Traffic and Parking Assessment and Principles of Construction Traffic Management

Colston Budd Rogers & Kafes

Appendix E

DPT & DPPT OPERATOR PTY LTD

PRINCIPLES OF CONSTRUCTION TRAFFIC MANAGEMENT FOR THE PROPOSED REDEVELOPMENT OF COCKLE BAY WHARF, DARLING HARBOUR

OCTOBER 2016

COLSTON BUDD ROGERS & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Facsimile: (02) 9411 2422
Email: cbhk@cbhk.com.au

REF: 10166/1

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1. INTRODUCTION

1.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by DPT & DPPT Operator Pty Ltd to assist in developing the principles of construction traffic management for the proposed redevelopment of Cockle Bay Wharf, Darling Harbour. The construction process for the overall development will involve a series of construction traffic management plans, including Wheat Road diversion works, enabling & substructure works, demolition works, excavation works and main structure works, including works over the Western Distributor (requiring the night time closure of the Western Distributor).

1.2 Cockle Bay Wharf is located on the eastern side of Darling Harbour, as shown on Figure 1. Access to the site is available from Harbour Street via Wheat Road. Wheat Road passes through the site in a northerly direction and Harbour Street is located adjacent to the eastern boundary of the site. The proposed redevelopment will include some 110,000m^2 of commercial area, some 25,000m^2 of retail area (including food, beverage and retail shops) and up to 12,000m^2 of publicly accessible open space. The proposed redevelopment will include an extension of the development over the northbound and southbound carriageways of the Western Distributor and the diversion of Wheat Road through the site.

1.3 At this stage the overall construction methodology, process and staging of the proposed development have not been determined. As outlined with RMS, a series of construction traffic management plans will be developed for the various stages of construction, including construction of the development over the Western Distributor. These will be the subject of ongoing negotiations with the authorities. The construction methodology and the extension of the development over the

Western Distributor will be carried out in a similar manner to the construction of the nearby Four Points Hotel development in Sussex Street.

1.4 This report outlines the principles of construction traffic management. These principles will be refined and construction traffic management plans prepared for the redevelopment, in consultation with RMS, SHFA and the City of Sydney.

1.5 The following chapter set out the principle of construction traffic management for the Wheat Road diversion works and the initial enabling & substructure works associated with the proposed development.

2. PRINCIPLES OF CONSTRUCTION TRAFFIC MANAGEMENT

2.1 The proposed redevelopment of Cockle Bay Wharf will include some 110,000m^2 of commercial area, some 25,000m^2 of retail area (including food, beverage and retail shops) and up to 12,000m^2 of publicly accessible open space. The proposed redevelopment will include an extension of the development over the northbound and southbound carriageways of the Western Distributor and the diversion of Wheat Road through the site.

2.2 The construction process will involve a series of management plans forming the basis of the overall project management plan for construction. These plans will be prepared in consultation with RMS, SHFA and City of Sydney, and will include Wheat Road diversion works, enabling & substructure works, demolition works, excavation works and main structure works, including works over the Western Distributor (requiring the night time closure of the Western Distributor).

2.3 These plans will be developed to satisfy the following traffic arrangements during the project:-

- cumulative impacts of multiple construction sites and other major construction projects in the area, including the redevelopment of the IMAX Cinema and adjacent facilities;

- measures to manage traffic flow through and around the site during construction, including the diversion of Wheat Road traffic and the redistribution of traffic associated with the temporary night time closures of the Western Distributor during construction;

- provision of appropriate regulatory and directional signposting, line-marking and variable message signs, associated with the diversion of traffic during construction;

- identify mitigation measures to improve traffic conditions; and

- take into account both local and regional traffic impacts.

2.4 The principles of construction traffic management for the proposed redevelopment are set down through the following sections:-

- Wheat Road diversion works;
- enabling & substructure works;
- hours of work;
- truck routes;
- traffic diversions;
- construction site entries;
- pedestrians;
- consultation; and
- principles of construction traffic management.

Wheat Road Diversion

2.5 The Wheat Road diversion works will be staged with work being undertaken within the construction areas indicated on Figure 2. The section of Wheat Road adjacent to Cockle Bay Wharf will be temporarily closed during construction. General traffic will be diverted around the construction activity via Harbour Street and a new access road onto Wheat Road to the north of the site. The new access

road to the north of the site will maintain access to existing bus/coach parking on Wheat Road, servicing for Helm Bar and the adjacent Aquarium, and continued access to King Street Wharf via Shelley Street.

2.6 The Wheat Road diversion works will include the following:-

- temporary closure of Wheat Road and diversion of existing Wheat Road traffic during construction;

- installation of temporary traffic signals at the intersection of Harbour Street and Blackwattle Place (left in and left out movements only) to cater for construction traffic movements generated by the proposed Cockle Bay Wharf redevelopment and the adjacent IMAX Cinema development during construction;

- construction of a new temporary connection to Wheat Road to the north of the site to maintain access to existing bus/coach parking on Wheat Road, servicing for Helm Bar and adjacent Aquarium, and continued access to King Street Wharf via Shelly Street; and

- temporary relocation of Wheat Road through the site.

2.7 The Wheat Road diversion works will include site establishment, erection of site facilities and amenities, erection of construction fencing/hoardings, establishment of construction site compound and on-site materials handling area adjacent to the construction site. Pedestrian facilities and connections will be maintained along the adjacent pedestrian promenade to the west of the site and to/from pedestrian connections to the east. Bus and coach parking facilities on Wheat Road will be

reconfigured in association with the relocation of Wheat Road. The proposed temporary Wheat Road diversion works are shown on plans prepared by Enstruct Group Pty Ltd, as shown on Figure 3.

2.8 Following the completion of Wheat Road diversion works, work will commence on the demolition and detailed excavation of the site, and the construction of the relocated Wheat Road though the site.

Enabling & Substructure Works

2.9 Subject to the approval by the authorities, work over the Western Distributor will be undertaken during the evening period and will require the temporary closure of part of the northbound and southbound carriageways of the freeway, adjacent to the construction activity. Where possible, the closure of the Western Distributor will be staged so as to maintain as far as possible access to/from the Harbour Bridge. This is similar to the construction methodology adopted for the construction of the nearby Four Points Hotel development.

2.10 The enabling & substructure works will include the following:-

- preparation of piling areas and removal of vegetation, barriers and establishment of an appropriate piling platform in the relevant areas; and

- drilling and construction of piles/supporting structure adjacent to the northbound and southbound carriageways of the Western Distributor to support the extension of the development over the freeway.

2.11 The construction of the development over the Western Distributor will involve the erection of a construction platform over the freeway. The construction traffic management plan for the main construction works and construction of the superstructure over the Western Distributor will be prepared in consultation with RMS, SHFA and City of Sydney.

2.12 Work adjacent to the Western Distributor, associated with the enabling & substructure works, will be undertaken during agreed working hours and will require the temporary closure of part of either the northbound or southbound carriageways of the freeway at various times, adjacent to the construction activity. During construction, if the full closure of either the northbound or southbound carriageways of the Western Distributor is required, traffic will be diverted along alternative traffic routes.

Hours of Work

2.13 Work associated with the construction activity (not required to be carried out during lane/road closures) will be carried out between the following hours of construction, unless otherwise agreed with the relevant authority:-

- Monday to Friday - 7:00am to 7:00pm;
- Saturday - 7:00am to 5:00pm; and
- Sunday/public holidays - No work.

2.14 Work associated with the enabling & substructure works adjacent to and directly above the Western Distributor (required to be carried out during lane/road closures), will be carried out outside of peak periods. These works will typically be undertaken at night, with the agreed working hours approved by RMS and

TMC, typically being Sunday to Thursday during the hours 9.00pm to 5.00am for partial closures and 11.00pm to 4.30am for full closures. These construction hours will require approval by the City of Sydney's Construction Regulation team.

2.15 The site contractor will be responsible to instruct and control sub-contractors regarding the hours of work. Any work outside the approved construction hours would be subject to prior approval from RMS, SHFA and the City of Sydney's Construction Regulation team.

2.16 All work, including demolition and construction work should comply with the "City of Sydney Code of Practice for Construction Hours/Noise 1992"and the Australian Standard AS2436.1981 Guide to Noise Control and Construction, Maintenance and Demolition Sites.

2.17 The "City of Sydney Code of Practice for Construction Hours/Noise 1992"allows extended working hours subject to the approval of an application in accordance with the Code and under Part 4 of the Environmental Planning and Assessment Act 1979.

2.18 To facilitate an efficient program, the arrival and departure of trucks associated with construction works will be regulated and on-site works will be carefully managed and controlled by site personnel. Trucks will be called onto the site when required. Trucks will not be permitted to park on-street in Wheat Road, or within the surrounding CBD, without prior approval from the relevant authority to do so.

Truck Routes

2.19 During the Wheat Road diversion works and the initial enabling & substructure works associated with the proposed development, trucks transporting material to/from the site will be accommodated on-site or within designated work zones/temporary construction compounds adjacent to the construction activity. These areas will be managed and controlled by qualified traffic controllers.

2.20 Truck movements will be restricted to designated truck routes and will be confined to the main road network in the vicinity of the site. Trucks at no time during construction will be permitted to park on-street within the surrounding CBD.

2.21 The proposed truck routes for the Wheat Road diversion works and the initial enabling & substructure works, as shown on Figures 3 and 4, include the following:-

- Approach routes

  - Warringah Freeway, Sydney Harbour Bridge, York Street, Erskine Street, Sussex Street, Liverpool Street, Harbour Street and Wheat Road;

  - Western Distributor, Harbour Street and Wheat Road;

  - Eastern Distributor, Cross City Tunnel, Harbour Street and Wheat Road;

- Parramatta Road, Broadway, George Street, Goulburn Street, Harbour Street and Wheat Road;

- Departure routes

  - Harbour Street, Western Distributor, Harbour Bridge and Warringah Freeway;

  - Harbour Street/Wheat Road, Shelley Street, Erskine Street, Sussex Street, Market Street freeway on ramp and Western Distributor;

  - Harbour Street/Wheat Road, Shelley Street, Erskine Street, Sussex Street, Liverpool Street, Harbour Street, Cross City Tunnel and Eastern Distributor;

  - Harbour Street/Wheat Road, Shelley Street, Erskine Street, Sussex Street, Bathurst Street, George Street, Broadway and Parramatta Road.

2.22 The designated truck routes to and from the site are proposed to restrict construction traffic to the main road network through the area. In particular, these truck routes are proposed to prevent trucks accessing other roads within the CBD in the vicinity of the site. Truck drivers will be inducted and advised of the designated truck routes to and from the site.

Traffic Diversions

2.23 As previously discussed, work adjacent to the Western Distributor will be undertaken at night during agreed working hours and will require the temporary

closure of part or all of either the northbound and/or southbound carriageways of the freeway at various times, adjacent to the construction activity. Where possible, the closure of the Western Distributor, will be staged so as to maximise access to/from the Harbour Bridge.

2.24 During construction, when the full closure of either the northbound or southbound carriageways of the Western Distributor are required, traffic will be diverted along the following routes, as shown on Figure 5:-

- Northbound traffic diversion

  - Western Distributor northbound closed at the King Street off-ramp with northbound traffic diverted via King Street, Kent Street and Clarence Street;

  - Harbour Street northbound carriageway closed at Bathurst Street with northbound traffic diverted via Bathurst Street and Kent Street;

- Southbound traffic diversion

  - Western Distributor southbound on-ramp closed at the Bradfield Highway (Harbour Bridge) with southbound traffic diverted via York Street and Market Street.

<u>Construction Site Entries</u>

2.25 During the Wheat Road diversion works and the initial enabling & substructure works, temporary construction vehicle access to the site will be provided via

Harbour Street and Wheat Road. The section of Wheat Road adjacent to Cockle Bay Wharf will be temporarily closed during construction. General traffic will be diverted around the construction activity via Harbour Street and a new access road onto Wheat Road to the north of the site. The new access road to the north of the site will maintain access to existing bus/coach parking on Wheat Road, servicing for Helm Bar and the adjacent Aquarium, and continued access to King Street Wharf via Shelley Street. A new temporary connection to Wheat Road to the north of the site will be constructed to maintain access to existing bus/coach parking on Wheat Road, servicing for Helm Bar and adjacent Aquarium, and continued access to King Street Wharf via Shelly Street.

2.26 A temporary set of traffic signals will be installed at the intersection of Harbour Street and Blackwattle Place (left in and left out movements only) to cater for construction traffic movements generated by the proposed Cockle Bay Wharf redevelopment and the adjacent IMAX Cinema development during construction. Smaller construction vehicles including single rigid trucks will enter and exit the site via the temporary traffic signals on Harbour Street. Larger construction vehicles will pass through the construction site, entering from the south via the temporary traffic signals and exiting to the north via Shelley Street.

2.27 The proposed construction access driveways at the northern and southern end of Wheat Road and the arrival and departure of trucks to and from the site will be managed and controlled by qualified traffic controllers. These personnel will manage the movement of construction vehicles to and from the site and pedestrian movements adjacent to the construction activity.

2.28 Truck drivers will be advised of the presence of the traffic controller, and that they must observe his or her direction at all times. All traffic controllers will be fully qualified with the relevant RMS Traffic Controllers qualifications.

2.29 All traffic controllers and work personnel will be required to wear high visibility fluorescent safety vests and Personnel Protective Equipment (PPE). Wet weather clothing will be made of fluorescent high visibility material.

Pedestrians

2.30 Pedestrian routes adjacent to the site will be subject to some modification as a result of the construction activity in order to minimise conflict and maintain safe pedestrian conditions. No construction vehicles will be parked nor will material/ equipment be stored on the public footpaths adjacent to the site. The existing pedestrian promenade on the western side of site will be maintained.

