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**THE CHINATOWN AND CITY SOUTH
TRAFFIC ASSESSMENT REPORT
(ARUP, 2015)**

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City of Sydney
**City South and Chinatown:
Connecting and Interface Streets**
Traffic Assessment

Draft 2 | 1 June 2015

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

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Arup
Arup Pty Ltd ABN 18 000 966 165



Arup
Level 10 201 Kent Street
PO Box 76 Millers Point
Sydney 2000
Australia
www.arup.com

ARUP

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1 Introduction

Arup has prepared a traffic assessment for the concept design being prepared by Spackman Mossop Michaels for the connecting and interface streets for the City South and Chinatown precinct.

2 Background

The Traffic, Transport and Accessibility Report prepared by Hyder in 2013 in support of the State Significant Development Application (SSD 5752-2012) for the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) Project at Darling Harbour has been used as the basis for the traffic assessment.

The Light Rail Project on George Street will further influence traffic flows in the precinct with a reduced traffic capacity on George Street likely to reduce general traffic flows through the precinct. The traffic analysis for George Street was not available at the time of writing so assumptions about possible traffic reduction have been applied.

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3 Concept Design Options

3.1 Harbour Street / Hay Street

There are two potential road configurations for the Harbour Street / Hay Street road network. The base option is to retain Hay Street and Harbour Street as one-way west and northbound respectively. This will facilitate the existing local access to Chinatown, maintain the through traffic movement from George Street to Harbour Street north and facilitate access to the Darling Square development (part of SICEEP) as shown in Figure 1.



Figure 1: Darling Square vehicle access

The alternative option considers closing Hay Street between George Street and Harbour Street, with a new east-west connection provided along the Hay Street alignment between Darling Drive and Harbour Street as shown in Figure 2. This would create a local road link between Goulbourn Street and Darling Drive providing access to the Darling Square development. This road could be configured as one-way or two-way to suit local access requirements.

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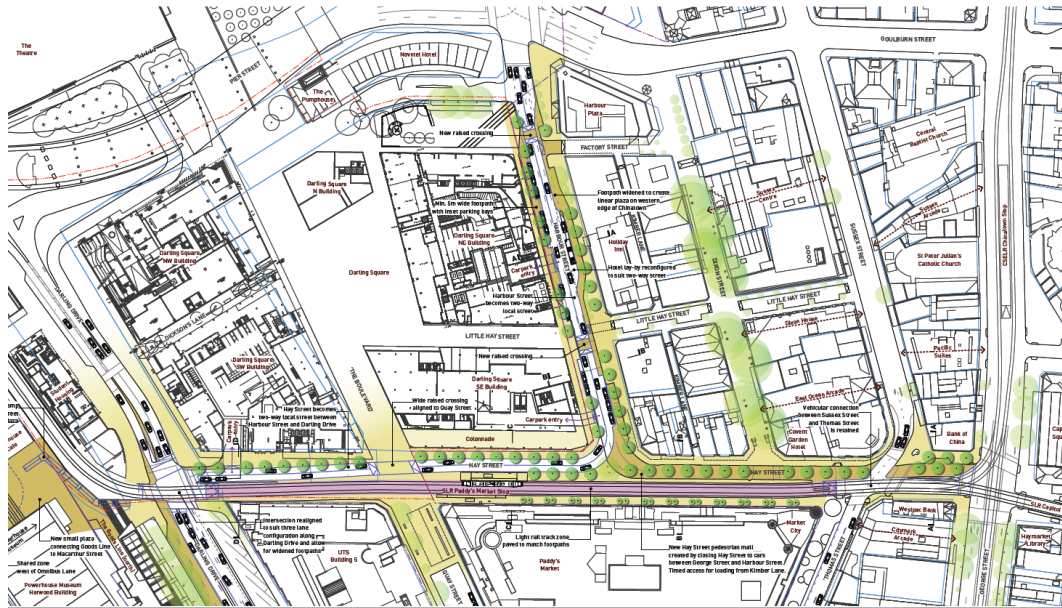


Figure 2: Proposed east-west connection between Darling Drive and Harbour Street

The preferred arrangement would provide two-way traffic to increase local accessibility and to reduce the capacity for through traffic use by limiting the road to a single lane in each direction. Given the poor connectivity from the south to access Darling Drive, it is unlikely that east to north through traffic would be attracted to the new link. Similarly, the existing Pier Street connection to Harris Street provides better access for through traffic travelling south to west and hence through traffic is unlikely to use the new link.

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3.1.1 George Street traffic changes with LRT

With the LRT introduced into George Street there will be a reduction in the number of traffic lanes in both directions generally from two to one. The existing northbound traffic lanes are shown in Figure 3. There are two lanes feeding into George Street northbound from Broadway, Lee Street and Rawson Place. With the LRT, it is proposed that only one lane feed into George Street from Broadway and Lee Street as shown in Figure 4. Rawson Place will be closed to general traffic. With this significant reduction in road capacity it could be expected that traffic volumes on George Street will reduce by more than 50%.

