
Prepared by
Brookfield Multiplex Constructions Pty Limited

Concept Construction Methodology Report
City One Wynyard
301 George Street & 2-12 Carrington Street

Thakral
Part 3A Application

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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



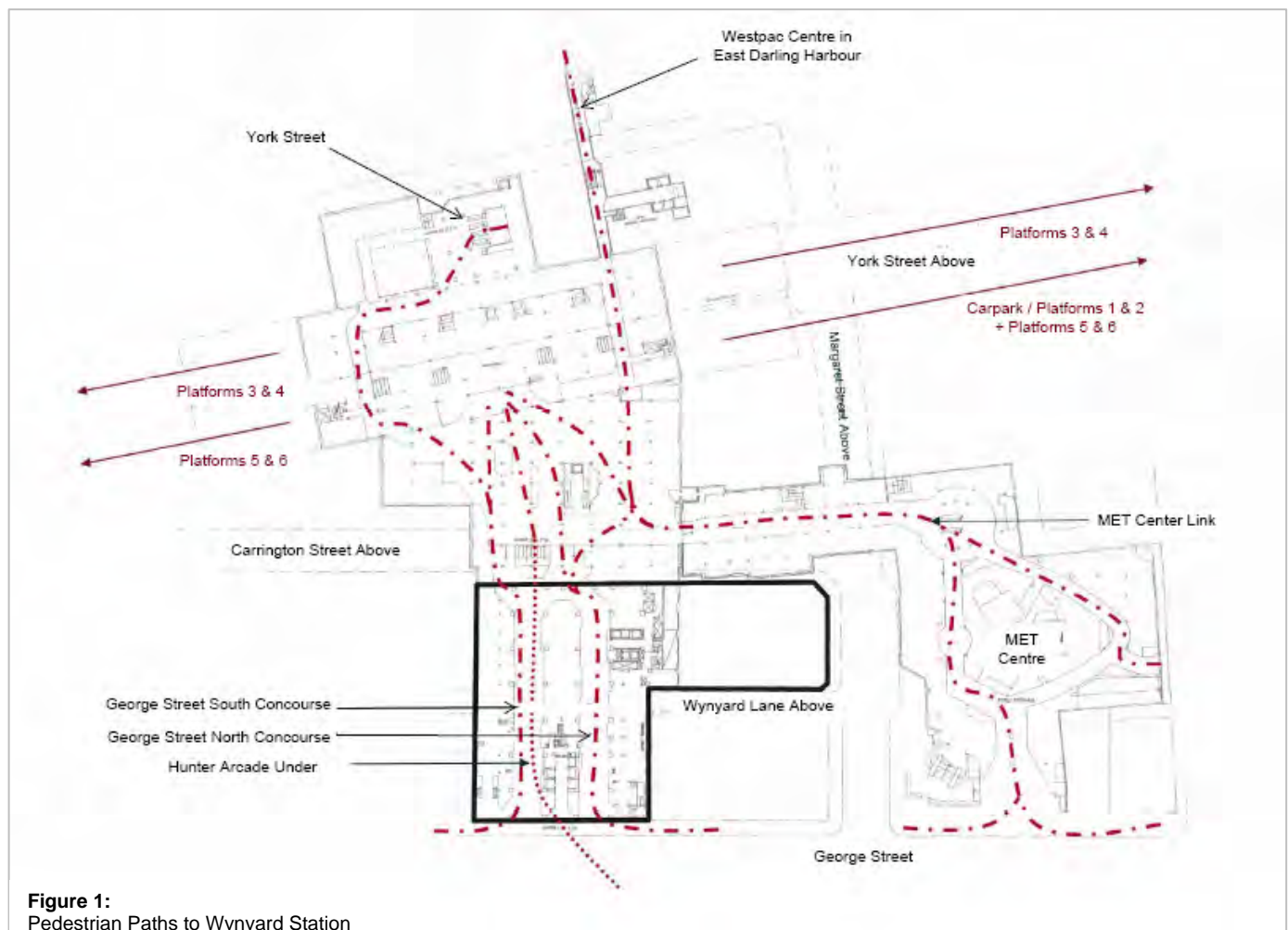
3.0 Physical Constraints of the Site

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 has 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.



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 has 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 Substations Nos 1771 & 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.

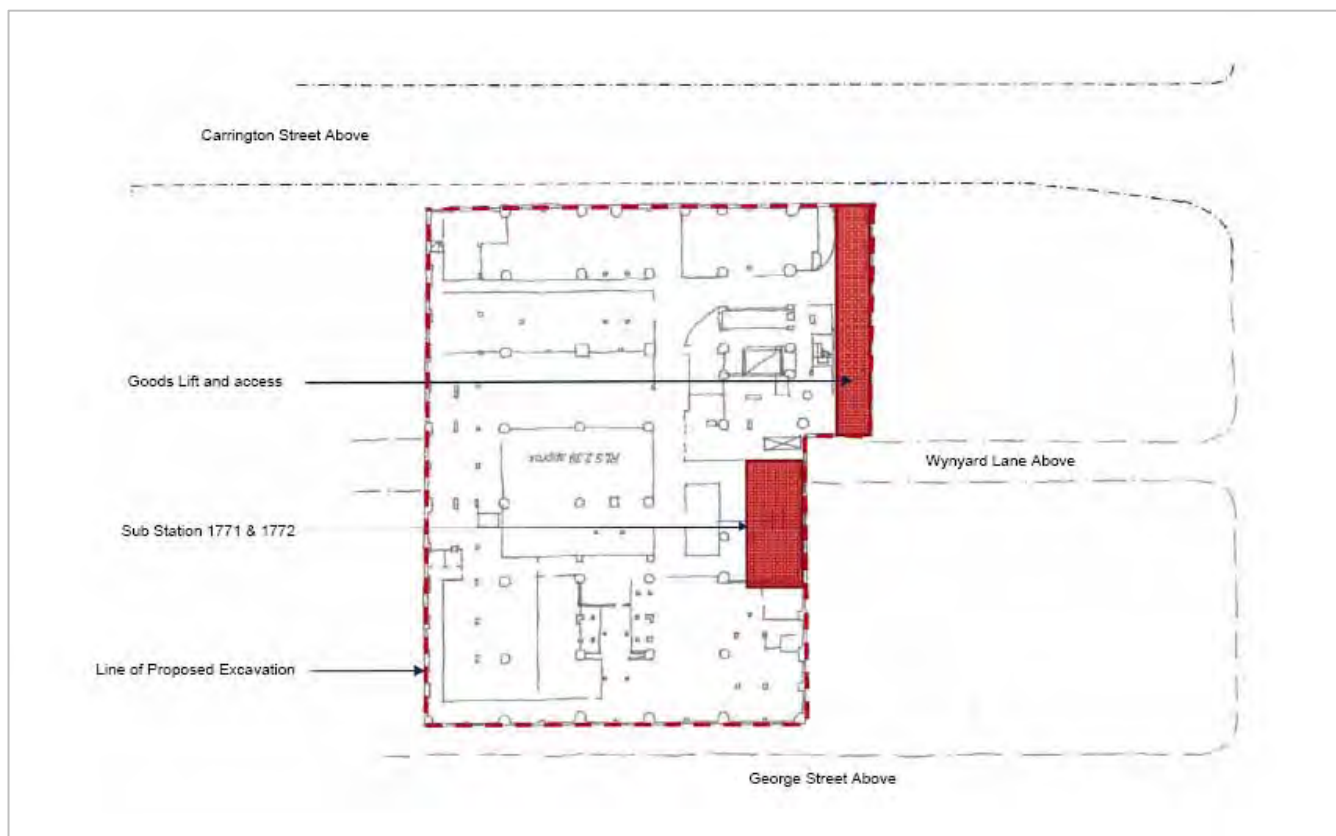


Figure 3:
Goods and Lift Access

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.