2.31 In association with the proposed temporary traffic signals at the intersection of Harbour Street and Blackwattle Place, the existing pedestrian bridge over the Western Distributor at the southern end of the site will be modified and diverted in order to provide for the signals and to maintain convenient access to/from Sussex Street. Appropriate pedestrian diversion signs will be erected at either end and along the alternative route, informing pedestrians of the changed conditions during construction.

2.32 Pedestrian activity adjacent to the construction site will be protected with the provision of construction safety fencing, with scaffolding and overhead protection provided where required. Temporary moveable barriers will be used to manage pedestrian movements adjacent to the construction activity.

2.33 A hoarding application together with details and extent of the proposed construction zone will be submitted to and approved by SHFA for the enclosure of public space as required by SHFA's Temporary Structures Policy.

2.34 The construction safety fencing will allow for the continued use of footpaths by pedestrians during construction and will provide a safe and convenient environment for all users. The design, set-out and erection of the construction safety fencing around the construction site and at the northern and southern ends of Wheat Road, will be the responsibility of the site contractor and will be in accordance with SHFA's Temporary Structures Policy.

2.35 Openings in the construction fencing at the construction access driveways will be managed and controlled by qualified traffic controllers. Pedestrian warning signs and construction safety signs/devices will be located adjacent to the driveways, in accordance with WorkCover requirements. The movement of trucks entering and exiting the site and the movement of pedestrians across the construction site access driveways when in use, will be managed and controlled by qualified traffic controller.

Consultation

2.36 In regards to community public consultation relating to the staging of construction and timeframes for the completion of each phase of development/construction process, the site contractor will undertake regular meetings and discussions with RMS, SHFA, City of Sydney and various stakeholders.

2.37 A community consultation plan will be prepared in association of the overall project management plan and will be submitted to SHFA for approval. The plan

will include 24 hour hotline, advertising strategies, website dedicated to the project's status and upcoming activities and other means of consultation.

Principles of Construction Traffic Management

2.38 At this stage the overall construction methodology, process and staging of the proposed development have not been determined. As outlined with RMS, a series of construction traffic management plans will be developed for the various stages of construction, including construction of the development over the Western Distributor. These will be the subject of ongoing negotiations with the authorities.

2.39 Detailed information regarding documentation of work site operations details, signage, construction fencing/hoarding, overhead protection, safety barriers and line marking details, as required, will be provided in accordance with Australian Standards and the Roads and Maritime Services' Manual for Traffic Control at Work Sites. Traffic control at work sites will be undertaken with specific reference to WorkCover requirements and the company's own Occupational Health and Safety Manuals. Signage detail, traffic management and the control of pedestrians and cyclists in the vicinity of the site, and the control of construction vehicles to and from the site, will be the responsibility of the appointed builder.

2.40 The principles of construction traffic management are shown on Figure 6 and the concept demolition plans are shown in Appendix A. The principles of construction traffic management have been prepared to support the Stage 1 development application for the redevelopment of Cockle Bay Wharf.

2.41 The City of Sydney Council's standard requirements for construction management plans are shown in Appendix B. In addition to these requirements, the overall

principles for traffic management during the Wheat Road diversion works and the initial enabling & substructure works associated with the proposed development are:-

- temporarily close Wheat Road adjacent to the site and divert existing Wheat Road traffic during construction;

- construct a new temporary connection to Wheat Road to the north of the site and maintain access to existing bus/coach parking on Wheat Road, servicing for Helm Bar and adjacent Aquarium, and maintain access to King Street Wharf via Shelly Street;

- install temporary traffic signals at the intersection of Harbour Street and Blackwattle Place (left in and left out movements only) to cater for construction traffic movements generated by the proposed Cockle Bay Wharf redevelopment and the adjacent IMAX Cinema development during construction;

- provide a convenient and appropriate environment for pedestrians;

- minimise effects on pedestrian movements and amenity;

- maintain appropriate capacity for pedestrians at all times along the pedestrian promenade and connections to/from Sussex Street;

- maintain convenient access and circulation for buses and coaches;

- provide appropriate safety fencing/hoardings around the site compound and adjacent to the construction activity;

- manage and control construction traffic movements on the adjacent road network and vehicle movements to and from the site;

- maintain traffic capacity at intersections and mid-block in the vicinity of the site;

- construction work zones adjacent to and directly above the Western Distributor will be undertaken at night during agreed working hours. This work will require the temporary closure of part of the northbound and/or southbound carriageways of the freeway, adjacent to the construction activity;

- the temporary lane closures of the Western Distributor, will be subject to approval by RMS and TMC;

- manage and control traffic diversions around the construction activity associated with the temporary partial closure of the Western Distributor;

- maintain access to properties adjacent to the site;

- restrict construction vehicle activity to designated truck routes through the area;

- construction access driveways to allow trucks to enter and exit the site in a forward direction;

- maintain safety for workers;
- the construction access driveways and the on-street traffic diversions to be managed and controlled by qualified traffic controllers;
- construction hoardings/fencing and scaffolding to be erected around the construction site, with overhead protection provided where required;
- construction vehicles to be accommodated on-site or within the on-street works zones adjacent to the construction activity;
- all trucks removing demolition material from the site to be loaded from the on-site construction compounds;
- pedestrian movements adjacent to the site to be protected with the erection of Class B construction hoardings and containment fencing/barriers;
- pedestrian movements across the construction access driveways to be managed and controlled by traffic controllers when the driveway is in use;
- construction activity to be carried out in accordance with approved hours of work;
- the preparation of the construction traffic management plans, signage detail, control of pedestrians and control and management of construction activity/ vehicles in the vicinity of the site will be the responsibility of the appointed builder.

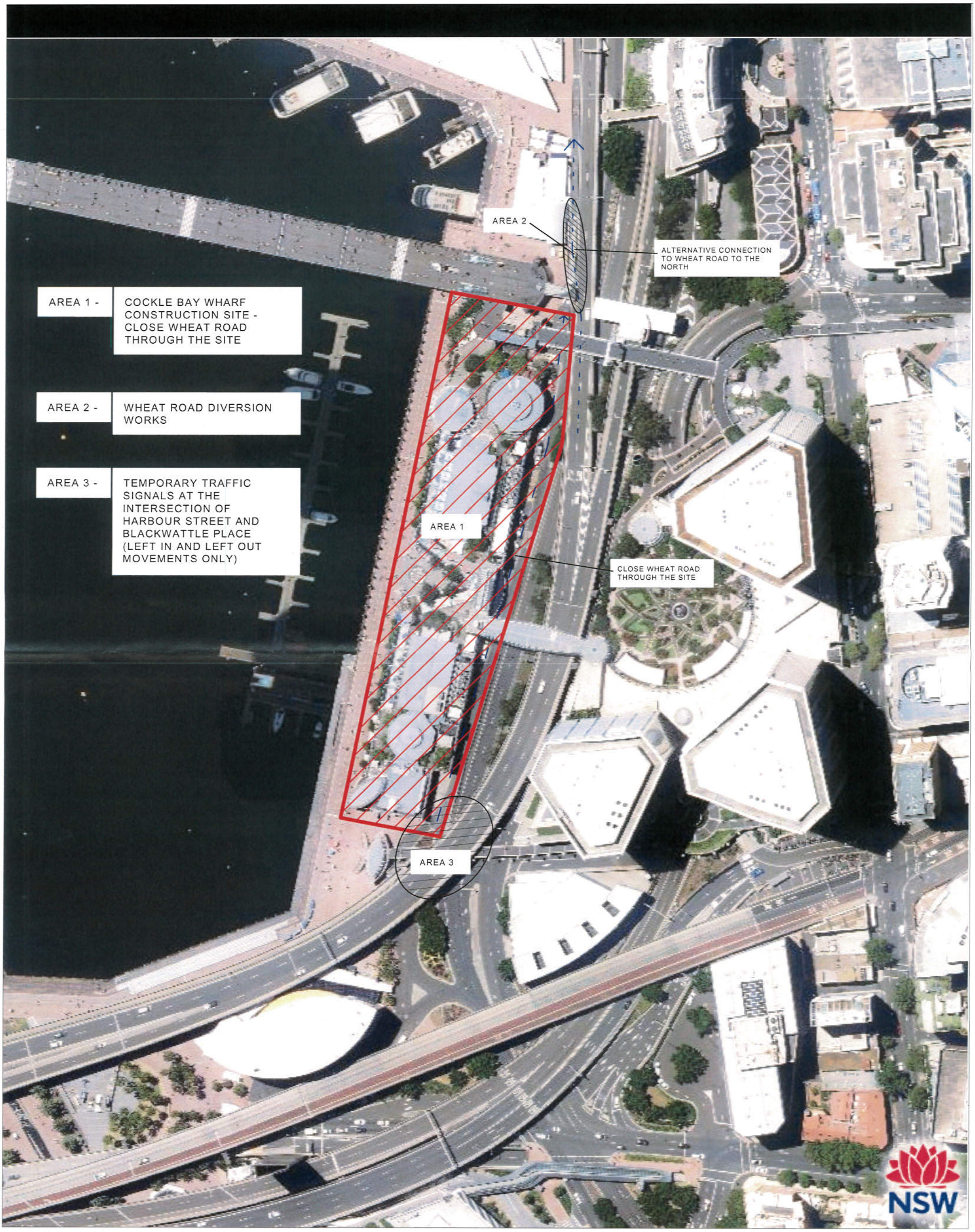
2.68 The principles of construction traffic management presented in this report will be used as the basis for the preparation of the construction traffic management plans for the various stages of construction and for ongoing negotiations with the authorities.