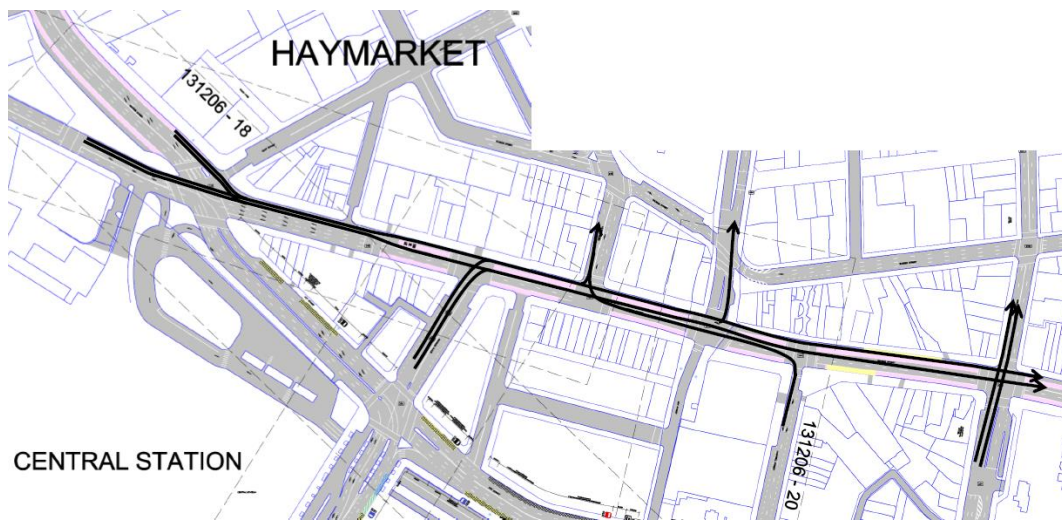


Figure 3: Existing northbound traffic lanes on George Street

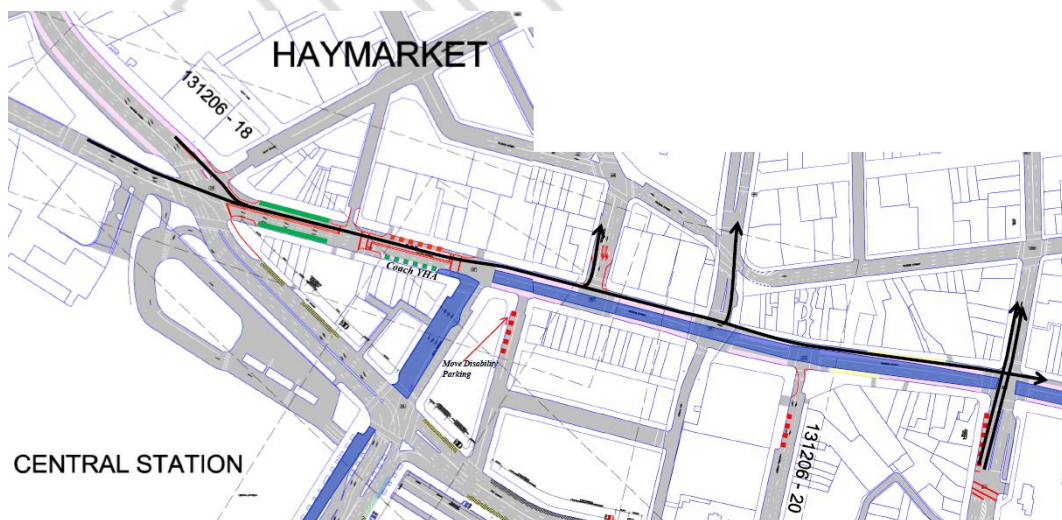


Figure 4: Proposed George Street northbound traffic lanes with LRT

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3.1.2 Alternative traffic routes

The future city centre major street network was identified in the Sydney City Centre Access Strategy and is shown in Figure 5. The routes identified are for north south travel within the city. There is a next layer of bypass routes offered by Harris Street/Wattle Street to the west and the Eastern Distributor to the east.