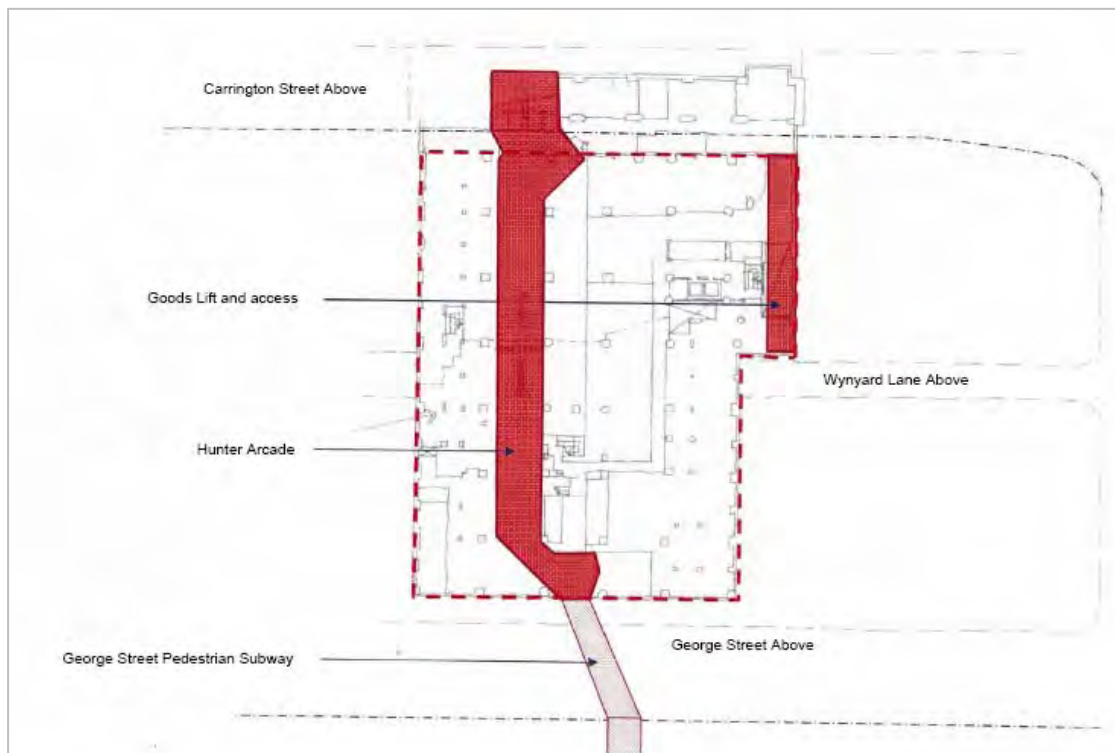


Figure 4
Hunter Arcade

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

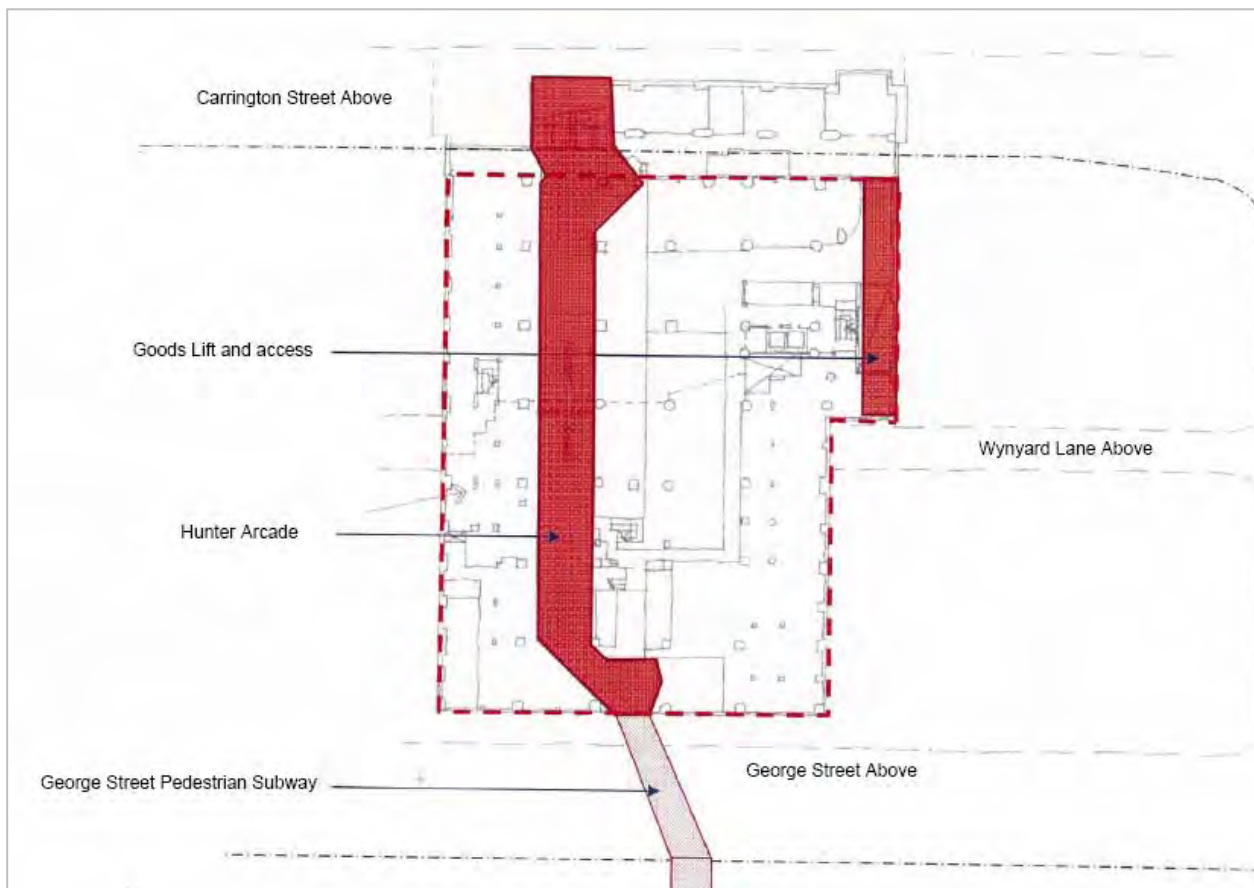


Figure 5:
George Street Pedestrian Subway

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 metres and represents 33% of the George Street frontage of the Thakral Site. We understand that Thakral has 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.

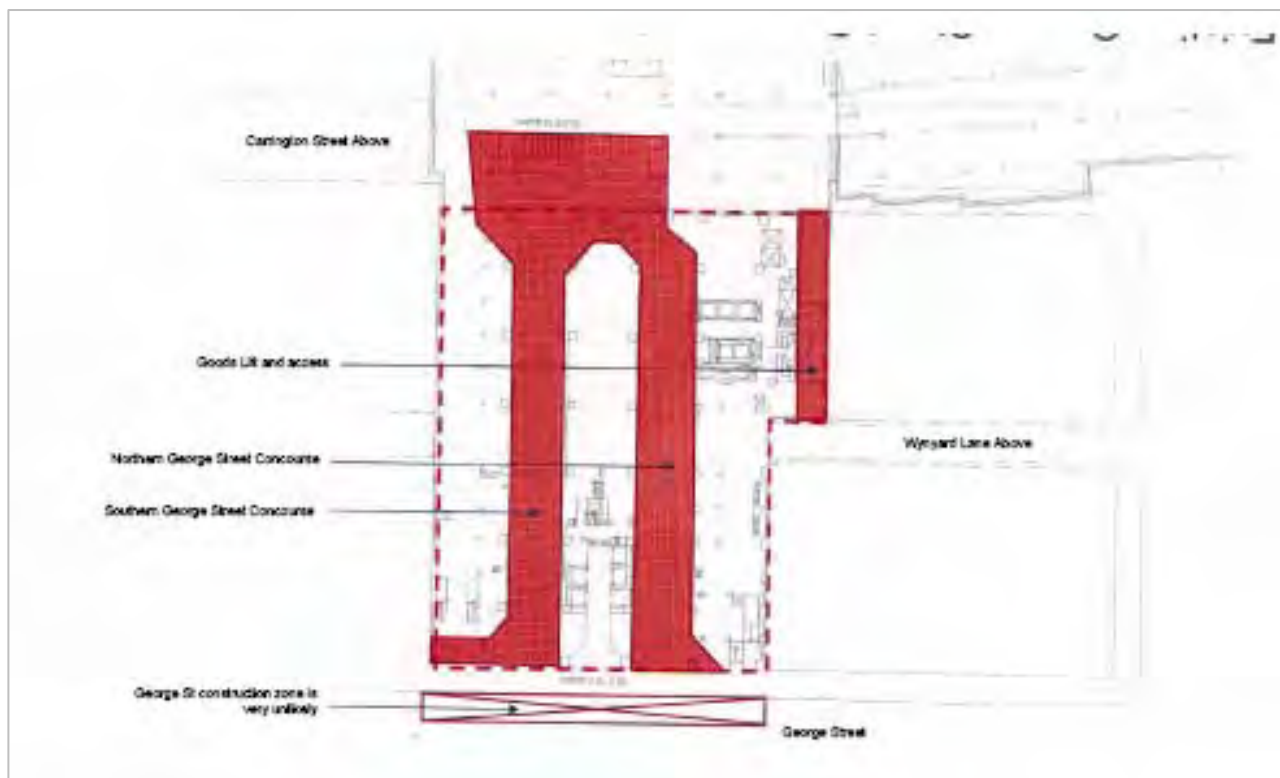


Figure 6:
George Street Concourses

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 Lane suffers a minimum of inconvenience 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.

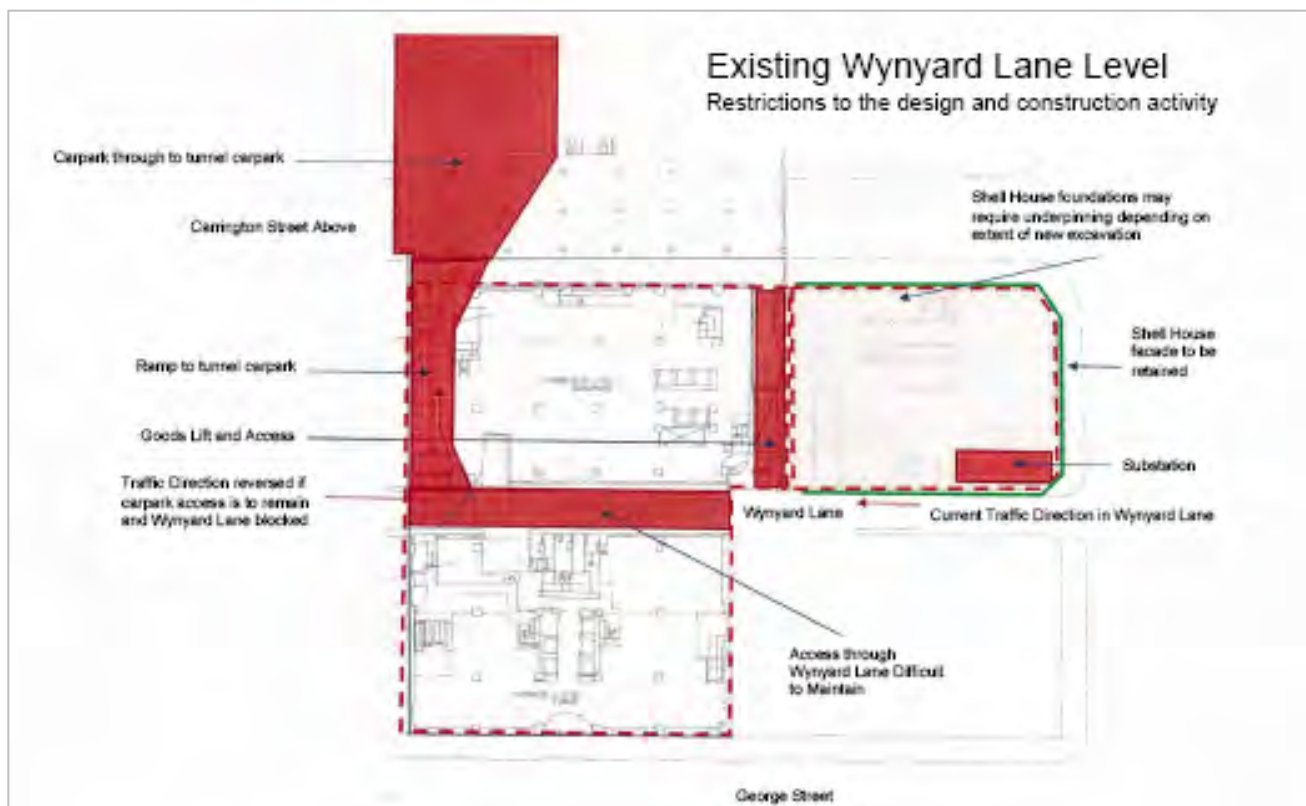


Figure 7:
Wynyard Lane and the Ramp to Tunnel
Carpark

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 and 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 finalised.

