTRUCTION & TRUCK ACCESS
  - MAINTAIN EXISTING BUS OPERATIONS
  - PEDESTRIAN/CYCLIST TREATMENTS DURING CONSTRUCTION.
- HMWT CONFIRMED THAT CONSTRUCTION MANAGEMENT PLANS WOULD BE PROVIDED AT LATER STAGES OF DEVELOPMENT APPLICATION.

Comments:

Appendix D Multiplex Construction Methodology

CITY ONE WYNYARD

Photo

CONCEPT CONSTRUCTION METHODOLOGY REPORT

CITY ONE WYNYARD

301 GEORGE ST & 2-12 CARRINGTON ST

BROOKFIELD MULTIPLEX

28 September 2010

Table of Contents

1.0 Introduction

This report has been prepared by Brookfield Multiplex Construction Pty Ltd on behalf of Thakral to accompany an Environmental Assessment as requested by Director-General's Requirements (MP 09_0076) for the redevelopment of 301 George St and 2-12 Carrington St, Sydney.

This Construction Methodology Report (CMR) addresses works issues sufficiently for the Director-General to assess the Environmental Assessment. The intention of this document is to communicate that this development has been well considered, and will be undertaken in a manner that seeks to minimize disturbance and impact on the surrounding environment. Items contained in this CMR include:

- Outline of major works
- Heritage items
- Public amenity, safety, and pedestrian management
- Materials handling
- Traffic management
- Environmental management
- Impact on RailCorp

This report has included input from leading crane, demolition & excavation subcontractors. However, it is intended that a further detailed works plan be prepared and relevant approvals secured, prior to construction commencement.

1.1 Overview

This CMR has been prepared following the request of David Hogendijk of Thakral on the 22 September 2010., The report is at a concept stage and may require changes as detailed design progresses to meet stakeholder requirements.

This CMR has also considered and uses the Robert Bird Group (Exallos Division) report of the 18th July 2008 to provide information on pedestrian management and critical staging issues. An extract of this have been incorporated in the CMR in Section 3.0.

1.2 Project Description

The City One Wynyard Centre currently consists of:

Thakral House (301 George Street) – A fourteen level commercial office building with main entry from George Street. The building consists of ground level entry and commercial offices on Levels 1-13 with roof top plant area. The lower levels and basement areas are not part of this building.

Wynyard Retail – Ground and lower ground Wynyard Ramps and associated retail outlets and mixed use office/medical centre.

Menzies Retail Arcade – Two level retail arcade above ground level.

Hunter Retail Arcade – Single level retail arcade below ground level.

Wynyard Car Park - Basement car park level under the Menzies Hotel that extends under the Carrington Street and under Wynyard Park with access and egress tunnels.

North and South Wings of Menzies Hotel (2-12 Carrington St) – A four (4) star hotel with additional dining, function and basement storage levels. The north wing, known as Shell House has a distinct heritage façade and heritage roof top clock tower.

The future development consists of a new 29 storey office building consisting of an 11 storey podium & 18 storey tower (between Carrington & George St) , internal refurbishment of Shell House for use as office premises & 5 levels of retail linking George St & Carrington St to the station concourse.

2.0 Works Description

2.1 Overall Description and Programme

. Major Activities associated with the construction will include (in approximate order of occurrence noting, that these stages may overlap)

Stage 0	Vacate Thakral House and Menzies Hotel.
Stage I	Site Establishment Site sheds, hoarding erection, scaffolding, pedestrian control, vehicle cross overs, construction zones. Temporary hoardings to provide new ramp access to George St and Hunter Arcade.
Stage II	Demolition & Excavation Demolition of Thakral House & Menzies Hotel Buildings from existing roof to existing Level 2 (Demolition Stage 1). Demolition & excavation of Thakral House and Menzies Hotel Buildings from existing Level 2 to new footing level of half the site. (Demolition Stage 1)
Stage III	Structure Commencement of new structural works from new footing level to new Level 3. Installation of temporary steel truss at new Level 3. Continue new structural works above new Level 3. Commencement of façade & finishes works
Stage IV	Demolition/Excavation and Structure Provide within Stage III works, temporary hoarding to provide new ramp access to George St & Hunter Arcade. Demolition & excavation of remaining half of the site from existing Level 2 to new footing level (Demolition Stage 1A) Complete new structural works to remaining half of the site from new footing level to

	underside new Level 3. Remove temporary steel truss at new Level 3. Façade & finishes completed.
Stage V	Shell House Identify and protect heritage items Install façade retention if required Internal strip out and demolish as required (Demolition Stage 2) Excavate to new basement level (B3) Build new structure from new basement level (B3) to new roof. Fit out/Finishes to Shell House.
Stage VI	Stage VI: Wynyard Park Install "A" Class hoarding to Wynyard Park Demolish existing sky light & new escalator void (Demolition Stage 3) Re-build new structure & new lift Construct new awning Internal fit out

3.0 Physical Constraints of Site

An understanding has been developed of the physical constraints that impact on the City One Wynyard project. A summary of these physical constraints follows.

3.1 Pedestrian Paths

The site for the proposed City One Wynyard building is not located directly above the Wynyard Railway Station although has three (3) major pedestrian travel paths below that provide access to the station. These travel paths include the Northern and Southern George Street Concourses and the Hunter Arcade. As well as these there are two (2) adjacent MET Centre Arcades and the connection to the Westpac Centre in East Darling Harbour that feed into Wynyard Railway Station.

Thakral have engaged Stephen Grubits & Associates to investigate and report on the pedestrian traffic flows that occur through the Wynyard Railway Station and under the Thakral property. The pedestrian paths are shown in Figure 1 below.

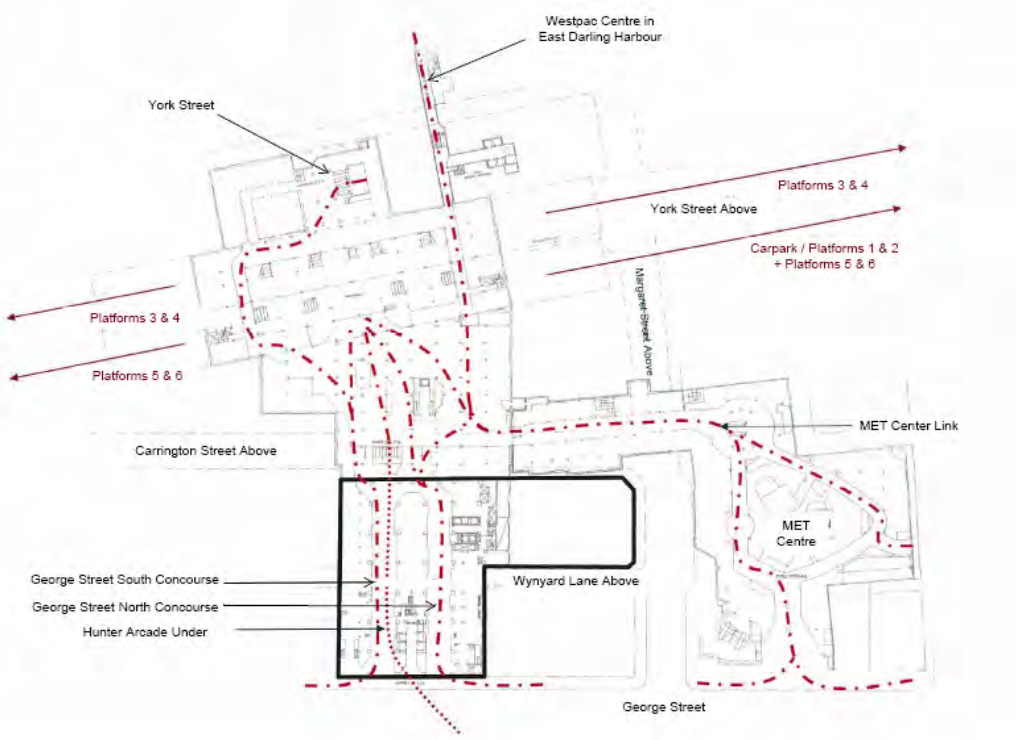


Figure 1: Pedestrian Paths to Wynyard Station

3.2 Electrical Substations

There are two (2) electrical substations located in the basement of the Thakral Building which supply electricity not only to the Thakral Building and the Menzies Hotel but also to the adjacent buildings and surrounds.

Thakral have engaged Mr Richard Pickering of NDY to investigate the substations and to report and comment on the likely impact on the proposed development. For the purposes of this report we have allowed for them to remain in their current position. The substations are shown in Figure 2 below.

Figure 2: *Electrical Substation Numbers 1771 and 1772.*

3.3 RailCorp Goods Lift and Access

RailCorp operate a goods lift that services multiple levels of the railway station operations as well as the retail business operations in RailCorp and Thakral controlled premises. Delivery Vehicle access to the goods lift is obtained from Wynyard Lane.

The need to keep the goods delivery lift in operation during construction of the new building would have to be negotiated with RailCorp.

Alternative goods delivery may need to be investigated if RailCorp require continuity of access for the operation of the railway station during construction. The goods lift is shown in Figure 3 below.

A new goods lift with access off Wynyard Lane will be constructed within the new City One Wynyard project.

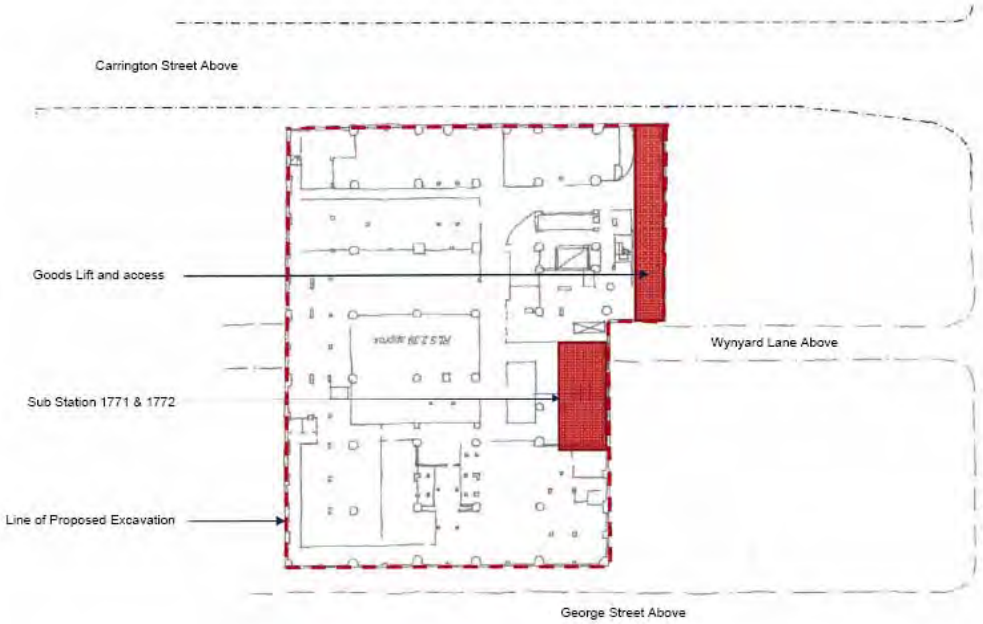


Figure 3: *Goods and Lift Access.*

3.4 Hunter Arcade

The Hunter Arcade is located directly below Thakral House and the Menzies Hotel and links the eastern side of Wynyard Station to the George Street Pedestrian Subway.