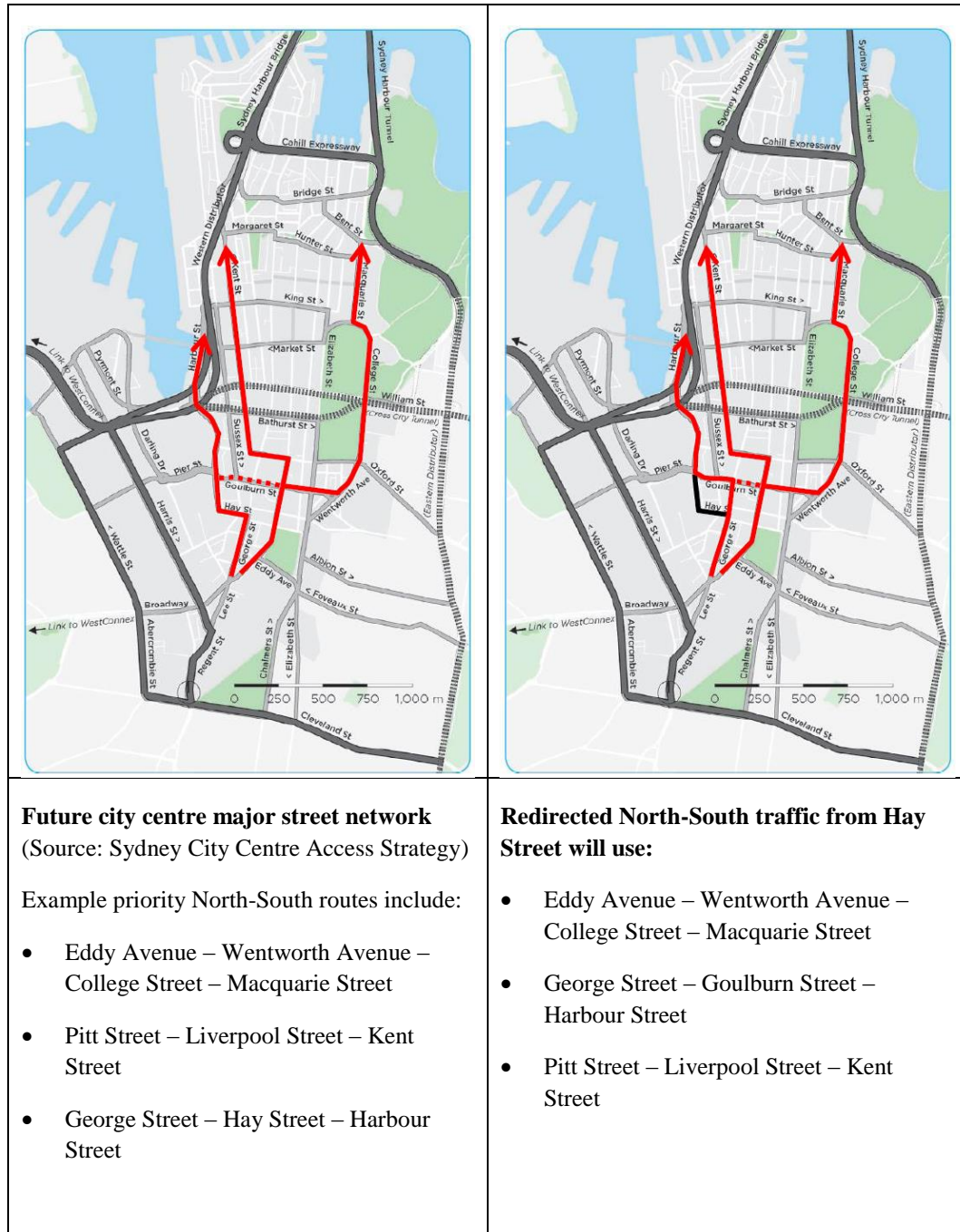


Figure 5: Future city centre major street network

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3.1.3 Traffic Volumes

The existing PM Peak traffic flows and the proposed PM Peak SICEEP development traffic flows in this precinct are shown in Figure 6 and Figure 7 respectively. There are currently 318 vehicles turning left from George Street into Hay Street to access Harbour Street with approximately 230 of these assumed to be through traffic. The remainder are assumed to be accessing Chinatown.

For the future analysis, the existing traffic on George Street has been assumed to reduce by 50% as a result of the LRT reducing capacity on George Street and cars choosing alternative routes to the east and west to access the bridge. The SICEEP future development traffic has also be redistributed to suit the new road arrangements. The assumed traffic volumes and distribution are shown in Figure 8.

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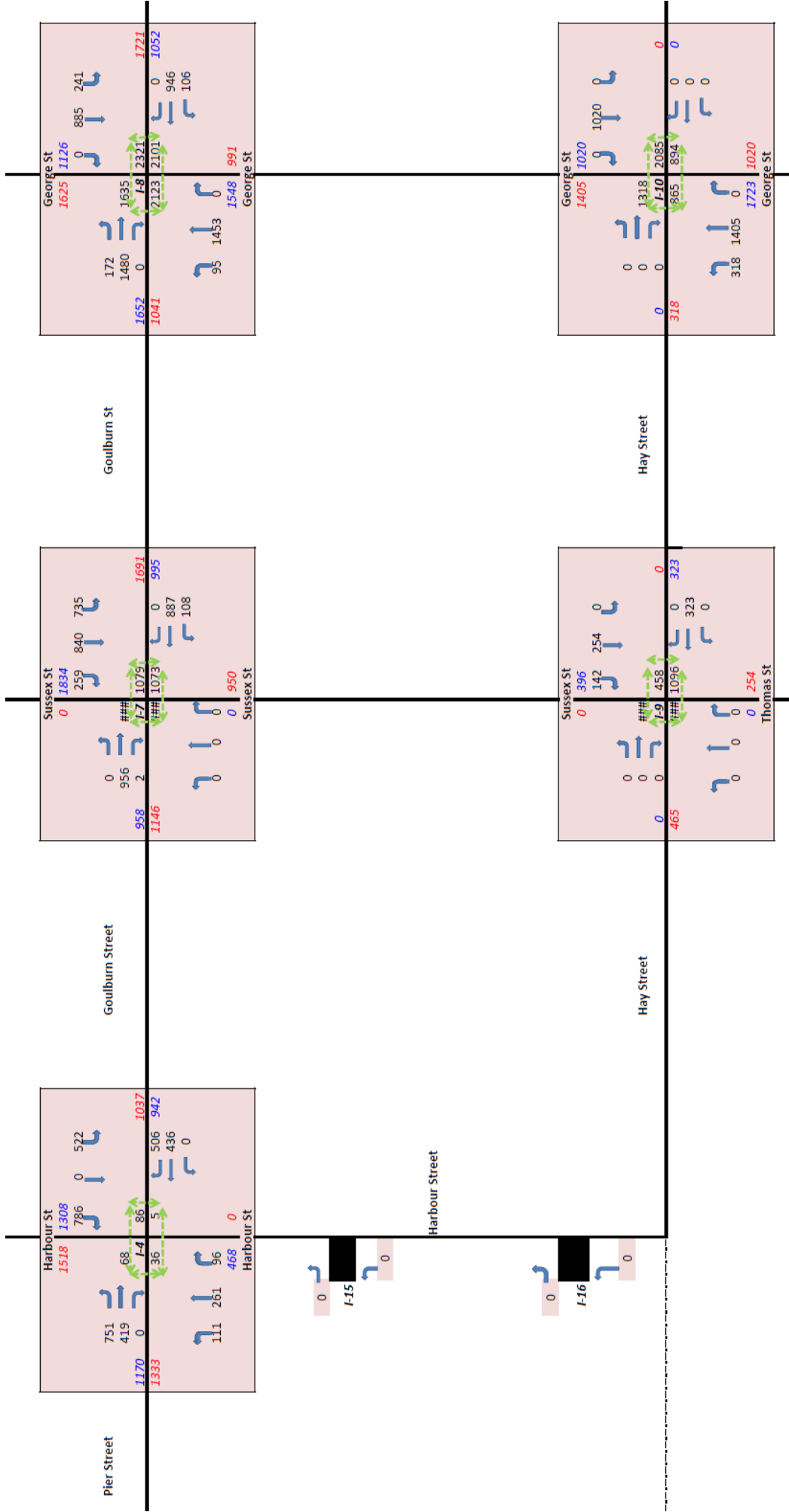


