Parramatta Leagues Club Hotel
1 Eels Place, Parramatta

Transport and Accessibility Impact Assessment

Prepared for:

Parramatta Leagues Club

29 November 2018

The Transport Planning Partnership

Parramatta Leagues Club Hotel
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Transport and Accessibility Impact Assessment

Client: Parramatta Leagues Club

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1 Introduction

1.1 Background

This Transport and Access Impact Assessment report has been prepared by the Transport Planning Partnership (TTPP) on behalf of the Parramatta Leagues Club to accompany a State Significant Development (SSD) application for the construction of a proposed new 17 storey hotel and ancillary uses, with associated access and public domain works.

Specifically, this report has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) (SSD8800) for the Proposal, issued by NSW DP&E on 6 November 2017.

The proposed hotel development will be located on a site adjacent to the existing Parramatta Leagues Club building and car park structure and immediately north of the soon to be completed Western Sydney Stadium.

The proposed hotel development is targeted to a market segment which includes groups, supporters and sporting team bookings given its proximity to the Western Sydney Stadium and the Parramatta Leagues Club relationship with and intended use of the Stadium.

Notwithstanding the above, the hotel also anticipates demand from indoor recreational uses associated with the Parramatta Leagues Club itself, along with other uses found in the surrounding immediate area. Thus the proposed hotel represents a significant opportunity to augment the social, cultural, recreational and economic fabric of Parramatta, while also representing a strategic asset for the Parramatta Leagues Club for long term financial sustainability, diversity and corporate responsibility.

The proposed hotel has been planned by the Parramatta Leagues Club for many years, and follows completion of initial master planning for the Club involving the approved and recently completed multi-level carpark accessed via Eels Place.

With regard to the multi-level car park, the consent issued by Parramatta City Council (DA/310/2015) in June 2016 included the following condition:

> 3. This application grants consent to the provision of 867 onsite parking spaces, comprising 773 within the multi storey structure, and 94 temporary surface parking spaces. The 94 surface parking spaces are temporary only, and are not entitled to be replaced in conjunction with any future development applications. Any future increases in parking shall be determined only with regard to demand associated with proposed additional floor space.

Therefore, the assessment as presented in this Transport and Access Impact Assessment report has considered the operation (and construction) of the proposed hotel in the context of its

surroundings, namely the cumulative implications of the various activities within the broader Parramatta Leagues Club and Western Sydney Stadium precinct.

1.2 Overview of the Proposed Hotel Development

The proposed development will include the demolition of existing improvements and erection of a 17 storey hotel building (plus a single level basement for services) accommodating the following:

- 209 hotel rooms;
- Fitness and wellness centre including gymnasium and pool; and
- Function facilities and meeting rooms.

The proposed hotel development will also include a porte cochere facility which has been designed to accommodate coach drop off and pick up at the hotel and a service vehicle loading dock facility. Vehicle access to the porte cochere and loading dock is proposed from O'Connell Street to the south of the hotel building (via a new vehicle access to the adjoining Western Sydney Stadium).

No additional car parking is proposed as part of the hotel development. Hotel car parking demand has been planned for and will be provided within the recently completed multi storey car park adjacent to the hotel and Parramatta Leagues Club building.

1.3 Site Location

The proposed Parramatta Leagues Club hotel site is located within the broader Parramatta Leagues Club site. The Parramatta Leagues Club site is located within the Parramatta City Council local government area and is generally bound by O'Connell Street to the east, Eels Pace to the north, the Parramatta River to the west and the Western Sydney Stadium to the south as shown in Figure 1.1.

The site of the proposed hotel is legally known as Lot 369 in DP 752058, Lot 7054 in DP 1074335 and Residual Crown Plan 80-3000 (Sydney). The SSD relates to Residual Crown Plan 80-3000 (Sydney) only, with the proposal depicted on the plans by Hassell and others.

The site is commonly known as 1 Eels Place, Parramatta (although is also variously known as 1 Parramatta Park Land, Parramatta by Parramatta Council, and 17-19 O'Connell Street, Parramatta due to current linkages with Parramatta Leagues Club).

The hotel building site is proposed to be constructed to the south of the current Parramatta Leagues Club building and north of Western Sydney Stadium (undergoing redevelopment).

The site of the proposed hotel building currently contains at grade car parking on a bitumen surface, trees and services. The site is owned by Parramatta Park Trust and is under an exclusive lease by Parramatta Leagues Club. The location of the proposed hotel relative to the surrounding Parramatta Leagues Club facilities and adjacent Western Sydney Stadium is shown in Figure 1.2.

Vehicle access to the existing at grade car parking on the hotel site is currently accessed via Eels Place along an internal shared vehicle / pedestrian zone between the Parramatta Leagues Club building and the multi storey car park.

The site also fronts onto a driveway access on O'Connell Street opposite Ross Street. This access is currently gated and bollarded and utilised for construction vehicles associated with the Western Sydney Stadium and will be upgraded as part of the Stadium's Stage 2 approval to access the Stadium's on site parking area. The existing vehicle access arrangements are shown in Figure 1.3.

Figure 1.1: Parramatta Leagues Club Site Location

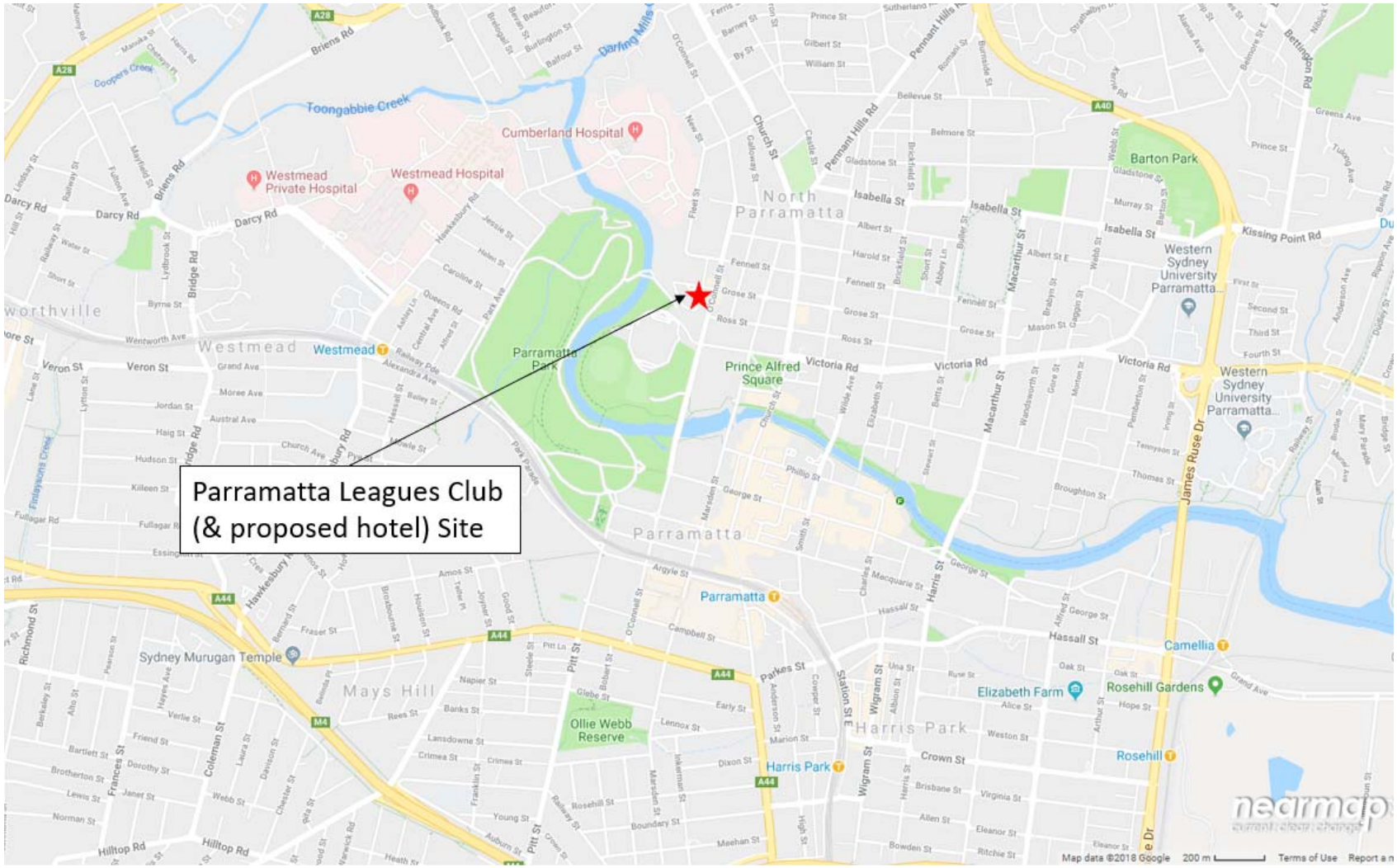


Figure 1.2: Location of Proposed Hotel within Parramatta Leagues Club Site

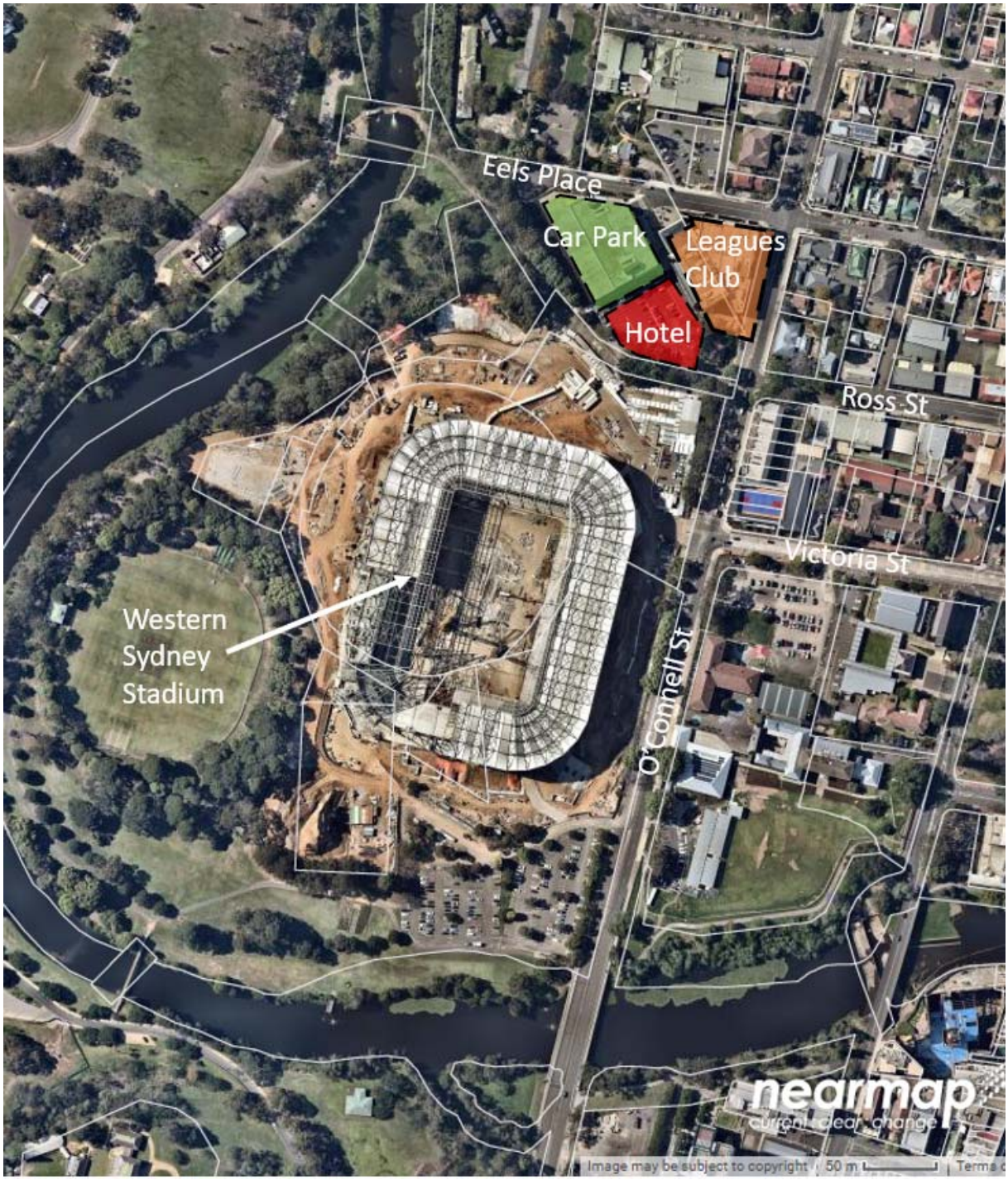


Figure 1.3: Proposed Hotel Site – Vehicle Access

1.4 Assessment Methodology

1.4.1 Proposed Hotel Operation within Broader Precinct

As described above, the proposed hotel development will be located within the Parramatta Leagues Club precinct and the broader Stadium Precinct.

It is expected that 30,000 seat Western Sydney Stadium will accommodate some 40-50 sporting events per year of varying sizes. In addition the Stadium is expected to hold concerts and other cultural events accommodating populations of approximately 40,000 people[1].

As with previous sporting and cultural events at the now demolished Parramatta Stadium, the Leagues Club precinct will act as an important pre and post event facility both within the Club building and the Club's multi storey car park.

As part of the Stage 1 DA[2] and Stage 2 DA[3] transport assessments for the approved and under construction Western Sydney Stadium, the traffic and parking demand assumptions include the continued use of the Parramatta Leagues Club car parking facilities to accommodate the demands of visitors to the Stadium.

Thus during event mode, the Parramatta Leagues Club precinct and the proposed hotel, will very much be ancillary uses to the Stadium with regard to travel demands to and from precinct.

[1] *Western Sydney Stadium – Stage 2 DA – Traffic Impact Assessment (BECA, May 2017)*
[2] *Western Sydney Stadium – Transport and Accessibility Working Paper (AECOM, July 2016)*
[3] *Western Sydney Stadium – Stage 2 DA – Traffic Impact Assessment (BECA, May 2017)*

1.4.2 Proposed Hotel Traffic Assessment Methodology

Once operational, the traffic demands of the proposed hotel are expected to vary depending upon the functions and activities of the surrounding land uses, most notably the adjacent Western Sydney Stadium.

The following operational scenarios have been considered in the transport assessment of the proposed Parramatta Leagues Club Hotel presented herein:

- Future Event Mode at the Stadium; and
- Future Non Event Mode at the Stadium.

For the Event Mode at the Stadium, it is considered that the implications of the proposed hotel on the Parramatta Leagues Club site has been considered as part of the approved Stage DA assessment prepared by BECA (May 2017). A summary of the Event Mode assessment prepared by BECA is provided in Section 4 of this document.

The Event Mode operating scenario is expected to be the 'worst case' scenario with regard to future traffic and transport conditions at the Stadium / Club precinct.

Notwithstanding the above, the proposed hotel development will operate and service markets outside of event periods at the Stadium. Thus it is expected that there will be an increase in travel demands to and from the Parramatta Leagues Club precinct associated with the proposed hotel when the Stadium is not operating an event.

To assess the implications of the proposed hotel development transport demands during non event periods the following scenarios have been assessed by TTPP and presented in this report:

- **Existing Base Case (S1)** – this scenario represents the current performance of the network and a starting point for comparative purposes.
- **Future Base Case (S2)** – this scenario includes the existing base case traffic and a 2 per cent annual background traffic growth for a ten-year period.
- **Future Case with Development (S3)** – this scenario includes S2 and the additional traffic associated with the proposed hotel development.

Assumptions regarding background traffic growth (2 percent), traffic generation and traffic distribution are generally consistent with the assumptions utilised in the Stadium Stage 2 DA traffic assessment prepared by BECA (May 2017).

Peak period traffic surveys were undertaken by TTPP in October 2018 at the following the intersections to supplement those presented in the Stadium Stage 2 DA traffic assessment prepared by BECA (May 2017):

- O'Connell Street / Eels Place; and
- O'Connell Street / Ross Street / driveway access.

2 Description of the Proposed Hotel Development

2.1 Overview of Proposed Hotel Facilities

The proposal is seeking approval for demolition of existing infrastructure and construction of a 17-storey hotel development with 209 hotel rooms.

In addition, the proposed hotel development also includes the following:

- porte cochere and vehicle circulation area in front of the hotel lobby;
- separate loading dock facility accessed via the vehicle circulation area;
- staff amenities, training room and office in the basement level;
- lobbies and café on the ground floor;
- swimming pool with changeroom facilities on the lower ground floor;
- hotel gymnasium and fitness centre including associated amenities and facilities on Levels 1 and 2;
- meeting rooms and function facilities on Level 3 and rooftop level; and
- pedestrian linkages to the existing Parramatta Leagues Club building and Western Sydney Stadium.

No additional car parking will be provided as part of the hotel development.

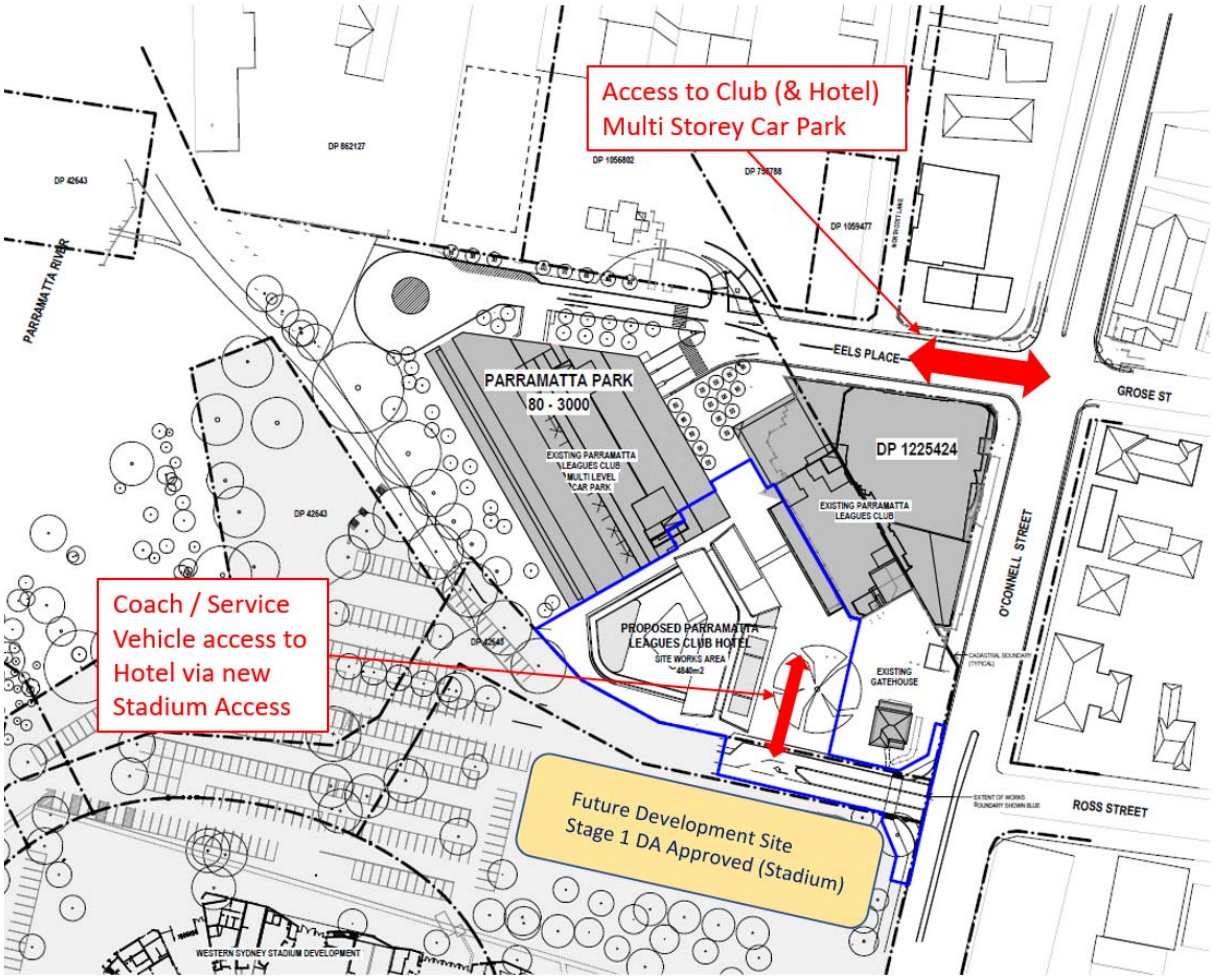
2.2 Proposed Vehicle Access Arrangements

It is proposed that the hotel's porte cochere and loading dock facility will be accessed via a new driveway connection to the new Western Sydney Stadium vehicle access (opposite Ross Street).

The multi storey car park will continue to be solely accessed via Eels Place from the signalised intersection at O'Connell Street. This car park will be used for hotel guest parking and thus access for car parking will be provided via the existing signalised intersection at O'Connell Street / Eels Place.

Figure 2.1 is an extract from the proposed hotel architectural drawings prepared by Hassell (November 2018) showing the proposed vehicle access arrangements for the hotel.

Figure 2.1: Hotel Site – Overview of Proposed Vehicle Access Arrangements



Base Map Source: Hassell (November 2018)

It is noted that a 6 metre wide vehicle access with a driveway at O'Connell Street (opposite the Ross Street intersection) has been approved as part of the Western Sydney Stadium development. The intersection of the new vehicle access is to be restricted to left in / left out at O'Connell Street.

Further as part of the Stadium redevelopment, the site on the south western corner of the new access and O'Connell Street intersection has received Stage 1 concept approval (approval of envelope and 20,000m2 GFA). The location of this site is shown in Figure 2.1.

Consultation with RMS as part of the Parramatta Leagues Club hotel development assessment process indicated that direct vehicle to the proposed hotel (ie. new driveway) would not be permitted via O'Connell Street, due in part to the proximity to other driveways, namely, the existing Eels Place access and the approved new Stadium access (opposite Ross Street).

Thus it is envisaged that the Stage 1 DA approved building on the Stadium site will be accessed via the new approved vehicle access (ie. new access between the Parramatta Leagues Club and the Stadium site (opposite Ross Street). This being the case, it would be sensible to plan for such an access to accommodate service vehicles to a very large building and not rely on a permanent managed situation (traffic controllers) for all future access involving service vehicles into the Stadium site and future Stage 1 DA building.

Through TTPP's initial investigations, it has been determined that a 6 metre wide vehicle access would not be capable of accommodating the vehicle manoeuvring of coaches / buses accessing the Stadium parking area as envisaged.

Furthermore, the approved Stage 1 development on the Stadium site potentially restricted the ability to widen the vehicle access beyond 6 metres within the Stadium site to accommodate coach manoeuvring and pedestrian access between the Stadium and Leagues Club site.

It is proposed that the width of the vehicle access be increased to approximately 10 metres to accommodate coaches and also anticipated pedestrian flows both to the Stadium and to the proposed Hotel sites.

The widening would be accommodated on the northern side of the access (ie. the Club's site) as part of the proposed Hotel development. This approach has been developed by the Club through consultation with Venues NSW (operators of the Stadium).

It is intended that vehicle access to / from the new access would be highly managed during events at the Stadium. This may include potential closure of the access at O'Connell Street during 'bump in' and 'bump out' periods for the Stadium car park pre and post events.