As well as providing a pedestrian link for rail patrons the Hunter Arcade provides a vital link for retail businesses within the Railcorp tenancies, Thakral tenancies and the Hunter Connection shopping centre on the eastern side of George Street.

The Hunter Arcade will be temporarily redirected during Stage I of the City One Wynyard construction. Access to the George Street Pedestrian Subway will be via a temporary stair connection between the Northern George Street Concourse and the Subway. This temporary access stair will be modified during Stage IV City One Wynyard construction to maintain continuous access to the George Street Subway and the Hunter Connection.

The Brookfield Multiplex proposed solution is to re-divert pedestrian access through the existing basement facilities of Menzies Hotel. This temporary access and modification can be seen in sketches Sk 012, Sk 013 and Sk 014.

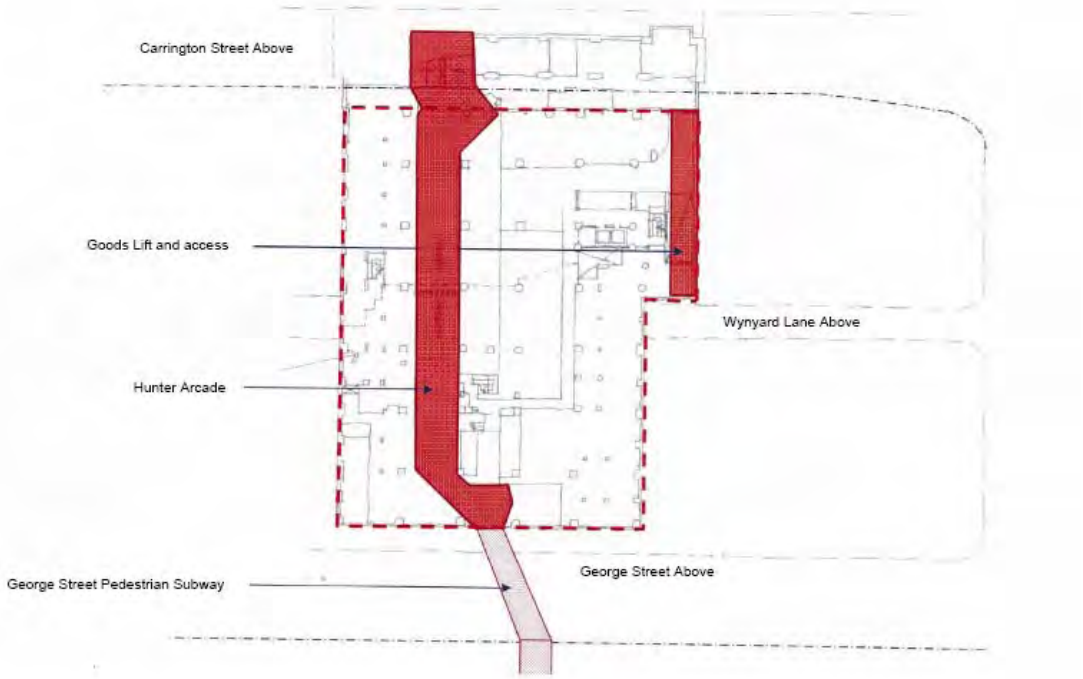


Figure 4: *Hunter Arcade*

3.5 George Street Pedestrian Subway

The George Street Pedestrian Subway adjoins the Hunter Arcade and is located centrally at the eastern boundary of the Thakral House site and provides an underground pedestrian link for rail patrons, shoppers, city visitors and office workers moving in an easterly or westerly direction across the city. The subway alignment is at an angle and not perpendicular to George Street.

Access to the George Street Pedestrian Subway will be maintained throughout the City One Wynyard Construction period except for minor changeovers of temporary stair access.

As per Section 3.4, the Brookfield Multiplex proposed solution to maintain access can be seen in sketches Sk 012, Sk 013 and Sk 014

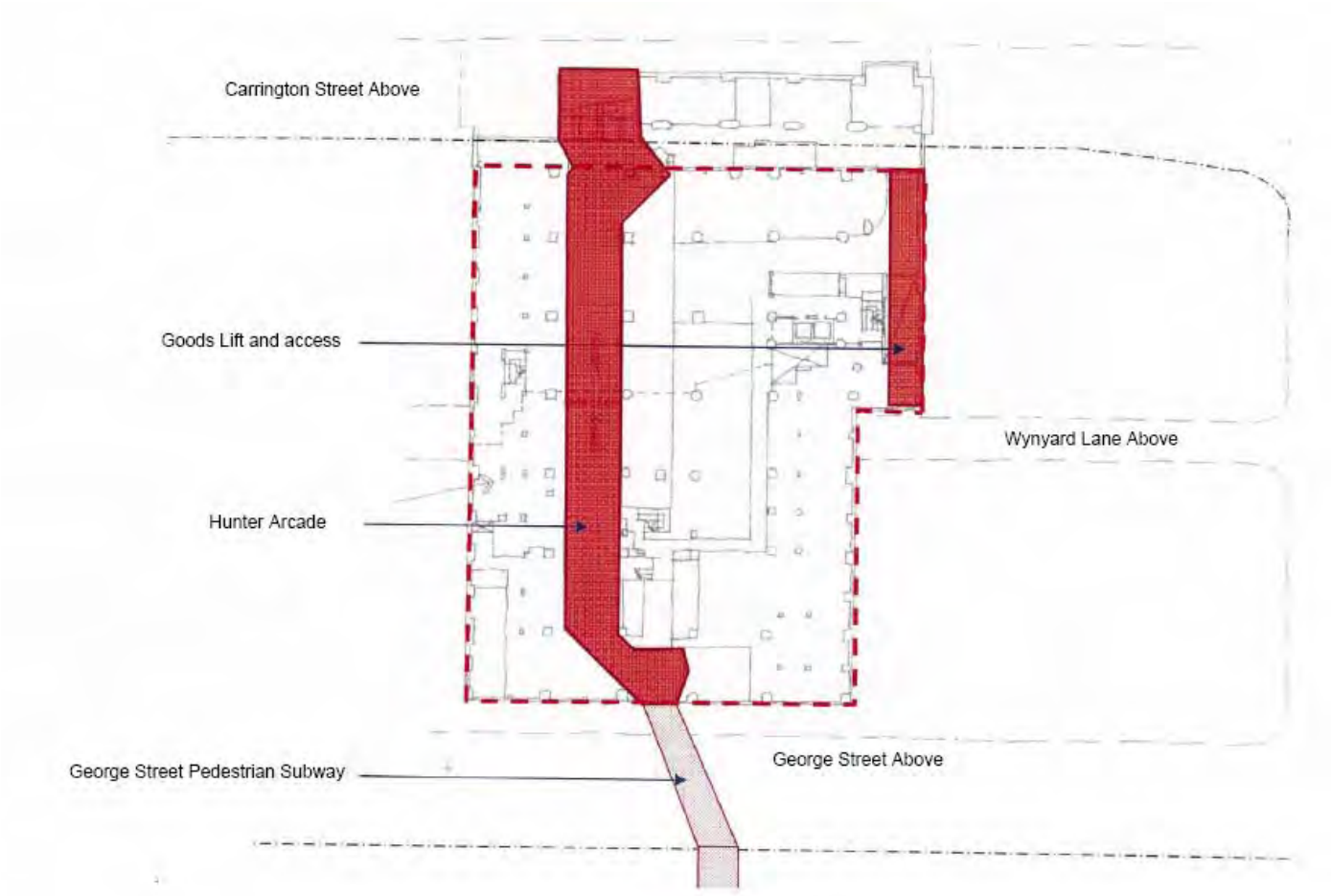


Figure 5: *George Street Pedestrian Subway.* George Street Concourses

3.5.1 George Street Concourses

George Street is linked to the Wynyard Railway Station by the Northern and Southern George Street Concourses which are located between three (3) strips of retail shops.

The combined width of the two (2) concourses is approximately 15 meters and represents 33% of the George Street frontage of the Thakral Site. We understand that Thakral have engaged Connell Wagner to provide expert advice on pedestrian movements through the site.

Access from George Street to Wynyard Station will be maintained at all times during the City One Wynyard project. Access will be provided through either the Northern or Southern parts of the existing structures or the new structure until the final arrangements are in place.

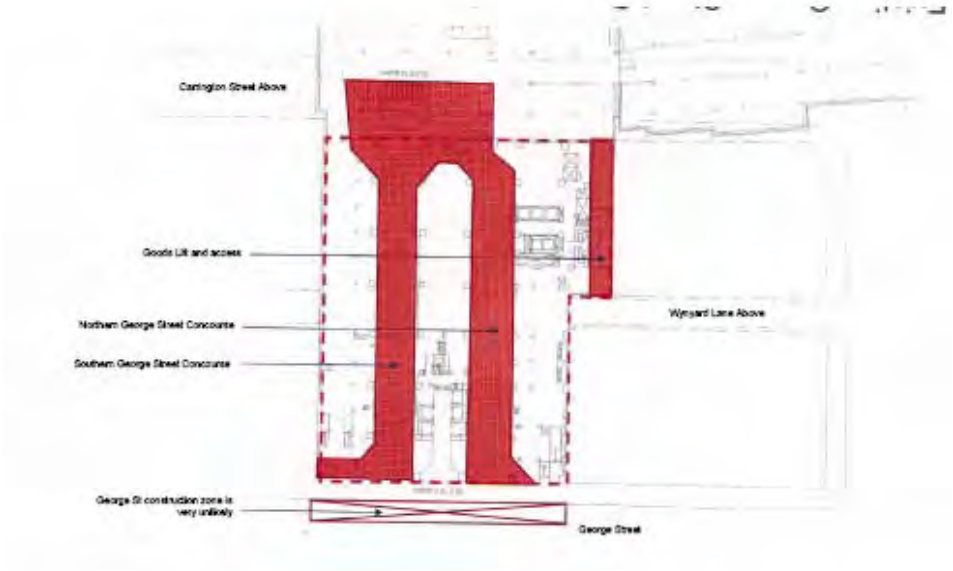


Figure 6: *George Street Concourses*

3.6 Wynyard Lane and Ramp to Tunnel Carpark

Wynyard Lane divides the Thakral development site between the Thakral House building on the east and the Menzies Hotel on the west. At the southern end of the Thakral site there is an access ramp from Wynyard Lane to the Thakral operated carpark which is located in two (2) disused tunnels.