Figure 6: Existing PM Peak Traffic

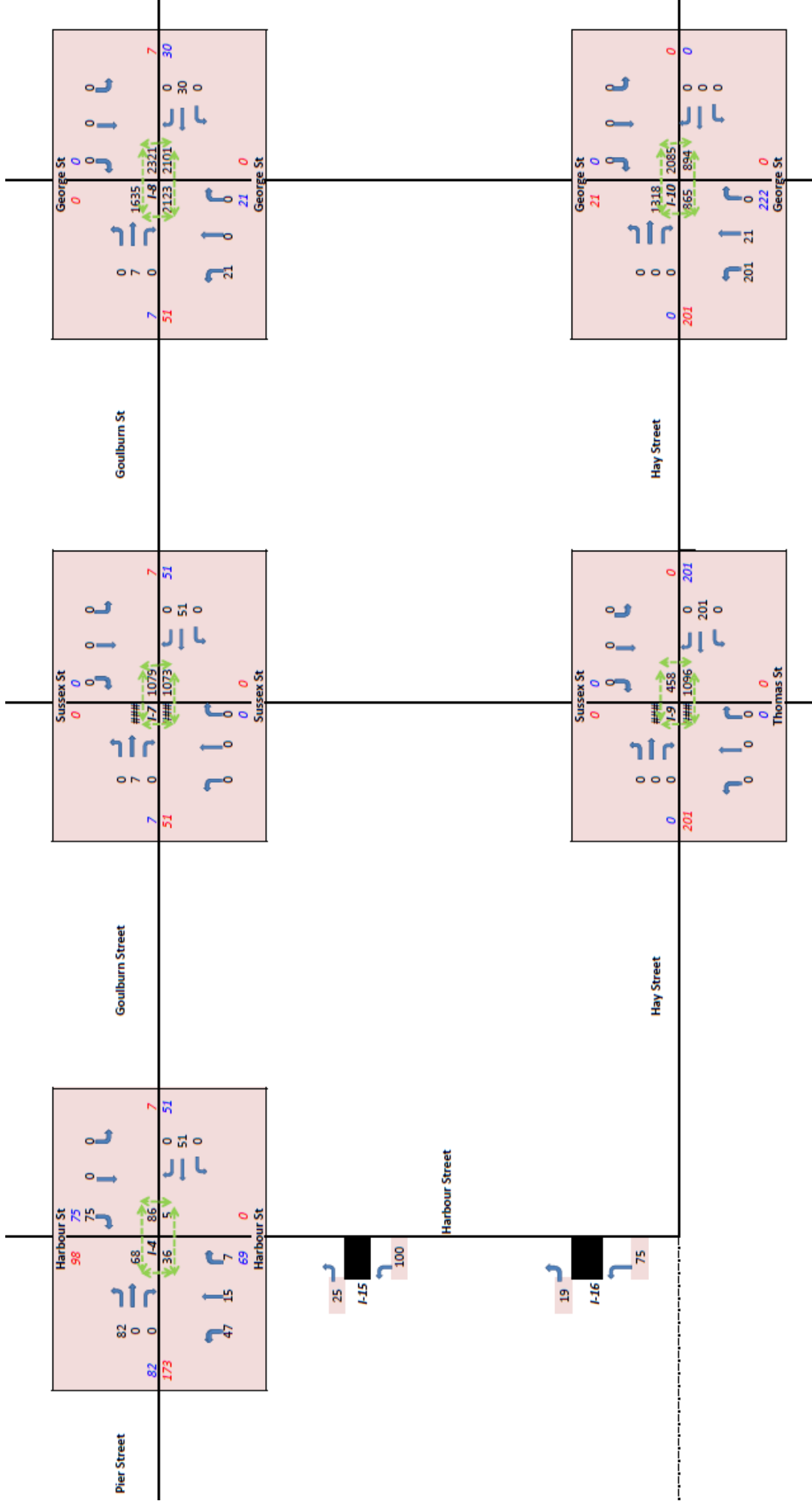


Figure 7: Future PM Peak SICCEP traffic

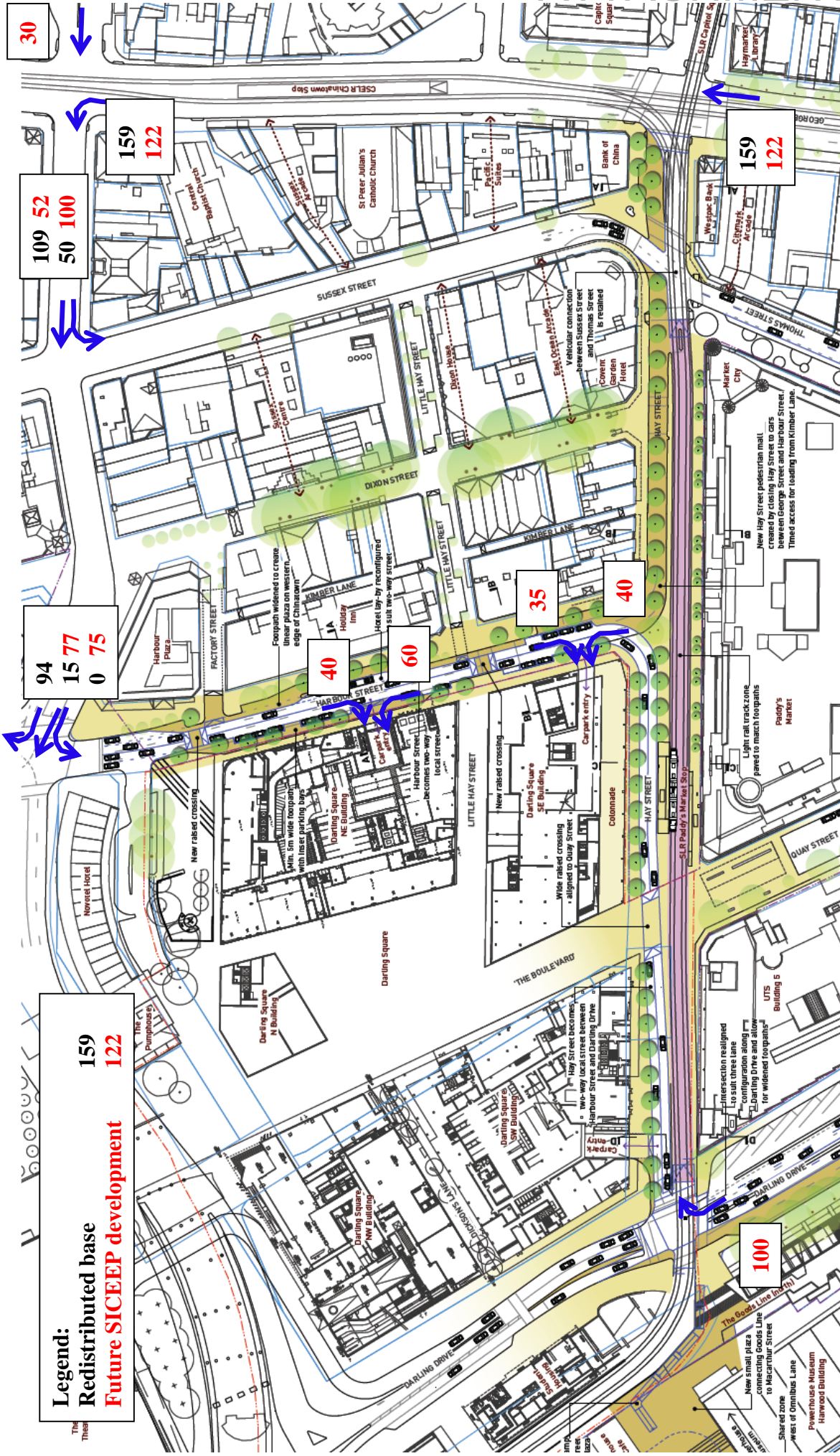


Figure 8: PM Peak redistributed base and future development traffic

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3.1.4 Intersection analysis

The intersections of Goulburn Street / George Street and Pier Street / Goulburn Street / Harbour Street have been analysed using SIDRA for the Friday PM Peak utilising the traffic volumes from the Hyder analysis which have