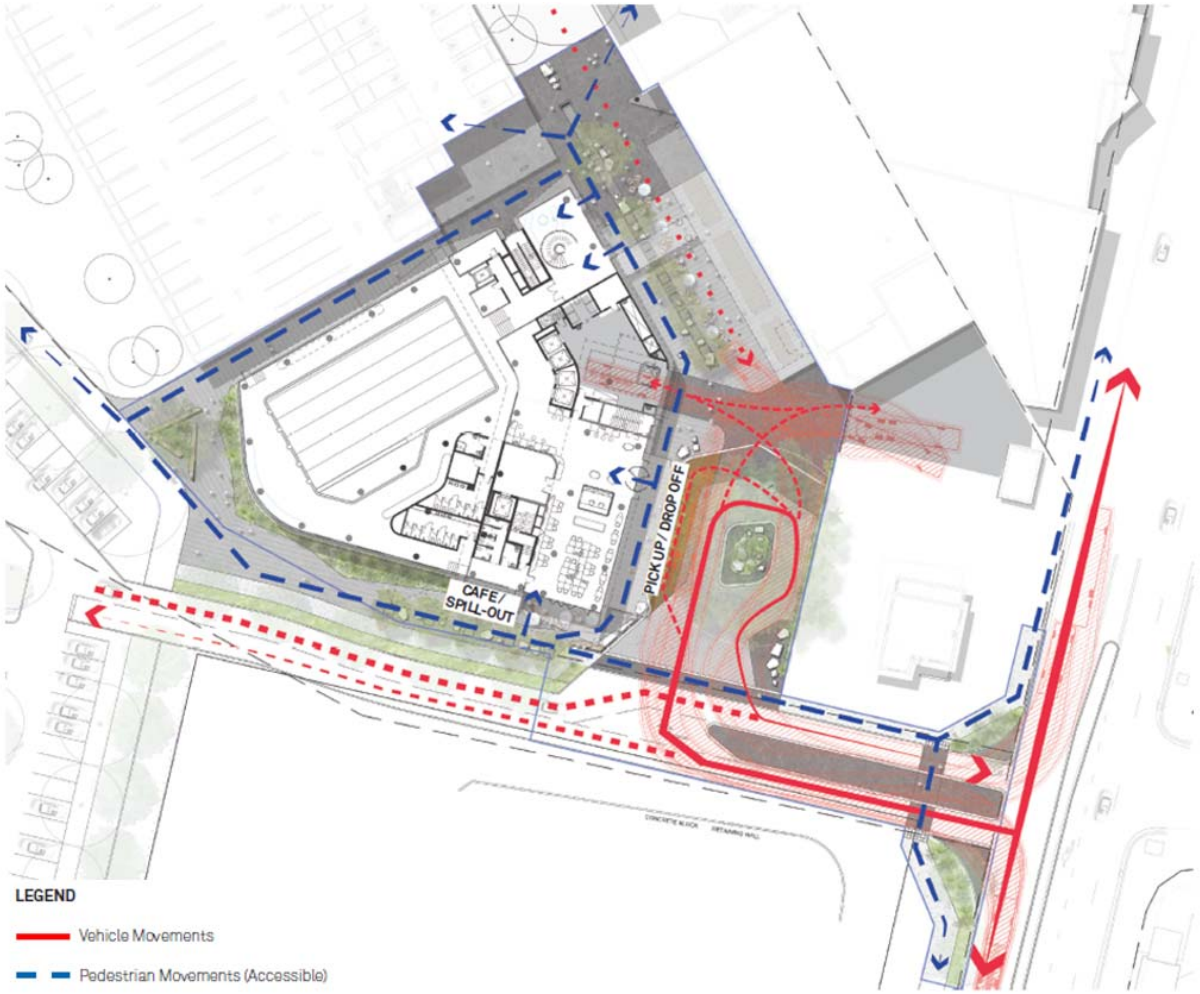
Widening of the access provides several significant benefits for access to the hotel, the Stadium and the Parramatta Parklands.

As shown in Figure 2.2 and Figure 2.3, the widening will allow the provision of a dedicated pedestrian / cycle pathway along the northern side of the access while maintaining two way traffic lanes along the access. This pedestrian pathway will accommodate pedestrian access from O'Connell Street between the Stadium and Parramatta Leagues Club to the Parramatta River and its pedestrian links along the eastern river bank. These pedestrian pathways will be maintained and operate during event and non-event modes at the adjacent Western Sydney Stadium.

The widening of the access also accommodates coach and service vehicle access to the hotel's porte cochere. The provision of vehicle access via the new Stadium access allows for the creation of a dedicated pedestrian area between the Leagues Club building and the proposed hotel. This pedestrian area is part of a potential pedestrian link between the Stadium and the Club.

This is illustrated in Figure 2.2 and Figure 2.3.

Figure 2.2: Pedestrian Access / Pathways with Widened Vehicle Access – Non Event Mode

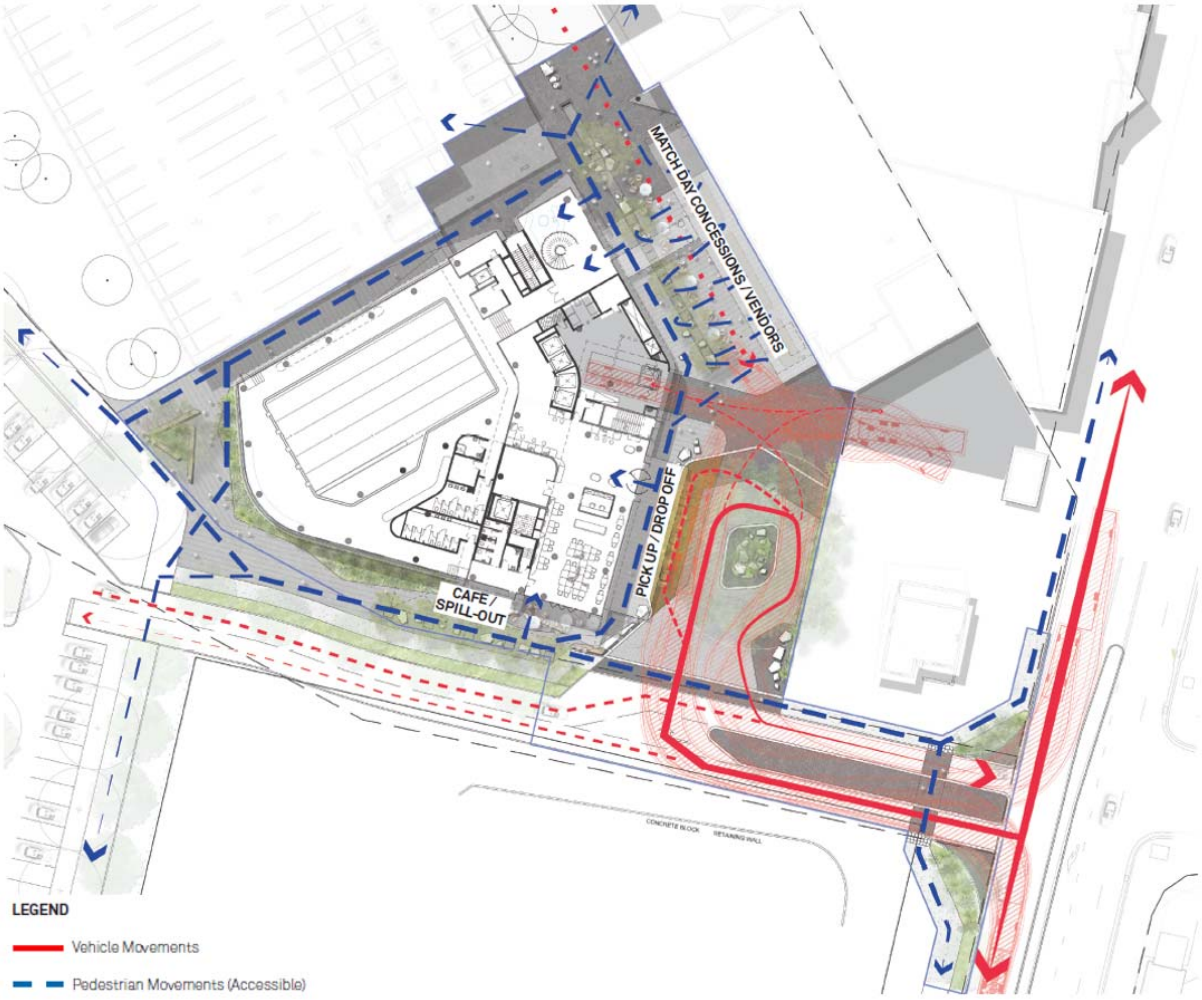


Base Map Source: Hassell (November 2018)

Thus, the proposed Hotel development is seeking approval to widen the approved new vehicle access and to use the new access for access to the hotel porte cochere and facilitate pedestrian pathways between the Club and stadium sites.

The traffic generation potential of the proposed hotel development is estimated and assessed in Section 4 of this report.

Figure 2.3: Pedestrian Access / Pathways with Widened Vehicle Access – Event Mode



Base Map Source: Hassell (November 2018)

3 Existing Transport Conditions

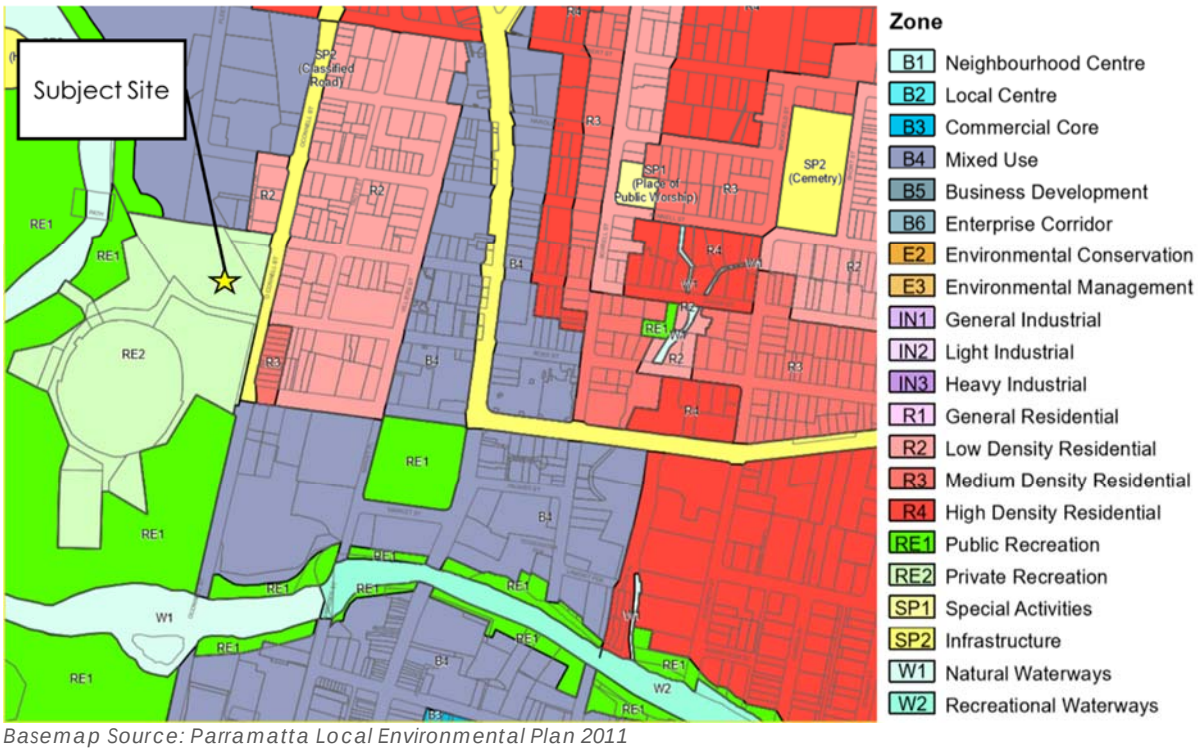
3.1 Current Land Use

The subject site is currently zoned as RE2 Private Recreation under Parramatta City Council's Local Environmental Plan (LEP) 2011. The proposed hotel (tourist and visitor use) is permissible in the zone.

The proposed hotel site is currently operating as an at-grade car park for Parramatta Leagues Club which is a registered club with multiple uses such as restaurants, recreational and entertainment facilities and function centres for weekly events.

The surrounding land uses to the subject site include mixed use, low density residential, medium density residential and public recreational classifications. The location of the site and its surrounding land use zones are shown in Figure 3.1.

Figure 3.1: Subject Site and Surrounding Land Uses



Basemap Source: Parramatta Local Environmental Plan 2011

3.2 Surrounding Road Network

The road network immediately servicing the proposed hotel site and the Parramatta Leagues Club precinct is described below.

O'Connell Street is a two-lane, two-way road located east of the Proposal site. The carriageway is typically 15m in width with sections of double barrier line marking and raised medians separating opposing traffic movements. Parking along both sides of O'Connell Street is restricted by 'No Parking' and 'No Stopping' restrictions and in addition, clearway restrictions during 6.00am-10.00am and 3.00pm-7.00pm from Monday to Friday are placed on both sides of O'Connell Street. The sign posted speed limit in the area is 60km/h.

Eels Place is typically a two-lane, two-way road located north of the Proposal site. The road provides vehicular access to the PLC multi deck car park, Northcott Disability Services, Northcott Lane and the former Parramatta Female Factory site. The carriageway width is generally 12m aligned in the east-west direction. Kerbside parking is not permitted along both sides of the road. The default speed limit is 50km/h.

Grose Street is a local two-way road with single traffic lanes in an east-west direction. Time restricted kerbside parking is permitted along both sides of the road assisted by a paid parking system. The posted speed limit is 50km/h.

Ross Street is a local two-way road located directly east of the site. The carriageway is typically 11m in width with single traffic lanes in both eastbound and westbound. Kerbside parking is permitted with time restrictions along both sides of the road. The on-street parking is managed by a paid parking system. The default speed limit is 50km/h.

3.3 Existing Background Traffic

O'Connell Street is currently part of the inner ring road for Parramatta CBD which allows destinations traffic to better circumnavigate the city rather than cross it. The intent is to help shift the balance of traffic from through traffic to destination traffic, allowing the city centre to function more effectively. Figure 3.2 shows the two ring roads of Parramatta.

As a result, O'Connell Street carries significant amount of traffic with average daily traffic volumes of 29,258 which were collected on a sampled event day in May 2016 as stated in the Traffic Impact Assessment for Western Sydney Stadium prepared by BECA. However, it is assumed the daily traffic volumes on O'Connell Street would be reduced due to the redevelopment of Western Sydney Stadium which is currently under construction.

Figure 3.2: Inner and Regional Ring Roads of Parramatta

Source: City of Parramatta (2012)

As part of our assessment for the proposed development, traffic surveys were undertaken on Friday, 26 October 2018 to observe the current traffic volumes at O'Connell Street intersections with Eels Place and Victoria Road during the typical AM and PM peak hours. The traffic surveys also observed the traffic movements at the intersections.

It is noted that the construction traffic movement for the Western Sydney Stadium at the intersection of O'Connell Street and Victoria Road were also recorded in Figure 3.3 and Figure 3.4.

It is also noted that there was some disparity between the southbound flow counts between the surveyed intersections. This is due to some traffic entering and exiting from Ross Street.

The traffic volumes recorded on 26 October 2018 were used as the existing base case for intersection modelling analysis. This is discussed further in Section 4 of this report.

Figure 3.3: Turning Traffic Volumes for the AM Peak Hour

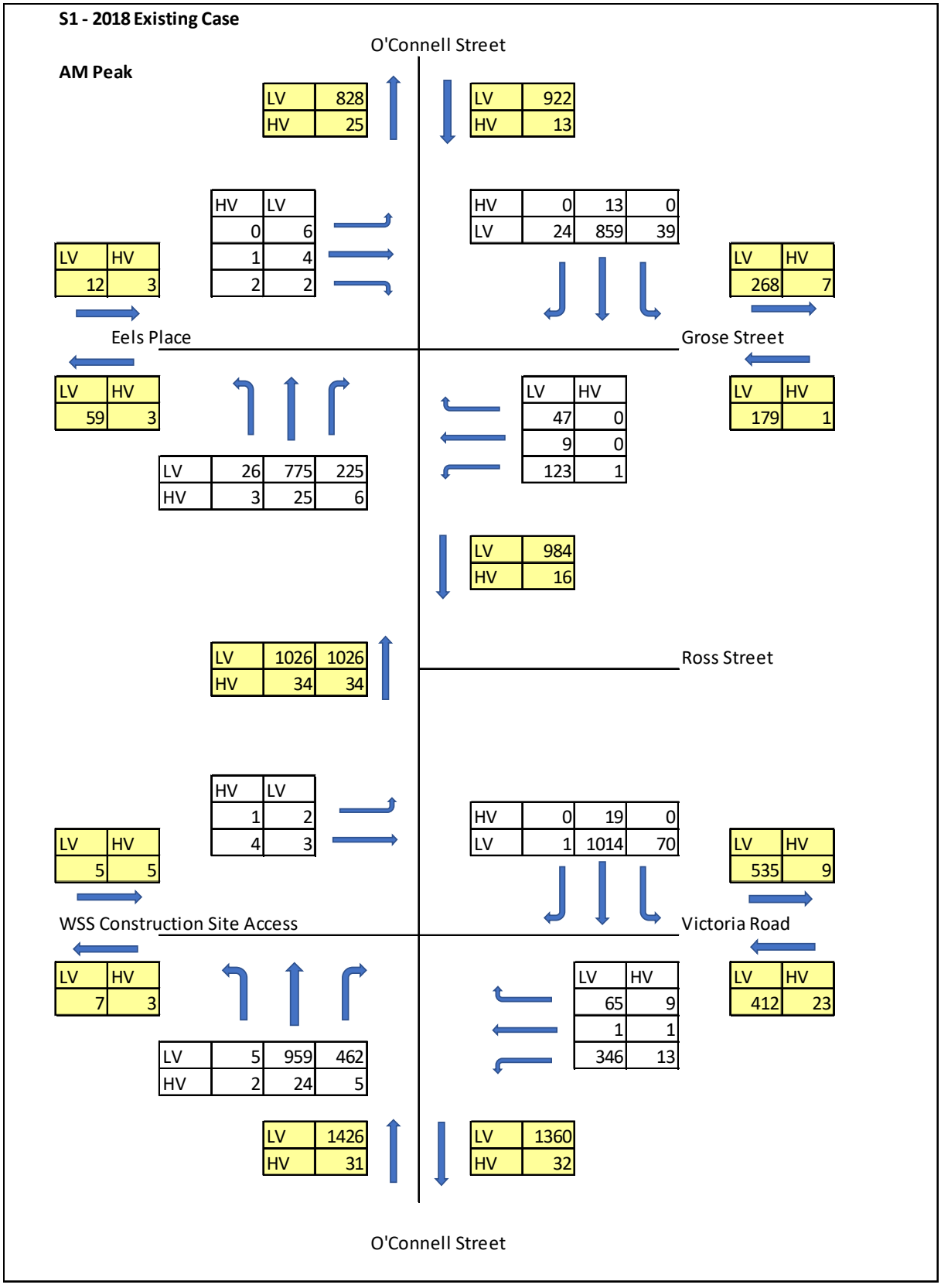
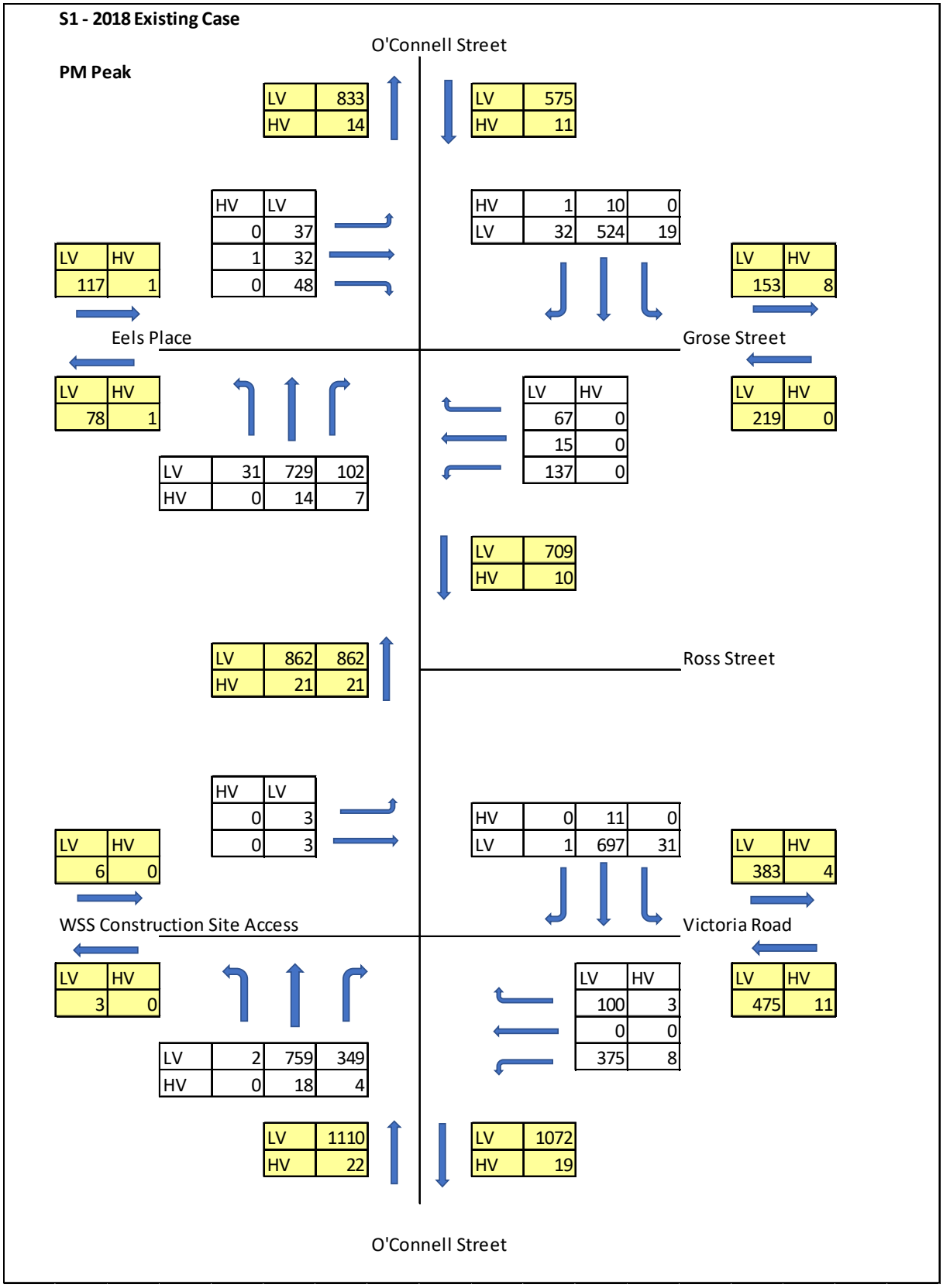


Figure 3.4: Turning Traffic Volumes for the PM Peak Hour



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It is also noted that there was some disparity between the southbound flow counts between the surveyed intersections. This is due to some traffic entering and exiting from Ross Street.

The traffic volumes recorded on 26 October 2018 were used as the existing base case for intersection modelling analysis. This is discussed further in Section 4 of this report.

3.4 Existing Parking Facilities

3.4.1 Overview

The Parramatta Leagues Club recently completed an upgrade of the Club's on site parking provisions with the construction of the multi storey car park providing 773 car parking spaces.

The Parramatta Leagues Club Ltd has been carefully developing a plan for the carpark site for several years. The approval recognised the potential for future redevelopment of the hotel site, by foreseeing the removal of the existing at grade parking (94 spaces) on the hotel site.

The proposed development is located at the southern at-grade section of the car park as shown in Figure 3.5.