All of the Hassel architectural schemes retain Wynyard Lane as a feature of the redevelopment. At this stage we have been advised by Thakral that there will be no requirement to maintain the operations of the carpark during the redevelopment construction period.

For the purposes of this Concept Design Construction Methodology we have assumed that Wynyard Lane buildings to the north and south of the Thakral site will be serviced by an amended traffic arrangement which would be in place until the works have proceeded to a point whereby safe access could be provided. We have adopted this arrangement to ensure that Wynyard Lanes suffers a minimum of convenience for a minimum of time.

In this plan, Wynyard Lane will temporarily become a one way access from Margaret Street to the north and from Wynyard Street to the south. Turning movements will be restricted and businesses will be advised on the appropriate delivery vehicle requirements. Alternative access arrangements will be further considered and refined on completion of the detailed design and discussions with Stakeholders (i.e. Council). This work will then be included within the Traffic Management Plan developed for the works. Wynyard Lane and the Ramp to Tunnel Carpark are shown in Figure 7 below.

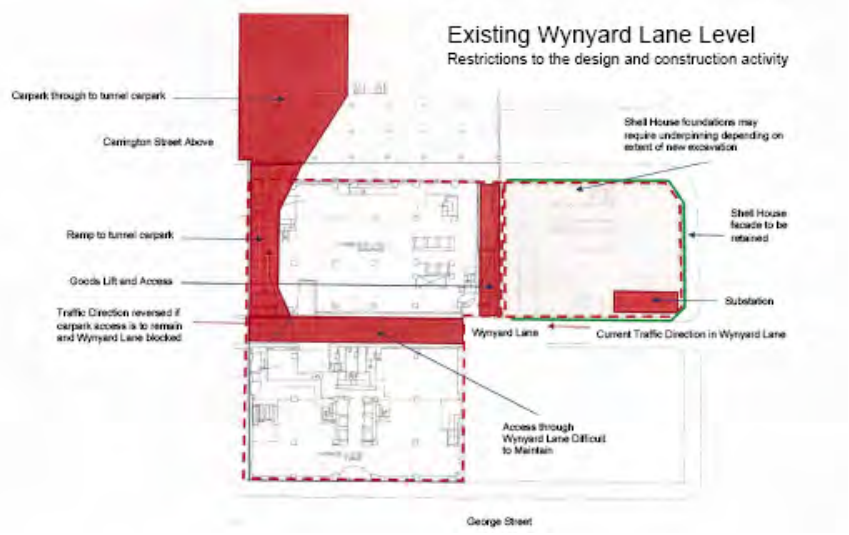


Figure 7: *Wynyard Lane and the Ramp to Tunnel Carpark*

3.7 Existing Buildings

The Thakral site includes two (2) buildings that will be completely demolished i.e. Thakral House and the Menzies Hotel as well as a third building, Shell House, that will be internally demolished and undermined for new basement carparking.

It is proposed that the demolition of Thakral House and Menzies Hotel will proceed down to two (2) levels above the George Street Concourses and then be staged separately to ensure the maintenance of the various pedestrian movements during the redevelopment construction period.

The Shell House works are complex and will include partial demolition, removal of columns, retention of the heritage listed façade and clock tower and the addition of another carpark basement below the existing level. Although these works are complex they do not generally have a direct impact on the railway station operation. The Existing Buildings are shown in Figure 8 below.

Figure 8: *Existing Buildings*

4.0 Major Work Items

4.1 Demolition and Excavation

The demolition of the 3 existing buildings Thakral house, Menzies Hotel South Wing & Menzies Hotel North Wing (Shell House) will be completed in a manner appropriate for its central, high traffic location. Noise, dust and vibration levels will be controlled in accordance with good practice for CBD construction and the City of Sydney guidelines.

Detailed work methods are yet to be determined, however it is envisaged that the Contractor will utilize small excavators and bulldozers to demolish upper floor slabs, and pneumatic hammers on excavators for lower levels.

During both demolition and excavation, the Contractor will pay specific attention to items of heritage significance to ensure no damage occurs.

Demolition will be carried out in four (4) major stages with the addition of many smaller activities such as strip out for tenancy, isolated lift, stair & services shafts.

Stage 1- Demolition of Thakral & Menzies Building from Roof to Level 2, as part of this stage either the northern or southern half of the remaining floor will be demolished down to basement level. (See Sk 001)

Stage 1A - Demolition of the remaining half of the Thakral & Menzies Building from Level 2 down to the new basement, this activity will be done after installation of the new structure incorporating a temporary steel truck on Level 3.

Stage 2 – Demolition of Shell House (Extent to be determined) including installation of the façade retention system (see Sk 002), identification protection or removal of all heritage items

Stage 3 - Wynyard park escalator void will be demolished to the extent of the new escalator, lift and atrium. The demolition works for the new awning will commence simultaneously.

To facilitate the work, construction hoardings will be erected on George St, Wynyard Lane, Margaret St and Carrington St. (See Sk 005)

External scaffold with chain wire mesh and shade cloth will be erected on all exposed work faces to act as fall protection and provide visual amenity to the surrounding area. A tower crane will be erected on structural steel grillage at existing Level 2 adjacent Carrington St to assist in the removal of demolition debris below.

Excavation will be carried out in stages in line with the demolition stages, i.e. stages 1, 1A, 2 & 3. As for the demolition, detail work methods are yet to be determined. However it is envisaged that the contractor will use a large bulldozer to rip the rock, excavator with diamond saw to provide separation to the surrounding area and additional excavators with buckets and hammers to remove the material off site. As stated in the demolition section a tower crane will facilitate the removal of soil via bins lifted to Carrington St construction zone.

Demolition for the new escalators (under Wynyard park) within the RailCorp concourse retail area will require careful consultation with all stakeholders to ensure continuity of works, minimum disruptions and maintaining acceptable pedestrian traffic flows.

4.2 Structure

The Structure will be built in stages as previously described in the demolition section, basement structure will be a combination of conventional reinforced concrete elements ,post tensioned concrete elements and conventionally reinforced vertical concrete columns & cores; system formwork will be used for some vertical elements such as lift & stair cores.

A temporary structural steel truss to assist in a jump start for the tower construction will be incorporated in Stage III. The tower construction will use similar construction techniques as described in the basement works. The use of structural steel as the main structural frame for the tower is also under consideration. As the amount of new structure for this is still under consideration detail and work methods have yet to be finalized.

4.3 Façade

New elements of the building will predominantly be clad with aluminum framed curtain wall. Some stone cladding or similar is expected to be introduced along George St, Wynyard Lane & Carrington St footpath level.

At Shell House the façade will remain in its current condition.

4.4 Fit-out Building Services

Renovated and new office areas will be built to meet modern A grade office standards. The majority of new building services will be selected to ensure environmental performances meet the market leading targets (Greenstar/NABERS).

Major plant rooms will exist predominantly on the roof top in addition to a low rise plant room on Level 5, with installation commencing as soon as these areas are available.

The existing Energy Australia (EA) substation is located at the existing basement level. Details of its current operation during site works are yet to be determined. Once details of its current operation are determined, a methodology with EA & stakeholders will finalized.

4.5 Site Accommodation

Worker accommodation will be provided via sheds in the existing Level 1 Thakral House and existing floors not demolished. There may be limited accommodation on B Class hoardings fronting Carrington St and Wynyard Lane (see sketch Sk 007). Site access will be from Carrington St, via hoarding gates and direct foot access to sheds.

5.0 Materials Handling

5.1 Material Deliveries

The predominant means of materials deliveries to the project will be via a proposed construction zone on Carrington St (see sketch Sk 005). General site deliveries will be handled through this construction zone. Smaller vehicles will also use Wynyard Lane from Margaret St.

To alleviate congestion to the construction zone and surrounding streets, once the permanent basements and Carrington St Levels are constructed, trucks that can be marshaled into Carrington St and the site will do so. Additionally, on site storage of material will be kept to a minimum

5.2 Waste Management

It is part of the Brookfield Multiplex philosophy that a tidy site is a safe site, and this principle will be maintained throughout the construction duration. Rubbish bins / skips will be provided at strategic

positions around the site, where all subcontractors will be required to clear their rubbish as it accumulates. These bins will be brought down the building in the construction hoists / builders lifts and loaded via forklift into the large skips for removal from site.

Brookfield Multiplex will also provide specifically labeled recycling bins for materials such as steel, timber, concrete, masonry, cardboard and plasterboard to maximize the amount of material able to be recycled. In addition all sub-contractors are responsible for removing their own packaging and other re-usable items such as pallets from site; this policy promotes recycling by sub-contractors and suppliers and removes unnecessary packaging at the source rather than at site. In this way, the amount of rubbish being sent to land fill will be minimized.

A specific waste management plan will be developed in accordance with the Brookfield Multiplex Environmental Management System to ensure optimum waste management initiatives are implemented.

5.3 Crane, Hoists and Loading Platforms

During Stage 1 Demolition. A tower crane will be erected on steel grillage at existing Level 2 to assist in removing demolition and excavation material from the basement. On completion of the temporary structural steel truss in Stage III the crane will then be relocated to allow Stage 1A Demolition to commence.

It is anticipated tower cranes will provide an efficient configuration for the site, with mobile cranes introduced to supplement this as required. Exact types and location of the tower crane are yet to be determined; however indicative layouts are shown on the sketch Sk 006.

Man and materials hoists will be required to service all levels of the existing and new buildings. Exact sizes and locations are yet to be determined. Use of existing lifts as man hoists will be investigated.

Loading platforms will progressively be erected on each floor for the loading of materials, plant and equipment. These will be removed as façade works progress up the building.

6.0 Protection of Heritage Items and Surrounding Developments

Heavy construction works and general access will be directed away from areas of heritage value as much as possible. Wherever required, heritage components will be protected with appropriate paneling, barriers and fencing. In general heritage items that are to remain and/or be refurbished will be identified and protected. Details of the refurbishment will be developed in conjunction with trade experts and the Heritage Architect.

Site inductions and tool box talks will be held by the Contractor to inform site personnel and visitor of the location and requirements for the protection of heritage items. Work method statements will be developed specifically for works in close proximity to heritage items.

6.1 Adjoining Neighbours

Prior to demolition and excavation works, a full dilapidation survey will be compiled of all adjoining neighbours properties, streets and footpaths. These surveys will be issued to all adjoining neighbours and a post completion survey will also be compiled for comparison.