Location Plan

Colston Budd Rogers & Kafes Pty Ltd

DRAWN BY CBRK Pty Ltd_jc Ref: 10166 06.10.2016

Figure 1

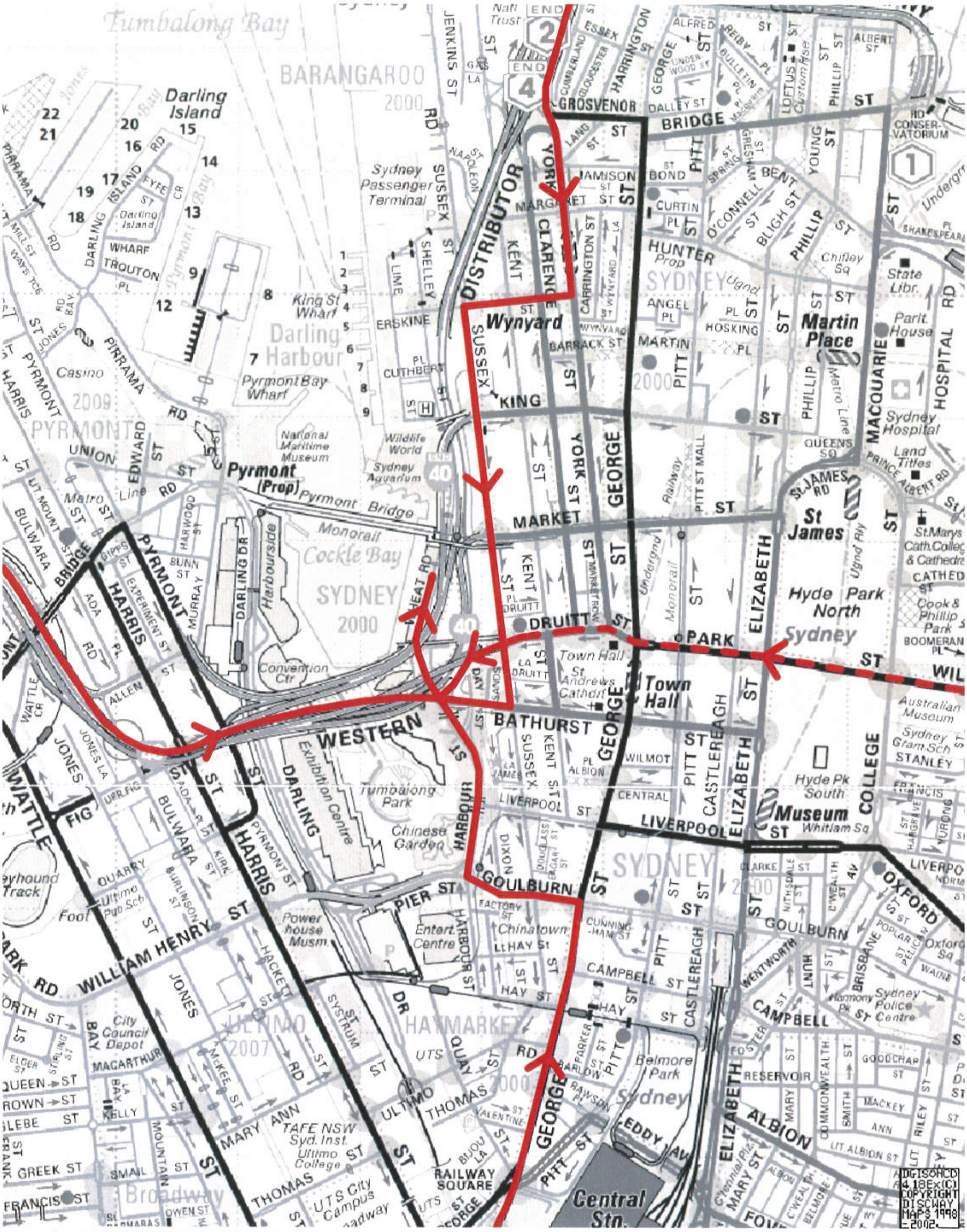


Cockle Bay Wharf Construction Areas

Colston Budd Rogers & Kafes Pty Ltd

DRAWN BY CBRK Pty Ltd_mr Ref: 10166 10.10.2016

Figure 2



Truck Routes - Approach Routes

Colston Budd Rogers & Kafes Pty Ltd

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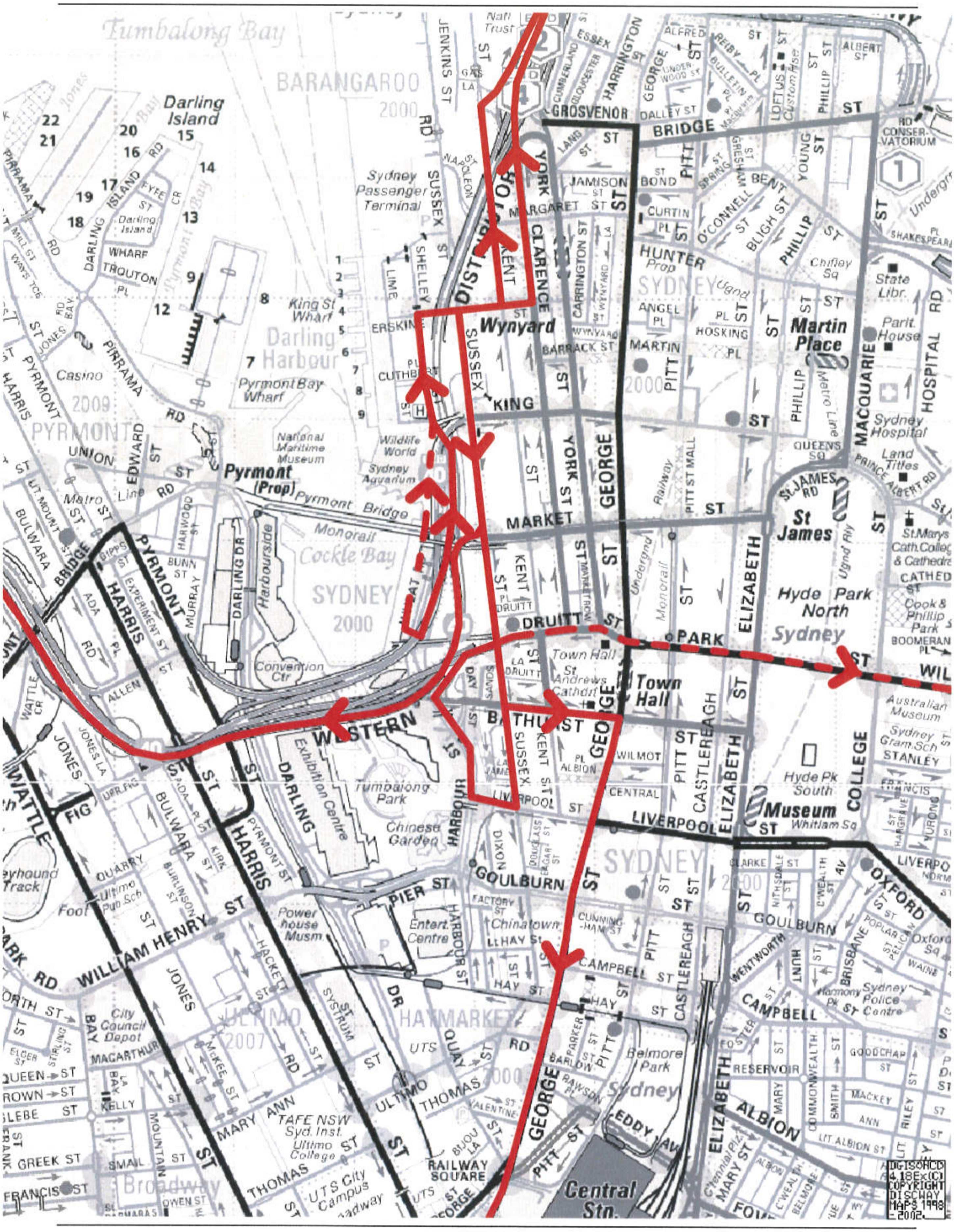
Figure 3



Truck Routes - Departure Routes

Colston Budd Rogers & Kafes Pty Ltd

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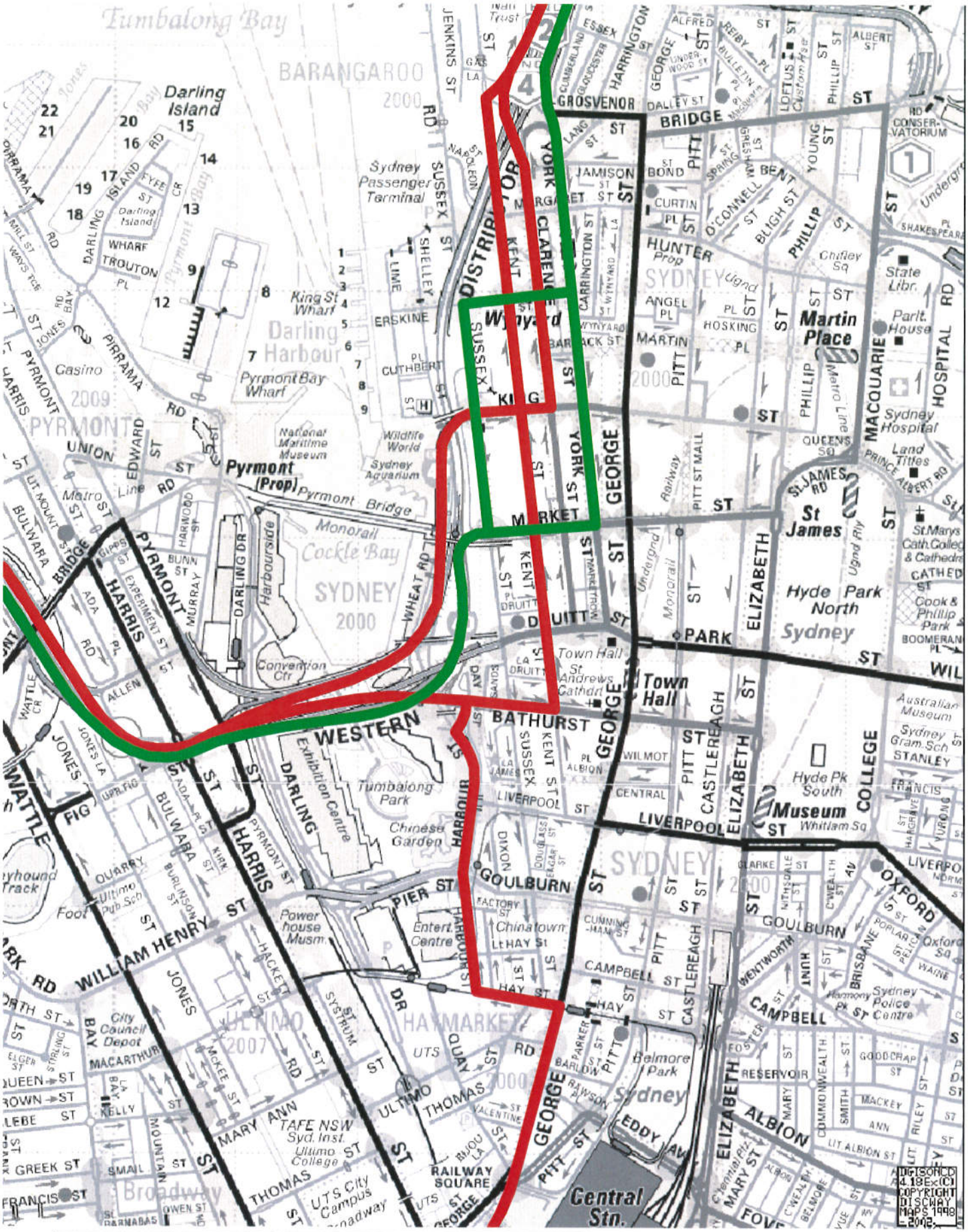
Figure 4



Western Distributor northbound closed at king street off-ramp and harbour street northbound closed at Bathurst Street

Western Distributor southbound on-ramp closed at Bradfield Highway

Traffic Diversions

Colston Budd Rogers & Kafes Pty Ltd

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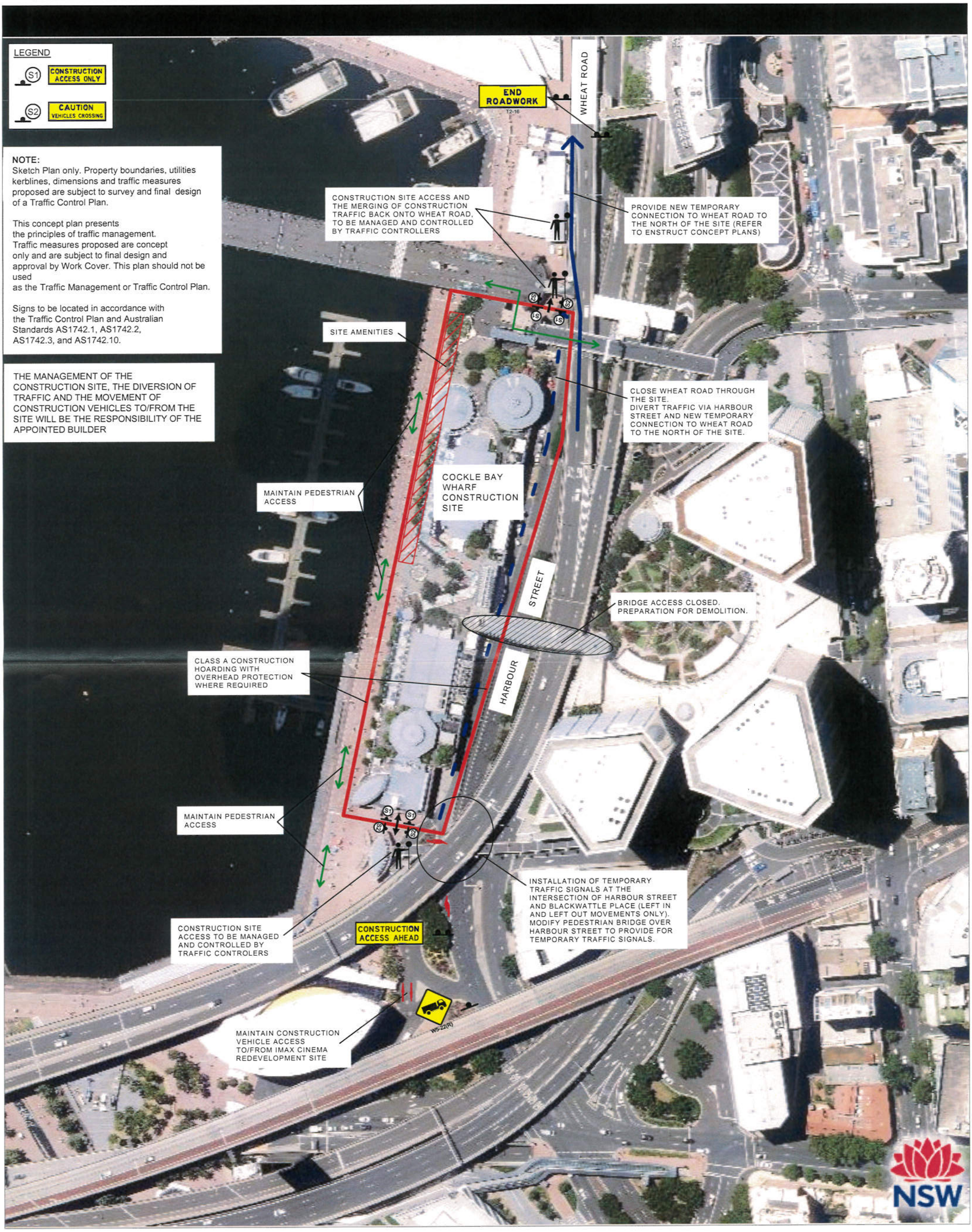
Figure 5