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 be finalised.

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 panelling, 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 inconvenience 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 neighbouring 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 finalised 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:

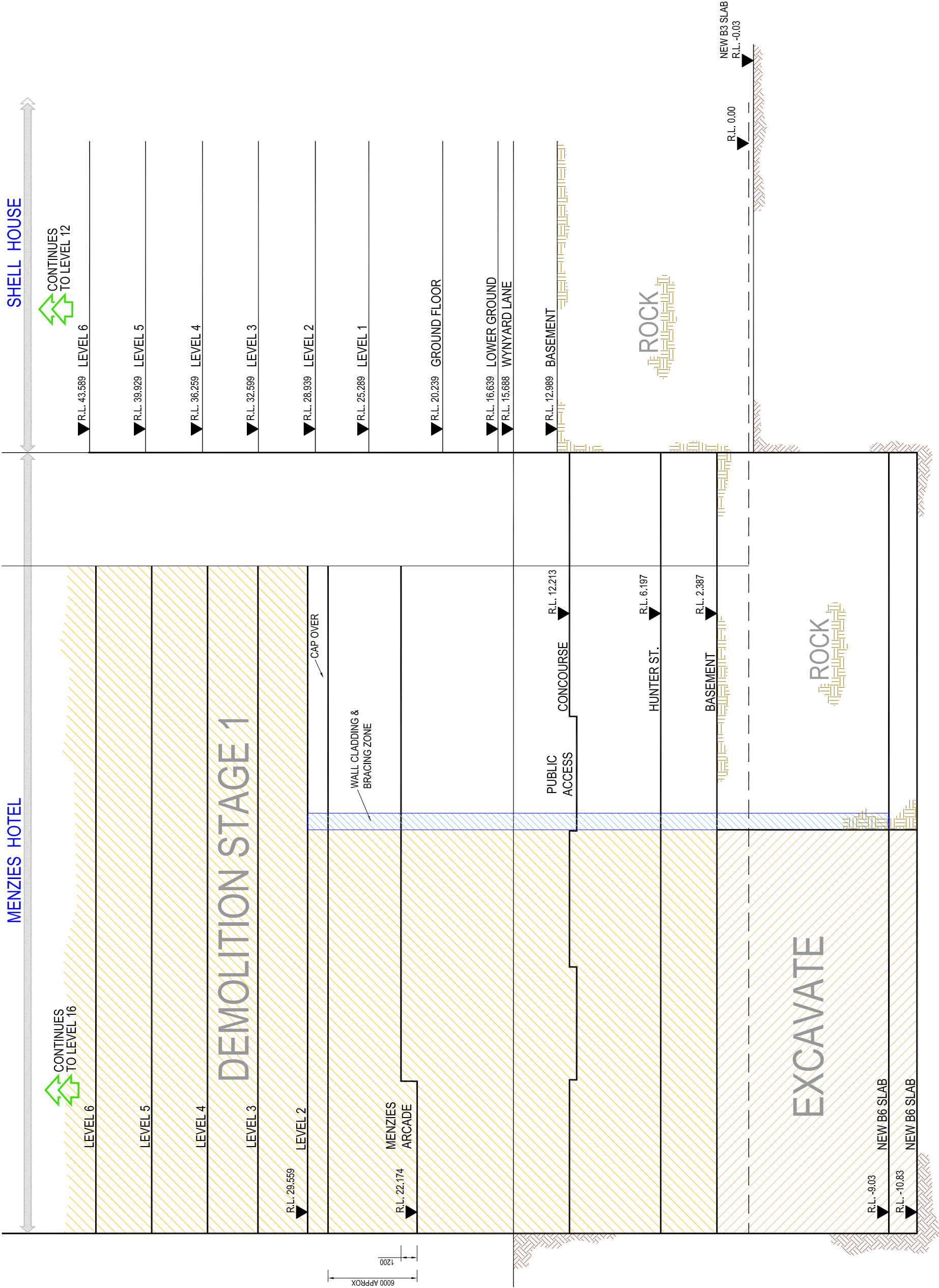
- Ensure all existing services are identified, and terminated or diverted as appropriate
- Ensure movement or placement of construction plant does not damage infrastructure
- At the beginning of construction we will advise adjoining and nearby properties of commencement date, possible disruptions and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



PROJECT

CITY ONE WYNYARD



THAKRAL

DRAWING TITLE

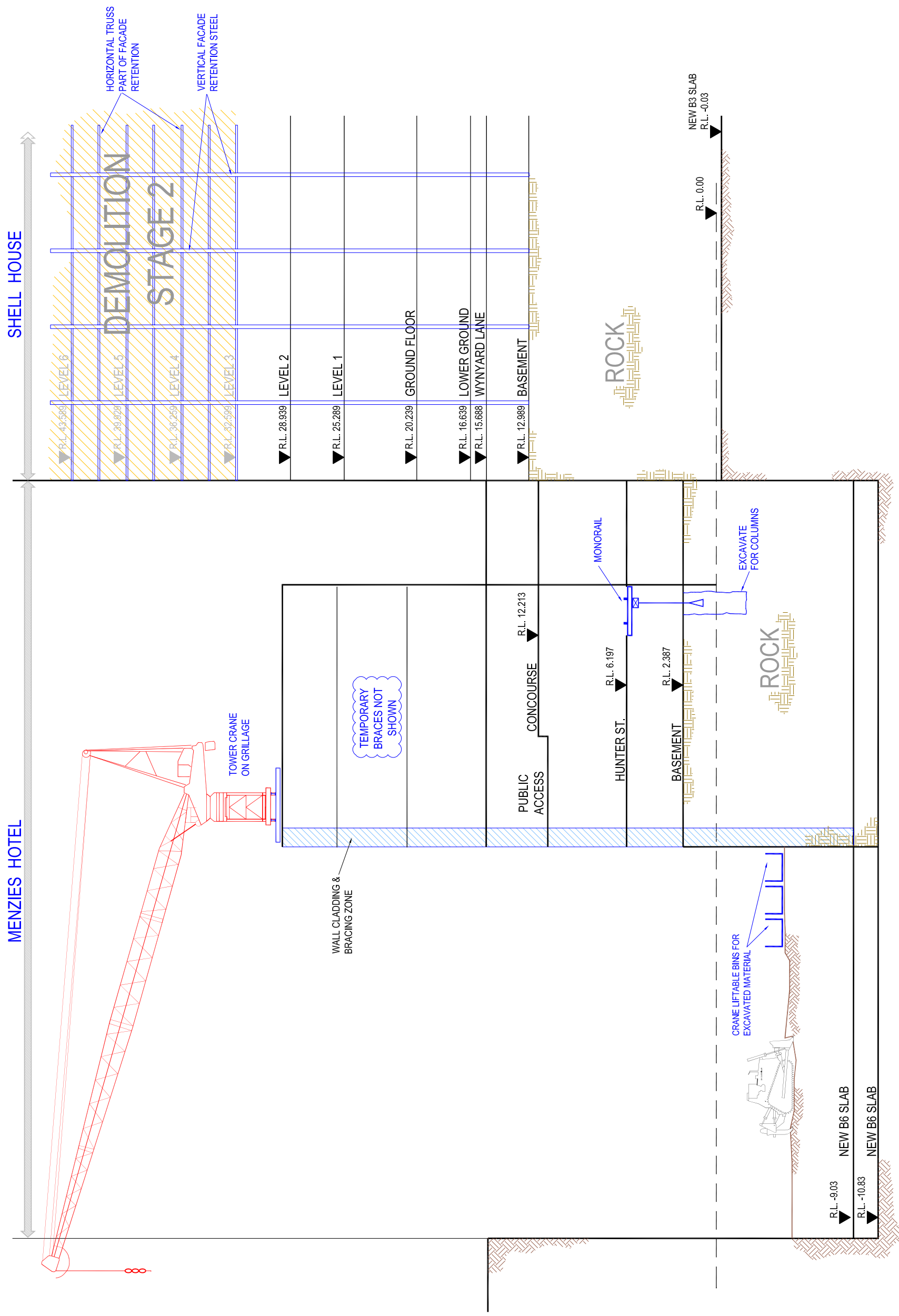
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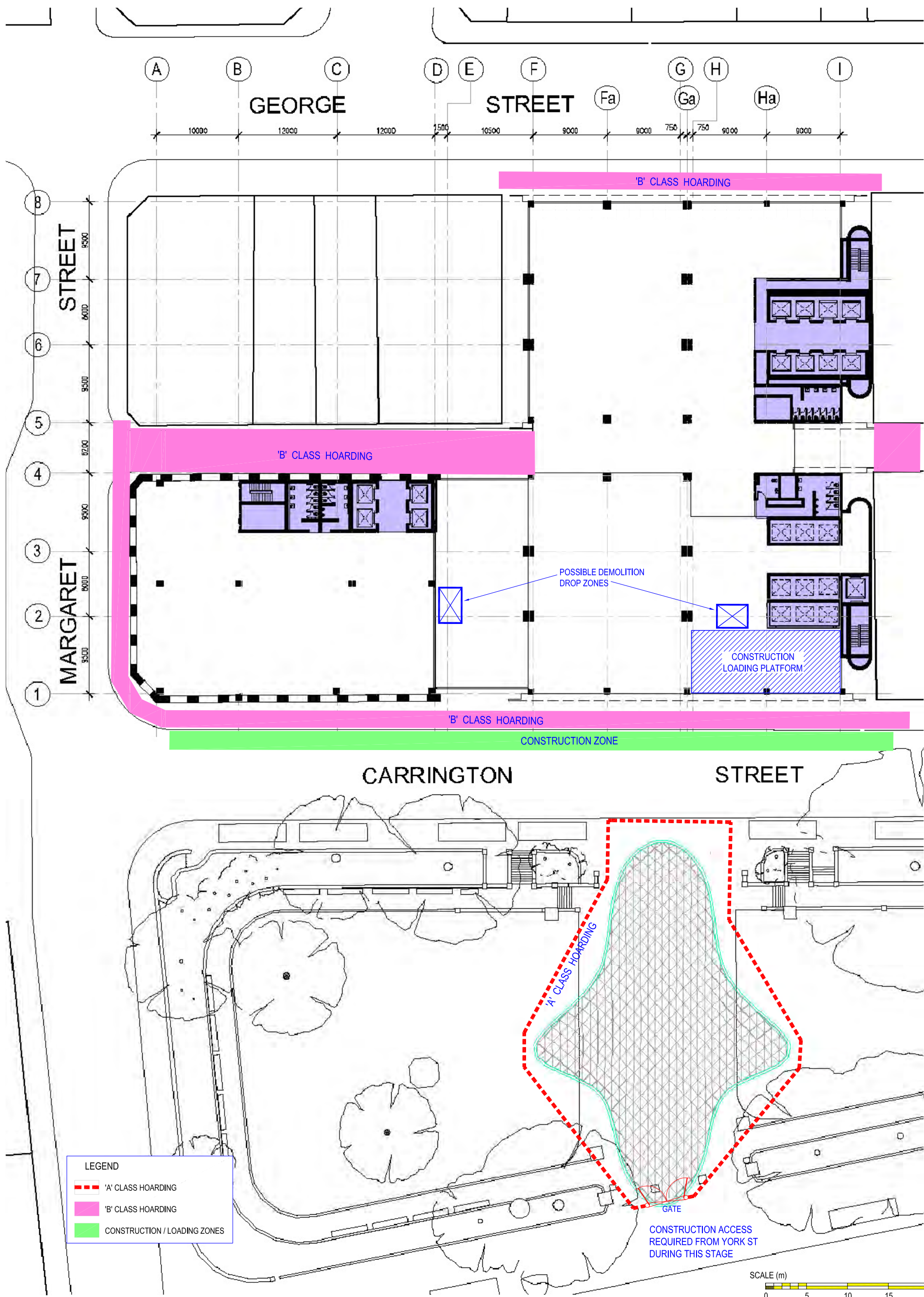
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Checked		Revision	E
Drawing No.	SK_001		