As the City One Wynyard main structure is being built, protection of neighbouring building roofs may be required to the buildings directly adjacent to the development. The method of protection will vary and will be resolved with direct communication with each neighbour.

6.2 Rail Tunnel

The demolition and excavation works for the new building is approximately 43m from the rail way tunnel, outside the rail corridor and outside the tunnel notification zone.

There are works that involve local demolition, building and fit out that occur within RailCorp controlled retail areas. A detailed management plan will be developed in conjunction with RailCorp and other stakeholders to minimize impact on retail patronage and pedestrian traffic flows.

This detailed management plan, will be part of a submission for RailCorp approval.

6.3 Wynyard Station – Hunter Connection – Wynyard Park

Wynyard Station, Hunter Connection and Wynyard Park, similarly as mentioned above, a full dilapidation survey will be carried out prior to works commencing and items of heritage significance will be identified.

The sequence of works that affect these areas will be highlighted when further details are known. The sequence of works will be outlined in future stakeholder meetings.

7.0 Public Amenity, Safety and Pedestrian Management

7.1 Hours of Work

General demolition and construction works will be undertaken within hours permitted under the development approval. In some cases after-hours permits will be sought from the relevant authorities where special requirements exist- for example over sized deliveries.

7.2 Noise & Vibration

Prior to the commencement of any works onsite a noise and vibration management plan will be developed by Brookfield Multiplex in consultation with the Stakeholders to develop strategies for the mitigation of noise and vibration generated by the works.

Vibration and noise generating activities will be coordinated and undertaken in consultation with the appropriate parties and carried out during the subsequent agreed periods.

Vibration and noise will be minimised during the detailed excavation process by the use of saw-cutting of footings, which will reduce the amount of “hammering” required. Particular care will also be taken during the demolition and connection to the surrounding structure.

Work methodologies and plant selection will be reviewed to mitigate the potential for noise and vibration from the new works being loaded onto the surrounding structure.

Brookfield Multiplex will engage an independent acoustic / vibration consultant to install and monitor noise and vibration logging equipment at suitable locations and within the existing Rail Tunnel if required. Locations of these monitors will be finalised in consultation with Rail Corp to ensure that the monitors are placed in as discreet location as possible. These monitors will be calibrated and programmed to an agreed level with an alarm being triggered in the event of vibration or noise exceeding the acceptable range. This alarm is neither visible nor audible to the public, but will automatically page the nominated Brookfield Multiplex liaison officer. In the event of such an incident works will cease in the specific area and be reviewed and if appropriate, alternate methods will be adopted.

7.3 Public Safety

Noting Section 3, the extract from the Robert Bird Group Report regarding the physical constraints of site, works will be undertaken with Public Safety as a significant consideration. Class B type hoardings will generally be erected around the site perimeter. Where construction is occurring over or adjacent to public thoroughfares, Class ‘B’ type hoardings will be installed in place of Class ‘A’. (see Sk 005).

Formwork screens will be utilised to secure leading edges during construction of structural elements.

General safety measures shall be undertaken as standard practice, such as scaffolding around demolition works, adequate lighting, safety signage, provision of site security, flashing lights at vehicle cross overs, physical barriers between construction works areas and public access areas.

7.4 Pedestrian Management

To allow for continuous public access to the station concourse, materials handling and management of pedestrian safety, some major diversions from existing pedestrian routes will be required for large periods of the work. Refer to sketches Sk 009, Sk 010, Sk 011 , Sk 012 , Sk 013 and Sk 014. The installation of wayfinding signage and lighting will be professionally managed to ensure clear pedestrian understanding and preservation of safety and amenity.

7.5 Community Management

Careful management of site to minimise disruption and inconvience to neighbouring buildings and their occupants is of highest importance. The Contractor will provide a Community Liaison Officer to work with neighbours, understand their needs and requirements, and, where possible, adjust construction works methodologies accordingly.

Neighbours specifically identified for close consultation include:

- Wynyard Station/RailCorp
- Travel path between York , Carrington St and George St
- Wynyard Lane access
- Hunter Connection
- Adjoining owners

8.0 Traffic Management

Brookfield Multiplex will prepare a detailed Traffic Management Plan prior to the issue of a Construction Certificate. Traffic will generally be managed in the following way:

- Designated transport routes will be communicated to all personal , and enforced
- Designated peak hour and non peak hour delivery vehicle waiting areas
- Strict scheduling of vehicle movement will occur to minimize off site waiting times.
- On-site parking will not be provided , and site workers will utilize public transport and car sharing wherever possible
- Vehicle movements will be compliant with conditions of Consent and broader road-use regulations, particularly with regard to hours of work, materials loading and unloading, and over size deliveries and installation
- Stakeholder feedback

8.1 Site Access

Access to the Site will be available at various times via the loading dock on Carrington St and a construction zone to be created on Carrington St.

For access reasons, and to minimize traffic disruptions to Carrington and Margaret St, deliveries will be carefully controlled. Materials will predominantly be delivered via the construction zone, however crane lifting is required from Carrington St. Existing usage by neighboring properties will not be significantly affected by Wynyard Lane deliveries to City One Wynyard.

No Significant site access will be sought via George St.

Heavy and wide loads will be coordinated with the relevant authorities and stakeholders for approval, so as to minimise traffic impact during work hours.

On site traffic management will be finalized with each stage of the works, as appropriate. Ongoing liaison with the relevant authorities will occur throughout.

8.2 Street Closures

For works to be completed safely, some temporary street closures will be required. It is anticipated that these will affect Carrington St. These closures will be well planned in advance, with approvals sought from relevant authorities. Activities that may require a street closure include: tower crane erection and dismantling and installation of major plant and structure. Wherever possible these closures will be scheduled for non-peak times. In addition Wynyard Lane will require extended closure as this is part of the new excavation works. A specific management plan will be established to ensure the best possible outcome.

9.0 Environmental Management

9.1 Occupational Health & Safety

The Contractor will be the nominated “Principal Contractor “as required under the OH&S Act. This role will require the careful and controlled management of worker and public safety. Detailed methodologies are yet to be developed, however typical approaches include job training, toolbox talks, and implementation of emergency management plans. Safe work method statements the contractor will set up weekly OH & S meetings & audits to confirm compliance.

The Contractor will be required to report on OH&S on a regular basis.

9.2 Hazardous Materials

Consultant survey works are required in order to establish initially, existing site conditions and identify any remediation works that may be required. This investigation would include:

- Hazardous material (Hazmat) survey of the existing structures
- Any additional requirements for soil classification, sampling and analysis works
- Community liaison plan to be established and contact made with relevant authorities

In the event that hazardous materials are uncovered once site works have commenced, the following procedures and principles will be followed; this would be consistent for expected and unexpected hazardous materials:

- Notification to client and project stakeholders
- Brookfield Multiplex to develop a remediation management plan
- Advise the client of the most cost and time efficient solutions whilst adhering to industry best practice standards
- Agree strategy and commence implementation

With asbestos for example, all employees need to be trained in the recognition of asbestos and synthetic mineral fibre (SMF) as part of their employers SWMS and would cease work on discovering any Hazmat not identified in the report and then inform their supervisor who would arrange for the appropriate action to be taken.

General procedures for hazardous materials removal (including asbestos and asbestos contaminated dirt) would need to be as follows. Specific details and procedures will be developed upon material identification. Detailed work method statements will be produced identifying processors such as:

- The area to be decontaminated to be bunted off at a minimum 10 metre radius
- Asbestos warning signage to be erected to inform people of the nature of the work being carried out
- 'No unauthorised access' signage to be erected
- Water points to be established
- Personal Protective Equipment (PPE) including but not limited to Hard Hat, Safety Boots, Disposable Coveralls, Gloves, Masks and Glasses to be worn at all times when in the Hazmat removal zone
- All personnel involved in the removal of asbestos to have attended and completed the approved Work cover courses and to be the holders of valid, Work cover approved asbestos removal licenses
- Tools and equipment appropriate to the type of asbestos containing material to be used for its removal in order to minimise the disturbance of the material thus preventing the release of fibres
- Where appropriate, water to be used to keep the material slightly damp thus minimising the chances of dust and fibres being released
- All asbestos waste to be wrapped in 200µm plastic and tightly secured
- All asbestos waste to be removed from site and disposed at a licensed EPA asbestos disposal facility (Penrith Waste Services, Mulgoa)
- Asbestos waste to be removed at the end of each shift. Stockpiling of asbestos will not be permitted
- Clearance certificates to be provided on completion of Hazmat Removal.

The protection of all council infrastructure including trees, overhead cables and existing services will be managed to ensure that all infrastructure will be maintained, and in the same condition at the completion of the project.

The following protection procedure will be adopted:

- Ensure all existing services are identified, and terminated or diverted as appropriate
- Ensure movement or placement of construction plant does not damage infrastructure
- At the beginning of construction we will advise adjoining and nearby properties of commencement date, possible disruptions and approximate construction time