Principles of Construction Traffic Management - Wheat Road Diversion Works

Figure 6

Colston Budd Rogers & Kafes Pty Ltd

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APPENDIX A

CONCEPT DEMOLITION PLANS FOR COCKLE BAY WHARF

1 OF 5

CBWR-CMP-SK03
DEMOLITION STAGING PLAN
PART 1

MULTIPLEX

GPT The GPT Group

Brookfield

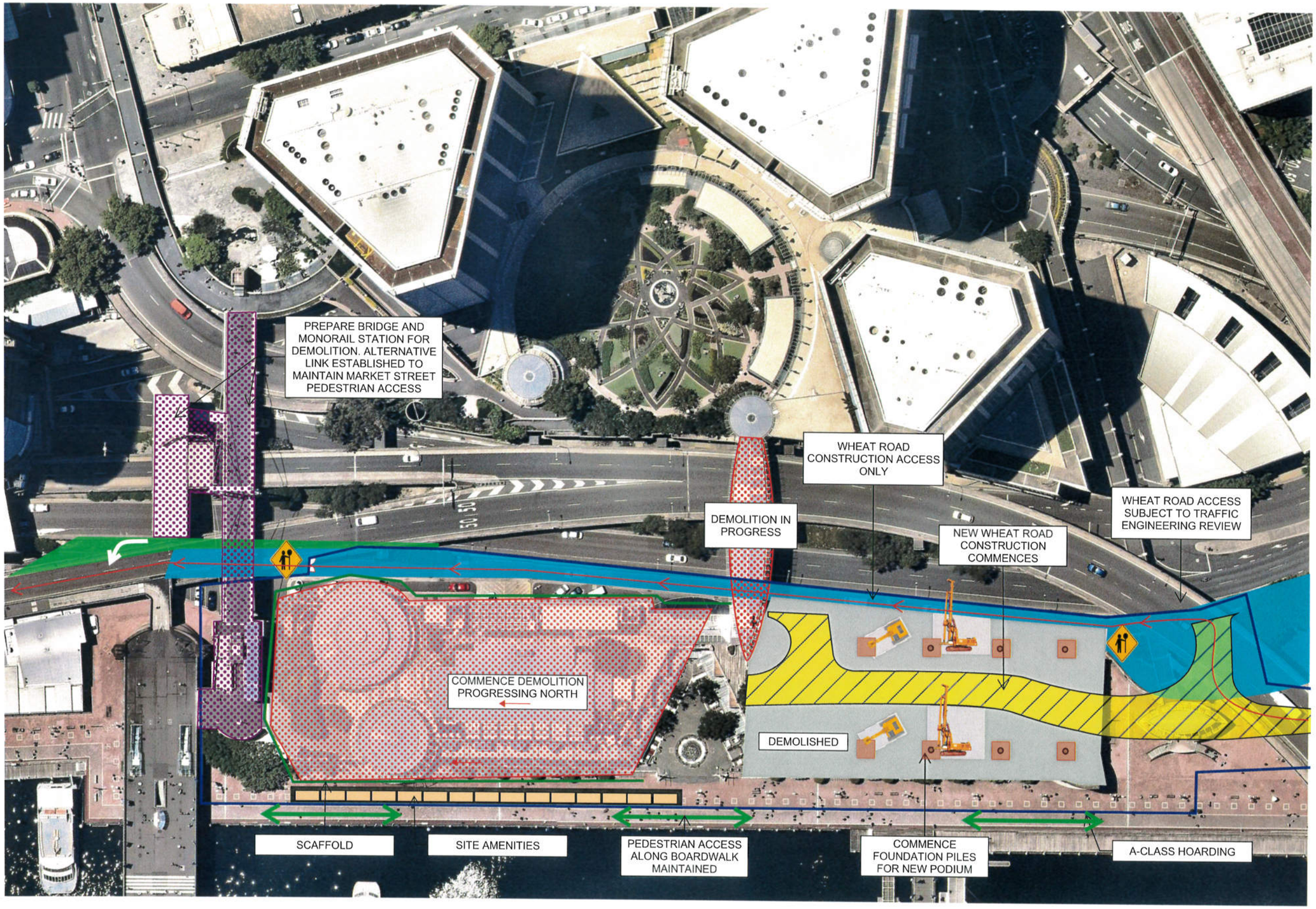
AMP CAPITAL

Project
Cockle Bay Wharf Redevelopment

Drawing
Demolition Staging Plan - Part 1

Drawing ID
CBWR-CMP-SK03

Date
21/9/2016



CBWR-CMP-SK04
DEMOLITION STAGING PLAN
PART 2

MULTIPLEX

GPT
The GPT Group

Brookfield

AMP CAPITAL

Project
Cockle Bay Wharf Redevelopment

Drawing
Demolition Staging Plan - Part 2

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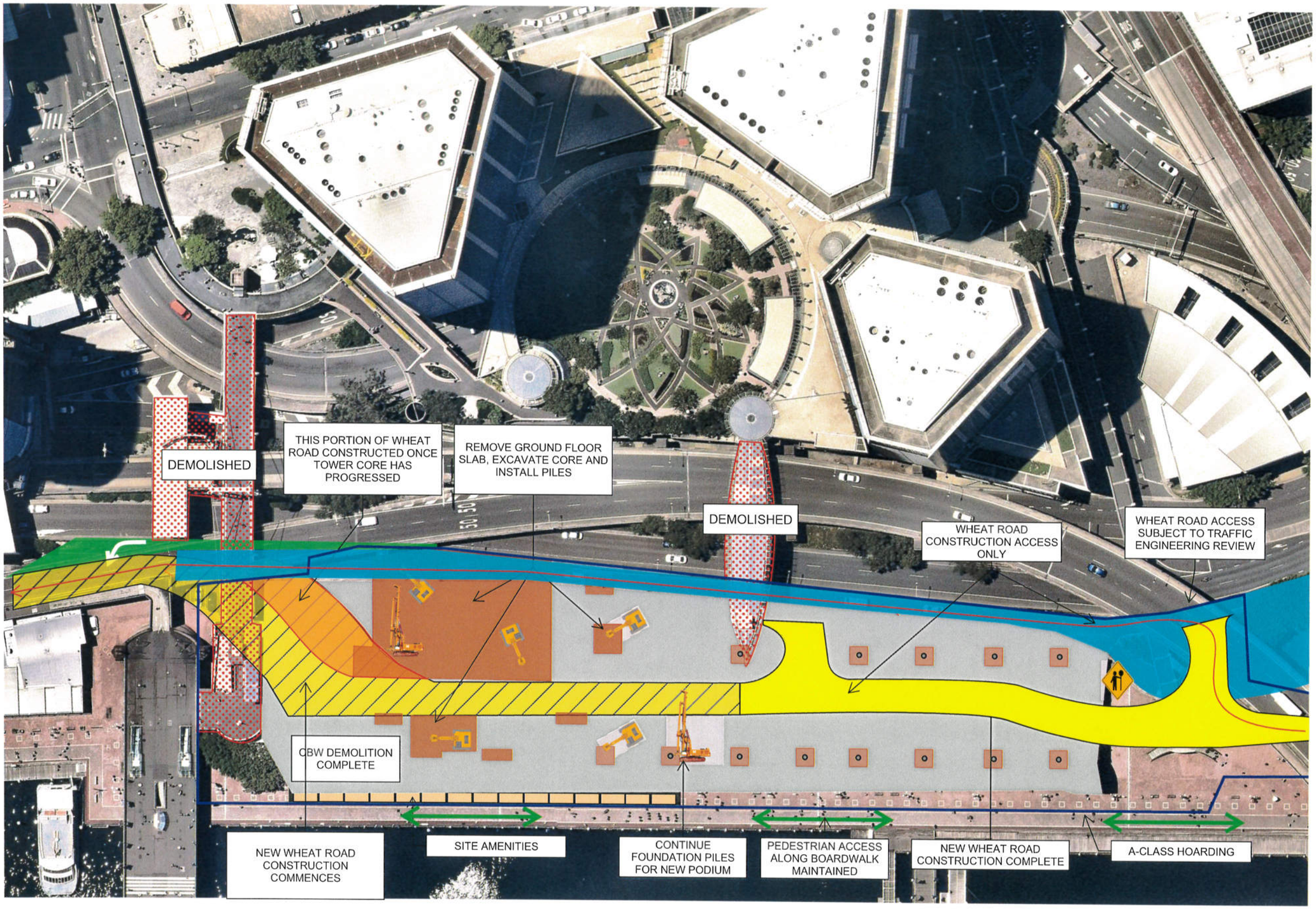
Date
21/9/2016



CBWR-CMP-SK06
DEMOLITION STAGING PLAN
PART 3

MULTIPLEX

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Project
Cockle Bay Wharf Redevelopment

Drawing
Demolition Staging Plan - Part 3

Drawing ID
CBWR-CMP-SK05

Date
21/9/2016

4 OF 5

CBWR-CMP-SK06
DEMOLITION STAGING PLAN
PART 4

MULTIPLEX

GPT
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Brookfield

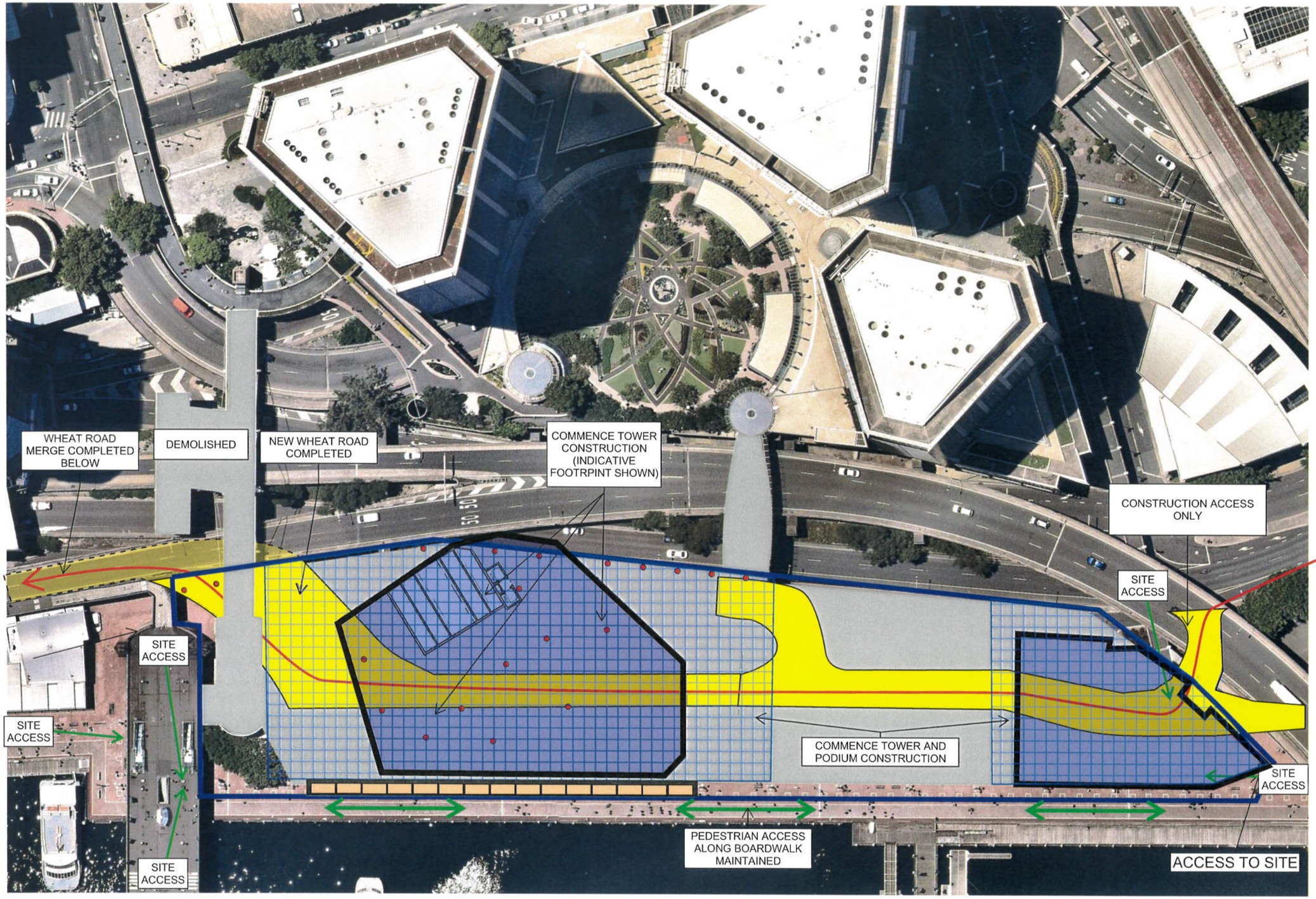
AMP CAPITAL

Project
Cockle Bay Wharf Redevelopment

Drawing
Demolition Staging Plan - Part 4

Drawing ID
CBWR-CMP-SK06

Date
21/9/2016



5 OF 5

CBWR-CMP-SK07
DEMOLITION STAGING PLAN
PART 5

MULTIPLEX

GPT The GPT Group

Brookfield

AMP CAPITAL

Project
Cockle Bay Wharf Redevelopment

Drawing
Demolition Staging Plan - Part 5

Drawing ID
CBWR-CMP-SK07

Date
21/9/2016

APPENDIX B

THE CITY OF SYDNEY
STANDARD REQUIREMENTS FOR
CONSTRUCTION TRAFFIC PLANS

APPENDIX

The City of Sydney Standard Requirements for Construction Traffic Management Plan

The developer or contractor undertakes to follow and abide by the following conditions at all times during the demolition, excavation and construction works at (Please Insert Address Here and DA No Here)

1. Details of any roads that may not be used by construction traffic – site specific – to be completed as part of CTMP

2. Details of routes to and from site and entry and exit points from site – site specific – to be completed as part of CTMP

3. The approved truck route plan shall form part of the contract and must be distributed to all truck drivers.

4. All vehicles must enter and exit the site in a forward direction (unless specific approval is received from the City's Construction Regulation Unit).

5. All Traffic Control Plans associated with this Construction Traffic Management Plan must comply with Australian Standards and Roads and Maritime Services (RMS formerly RTA) Traffic Control At Work Sites Guidelines.

6. The applicant must provide the council with details of the largest truck that will be used during the demolition, excavation and construction, prior to the start of any work on site and obtain approval from City's Construction Regulation Unit for the use of this vehicle.
   NOTE: No dog trailers or articulated vehicles (AV) to be used without City's Construction Regulation Unit approval.

7. The developer must obtain a permit from the City's Construction Regulation Unit regarding the placing of any plant/equipment on public ways.

8. No queuing or marshalling/parking of trucks is permitted in any public road.

9. All vehicles associated with the development shall be parked wholly within the site. All site staff related with the works are to park in a designated off street area, no staff are to park on the street.

10. All loading and unloading must be within the development site or at an approved "Works Zone".

11. The applicant must comply with development consent for hours of construction.

12. Traffic Controllers are NOT to stop traffic on the public street(s) to allow trucks to enter or leave the site. They MUST wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - the vehicles already on the road have right-of-way.

13. Trucks are not allowed to reverse into the site from the road for safety reasons (unless specific approval is obtained from the City's Construction Regulation Unit).

14. Pedestrians may be held only for very short periods to ensure safety when trucks are leaving or entering BUT you must NOT stop pedestrians in anticipation i.e. **at all times the pedestrians have right-of-way on the footpath not the trucks**.

15. Physical barriers to control pedestrian or traffic movements need to be determined by the Construction Regulations Unit prior to commencement of work.

16. Any temporary adjustment to a Bus Stop or Traffic Signals will require the applicant to obtain approval from the STA and RMS respectively prior to commencement of works.

17. The developer must apply to the Construction Regulations Unit to organise appropriate approvals for temporary driveways, cranes and barricades etc.

18. The developer must apply to Building Compliance Unit to organise appropriate approvals for hoarding prior to commencement of works.