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CITY ONE WYNYARD

THAKRAL

**HOARDING, CONSTRUCTION ZONES
& DEMOLITION MANAGEMENT**

Drawing Title
**HOARDING,
CONSTRUCTION ZONES &
DEMOLITION MANAGEMENT**

Job No. city 1-002 (VH)

Discipline

Date 28/09/2010

Drawing No. Sk. 005

Revision C

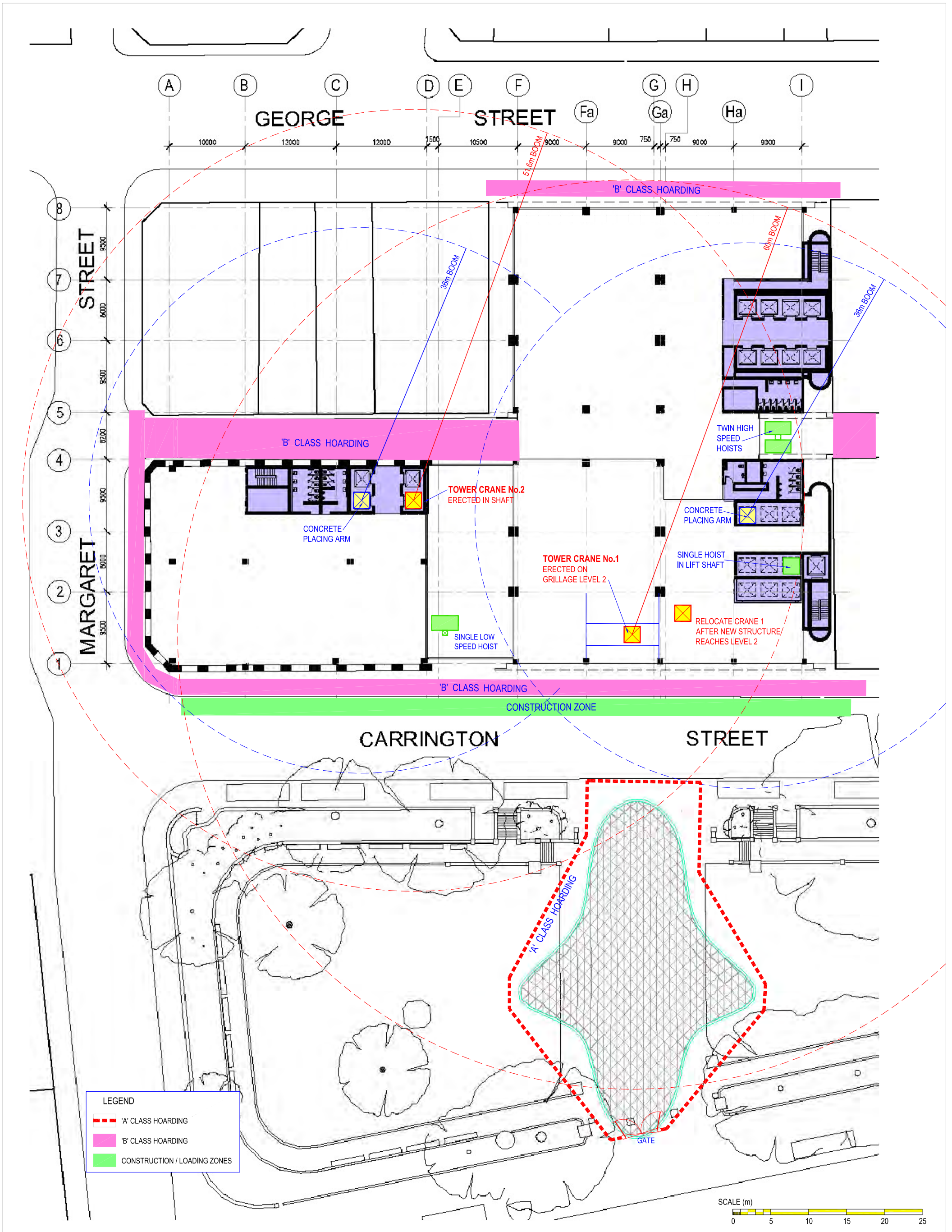
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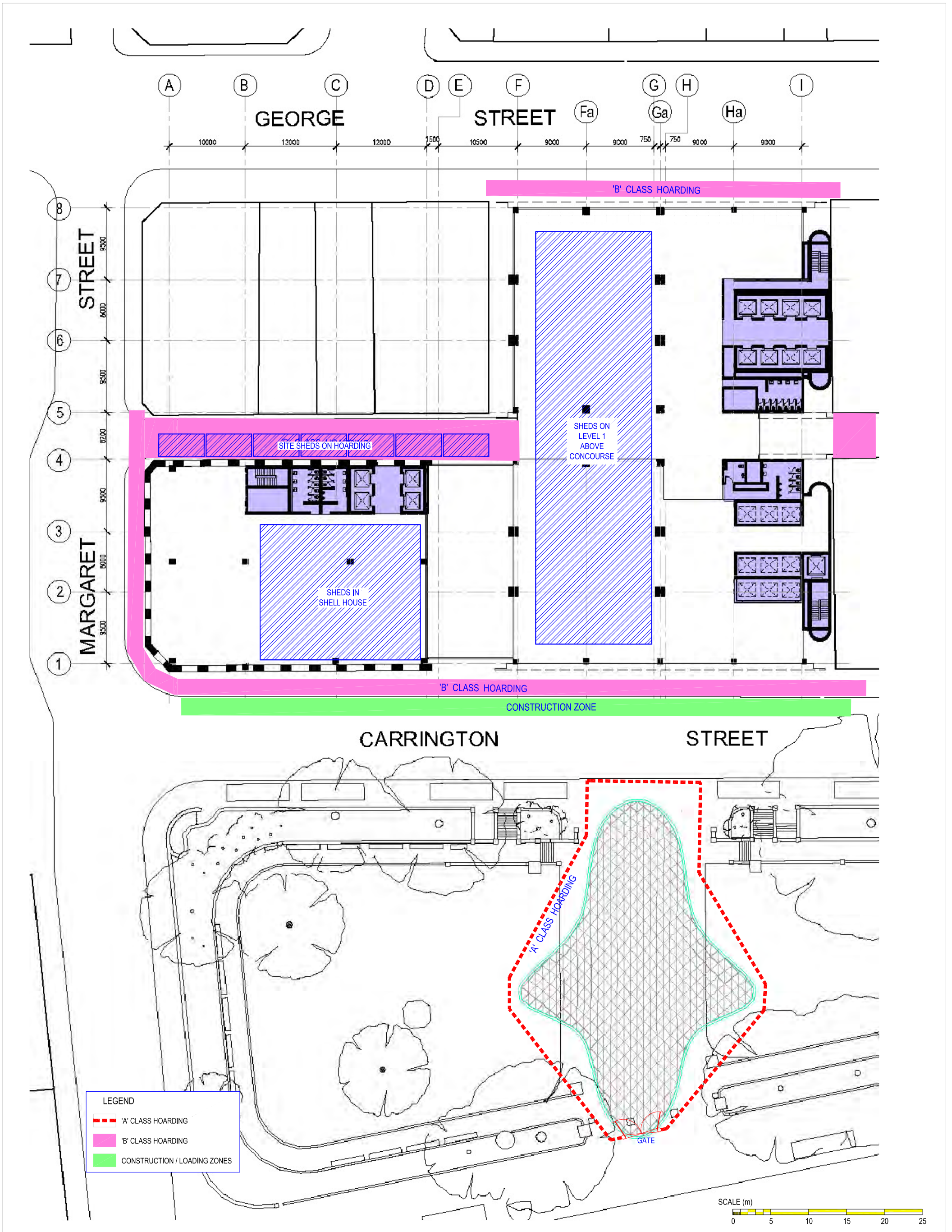
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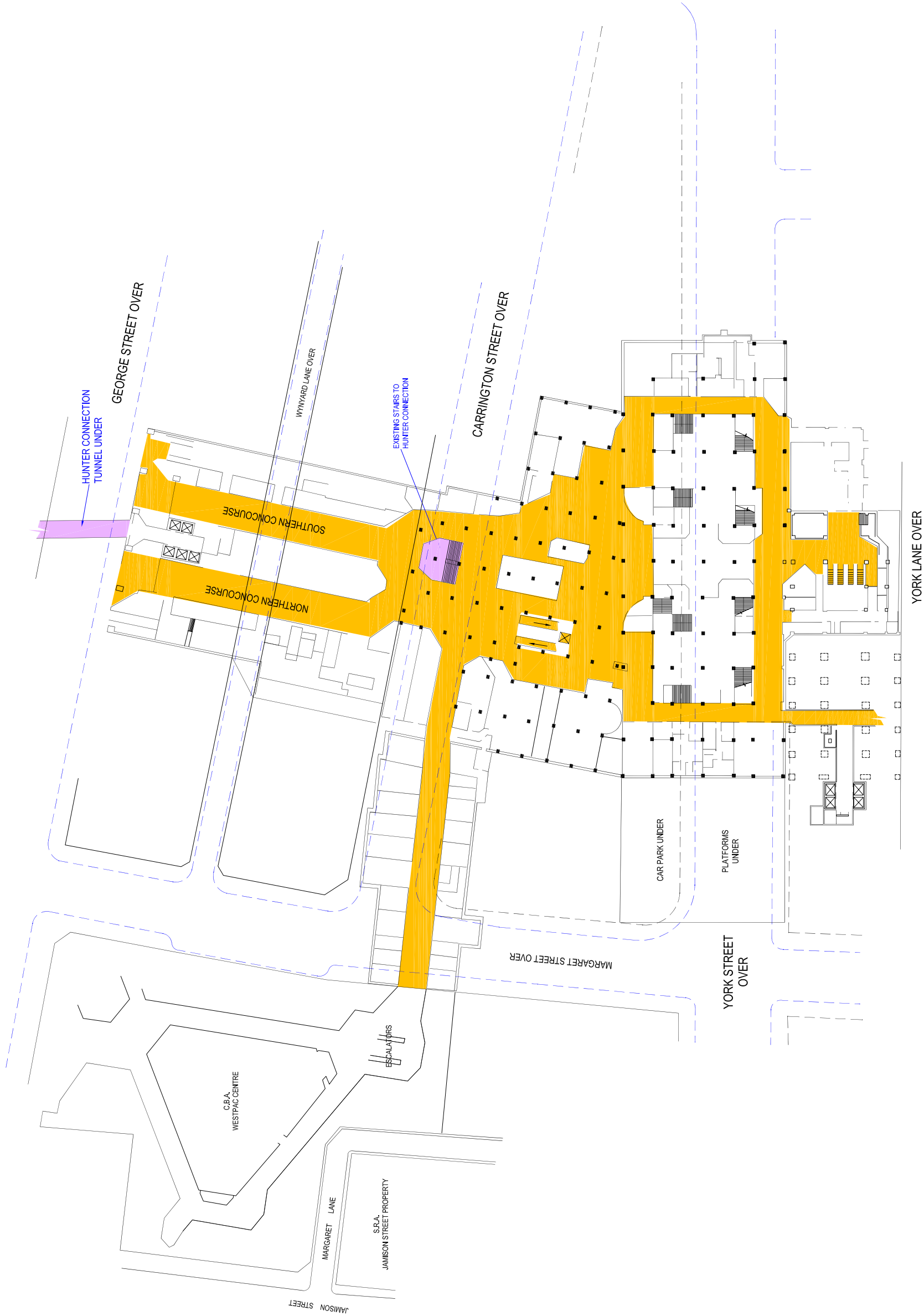
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CITY ONE WYNYARD