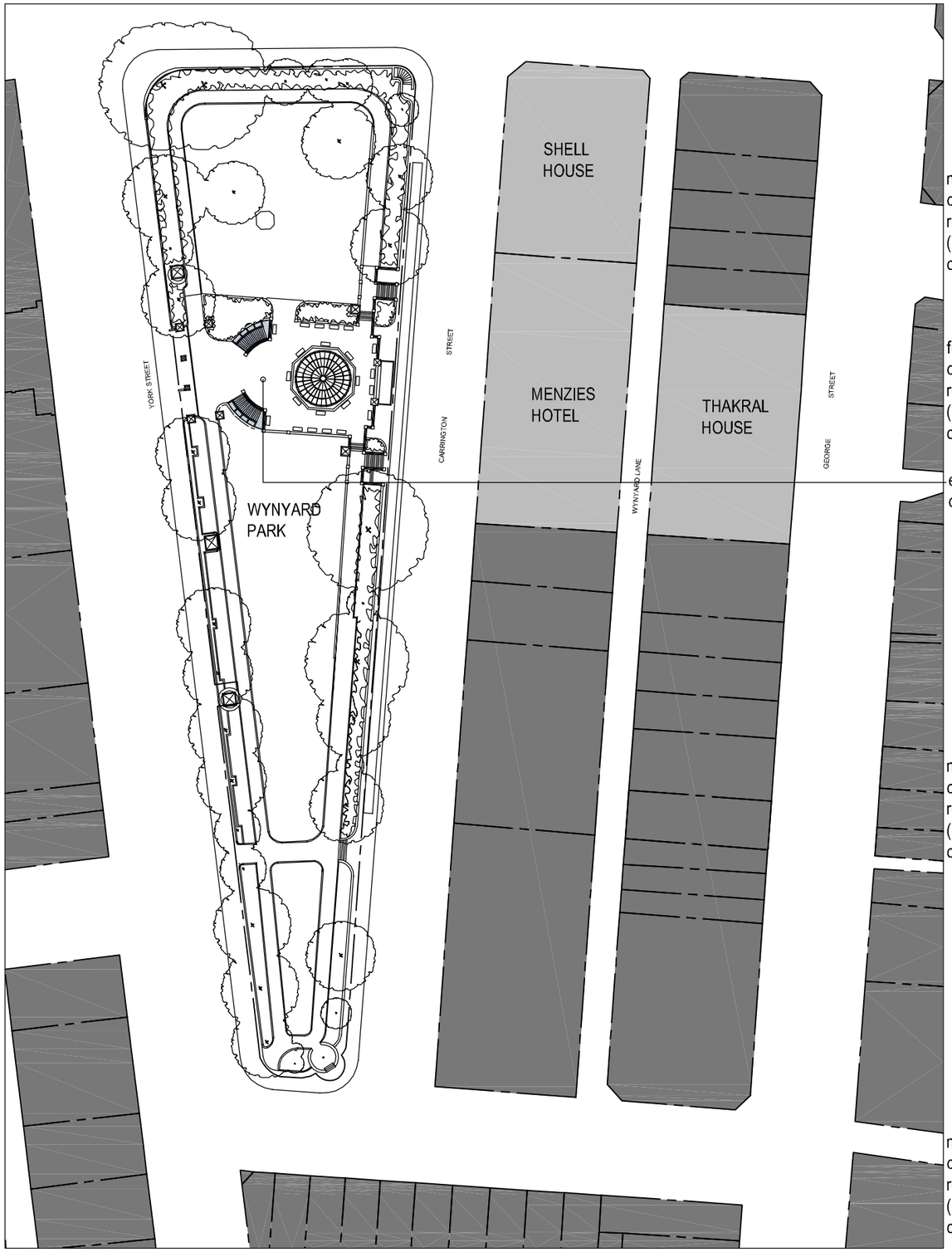
9.3 Site Discharge

Any discharges from the site will be strictly controlled to ensure hazardous materials and contaminants are contained to authority requirements and do not pollute the council storm water system. Brookfield Multiplex have within their standard procedures, the requirement of spill kits for hazardous materials also including environmental audits that review the usage and storage of hazardous materials on site.

9.4 Recycling

Further to Section 5.2 Waste Management, detailed recycling programs will be developed for both demolition and construction phases of the works. The site subcontractors will be required to report on extent of recycling achieved and be subject to Environmental Audits.

Appendix E Existing and Proposed Plans



EXISTING

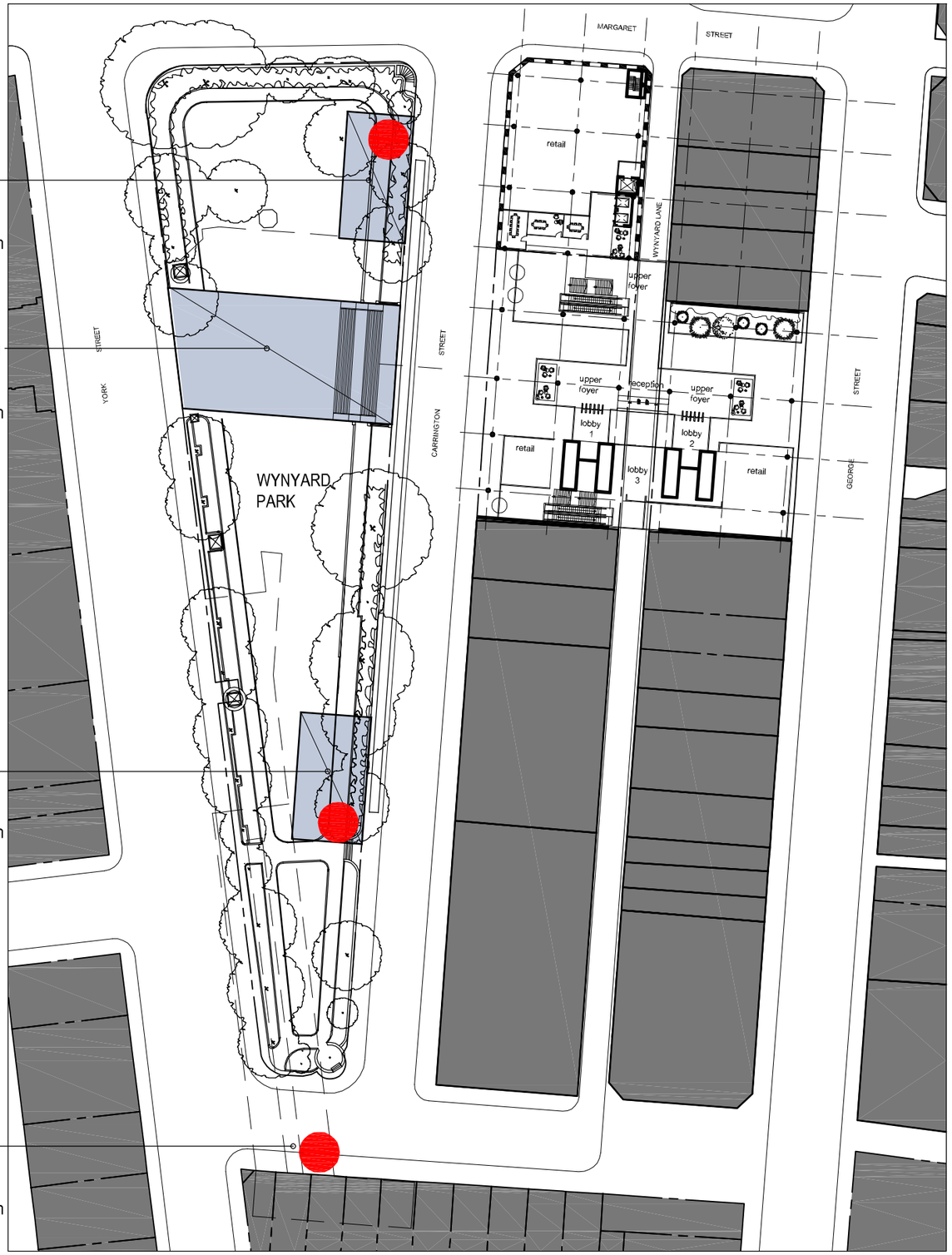
new station canopy to TNSW requirements (indicative location only)

future new station canopy to TNSW requirements (indicative location only)

existing station canopy and entry

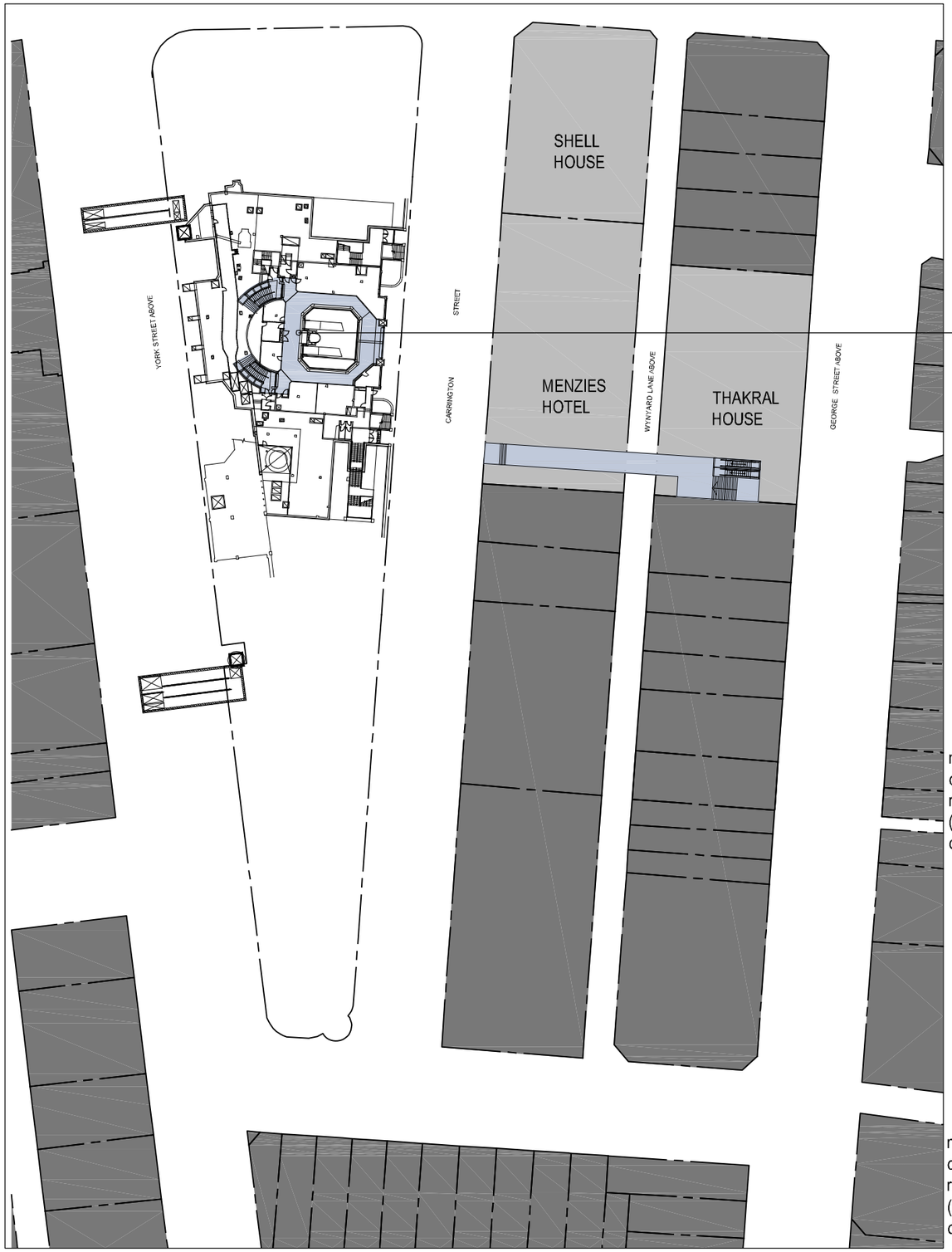
new station canopy to TNSW requirements (indicative location only)

new station canopy to TNSW requirements (indicative location only)



PROPOSED

Client	Project	Drawing	Drawing No	Project No	Date	Scale	Drawn By
THAKRAL HOLDING GROUP	ONE CITY WYNYARD	EXISTING AND PROPOSED PLAN - YORK ST	SK-01	PSA 7468A	16.12.2010	1:1000 @ A3	-