19. The developer must apply to the Work Zones Co-ordinator to organise appropriate approvals for the Work Zones.

20. The developer must apply to the Construction Regulations Unit to organise appropriate approvals for partial road closures.

21. The developer must apply to the Works Zones Co-ordinator to organise appropriate approvals for full road closures.

22. The developer must apply to the Roads and Maritime Services', Traffic Management Centre for approval of any road works on State Roads or within 100m of Traffic Signals and receive an approved Road Occupancy Licence. A copy of this must be provided to the City of Sydney.

23. The Construction Traffic Management Plan is for the excavation, demolition and construction of building works, not for road works (if required) associated with the development. Any road work will require the developer or the contractor to separately submit a Traffic Control Plan to the City and RMS for consideration. Also, WorkCover requires that Traffic Control Plans must comply with Australian Standards 1742.3 and must be prepared by a Certified Traffic Controller (under RMS regulations).

24. Please note that the provision of any information in this Construction Traffic Management Plan will not exempt the developer from correctly fulfilling all the other conditions relevant to the development consent for the above site.

DPT & DPPT OPERATOR PTY LTD

TRAFFIC REPORT FOR PROPOSED REDEVELOPMENT OF COCKLE BAY WHARF, DARLING HARBOUR

OCTOBER 2016

COLSTON BUDD ROGERS & KAFES PTY LTD
ACN 002 334 296
Level 18 Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067

Telephone: (02) 9411 2411
Facsimile: (02) 9411 2422
Email: cbrk@cbrk.com.au

REF: 10166/2

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1. INTRODUCTION

1.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by DPT & DPPT Operator Pty Ltd to prepare a report examining the traffic implications of the proposed redevelopment Cockle Bay Wharf, Darling Harbour.

1.2 Cockle Bay Wharf is located on the eastern side of Darling Harbour, as shown on Figure 1. Access to the site is available from Harbour Street via Wheat Road. Wheat Road passes through the site in a northerly direction and Harbour Street is located adjacent to the eastern boundary of the site. The site is currently occupied by a mix of commercial, retail and recreational uses.

1.3 The proposed redevelopment will include some 110,000m^2 of commercial area, some 25,000m^2 of retail area (including food, beverage and retail shops) and some 12,000m^2 of publicly accessible open space. The proposed redevelopment will include an extension of the development over the northbound and southbound carriageways of the Western Distributor and the potential diversion of Wheat Road through the site.

1.4 The report considers the traffic matters raised in the SEARS issued by NSW Planning and Environment for the redevelopment of Cockle Bay issued on 23 June 2016 (Section 8 Transport and Accessibility – construction and operation). These are summarised below:

- existing traffic conditions;
- estimated traffic generation of the proposed development;

- impact of the proposed development on the operation of the surrounding road network;
- provision of appropriate on-site parking;
- measures to encourage travel by means other the private car;
- service vehicle requirements;
- site access requirements; and
- construction impacts.

1.5 The traffic effects of the proposed redevelopment of Cockle Bay Wharf are set out through the following chapters:

- Chapter 2: describing existing conditions; and

- Chapter 3: assessing the implications of the proposed development.

2. EXISTING CONDITIONS

Site Location and Road Network

2.1 Cockle Bay Wharf is located on the eastern side of Darling Harbour, as shown on Figure 1. Access to the site is available from Harbour Street via Wheat Road. Wheat Road passes through the site in a northerly direction and Harbour Street is located adjacent to the eastern boundary of the site. The site is currently occupied by a mix of commercial, retail and recreational uses. Surrounding land use is predominantly commercial, recreational and retail uses. The IMAX theatre is located to the south of the site and has been approved for a new mixed use development (comprising two levels of retail/mixed use space, 23 level hotel/serviced apartments and new IMAX theatre).

2.2 The roads adjacent to the site include Harbour Street, Wheat Road, Blackwattle Place and Shelly Street. Harbour Street is located east of the site and runs in a north south direction connecting the southern part of Sydney CBD with the Harbour Bridge (connecting to the Western Distributor to the north of the site). Adjacent to the site it is a divided road providing two to three lanes in each direction.

2.3 Wheat Road runs north south within the site connecting Harbour Street in the south with Shelley Street in the north. It is one way northbound with a single lane in a five metre carriageway. Wheat Road provides access to the IMAX site, Cockle Bay Wharf and to the King Street Wharf precinct which is north of the site and has three connections from Harbour Street (all left turns). These are to the IMAX site, at the southern end of Cockle Bay Wharf and just north of the site.

Kerbside parking is permitted along the western side Wheat Road, generally for buses, coaches, taxis and loading. Wheat Road provides service access to development fronting Cockle Bay. There is no egress from Wheat Road onto Harbour Street.

2.4 Blackwattle Place is located on the eastern side of Harbour Street and is a no through road. It functions as a service access road to Darling Park. The intersection of Blackwattle Place and Harbour Street is controlled by a traffic signal controlled t-intersection with no right turn from Blackwattle Place. Northbound traffic flow on Harbour Street is not affected by these traffic signals.

2.5 Shelley Street is the northern extension of Wheat Road passes through the King Street Wharf precinct. It provides for two way traffic and connects to Erskine Street and Sussex Street. All vehicles departing Cockle Bay Wharf are required to exit via Shelley Street.

Traffic Flows

2.6 Weekday morning and afternoon peak period traffic counts have been undertaken along Wheat Road and Harbour Street at the following locations:

- Harbour Street/Wheat Road (IMAX access);
- Harbour Street/Wheat Road (Cockle Bay Wharf access);
- Harbour Street/Wheat Road (King Street Wharf access); and
- Harbour Street/Blackwattle Place.

2.7 The results of the surveys are shown in Figures 2 and 3 and summarised in Table 2.1.

Table 2.1: Existing Two-Way (Sum of Both Directions) Peak Hour Traffic Flows		
Road	**Weekday Morning**	**Weekday Afternoon**
Harbour Street		
– north King Street Wharf Access	1790	2350
– north of Cockle Bay Wharf Access	2520	2575
– north of Imax Access	2575	2645
Wheat Road		
– north King Street Wharf Access	790	340
– north of Cockle Bay Wharf Access	65	130
– north of Imax Access	10	60
Blackwattle Place		
– east of Harbour Street	15	15

2.8 Table 2.1 shows that:

- Harbour Street carried traffic flows of some 1,800 to 2,600 vehicles per hour two-way during the peak periods;

- Wheat Road carried traffic flows of some 10 to 790 vehicles per hour two-way during the peak periods. Traffic flows were highest in the northern section of Wheat Road; and

- Blackwattle Place carried low traffic flows of some 15 vehicles per hour two-way during the peak periods.

2.9 In addition to the traffic counts, observations were made of queuing on Harbour Street (in both directions) in the vicinity of Blackwattle Place during the weekday morning and afternoon peak periods. The observations were made over three days in August/September 2016 between 7.00am and 9.30am in the morning and 3.30pm and 6.30pm in the afternoon. The results are summarised below.

- in the weekday morning survey period there was no queuing northbound on

Harbour Street through the intersection with Blackwattle Place;

- in the weekday afternoon survey period there were three occasions when queuing northbound on Harbour Street extend to the intersection with Blackwattle Place. This represented 0.2% of the survey period.
- in the weekday morning survey period there were 40 occasions when queuing southbound on Harbour Street extend to the intersection with Blackwattle Place. This represented 9% of the survey period; and
- in the weekday afternoon survey period there were eight occasions when queuing southbound on Harbour Street extend to the intersection with Blackwattle Place. This represented 1.5% of the survey period

2.10 When queuing on Harbour Street did extend to Blackwattle Place it was noted that:

- on the three occasions the northbound queue extended to Blackwattle Place the queue lasted less than a minute within a five minute period; and
- the majority of the time (65%) the southbound queue extended to Blackwattle Place the queue lasted than a minute within a five minute period. The maximum time was some two minutes.

2.11 Thus in summary the observations found that:

- there is effectively no queuing northbound on Harbour Street back to Blackwattle Place; and
- for the majority of the time there is no queuing southbound on Harbour Street to Blackwattle Place. The occasional queuing that does occur (mainly in the morning peak period), is of a short duration.

Intersection Operations

2.12 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the SIDRA computer program. SIDRA analyses intersections controlled by traffic signals, roundabouts and signs.

2.13 SIDRA provides a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

2.14 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.15 The SIDRA analysis found that the signalized intersection of Harbour Street and Blackwattle Place currently operates with average delays of less than 15 seconds per vehicle in the peak periods. This represents level of service A/B a good level of service. Observations noted that due to the low traffic flows in Blackwattle Place the traffic signals were only activated occasionally and that the green time allocated to turning to/from Blackwattle Place was a minimum.

Public Transport

2.16 The site is located close to major public transport routes and nodes within the CBD, as shown on Figure 4. Wynyard and Town Hall railway stations are within some 5 to 10 minutes walking distance. These are major stations on the Cityrail

network and provide two of the major stops within the CBD. All suburban rail services to and through the City stop at one or both of these stations.

2.17 Rail services operate on the Airport and East Hills Line, Bankstown Line, Eastern Suburbs and Illawarra Line, Inner West Line, North Shore and Western Line, Northern Line and Southern Line. The proposed Sydney metro rail link (connecting Chatswood to Bankstown via the CBD and Sydenham) is currently in the early stages of construction with an estimated completion date of 2024. When completed this will significantly increase the capacity of the rail network to/from the CBD.

2.18 Numerous bus services operate along many of the streets within the vicinity of the site, with major bus facilities located at Wynyard Park and Queen Victoria Building bus terminus. Bus services provide links to areas north, east, inner west and south. A number of services also operate along Market Street, King Street, Clarence Street and York Street.

2.19 The CBD light rail is currently under construction along George Street to the east of the site. This will connect the CBD to Sydney's eastern suburbs through Surry Hills and Randwick further improving public transport access to the CBD. The CBD light rail will be within some 500 metres of the site. The existing inner west light rail is located to the west and south of the site with the nearest stop (convention centre) located 400 metres away on the western side of Darling Harbour.

2.20 Thus in summary the site is well serviced by existing and future public transport services.

Cycling

2.21 The City of Sydney bicycle network, as shown on Figure 5, includes a mix of on-road cycleways and shared cycle routes. In the vicinity of the site these routes include Sussex Street, King Street and Pyrmont Bridge to the north, and Kent Street to the east of the site. An off road shared path travels north-south through Darling Harbour connecting Pyrmont Bridge Road with Union Street and Liverpool Street. Thus the site is readily accessible cyclists.

Pedestrians

2.22 The site is located adjacent to Darling Harbour which has existing pedestrian connections to the surrounding area as shown in Figure 6. These include:

- pedestrian overpass located immediately south of the site. This provides direct access to town hall station via Druitt Street;
- pedestrian overpass connecting Cockle Bay Wharf with Darling Park and Sussex Street;
- Bathurst Street pedestrian bridge located south of the site;
- At grade pedestrian crossings at the intersection of Bathurst Street and Harbour Street;
- Pyrmont Bridge, located north of the site connection the CBD and Pyrmont via Darling Harbour;
- Pedestrian paths around Darling Harbour including along the western frontage of the site; and
- At grade crossings and pedestrian overpass at the intersection of Market Street and Sussex Street.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 The proposed redevelopment will include some 110,000m^2 of commercial area, some 25,000m^2 of retail area (including food, beverage and retail shops) and some 12,000m^2 of publicly accessible open space. The proposed redevelopment will include an extension of the development over the northbound and southbound carriageways of the Western Distributor and the potential diversion of Wheat Road through the site. This assessment has been based on Wheat Road being diverted through the site, becoming two-way and providing an exit onto Harbour Street.

3.2 This chapter assesses the traffic implications of the proposed development through the following sections:

- public transport;
- pedestrians and cyclists;
- travel access plan;
- parking provision;
- access, servicing and internal layout;
- traffic generation and effects; and
- summary.

Public Transport

3.2 As previously discussed, the site is well located to existing and future public transport services in the area. It is located within close walking distance to

Wynyard and Town Hall railway stations. All suburban rail services to and through the city stop at one or both of these stations. The site is also located close to existing and future light rail services.

3.3 Bus services from major bus facilities located at Wynyard Park and Queen Victoria Building also link the site to areas to the north, east, inner west and south. A number of services also operate along Market Street, King Street, Clarence Street and York Street.

3.4 The site provides opportunities to for people to travel to the site by means other than car. Thus the proposed development is consistent with government objectives and the planning principles of:

(a) improving accessibility to employment and services by walking, cycling, and public transport;

(b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

(c) moderating growth in the demand for travel and the distances travelled, especially by car; and

(d) supporting the efficient and viable operation of public transport services.

3.5 As noted previously the assessment has been based on Wheat Road being realigned within the site. Provision will be made along the western side of the realigned Wheat Road for taxi's and coaches to set down/pick up passengers.

Pedestrians and Cyclists

3.6 As noted in Chapter 2 the subject site is located in an area serviced by good pedestrian and cyclist networks. The proposed development will improve pedestrian/cyclist access by reconnecting the CBD with Darling Harbour via Darling Park with the extension of the development over the Western Distributor. To encourage and cater for travel by cyclists, appropriate on site cycle facilities will be provided including secure and casual cycle parking and end of trip facilities (toilets, change/locker rooms and showers).

3.7 The proposed development will be designed to provide good pedestrian access to Darling Harbor and Darling Park with high standard pedestrian links promoting pedestrian travel between Sussex Street and Darling Harbour. These will be designed to integrate with the existing pedestrian infrastructure.

Travel Access Guide

3.8 To encourage travel modes other than private vehicle, a travel demand management approach should be adopted, through a travel access guide to meet the specific needs of the site, including visitors and employees. Once the tenants of the proposed development are known, the specific requirements and needs of the employees/visitors will be incorporated in a work place travel plan and transport access guide to support the objectives of encouraging the use of public transport.