DRAWING TITLE

EXISTING PUBLIC ACCESS
AT CONOURSE LEVEL

Drawing Title
EXISTING PUBLIC ACCESS
AT CONOURSE LEVEL

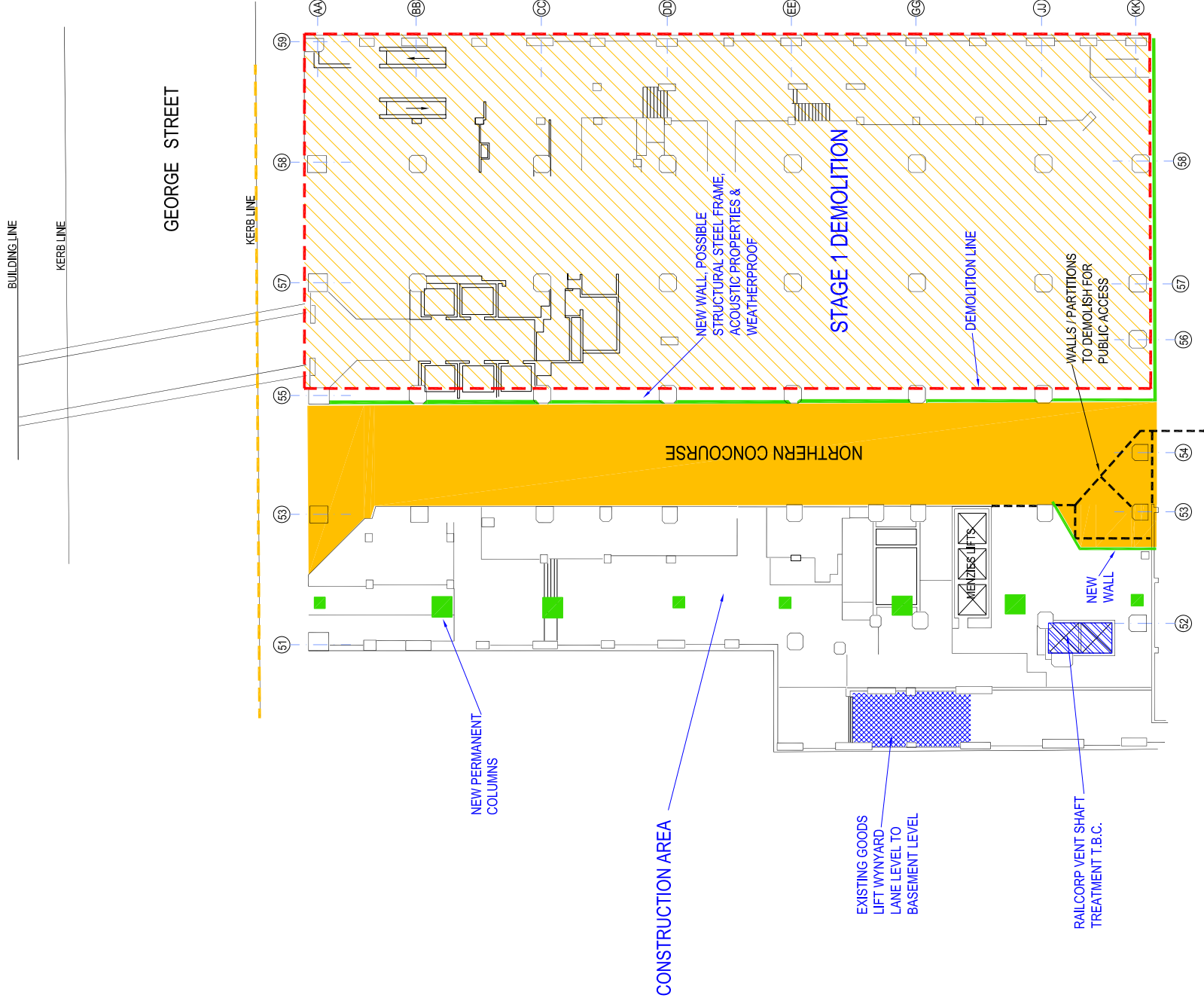
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Client	
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Date	28/02/2010
Revision	B