EXISTING

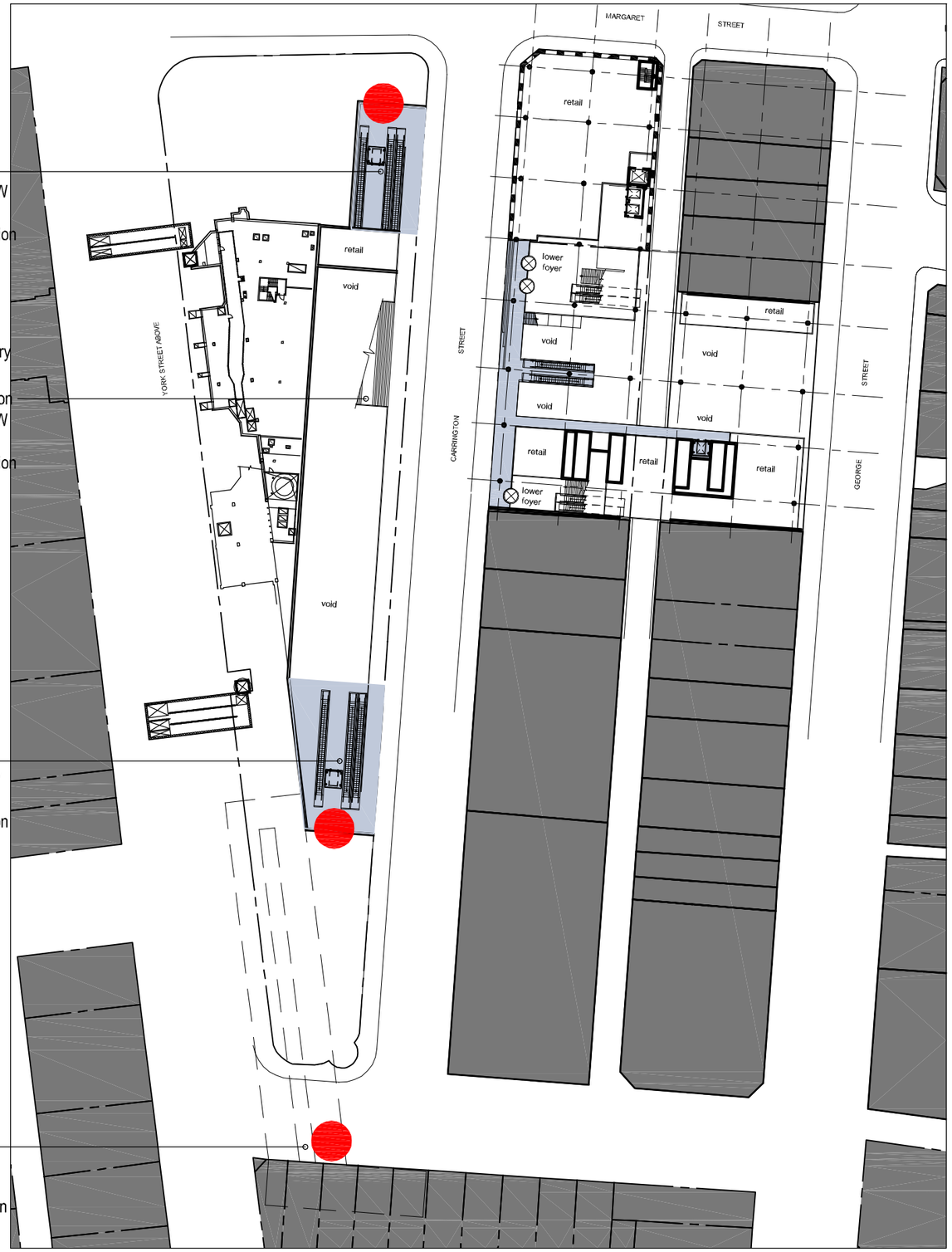
new station canopy to TNSW requirements (indicative location only)

existing station canopy and entry

future new station canopy to TNSW requirements (indicative location only)

new station canopy to TNSW requirements (indicative location only)

new station canopy to TNSW requirements (indicative location only)



PROPOSED

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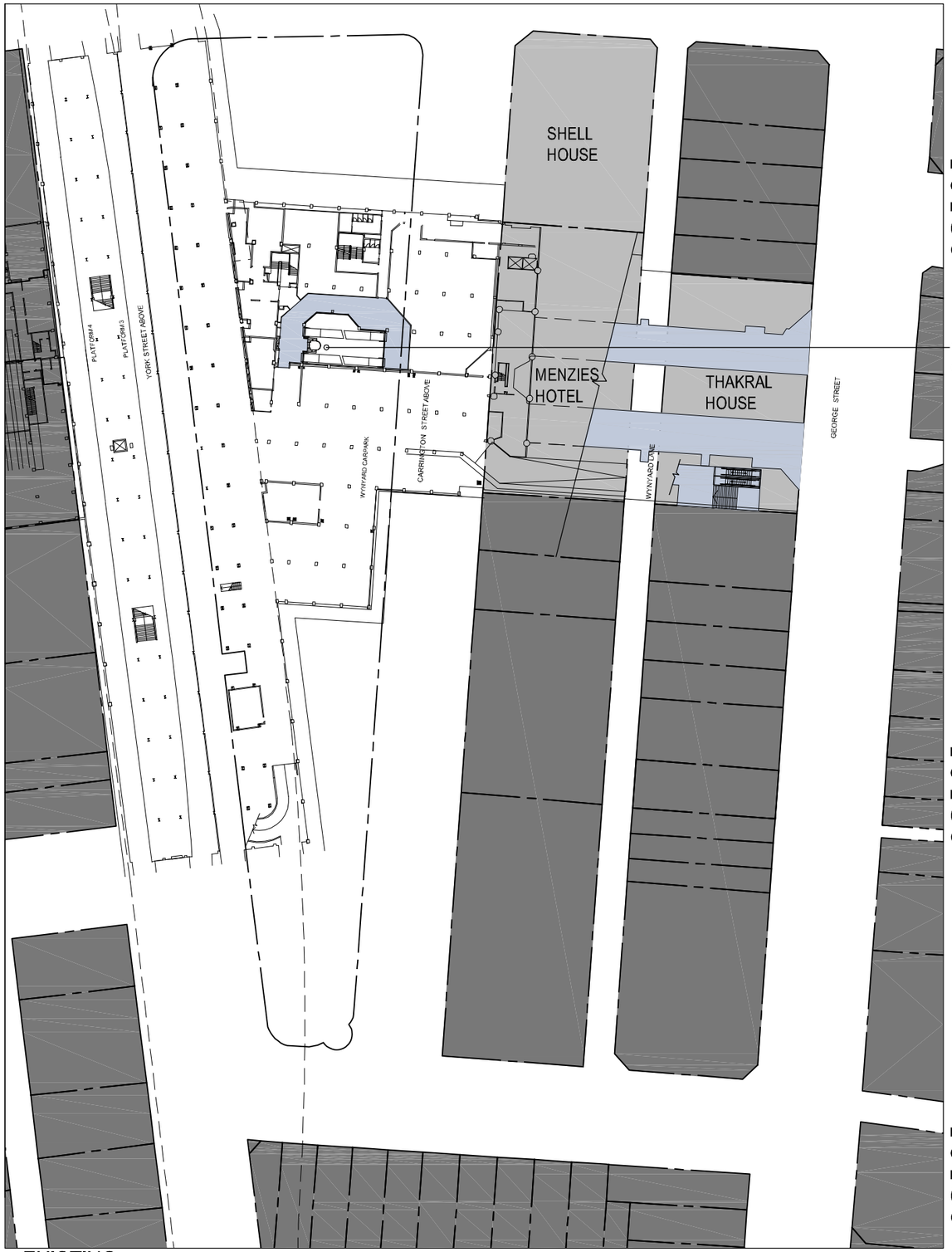


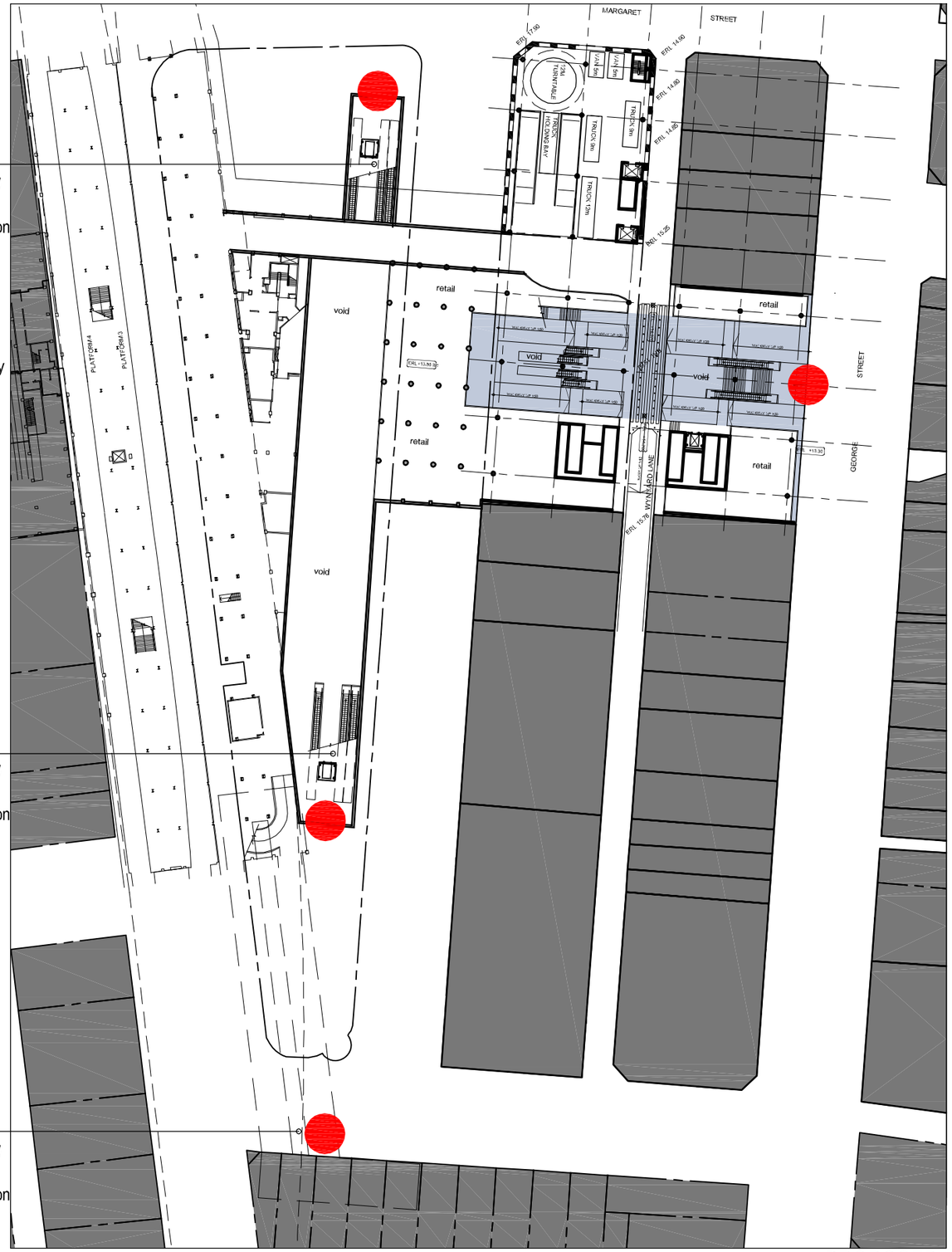
EXISTING

new station canopy to TNSW requirements (indicative location only)

existing station canopy and entry

new station canopy to TNSW requirements (indicative location only)

new station canopy to TNSW requirements (indicative location only)