3.9 The principles of the work place travel plan and travel access guide will include the following:

- encourage the use of public transport, including rail services through Wynyard and Town Hall, light rail services and bus services through the CBD;

- work with public transport providers to improve services;

- encourage public transport by employees and visitors through the provision of information, maps and timetables;

- raise awareness of health benefits of walking (including maps showing walking and cycling routes, including through and adjacent to the site);

- encourage cycling by providing safe and secure bicycle parking, including the provision of lockers and change facilities;

- provide a restrictive parking provision consistent with Council's controls and the government's objective of reducing traffic generation.

3.10 The travel access guide should be developed in accordance with the principles identified by TfNSW and RMS, and distributed with marketing material for the proposed development. The travel access guide would assist in delivering sustainable transport objectives by considering the means available for reducing dependence solely on cars for travel purposes, encouraging the use of public transport, cycling and walking and supporting the efficient and viable operation of public transport services

Parking Provision

3.11 The subject site is located on land under the control of SHFA and bounds the western edge of the CBD. For the purposes of estimating parking provision the rates set out in the City of Sydney LEP 2012 have been used. The parking rates in LEP 2012 are maximum rates and reflect Council's objective of reducing traffic and encouraging use of no-car based travel. For the proposed development the following LEP 2012 rates apply:

M = (G x A)/(50x T) where

M = maximum number of parking spaces;
G = Gross Floor Area of retail or commercial floor space;
A = Site Area; and
T = Total Gross Floor Area of Development

3.12 The site area is some 10,000m^2 with some 110,000m^2 commercial and some 25,000m^2 retail floorspace. Using the above formula the proposed development could provide a maximum of 200 parking spaces (155 commercial and 45 retail spaces with parking allocated to commercial and retail tenants). On the realigned Wheat Road some short term set down/pick up parking (Kiss and Ride) will be provided.

3.13 Parking provision will be finalized in a Stage 2 DA, but would not exceed the maximum allowed under the provisions of LEP 2012. Appropriate disabled parking will be provided.

3.14 With regards to bicycle parking the rates in the City of Sydney DCP 2012 have been adopted. For the proposed development the following rates in DCP are relevant:

- commercial – 1/150m^2 employees plus 1/400m^2 visitor;
- retail – 1/200m^2 employees plus 1/300m^2 visitor; and
- open space – 1/1000m^2 employees plus 1/200m^2 visitor.

3.15 Applying these rates the proposed development would require the following number of bicycle spaces:

- commercial – 1,008 (733 employee and 275 visitor);
- retail – 208 (125 employee and 83 visitor); and
- open space – 72 (12 employee and 60 visitor).

3.16 Staff/employee bicycle parking will be located in secure locations with appropriate end of trip facilities (showers, change rooms, lockers and bathrooms). Visitor bicycle parking will distributed around the site in accessible locations.

Access, Servicing and Internal Layout

3.17 Vehicular access to the proposed development will be provided from Wheat Road. As part of the proposed development Wheat Road will be realigned within site to provide:

- for two-way traffic to the northern boundary of the site;
- one traffic lane in each direction;
- a turning circle at the northern end of the site;

- set down/pick up for coaches and taxis on the western side of Wheat Road;
- short section of short term parking for private car set down/pick-up;
- access to off street parking and loading areas on the eastern side of Wheat Road;
- reconfiguration of the Cockle Bay connection of Wheat Road to Harbour Street to opposite Blackwattle Place with modifications to the existing traffic signals allow egress from Wheat Road onto Harbour Street.

3.18 Off street parking will be provided within podium level parking areas accessed from Wheat Road. All parking areas (driveways, ramps, circulating aisles and parking bays) will be designed to comply with requirements of AS2890.1-2004 and AS2890.6-2009.

3.19 Loading for the new development will be provided within a loading dock with access off the reconfigured Wheat Road. The docks will be designed to accommodate rigid trucks and to comply with the requirements of AS2890.2-2002 with all trucks entering and departing the docks in a forward direction.

3.20 Further details on the design of the realigned Wheat Road, car parking areas and loading docks will be provided in the Stage 2 DA.

Traffic Generation and Effects

3.21 Traffic generated by the proposed development will comprise private vehicles, taxis, coaches and service vehicles. The morning and afternoon peak hour traffic generation of the existing uses on the site are summarised is below:

- some 53 vehicles per hour in the morning peak hour comprising 32 cars, 14 trucks, 3 coaches and 4 taxis; and
- some 69 vehicles per hour in the afternoon peak hour comprising 19 cars, 1 truck, 7 coaches and 42 taxis

3.22 The proposed development will generate additional traffic associated with increased trucks, coaches and taxis to the new development, and the new parking provided on site. For the purposes of assessing the traffic effects of the proposed development the following assumptions:

- a 50% increase in existing traffic generation (car, truck, coach and taxi generation); and
- traffic generated by the new car parking on site. A generation rate of 0.2 vehicles per hour (two way) per space in the morning/afternoon peak hours, has been adopted (reflecting the low traffic generation of commercial/tenant parking within the CBD).

3.23 Based on these assumptions the proposed development would generate an additional 85 and 100 vehicles per hour (two way) in the morning and afternoon peak hours.

3.24 As part of the proposed development it is proposed to make Wheat Road two way and reconfigure the Cockle Bay connection of Wheat Road to Harbour Street (at the southern end of the site opposite Blackwattle Place) with modifications to the existing traffic signals allow egress from Wheat Road onto Harbour Street. Two options for this egress have been assessed:

- left turn exit only onto Harbour Street (traffic signal controlled); and

- left and right turn exit onto Harbour Street (traffic signal controlled).

3.25 With a left turn only onto Harbour Street, 35% of existing and additional traffic departing the site has been assumed to turn left onto Harbour Street. Redistributed existing morning and afternoon peak hour traffic flows (including traffic from the IMAV redevelopment) are shown on Figures 7 and 8 and summarised in Table 3.1.

Table 3.1: Existing + Development Two-Way (Sum of Both Directions) Peak Hour Traffic Flows – Left Out onto Harbour Street

Road	**Weekday Morning**		**Weekday Afternoon**	
	Existing	With Dev	Existing	With Dev
Harbour Street				
– north King Street Wharf Access	1790	1840	2350	2485
– north of Cockle Bay Wharf Access	2520	2570	2575	2700
– north of Imax Access	2575	2650	2645	2725
Wheat Road				
– north King Street Wharf Access	790	825	340	375
– north of Cockle Bay Wharf Access	65	150	130	290
– north of Imax Access	10	35	60	120
Blackwattle Place				
– east of Harbour Street	15	15	15	15

3.26 Examination of Table 3.1 reveals that with development traffic in place and a left turn exit onto Wheat Road:

- Traffic flows on Harbour Street would increase by some 50 to 125 vehicles per hour (two way); and
- Traffic flows on Wheat Road would increase by some 25 to 130 vehicles per hour (two way).

3.27 With left and right turns onto Harbour Street 35% of the existing and additional traffic departing the site has been assumed to turn left onto Harbour Street and

35% assumed to turn right onto Harbour Street. Redistributed morning and afternoon peak hour traffic flows are summarised in Table 3.2 and displayed on Figures 9 and 10.

Table 3.2: Existing + Development Two-Way (Sum of Both Directions) Peak Hour Traffic Flows – Left & Right Out onto Harbour Street

Road	**Weekday Morning**		**Weekday Afternoon**	
	Existing	With Dev	Existing	With Dev
Harbour Street				
– north King Street Wharf Access	1790	1840	2350	2485
– north of Cockle Bay Wharf Access	2520	2770	2575	2700
– north of Imax Access	2575	2705	2645	2845
Wheat Road				
– north King Street Wharf Access	790	775	340	315
– north of Cockle Bay Wharf Access	65	100	130	230
– north of Imax Access	10	35	60	120
Blackwattle Place				
– east of Harbour Street	15	15	15	15

3.28 Examination of Table 3.2 reveals that with development traffic in place and a left turn exit onto Wheat Road

- Traffic flows on Harbour Street would increase by some 50 to 200 vehicles per hour (two way); and
- Traffic flows on Wheat Road would increase by some 25 to 130 vehicles per hour (two way) with the exception of north of Cockle Bay where there would be a decrease is traffic flows.

3.29 The impact of the proposed egress onto Harbour Street has been assessed using SIDRA. The analysis also includes traffic from the redevelopment of the IMAX site to south (some 70 and 115 vehicles per hour, two way, in the morning and afternoon peak hours). The analysis found that the modified intersection of Harbour Street/Blackwattle Place/Wheat Road would operate with average delays

of less than 15 seconds per vehicle in the morning and afternoon peak periods with left out only and left and right out. Copies of the SIDRA movement summaries are attached.

3.30 The analysis found that the new signals would have minimal effect on traffic flows along Harbour Street. Queuing northbound on Harbour Street would be minimal (95% back of queue of 20 metres) and thus would not impact on the operation of the downstream intersection (Bathurst Street).

3.31 Prior to preparing this report, preliminary discussions were undertaken with RMS regarding the potential for egress from Wheat Road onto Harbour Street at Blackwattle Place. RMS indicated that it did not support the proposed egress due to existing queuing on Harbour Street (both directions) and the impact modifications to the signals would have on Harbour Street traffic flows. RMS also noted that it has long term plans to upgrade the Western Distributor connection to the Harbour Bridge and that this may involve modifications to the Harbour Street connection to the Western Distributor.

3.32 As set out in Chapter 2, there was effectively no queuing northbound on Harbour Street through the Blackwattle Place intersection. Thus the provision of a left turn egress would allow traffic to exit the site satisfactorily. As noted above the SIDRA analysis found that the proposed modifications would result in minimal queuing to northbound traffic flow on Harbour Street and thus would not impact on the downstream intersection at Bathurst Street. In summary the analysis has found that provision of a signalized left turn onto Harbour Street from Wheat Road (at Blackwattle Place) would operate satisfactorily.

3.33 With regard to provision of a right turn out of Wheat Road and the impact on southbound traffic flow on Harbour Street, the observations of queuing on Harbour Street noted that queues can extend back through the Blackwattle Place intersection in the peak periods (mainly in the morning peak period). These queues occur for a short period and generally clear each cycle. Thus provision of a right turn egress from Wheat Road should be satisfactory. However, it is suggested that further modeling (such as a network model of the intersections along Harbour Street) be undertaken of this option.

3.34 Provision of an egress from Wheat Road onto Harbour Street will provide direct egress from the site to the arterial road network and result in less traffic having to pass through Shelley Street and the King Street Wharf precinct located immediately north of the site.

3.35 A concept plan of the modified intersection of Wheat Road/Harbour Street/Blackwattle Place is provided in Attachment B. Further design development of the Wheat Road exit onto Harbour Street will be undertaken in consultation with RMS as part of the ongoing assessment of the proposed development.

Construction Traffic Management Plan

3.36 A preliminary construction traffic management plan has been prepared and is provided in Attachment B.

Summary

3.37 In summary, the main points relating to the traffic implications of the proposed development are as follows:

i) the proposed development is close to existing public transport services and is consistent with government policy objectives to reduce private car travel and encourage public transport use;

ii) The proposed development will result in improved pedestrian connectivity between Darling Harbour and the CBD;

iii) a travel access guide will be implemented for the site;

iv) on-site car parking will be provided within the maximum allowable by LEP 2012;

v) on-site bicycle parking will be provided in accordance with the requirements of DCP 2012;

vi) access arrangements, internal circulation, and servicing will be provided in accordance with AS2890.1-2004, AS2890.2-2002 and AS2890.6-2009;

vii) the road network will be able to cater for the additional traffic from the proposed development;

viii) a left turn egress onto Harbour Street from Wheat Road at Blackwattle Place would be satisfactory with minimal impact on Harbour Street;

ix) further modelling is suggested to determine whether provision of a right turn egress from Wheat Road onto Harbour Street is appropriate;

x) a preliminary construction traffic management plan has been prepared

xi) the traffic matters raised in the SEARS have been addressed;

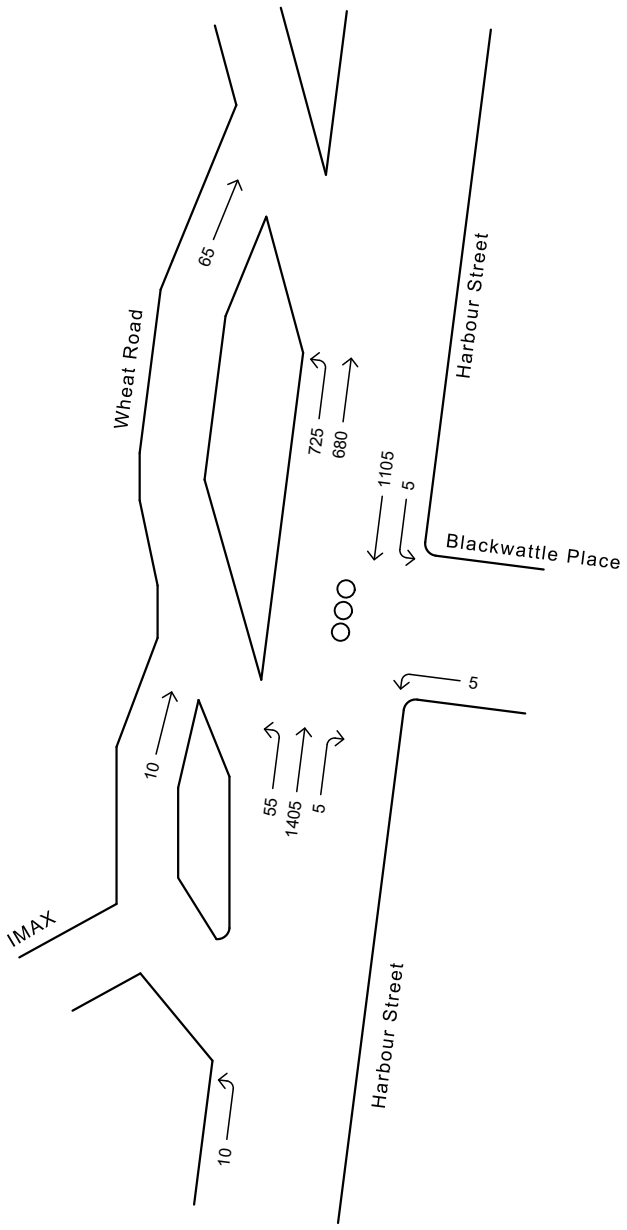
xii) further design development of the Wheat Road exit onto Harbour Street will be undertaken in consultation with RMS as part of the ongoing assessment of the proposed development.