Shaw Wilson

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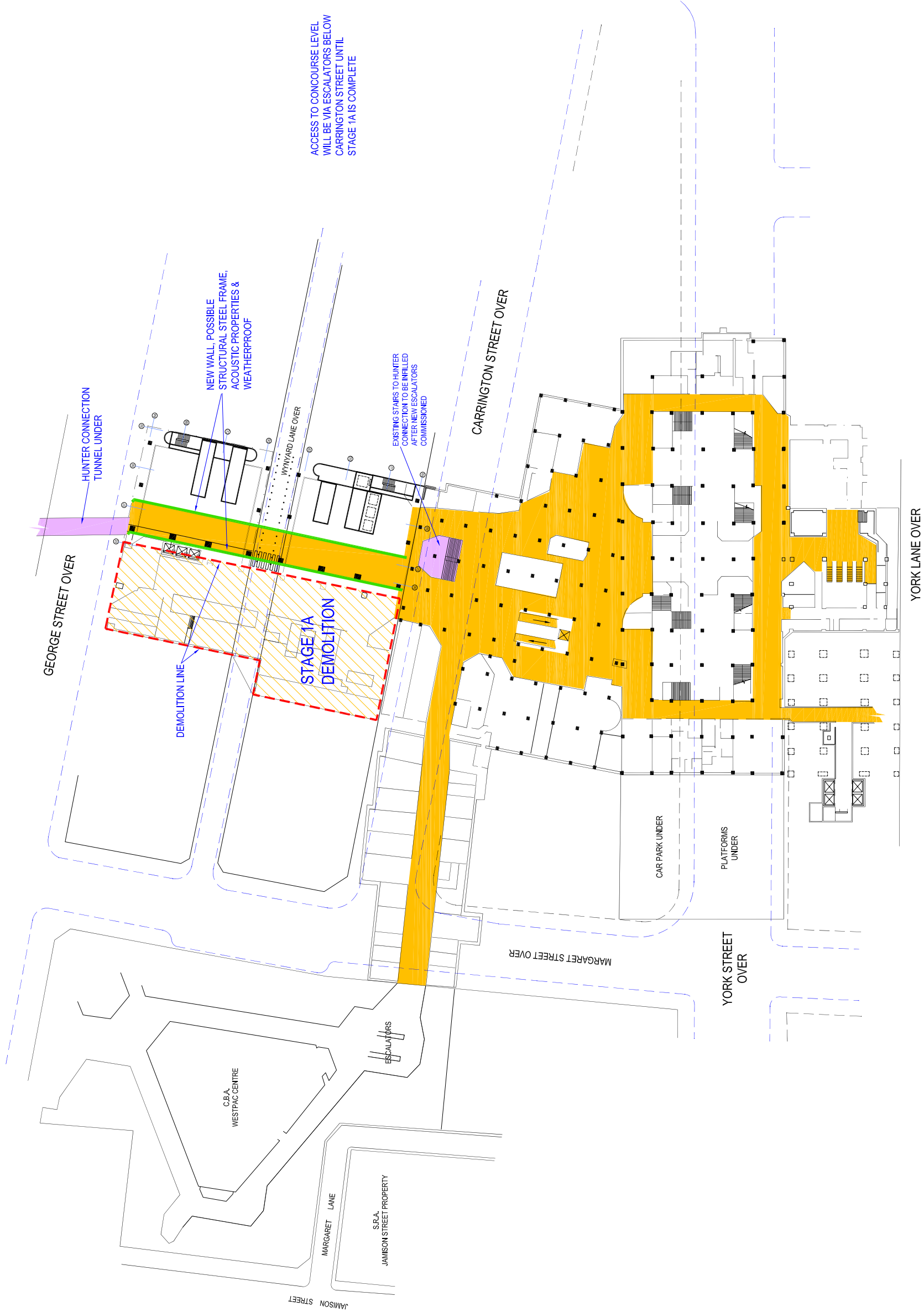
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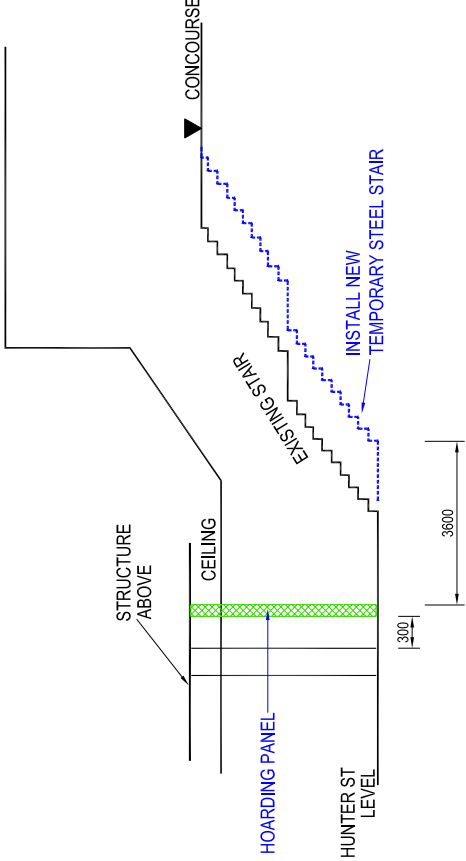
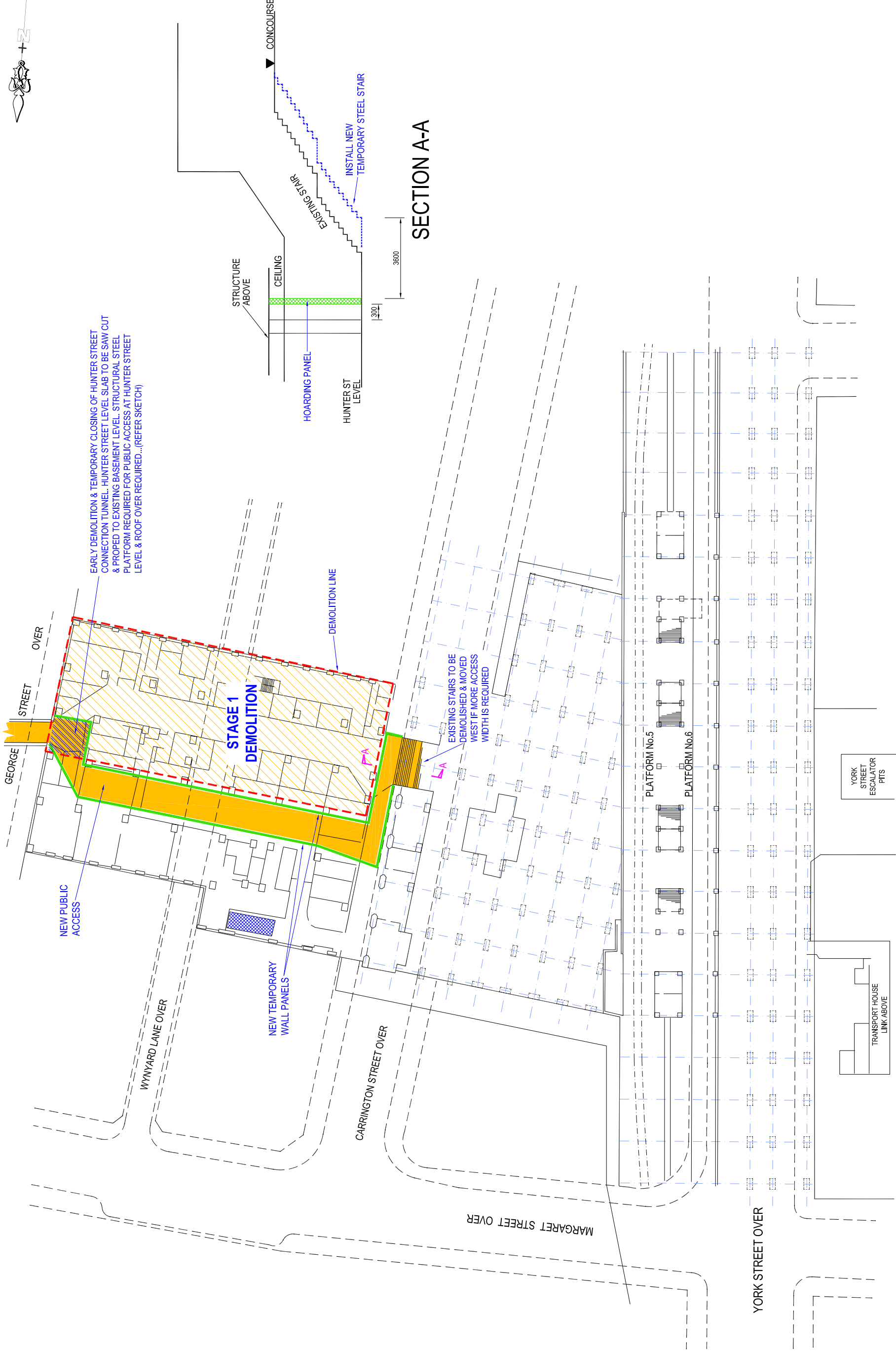


DRAWING TITLE

GEORGE STREET ACCESS
DURING STAGE 1 DEMOLITION

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Use No.	day 1:002 (WH)	Date	20/02/2010
Checked		Revision	C
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SECTION A-A