3.4.2 Parking Supply

The multi-storey car park for the Parramatta Leagues Club has a total parking supply of 773 car parking spaces including:

- accessible parking spaces
- a car share space
- bicycle storage facilities
- motorcycle parking spaces

It is noted that the multi-storey car park was constructed to accommodate the parking demand of the proposed hotel development and to meet peak demand for Club members during game day events at the Western Sydney Stadium.

Figure 3.5: Site Map and Parking Provisions

Basemap Source: Nearmap

3.4.3 Parking Demand

The parking demand for the existing club facilities have been assessed in the Traffic and Parking Report (TPR) for the Parramatta Leagues Club Car Park prepared by Taylor Thomson Whitting (TTW) in April 2015.

A parking survey of the at-grade car park prior to completion of the multi-storey car park was conducted by TTW. The parking survey results have shown that the at-grade car park had a maximum parking occupancy of 75 per cent. Hence, it was determined that the existing club facilities would require a minimum of 274 car parking spaces.

The parking demand for the proposed development will be detailed in Section 4 of this report.

3.5 Public Transport Facilities

There are various public transport services available within the Parramatta CBD. Several bus stops with frequent bus services are available in close proximity to the subject site as shown in Figure 3.6.

Figure 3.6: Locality Map

Basemap Source: Google Maps Australia

The nearest bus stop to the subject site is on the O'Connell Street frontage of Parramatta Leagues Club and provides bus services to Epping via North Rocks and a free shuttle bus loop service from Macquarie Street near Centenary Square.

The free shuttle bus service connects tourists, residents and commuters to the commercial, retail and recreational landmarks of Parramatta city. The free shuttle bus service operates between 7:00am to 6:30pm from Monday to Friday and 8:00am to 4:00pm from Saturday to Sunday. A summary of the bus services near the subject site are presented in Table 3.1.

Table 3.1: Public Transport Services near the Subject Site

Service	Route	Route Description	Site Proximity	Frequency (peak / off peak)
Bus	549	Parramatta to Epping via North Rocks	70m	10-minutes / 30-minutes
	900	Parramatta Free Shuttle	70m	10-15 minutes / 10-15 minutes

Table 3.2: Additional Public Transport Services

Service	Route	Route Description	Frequency (peak / off peak)
Train	T1	North Shore, Northern & Western Line	3-10 minutes / 15 minutes
	T2	Inner West & Leppington Line	15 minutes / 30 minutes
	T5	Cumberland Line	30 minutes / 30 minutes
Ferry	F3	Parramatta River	60 minutes / 60 minutes

Figure 3.7 shows the shuttle bus service also connects passengers to Parramatta Railway Station and Parramatta Wharf.

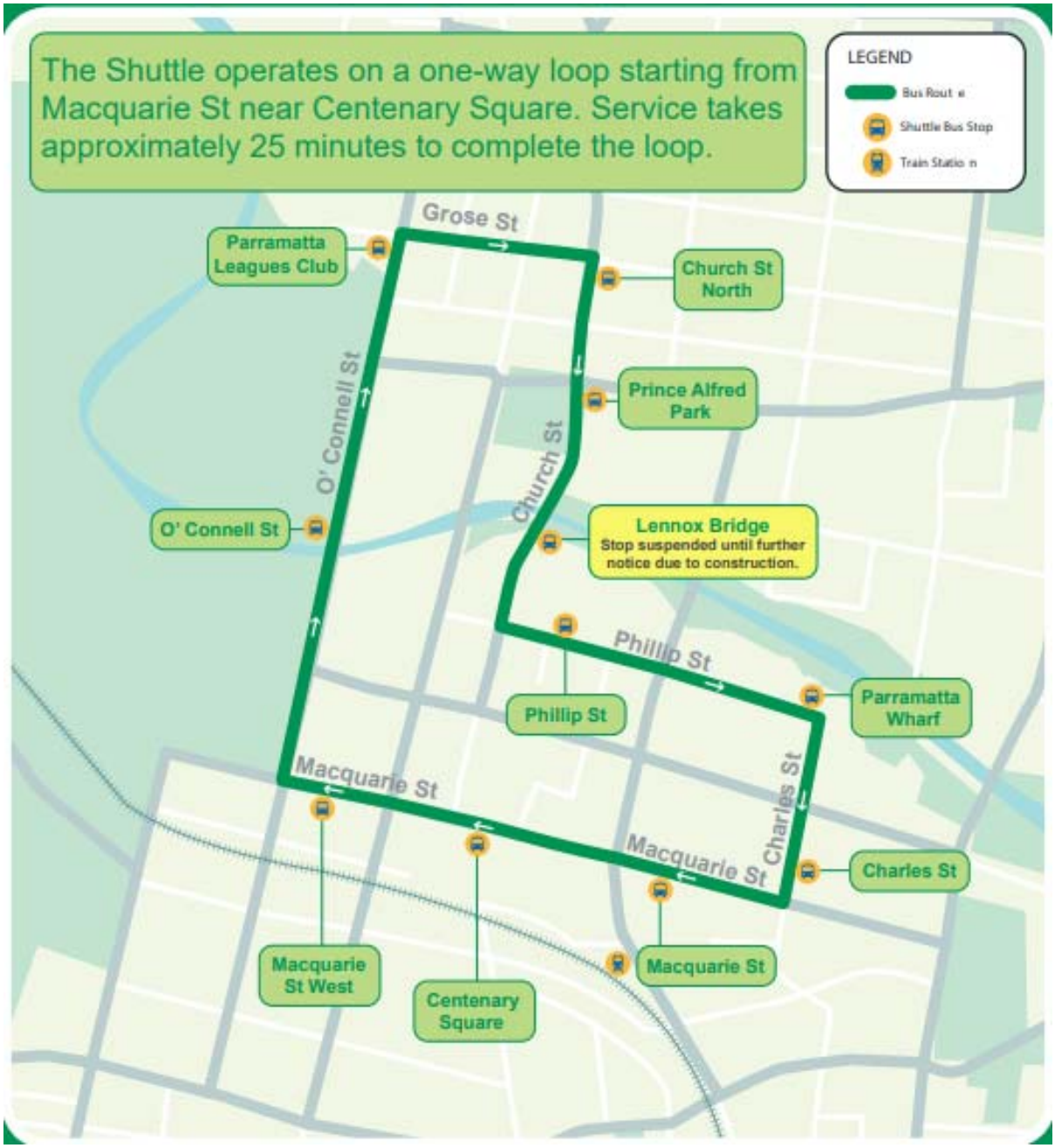
This provides further public transport services to other major interchanges such as Lidcombe, Strathfield and Sydney CBD via train services from Parramatta Railway Station. In addition, Parramatta Wharf provides ferry services to key suburbs like Balmain, Barangaroo, Milsons Point and Circular Quay.

3.6 Pedestrian and Cyclist Facilities

Pedestrian footpaths are provided along both sides of the roads in the immediate vicinity of the site. Additionally, there are existing shared paths along both sides of O'Connell Street with widths of approximately 3m and 3.2m. It is proposed by Parramatta City Council that the existing shared path on the western side of O'Connell Street will be extended towards Fennell Street and will connect to a future separated path, completing the recreational cycle route for Parramatta Park.

The existing and proposed bicycle routes and infrastructure are shown in Figure 3.8.

Figure 3.7: Bus Route Map of Parramatta Free Shuttle Service



Source: Parramatta City Council

Figure 3.8: Bicycle Routes and Infrastructure surrounding the Site

Basemap Source: City of Parramatta Bike Plan 2017

3.7 Future Developments

3.7.1 Western Sydney Stadium

As part of the NSW Government's Stadia Strategy to improve sporting infrastructure across NSW, the Western Sydney Stadium located directly south of the subject site is currently under construction.

The new stadium will include:

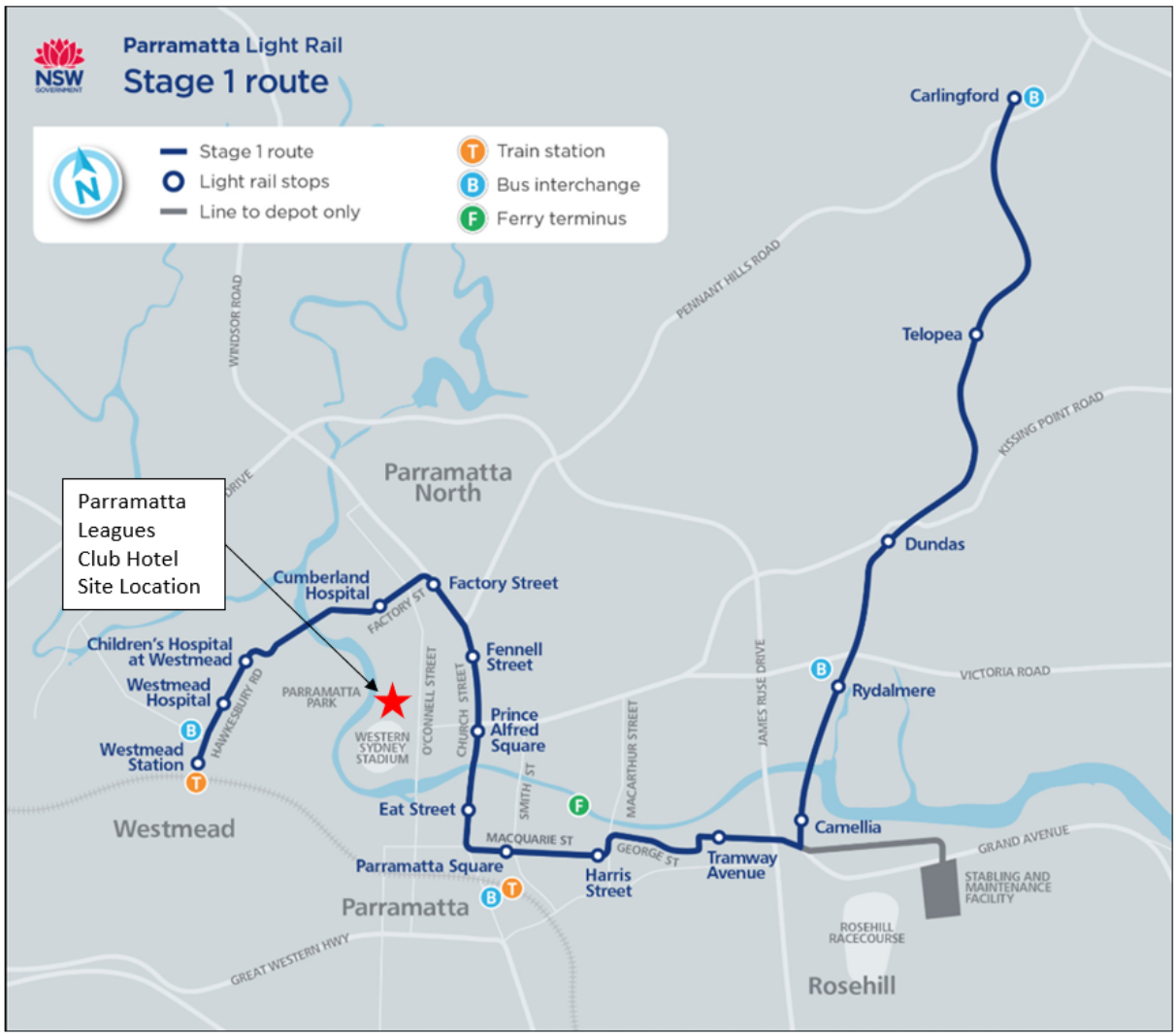
- undercover seating for 30,000 people;
- approval to accommodate up to 40,000 people during concerts and similar events;
- approximately 20,000m2 GFA for ancillary uses;
- a new at-grade car park of approximately 500 car parking spaces;
- a new vehicle access from O'Connell Street south of the new stadium with an internal road connecting to the O'Connell Street intersection with Victoria Road via the western side of the new stadium;
- a new vehicle access at the northern end of the Stadium's frontage to O'Connell Street (opposite Ross Street); and
- shuttle bus and STA bus layover areas along the western side of O'Connell Street directly outside the eastern entrance to the new stadium.

Western Sydney Stadium is scheduled to be completed and due to open in 2019.

3.7.2 Parramatta Light Rail

The first stage of the Parramatta Light Rail will connect Westmead to Carlingford via the Parramatta CBD and Camellia over 12 kilometres, with 16 stops as shown in Figure 3.9.

Figure 3.9: Parramatta Light Rail Stage 1 Route



Source: TfNSW (http://www.parramattalightrail.nsw.gov.au/maps, accessed on 22/11/2018)

It is indicated that the route alignment towards Parramatta CBD will be via Church Street. It is assumed that when stage 1 is constructed, O'Connell Street will likely to accommodate additional traffic demand due to displaced trips.

It is expected that the Parramatta Light Rail would be operational in 2023.

3.7.3 Sydney Metro West

Sydney Metro West project was announced by the NSW Government in November 2016 to connect Parramatta and Sydney CBD via a new underground metro railway (see figure XX).

Figure 3.10: Sydney Metro West -

Source: Sydney Metro (https://www.sydneymetro.info/sites/default/files/document-library/Sydney-Metro-West-Project-Overview-March-2018.pdf, accessed on 27/11/2018)

The Sydney Metro West will service key precincts of Greater Parramatta, Sydney Olympic Park, The Bays Precinct and the Sydney CBD. It is proposed that Sydney Metro West will have an underground interchange with an existing suburban station on the T1 Western Line either at Parramatta or Westmead.

The Sydney Metro West is set in place to address the future demand for transit services between Parramatta and the Sydney CBD. It is expected that:

- an extra 420,000 people are expected to move into the corridor between Parramatta and Sydney CBD over the next 20 years
- more than 300,000 new jobs will be created by 2036 in the corridor between Parramatta and Sydney CBD at places like Parramatta CBD, Sydney Olympic Park and the Bays Precinct, and
- the T1 Western Line needs relief because it will be severely overcrowded by the early 2030s.

The project is currently under early investigations and is scheduled to be operational to the key precincts in the second half of 2020.

Both the Parramatta Light Rail and Sydney Metro West projects will enhance the public transport options for access to and from the proposed hotel development along with the Parramatta Leagues Club and Stadium precinct generally, thereby encouraging a greater use of public transport to access the site.

4 Transport Assessment of Proposed Hotel Development

4.1 Site Layout Arrangements

4.1.1 Vehicle Access and Circulation

Vehicular access to the proposed hotel porte cochere and loading will be provided via the Stadium's new northern vehicle access at O'Connell Street opposite Ross Street. It is intended that this vehicle access will be shared by the future Western Sydney Stadium for access to its on site parking facility.

All hotel guests arriving to the site via private vehicles will either:

- Access the hotel's porte cochere to drop off / pick up guests and luggage via the new access. These vehicles will be required to exit the hotel site via the new access to O'Connell Street and access the hotel / Club parking via Eels Place; or
- Directly access the hotel / Club car parking area via Eels Place and walk to the hotel.

Taxis and ride share trips can utilise either the Club's porte cochere accessed via Eels Place or the hotel porte cochere accessed via the new Stadium access.

During major events at the Stadium, it is envisaged that the new Stadium access may be close when the on-site parking spaces for Western Sydney Stadium are fully occupied. During event mode, the implementation of the Stadium's event traffic management plan would include the use of marshals at the road closures and pedestrian crossing points.

During potential road closures of the new Stadium access, vehicle drop offs / pick ups and parking for the hotel would be maintained and provided for via the Club's porte cochere facility.

Furthermore, access to and from hotel related car parking within the multi-storey car park would be maintained at all times (including during events) via Eels Place.

As discussed in previous sections of the report, it is envisaged that a large proportion of hotel guests during major events will be associated with the event and thus not necessarily seeking to travel to or away from the Stadium precinct.

4.1.2 Vehicle Swept Path Analysis

Loading dock access for both the hotel and the Club building will be provided via the new Stadium vehicle access.

As part of the vehicle access widening proposed for the Hotel development, the access has been designed to accommodate the turning movements of a coach and a Heavy Rigid Vehicle (HRV – 14.5m long) as defined by AUSTROAD guidelines.

These design vehicle requirements have been applied to the following:

- The vehicle crossover at O'Connell Street with the left in / left out turn restrictions;
- Vehicles turning movements to and from the access to the hotel; and
- Vehicle manoeuvring with the hotel's porte cochere and turning facility.

It is noted that the existing Club building loading dock is generally accessed by small and medium rigid vehicles with the very occasional heavy rigid vehicle (HRV). For the purpose of this assessment a HRV has been adopted as the design vehicle to access the Club building dock.

The hotel dock has been designed to accommodate a medium rigid vehicle (MRV – 8.8m).

Vehicle swept path analysis has been undertaken for the proposed site layout using vehicle simulation software (AutoTRACK) and the design vehicles described above.

The results of the swept path analysis are presented in Appendix A. The analysis indicated that the proposed site layout can satisfactorily accommodate the following:

- Left in / left out Coach and HRV movements at the intersection of O'Connell St and the new vehicle access driveway.
- Right turn in and left out Coach and HRV movements at the hotel site and new access intersection.
- Coach manoeuvring to and from the hotel porte cochere and around the internal hotel site turning area.
- HRV access to and from the Club loading dock.
- MRV access to and from the hotel loading dock.

In summary the site layout can satisfactorily accommodate the design vehicle manoeuvring requirements and allow all vehicles to enter and exit the hotel site via the new access in a forward direction.

4.2 Pedestrian and Cyclist Access

As mentioned previously in Section 3, the proposed hotel development seeks to widen the new Stadium vehicle access between the Stadium and Parramatta Leagues club sites to facilitate a dedicated pedestrian / cycle path between O'Connell Street and the Parramatta River foreshore.

This connection will improve the east west pedestrian / cycle access to the Parramatta parklands.

Additionally the proposed hotel development will improve the pedestrian connections between the Stadium and the Club building which was a significant pedestrian desire line for pre and post events periods.

It is also noted that pedestrian footpaths are provided along the local roads near the vicinity of the site and shared paths along sections of O'Connell Street, south of the subject site. Access from Eels Place, north of the site would be retained for pedestrians and cyclists.

4.3 Parking Assessment

As documented in previous sections, the existing 733 car parking spaces located in the multi storey car park will service both the facilities in the existing Parramatta Leagues Club building and the proposed hotel development.

The multi-storey car park also provides parking spaces for Club members accessing the Stadium to attend events. This arrangement is expected to continue with the opening of the Western Sydney Stadium.

It is noted that the approval for the multi storey car park by Parramatta City Council considered future development of the proposed hotel site in determining the number of spaces provided in the car park.

In approving multi storey car park development, Council required the provision of car parking spaces to be reduced from approximately 1,000 spaces as proposed by the Parramatta Leagues Club to 733 spaces on the basis that 1,000 spaces would be an excessive provision for existing and future development on the Parramatta Leagues Club site.

The various facilities and functions of the Parramatta Leagues Club precinct building and hotel will have various and different operating peaks and thus parking demands.

As parking will be generally unallocated within the multi storey car park, there will be the opportunity for co-utilisation of the same spaces by different uses at different times of the day.

This has the effect of reducing the total site parking demands compared to individual uses being allocated individual spaces.

Notwithstanding the above, the potential parking demands of individual uses has been estimated using Parramatta City Council DCP and RMS parking rates. These individual demands are set out in Table 4.1.

Table 4.1: Parking Demand of Existing Multi-Storey Car Park

Use	DCP Parking Requirement for Stand Alone Development	Total Parking Supply of Multi-Storey Car Park	Nett Car Park Capacity / Demand
Existing Parramatta Leagues Club Facilities (non-event mode)	274 spaces (based on previous survey)	-	-
Hotel	52 spaces (1 space / 4 rooms)		-
Wellness & Fitness Centre (Pool + Gym) for Proposed Hotel Development (3,688 m2)	166 spaces (4.5 spaces / 100m2)	-	-
Function & Meeting Room (2,128 m2)	319 spaces (15 spaces / 100m2)	-	-
Total	**811 spaces**	**733 spaces**	**-78 spaces**

Table 4.1 indicates that the 733 parking spaces in the multi storey car park would accommodate approximately 90 percent of the total individual peak parking demands of each use for the proposed hotel and the Parramatta Leagues Club building.

However, as described above it is unrealistic to assume that all uses will generate peak demand simultaneously.

Furthermore, both the fitness & wellness and function facilities will be ancillary to the proposed hotel and Leagues Club and thus generate parking demand in isolation of the other uses.

It is considered that the provision of 733 on site parking spaces will adequately accommodate the Club precinct's future parking demand in a manner which is consistent with the approval for multi storey car park the anticipated future Precinct development and broader transport policies which seek to reduce private vehicle travel in favour of public and active transport.

4.4 Road Network Assessment : Operational Implications of Hotel During Event Mode at Stadium

As described in Section 1.4 of this report, during major event mode at the adjacent Western Sydney Stadium, the proposed hotel development and the Parramatta Leagues Club precinct effectively operates as an ancillary use to the major event.

With regard to the proposed hotel development, it is expected that the majority of guests of the hotel during event mode are also likely to be attending the event at the Stadium. The presence of ancillary uses including the proposed hotel as well as after match facilities in the Leagues Club will potentially retain a portion of travel demand on site within the precinct, thereby reducing rather than increasing the travel demands to the external road and transport networks.

During event mode, hotel guests who are not attending the game / event would be highly likely to know of the game / event and plan accordingly, noting that advice of planned events at the Stadium would be provided on the hotels website / booking systems.

Thus, during the worst-case scenario (ie. major event mode), the proposed hotel development is expected to have no net impact on the surrounding road network compared to the Stadium operation.

The traffic and transport implications of major event periods have been assessed by BECA as part of the Western Sydney Stadium Stage 2 DA Traffic Impact Assessment[4].

A summary of the findings of the BECA assessment for major events at the Stadium is presented below.

- Day to day operations and small to medium sized events at the Stadium are unlikely to have a significant adverse impact on the operational capacity of the surrounding road network;
- During major events at the Stadium, intersection capacity constraints will occur at site access intersections on O'Connell Street and some nearby intersections.
- During major events at the Stadium, intersection operation at the O'Connell Street / Eels Place intersection will continue to operate satisfactorily (ie. access to the Parramatta Leagues Club car park will operate satisfactorily).

For major events the following mitigation measures have been recommended by BECA:

- Develop and implement an Event Day Management Plan (EDMP). An example of what BECA have recommended for consideration as part of an EDMP is provided in Appendix B.

[4] Western Sydney Stadium – Stage 2 DA – Traffic Impact Assessment (BECA, May 2017).

- Relocate the proposed Stadium northern access at O'Connell Street from Victoria Street intersection to opposite Ross Street. This recommendation was approved as part of the Stage 2 DA.

Based on the above, the operation of the proposed hotel development will need to be considered and considerate of the Event Day Management Plan for the Stadium.

4.5 Road Network Assessment : Operational Implications of Hotel During Non - Event Mode at Stadium

This section of the report assesses the traffic implications of the proposed hotel development on the surrounding road network for periods when the Stadium is operating in non-event mode.

4.5.1 Hotel Travel Demand

The proposed hotel development is expected to appeal to corporate travellers, leisure travellers in particular associated with future events held at Western Sydney Stadium and groups primarily for tourism.

It is expected that corporate travellers will travel to the site via taxis/uber, personal vehicles or to a lesser extent public transport (buses). Leisure travellers are assumed to be travelling via public transport, taxis/uber, personal vehicles or walk to the site. Group travellers are assumed to typically travel to/from the site via privately organised coach services or public transport.

A summary of the anticipated split of mentioned guest types accommodating the proposed hotel development as well as the typical modes of transport used to/from the proposed development are presented in Table 4.2.

The indicative arrival and departure times for the different guest types are provided in Table 4.3 with a description of the general arrival and departure behaviours for each guest type.