been adjusted for 50% less traffic on George Street and a two way traffic flow on Harbour Street south as shown in Figure 9.



Figure 9: George Street / Goulburn Street intersection with LRT

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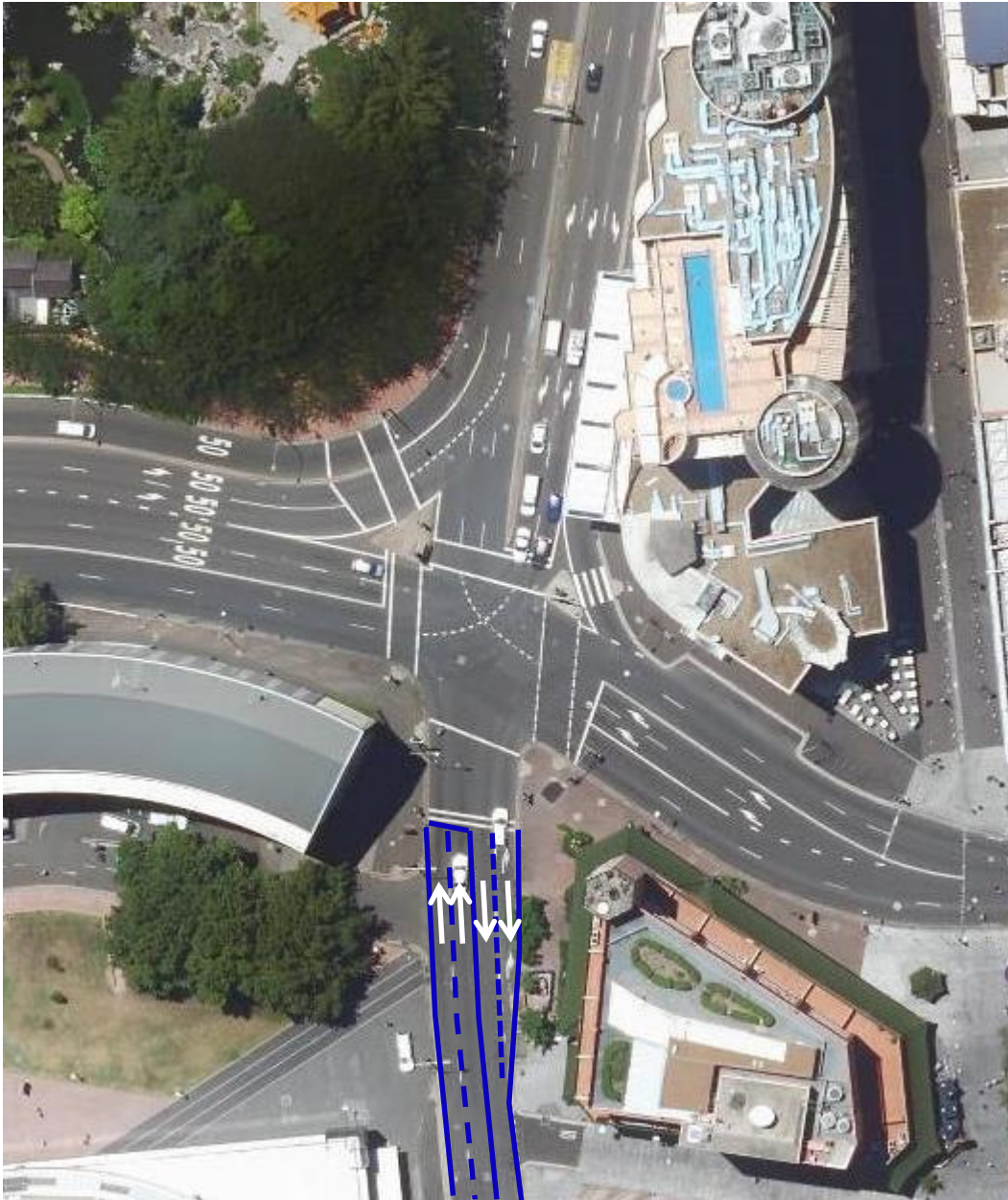


Figure 10: Goulburn Street / Harbour Street / Pier Street

The results of the SIDRA analysis for the PM Peak are shown in Table 1: Pier St / Goulburn St / Harbour St Intersection Results and Table 2: George St / Goulburn St / Intersection Results.