CITY ONE WYNYARD



THAKRAL

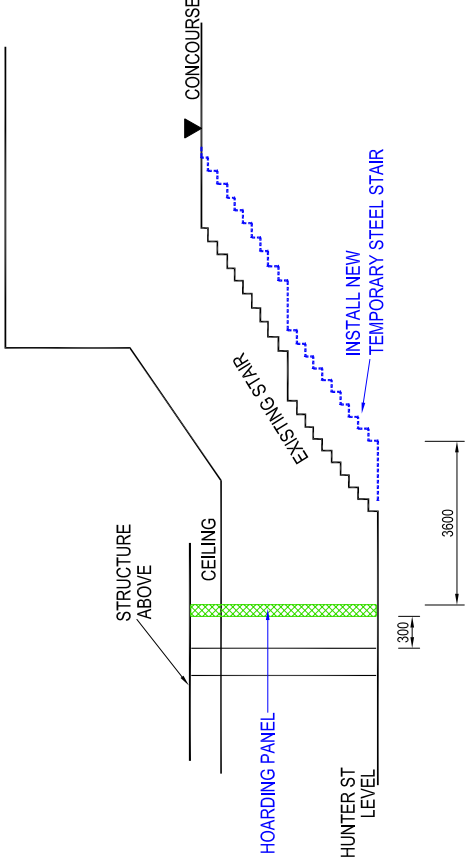
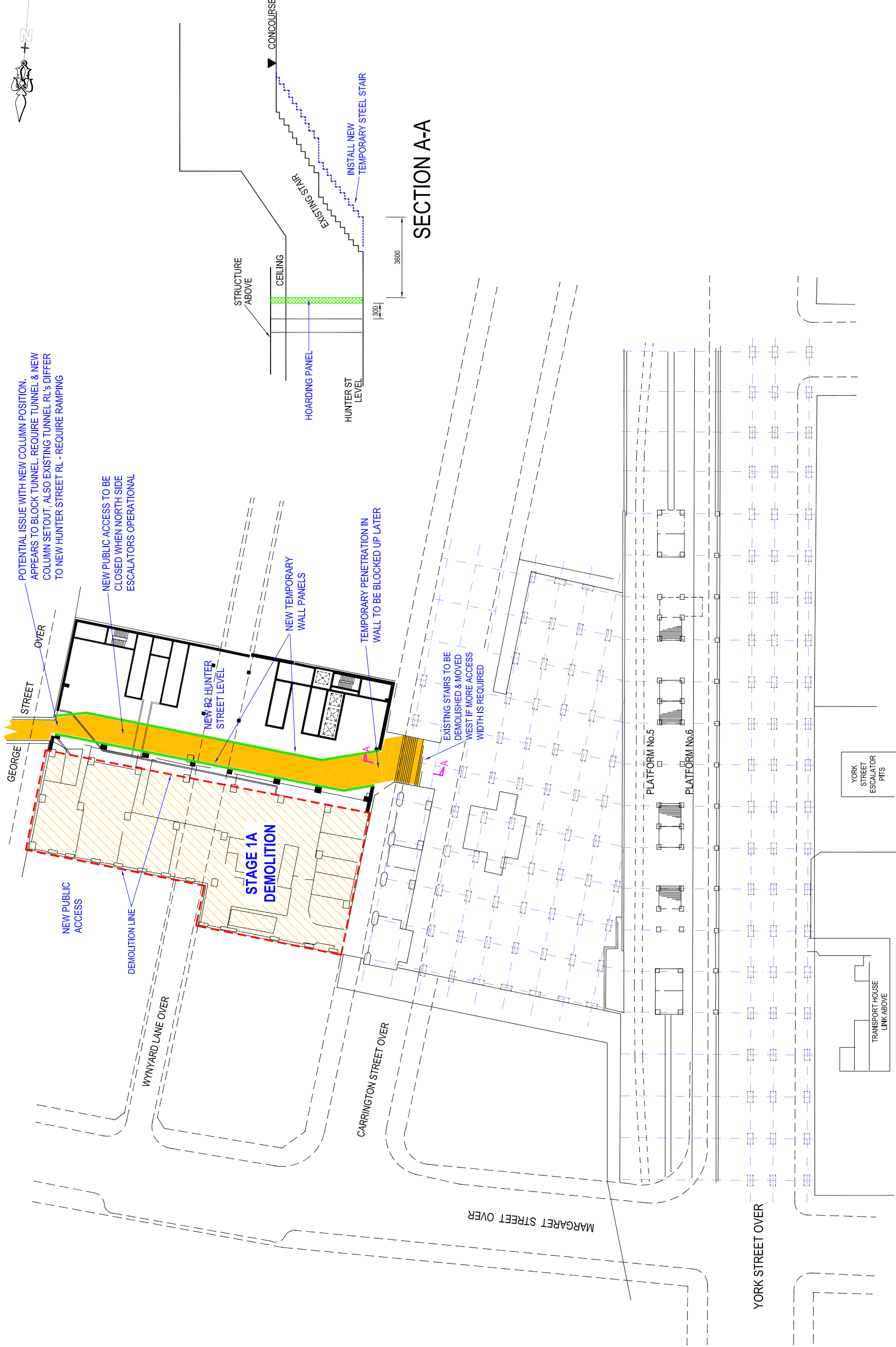
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HUNTER CONNECTION ACCESS DURING STAGE 1 DEMOLITION

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Use No.	day 1:003 (WH)	Date	28/02/2010
Client		Revision	B
Drawing No.	SK_012		
DRAFTING		Shaw Wilson	

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SECTION A-A

CITY ONE WYNYARD



THAKRAL

DRAWING TITLE

HUNTER CONNECTION ACCESS
DURING STAGE 1A DEMOLITION

Drawing Title		HUNTER CONNECTION ACCESS DURING STAGE 1A DEMOLITION	
Use No.	day 1:001 (HSE)	Date	28/02/2010
Client		Revision	B
Drawing No.	SK_013	DRAFTING Shaw Wilson	

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Robert Bird Group

EXALLOS DIVISION

SPECIALIST ENGINEERING

Construction Management Statement for **City One Wynyard**

Prepared For: Thakral

28th April 2009

Job No.: 07661

Issue A



Report Amendment Register

Rev No.	Section & Page No.	Issue/Amendment	Author/Initials		Project Engineer	Reviewer/Initials		Date
A	All	Draft	DP		DP	NB		21-4-2009
B	Section 1.0 (Page 1) Sentence amended. Section 2.0 (Page 1) Sentence amended. Section 3.0 (Page 1) Sentence amended. Section 4.1 (Page 2) Section 4.1 amended. Section 4.4 (Page 6) Section 4.4 added. Section 4.5 (Page 7) Section 4.5 added. Section 5.0 (Page 9) Paragraph added.	Draft	DP		DP	NB		27-4-2009
C	Section 2.0 (Page 1) Bullet point revised. Section 3.0 (Page 1) Bullet point revised. Section 4.1.1 (Page 2) Paragraph added. Section 4.1.2 (Page 2) Paragraph added. Section 4.1.2 (Page 3) Bullet point revised. Section 4.4 (Page 6) Bullet points revised.	Issue A	DP		DP	NB		28-4-2009

FINAL DRAFT ACCEPTED BY: AUTHOR:

REVIEWER:

.....
DAMIEN PERREN
Signing for and on behalf of
Robert Bird Group Pty Ltd
Date: 28th April 2009

.....
NICK BARKER
Signing for and on behalf of
Robert Bird Group Pty Ltd
Date: 28th April 2009

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1.0 Brief

The Exallos Division of Robert Bird Group (RBG) was requested by PTW Architects on behalf of Thakral to prepare a statement that will form part of a concept plan application for the proposed City One Wynyard development.

The construction management statement was to address the following:

- Proposed construction management strategy and staging of the construction works to ensure continuous access and operation of Wynyard Station throughout the construction process.
- Provide recommendations to the strategies proposed that may need to be addressed at the detailed design stage.

2.0 Limitations

- This report has been prepared by the Exallos Division of RBG for the Thakral City One Wynyard project.
- This report shall not be used for any purpose than that stated above.
- This report is based upon our understanding of the site constraints developed during our initial brief and site inspections in August 2007, and follow up meetings with Thakral in July 2008.
- The Construction Management Strategy is at concept stage and will require changes as detailed design progresses and the results of detailed consultation with RailCorp, State Transit, RTA, and the City of Sydney Council are incorporated.
- This report is based on the building concept shown in the PTW Architects report dated April 2008, and Wynyard Station upgrades by Hassell Architects. Refer to Preliminary Concept Study dated 14th April 2008 by Hassell Architects.

3.0 Introduction

The City One Wynyard project comprises two (2) parts described as Part A and Part B.

The works proposed to be completed in each part have been documented by two (2) architectural firms, PTW Architects and Hassell Architects.

- Part A – Thakral Building as designed by PTW Architects. Refer to PTW indicative design studies.
- Part B – Wynyard Station upgrade as designed by Hassell Architects. Refer to Preliminary Concept Study dated 14th April 2008 by Hassell Architects.

This report addresses the impact of the proposed architectural designs on the physical constraints of the site including continuous access and operation of Wynyard Station for Part A of the proposed development, and highlights the issues that may require further development at the detailed design stage.

It is proposed that the upgrades to Wynyard Station be performed concurrently with the City One Wynyard building.

4.0 Construction Management Strategy

4.1 Potential Areas of Impact to Access and Operation of Wynyard Station

The construction management methodology of the proposed development of the City One Wynyard building and upgrades to Wynyard Station will need to address the following issues at the detailed design phase.

4.1.1 Potential Structural Impact of the Proposed Development on Adjacent Structures

The proposed architectural design for the City One Wynyard building requires demolition of two (2) existing buildings that are at present located within the proposed development footprint. These buildings are the existing Menzies Hotel, and Thakral House.

Shell House, a heritage listed building located on the northern side of the Menzies Hotel will have its central and core structure removed whilst the façade is maintained.

The demolition methodology employed will focus on minimising the risk of damage to adjacent structures, as well as limiting vibration and noise whilst the demolition and construction phases are being performed.

To record the existing general structural condition and visible structural defects, dilapidation inspections and reports will be performed on the adjacent buildings and structures deemed to be within the potential zone of influence before any work commences.

An emphasis on vibration related deterioration and foundation stability of the existing buildings and structures will need to be observed for these inspections and reports.

The extent of adjacent buildings and structures that will require their condition to be recorded will need to be determined at the detailed design phase.

4.1.2 Demolition Methodology for Existing Buildings

The methodology sequence employed to demolish the existing Menzies Hotel and Thakral House will be performed in a manner that minimises risk to the general public, and damage and nuisance to adjacent structures.