Table 4.2: Hotel Guest Types and Typical Mode of Transport

Guest Types	Average Business Mix	Typical Mode of Transport
Corporate	25%	Taxi/uber - 50%
		Car – 25%
		Bus - 25%
Leisure	50%	Bus – 30%
		Taxi/uber – 20%
		Car – 40%
		Walk – 10%
Group	25%	Coach – 80%
		Bus – 20%

Table 4.3: Indicative Guest Arrival and Departure Time Periods to/from Site

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Corporate – arrivals	4.00pm-7.00pm						
Corporate – departures		7.30am-9.30am					
Leisure – arrivals			2.00pm-6.00pm				
Leisure – departures				9.00am-11.00am			
Group – arrivals	6.00pm-9.00pm						
Group – departures	6.00am-9.00am						

As indicated above:

- Corporate guests typically arrive towards the close of business hours through to early evening with stays over the working week days. Departures are on typically early, before working hours. It is assumed there are no business trips over the weekend, however there may be arrivals occurring on Sunday night in preparation for the following week. Stay length on average is approximately 1.5 nights, with exceptions relating to extended project work.

- Leisure guests typically arrive closer to standardised check-in times (from 2:00pm), while also departing later than corporate guests and nearer to standard hotel check out time of 11:00am. Stay length on average is approximately 2 nights.
- Group travellers are more structured in their arrival/ departure times, with arrivals generally being late in the day (6:00pm-9:00pm) while departures are typically early. Group guests stay between 1 – 3 nights depending on the package. Coach/bus drop off and pick-ups are well coordinated with the respective companies and the proposed hotel, schedule arrangements communicated in advance to facilitate an efficient process for all parties.

4.5.2 Hotel Development Traffic Generation

The traffic generated by the 209 hotel rooms within the proposed development is determined by the guest types travelling to/from the site by cars and taxis/uber as mentioned above.

Traffic survey were undertaken at the O'Connell Street intersections with Eels Place and Victoria Road during the AM and PM peak hours to assess the existing traffic conditions along O'Connell Street.

In order to be consistent with the traffic volumes taken from the surveys, the associated with the proposed hotel development traffic generation will be assessed based on Friday AM and PM peak hours.

As shown in Table 4.3, the Friday arrival and departure for each hotel guest type were applied to the modal split in Table 4.2 to determine the vehicle trips generated by the proposed development. In order to determine the vehicle trips of cars, taxis and/or uber, it is assumed that there is a car occupancy of 1.5 people per car.

Additionally, for the purpose of assessing the worst case scenario, it has been assumed that the ancillary uses within the proposed development (ie. gymnasium / pool and function facility uses), will be accessible to the public and generate traffic simultaneously with other site uses during the peak periods of the surrounding road network.

It is noted that the peak traffic generating periods for the ancillary uses would typically occur outside of the road network peak and not necessarily at the same time as other site uses. For example, function related traffic is unlikely to occur during the AM commuter peak period, while the Wellness Centre is likely to generate its peak traffic flows before the AM peak and not during functions.

Similarly for major functions at the hotel a significant proportion of the hotel rooms are expected to be occupied by people attending the function.

Notwithstanding the above, and to provide a conservative assessment traffic generation for the proposed hotel development is set out in Table 4.4.

Table 4.4 indicates that the proposed development is theoretically anticipated to generate some 90 two-way trips in the AM and PM peak hours respectively.

Table 4.4: Traffic Generation of Proposed Development – Vehicles / Hour in Network Peak

Peaks	User Types	Mode of Transport	Vehicle Trips (In/Out)
AM Peak	Hotel Guests	Taxi/Uber	0 vehicles / 32 vehicles
		Car	0 vehicles / 37 vehicles
	Ancillary Uses	Car	4 vehicles / 17 vehicles
PM Peak	Hotel Guests	Taxi/Uber	11 vehicles / 3 vehicles
		Car	22 vehicles / 6 vehicles
	Ancillary Uses	Car	38 vehicles / 10 vehicles

Notes:

i. For the car trips generated from the hotel component, it has been assumed 100% of trips are outbound in the AM peak hour and 80% of trips are inbound and 20% of trips are outbound in the PM peak hour.

ii. For the car trips generated from the ancillary facilities accessible for public visitors, it has been assumed 80% of trips are outbound and 20% of trips are inbound in the AM peak hour and reverse in the PM peak hour.

4.5.3 Hotel Development Assessment Scenarios

In order to analyse the potential operational traffic impact of the proposed hotel development on the surrounding local road network during non-event mode at the Stadium, the following assessment scenarios have been undertaken:

- **Existing Base Case (S1)** – this scenario represents the current performance of the network based on TTPP's traffic surveys and is the starting point for comparative purposes.
- **Future Base Case (S2)** – this scenario includes the existing base case traffic and a 2 per cent annual background traffic growth for a ten-year period.
- **Future Case with Hotel Development (S3)** – this scenario includes S2 and the development traffic associated with the proposed hotel development.

4.5.4 Traffic Volumes

The existing base case traffic volumes are presented in Figure 4.1 and Figure 4.2 for the AM and PM peak hours respectively.

The future case traffic volumes are presented in Figure 4.3 and Figure 4.4 for the AM and PM peak hours respectively. Conservatively, the traffic volumes do not take into account the events held at the new Western Sydney Stadium, as it is assumed that any additional parking spaces within the multi-storey car park will be occupied by attendees of the special events.

The future case with the proposed development traffic volumes are presented in Figure 4.5 and Figure 4.6 for the AM and PM peak hours respectively.

It is assumed that the traffic generation of the proposed hotel development as mentioned in Table 4.4 was distributed evenly to/from the northern, eastern and southern directions.

It is also assumed that hotel guests arriving to the site via private vehicles would enter via the future access for check in procedures and would then proceed to enter the multi-storey car park via O'Connell Street and Eels Place.

Similarly, hotel guests leaving the site via taxis or uber to head to the south would exit the future access and turn left onto O'Connell Street and turn left onto Eels Place to turn around and turn right onto O'Connell Street southbound.

4.5.5 Intersection Capacity Assessment

The operation of the key intersections has been assessed using SIDRA INTERSECTION 8 NETWORK, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

The key intersections assessed were as follows:

- Eels Place/ O'Connell Street/ Grose Street intersection;
- Victoria Road/ O'Connell Street intersection; and
- Future Site Access/ O'Connell Street intersection.

Intersection configurations were sourced from Roads and Maritime traffic signal plans and aerial photos. Signal phasing information was obtained through video footage taken for traffic surveys.

SIDRA modellings were calibrated to the conditions observed during the surveys.