PROPOSED

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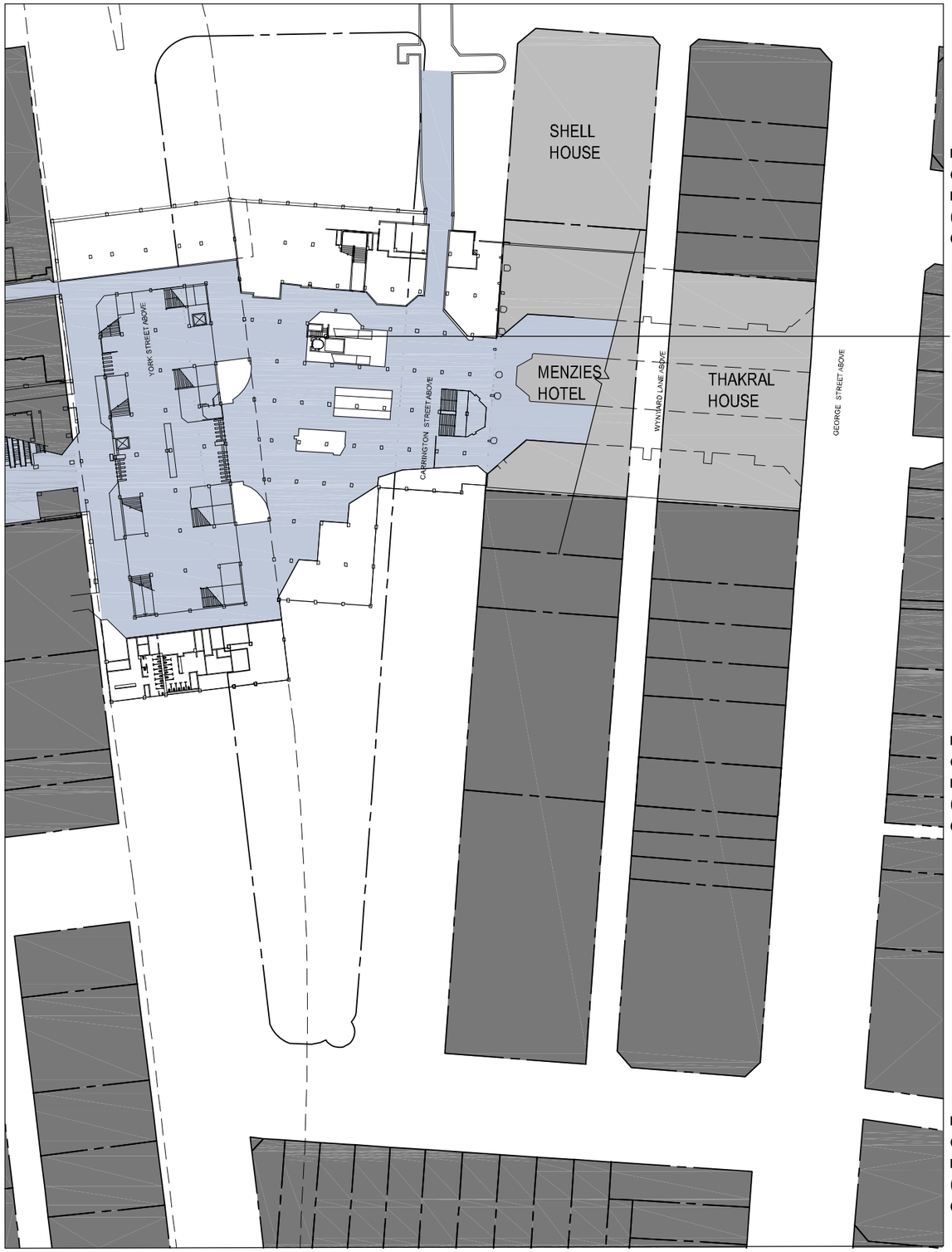
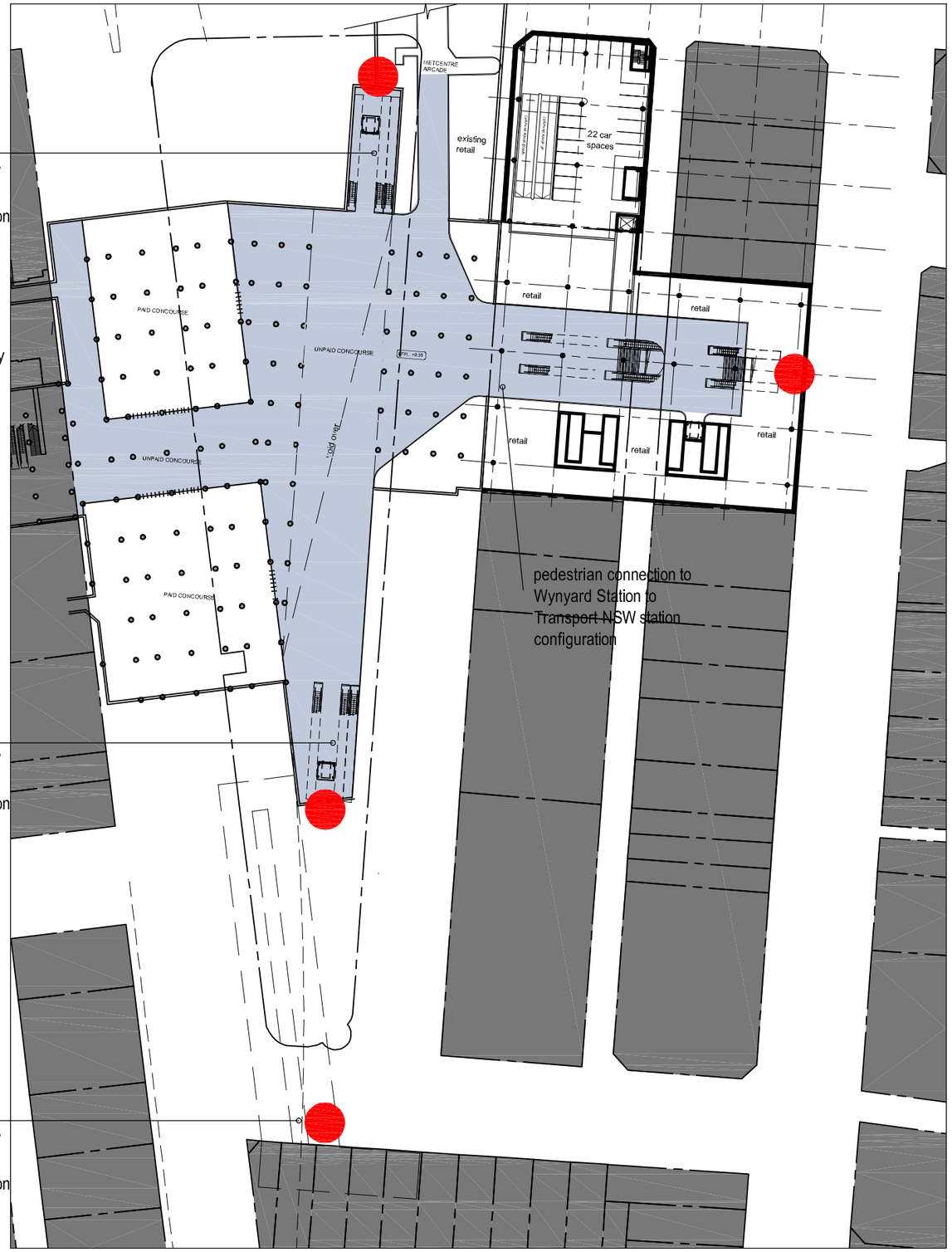


new station canopy to TNSW requirements (indicative location only)

existing station canopy and entry

new station canopy to TNSW requirements (indicative location only)

new station canopy to TNSW requirements (indicative location only)