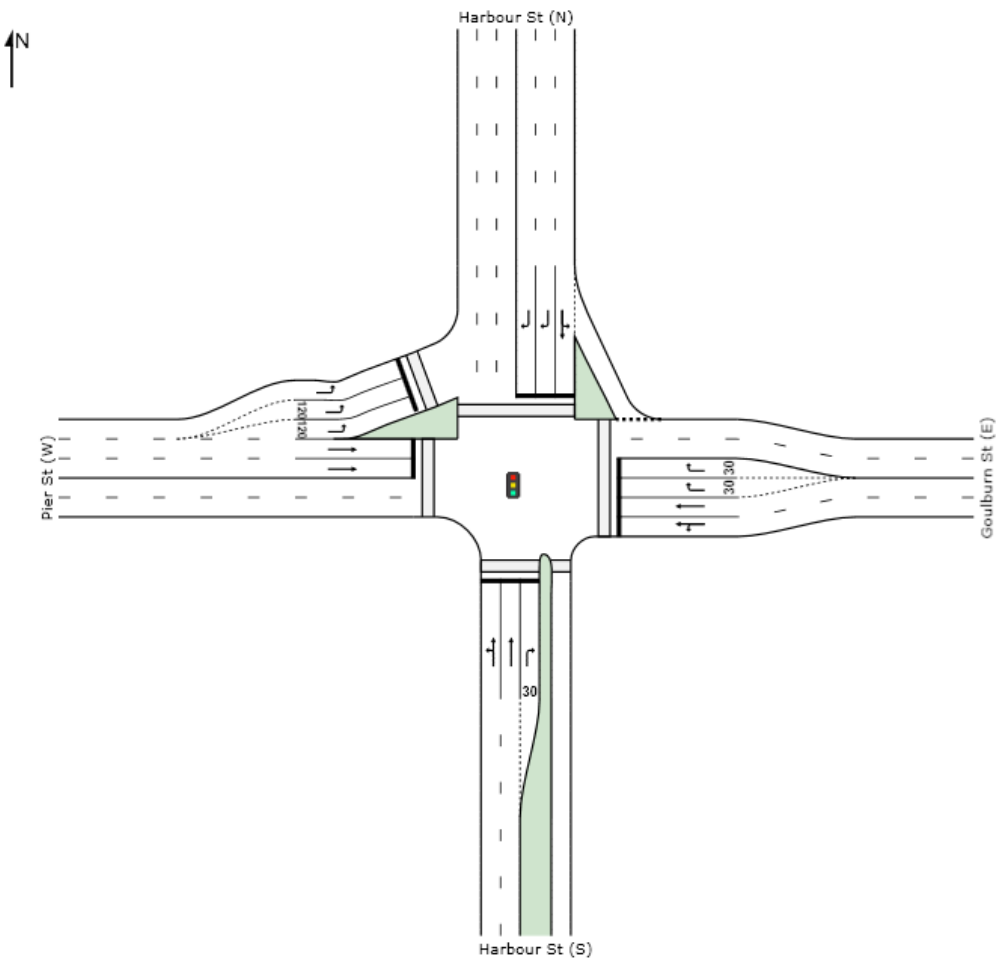
Both intersections are operating close to capacity and the additional traffic impacts on both intersections however their operation is considered acceptable for a CBD intersection in the peak hour.

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Table 1: Pier St / Goulburn St / Harbour St Intersection Results

Scenario	LoS	Avg Delay (s)	DoS
Existing (Hyder SIDRA results)	D	44	1.000
Existing	D	44	1.019
Redirected and Development Traffic*	E	66	1.045