Demolition methods and sequencing will be reviewed with RailCorp, State Transit, RTA, and the City of Sydney Council prior to demolition commencing, and throughout the demolition process.

This will be achieved by the following.

- A comprehensive review of all available structural drawings and documentation for the existing Menzies Hotel and Thakral House.
- Regular site inspections to monitor and if necessary develop alternate processes.

- Temporary load out platforms and designated construction zones nominated to allow demolished materials to be efficiently removed from the site in a manner that minimises adverse impacts to pedestrian movements and general traffic flow.

This will be achieved by a comprehensive review of site constraints and strategic location of designated load out and construction zones.

Type B overhead protection hoardings will also be provided to limit impacts to pedestrian movements where applicable.

Traffic management plans will also be required to minimise the effect of construction related traffic on general traffic and bus movements and flows in the local area.

4.1.3 Sediment, Noise, and Vibration Control

The construction and demolition methodologies developed for the proposed City One Wynyard development will focus on controlling and minimising sediment run-off, excessive noise, and vibration from construction related activities.

Sediment run-off will require monitoring at the northern end of Wynyard Lane. This may require preliminary assessment and potentially upgrading prior to demolition works commencing.

The control of noise and vibration nuisance related to demolition and construction activities will be assessed at the detailed design phase of the development. This will be controlled by appropriate selection of demolition and construction methods and sequencing, as well the equipment used to perform these activities.

4.2 Potential Areas of Impact to Access and Operation of Wynyard Station for Part A of the Development

The demolition of the existing Thakral Building and Menzies Hotel, and construction of the new City One Wynyard building has a potential impact on the following areas that may affect the access and operation of Wynyard Station.

- RailCorp goods lift and access.
- Hunter Arcade pedestrian access.
- George Street pedestrian subway.
- George Street pedestrian ramps.

These issues are addressed to a concept level of detail in Section 4.3.

4.3 Proposed Staging of Demolition and Construction Works

The proposed staging of demolition and construction works is shown in the table below.

Construction Stage	Affected Areas	Proposed Solution to Affected Area	Issues Requiring Further Development at Detailed Design Stage
Stage 1 – Demolition of existing Thakral House and Menzies Hotel down to existing Level 2.	Access to goods lift off Wynyard Lane.	Erect Type B hoarding in Wynyard Lane. Temporarily relocate goods lift.	Temporary location of goods lift.
	Pedestrian access along George Street, and Carrington Street.	Erect Type B hoarding and access scaffold on George Street, and Carrington Street.	Extent of hoarding required. Potential clash with construction zones and load out platforms.
Stage 2 – Demolition proceeds as per Stage 1. Construct a temporary staircase from Hunter Arcade to George Street northern ramp (adjacent to the western side of George Street). Close Hunter Arcade to pedestrian traffic.	Pedestrian access to Hunter Arcade between George Street, and Carrington Street.	Construct a temporary staircase between Hunter Arcade to George Street northern ramp (adjacent to the western side of George Street), and divert pedestrians from George Street pedestrian subway at the eastern end of the Hunter Arcade.	Refine temporary staircase location and ensure the required clearances for pedestrian flow can be achieved. Assessment of existing levels 2 and 3 to act as overhead protection for demolition activities being performed above. Disabled temporary access requirements may also have to be addressed.
Stage 3 – Demolition to proceed as per Stage 1. Close the George Street southern ramp, and re-direct pedestrians to the George Street northern ramp.	George Street southern ramp.	Divert pedestrian traffic from George Street southern ramp to northern ramp.	Disabled temporary access requirements may have to be addressed.
Stage 4 – Wynyard Lane is closed to through traffic. Demolition of the southern side of Thakral House, and Menzies Hotel can now proceed to footing level.	Wynyard Lane closed to through traffic.	Traffic management plans to be put into place.	N/A

Construction Stage	Affected Areas	Proposed Solution to Affected Area	Issues Requiring Further Development at Detailed Design Stage
Stage 5 – Complete demolition of southern side, and re-construct southern side of new City One building to Level 2. Construct temporary staircase between new George Street southern ramp, and existing George Street pedestrian arcade. Close existing George Street northern ramp and re-direct pedestrians to new George Street southern ramp.	Existing George Street northern ramp now closed to pedestrians.	Re-direct pedestrians to new George Street southern ramp.	Refine temporary staircase location and ensure the required clearances for pedestrian flow can be achieved. Assessment of new floors to act as overhead protection for construction activities being performed above. Disabled temporary access requirements may also have to be addressed.
Stage 6 – Demolition of the northern side of Thakral House, and Menzies Hotel can now proceed to footing level.	Wynyard Lane closed to through traffic.	Traffic management plans to be put into place.	N/A
Stage 7 – Construct northern side of new City One building to Level 2.	N/A	N/A	N/A
Stage 8 – New George Street northern ramp is now open to pedestrians. All new pedestrian paths are now open.	N/A	N/A	Assessment of new floors to act as overhead protection for construction activities being performed above.
Stage 9 – Complete construction of the remainder of the building. Overhead Type B hoardings along George and Carrington Street are to remain in place until the City One development is complete.	N/A	N/A	N/A

4.4 Potential Areas of Impact to Access and Operation of Wynyard Station for Part B of the Development

The proposed upgrade to Wynyard Station has a potential impact on access and operation of Wynyard Station. The proposed upgrades are summarised below.

- Installation of a new disabled lift adjacent to York Street on the western side of rail platforms 3 and 4.
- Construction of new emergency egress stairs at the northern and southern ends of both rail platforms, discharging at ground level on the western edge of Wynyard Park adjacent to the existing ventilation shafts.
- Enlarged atrium and retail, and additional escalators on the eastern side of rail platforms 5 and 6.
- Additional ticket gates, information and staff facilities, transport information points, platform supervisor booths, and passenger toilets.
- New stair and lift configurations for pedestrian access to rail platforms.
- Reconfigured emergency egress stairs to York Street.
- New electrical communications room, and smoke exhaust systems.
- New wayfinding and signage.
- New P.A. system and CCTV monitoring.

These issues are addressed to a concept level of detail in Section 4.5.

4.5 Proposed Staging of Upgrades to Wynyard Station

The proposed staging of upgrades to Wynyard Station is shown in the table below.

Construction Stage	Affected Areas	Proposed Solution to Affected Area	Issues Requiring Further Development at Detailed Design Stage
Stage 1 – Construction of new emergency egress stairs at the ends of both rail platforms. New passenger lift adjacent to York Street existing escalators.	Localised areas at York Street level.	Locally hoard off construction zones. Provide temporary works solutions and detailed construction staging to ensure stability of existing adjacent structures, and safe passage for general public. Works to be performed in off peak periods. Prefabrication methods used where available.	The temporary works solutions and construction staging methodology will need to be prepared once locations and detailed structural design have been completed.
Stage 2 – Construction of enlarged atrium and additional escalators from concourse level to York Street level.	Pedestrian access to existing escalators.	Alternate temporary access whilst upgrade works are being performed. Provide temporary works solutions and detailed construction staging to ensure stability of existing adjacent structures, and safe passage for general public. Works to be performed in off peak periods. Prefabrication methods used where available.	Location and extent of temporary access required. The temporary works solutions and construction staging methodology will need to be prepared once locations and detailed structural design have been completed.

Construction Stage	Affected Areas	Proposed Solution to Affected Area	Issues Requiring Further Development at Detailed Design Stage
Stage 3 – Construction of new retail facilities and ticketing facilities at existing concourse level.	Localised areas of the existing concourse level.	Locally hoard off construction zones. Works to be performed in off peak periods. Prefabrication methods used where available.	Locations and extent of temporary access required to be finalised at detailed design stage.
Stage 3 (con't) – Installation of new smoke exhaust system.	Localised areas on platforms and concourse level.	Locally hoard off construction zones. Provide temporary works solutions and detailed construction staging to ensure stability of existing adjacent structures, and safe passage for general public. . Works to be performed in off peak periods. Prefabrication methods used where available.	The temporary works solutions and construction staging methodology will need to be prepared once locations and detailed structural design have been completed.
Stage 3 (con't) – Reconfiguration of existing stairs and lifts to platforms.	Pedestrian access to platforms.	Alternate temporary access whilst upgrade works are being performed. Provide temporary works solutions and detailed construction staging to ensure stability of existing adjacent structures, and safe passage for general public. Works to be performed in off peak periods. Prefabrication methods used where available.	Location and extent of temporary access required. The temporary works solutions and construction staging methodology will need to be prepared once locations and detailed structural design have been completed. Sequence the construction to ensure that at least one of the two stairs is always available.
Stage 3 (con't) – Reconfiguration of existing stairs to York Street.	Pedestrian access to York Street.	Alternate temporary access whilst upgrade works are being performed. Provide temporary works solutions and detailed construction staging to ensure stability of existing adjacent structures, and safe passage for general public. Works to be performed in off peak periods. Prefabrication methods used where available.	Location and extent of temporary access required. The temporary works solutions and construction staging methodology will need to be prepared once locations and detailed structural design have been completed. Sequence the construction to ensure that at least one of the two stairs is always available.

5.0 Conclusion

In accordance with the brief from PTW Architects on behalf of Thakral, the Exallos Division of RBG has prepared a construction management statement to address the construction management issues to a concept level for inclusion in the concept plan application submission for the proposed City One Wynyard development.

The construction sequence requires that the demolition of the existing Thakral House, and Menzies Hotel, and construction of the new City One building be performed in two (2) parts to minimise the disruption to the pedestrian paths under the new City One Wynyard building and through Wynyard Station whilst the development is being completed.

It is proposed that the upgrades to Wynyard Station be performed concurrently with the City One Wynyard building.

The demolition and construction staging for Part A and Part B is at concept level and may require changes as detailed design progresses to meet stakeholder requirements.



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