Figure 4.1: S1 AM Peak Hour Traffic Volumes

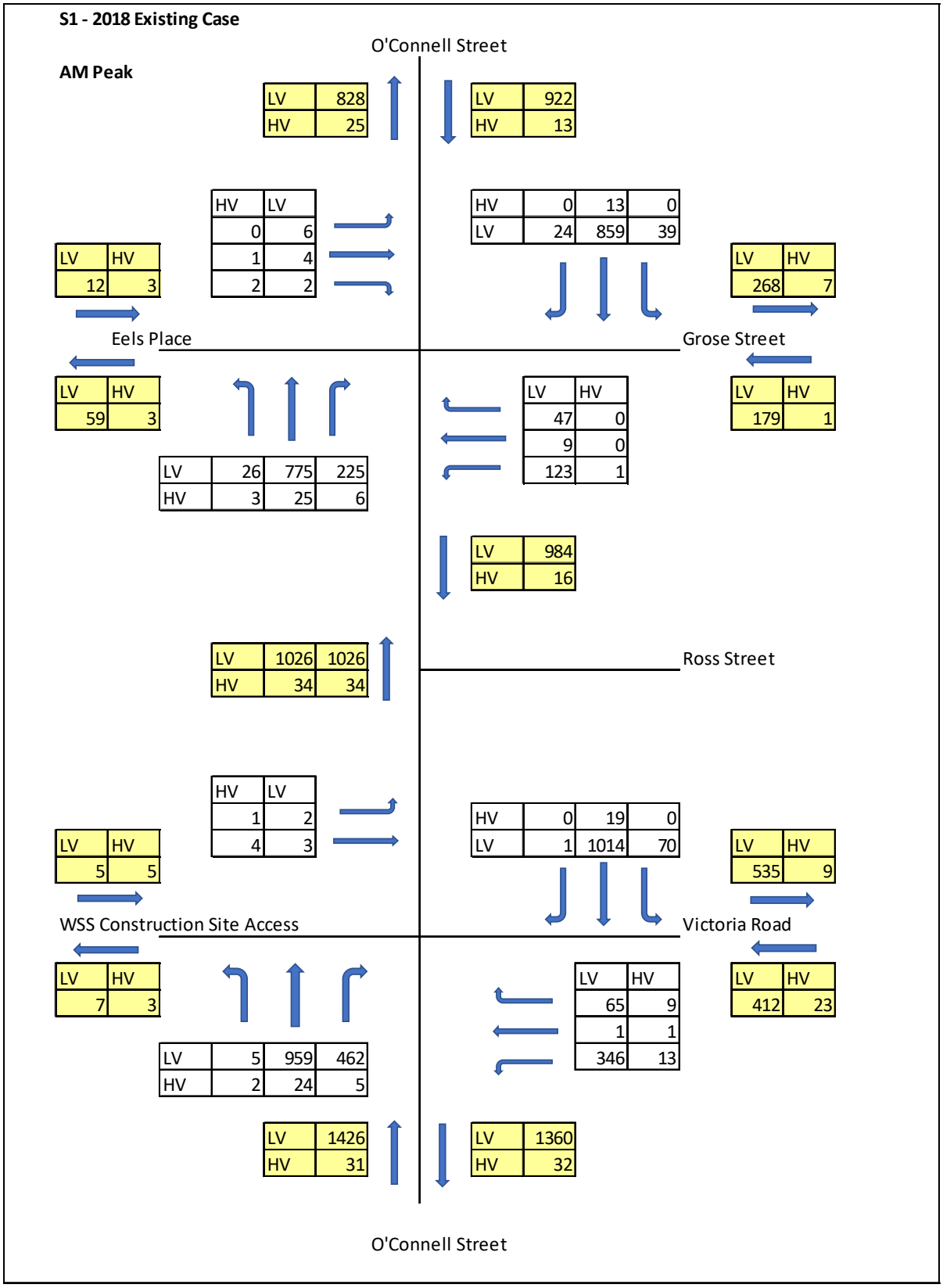


Figure 4.2: S1 PM Peak Hour Traffic Volumes

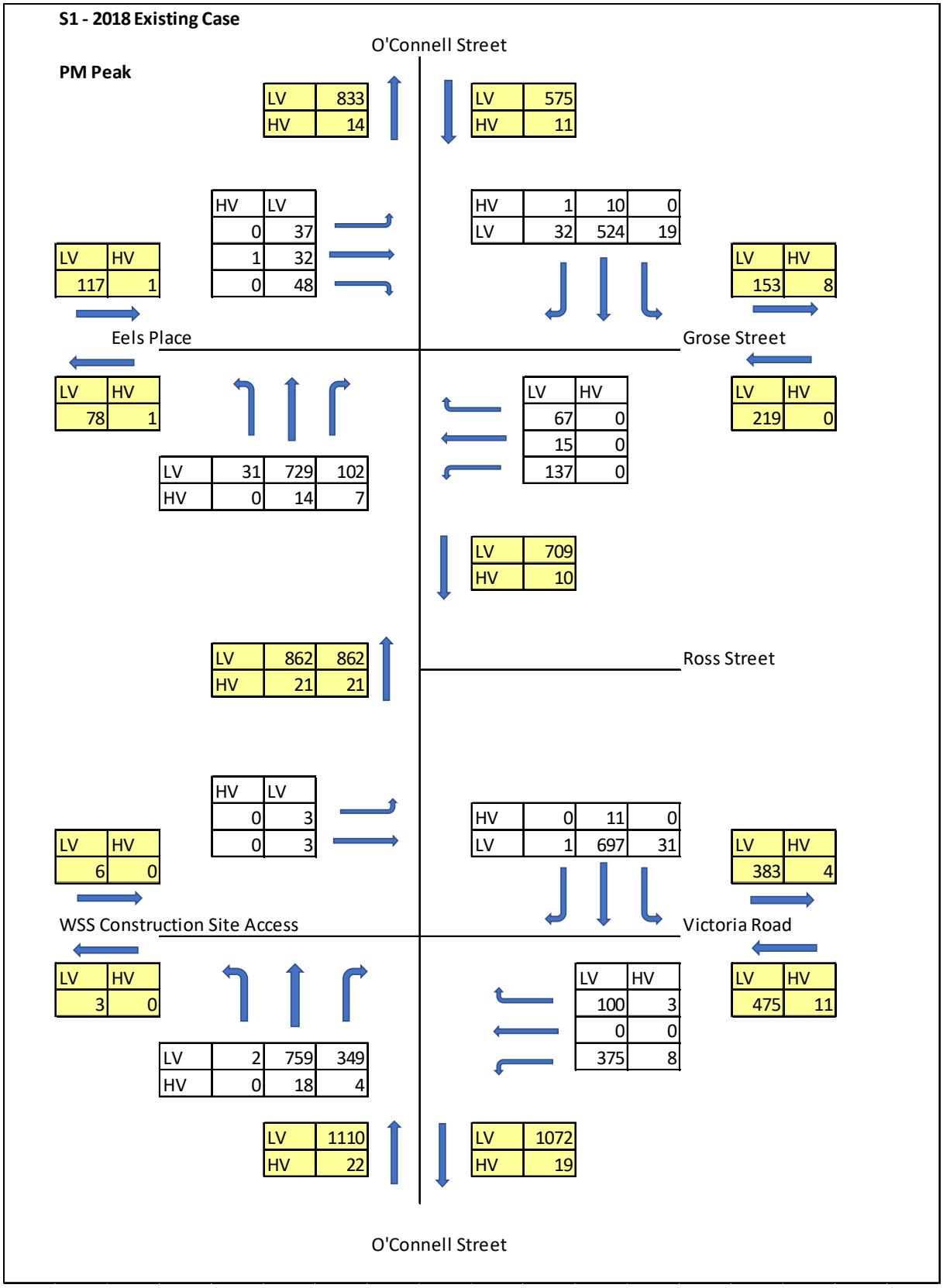


Figure 4.3: S2 AM Peak Hour Traffic Volumes

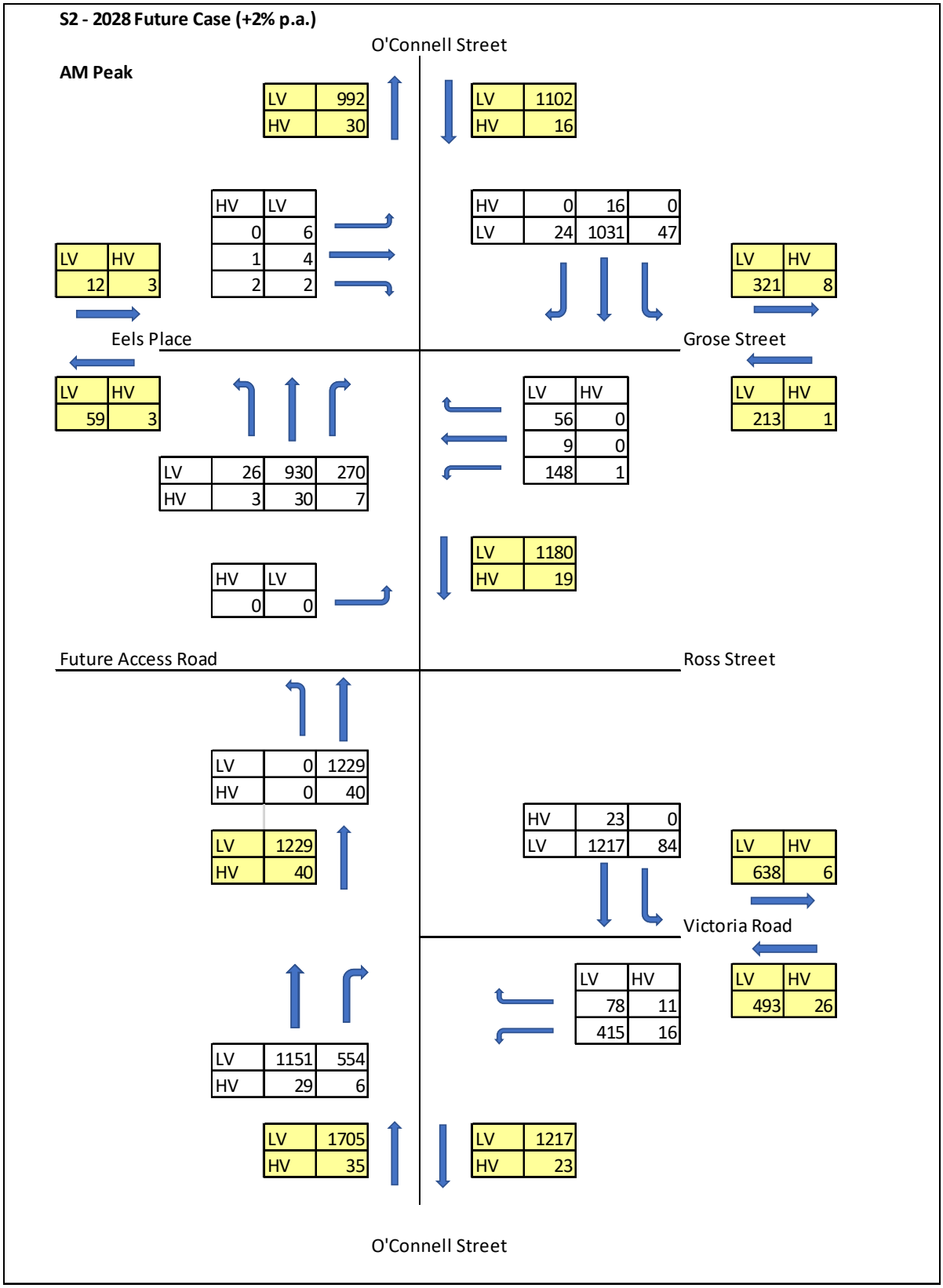


Figure 4.4: S2 PM Peak Hour Traffic Volumes

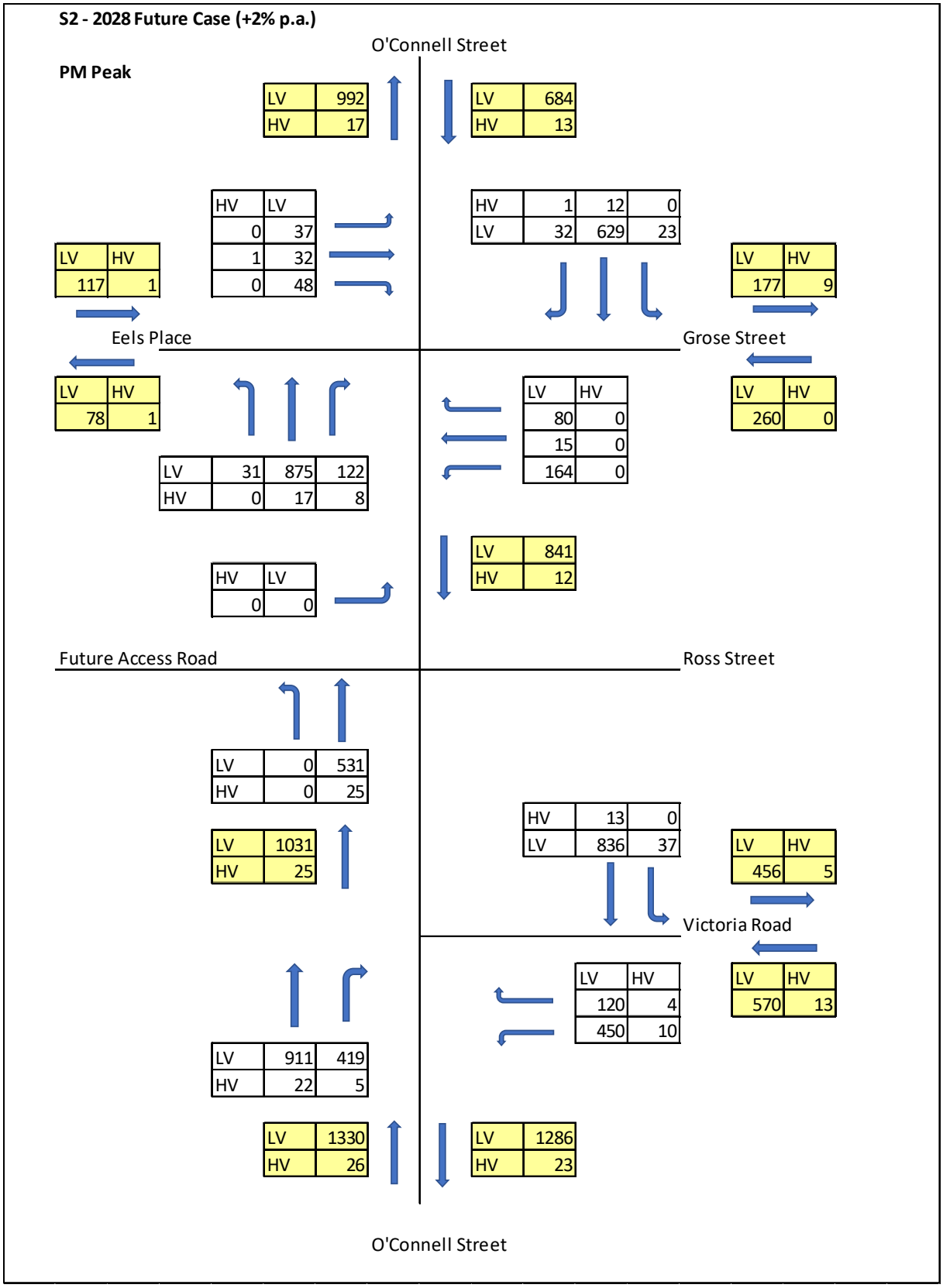


Figure 4.5: S3 AM Peak Hour Traffic Volumes

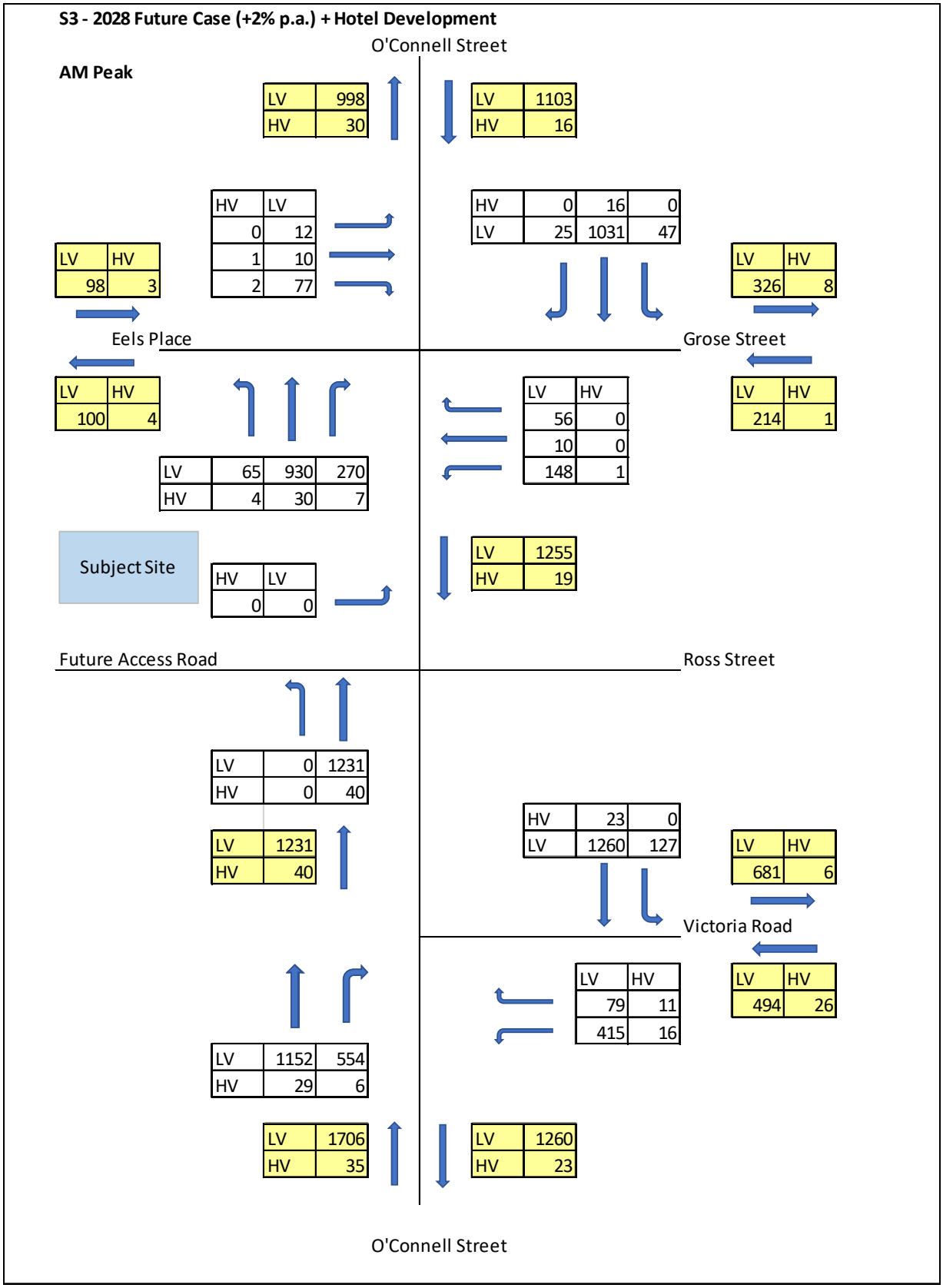
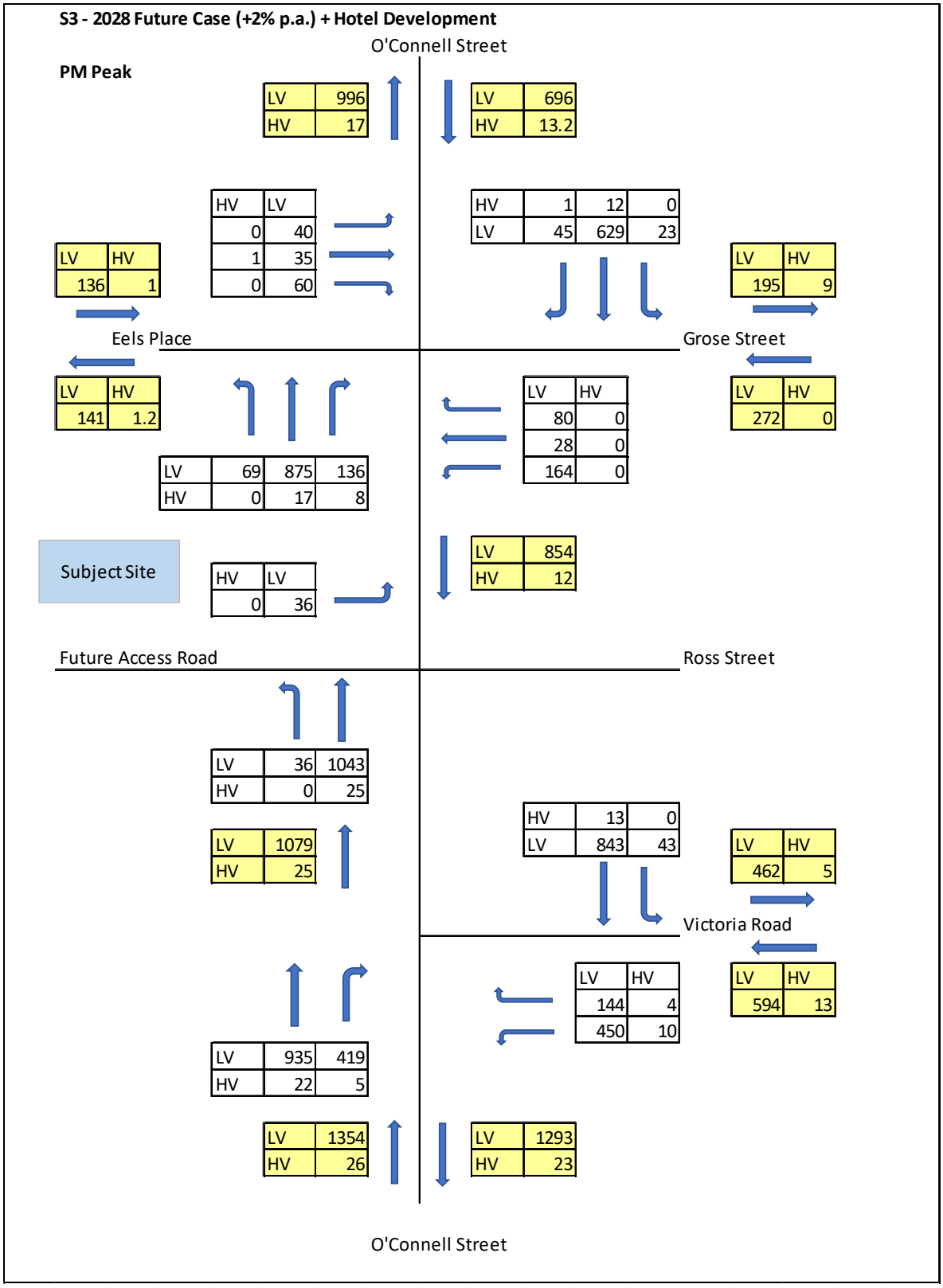


Figure 4.6: S3 PM Peak Hour Traffic Volumes



4.5.6 Model Performance Indicators

SIDRA INTERSECTION 8 modellings provide several useful indicators to determine the level of intersection (LoS) performance.

LoS is a basic performance parameter used to describe the operation of an intersection. Levels of service indicators range from A (indicating good intersection operation) to F (indicating over-saturated conditions with long delays and queues).

At priority controlled (give-way and stop controlled) and roundabout intersections, the LoS is based on the modelled delay (seconds per vehicle) for the most delayed movement (refer to Table 4.5).

Average delay is the difference between interrupted and uninterrupted travel times through the intersection and is measured in seconds per vehicle. At priority controlled intersections and roundabouts, the average delay for the most delayed movement is usually reported.

Table 4.5: Level of Service Criteria for Intersections

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	good operation	good operation
B	15 to 28	good with acceptable delays and spare capacity	acceptable delays and spare capacity
C	29 to 42	satisfactory	satisfactory, but accident study required
D	43 to 56	operating near capacity	near capacity and accident study required
E	57 to 70	at capacity At signals, incidents will cause excessive delays.	at capacity, requires other control mode
F	Greater than 71	unsatisfactory with excessive queuing	unsatisfactory with excessive queuing; requires other control mode

4.5.7 Intersection Operational Conditions

Intersection analysis was conducted for the key intersections based on the existing peak hour flows and the estimated future peak hour flows with or without development as shown in Section 4.5.4.

The analysis results for traffic conditions are presented in Table 4.6.

Table 4.6 indicates that minor delays are currently experienced by motorists at the O'Connell Street intersections in the AM and PM peak hours.

Table 4.6 indicates that the existing intersections currently operates acceptably at LoS B during the AM and PM peak hours. It also shows for the future case without development traffic that Eels Place/ O'Connell Street/ Grose Street intersection would continue to operate with a LoS B during the AM and PM peak hours.

However, Victoria Road and O'Connell Street intersection would operate at LoS D with significant delays during the AM peak hour and LoS B during the PM peak hour.

The future case with development traffic shows that Victoria Road and O'Connell Street intersection would operate at LoS E during the AM peak hour and LoS B during the PM peak hour.

Table 4.6: Intersection Operating Conditions

Scenario	Intersection	AM Peak			PM Peak		
		95th Percentile Queue (m)	Ave. Delay (sec/veh)	Level of Service (LoS)	95th Percentile Queue (m)	Ave. Delay (sec/veh)	Level of Service (LoS)
S1	Eels Place/ O'Connell Street/ Grose Street	102	19	B	74	23	B
	Victoria Road/ O'Connell Street	207	23	B	135	20	B
S2	Eels Place/ O'Connell Street/ Grose Street	152	26	B	96	24	B
	Victoria Road/ O'Connell Street	431	54	D	155	22	B
S3	Eels Place/ O'Connell Street/ Grose Street	151	27	B	96	24	B
	O'Connell Street/ Future Site Access	2	13	A	2	12	A
	Victoria Road/ O'Connell Street	507	65	E	158	22	B

In summary, the assessment of the proposed hotel development traffic generated during non-event periods at the Stadium have indicated that, except for the Victoria Road / O'Connell Street intersection, the road network will operate satisfactorily in the future with the proposed hotel development.

It is noted that the O'Connell Street / Victoria Street intersection is modelled to experience a significant decrease in performance from Los B to LoS D in the AM peak between S1 and S2. This is the result of background traffic increases (ie. 2% pa). With the addition of hotel related traffic flows in the year 2028 the intersection is predicted to operate with a LoS E in the morning peak. This indicates that the intersection would in 10 year's time be approaching operational capacity.

The address the capacity issue, it is suggested that phasing adjustments to signal timings be engaged to optimise the intersection performance within the network. Additionally, it is expected that hotel related traffic may seek alternate routes to and from the south. Cars accessing the hotel car parking have the opportunity to utilise unrestricted directional movements at the Eels Place / O'Connell Street intersection and can avoid the Victoria Street / O'Connell Street intersection if necessary.

4.6 Implications to Public Transport

Development of the proposed hotel within the broader Parramatta Leagues Club site will not adversely impact access to public transport services. Existing bus stops located on the Club's frontage to O'Connell Street will be retained unchanged by the proposed hotel development.

Both the Parramatta Light Rail and Sydney Metro West projects will enhance the public transport offering to the proposed hotel, the Club and the Stadium precinct more broadly.

While no bus occupancy data was available, observations indicate that buses stopping at the O'Connell Street bus stops in front of the Parramatta Leagues Club generally have spare capacity throughout the day. However, being close to the Parramatta Transport interchange, peak commuter period buses operating in the peak direction may have limited capacity in the future if current service levels are maintained.

Notwithstanding the above, the increase in public transport demands associated with the proposed hotel during commuter peak periods is not expected to have noticeable impact on bus operations.

For event mode at the stadium it is noted that public transport will form a critical part of any Event Day Management Plan.

4.7 Sustainable Transport Measures

4.7.1 Access to Public Transport

As documented in previous sections of this report, the proposed hotel development site is located within close proximity to and with good access to public transport services.

Public transport opportunities for the site and its surrounds will also improve in the future with the construction of the Parramatta Light Rail and Sydney Metro West projects.

The potential for these services to achieve mode shifts to public transport are recognised as part of the State Governments recognition of North Parramatta Urban Transformation project.

4.7.2 Local Car Sharing Initiatives

The Parramatta Leagues Club car park currently has dedicated spaces for car sharing vehicles.

Memberships for the car share service are available for both personal and business use.

Car share is a concept by which members join a car ownership club, choose a rate plan and pay an annual fee. The fees cover fuel, insurance, maintenance and cleaning of car share vehicles.

The vehicles are mostly sedans, but also include sports utility vehicles and station wagons. Each vehicle has a home location, referred to as a "pod", either in a parking lot or on a street, typically in a highly-populated urban neighbourhood. Members reserve a car by web or telephone and use a key card to access the vehicle.

Car share services can be attractive to hotel guests who stay in the hotel for a couple of days and wish to make use a car for a hour or two here and there for trips that wouldn't other be made by public transport.

The availability of on site car share services can be promoted through the hotel's advertising and marketing.

4.7.3 Green Travel Plans

Green Travel Plans have proven to be a successful way of changing travel behaviour for mixed use developments throughout Australia and overseas. A Green Travel Plan is a way in which a development manages the transport needs of residents, staff and visitors.

The aim of the plan is to reduce the environmental impact of travel to and from a given site and in association with its operation. In essence, plans encourage more efficient use of motor vehicles as well as alternatives to single occupant car usage.

There is anticipated to be a significant shift in the future travel patterns to/ from and within the site's local and regional area, due to the Parramatta Light Rail and Sydney Metro West projects.

A Green Travel Plan would provide travel information for people travelling to and from the site using the sustainable forms of transport available, including walking, cycling and public transport. The Green Travel Plan would provide a visual snapshot of the location, making it easier to understand the relationship between a site and the surrounding train stations, bus stops, car share pods and walking and cycling routes.

Such plans encourage the use of non-vehicle mode transport and can reduce associated greenhouse gas emissions and traffic congestion while improving health through promoting active transport choices.

They can be presented in different forms, such as a map printed on the back of business cards or envelopes with complimentary slips detailing more comprehensive information. Best practice suggests that the information should be as concise, simple and site centred and where possible, be provided on a single side sheet.

The information presented in the plan could also be incorporated onto public transport noticeboards that would make residents and visitors more aware of the alternative transport options available.

In general, there is an opportunity to provide a Green Travel Plan for the proposed development for guests and staff to encourage changes in mode of travel that is afforded a high level of accessibility to public transport services.

4.8 Construction Traffic Management

Should development approval be granted for the proposed hotel / retail uses on the site, it is envisaged that consent conditions will require the preparation of a detailed and comprehensive Construction Traffic Management Plan (CTMP).

Any such CTMP will need to be prepared in consultation with Council and RMS / TfNSW and the building contractor.

The preparation of the detailed CTMP would be prepared prior to the commencement of any construction works on the site following engagement with the building contractor and development of a detailed construction methodology.

Notwithstanding the above, it is anticipated that construction vehicle access would be limited to O'Connell Street via the new Stadium access (opposite Ross Street) and the Eels Place / O'Connell Street intersection.

In developing a detailed CTMP, there are considered to be a number of site specific constraints to be considered. These include:

- Ongoing operation of the Parramatta League Club and car park;
- Event mode pedestrian, traffic and public transport activity associated with the adjacent Western Sydney Stadium;
- Maintaining pedestrian and cyclist access to the Parramatta River foreshore and Parramatta Parklands links; and
- Sensitive surrounding land uses including the nearby schools and child care facilities.

Additionally, there is an opportunity to obtain "*lessons learnt*" from the construction activities associated with the Western Sydney Stadium.

The following sections of this report provide an outline of the principles and objectives for construction traffic management associated with the proposed hotel development.

4.8.1 Construction Traffic Management Principles

The following construction traffic management principles would apply to the construction of the proposed hotel :

- Maximise public safety at all times;
- Minimise disruption to pedestrians, cyclists and motorists;
- Ensure construction traffic accesses the arterial network as soon as practicable on route to, and immediately after leaving, the construction site;
- Ensure buses run on time with no disruption to routes and stops, where possible;
- Minimise changes to traffic operation and kerbside access
- Minimise construction traffic generation during network peak periods.
- Maintain access to properties and businesses
- Work collaboratively with other stakeholders and other major projects to mitigate traffic and transport impacts.

4.8.2 Construction Traffic Management Methodology

At this stage, a detailed construction methodology for the proposed hotel development is not been developed. A detailed methodology will be developed following approval of the SSD by the Club and selected building contractors.

Notwithstanding the above, construction of the proposed hotel will involve three general stages, namely:

- Demolition
- Excavation and bulk earthworks; and
- Building works.

For each of these stages a detailed CTMP will need to be prepared which will outline the specific measures to address the traffic management principles listed above and demonstrate how traffic and pedestrians will be managed when construction works are being carried out.

The CTMP shall be prepared in accordance with specific conditions of consent and the requirements set out in the Roads and Maritime Services Traffic Control at Work Sites Version 4 (2010);

The CTMP itself will describe in detail what work activities are proposed, how they will be staged, the potential impact on the roadway and all road users, and how these impacts will be managed.

A detailed CTMP will, where relevant, comprise:

- Traffic Control Plans
- Vehicle Movement Plans
- Pedestrian Movement Plans
- Parking Management Plans
- Traffic Staging Plans.

All of the above plans will be required to respond to specific works and the removal of any of the above management plans should be justified and agreed with the approval authority prior to the commencement of works.

The Parking Management Plan will also provide details regarding on-site and off-site staff parking arrangements, including any proposed busing to and from worksites.

4.8.3 Draft CTMP (Framework Document)

As part of the SSD traffic assessment, TTPP has prepared a Draft CTMP (or Framework Document) which is provided at Appendix D.

The purpose of the Draft CTMP is to identify potential construction implications, outline recommended mitigation measures and establish a framework for the preparation of the detailed CTMP.

5 Conclusions and Recommendations

Based on the findings of the traffic and transport assessment presented in this report, the key findings from the assessment are as follows:

- The proposed hotel development is part of a broader sports, leisure and entertainment precinct formed by the Parramatta Leagues Club and adjacent Western Sydney Stadium. The presence of an accommodation offering within this precinct will expand the functionality of the various Precinct uses.
- The proposed hotel development has been envisaged by the Parramatta Leagues Club in their master planning processes, including the incorporation of on site parking requirements for the existing Club building uses and future hotel development uses into the recently constructed multi storey car park on the Leagues Club site.
- The layout and site orientation of the hotel development reflects a planned and co-ordinated proposal with regard to internal site linkages between the Club building and the hotel development rationalisation of space at the ground floor to provide pedestrian priority connections both within the Parramatta Leagues Club site and externally to the Stadium and Parramatta Parklands.
- The proposed hotel development seeks approval to utilise and widen the new Stadium access at O'Connell Street to facilitate the following:
    - Coach, delivery vehicles and guest drop off / pick up movements to the hotel porte cochere and loading dock.
    - Improved and dedicated pedestrian / cycle access between the Club and the Stadium sites to the Parramatta River foreshore from O'Connell Street.
    - Improve coach access to and from the Stadium parking.
- Car parking associated with the hotel development will be accessed via the existing O'Connell Street / Eels Place signalised intersection.
- The proposed hotel development will operate both as an ancillary facility to the Stadium and Club during major events and as a stand-alone facility during non-event modes.
- The traffic impact assessment for event mode conditions has been sourced from the assessments prepared for the approved Western Sydney Stadium. This assessment and approval determined that traffic management will need to be implemented during large events to minimise road network disruptions and maintain road user safety. Operation of the hotel during major event periods will need to be cognisant of these measures.
- For non-event mode, the traffic analysis indicted that the traffic generation potential of the proposed hotel can be adequately accommodated by the surrounding road network.

In summary, it is concluded that, subject to the implementation of the following recommendations that the proposed development would make a positive contribution to the Parramatta Leagues Club / Western Sydney Stadium precinct.

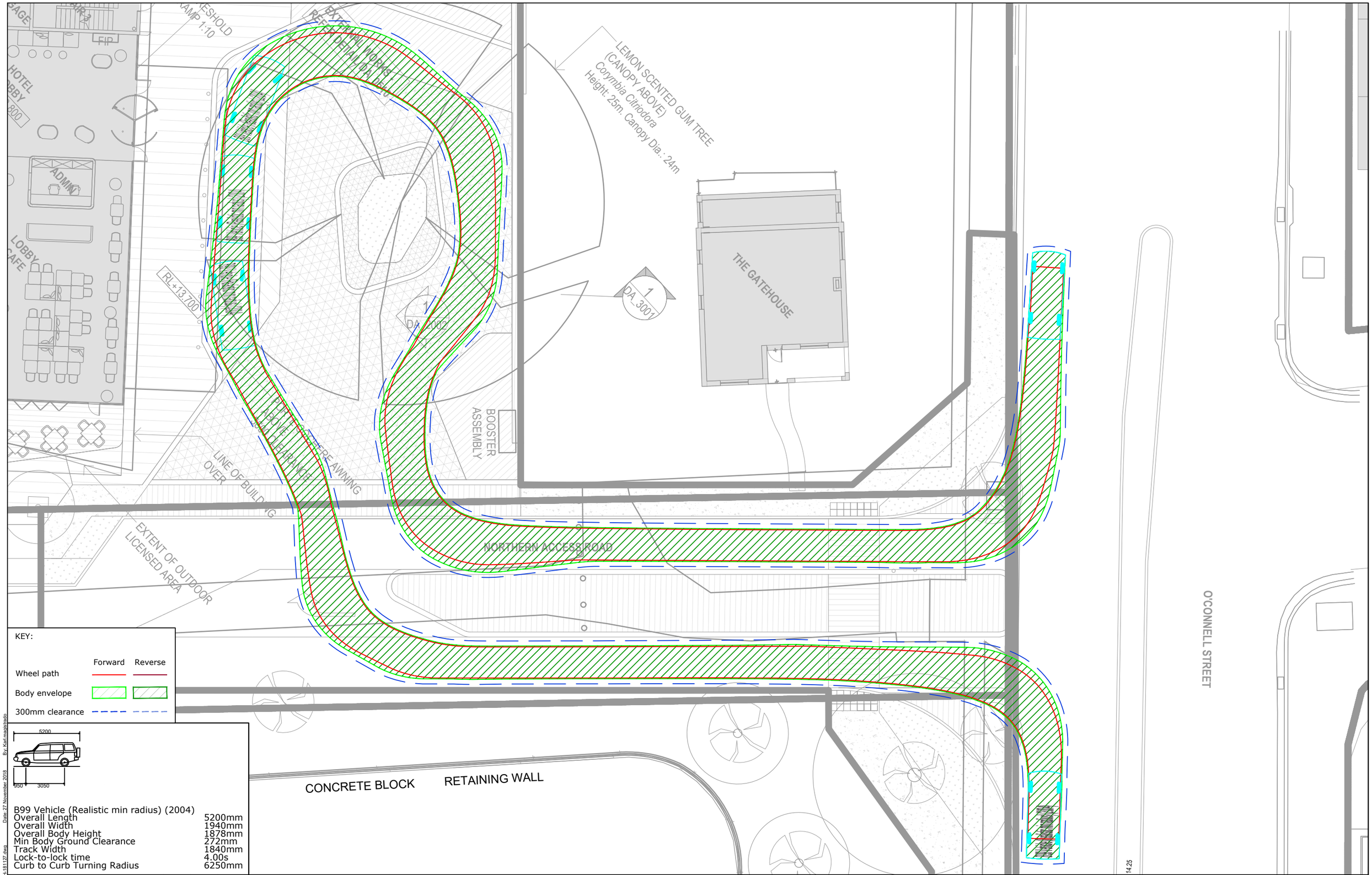
Recommendations

The following recommendations have been identified for the proposed development:

- Develop and implement a Green Travel Plan for the hotel development
- A detailed CTMP be prepared following approval once a building contractor has been engaged. The detailed CTMP shall address the considerations and framework identified in the draft CTMP appended to this assessment report.