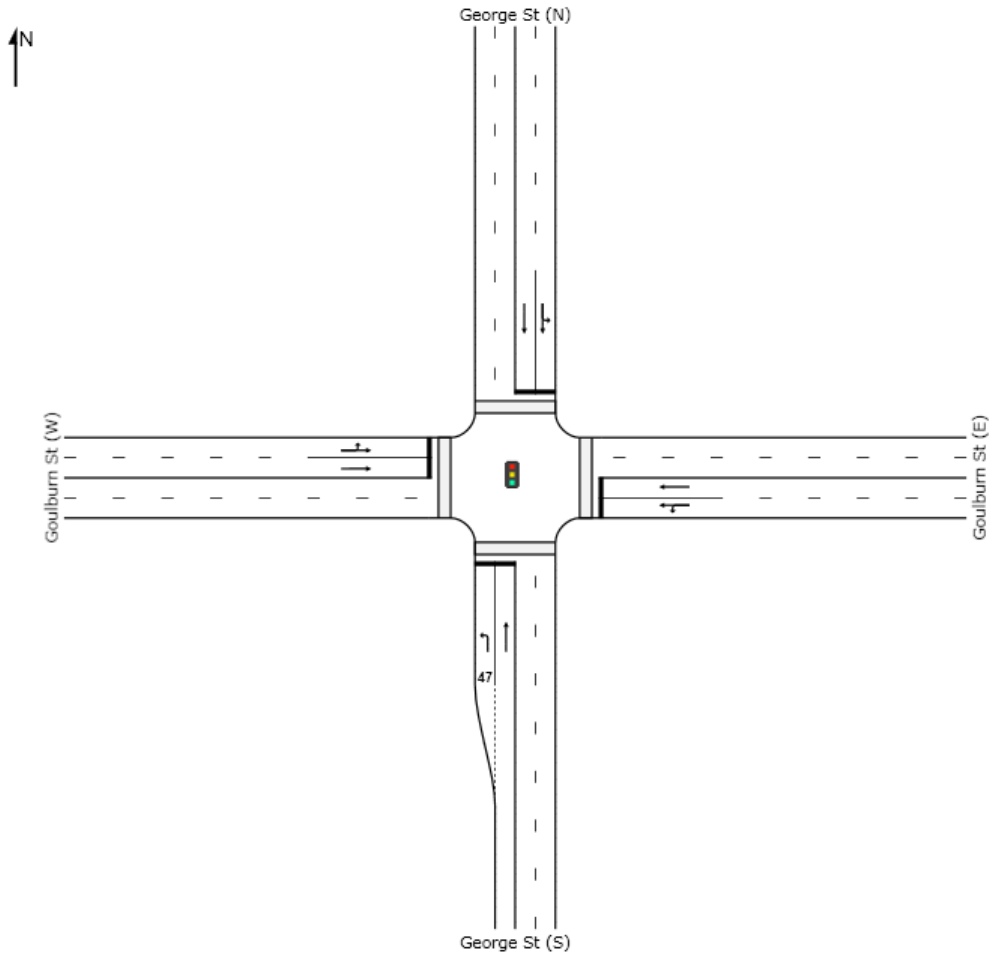
*Phase time increased to 135 seconds Optimum Cycle



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Table 2: George St / Goulburn St / Intersection Results

Scenario	LoS	Avg Delay (s)	DoS
Existing	E	67	1.001
Redirected and Development Traffic	F	101	1.052



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3.2 Ultimo Road

Minor adjustments to the kerb alignment on Ultimo Road are proposed to increase footpath widths. In addition, a segregated two-way cycleway is proposed along the northern kerb of Ultimo Road between Harris Street and Thomas Street which the City of Sydney consider to be an important link into the Central Sydney cycle network, particularly connecting into the Darling Drive cycleway.

There is a short section of cycleway travelling eastbound towards Darling Drive as shown in Figure 11. Vehicles turning left utilise this lane which will be lost in future with the cycleway. The existing 3 traffic lane configuration will therefore be retained on this section of Ultimo Road. Further east, the parking lane will be removed to facilitate the segregated bicycle facility as shown in Figure 12.



Figure 11: Ultimo Road at Darling Drive intersection looking west



Figure 12: Ultimo Road at Darling Drive intersection looking east

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3.3 Darling Drive

The SICEEP development will be creating 3 lanes in total on Darling Drive to the north of Hay Street – 1 northbound and 2 southbound. It is proposed to extend this arrangement to Ultimo Road which will enable the western kerb to be moved out to create a shared pedestrian/cycle facility as shown in Figure 13. This shared path is generous in width at 5.5m and will provide a good level of service for shared use.

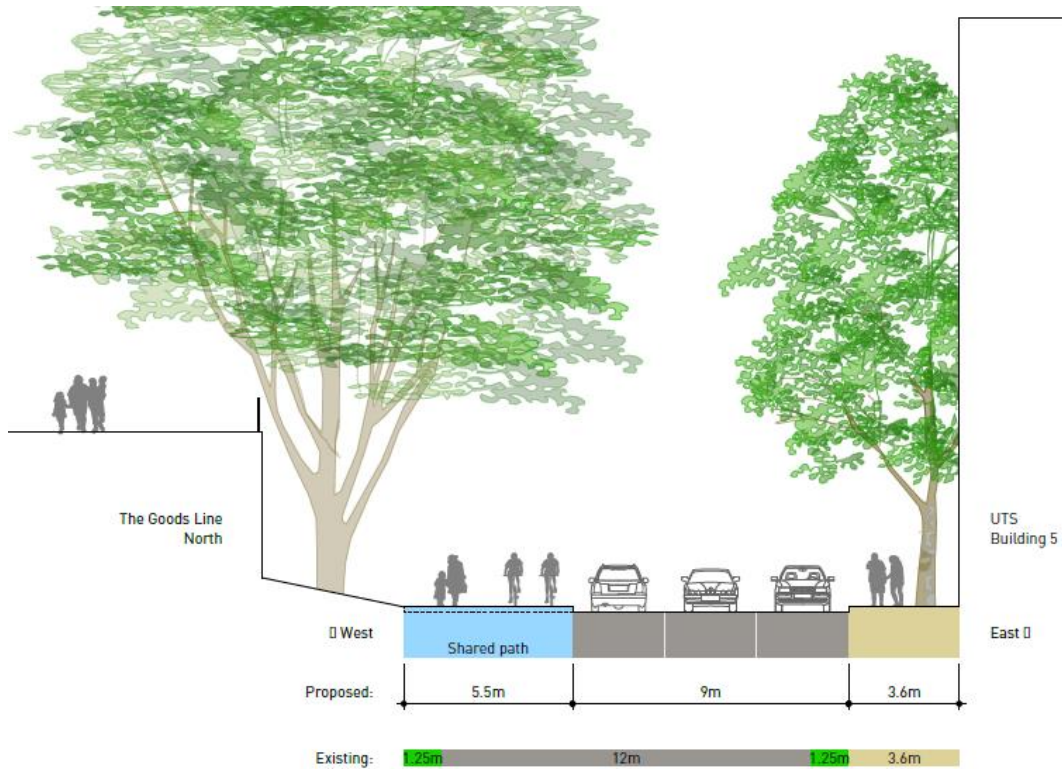


Figure 13: Proposed Darling Drive cross section north of Ultimo Road

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3.4 Quay Street and East West connections

3.4.1 Quay Street and Thomas Street

The Quay Street and Thomas Street kerb adjustments will no impact on the capacity of the streets. At the western end of Thomas Street, the full road width will need to be retained to allow for the buses and trucks to turn around as shown in Figure 14.