EXISTING

PROPOSED

Client	Project	Drawing	Drawing No	Project No	Date	Scale	Drawn By
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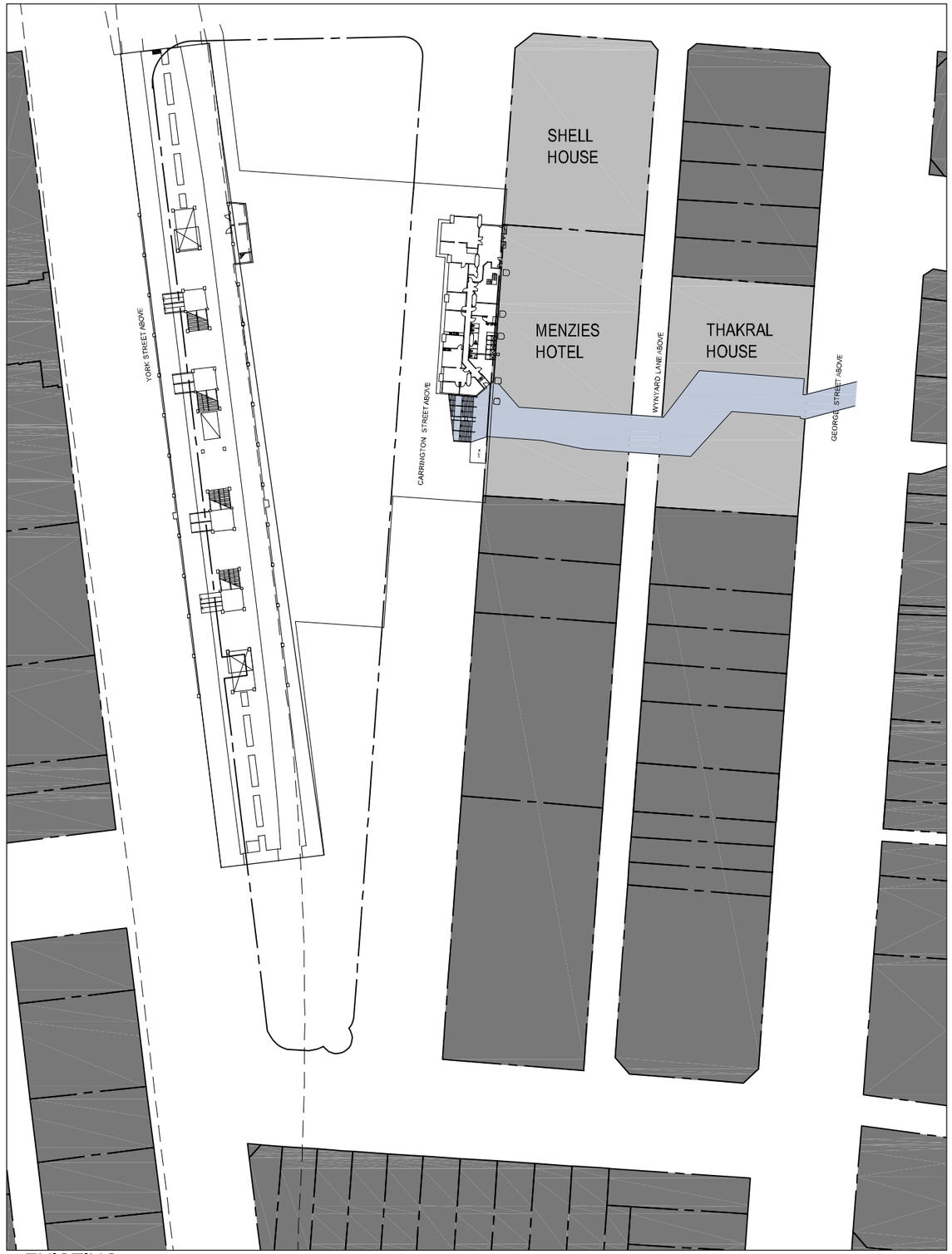
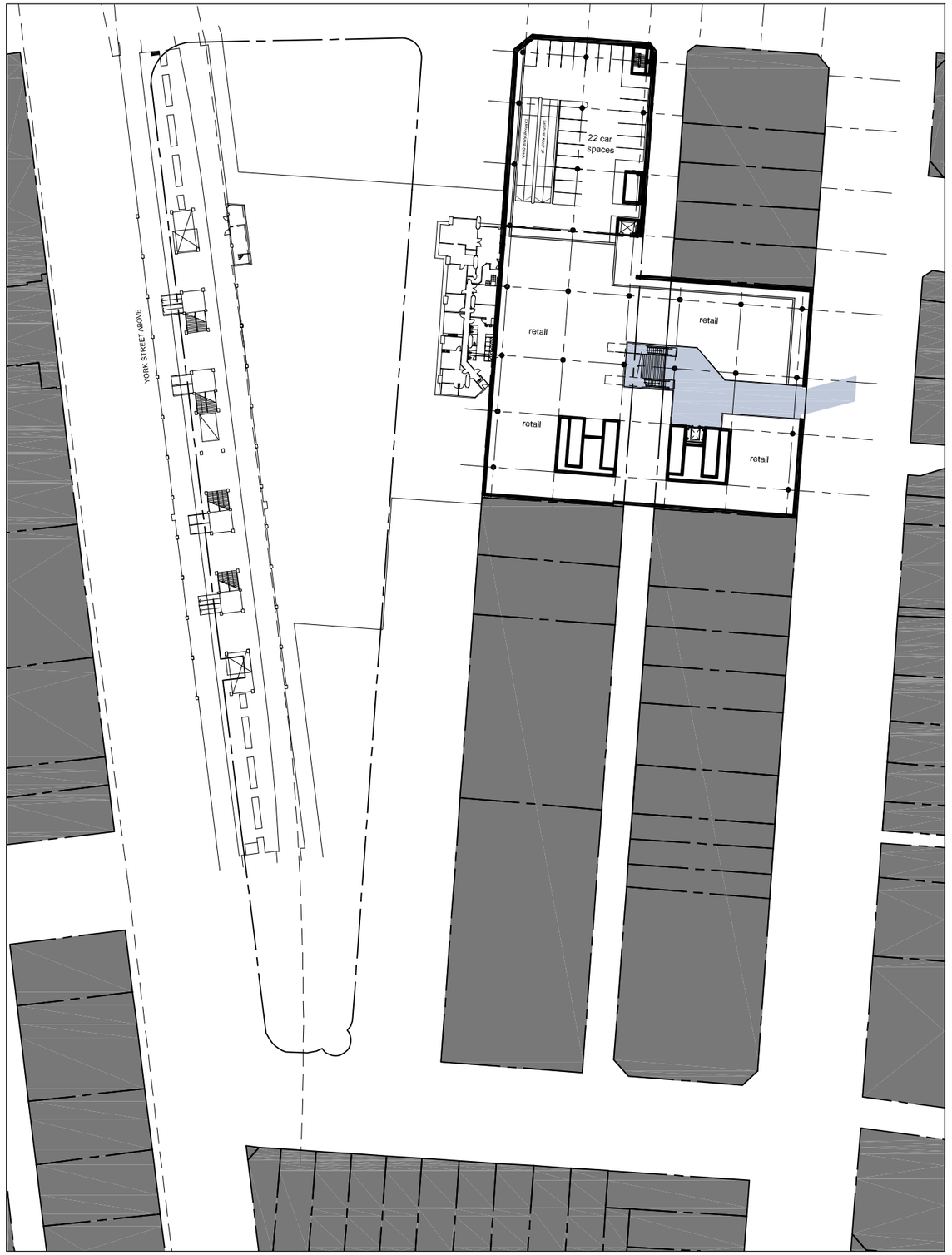


EXISTING



PROPOSED

Client	Project	Drawing
THAKRAL HOLDING GROUP	ONE CITY WYNYARD	EXISTING AND PROPOSED PLANS - HUNTER ST CONNECTION LEVEL

Drawing No	Project No	Date	Scale	Drawn By
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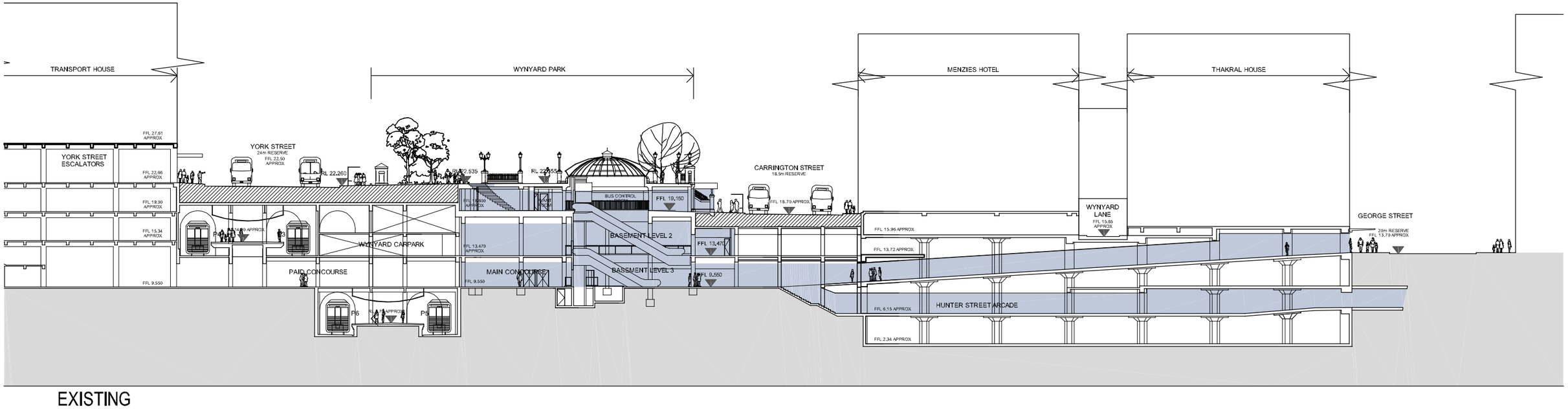
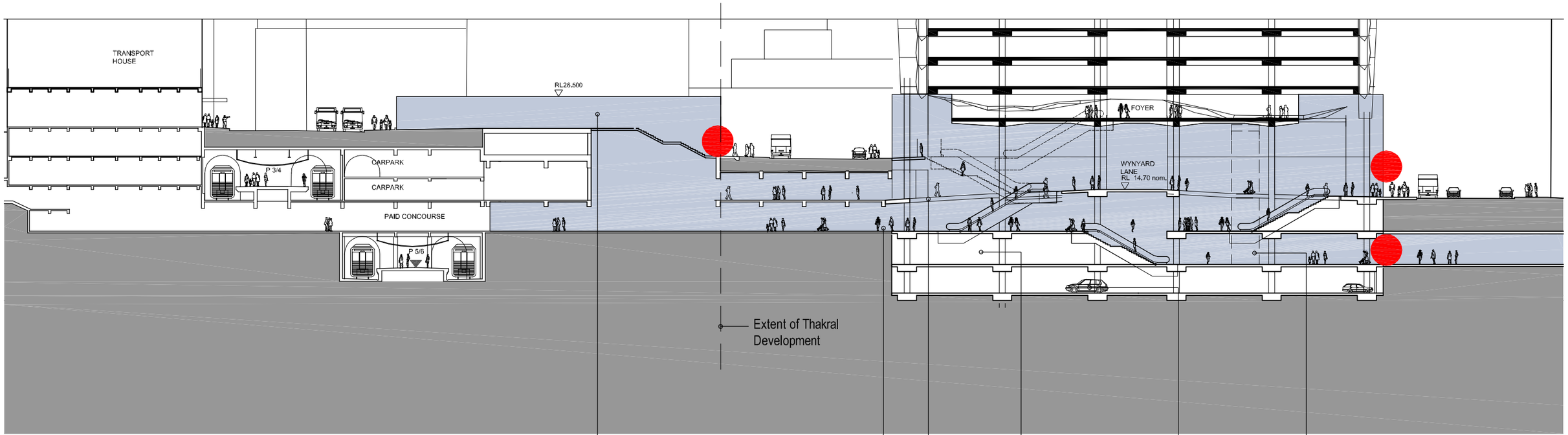


EXISTING



PROPOSED

future new station canopy to TNSW requirements (indicative location only)

pedestrian connection to Wynyard Station to Transport NSW station configuration

2x escalators George St to Carrington St

2x escalators Concourse to George St

2x escalators & stair Hunter St Ped. link to Concourse

2x escalators & stair Concourse to George St

Client	Project	Drawing	Drawing No	Project No	Date	Scale	Drawn By
THAKRAL HOLDING GROUP	ONE CITY WYNYARD	EXISTING AND PROPOSED LONG SECTION	SK-06	PSA 7468A	16.12.2010	1:500 @ A3	-