Location Plan

Colston Budd Rogers & Kafes Pty Ltd

DRAWN BY CBRK Pty Ltd_mr   Ref: 10166   21 October 2016

Figure 1



Existing weekday morning peak hour traffic flows

Colston Budd Rogers & Kafes Pty Ltd

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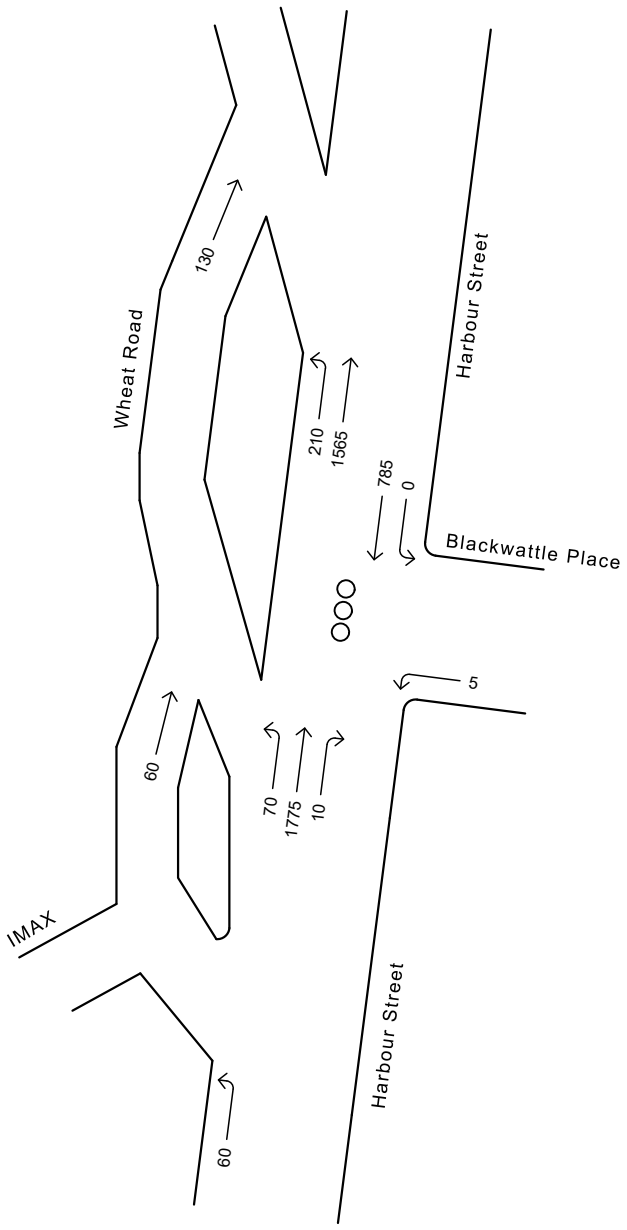
Figure 2



Existing weekday afternoon peak hour traffic flows

Colston Budd Rogers & Kafes Pty Ltd

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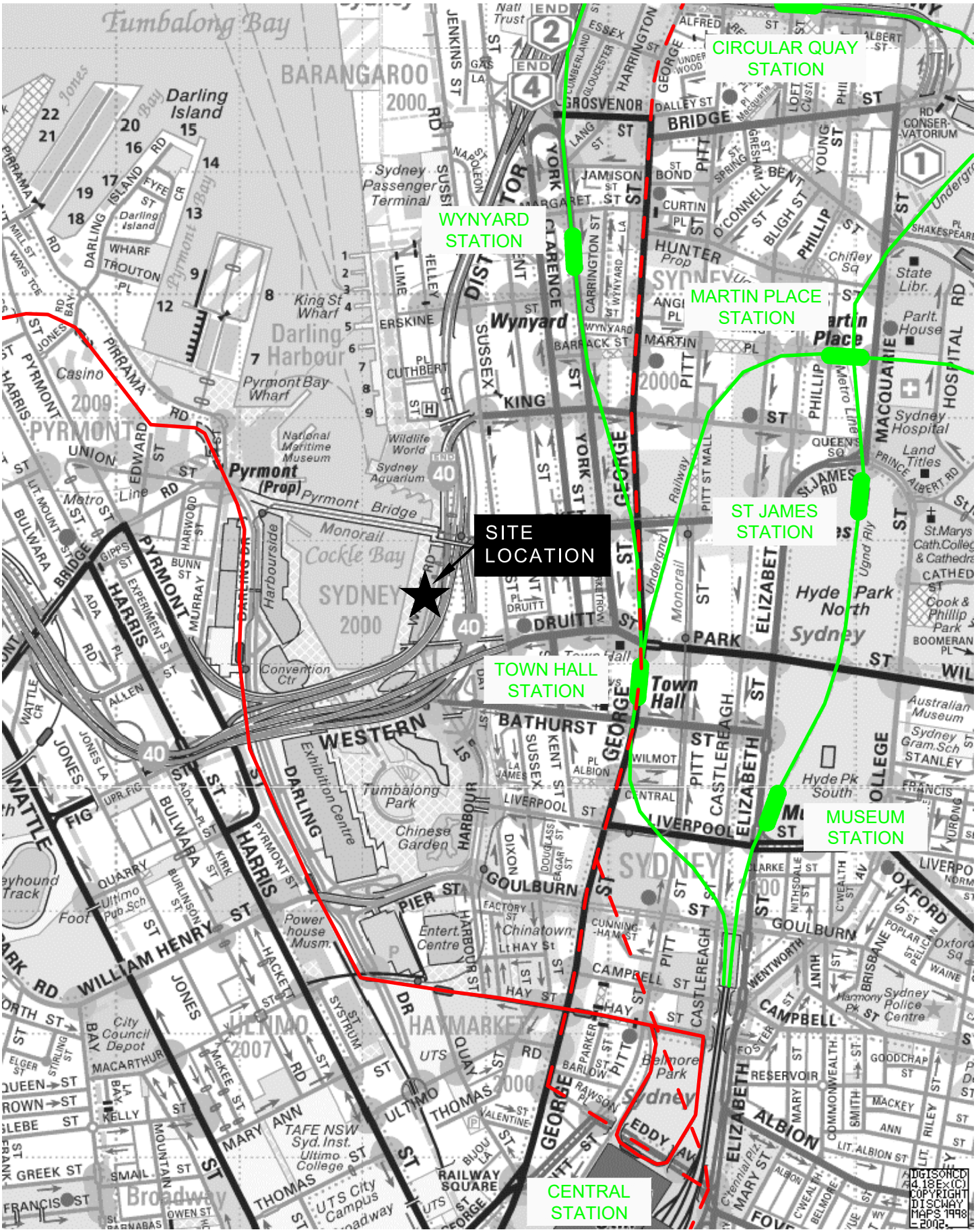
Figure 3



Public Transport

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Figure 4

Bicycle Network

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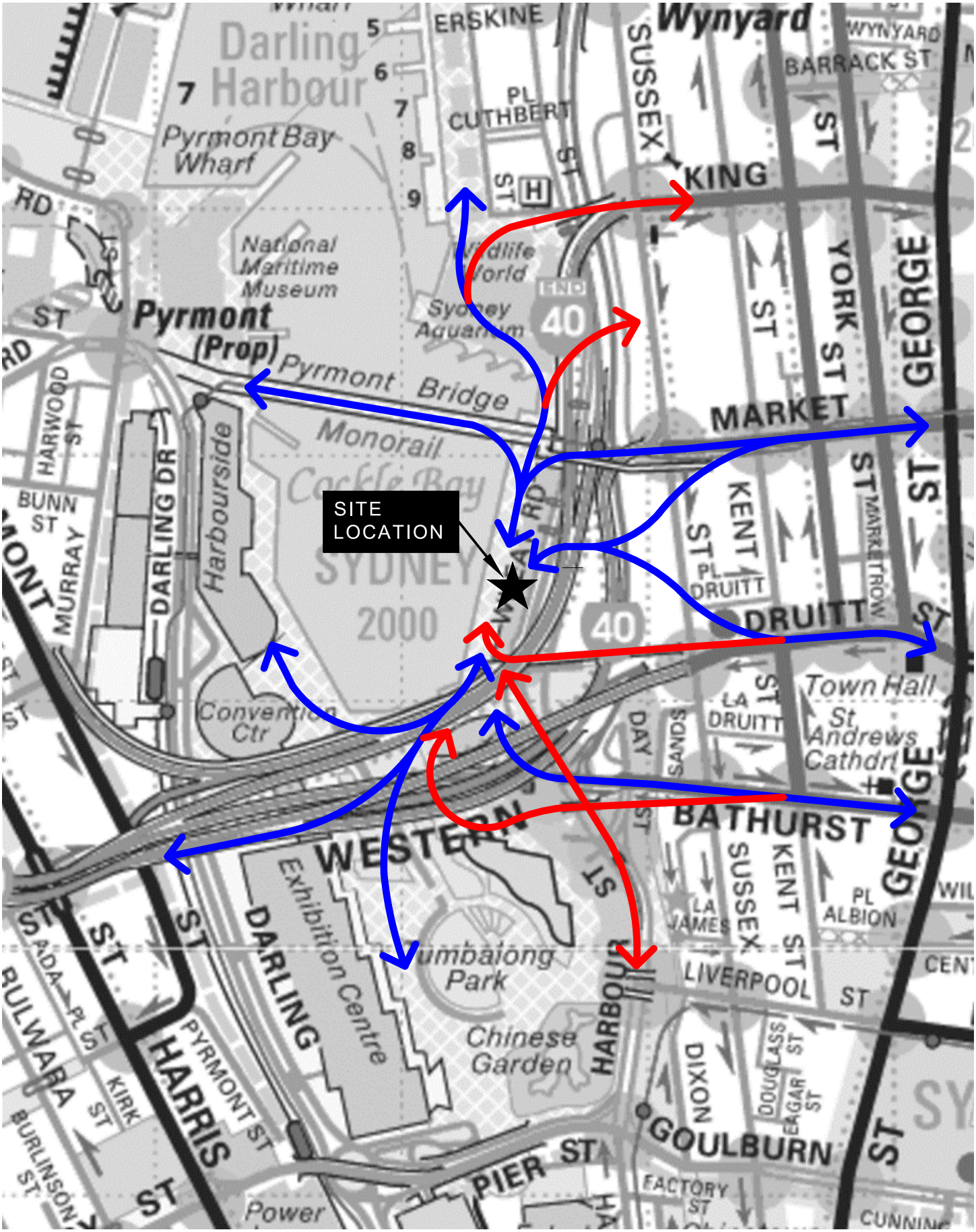
Figure 5



Primary Pedestrian Route

Secondary Pedestrian Route

Pedestrian Desire Lines

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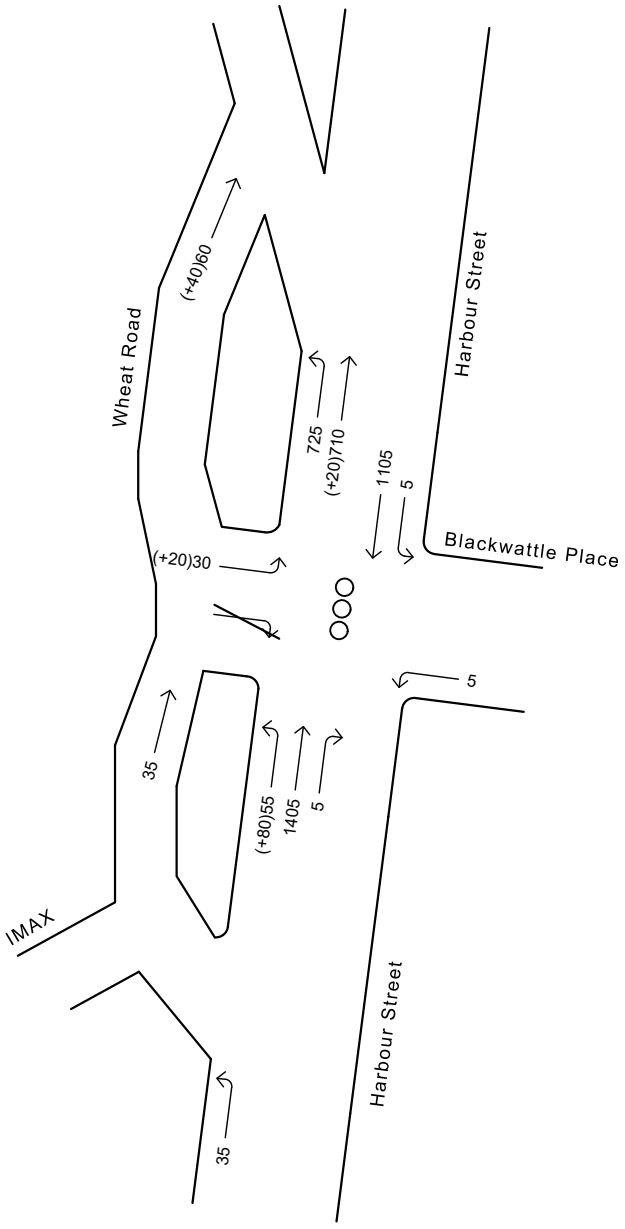
Figure 6