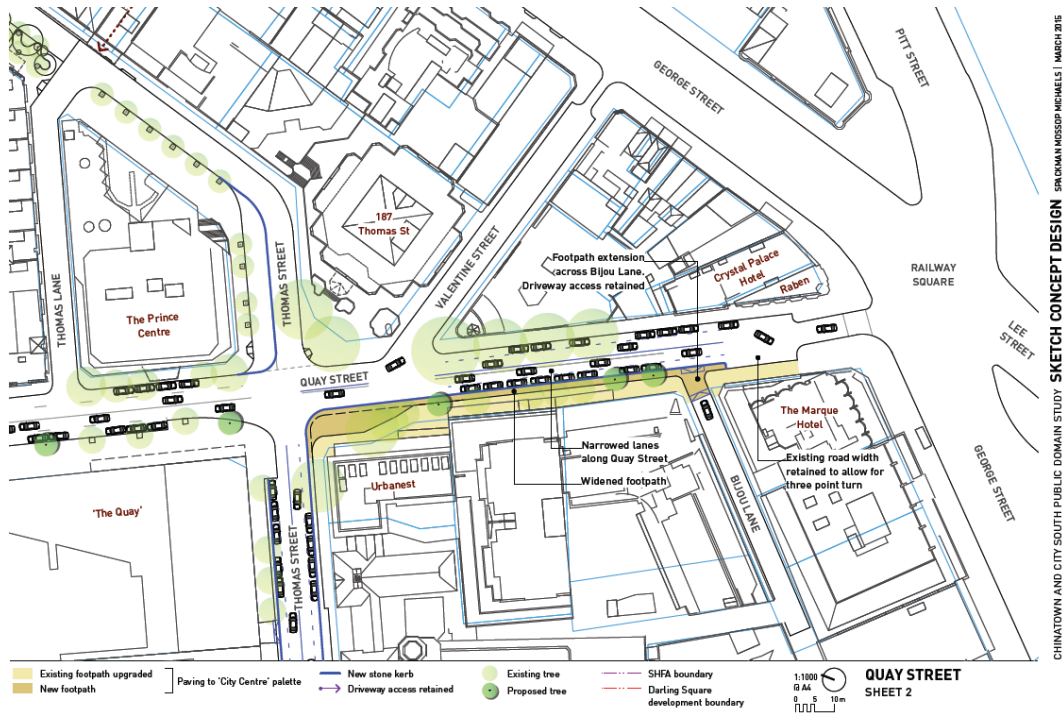
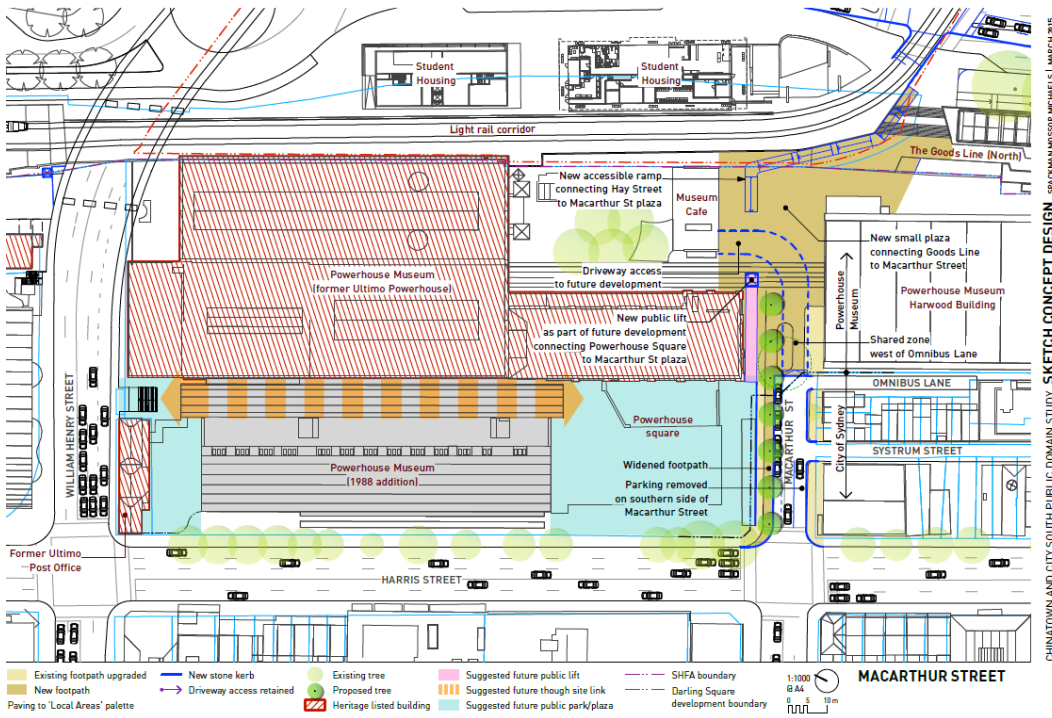


Figure 14: Bus turning at the end of Thomas Street

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3.4.2 Macarthur Street

Vehicles wishing to turn around in Macarthur Street will need to use Systrum Street to execute a three point turn. It may be possible to treat Macarthur Street differently to the east of Systrum Street depending on the future form of development on the Power House site. A Shared Zone would not be suitable for the full length up to the Harris Street traffic signals.



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3.4.3 Quarry Street

The Quarry Street corner is very wide and could be narrowed to create a larger footpath and to reduce traffic speeds. The turning path of trucks using this corner will need to be checked in detail design. There will be no change in capacity.