Appendix A

Vehicle Swept Path Analysis



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5200mm
Overall Width	1940mm
Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6250mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: AS2890.1:2004 5.2m B99 VEHICLE SWEPT PATH ANALYSIS
PORTE COCHERE

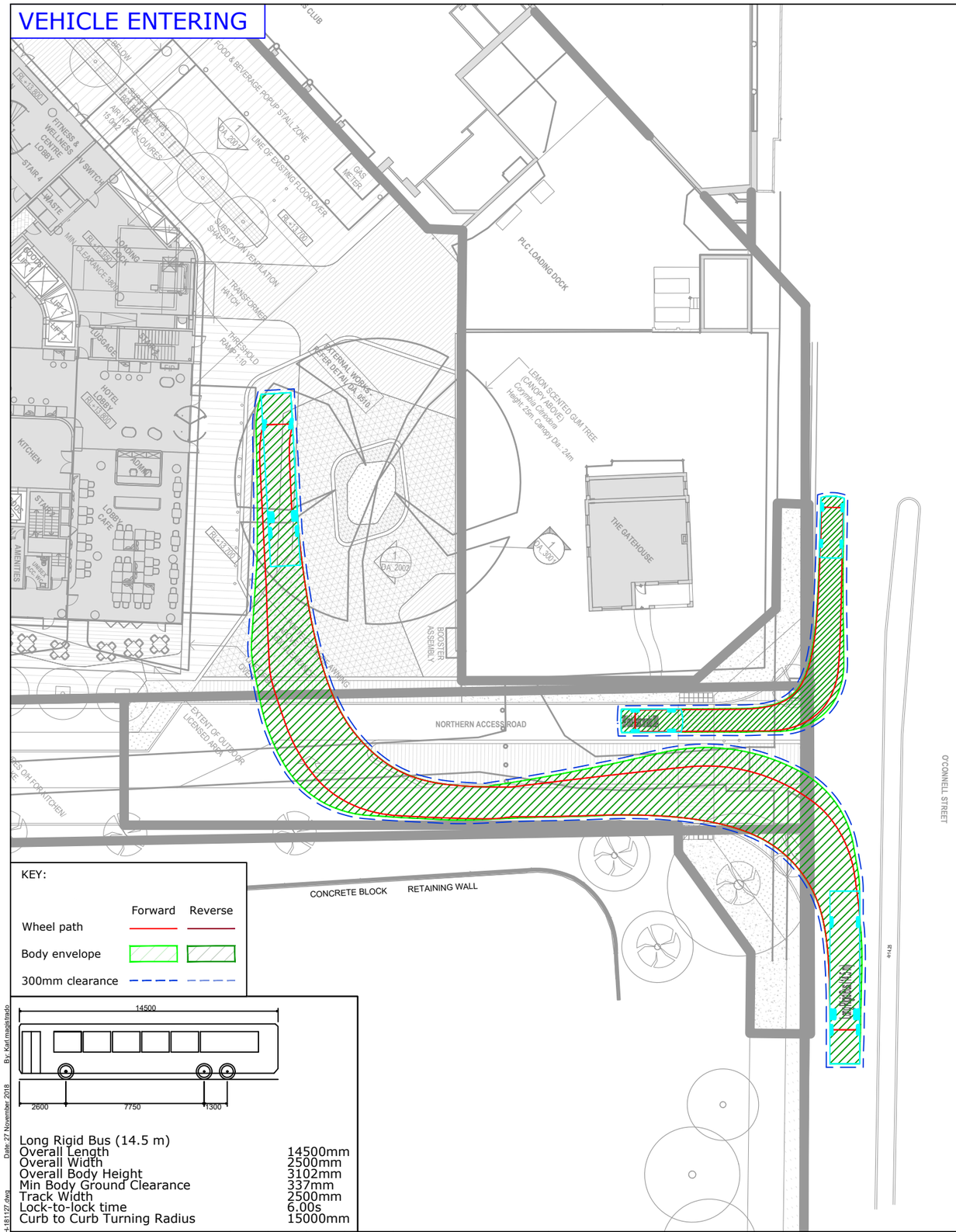
DWG No. 18305CAD007
FIGURE 1

DATE STAMP 27 NOVEMBER 2018

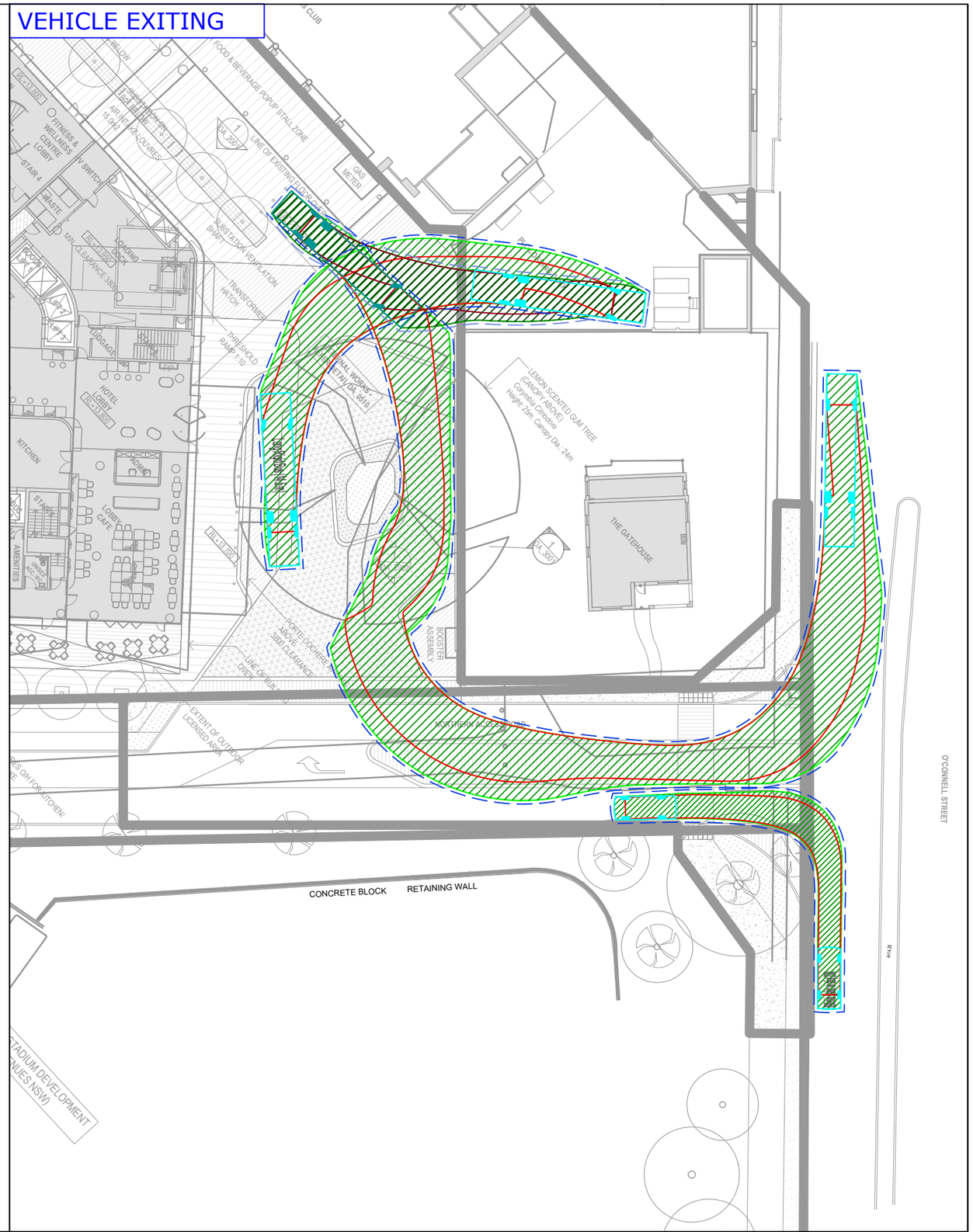
PROJECT No. 18305 | SCALE 1:200 @ A3 | REV. A

By: Karl magistrado
Date: 27 November 2018
Filename: 18305CAD007-SWEPT PATH-181127.dwg

VEHICLE ENTERING



VEHICLE EXITING



KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

Long Rigid Bus (14.5 m)

Overall Length	14500mm
Overall Width	2500mm
Overall Body Height	3102mm
Min Body Ground Clearance	337mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

By: Kiet.magistrado
Date: 27 November 2018
Filename: 18305CAD007-SWEPT PATH-181127.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: 14.5m LONG RIGID BUS VEHICLE SWEPT PATH ANALYSIS
PORTE COCHERE

DWG No. 18305CAD007
FIGURE 2

DATE STAMP: 27 NOVEMBER 2018

PROJECT No.	SCALE	REV.
18305	1:400 @ A3	A

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

Long Rigid Bus (14.5 m)

Overall Length	14500mm
Overall Width	2500mm
Overall Body Height	3102mm
Min Body Ground Clearance	337mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15000mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: 14.5m LONG RIGID BUS VEHICLE SWEPT PATH ANALYSIS

DWG No. 18305CAD007 FIGURE 3

DATE STAMP 27 NOVEMBER 2018

PROJECT No. 18305 | SCALE 1:300 @ A3 | REV. A

By: Karl magistrado

Date: 27 November 2018

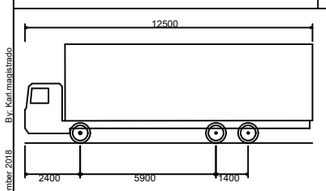
Filename: 18305CAD007-SWEPT PATH-181127.dwg

VEHICLE ENTERING

VEHICLE EXITING

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		



HRV - Heavy Rigid Vehicle

Overall Length	12500mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	417mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

By: Kiet magistrado
Date: 27 November 2018
Filename: 18305CAD007-SWEPT PATH-181127.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: AS2890.2:2002 12.5m HEAVY RIGID VEHICLE SWEPT PATH ANALYSIS FORWARD-IN

DWG No. 18305CAD007 FIGURE 4

DATE STAMP 27 NOVEMBER 2018

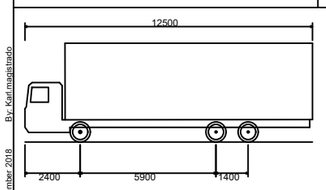
PROJECT No.	SCALE	REV.
18305	1:400 @ A3	A

VEHICLE ENTERING

VEHICLE EXITING

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		



HRV - Heavy Rigid Vehicle

Overall Length	12500mm
Overall Width	2500mm
Overall Body Height	4300mm
Min Body Ground Clearance	417mm
Track Width	2500mm
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12500mm

By: Kiet magistrado
Date: 27 November 2018
Filename: 18305CAD007-SWEPT PATH-181127.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

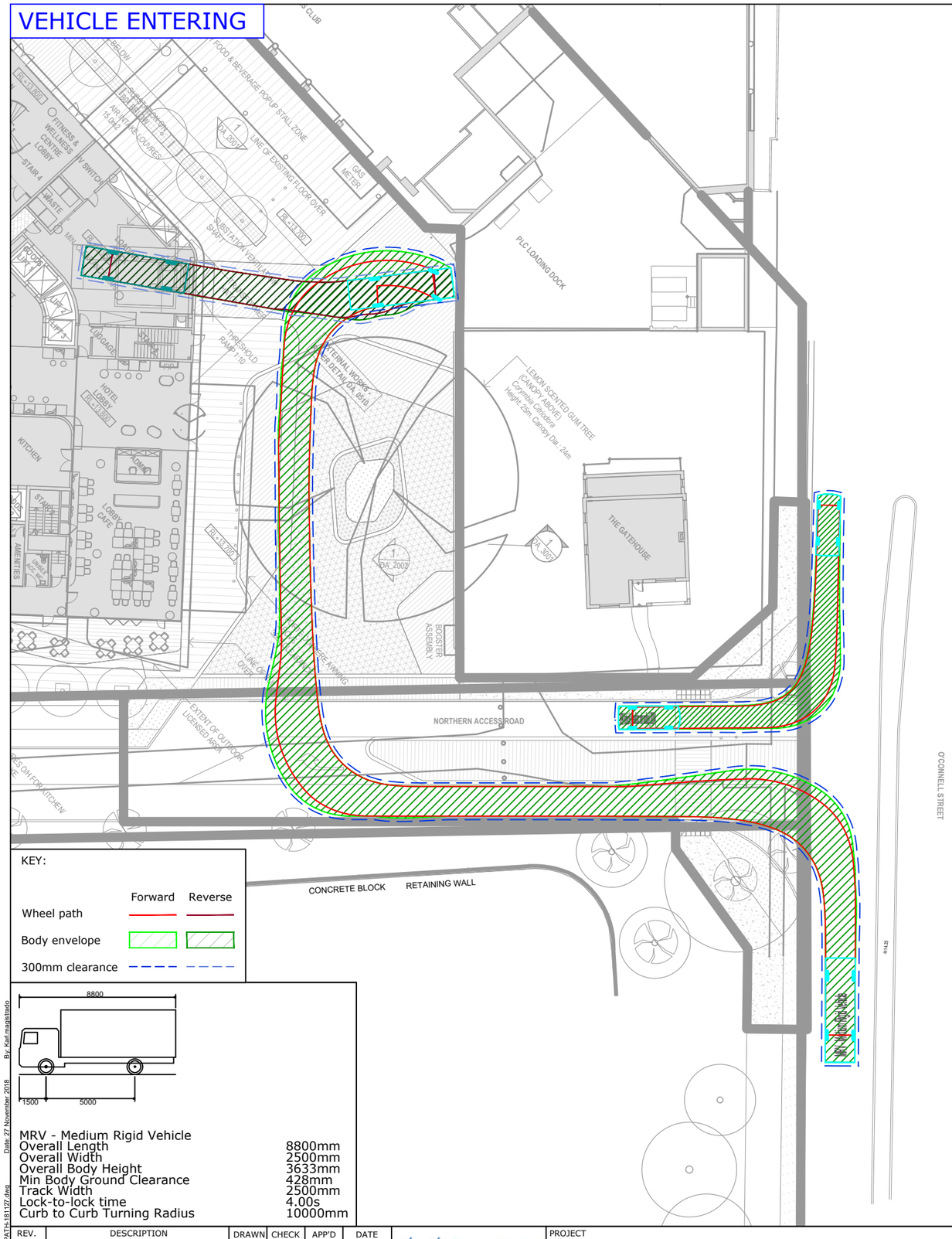
TITLE: AS2890.2:2002 12.5m HEAVY RIGID VEHICLE SWEPT PATH ANALYSIS
REVERSE-OUT

DWG No. 18305CAD007
FIGURE 5

DATE STAMP 27 NOVEMBER 2018

PROJECT No.	SCALE	REV.
18305	1:400 @ A3	A

VEHICLE ENTERING



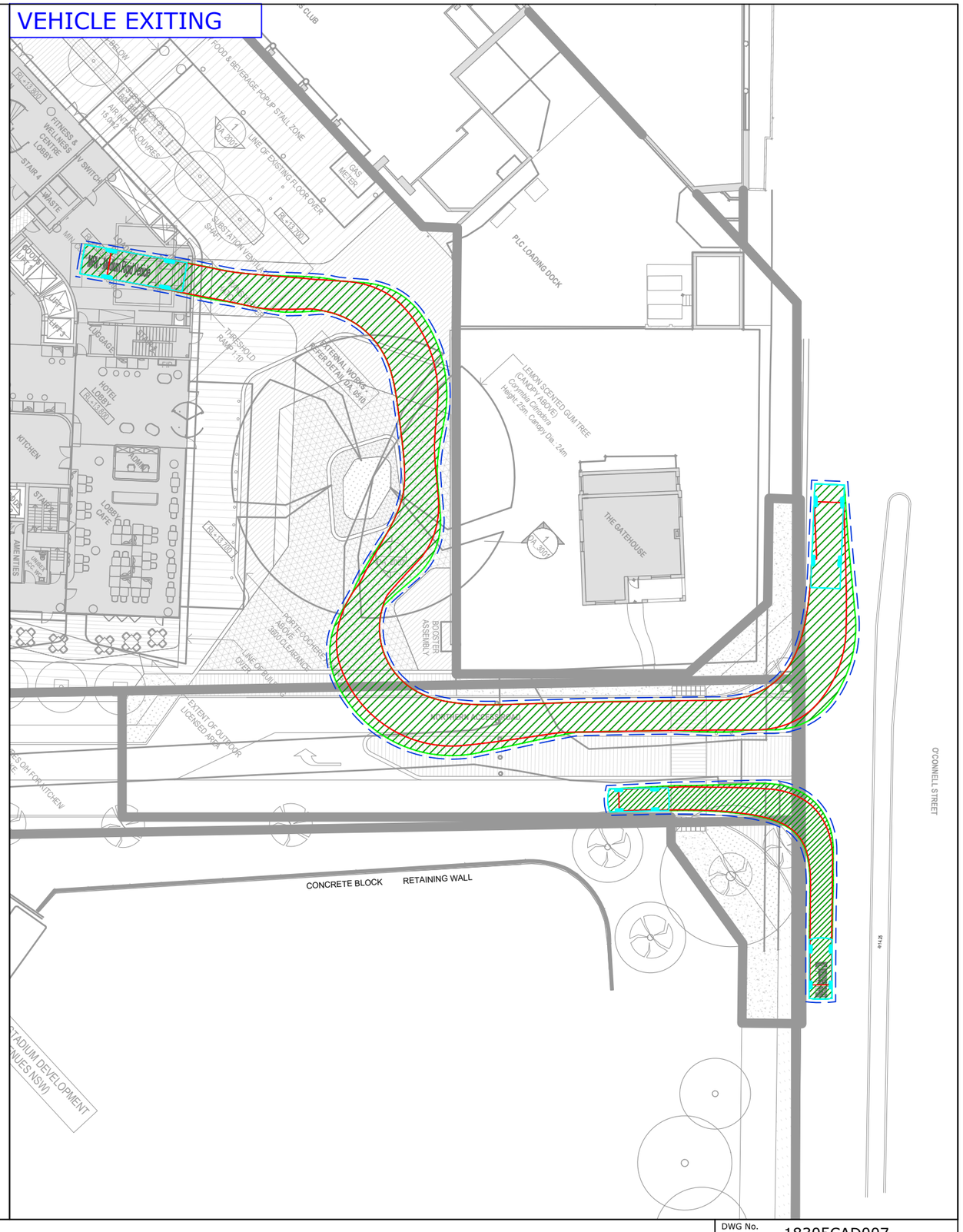
KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		

MRV - Medium Rigid Vehicle

Overall Length	8800mm
Overall Width	2500mm
Overall Body Height	3633mm
Min Body Ground Clearance	428mm
Track Width	2500mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10000mm

VEHICLE EXITING



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: AS2890.2:2002 8.8m MEDIUM RIGID VEHICLE SWEPT PATH ANALYSIS

DWG No. 18305CAD007 FIGURE 6

DATE STAMP 27 NOVEMBER 2018

PROJECT No. 18305 | SCALE 1:400 @ A3 | REV. A

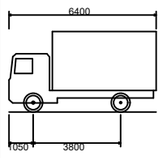
Filename: 18305CAD007-SWEPT PATH-181127.dwg
Date: 27 November 2018
By: Karl.magistrado

VEHICLE ENTERING

VEHICLE EXITING

KEY:

	Forward	Reverse
Wheel path		
Body envelope		
300mm clearance		



SRV - Small Rigid Vehicle

Overall Length	6400mm
Overall Width	2330mm
Overall Body Height	3500mm
Min Body Ground Clearance	398mm
Track Width	2330mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7100mm

By: Karl.magistrado
Date: 27 November 2018
Filename: 18305CAD007-SWEPT PATH-181127.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KM	JR	JR	27/11/18

ttpp transport planning

PROJECT: PARRAMATTA LEAGUES CLUB HOTEL

TITLE: AS2890.2:2002 6.4m SMALL RIGID VEHICLE SWEPT PATH ANALYSIS

DWG No. 18305CAD007 FIGURE 7

DATE STAMP 27 NOVEMBER 2018

PROJECT No.	SCALE	REV.
18305	1:400 @ A3	A

Appendix B

Stadium Event Day Management Plan

Example prepared by BECA for the Western Sydney Stadium

Source: Western Sydney Stadium – Stage 2 DA Traffic Impact Assessment (BECA, 19 May 2018)

Appendix D: Example - Event Day Management Plan - Framework

INTRODUCTION

An Event Day Management Plan **(EDMP)** should be provided as a framework for the management of spectator movements by all modes of transport to and from the Western Sydney Stadium **(WSS)** in Parramatta, on event days. It will also identify measures that may be required to manage spectators.

The WSS will accommodate up to 30,000 spectators and a full range of modern spectator facilities, including some 850 car parking spaces of which a percentage would be specifically for use by mobility impaired supporters. An appropriate number of cycle parking spaces should be provided on site to accommodate demand.

This document should be prepared in consultation with key stakeholders including Infrastructure New South Wales, The City of Parramatta, Transport for New South Wales, Roads and Maritime Services, NSW Police, NSW Fire Service and NSW Ambulance and the relevant clubs using the venues.

The EDMP should be an evolving document and include a flow chart showing process and stakeholder engagement.

TYPE, FREQUENCY AND DURATION OF EVENTS

The type of event (e.g. football, league), anticipated number of spectators, days of the week, anticipated kick off and finish times should be described.

The EMDP should define the magnitude of events at the stadium as a different plan may be triggered for different spectator numbers. Definition of events:

- Major event 15,000 - 30,000 spectators
- Minor events – less than 15,000 spectators

SPECTATOR MODE SHARE

The mode share used in developing the EDMP should be consistent with the approved TIA and updated as appropriate to reflect real events (as this will be a live document that should be continuously updated with fresh information).

LOCAL AREA

A map of the local area should present the stadium and the key transport options and stations, spectators will use to travel to the stadium.

TRAVEL TO AND FROM THE STADIUM

This section of the EDMP should describe the opportunities for travel to and from the WSS by public transport, private vehicle, coach, walking and cycling.

Public transport

It is assumed that Transport for New South Wales and the Train Operating Companies would prepare separate event day management plans for the operation of stations focusing on pre-event arrival and post-event departure. This should include any queuing management required outside the station.

The EDMP needs to be specific in how spectators would be routed to and from (pre and post event) the various Public Transport facilities to ensure safety and efficiency and avoiding conflicts, with the overriding objective being to provide safe connections to Public Transport which enable spectators to access and egress the stadium in a timely manner.

Heavy rail & Light Rail

A map showing the location of the heavy rail stations spectators are expected to use should be included. Also a brief summary of the event day services and frequencies and walking distance / time between stadium and stations.

Bus

A map showing the location of the bus stops spectators are expected to use should be included. Also a brief summary of the event day services and frequencies and a walking distance / time between stadium and closest bus stops.

Private Car

The EDMP should include information on travel to WSS by private car such as:

- Car ingress and egress routes;
- Number, location and allocation of parking spaces for different users;
- Parking hierarchy for different users;
- Management of car park (eg. Permit control) including circulation, rejection and sequencing;
- Arrival and departure times for cars and identify any restrictions on departure post-event;
- Management measures for late arrivals; and
- Identify any areas where on-street parking will need to be suspended temporarily to assist with access and egress.

Coach

The EDMP should include information on travel to WSS by team or supporter coaches:

- Team and supporter ingress and egress routes;
- Number, location and allocation of parking spaces for team and supporter coaches;
- Parking hierarchy for team and supporter coaches;
- Management of coach park (eg. Registering with stadium so anticipated number of coaches is understood before the event and can be accommodated);
- Arrival and departure times for team and supporter coaches and identify any restrictions on post-event departures; and
- Management measures for late arrivals.

Cycling

Identification of the anticipated number of cyclists and description of the location of an appropriate number of parking spaces to accommodate these users.

KEY SPECTATOR ROUTES

The EDMP should include a map showing the stadium and Key Pedestrian Routes and any Event Crowd Management that may be required. This will include the key predicated routes from the heavy rail stations, light rail station and other destinations to stadium entry and egress points.

It is considered that an appropriate Fruin Level of Service for major events on the footpaths would be a Level of Service D as seen in the below Figure 1.

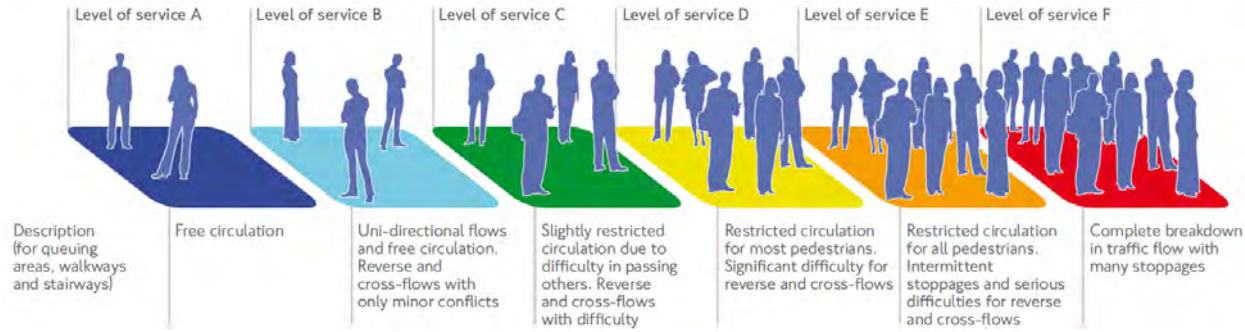


Figure 1: Pedestrian Levels of Service Source: Transport for London

Identification of any roads that may need closing to accommodate the anticipated demand of spectators that cannot be accommodated on existing footpaths should also be shown on the map. The aim will be to distribute the spectators as evenly as is possible on the existing pedestrian network.

Identification of “hot spot” intersections where queueing may need to be managed in peak times before and after the event due to spectator numbers. It is anticipated that management will be more important in the departure after an event. The location of these managed queues should be shown on a map. Any “no-go” areas for pedestrians post event should also be shown on the map.

An event day Signage Strategy may be required between stations and the stadium to encourage spectators to use the identified key spectator routes and to help with distribution.

This section will need to be developed in consultation with key stakeholders particularly the NSW Police and City Of Parramatta.

OTHER CONSIDERATIONS

It may evolve that separate management plans and/or operational plans are needed to facilitate safe and efficient spectator movement e.g. wayfinding/signage strategy, crowd control strategies, and car parking management that would be produced to sit under the EDMP.

A Stadium Event Management Plan is also anticipated to be prepared which should cover stadium operations such as stewarding, catering, emergency access routes, waste management. This is typically developed by the operator in collaboration with the City Council and emergency services.

An Event Day Travel Plan may also be required to discourage spectators from driving to the stadium and to encourage spectators to use public transport and sustainable modes (walking and cycling). A strategy to achieve this (e.g. offering PT tickets with event tickets, perhaps at a discount) could be included in the EDMP.

Appendix C

TTPP SIDRA Modelling Results

MOVEMENT SUMMARY

Site: 101 [S1 Eels Pl/O'Connell St/Grose St - AM Peak 2018 Existing Case (User Given Cycle Time)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	31	10.3	0.480	18.7	LOS B	10.0	72.2	0.72	0.64	0.72	47.7
2	T1	842	3.1	0.480	13.1	LOS A	10.1	72.6	0.72	0.63	0.72	49.3
3	R2	243	2.6	0.468	15.9	LOS B	3.6	26.0	0.84	0.80	0.84	46.4
Approach		1116	3.2	0.480	13.8	LOS A	10.1	72.6	0.74	0.67	0.74	48.6
East: Grose Street												
4	L2	131	0.8	0.342	29.9	LOS C	4.1	28.7	0.87	0.77	0.87	39.7
5	T1	9	0.0	0.342	24.3	LOS B	4.1	28.7	0.87	0.77	0.87	40.4
6	R2	49	0.0	0.437	44.2	LOS D	1.8	12.7	1.00	0.72	1.00	34.3
Approach		189	0.6	0.437	33.3	LOS C	4.1	28.7	0.90	0.76	0.90	38.2
North: O'Connell Street												
7	L2	41	0.0	0.696	26.4	LOS B	14.4	102.3	0.91	0.81	0.92	43.6
8	T1	918	1.5	0.696	20.7	LOS B	14.4	102.3	0.90	0.80	0.92	44.7
9	R2	25	0.0	0.061	12.5	LOS A	0.3	2.2	0.61	0.67	0.61	48.6
Approach		984	1.4	0.696	20.7	LOS B	14.4	102.3	0.89	0.80	0.91	44.7
West: Eels Place												
10	L2	6	0.0	0.020	31.9	LOS C	0.2	1.3	0.85	0.65	0.85	38.7
11	T1	5	20.0	0.039	26.9	LOS B	0.3	2.5	0.86	0.63	0.86	40.8
12	R2	4	50.0	0.039	33.0	LOS C	0.3	2.5	0.86	0.63	0.86	39.0
Approach		16	20.0	0.039	30.5	LOS C	0.3	2.5	0.86	0.64	0.86	39.5
All Vehicles		2305	2.3	0.696	18.5	LOS B	14.4	102.3	0.82	0.73	0.83	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P4	West Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		211	29.3	LOS C			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S1 Eels Pl/O'Connell St/Grose St - PM Peak 2018 Existing Case]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	33	0.0	0.488	16.6	LOS B	7.7	54.5	0.77	0.68	0.77	49.3
2	T1	782	1.9	0.488	10.3	LOS A	8.3	59.3	0.75	0.65	0.75	51.2
3	R2	115	6.4	0.236	32.9	LOS C	3.9	29.1	0.81	0.76	0.81	38.1
Approach		929	2.4	0.488	13.3	LOS A	8.3	59.3	0.76	0.67	0.76	49.0
East: Grose Street												
4	L2	144	0.0	0.341	36.7	LOS C	6.0	41.8	0.88	0.78	0.88	37.0
5	T1	16	0.0	0.341	31.1	LOS C	6.0	41.8	0.88	0.78	0.88	37.7
6	R2	71	0.0	0.362	49.9	LOS D	3.1	21.8	0.99	0.76	0.99	32.5
Approach		231	0.0	0.362	40.3	LOS C	6.0	41.8	0.91	0.78	0.91	35.6
North: O'Connell Street												
7	L2	20	0.0	0.479	32.1	LOS C	10.3	72.9	0.85	0.73	0.85	40.8
8	T1	562	1.9	0.479	26.5	LOS B	10.4	73.9	0.85	0.73	0.85	41.7
9	R2	35	3.0	0.299	51.9	LOS D	1.6	11.2	0.99	0.72	0.99	31.8
Approach		617	1.9	0.479	28.1	LOS B	10.4	73.9	0.86	0.73	0.86	41.0
West: Eels Place												
10	L2	39	0.0	0.109	21.3	LOS B	0.8	5.4	0.83	0.71	0.83	43.6
11	T1	35	3.0	0.461	38.4	LOS C	3.5	24.6	0.94	0.75	0.94	35.6
12	R2	51	0.0	0.461	44.2	LOS D	3.5	24.6	0.94	0.75	0.94	35.1
Approach		124	0.8	0.461	35.4	LOS C	3.5	24.6	0.90	0.73	0.90	37.5
All Vehicles		1901	1.8	0.488	22.8	LOS B	10.4	73.9	0.82	0.70	0.82	43.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	18.1	LOS B	0.1	0.1	0.87	0.87
All Pedestrians		211	34.0	LOS D			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S2 Eels Pl/O'Connell St/Grose St - AM Peak 2028 Future Case (+2% p.a.)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	31	10.3	0.749	28.3	LOS B	16.5	118.7	0.93	0.87	1.00	42.4
2	T1	1011	3.1	0.749	22.7	LOS B	16.6	119.4	0.93	0.86	1.00	43.7
3	R2	292	2.5	0.601	19.0	LOS B	5.2	36.9	0.92	0.83	0.95	44.7
Approach		1333	3.2	0.749	22.0	LOS B	16.6	119.4	0.93	0.86	0.99	43.8
East: Grose Street												
4	L2	157	0.7	0.388	29.4	LOS C	4.8	34.0	0.87	0.78	0.87	39.9
5	T1	9	0.0	0.388	23.8	LOS B	4.8	34.0	0.87	0.78	0.87	40.6
6	R2	59	0.0	0.521	44.5	LOS D	2.2	15.2	1.00	0.74	1.04	34.2
Approach		225	0.5	0.521	33.1	LOS C	4.8	34.0	0.90	0.77	0.92	38.2
North: O'Connell Street												
7	L2	49	0.0	0.840	33.8	LOS C	21.4	151.8	0.98	1.00	1.17	40.0
8	T1	1102	1.5	0.840	28.2	LOS B	21.4	151.8	0.97	0.99	1.17	40.9
9	R2	25	0.0	0.050	14.2	LOS A	0.3	2.1	0.69	0.68	0.69	47.5
Approach		1177	1.4	0.840	28.1	LOS B	21.4	151.8	0.96	0.98	1.16	41.0
West: Eels Place												
10	L2	6	0.0	0.012	24.7	LOS B	0.2	1.1	0.74	0.65	0.74	41.8
11	T1	5	20.0	0.039	26.9	LOS B	0.3	2.5	0.86	0.63	0.86	40.8
12	R2	4	50.0	0.039	33.0	LOS C	0.3	2.5	0.86	0.63	0.86	39.0
Approach		16	20.0	0.039	27.7	LOS B	0.3	2.5	0.81	0.63	0.81	40.7
All Vehicles		2751	2.3	0.840	25.5	LOS B	21.4	151.8	0.94	0.90	1.05	42.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P4	West Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		211	29.3	LOS C			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S2 Eels Pl/O'Connell St/Grose St - PM Peak 2028 Future Case (+2% p.a.)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	33	0.0	0.577	17.1	LOS B	9.7	69.0	0.81	0.71	0.81	49.0
2	T1	939	1.9	0.577	10.9	LOS A	10.4	74.0	0.80	0.70	0.80	50.8
3	R2	137	6.2	0.270	32.4	LOS C	4.7	34.5	0.81	0.77	0.81	38.3
Approach		1108	2.4	0.577	13.7	LOS A	10.4	74.0	0.80	0.71	0.80	48.8
East: Grose Street												
4	L2	173	0.0	0.395	34.4	LOS C	6.8	47.3	0.86	0.79	0.86	37.8
5	T1	16	0.0	0.395	30.4	LOS C	6.8	47.3	0.87	0.79	0.87	37.9
6	R2	84	0.0	0.395	45.9	LOS D	3.6	25.5	0.96	0.77	0.96	33.8
Approach		273	0.0	0.395	37.7	LOS C	6.8	47.3	0.89	0.78	0.89	36.5
North: O'Connell Street												
7	L2	24	0.0	0.615	34.3	LOS C	13.5	96.3	0.91	0.78	0.91	39.8
8	T1	675	1.9	0.615	28.5	LOS C	13.5	96.3	0.90	0.77	0.90	40.8
9	R2	35	3.0	0.299	51.9	LOS D	1.6	11.2	0.99	0.72	0.99	31.8
Approach		734	1.9	0.615	29.8	LOS C	13.5	96.3	0.91	0.77	0.91	40.2
West: Eels Place												
10	L2	39	0.0	0.130	22.6	LOS B	1.0	6.7	0.85	0.71	0.85	43.3
11	T1	35	3.0	0.549	42.8	LOS D	3.8	26.5	0.97	0.77	0.99	34.0
12	R2	51	0.0	0.549	55.0	LOS D	3.8	26.5	1.00	0.78	1.02	31.7
Approach		124	0.8	0.549	41.4	LOS C	3.8	26.5	0.95	0.76	0.96	35.3
All Vehicles		2239	1.8	0.615	23.5	LOS B	13.5	96.3	0.85	0.74	0.85	43.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	18.3	LOS B	0.1	0.1	0.87	0.87
All Pedestrians		211	34.0	LOS D			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S3 Eels Pl/O'Connell St/Grose St - AM Peak 2028 Future Case (+2% p.a.) +Development]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	73	5.8	0.783	29.9	LOS C	17.9	128.9	0.95	0.91	1.05	41.5
2	T1	1011	3.1	0.783	24.3	LOS B	18.2	130.7	0.95	0.91	1.05	42.7
3	R2	292	2.5	0.600	18.9	LOS B	5.2	36.9	0.92	0.83	0.94	44.7
Approach		1375	3.1	0.783	23.4	LOS B	18.2	130.7	0.94	0.89	1.03	43.1
East: Grose Street												
4	L2	157	0.7	0.401	29.5	LOS C	4.9	34.4	0.87	0.78	0.87	39.8
5	T1	11	0.0	0.401	23.9	LOS B	4.9	34.4	0.87	0.78	0.87	40.6
6	R2	59	0.0	0.788	48.4	LOS D	2.3	16.3	1.00	0.84	1.46	33.0
Approach		226	0.5	0.788	34.1	LOS C	4.9	34.4	0.91	0.80	1.03	37.8
North: O'Connell Street												
7	L2	49	0.0	0.838	33.7	LOS C	21.3	150.8	0.98	1.00	1.17	40.1
8	T1	1102	1.5	0.838	28.0	LOS B	21.3	150.8	0.97	0.99	1.16	41.0
9	R2	26	0.0	0.053	15.0	LOS B	0.3	2.4	0.72	0.69	0.72	47.0
Approach		1178	1.4	0.838	27.9	LOS B	21.3	150.8	0.96	0.98	1.15	41.1
West: Eels Place												
10	L2	13	0.0	0.081	35.8	LOS C	0.5	3.5	0.91	0.68	0.91	37.5
11	T1	12	9.1	0.345	29.9	LOS C	2.9	21.1	0.93	0.74	0.93	38.2
12	R2	83	2.5	0.345	35.3	LOS C	2.9	21.1	0.93	0.76	0.93	37.6
Approach		107	2.9	0.345	34.8	LOS C	2.9	21.1	0.93	0.75	0.93	37.6
All Vehicles		2886	2.2	0.838	26.5	LOS B	21.3	150.8	0.95	0.92	1.08	41.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P2	East Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
P4	West Full Crossing	53	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		211	29.3	LOS C			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S3 Eels Pl/O'Connell St/Grose St - PM Peak 2028 Future Case (+2% p.a.) +Development]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 90 seconds (Site User-Given Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	73	0.0	0.633	18.9	LOS B	10.1	71.6	0.87	0.76	0.87	47.6
2	T1	939	1.9	0.633	11.7	LOS A	11.9	84.5	0.83	0.73	0.83	50.1
3	R2	152	5.6	0.310	33.6	LOS C	5.3	39.1	0.83	0.78	0.83	37.8
Approach		1163	2.3	0.633	15.0	LOS B	11.9	84.5	0.84	0.74	0.84	47.9
East: Grose Street												
4	L2	173	0.0	0.425	35.5	LOS C	7.0	48.9	0.87	0.79	0.87	37.5
5	T1	29	0.0	0.425	33.9	LOS C	7.0	48.9	0.91	0.78	0.91	36.6
6	R2	84	0.0	0.425	44.3	LOS D	4.1	28.4	0.95	0.78	0.95	34.5
Approach		286	0.0	0.425	37.9	LOS C	7.0	48.9	0.90	0.79	0.90	36.5
North: O'Connell Street												
7	L2	24	0.0	0.600	33.4	LOS C	13.5	96.0	0.90	0.78	0.90	40.2
8	T1	675	1.9	0.600	27.6	LOS B	13.5	96.0	0.89	0.76	0.89	41.2
9	R2	48	2.2	0.414	52.5	LOS D	2.2	15.7	1.00	0.74	1.00	31.7
Approach		747	1.8	0.600	29.4	LOS C	13.5	96.0	0.89	0.76	0.89	40.4
West: Eels Place												
10	L2	42	0.0	0.116	22.3	LOS B	0.8	5.9	0.85	0.71	0.85	43.0
11	T1	38	2.8	0.352	35.3	LOS C	4.0	28.2	0.91	0.76	0.91	36.7
12	R2	63	0.0	0.352	40.9	LOS C	4.0	28.2	0.91	0.76	0.91	36.1
Approach		143	0.7	0.352	33.9	LOS C	4.0	28.2	0.89	0.74	0.89	38.1
All Vehicles		2340	1.8	0.633	23.6	LOS B	13.5	96.0	0.87	0.75	0.87	43.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P2	East Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P3	North Full Crossing	53	39.3	LOS D	0.1	0.1	0.94	0.94
P4	West Full Crossing	53	18.1	LOS B	0.1	0.1	0.87	0.87
All Pedestrians		211	34.0	LOS D			0.92	0.92

MOVEMENT SUMMARY

Site: 101 [S1 Victoria Rd/O'Connell St - AM Peak 2018 Existing Case (User Given Phase Times)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 117 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	7	28.6	0.373	11.8	LOS A	10.6	76.1	0.39	0.36	0.39	52.1
2	T1	1035	2.4	0.373	6.0	LOS A	10.6	76.1	0.39	0.36	0.39	54.7
3	R2	492	1.1	0.780	38.3	LOS C	20.5	144.8	0.96	0.98	1.24	36.2
Approach		1534	2.1	0.780	16.4	LOS B	20.5	144.8	0.58	0.56	0.66	47.0
East: Victoria Road												
4	L2	378	3.6	0.234	6.0	LOS A	1.4	10.4	0.14	0.62	0.14	53.0
5	T1	2	50.0	0.336	48.1	LOS D	4.2	32.4	0.93	0.77	0.93	31.9
6	R2	78	12.2	0.336	53.8	LOS D	4.2	32.4	0.93	0.77	0.93	31.3
Approach		458	5.3	0.336	14.3	LOS A	4.2	32.4	0.28	0.64	0.28	47.3
North: O'Connell Street												
7	L2	74	0.0	0.775	39.4	LOS C	29.2	207.2	0.94	0.85	0.95	37.6
8	T1	1087	1.8	0.775	33.9	LOS C	29.2	207.2	0.94	0.85	0.95	38.5
9	R2	1	0.0	0.005	28.9	LOS C	0.0	0.3	0.62	0.61	0.62	40.2
Approach		1162	1.7	0.775	34.2	LOS C	29.2	207.2	0.94	0.85	0.95	38.4
West: WSS Access												
10	L2	3	33.3	0.012	50.1	LOS D	0.2	1.4	0.86	0.64	0.86	32.0
11	T1	7	57.1	0.031	44.8	LOS D	0.4	3.7	0.87	0.59	0.87	34.6
Approach		11	50.0	0.031	46.4	LOS D	0.4	3.7	0.86	0.61	0.86	33.8
All Vehicles		3164	2.6	0.780	22.7	LOS B	29.2	207.2	0.67	0.68	0.71	43.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	52.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [S1 Victoria Rd/O'Connell St - PM Peak 2018 Existing Case (User Given Phase Times)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 111 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
1	L2	2	0.0	0.314	13.0	LOS A	8.8	62.5	0.43	0.38	0.43	52.2
2	T1	818	2.3	0.314	7.4	LOS A	8.8	62.5	0.43	0.38	0.43	53.5
3	R2	372	1.1	0.606	18.0	LOS B	8.2	57.8	0.83	0.83	0.83	45.3
Approach		1192	1.9	0.606	10.7	LOS A	8.8	62.5	0.56	0.52	0.56	50.7
East: Victoria Road												
4	L2	403	2.1	0.248	6.0	LOS A	1.6	11.0	0.15	0.62	0.15	53.1
5	T1	1	0.0	0.349	41.3	LOS C	5.2	37.1	0.90	0.78	0.90	33.9
6	R2	108	2.9	0.349	46.9	LOS D	5.2	37.1	0.90	0.78	0.90	33.4
Approach		513	2.3	0.349	14.7	LOS B	5.2	37.1	0.31	0.65	0.31	47.1
North: O'Connell Street												
7	L2	33	0.0	0.502	31.9	LOS C	15.6	110.8	0.80	0.71	0.80	40.9
8	T1	745	1.6	0.502	26.4	LOS B	15.6	110.8	0.80	0.70	0.80	41.8
9	R2	1	0.0	0.004	26.6	LOS B	0.0	0.2	0.61	0.61	0.61	41.2
Approach		779	1.5	0.502	26.6	LOS B	15.6	110.8	0.80	0.70	0.80	41.8
West: WSS Access												
10	L2	3	0.0	0.008	42.5	LOS D	0.1	0.9	0.81	0.63	0.81	34.8
11	T1	3	0.0	0.008	37.0	LOS C	0.1	0.9	0.81	0.52	0.81	37.4
Approach		6	0.0	0.008	39.8	LOS C	0.1	0.9	0.81	0.58	0.81	36.0
All Vehicles		2489	1.9	0.606	16.6	LOS B	15.6	110.8	0.58	0.60	0.58	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		211	49.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [S2 Victoria Rd/O'Connell St - AM Peak 2028 Future Case (+2% p.a.)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 117 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
2	T1	1242	2.5	0.444	6.4	LOS A	13.7	97.7	0.43	0.39	0.43	54.3
3	R2	589	1.1	0.987	87.8	LOS F	44.4	313.6	1.00	1.19	1.83	24.3
Approach		1832	2.0	0.987	32.6	LOS C	44.4	313.6	0.61	0.64	0.88	38.8
East: Victoria Road												
4	L2	454	3.7	0.281	6.0	LOS A	1.8	13.3	0.15	0.62	0.15	53.0
6	R2	94	12.4	0.340	53.5	LOS D	4.8	37.5	0.93	0.78	0.93	31.4
Approach		547	5.2	0.340	14.2	LOS A	4.8	37.5	0.28	0.65	0.28	47.4
North: O'Connell Street												
7	L2	88	0.0	0.216	30.6	LOS C	6.0	42.1	0.70	0.68	0.70	40.3
8	T1	1305	1.9	1.081	140.2	LOS F	67.8	482.0	0.98	1.60	1.90	17.9
Approach		1394	1.7	1.081	133.3	LOS F	67.8	482.0	0.97	1.54	1.82	18.5
All Vehicles		3773	2.4	1.081	67.1	LOS E	67.8	482.0	0.69	0.98	1.14	28.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	52.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [S2 Victoria Rd/O'Connell St - PM Peak 2028 Future Case (+2% p.a.)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 111 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
2	T1	982	2.4	0.376	7.8	LOS A	11.1	79.3	0.46	0.41	0.46	53.1
3	R2	446	1.2	0.766	27.3	LOS B	13.6	96.4	0.96	0.92	1.08	40.6
Approach		1428	2.0	0.766	13.9	LOS A	13.6	96.4	0.62	0.57	0.65	48.5
East: Victoria Road												
4	L2	484	2.2	0.298	6.0	LOS A	2.0	14.1	0.16	0.62	0.16	53.0
6	R2	131	3.2	0.349	46.6	LOS D	6.1	44.0	0.90	0.78	0.90	33.4
Approach		615	2.4	0.349	14.7	LOS B	6.1	44.0	0.32	0.66	0.32	47.2
North: O'Connell Street												
7	L2	39	0.0	0.110	27.3	LOS B	2.8	19.7	0.65	0.62	0.65	42.0
8	T1	894	1.5	0.549	26.8	LOS B	17.5	124.3	0.81	0.71	0.81	41.6
Approach		933	1.5	0.549	26.8	LOS B	17.5	124.3	0.80	0.71	0.80	41.6
All Vehicles		2976	1.9	0.766	18.1	LOS B	17.5	124.3	0.61	0.63	0.63	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P2	East Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 101 [S3 Victoria Rd/O'Connell St - AM Peak 2028 Future Case (+2% p.a.)+Development]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 117 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
2	T1	1243	2.5	0.444	6.4	LOS A	13.7	97.8	0.43	0.39	0.43	54.3
3	R2	589	1.1	0.987	87.8	LOS F	44.4	313.6	1.00	1.19	1.83	24.3
Approach		1833	2.0	0.987	32.6	LOS C	44.4	313.6	0.61	0.64	0.88	38.8
East: Victoria Road												
4	L2	454	3.7	0.281	6.0	LOS A	1.8	13.3	0.15	0.62	0.15	53.0
6	R2	95	12.2	0.343	53.5	LOS D	4.9	37.9	0.93	0.78	0.93	31.3
Approach		548	5.2	0.343	14.2	LOS A	4.9	37.9	0.28	0.65	0.28	47.4
North: O'Connell Street												
7	L2	134	0.0	0.230	30.8	LOS C	6.4	44.6	0.71	0.72	0.71	39.6
8	T1	1351	1.8	1.152	197.8	LOS F	84.9	603.8	0.99	1.90	2.28	13.8
Approach		1484	1.6	1.152	182.7	LOS F	84.9	603.8	0.97	1.80	2.14	14.7
All Vehicles		3865	2.3	1.152	87.6	LOS F	84.9	603.8	0.70	1.09	1.28	24.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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P2	East Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	52.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	52.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
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MOVEMENT SUMMARY

Site: 101 [S3 Victoria Rd/O'Connell St - PM Peak 2028 Future Case (+2% p.a.)+Development]

New Site
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Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: O'Connell Street												
2	T1	1007	2.3	0.386	7.9	LOS A	11.5	82.0	0.46	0.41	0.46	53.1
3	R2	446	1.2	0.770	28.4	LOS B	14.0	98.9	0.97	0.93	1.10	40.1
Approach		1454	2.0	0.770	14.2	LOS A	14.0	98.9	0.62	0.57	0.66	48.3
East: Victoria Road												
4	L2	484	2.2	0.298	6.0	LOS A	2.0	14.1	0.16	0.62	0.16	53.0
6	R2	156	2.7	0.415	47.2	LOS D	7.4	53.2	0.91	0.80	0.91	33.2
Approach		640	2.3	0.415	16.1	LOS B	7.4	53.2	0.34	0.67	0.34	46.3
North: O'Connell Street												
7	L2	45	0.0	0.111	27.3	LOS B	2.8	19.9	0.65	0.63	0.65	41.8
8	T1	901	1.5	0.557	26.9	LOS B	17.9	126.7	0.82	0.72	0.82	41.5
Approach		946	1.4	0.557	26.9	LOS B	17.9	126.7	0.81	0.71	0.81	41.5
All Vehicles		3040	1.9	0.770	18.6	LOS B	17.9	126.7	0.62	0.64	0.64	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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P2	East Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	49.8	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	49.8	LOS E			0.95	0.95

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Appendix D

PLC Hotel Draft Construction Traffic Management Plan

Parramatta Leagues Club Hotel

Framework Construction Traffic Management Plan

Prepared for:

Parramatta League Club

29 November 2018

The Transport Planning Partnership

Parramatta Leagues Club Hotel

Framework Construction Traffic Management Plan

Client: Parramatta League Club

Version: V01

Date: 29 November 2018

TTPP Reference: 18305

Quality Record

Version	Date	Approved by	Signature
V01	29/9/18	Jason Rudd	

Table of Contents

Tables

Figures

1 Introduction

1.1 Background

This Draft Construction Traffic Management Plan (CTMP) has been prepared on behalf of the Parramatta Leagues Club and is associated with the proposed hotel development at 1 Eels Place.

Specifically, this Draft CTMP addresses a requirement of the SEARs issued for the SSD application for the hotel.

This CTMP is intended to provide a framework for the future preparation of a detailed CTMP following SSD application approval and development of a detailed construction methodology.

Moreover, this Draft CTMP establishes the principles and objectives for construction traffic management, evaluates the potential traffic-related impacts arising from the proposed construction activities of the subject development and sets out appropriate mitigation measures and management arrangements to address these implications.

This report provides an outline of an indicative construction methodology and details management measures to ensure the safety of the public and workers.

1.2 Purpose of this CTMP

This CTPM addresses the potential traffic and transport implications during the construction phase of the development. The overall principles of traffic management during construction include:

- manage vehicle and pedestrian access to / from adjacent properties;
- manage construction traffic activity during events at the adjacent Stadium;
- restrict construction vehicle movements to designated routes to / from the site;
- manage and control construction vehicle activity in the vicinity of the site;
- estimate indicative traffic generation associated with construction works;
- provide an appropriate and convenient environment for pedestrians and cyclists;
- minimise the impact on traffic flows, emergency vehicles and pedestrian movements;
- maintain appropriate public transport access; and
- carry out construction activity in accordance with the approved work hours.

2 Indicative Construction Methodology

2.1 Construction Staging and Activities Program

Demolition, excavation and construction works associated with the proposed hotel are expected to have a total duration of 18 – 24 months.

Construction activities for this project will generally involve:

- Preliminary works/ site establishment / demolition
- Excavation/ earthworks for basement
- Building Works (ie. structure works, façade and internal fit out

The staging and estimated duration of construction and indicative construction vehicle movements is summarised in Table 2.1.

Table 2.1: Indicative Duration Stages and Estimated Daily Construction Traffic Movements

Stage	Approximate Duration (months)	Average Daily Truck Movement Vehicles / day
Demolition	1	5
Excavation	4 - 6	10-20
Building Works	14- 18	40 during concrete pours 10-20 during non pour periods

2.2 Construction Site Access and Work Zones

The construction methodology for all stages of construction shall be developed with a principle objective of maintaining pedestrian access along all of the site's frontages at all times.

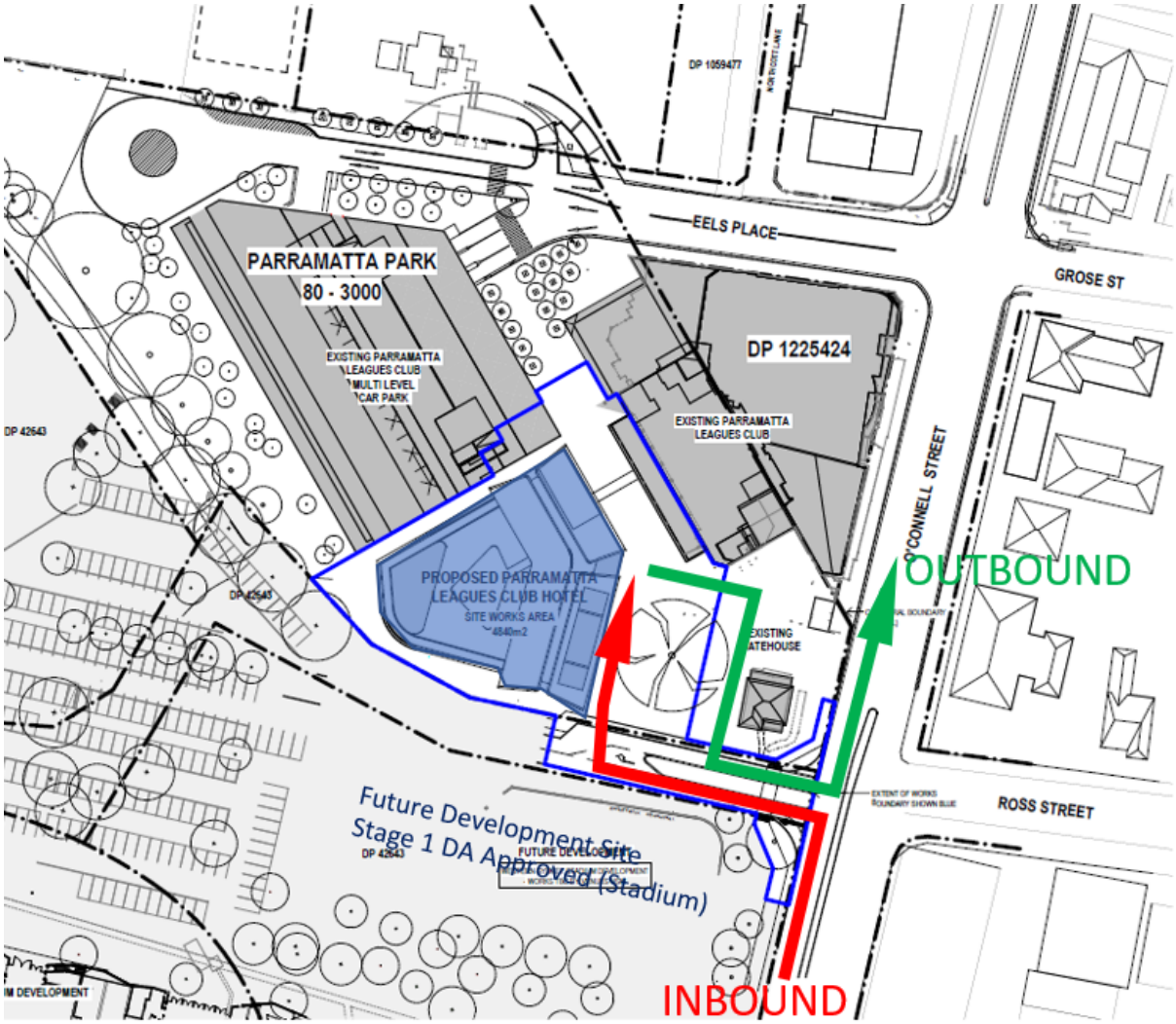
It is noted that the proposed hotel site will have vehicle access options from Eels Place and / or the new Stadium access road.

The hotel site sits within the broader Leagues Club precinct which will be available, with appropriate internal traffic and pedestrian management for access, materials handling and queuing of construction vehicles on site and off the external road network.

It is envisaged that the proposed hotel can be constructed without the need for work zones in O'Connell Street along the Club's frontage.

The proposed site and internal construction vehicle access arrangements are shown in Figure 2.1.

Figure 2.1: Construction Vehicle Site Access

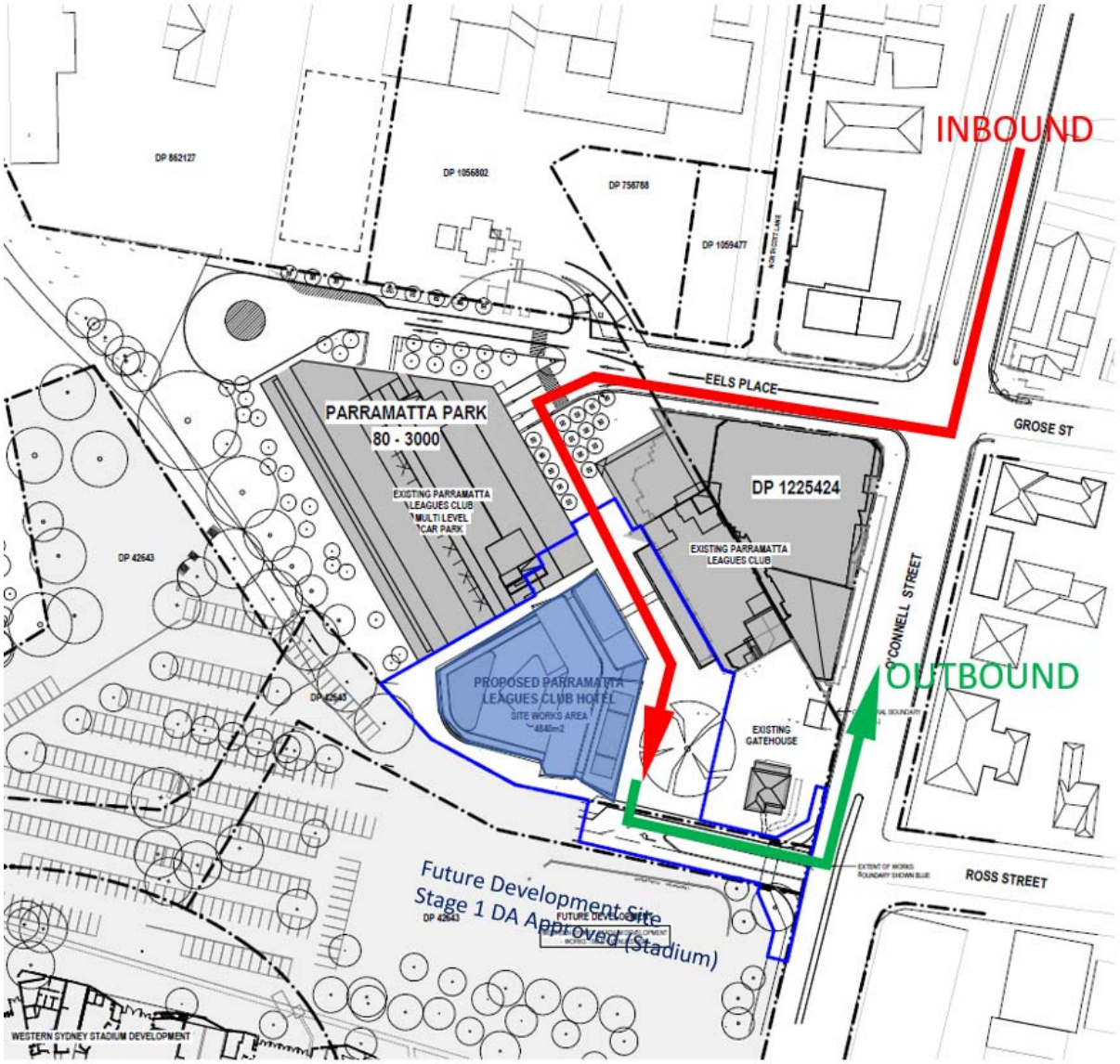


An alternative access scenario is presented in Figure 2.2. This arrangement would potentially be utilised during events at the Stadium when the new Stadium access is being utilised.

In summary the indicative methodology is as follows:

- Vehicles will enter and exit Parramatta Leagues Club precinct via the new Stadium access. A gate on the site boundary will be closed whenever vehicles are not entering or exiting the site.

Figure 2.2: Alternative Construction Vehicle Site Access



- Vehicles will manoeuvre on site on the area which is currently the at grade car park. Circulation within the site can be provided in a manner which allows vehicles to enter and exit in a forward direction.
- Pedestrians would be temporarily held on O'Connell Street footpath with traffic controls at the new Stadium access while construction vehicles are entering / exiting the site.
- Larger construction vehicles could utilise Eels Place to enable forward movements to be undertaken to from and through the site.

2.3 Work Hours

Construction works shall be carried out in accordance with the approved work hours specified in the conditions of consent for the development.

It is envisaged that the typical construction work hours will be as follows:

- Monday to Friday 7.00am – 5.00pm
- Saturday 8.00am – 3.00pm
- Sunday and public holiday No work.

For event mode periods at the Stadium specific construction traffic management measures would need to be implemented in consultation with Venues NSW (or relevant Stadium operators).

It is envisaged that during large events, no work requiring construction traffic movements would be undertaken on the hotel site.

2.4 Construction Vehicle Type and Volumes

Given the limited site constraints and available vehicle access routes, it is proposed that the size of vehicles accessing the site would include the following:

- Articulated semi trailers (19m long) – for delivery of large structural elements
- Truck and Dog – used removal of bulk excavated material
- Heavy Rigid Vehicles (12.5m long) – delivery of building materials
- Medium and Small Rigid Vehicles - Delivery of building materials, removal of waste etc.

Peak construction traffic generation during construction will occur during concrete pouring activities. During concrete pours potentially two concrete agitator trucks per hour will be required on an average day, and up to three to four concrete trucks per hour will be required during peak activities. The maximum traffic volumes will be up to 80 two-way movements (40 in / 40 out) on a 10-hour working day.

2.5 Construction Workers

It is envisaged that there will be an average of 100 construction staff on site, and up to 150 construction staff during peak activities. Limited on site car parking would be provided for construction workers within the Club's multi storey car park.

2.6 Site Access and Construction Vehicle Routes

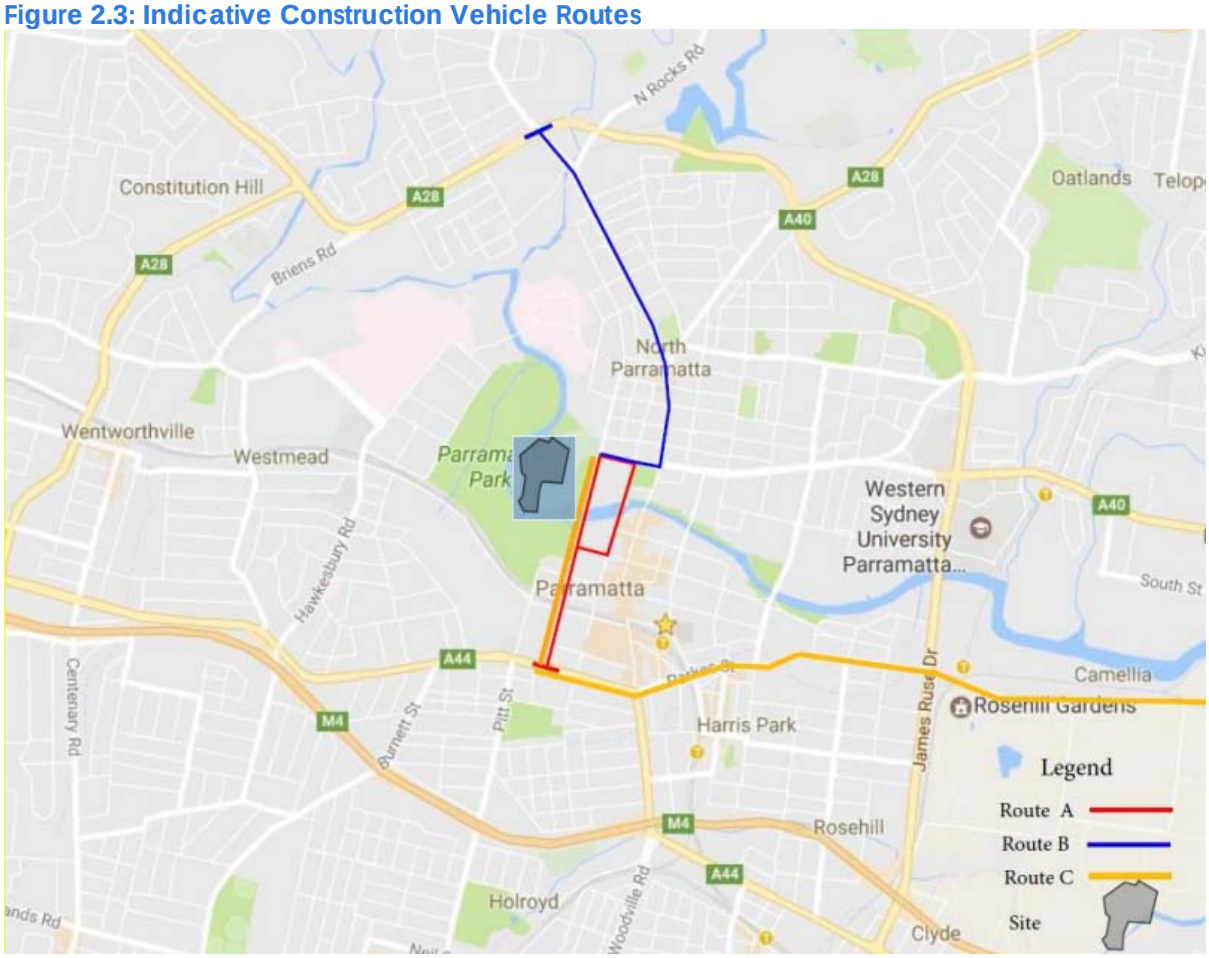
Construction vehicles shall be restricted to designated and approved construction vehicle routes for access to and from the site.

Construction vehicle routes shall seek to minimise the use of local roads and direct construction vehicles along the most direct route to and from the arterial road network.

It is envisaged that the construction traffic routes to be utilised for the construction of the proposed hotel will be the same as those utilised for the construction of the adjacent Stadium as shown in Figure 2.3.

The application of various routes may be required subject to where building materials are sourced and to address sensitive surrounding land uses at peak periods.

Figure 2.3: Indicative Construction Vehicle Routes



Source: Western Sydney Stadium CTMP (BECA,4/9/17)

All truck drivers will be advised of the designated truck routes to / from the site and be required to adhere to the nominated routes.

3 Construction Traffic Assessment and Implications

3.1 Construction Traffic Generation

The proposed peak construction activities are estimated to generate up to four concrete trucks per hour during the peak activities, equating to 80 two-way movements on a 10-hour working day. The low level of construction traffic volumes could not be expected to result in adverse impact on the operation of the surrounding road network and would be less than the volumes generated by the adjacent Stadium construction.

It is envisaged that the Stadium will be constructed prior to works commencing on the proposed hotel site.

3.2 Pedestrian and Cycle Access

Traffic control measures will be implemented during the construction phases as developed through the detailed CTMP and associated Traffic Control Plans (TCP).

Notwithstanding the above, all existing pedestrian and cycle access along the hotel site's frontages shall be maintained during construction activities.

Cycle access on public roads shall be maintained as would general traffic flows.

3.3 Public Transport Facilities

All loading activities will be undertaken within the site and will not affect bus services along O'Connell Street.

Access to the existing bus stop of the Club's frontage to O'Connell Street shall be maintained at all times.

Additionally, workers shall be encouraged to utilise public transport to access the site.

4 Indicative Construction Traffic Management Measures

4.1 Traffic Management Measures

Traffic Control Plans (TCPs) shall be prepared to depict the proposed traffic control measures including static signage to guide motorists past the subject site.

The TCPs shall be designed in accordance with Roads and Maritime Services' Traffic Control at Works Sites manual, with all relevant approvals and permits to be obtained prior to the commencement of any construction works.

The proposed construction truck movements to/from the site shall be accompanied by advisory traffic control signage to minimise the traffic impact on the surrounding road network.

All advisory road signage shall be installed in accordance with AS1742.3 Manual of uniform traffic control devices - Traffic control devices for works on roads and the Roads and Maritime Services Traffic Control at Worksites Manual. Signs shall be installed and maintained throughout the construction period.

4.2 Vehicle Access

Construction vehicles shall radio / call the site office on approach to the site to ensure that space is available within the site loading area.

All loading and unloading shall be undertaken within the site.

Notwithstanding this, if there are any materials spilt onto the road, site personnel and equipment shall rectify the issue accordingly, subject to appropriate OH&S provision.

4.3 Truck Routes

Protocols must be in place to ensure:

- site induction shall include procedures for accessing the site during demolition, excavation and construction stages;
- drivers shall adhere to the nominated truck routes as shown in Figure 2.3;
- drivers shall be aware of pedestrians and cyclists in the vicinity of the site; and
- drivers shall be aware of existing signposted speed limits.

4.4 Construction Worker Parking

It is envisaged that most workers at the site will utilise public transport to access the site.

A tool drop-off and storage facility shall be provided on-site. This will allow construction workers to drop off and store their tools, allowing them to use public transport to travel to and from the site. This will be incorporated in the workers induction program to ensure minimal parking impact on the surrounding streets.

It is proposed to implement the following measures to encourage workers to use public transport:

- provide an on-site tool drop-off and storage facility to allow tradespeople to drop off and store their specific machinery for the project
- inform staff during the induction and regular management meetings that limited on-site car parking will be available
- instruct staff to use public transport to access the site during the induction and regular management meetings
- display public transport timetable information at key locations within the work site and ensure that it is easily accessible by staff.

In addition to this, car sharing between staff will be encouraged, if car travel is necessary to the work site, to mitigate the arising parking impacts on the surrounding streets from the construction activities. Workers car sharing could be offered a parking space in the Club's multi storey car park.

4.5 Neighbouring Properties

Construction traffic will not impinge on vehicle or pedestrian access to occupants of neighbouring properties.

4.6 Site Inspections and Record Keeping

The demolition, excavation and construction stages shall be monitored to ensure that it proceeds as set out in the Contractor's Construction Management Plan provided by the Principal Contractor.

A daily inspection before the start of construction activity shall take place to ensure that conditions accord with those stipulated in the plan and that there are no potential hazards. Any possible adverse impacts shall be recorded and dealt with as they arise.

4.7 Site Induction

All staff employed on the site by the Principal Contractor shall be required to undergo a site induction.

The induction shall include permitted access routes to and from the works site for site staff and delivery vehicles as well as standard environmental, OH&S, driver protocols and emergency procedures.

The workers are to be informed to use public transport to access the site during the induction.

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