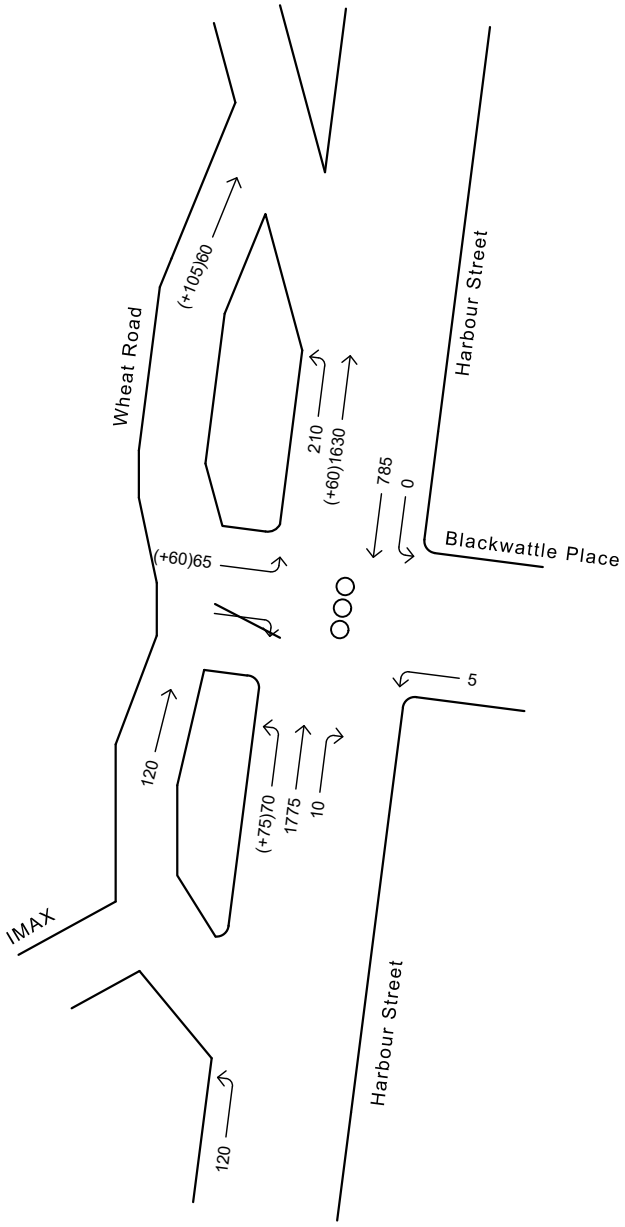
Redistributed existing weekday morning peak hour traffic flows (including IMAX redevelopment) plus development traffic left out only connection to Harbour Street

Colston Budd Rogers & Kafes Pty Ltd

DRAWN BY CBRK Pty Ltd_mr Ref: 10166 21 October 2016

Figure 7

North



Redistributed existing weekday afternoon peak hour traffic flows (including IMAX redevelopment) plus development traffic left out only connection to Harbour Street

Colston Budd Rogers & Kafes Pty Ltd

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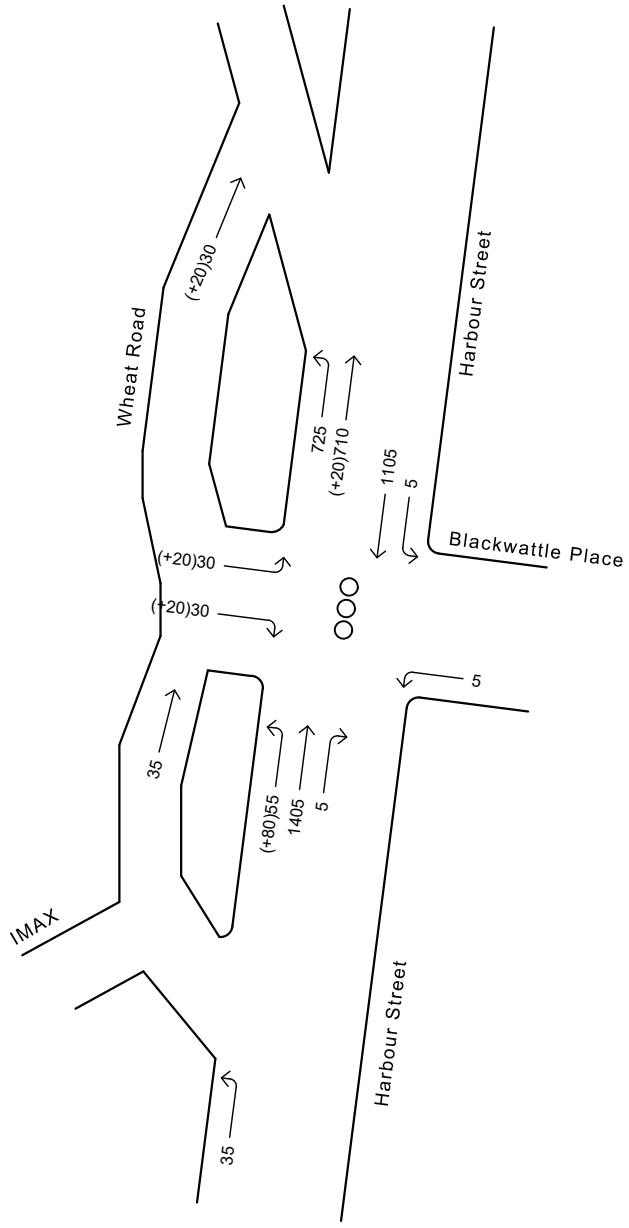
Figure 8



Redistributed existing weekday morning peak hour traffic flows (including IMAX redevelopment) plus development traffic left out/right out connection to Harbour Street

Colston Budd Rogers & Kafes Pty Ltd

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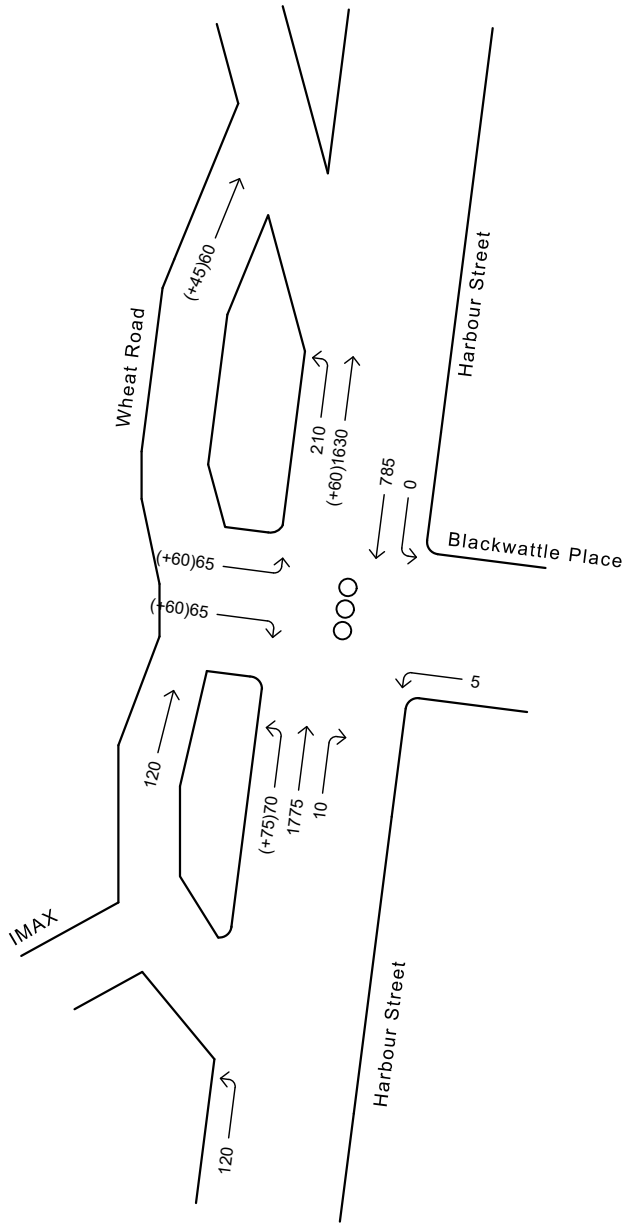
Figure 9



Redistributed existing weekday afternoon peak hour traffic flows (including IMAX redevelopment) plus development traffic left out/right out connection to Harbour Street

Colston Budd Rogers & Kafes Pty Ltd

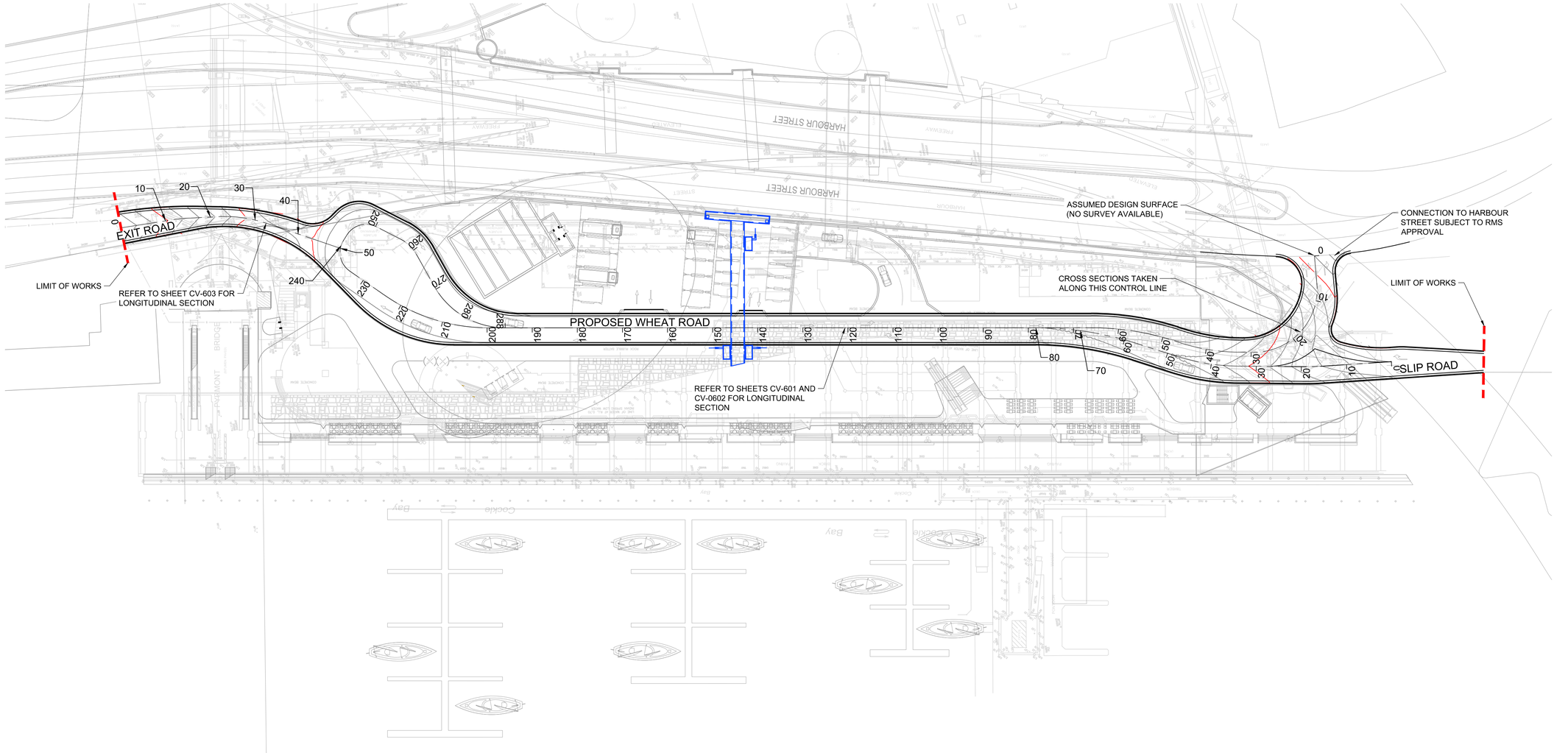
DRAWN BY CBRK Pty Ltd_mr Ref: 10166 21 October 2016

Figure 10

ATTACHMENT A

WHEAT ROAD REALIGNMENT CONCEPT PLAN

A1



LEGEND

PROPOSED OSD TANK

PROPOSED MAJOR CONTOUR

PROPOSED MINOR CONTOUR

NOTE
1. DESIGN DISPLAYED IS FOR INFORMATION PURPOSES ONLY AND IS SUBJECT TO CHANGE AS DESIGN PROGRESSES.
2. ASSUMED INTERPOLATED SURFACES AT INTERSECTION WITH HARBOUR STREET. AREA SUBJECT TO CHANGE ONCE SURVEY BECOME AVAILABLE.
3. PROPOSED ROAD DRAINAGE SYSTEM TO DISCHARGE INTO BOX CULVERT

SCALE 1:500

0 10 20 30 m

rev	date	description	drn	ch'k
1	14/10/16	FOR INFORMATION	CF	GP

enstruct group pty ltd

Level 4, 2 Glen Street
Milsons Point NSW 2061
Australia

Telephone (02) 8904 1444
Facsimile (02) 8904 1555
www.enstruct.com.au

enstruct

project
COCKLE BAY WHARF REDEVELOPMENT

drawing title
WHEAT ROAD PROPOSED ARRANGEMENT SHEET 1

status
FOR INFORMATION ONLY

scale at A1	drawn by	checked	date
1:500	CF	GP	OCT-16

project no.	drawing no.	rev.
4886	CV-0600	1

NOT FOR CONSTRUCTION

ATTACHMENT B

PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN