

Built Development Pty Ltd

50-52 Phillip Street

Stage 1 State Significant
Development Application -
Transport Impact Assessment

Rev A | 21 December 2020

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

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

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1 Introduction

This report supports a Stage 1 State Significant Development (SSD) Development Application (DA) for the redevelopment of a new mixed use hotel and branded residential building at 50-52 Phillip Street, Sydney. The Staged SSD DA proposes a concept proposal or Stage 1 DA for the retention and refurbishment of the heritage building on the site, demolition of other existing buildings on the site and construction of a new mixed use building. The Stage 1 SSD DA specifically seeks consent for land uses, a maximum gross floor area, a maximum building envelope, pedestrian and vehicle access and circulation arrangements, and associated car parking provision.

Built is seeking to transform the current site to deliver a new and modern mixed use development which contributes to overcoming a shortage of hotel accommodation in Sydney, and positively contributes to the character and vibrancy of Sydney's Central Business District (CBD). As part of the redevelopment project, the existing heritage listed building on the site will be retained and refurbished for hotel purposes.

As the proposal is for the development of a predominately tourist related purpose, being a hotel, that has a capital investment value in excess of \$100 million, it is SSD as prescribed in Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP).

1.1 Site Description

The site is located in Central Sydney, along the eastern edge of Sydney's core Central Business District (CBD). The immediate surrounds of the site in the eastern edge of the Sydney CBD present a mix of commercial, residential, and tourism uses. The prevailing built form in the vicinity of the site includes a range of building typologies and heights, as well as several significant state-listed heritage buildings, such as the Chief Secretary's Building immediately to the north of the site.

The site itself is located at 50-52 Phillip Street, Sydney and has a total area of approximately 1,726m², with frontages to Phillip Street and Phillip Lane. Two commercial buildings sharing a built-to-boundary condition currently occupy the site. The heritage-listed sandstone building in the northern portion of the site is six generous storeys in height and contains commercial office space. The building located on the southern portion of the site is 12 storeys in height, and contains a ground level café/bar use, with commercial office space above.

Phillip Lane, which forms part of the 50 Phillip Street lot, connects through the site from Phillip Street at the northern boundary of the site. Phillip Lane is not proposed to be altered from its current form as an access point to the remainder of Phillip Lane at the rear of the site.

An aerial image of the site is provided at Figure 1 and a photograph of the existing buildings fronting Phillip Street is provided at Figure 2.



Figure 1: Aerial photograph of the Site Source: Nearmaps (edits by Ethos Urban)

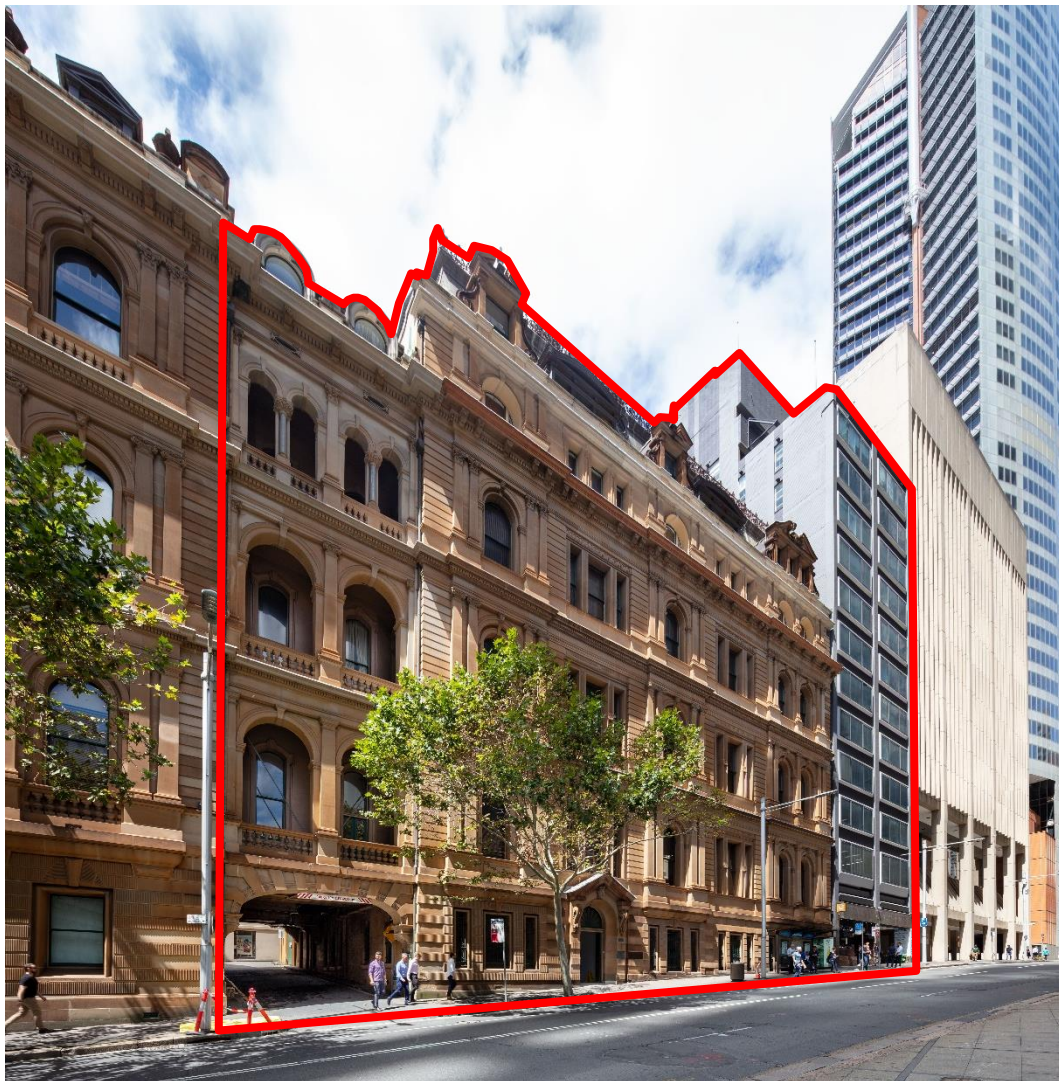


Figure 2: Existing buildings fronting Phillip Street (Source: Built)

1.2 Background

1.2.1 Built Unsolicited Proposal

On 15 October 2019, the NSW Government published details of the Built Unsolicited Proposal for the leasehold purchase of 50 Phillip Street, Sydney to allow for the proposed hotel redevelopment. The Built proposal has progressed to Stage 2 of the Unsolicited Proposal process, and has been deemed unique as Built owns the adjacent property (52 Phillip Street, Sydney) to the Government owned 50 Phillip Street, Sydney. As there are no other privately owned properties immediately contiguous to 50 Phillip Street, Built possesses unique property ownership that enables it to amalgamate 50 and 52 Phillip Street, and take full advantage of the unused developable air space.

The proposed redevelopment project will combine both private and Government land, breathing new life into an underutilised heritage-listed NSW Government owned building and Built's aging privately-held commercial office building.

Built is well recognised for work in the refurbishment and restoration of iconic heritage properties across Australia. As such, a foremost principle of the project is to ensure that the integrity of the heritage listed Government building is not compromised. Rather, the heritage qualities of the building will be celebrated and revitalised for the people of NSW. The Chief Secretary's Building which fronts Bridge Street will not be leased as part of this redevelopment project, and it is intended to remain in Government ownership and control.

1.2.2 Project Vision

The vision for the redevelopment is to revitalise the lower end of Sydney's financial services district by delivering a new luxury mixed use hotel with a portion of branded residential apartments. The proposal will provide an important and much needed asset to the people of NSW and visitors. Sydney will have, as part of the amalgamation of the properties, its finest luxury hotel with associated retail areas providing ground floor public activation accessible to the general public and hotel guests alike.

Overall, the project will provide the following key public benefits:

- Job creation and benefits to the tourism industry from construction and operation of a new 5/6 star hotel in Central Sydney.
- Contribution to the NSW State's economic activity and Gross State Product, including the generation of construction phase revenue for the Government in the form of payroll tax, stamp duty and GST payments.
- Rejuvenation and adaptive reuse of a Government owned heritage building.
- Regeneration, enhancement and activation of the surrounding public domain, particularly upgrades to Phillip Lane.
- Creation of a heritage-tourism precinct with a new hotel as the centrepiece.
- A portion of branded residential apartments to support the deliver of the hotel and provide a variety of uses to contribute to the liveability of Central Sydney.

- The potential to deliver a capital return to Government to fund future Government investment in services and infrastructure.

1.3 Project Description

This SSD DA seeks consent for a concept proposal for a new landmark mixed use building with approximately 331 new hotel rooms and 23 branded residential apartments in Sydney's CBD. The Stage 1 SSD DA Concept Proposal will establish a maximum building envelope, land uses, a maximum total quantity of floor space, pedestrian, vehicle circulation, and drop-off arrangements and associated car parking provision.

Specifically, the Stage 1 SSD DA seeks concept approval for:

- In-principle site preparation works, including termination/relocation of site services and infrastructure, demolition of the existing buildings/structure on the site, excluding the existing heritage-listed building;
- A new 47 storey mixed use building envelope containing:
 - lower level café/bar uses and associated servicing and back-of-house facilities;
 - a new basement containing waste rooms, loading space, and car parking spaces;
 - hotel uses on levels 1 to 35; and
 - residential uses on levels 36 to 47.
- Retention of the existing heritage-listed building on the site, and refurbishment of this building for hotel purposes.
- A new driveway crossing over Phillip Street at the southern end of the site.
- Maintenance and retention of the existing vehicular access over Phillip Lane.

Development consent is not sought for any detailed component of development. A future separate Stage 2 SSD DA will be lodged for the detailed design and construction of the development, following the completion of a competitive design process.

A further detailed description of the proposal is contained in the supporting Environmental Impact Statement prepared for the SSD DA by Ethos Urban.

1.4 Planning context

Built Development Pty Ltd lodged a request for Secretary's Environmental Assessment Requirements (SEARs) February 2021 with the state government and SEARs were issued in 23/03/2021 (SSD-10464).

This version of the report incorporates the SEARs and provides a response to each requirement in Table 1.

Table 1 SEARs and Arup response

SEARs	Arup response
Details of the current and likely daily and peak hour vehicle, public transport, point to point transport, coaches, pedestrian and bicycle movements from the site, together with cumulative impacts of existing, proposed and approved developments in the area and any transport/ traffic upgrades.	Details of the current and likely daily and peak hour vehicle, public transport, coaches and active transport for the existing site and the proposed development are discussed in Sections 2.3, 2.9, 2.10.1, 3.4, 4.6 and 5.1.
Daily and peak traffic movements generated by the project for all modes (driving, walking, cycling, public transport, bus/coach, taxi/point to point transport, other as appropriate for the site).	Assumptions on background growth have been made from the SCATS data and Census data which are assumed to account for surrounding approved developments.
The safety and performance of the surrounding road network, including a detailed assessment of the existing and future performance of key intersections providing access to the site, supported by appropriate modelling and analysis to the satisfaction of TfNSW	The existing performance of the key intersections around the site is discussed in Sections 2.10.3 and 5. It is anticipated that the proposed development will generate a net increase of 29 vehicle trips in the AM peak hour and 27 vehicle trips in the PM peak hour. The volumes are minor in nature and will have negligible impacts on the operation of key intersections. The SIDRA modelling outputs are provided in Appendix C. Crash data and road safety analysis are also included in Section 2.5.
Proposed car parking provision for residents, staff and visitors, including consideration of the availability of public transport and the requirements of the relevant parking codes.	The 23 car spaces proposed on-site will be allocated to residential uses only. This is further discussed in Section 4.1. The availability of public transport in the vicinity of the site is included in Section 2.4.
Proposed locations for hotel pick-ups and drop-offs via 'kiss and drop', point-to-point services, bus and coach without adverse traffic impacts on general traffic and public transport operation within the CBD.	Proposed locations for pick-up/drop off area, buses, coach and day-tour group pick-ups/drop offs are included in Sections 4.5, 4.6 and 4.7.
Detailed pedestrian route assessment of key routes between public transport nodes (existing and future) and the proposed development site.	The connectivity between the proposed development and public transport nodes via a network of good quality, wide pedestrian footpaths with signalised crossings of main local roads is shown in Section 2.7. An assessment of the existing pedestrian movement performance on the key intersections surrounding the site as well as walkability performance of Phillip Street footpath near the site are provided in Sections 2.10.4 and 2.10.5.
Measures to be implemented to encourage users of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing, such as provision of adequate bicycle parking and end-of-trip facilities in	Target mode split for the development is discussed in Section 3.4 and a comparison drawn from the Method of Travel to Work data outlined in Section 2.3. Sustainable travel, active and public transport are included in Section 6.1 and 6.2.

SEARs	Arup response
accordance with the City of Sydney DCP 2012.	Bicycle facilities are compliant with the relevant standards and DCP as noted in Section 4.2 .
Any proposed temporary or permanent changes to transport and access on surrounding streets.	The proposed changes to transport and access on surrounding streets are included in Section 3.5 .
An assessment and details of proposed vehicle access arrangements, including a Delivery Service Plan detailing loading dock and servicing provision, adequacy and management ensuring all servicing and loading occurs on-site and does not rely on kerbside controls.	Car parking and loading with details of the proposed site access are provided in Sections 3.2 and 3.3. A draft traffic management plan for vehicular access is also included in Section 6. The servicing strategy (Loading Dock Management), service and loading provision and delivery management are discussed in Section 4.4. Arrangements and final estimated truck movements will be considered after consultation with Council and waste contractors, and appropriately managed so not all collections occur concurrently. This will be included in Stage 2 DA. A detailed Loading Dock Management Plan will also be prepared in consultation with the Council and CBD Coordination Office prior to occupation of the building when tenancies are known to ensure adequate management of deliveries and waste collection.
Mitigation measures for the impacts identified in the TTIA, including management practices proposed for loading, drop-off and pick-up, walking access, cycling access, vehicle access and parking, bus/coach parking, and any other transport management and access issues as appropriate to the site.	The volumes generated from the proposed development are minor in nature and will have negligible impacts on the operation of key intersections. Existing modelling results also show that the surrounding intersections are generally operating satisfactorily at a Level of Service D or better (i.e. within the theoretical capacity of the intersection) during both AM and PM peak periods. Accordingly, the traffic impacts of the proposed development are considered supportable on traffic planning grounds. Mitigation measures to reduce the safety risk level to 'without development' conditions are included in Section 2.5.
In relation to construction/demolition traffic: Preparation of a draft Construction and Demolition Pedestrian and Traffic Management Plan to demonstrate the proposed management of impact. This Plan needs to include works zone location, vehicle routes, number of trucks, hours of operation, indicative construction program, access arrangements and traffic control measures for all demolition and construction activities.	Outline construction traffic management plan is included in Section 6.3. A detailed Construction Traffic Management Plan (CPTMP) will be prepared for the works following approval of the Stage 2 DA

1.5 Report structure

This transport report describes:

- Existing transport conditions;
- Proposed development including access configuration and proposed changes to transport and access on surrounding streets;
- Parking and loading assessment;
- Forecast traffic generation and road network impacts; and
- Traffic management plans.

2 Existing Conditions

2.1 Existing road network

The state and regional road network surrounding the site (shown in Figure 3) includes:

- Cahill Expressway
- Macquarie Street
- Eastern distributor

The road system in the vicinity of the site comprises a series of two-way streets and one-way lane as shown in Figure 4. Vehicle access to the site is via a one-way Phillip Lane (located north of the site) from Phillip Street with loading access via the laneway located south of the site.

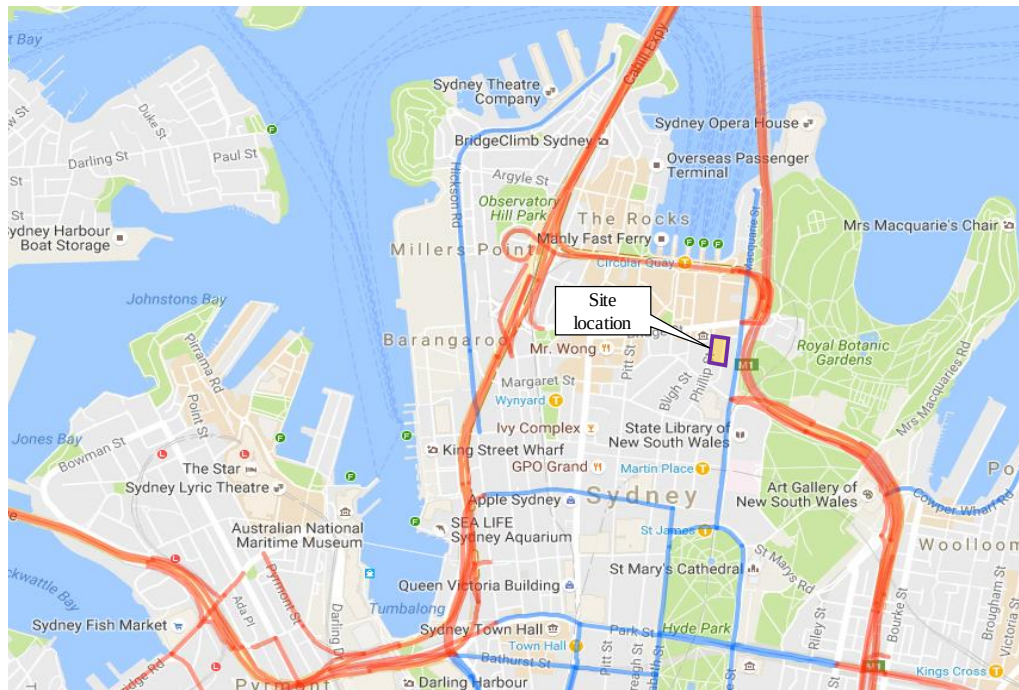


Figure 3: Surrounding Road Network

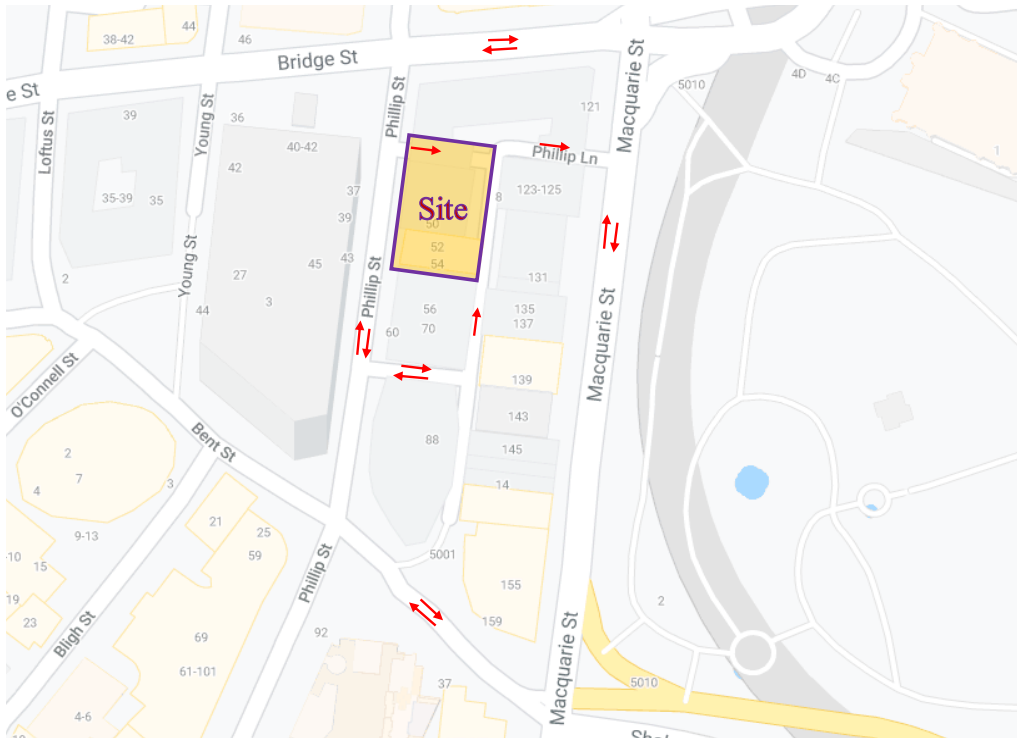


Figure 4: Directional Flow of Traffic

2.2 Existing site access and parking

The site is currently contained a heritage part and a large 14 storey commercial building accommodating offices and ground floor parking for 10-15 spaces. The site has a driveway access on Phillip Lane.

Substantial off-street parking is available in surrounding paid public parking stations operated by Wilson Parking or Secure Parking. On-street parking is provided on Macquarie Street as kerbside 1P and 4P zones. A No Parking zone, Mail zone and a No Stopping zone form the Phillip Street site frontage.

Traffic volumes along Phillip Street (as per the Survey discussed in further details in section 2.9) are currently in the order of 16,400 vehicles per day and varies by approximately 700-750 vehicles in each of the peak hours.

2.3 Existing travel characteristics

Mode share patterns at the site were analysed using 2016 Method of Travel to Work Census data. The Destination Zones (DZNs) of trips are built from 2016 Mesh Blocks (MB) and align with the 2016 Statistical Area Level 2 (SA2).

The zones within which the proposed site falls are shown in Figure 5. To identify the travel pattern of the users of the site, the neighbouring zones (113371040 and 113371041) have been selected as shown in the black border in Figure 5. The results of the analysis are presented in Table 2.

Table 2: 2016 Travel to Work - Mode Split

Mode	Inbound (People who are working in the area)
Train	44%
Bus / Ferry	30%
Car	13%
Walking and Cycling	7%
Other	6%
TOTALS	100%
Trips	6203

Source: BTS, 2016

The data revealed that inbound trips by workers relied more on public transport (74%). Walking and cycling also featured highly (7%).

At full capacity, a total of 280 - 300 full time roles are assumed for the existing office site. This equates to an approximately 220-person trips generated by public transport, 20 trips by active transport and 40 trips by car.

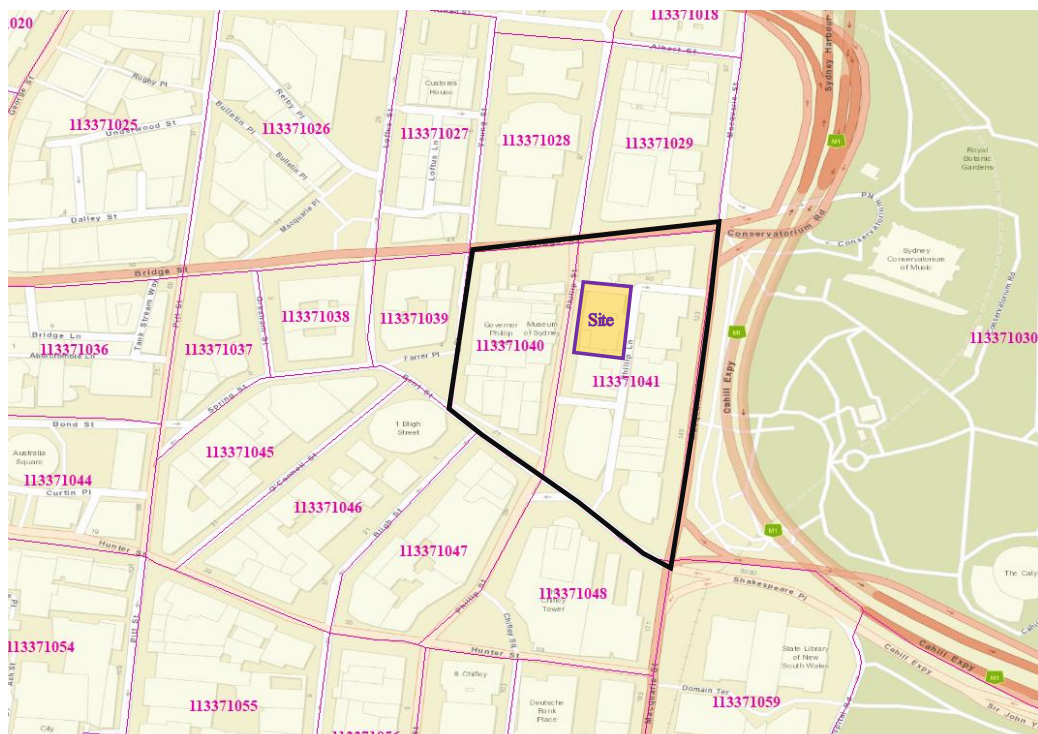


Figure 5: Site location in context of Destination Zones (DZNs)

2.4 Public transport

The site has excellent access to public transport with a large number of bus stops, train and light rail stations located within walking distance as shown in Figure 6.

Circular Quay and Martin Place train stations service the immediate area and are located within 400m and 450m walk respectively from the site. This is considered an acceptable walking distance for railway stations.

The Sydney Light Rail stop within circular quay precinct also permits easy transfer between modes.

The nearest bus stops are located on Phillip Street and Macquarie Street and service a great number of areas in the east, north and west regions of the metropolitan area.

The key public transport modes nearby include:

Train: Circular Quay and Martin Place Station

Bus: The key north and south bus routes are located on Macquarie Street and Phillip Street and the east-west buses on Phillip Street.

Light Rail: the CBD light rail is on George Street with a stop at Alfred Street located within 450m walking distance from the site. This presents further transport options for the patrons of the site.

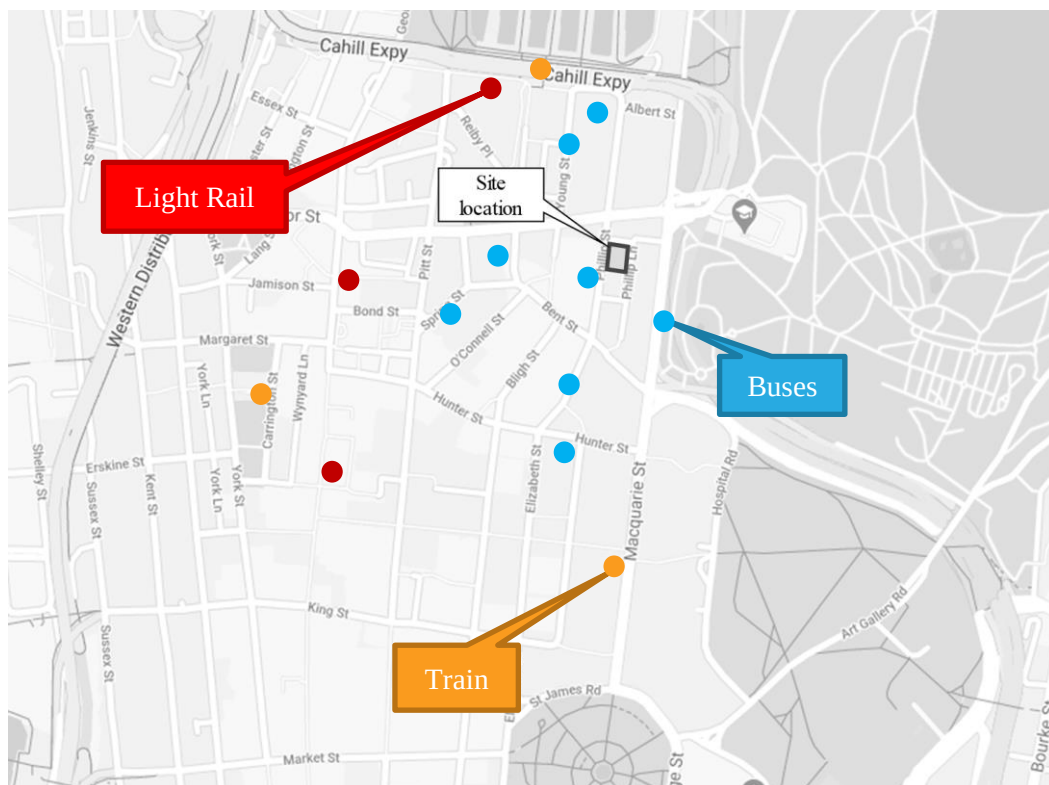


Figure 6: Public transport

2.5 Road Safety

Crash data has been derived for the area from Transport for NSW - Centre for Road Safety from 2014 to 2018 and is summarised in Figure 9. Further detail is provided in Appendix A, representing crash data for the key intersections and roads surrounding the site.

Some of the key points to emerge from the crash data include the following:

- Right through crashes were most frequent;
- pedestrian-related crashes were recorded in the area;

- There were some serious injuries recorded in the study area.

Mitigation measures which can be constructed include physical improvements to infrastructure to reduce the safety risk level to ‘without development’ conditions.

These may include:

- improving visibility / sight distances (removal of vegetation and so on)
- providing signage or road humps near building exits to remind drivers of people walking or cycling
- installing additional safety facilities such as guardrails, crash barriers, guideposts, reflectors, warning signs, median barriers, and so on
- improving shoulders and edge treatment quality
- upgrading / modifying access or intersection layouts: for example, through the provision of turn pockets for safe deceleration
- providing and / or extending overtaking and merging facilities for safety
- improving road pavement.

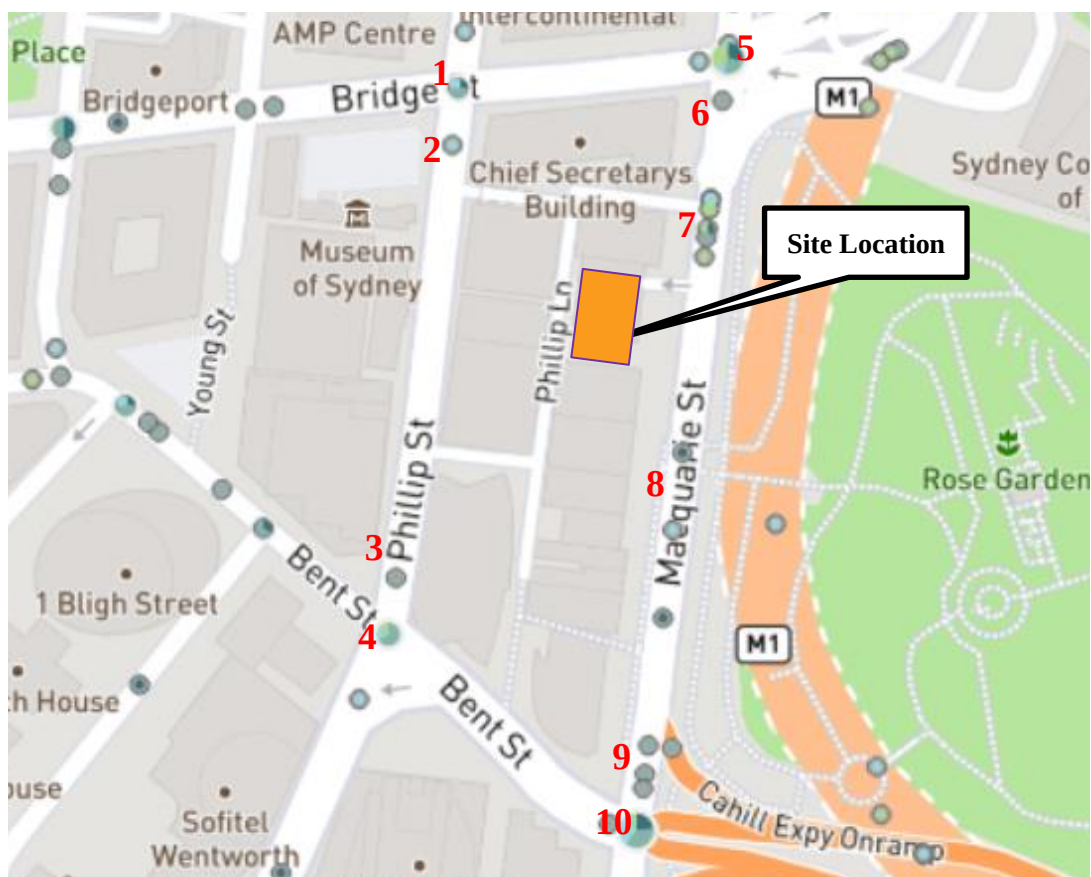


Figure 7: Crash map

2.6 Off-street public car parking

A range of available public car park sites are as shown in Figure 8. The two nearest Wilson public car parking facilities are:

- 61-101 Phillip Street (300m from the site), and
- 43 Phillip St (130m from the site).

Two nearest secure parking facilities are as follows:

- 131 Macquarie Street (40m from the site), and
- Intercontinental Hotel (Enacom) carpark – 100m from the site.

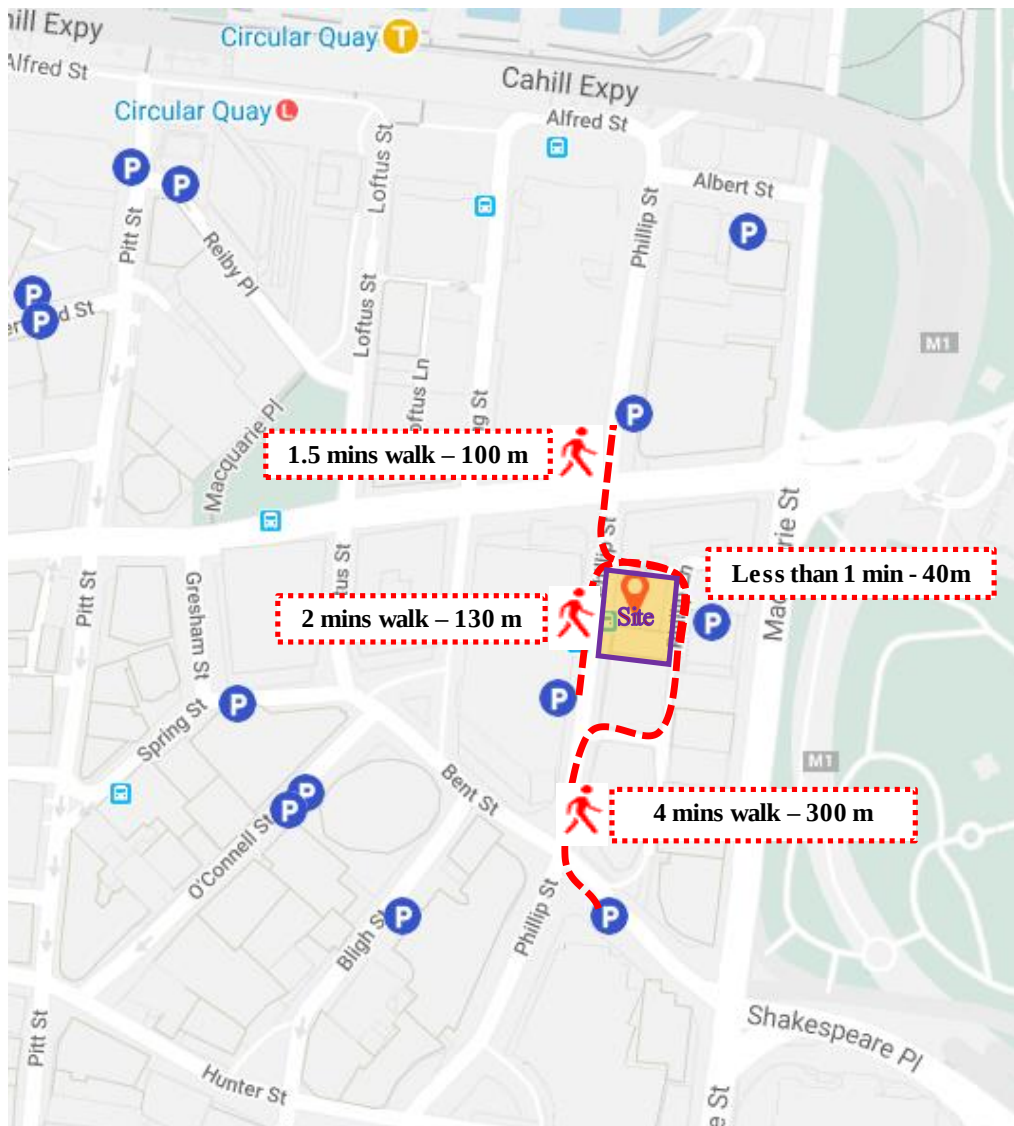


Figure 8: Off-Street Public Car Parking Stations

Source: <http://mysydneycbd.nsw.gov.au/interactive-maps>

2.7 Walking

The site is well connected via a network of good quality, wide pedestrian footpaths with signalised crossings of main local roads shown in Figure 9. The site has a pedestrian link through the site, improving permeability and walkability in the area.

The site frontage to Phillip Lane has a limited width footpath and pedestrians often walk on the carriageway (as shown in Figure 10).

The possible walking routes to the nearest PT nodes are shown with numbers 1 to 3 in Figure 9.

- Route 1: via Loftus Street, 6 mins walk – 450m
- Route 2: via young Street, 6 mins walk – 450m
- Route 3: via Phillip Street, 6 mins walk – 400m

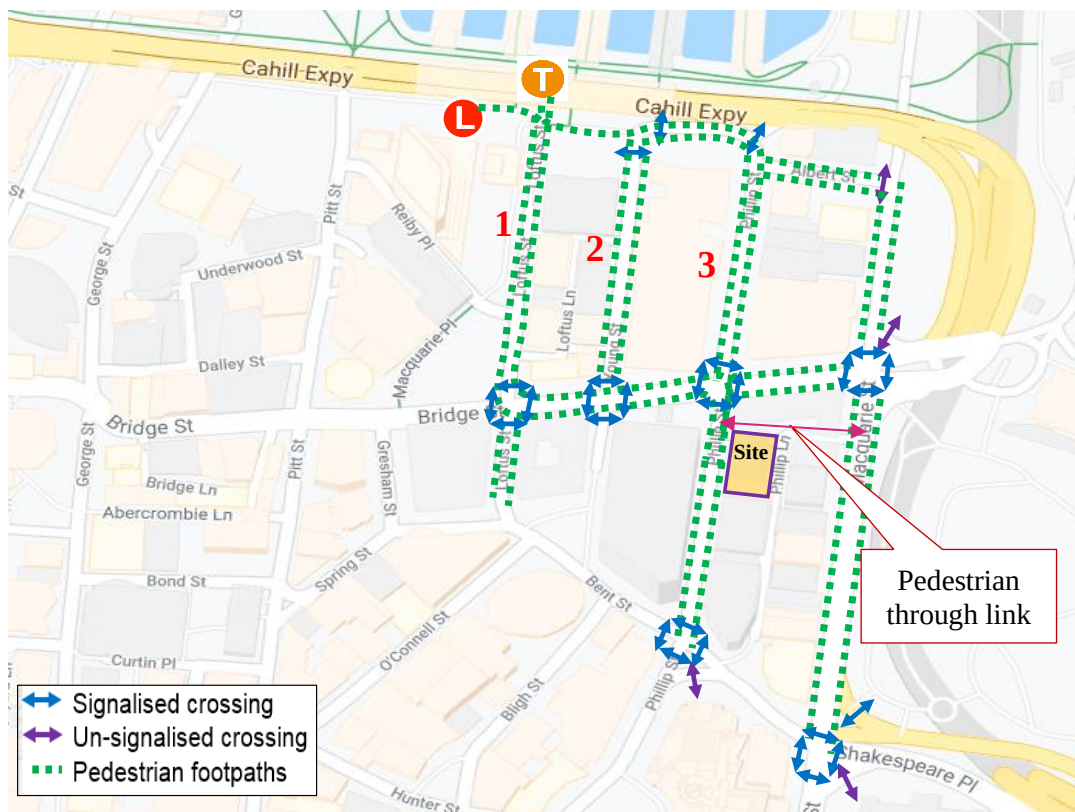


Figure 9: Key pedestrian amenities around the site



Figure 10: Limited width footpath along Phillip Lane

2.8 Cycling network

There are a number of key cross-city cycle routes which form part of City of Sydney Council's new cycling network which provide linkages to the site. These routes are as follows:

- Macquarie Street (mixed street environment)
- Alfred Street north (shared cycle path)
- Kent Street (separated, bi-directional cycleway)
- King Street (separated, bi-directional cycleway)
- Pyrmont Bridge (shared cycle path)

2.9 Existing site traffic generation

The existing development consists of a commercial building with approximately 1666.7m² gross floor area (GFA) and off-street car parking that accommodates 10-15 car parking spaces.

The existing development falls within the RMS guide's definition of an office and commercial development. The RMS Technical Direction TDT 2013/04a identifies morning peak hour vehicle trips to be 1.6 trips per 100m² gross floor area and evening peak hour vehicle trips to be 1.2 per 100m² gross floor area.

When applying this rate to the existing site, the traffic generation is considered to be:

- 27 vehicle trips in the AM peak.
- 20 vehicle trips in the PM peak.

This equates to approximately 270 daily vehicle trips.

2.10 Existing traffic conditions

2.10.1 Traffic volumes

SCATS count data and historic video turning movement data was analysed to ascertain intersection counts at the surrounding intersections.

SCATs data with 15-minute increments over a 24-hour period was provided by TfNSW for the following intersections in the vicinity of the site:

- Shakespeare Place / Macquarie Street intersection during Tuesday 30th July 2019 (TCS 291)
- Bridge Street / Phillip Street intersection during Tuesday 12th November 2019 (TCS 298)

This data was analysed to ensure that the AM, PM peak periods were appropriately captured in the turning movement data. These hourly peak times were found to be at 8:15-9:15am and 5:30-6:30pm. The identified peak periods are presented in Figure 11.

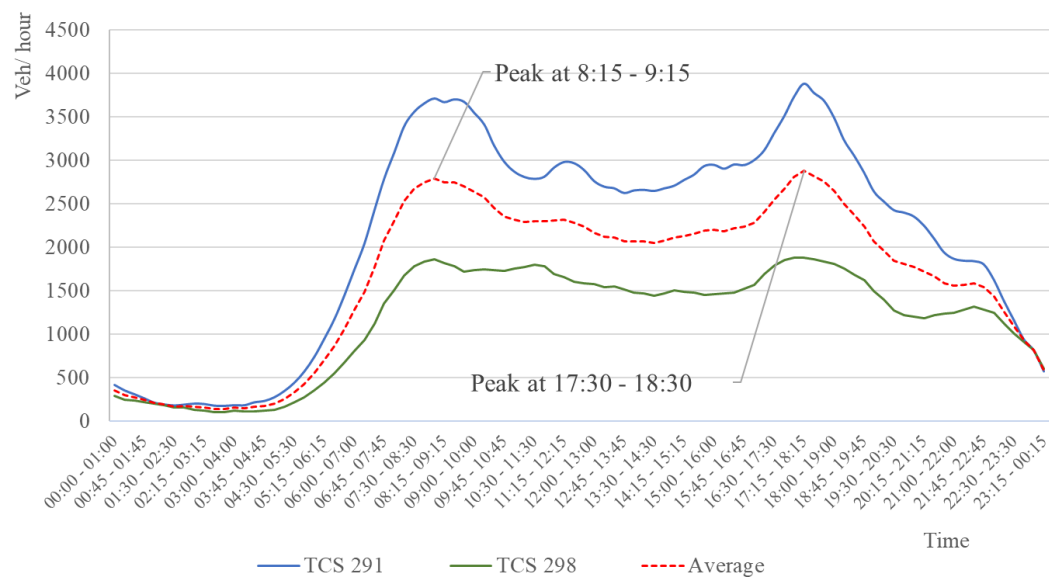


Figure 11: SCATS Traffic volumes on Shakespeare Place / Macquarie Street (TCS 291) – Bridge Street / Phillip Street intersection (TCS 298) and the average of volumes

Movement flows of turning vehicles and pedestrians were also provided by TTM for two weekdays in July 2015 for the following key intersections in the vicinity of the site:

- Shakespeare Place / Macquarie Street;
- Bent Street / Phillip Street;
- Bridge Street / Phillip Street; and
- Bridge Street / Macquarie Street.

The yearly growth percentage was then calculated by comparing the 2019 SCATS data and 2015 TTM data at each approach during the peak hour and these growth rates were extrapolated for the other intersections. The yearly percentage growths were compounded onto the 2015 volumes to calculate the existing 2020 movements and then the network was balanced.

The morning and evening peak hour traffic volumes with the turning movement volumes for the key intersections are shown in Figure 12 and Figure 13 respectively.

The results of the traffic surveys are provided in full in Appendix B and note that:

- Two-way traffic flows in Macquarie Street are typically in the order of approximately 2300 and 2500 vehicles per hour (vph) during the morning and afternoon peak periods respectively;
- Two-way traffic flows in Phillip Street are typically in the order of approximately 720 and 750vph during the morning and evening peak periods respectively.

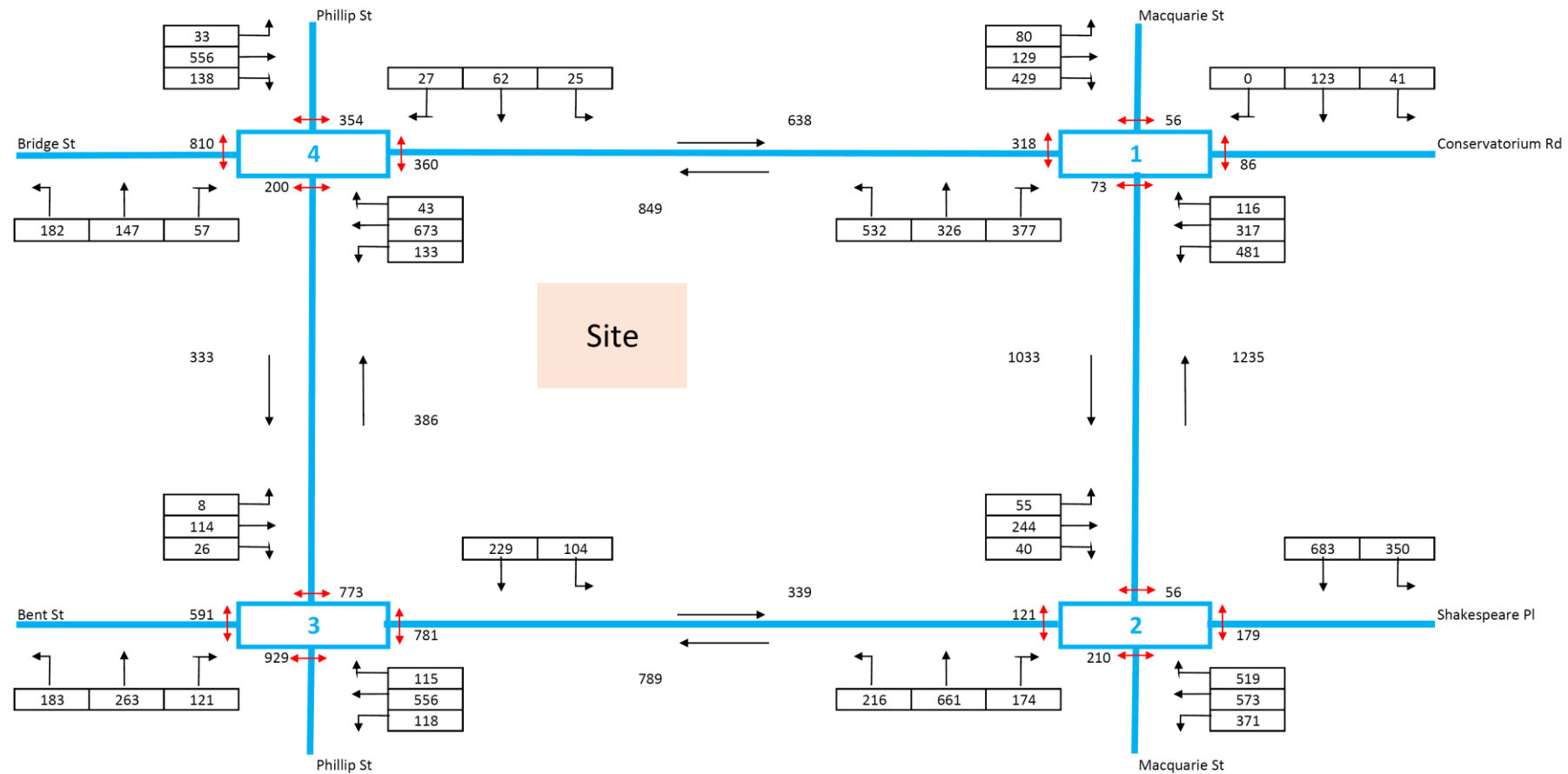


Figure 12: Baseline traffic generation - AM peak hour

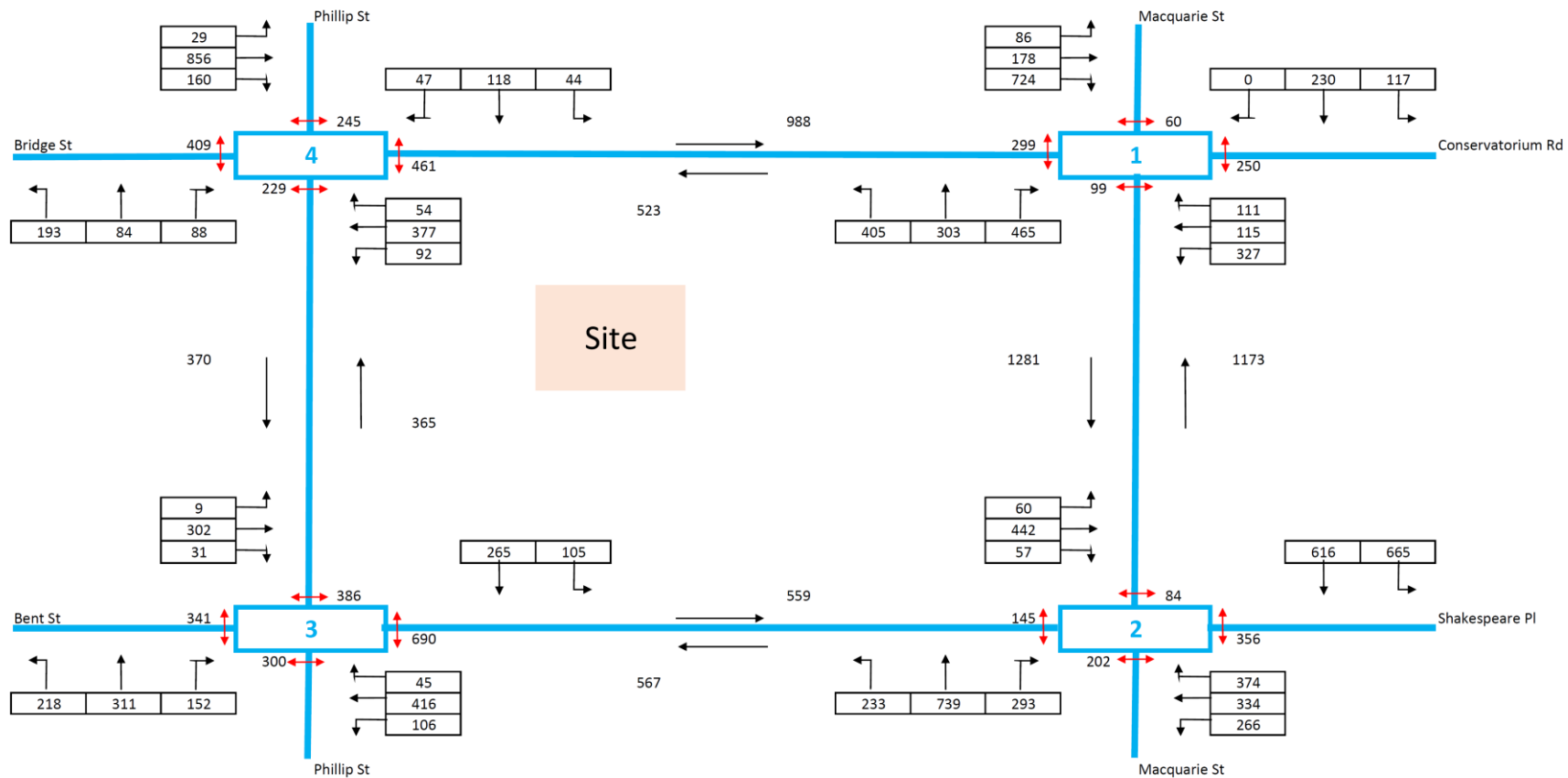


Figure 13: Baseline trip generation - PM peak hour

2.10.2 Google Map Snapshots of Typical Traffic

The typical travel time metrics by Google are shown in Figure 14 and Figure 15 for morning and afternoon peak periods (Tuesday). All streets surrounding the site were observed to have a slower travel time during both peak periods.

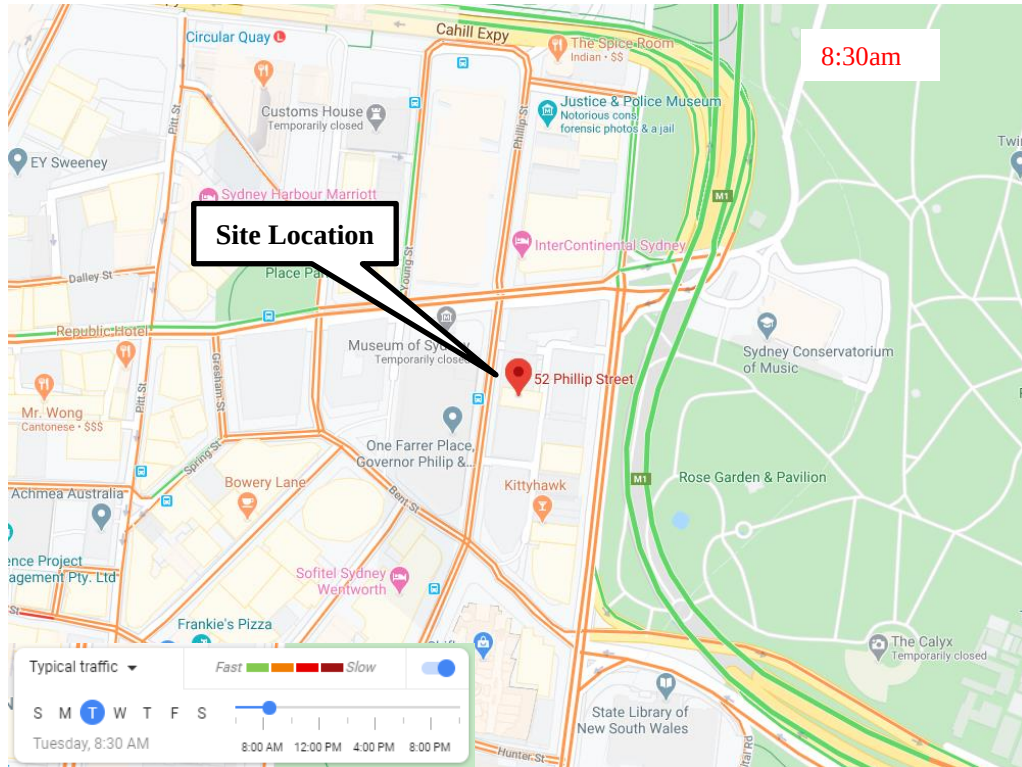


Figure 14: Google maps, AM peak snapshot of typical weekday traffic (travel time)

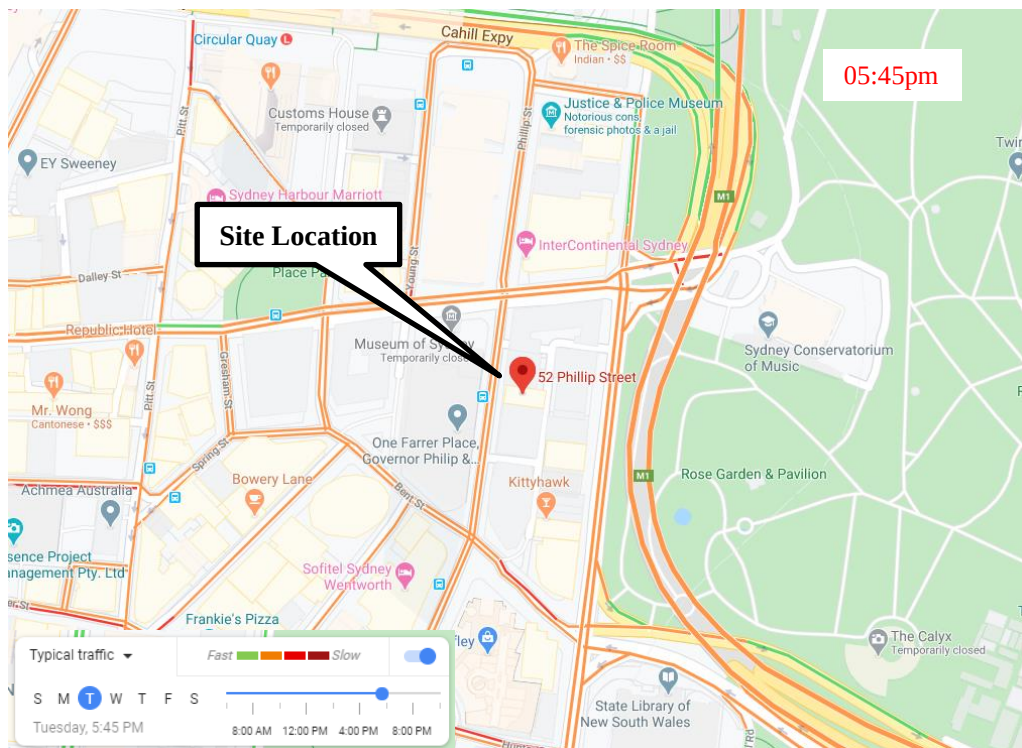


Figure 15: Google maps, PM peak snapshot of typical weekday traffic (travel time)

2.10.3 Existing Intersections Performance

Existing intersection performances have been assessed using SIDRA Intersection 8.0. The analysis is summarised in Table 3. The SIDRA output summaries are provided in Appendix C.

It should be noted that the phase signal times were provided by TfNSW for all four key intersections in the vicinity of the site during a weekday in July or November 2019.

Table 3: SIDRA Intersection Assessment – Existing Movement Performance - Vehicles

Intersection		Intersection Configuration	AM Peak			PM Peak		
			DoS	Delay	LoS	DoS	Delay	LoS
1	Shakespeare Pl / Macquarie Street	Signalised	0.935	42.4	D	0.872	31.7	C
2	Bent Street / Phillip Street	Signalised	0.691	24.6	C	0.645	24.6	C
3	Bridge Street / Phillip Street	Signalised	0.643	22.9	C	0.671	26.1	C
4	Bridge Street / Macquarie Street	Signalised	0.915	37.5	D	0.886	42.5	D

As shown above, the surrounding intersections are generally operating satisfactorily at a Level of Service D or better (i.e. within the theoretical capacity of the intersection) during both AM and PM peak periods.

2.10.4 Pedestrian performance assessment

The current day pedestrian demand (based on surveys) at the key intersections surrounding the site are shown in Figure 12 and Figure 13.

The results of pedestrian surveys are provided in full in Appendix B and note that:

- About 1300 and 1700 pedestrians were crossing the intersection of Bridge Street/Phillip Street during the PM and AM peak hours respectively.
- The pedestrian flows on Bent Street/ Phillip Street were approximately 1700 - 3100 people in the PM and AM peak hours respectively.
- The nearest footpath to the site on Phillip Street had approximately 200 to 400 pedestrians per hour (bidirectional flow)

Existing pedestrian performances have been assessed using SIDRA Intersection 8.0. The analysis is summarised in Table 4 and the SIDRA output summaries are provided in Appendix C.

Table 4: SIDRA Intersection Assessment – Existing Movement Performance - Pedestrian

Intersection		AM Peak		PM Peak	
		Delay	LoS	Delay	LoS
1	Shakespeare Pl / Macquarie Street	38	D	36.1	D
2	Bent Street / Phillip Street	26.6	C	25.6	C
3	Bridge Street / Phillip Street	30.1	D	28.5	C
4	Bridge Street / Macquarie Street	28.5	C	35.5	D

As shown above, the surrounding intersections from the movement performance perspective are generally operating satisfactorily at a Level of Service D or better during both AM and PM peak periods.

2016 Method of Travel to Work Census data (as discussed in Section 2.3) revealed that inbound trips to the area by workers relied more on public transport (74%). Walking and cycling featured around 7% of trips. For the existing office site with approximately 300 staff (at full capacity), about 240-person trips were generated by the site (220-person trips by public transport and 20 trips by active transport). This is comparable with the bidirectional pedestrian flow on the Phillip Street footpath.

2.10.5 Walkability performance – Footpath on Phillip Street

To assess the performance of Phillip Street footpath, the total bidirectional flow at the section of the Phillip Street footpath immediately north of Phillip Lane was considered.

A pedestrian Fruin assessment was undertaken to determine if an existing 3.5m footpath width is appropriate. The LoS at the mid-blocks are determined by dividing the peak minute bidirectional flow by the effective width of the footpath. Table 3 shows the criteria required for each level of service performance values.

Table 3: Fruin Level of Service (LoS) criteria

Level of Service	Area (m2) per pax	Pax. Per minute per width (m)
A	1.21+	23-
B	0.93 - 1.21	23 - 33
C	0.65 - 0.93	33 - 49
D	0.28 - 0.65	49 - 66
E	0.19 - 0.28	66 - 82
F	0.19-	82+

The footpath performance presented here is for the peak 5 minutes. Appropriate conversion factors were assumed to convert the peak hourly flow to peak 5 mins.

Table 4: Pedestrian flow on Phillip Street footpath near the site (two-way totals)

Peak period times	Hourly pedestrian flow	Peak 5 minutes	Peak minute flow (ppl/min)	Pax. Per minute per width
AM (8:15-9:15am)	420	54	11	3.1
PM (5:30-6:30pm)	230	24	5	1.4

From the Fruin assessment of the peak 5-minute flows, it was determined that there is a maximum peak flow rate of 3.1 pedestrians per metre per minute, corresponding to a level of service of A.

3 Proposed Development

3.1 Description of Proposal

The proposal consists of a multistorey hotel with a small size retail premises, hotel café and a rooftop bar.

- Site Area: 1,666.6 m²
- The total gross floor area of all buildings on the site in square metres: 25,188.1m²
- The bar/ café/ swimming pool area GFA: 1,263 m²
- The GFA of all office areas in the building: 235 m²
- Retail space: 123 m² GFA
- 244 hotel rooms
- 23 luxury 3-bedroom residential apartments
- Peak period staffing: total of 200 employees
- 23 car parking spaces on basement level – the access will be provided at ground level via a drop-off ramp from Phillip Lane to a car lift and then to a mechanical parking and permit a maximum sized B99 vehicle to access the site.
- 3 Loading bays - Development users

The development is configured for a variety of retail, hotel users, hotel staff/customers and rooftop bar users.

3.2 Car Parking and Loading

Car parking will be provided on the basement levels. The car parking access will be provided by a ramp down from Phillip Lane into a car lift and then to a mechanical parking.

Loading dock access will be provided to permit three courier vehicles up to 6.4m long Small Rigid Vehicles to access the site in a forward direction (by use of a turntable). This will permit waste collection by smaller private waste services on the turntable. The loading facilities will be managed to ensure adequate access is available for all users and this is discussed in further detail in Section 4.4.

3.3 Proposed Site Access

The site proposes a driveway access from Phillip Lane, which will be wide enough for two-way car travel given the car lift and mechanical parking operation requirements. This driveway width/length is critical in permitting the access for two-way operation of the mechanical parking (to queue within the site).

Pedestrian access to the site will be maintained on Phillip Lane. It is expected that pedestrians external to the site will continue to utilise Phillip lane in the current arrangement. Pedestrian/cycle paths should be protected where possible, and

exposure to vehicular traffic should be minimised. The footpaths/cycle path surrounding the site need to be clear, permit adequate width and have good surface conditions to minimise any risk of slips and falls for pedestrians/cyclists.

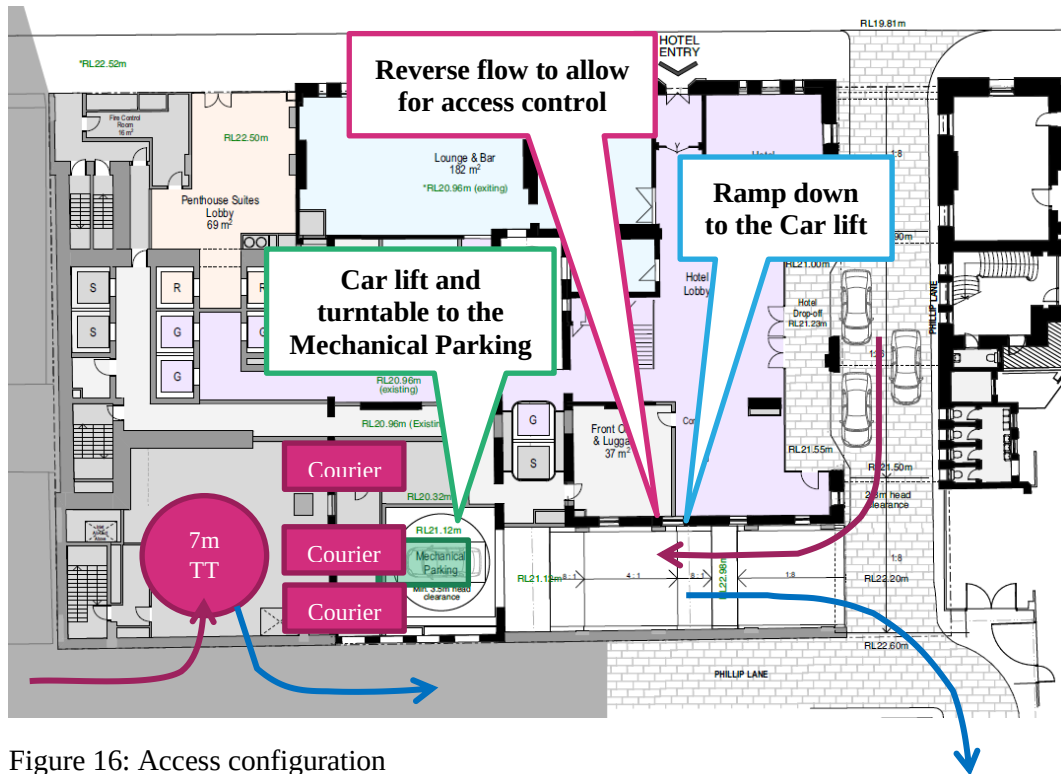


Figure 16: Access configuration

3.4 Travel Characteristics of the development

Sustainable Sydney 2030 includes an action to promote sustainable travel behaviour by developing Green Travel Plans (GTP) that will be implemented in new developments. A Travel Plan aims to manage transport demand through a series of measures that promote and facilitate more sustainable modes of travel with a view to reducing private motor vehicle use.

To encourage people to make greater use of public transport, cycling, walking and car sharing for commuting as well as to encourage people to leave their cars behind and use public transport services are major objectives of Green Travel Plan. Therefore, it is estimated that there would be a decrease in the car driver mode percentages and an increase in other modes (Train, Bus, Walk and Cycling) percentages when comparing them with the existing Travel to Work percentages outlined in Section 2.3.

The target mode split for the development is estimated to be as presented in Table 5.

Table 5: Target mode share

Mode Share	Existing Mode share	Target Mode share
Train / bus	74%	77% (+3% increase)
Car	13%	7% (-6% decrease)
Active Transport	7%	10% (+3% increase)
Other	6%	6% (no changes)

The site supports a low car mode share by providing only 23 car parking spaces on site. The site also encourages alternative modes such as bicycles, public transport, coaches, taxis, etc. Appropriate levels of bicycle parking will be provided within the basement levels for guests and staff at later stages.

Typically, visitors to Sydney CBD hotels also utilise taxi and public transport to transfer from the airport or wider Sydney region. Many guests will be business travellers who will stay for a number of consecutive nights.

A Transport Access Guide (TAG) will be distributed to staff, clients, customers and visitors to the site on their first visit or during any bookings to assist with information regarding:

- Suitable nearby public drop-off/pick-up locations
- Nearby train stations, Light rail stations and bus stops
- Key walking routes between these locations

3.5 Proposed changes to transport and access on surrounding streets

3.5.1 Metro

The future Martin Place Metro Station will have convenient access location to the site. It will be completed in 2024.

The Martin Place station is located in the heart of Sydney's CBD, to the south of Hunter Street between Castlereagh and Elizabeth streets and is integrated with the existing Martin Place Station. There will be a new underground pedestrian link between the existing Martin Place platforms and the metro platforms.

3.5.2 Bus

The proposal will have no impact on bus operations with all existing stops, routes, and layover areas remaining available.

3.5.3 Walking

The introduction of light rail through the CBD has provided opportunities for an improved pedestrian environment in the precinct. With the redevelopment of the AMP Building and adjacent street blocks there will be a more permeable pedestrian network with less traffic. This will improve accessibility for hotel patrons travelling between the proposed Hotel and Circular Quay transport interchange.

3.5.4 Cycling

The Sydney City Centre Access Strategy was released by the NSW Government in December 2013. The strategy outlines the future city centre cycleway network to encourage growth in cycling and reduce pressure on the public transport system. The future city centre cycle network is shown in Figure 17, and includes:

- Extending the east- west cycleway along Park Street to Castlereagh Street
- Construction of a bi-directional cycleway on Castlereagh Street and Pitt Street, providing a new north-south connection through the CBD
- Extending the existing King Street cycleway to Castlereagh Street
- Construction of a bi-directional cycleway on Liverpool Street

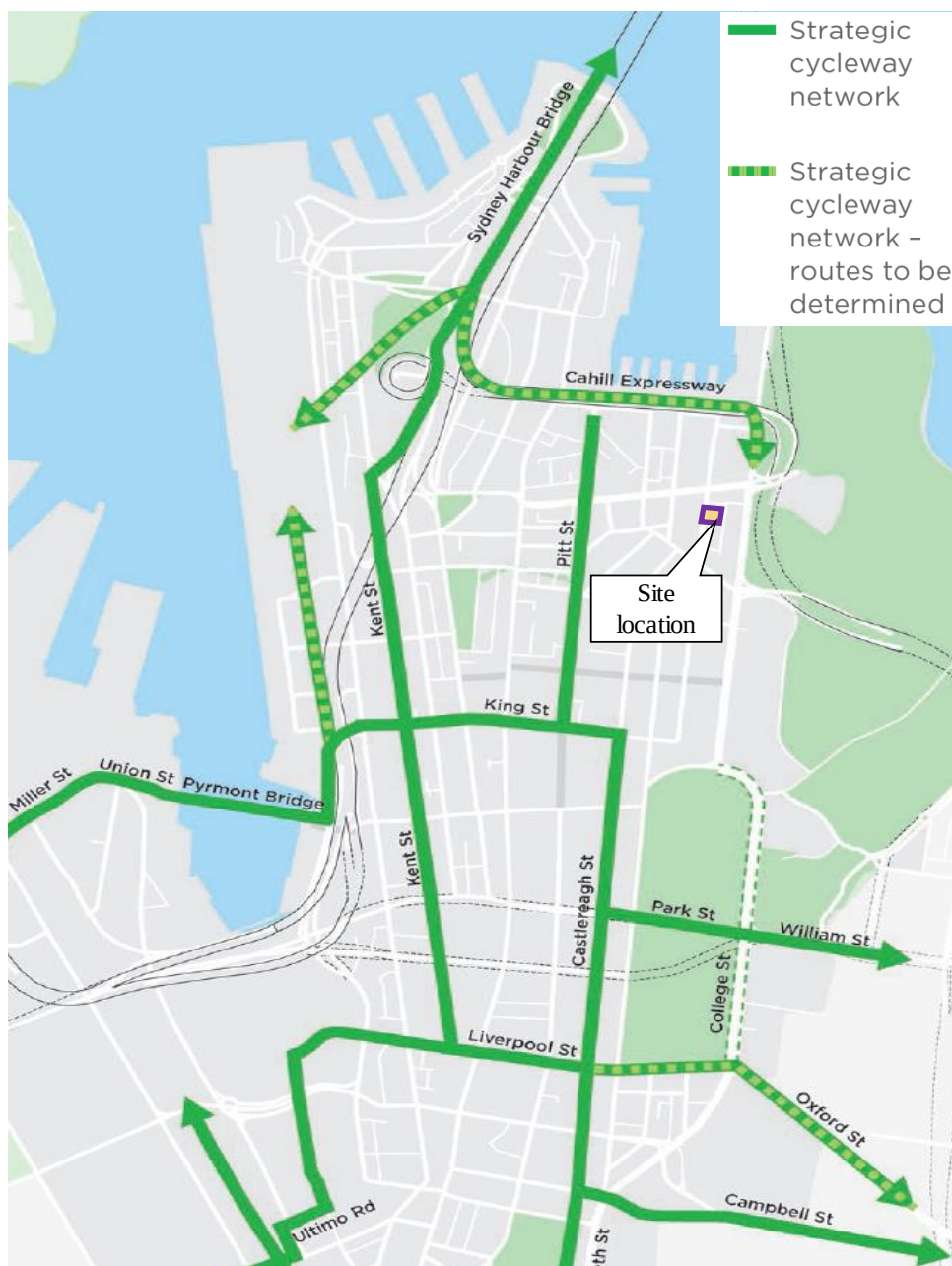


Figure 17 Strategic Cycleway Network Map

Source: Sydney City Centre Access Strategy (NSW Government, 2013)

4 Parking assessment

4.1 Car Parking Provision

The Sydney Local Environment Plan 2012 designates a maximum number of car parking spaces for a building used for the purposes of residential, retail, and hotel or motel accommodation. It should be noted that the site sits within zone B8 Metropolitan Centre and Category D under the Land Use and Transport Integration Map and has an FSR greater than 3.5:1.

The breakdown of the maximum provision of parking allowable on the site is shown in Table 6.

The development proposes a total of 23 car parking spaces for the site which complies with the LEP. The maximum of 23 car spaces will be allocated to residential uses only. No parking is being allocated for retail or hotel uses.

Table 6: Sydney LEP 2012 maximum parking rates

	Table colour	Number	LEP Max	Site
Residential	(i) for each studio dwelling—0.1 spaces, and (ii) for each 1 bedroom dwelling—0.3 spaces, and (iii) for each 2 bedroom dwelling—0.7 spaces, and (iv) for each 3 or more bedroom dwelling—1 space,	23 3-bed units	23 spaces	23 spaces
Hotel (first 100 rooms)	1 space for every 4 bedrooms up to 100 bedrooms,	244 rooms	25 spaces	0 spaces
Hotel (next 204 rooms)	1 space for every 5 bedrooms more than 100 bedrooms.		28.8 spaces	
Retail premise (Cat D, 85m ²)	if the building is on land in category D and has a floor space ratio greater than 3.5:1, the following formula is to be used: $M = (G \times A) \div (50 \times T)$	123 m ² GFA	0.31 spaces	
Total			77 spaces	23 spaces

Where:

M is the maximum number of parking spaces, and

G is the gross floor area of all office premises and business premises in the building in m²

A is the site area in square metres, and

T is the total gross floor area of all buildings on the site in square metres.

Source: <http://www.legislation.nsw.gov.au/#/view/EPI/2012/628/part7/div1/cl7.7>

4.1.1 Accessible parking spaces

The DCP Schedule 7 (7.8.5) outlines provision for accessible car parking spaces:

- 1 accessible space per 20 visitor car spaces.

Since all parking spaces will be tenanted, the development will allow for the car spaces to be wheelchair accessible from the turntable.

The architectural plans prepared by Built provide the required number of car parking spaces and the design, layout, etc of the off-street parking facilities will comply with the relevant AS2890 Australian Standards. A swept path analysis was also undertaken for the relevant manoeuvres and is shown in Appendix D.

4.2 Bicycle parking and end of trip facilities

Sydney Development Control Plan 2012 stipulates the required bicycle parking and associated facilities in Section 3.11.3. All development is to provide on-site bike parking designed in accordance with AS2890.3. The hotel will have up to 200 staff on site at peak times covering hotel, bar and cafe. The required bicycle parking is shown in Table 7.

In addition to the above bicycle parking facilities, end of trip facilities will need to be considered for the hotel employee uses:

- A locker is to be provided for each bike space (employees); and
- Two showers and change cubicles for first 20 bike spaces + 2 additional showers/cubicles per 20 thereafter (employees)

Table 7: Bicycle parking provision

Use	Residents/Employees		Visitors/customers/guests	
Residential	1 per units	23	1 per 10 units	3
Hotel	1 per 4 staff	50	1 per 20 rooms	14
Retail (Shop, Restaurant or café)	1 per 250sqm area	0.5	2 plus 1 per 100sqm over 100sqm GFA	3.2
Total	73.5 spaces		20.2 spaces	

The 74 secure bicycle spaces for residents, employees and visitors are provided in the basement level of the development. Staff facilities are provided in a secure caged area (Class B facility). Visitor and customer spaces are provided in an easily accessible area for the public as bicycle racks (Class C). The employee bicycles are provided in a lock-up cage within the basement levels. Visitor parking are located on basement level and easily accessed by guest lifts. This is presented in Figure 18.

End of trip requires six showers and change facilities and 50 lockers for employees of the site. These will be provided within the basement level alongside the secure employee bicycle parking.

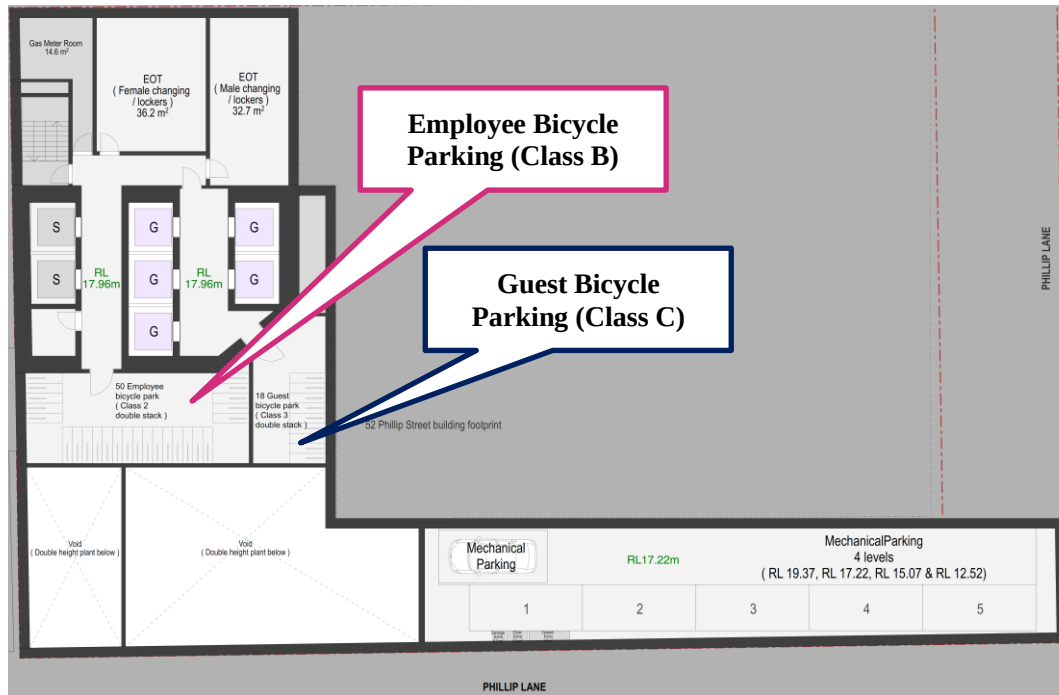


Figure 18: Bicycle parking spaces

4.3 Motorcycle parking spaces

The DCP requires 1 motorcycle parking space per 12 car spaces, which results in a minimum requirement of two motorcycle spaces across the site, which will be placed amongst the basement car parking level within the stacker system.

4.4 Servicing strategy (Loading Dock Management)

4.4.1 Loading bay access

The three loading bays will be located on the ground floor and entry will be located off the Phillip lane on the ground level of the site shown in Figure 19.

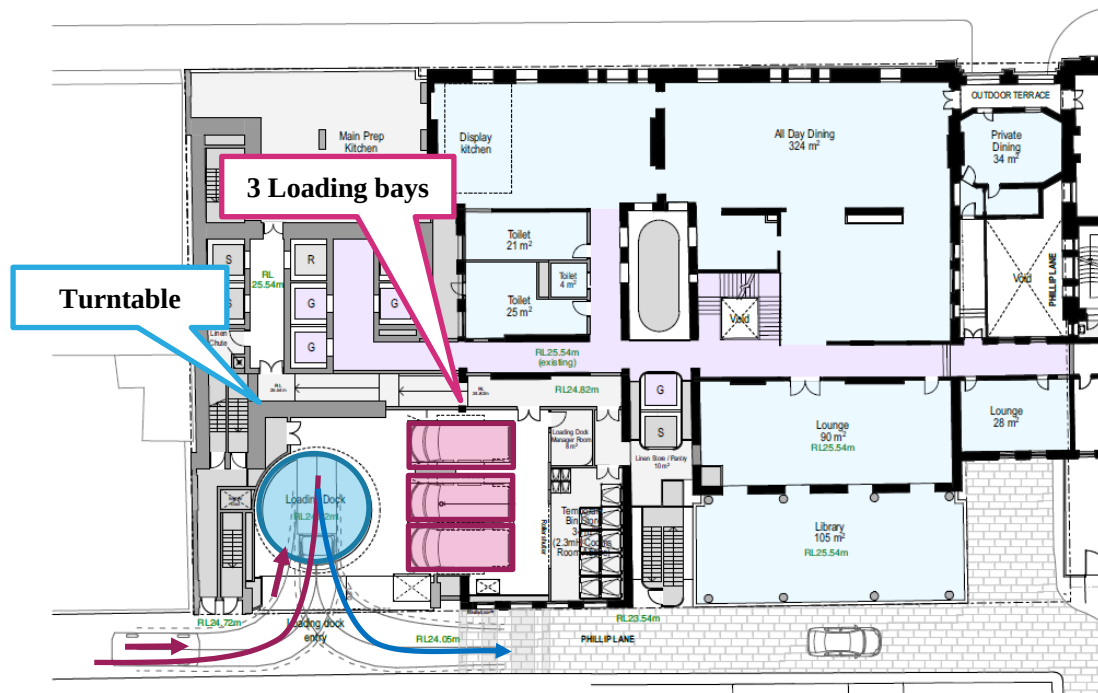


Figure 19: Access to loading bays

4.4.2 Service and loading provision

The proposed development is configured for a variety of residential, retail and hotel uses. Given that there will be a limited number of tenants, delivery of stock can be easily managed outside peak periods when vehicular movements on Phillip Lane is minimal.

At any one time (worst case scenario), it is anticipated that up to three trucks/vans would be using the loading dock.

The approximate number of trucks expected include:

- Daily delivery & pick up of linen
- Daily soiled garbage removal
- Daily fresh food delivery
- Average 15 trucks a day using the dock for other deliveries such as non-perishable food, beverages, housekeeping supplies, function setup materials, recycled material (paper, glass, cans etc) office supplies, engineering supplies, specialist contractors etc. This excludes mail & courier deliveries.

Arrangements and final estimated truck movements will be considered after consultation with Council and waste contractors, and appropriately managed so not all collections occur concurrently.

The maximum height of a vehicle accessing the loading dock is proposed to be 3.8m to comply with Council requirements and allow for various delivery vehicles for the hotel and retail uses. The proposed parking and loading layouts were reviewed for compliance with AS2890 Parking Facilities. The largest vehicle

expected to enter the loading area will be a 6.4m Small Rigid Vehicle (SRV). Swept paths are shown in Appendix B.

4.4.3 Delivery management

The Owners Corporation will be required to engage and maintain a Loading Dock Manager to organise and supervise delivery and removal activities. Personnel will be on site between the times of 6am and 6pm Monday to Friday. The Loading Dock Manager will need to be present on the site during all normal servicing hours and contactable by mobile phone at other times to oversee the operation of the loading dock areas.

All deliveries and waste collection will be conducted by a booking system for building occupants, which will be coordinated by the Loading Dock Manager and access into the building facilitated by the onsite Security Guard. It is expected that the designated loading bay will be locally managed to achieve an average of 15-20 minutes per delivery. This could achieve a total throughput of up to 112 vehicles during normal business hours (8 hours). Extended delivery windows will be set-up to permit variation in the arrival times of vehicles.

A Loading Dock Management Plan will be prepared in consultation with the Council and CBD Coordination Office prior to occupation of the building when tenancies are known to ensure adequate management of deliveries and waste collection.

4.5 Drop-off and pick-up

The site is proposed to function primarily as a hotel tower, with ancillary retail uses. Hotel occupancy could be expected to be about 75%, which equates to 183 occupied rooms. A typical profile of activity for the hotel is expected with check-out in the morning up to 10am and check-in after 2pm with a busier period likely between 5pm and 7pm. The ancillary facilities (retail and bar) will provide all day service to hotel guests and their visitors as well as catering for some walk-in patrons from the street.

Typically, visitors to Sydney CBD hotels utilise taxi and public transport to transfer from the airport or wider Sydney region. Many guests will be business travellers who will stay for a number of consecutive nights. A very low car mode of approximately 10% could be expected which equates to 18 cars needing to be parked overnight. The cars are able to be accommodated at nearby public parking sites.

As described in Section 2.6, off-street car parking is available within walking distance of the proposed hotel in paid parking stations. If dropping off baggage and guests, the car driver will be directed to the most appropriate off-site car park for overnight parking. Necessary information will be made available to guests at time of booking.

4.5.1 Porte Coche parking

There is a Porte cochere proposed on Phillip Lane adjacent to the site (shown in Figure 20, with storage capacity for up to two vehicles if required). These zones may be utilised by taxis and other private vehicles either dropping off or picking up hotel guests and baggage. High utilisation of public transport could be expected by guests and the majority of hotel staff. As described in Section 2.4, train, bus and light rail stops are easily accessible from the hotel.

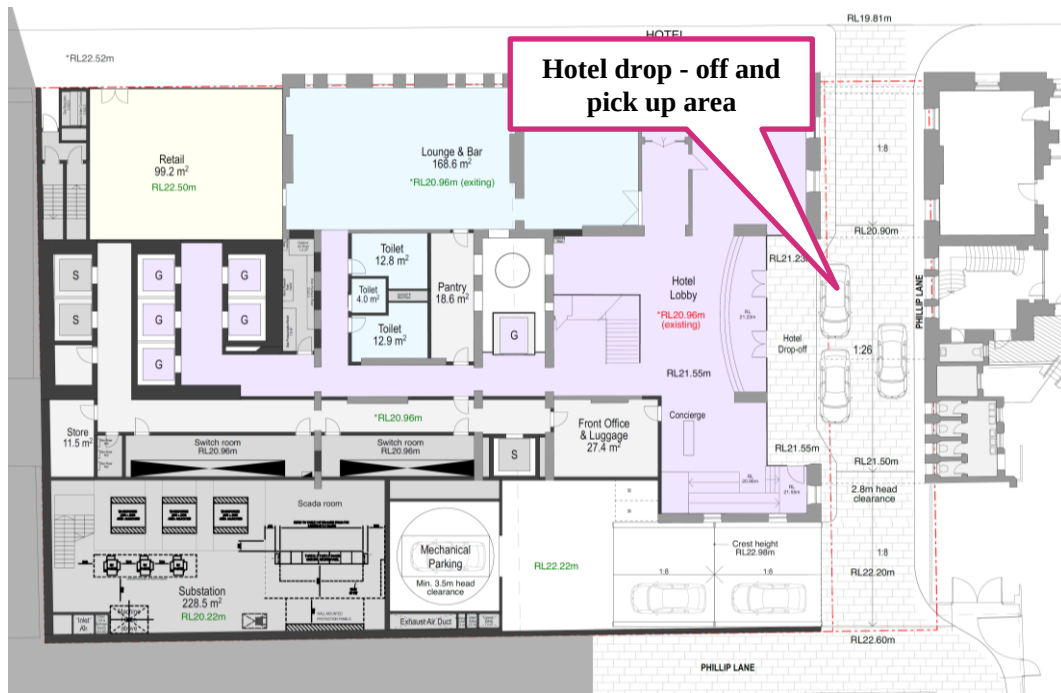


Figure 20: proposed drop-off and pick up area

4.6 Coach parking and day tour group pick-ups/drop offs

No coach parking will be provided on site given site constraints. Mini buses that fit under the Phillip Lane tunnel structure would use the drop off zone. Any use of buses will only be permitted if approved as part of a separate application process with the Council.

There are existing on-street coach spaces available and are displayed on the <https://mysydneycbd.nsw.gov.au/> website (under coach spaces). These spaces at the following locations displayed in Figure 21 below will be nominated if buses are required.

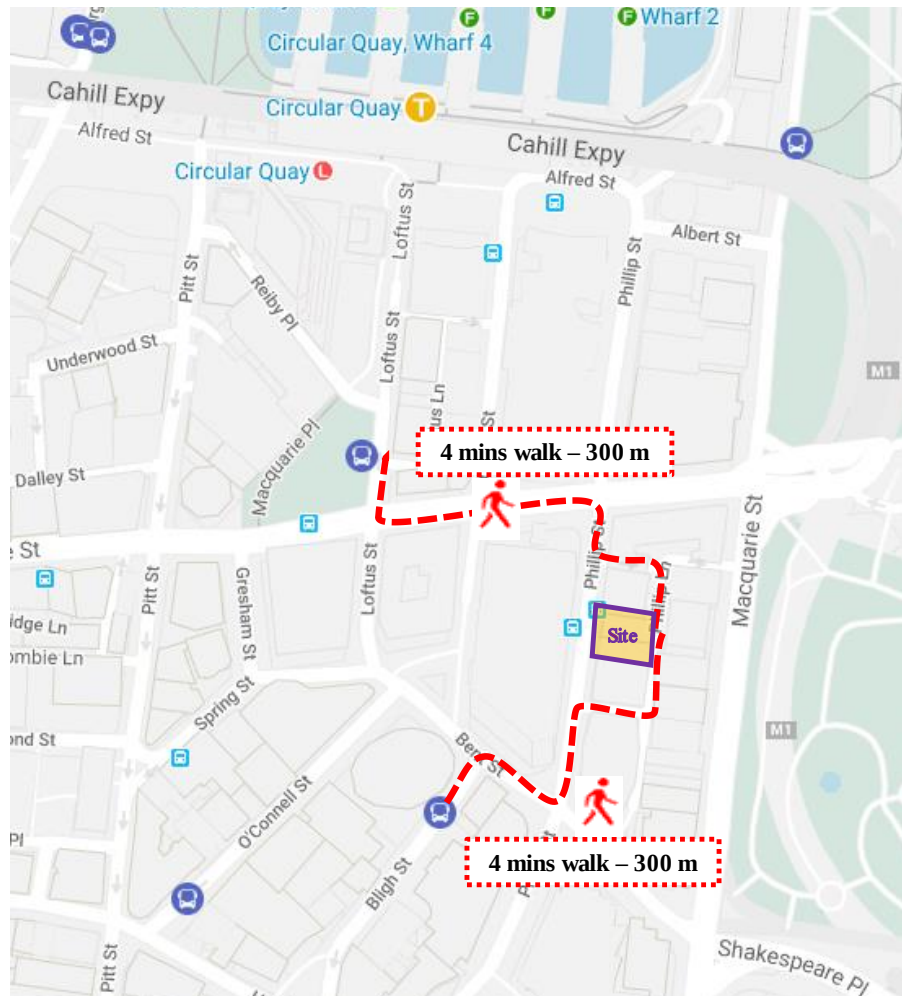


Figure 21: Coach parking locations near the site

Day tour group operators usually designate a number of major hotels across the CBD as pick-up and drop-off points. Visitors can make their way to these designated hotels.

The nearest on-street coach set down areas are located 300 metres south of the site on Bligh Street and 300 metres north west of the site on Loftus Street.

Tour group buses could pick up guests and drop off guests from the site at this location.

Details are as follows:

- Anticipate 2-3 coach arrivals per week
- Coaches arrive around 5pm
- 15-minute set-down
- 12.5-14.0m coach
- Coaches will be pre-booked. Coordination with the hotel manager can occur to schedule arrival/departure times.

4.7 Public transport

High utilisation of public transport could be expected by guests and the majority of hotel staff. As described in Section 2.3, train, bus and light rail stops are easily accessible from the hotel.

A Transport Access Guide (TAG) will also be distributed to staff, clients, customers and visitors to the site on their first visit or during any bookings to assist with information regarding:

- Suitable nearby public drop-off/pick-up locations
- Nearby train stations, Light rail stations and bus stops

5 Road network impacts

5.1 Traffic generation

5.1.1 Hotel Drop-off Pick up activity

Review of the 2002 TfNSW Guide to Traffic Generating Developments notes there are no comparable rates for hotels and serviced apartments. It states that *original RTA research indicated a large variance in the traffic generation rates of hotels*. Therefore, data from other car generating hotel sites was used to establish a profile of daily car activity for the site, noting no car parking was being provided for the hotel uses.

The recently completed Meriton Tower site in North Sydney was surveyed during the check-out peak hour between 7.15am and 8.15am. It was found that the 204-hotel suite site (with on-site 50 parking spaces) generates 5 car park movements and up to 13 taxi/Uber movements on street or within the Porte cochere.

Arup also undertook a recent survey of the Mercure Hotel containing 271 hotel rooms. The survey observed a total of 21 vehicles over the weekday check-in peak hour (5pm - 6pm), comprised of 11 taxis, 5 car drop offs and 5 vehicles parking.

The expected drop-off and pick-up activity over both peak periods as well as daily volumes are summarised in Table 8. Based on this, it could be expected that there will be up to 16 drop-off and pick-up trips on the 50 -52 Phillip Street site during peak hours as a worst case, noting there is good public transport accessibility.

Table 8: Expected drop-off and pick-up traffic generation

Site	Number of rooms	Trip rate (drop-off and pick-up)		Daily Volumes
		AM Peak	PM Peak	
Meriton Hotel, North Sydney	204	0.064	-	~160
Mercure Hotel, Wolli Creek	271	-	0.059	
Calculated drop-off and pick-up trips	244	16	14	

The volumes during the peak periods would equate to a vehicle trip being generated every 3-4 minutes and is considered to result in minimal impacts on the surrounding road network.

5.1.2 Residential

Recent surveys undertaken by the TfNSW of high-density residential developments in key centres such as areas near the train stations have lower traffic generation rates during peak hours. For every 100 residential car parking spaces, only 10 car trips are generated during the AM peak hour and 5 car trips during the PM peak hour. Any residential development within a viable walking distance from the train station would be considered to be reasonably similar to the results of the recent surveys. Notwithstanding, the average rate of 0.15 trips/space in the AM peak hour and 0.12 trips/space in the PM peak hour has been adopted for the

analysis. This is based on the assumption that all parking is used by residential uses only.

Table 9: Traffic Generation of the proposed residential component

Site	Number of parking spaces	Trip rate		Daily trips
		AM Peak	PM Peak	
Residential	23 spaces	0.15 trips / space	0.12 trips / space	~30
Calculated trips		3	3	

5.1.3 Retail

Due to the small nature of the retail uses, it is not expected to generate vehicle traffic. It is assumed it would primarily be pedestrian access and occasional delivery/waste collection. Employee traffic is also expected to be minimal as these trips are expected to consist of public transport and active transport access given no parking will be made available.

5.1.4 Loading trips

A managed loading dock is proposed, with up to three bays available for loading for the overall site. On this basis, assuming a worst-case turnover of 20 minutes per bay, it could be expected that during peak hours, 18 loading trips could occur. It is likely that the dock will be heavily managed during operation times between 6am and 6pm, so the upper limit of daily trips is estimated at around 200 loading trips on a busy day, with up to 112 daily trips over an average 8-hour day.

5.1.5 Existing traffic generation

The site currently contains a commercial building accommodating offices and ground floor parking for 10-15 spaces. Based on a traffic generation of 0.5 trips per parking space, this equates up to 8 vehicle trips per hour. It has been assumed no loading occurs in the existing development for a robust assessment of the future development.

5.1.6 Cumulative traffic

The total traffic generation of the proposed development has been summarised in Table 10 below. An inbound/outbound proportion of 50/50 for hotel users, commercial users and loading, and 80/20 for residential has been assumed during the AM peak hour. The inverse has been applied for the PM peak hour.

Given these rates, it is anticipated that the proposed development will generate a total of 29 trips in the AM peak hour and 27 trips in the PM peak hour.

Table 10: Total Traffic Generation of the proposed Development

Land Use	Traffic Volumes			
	AM In	AM Out	PM In	PM Out
Residential	0	3	2	1
Hotel	8	8	7	7
Loading	9	9	9	9
Existing traffic	-4	-4	-4	-4
Total	13	16	14	13

5.2 Traffic Distribution

The distributed development traffic was based on the 2016 Method of Travel to work data. The current distribution to the wider area is described below in Figure 22 and will need to utilise one-way lane system in the immediate surrounds to access the site. All traffic will leave via Macquarie Street and all traffic will enter via Phillip Street.

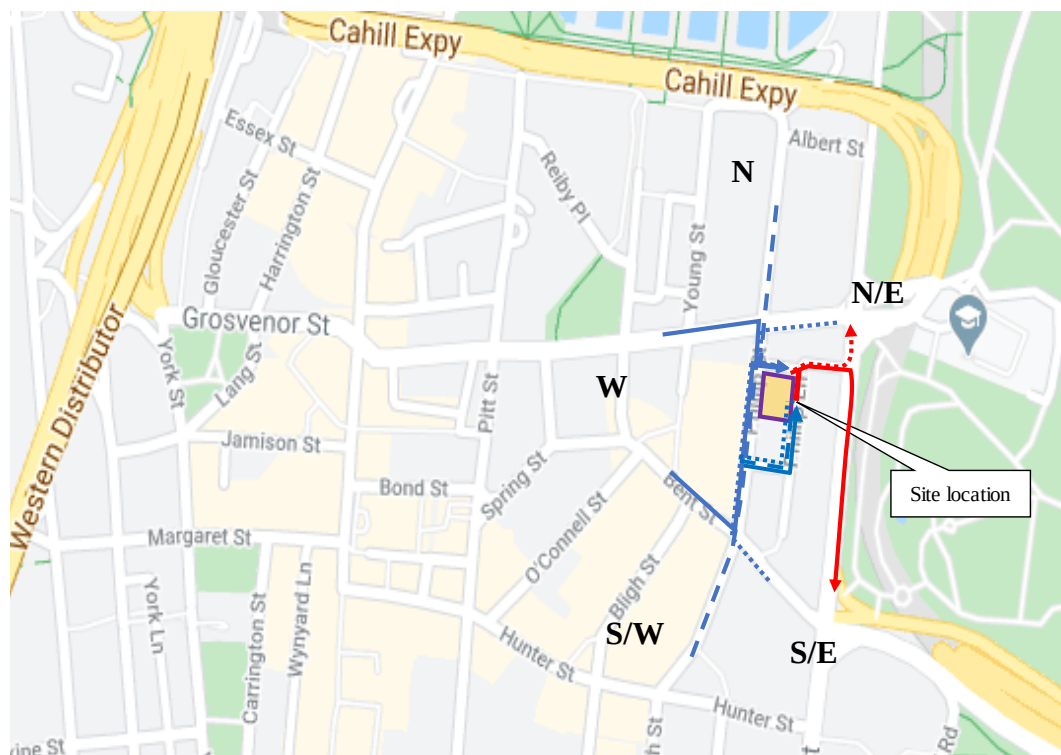


Figure 22: Traffic distribution

5.3 Road network impacts

The forecast in peak hour traffic of between 27 and 29 extra vehicles is considered minor when distributed onto the wider network, especially when viewed in the context of high background traffic volumes on Phillip Street, Macquarie Street and in the general CBD. It should be noted that car parking provision is being repurposed to a use that generates less traffic in the proposed development.

When considering the directional distribution, the volumes equate to less than one vehicle trip approximately every 2 minutes being generated on average during peak periods. The volumes are minor in nature and will have negligible impacts on the operation of key intersections. Existing modelling results also show that the surrounding intersections are generally operating satisfactorily at a Level of Service D or better (i.e. within the theoretical capacity of the intersection) during both AM and PM peak periods. Accordingly, the traffic impacts of the proposed development are considered supportable on traffic planning grounds.

6 Traffic management plan for access

The access for cars has been designed so that two cars will be able to pass at the site driveway to enter the car lift. A traffic light control system is required to control the operations of the vehicle lift. Priority will be given to vehicles entering the site so that vehicle queuing does not occur on entry. Vehicles exiting the mechanical car park will be held on a red light until the lift is clear for exit.

A lift management strategy will be implemented to manage the movement and queuing of vehicles. A plan of lift management and service rates/times will be prepared following approval of the Stage 2 DA.

6.1 Sustainable travel

The implementation of a Travel Plan would contribute to reducing parking demand and encourage other forms of transport to the site. The Premier's Council for Active Living (PCAL) describes the three key objectives for a Travel Plan as follows:

- To reduce the need to travel
- To improve non-car travel methods
- To ensure the most efficient use of car parking spaces

At this early stage (particularly where no future building occupants have been identified), it is difficult to prepare a detailed Travel Plan capable of implementation. A Travel Plan could be tailored to suit the specific requirements of each of the future building tenants.

Following the completion of the development and identification of building tenants, a detailed Travel Plan would be prepared given its proximity to Circular Quay and Martin Place stations and the opportunities that this provides for a modal split towards public transport and other journey to work options. Framework objectives and measures for the preparation of a Travel Plan for the proposed development could include the following:

- Increase of travel choices for employees, with an emphasis on improving access by sustainable modes of transport;
- Encouragement of high mode share to sustainable modes from private vehicle usage;
- Reduce the number of car journeys associated with business travel by staff and visitors with communication technologies;
- Raising awareness of sustainable transport amongst staff with travel guides (online and print planners);
- Facilitation of the sustainable and safe travel of new employees;
- Utilising the close proximity to the train station with train / bus reimbursement schemes and services tailored to suit employee's needs;
- Ensuring adequate end-trip facilities are provided at the site to enable staff and visitors to commute by active transport modes;
- Limited on-site parking and restricted public parking options as needed;

- Implementation of ride sharing and car sharing schemes; and
- Encouragement of carpooling and off-peak travel

The development of the Travel Plan could be undertaken using the above framework, considering the City of Sydney's objectives to encourage less traffic in the CBD. With the appropriate framework in place, implementation of a detailed and targeted Travel Plan for the eventual occupants of the buildings will be more effective.

6.2 Active and public transport assessment

The Sydney City Centre Access Strategy released in December 2013 identifies a fully integrated transport network for the city centre. There will be a greater focus on public transport access and pedestrian and cycle connectivity. The anticipated levels of public transport and active transport mode utilisation by the development will be well catered for under the new strategy.

The ground plane of the site interfaces to the heritage building and local road network with through links. The introduction of light rail through the CBD will provide opportunities for an improved pedestrian environment in the city centre.

The site is well located to take advantage of the City's existing and planned network of high-quality cycleway facilities. The existing cycleway on Alfred Street and Macquarie Street forms one of the main routes through the CBD for cyclists into this area. The proposed development will provide bicycle parking for staff and visitors in line with DCP requirements.

6.3 Outline Construction Traffic Management Plan (CTMP)

The following proposed traffic management principles would be adopted during the construction period:

- Disruption to all road users during the construction period would be kept to a minimum.
- Traffic control would need to be provided to manage and regulate traffic movements during construction.
- Construction and delivery vehicles entering or leaving the site compound and/or stockpile sites would use arterial roads. These movements would be restricted to non-peak traffic periods.
- In most cases, property access would be maintained throughout the construction period with suitable alternative access arrangements provided otherwise.
- Clear signage and alternate pedestrian routes should be organised if footpaths are affected.
- It is recommended that a detailed CTMP is developed as part of the detailed design stage.

6.3.1 Proposed Working Hours

Depending on the construction stage, the workforce which includes both construction and design personnel will vary. Construction would be undertaken during standard working hours which are assumed to be as follows:

- Monday to Friday: between 7am-6pm.
- Saturday: between 8am-1pm.
- Sunday and public holidays: no work.

In some cases, it may be necessary to undertake night works to minimise disruption to traffic. Further assessments of these requirements would be undertaken once the detailed design stage is undertaken and the requirements are known. All night works would be undertaken in accordance with the TfNSW Environmental Noise Management Manual (2001): Practice Note vii – Roadworks outside normal working hours, as well as the Office of Environment and Heritage Interim Construction Noise Guideline (DECC 2009).

Prior notice would be given to the community if any works are planned to be undertaken outside normal construction hours.

6.3.2 Truck routes and controls

Construction vehicles would be restricted to the state road network for access to the site and vehicles will likely originate from this network. It is envisaged the main site entrance will be off Phillip Street which is a local road. The proposed construction vehicle routes are shown in Figure 23.

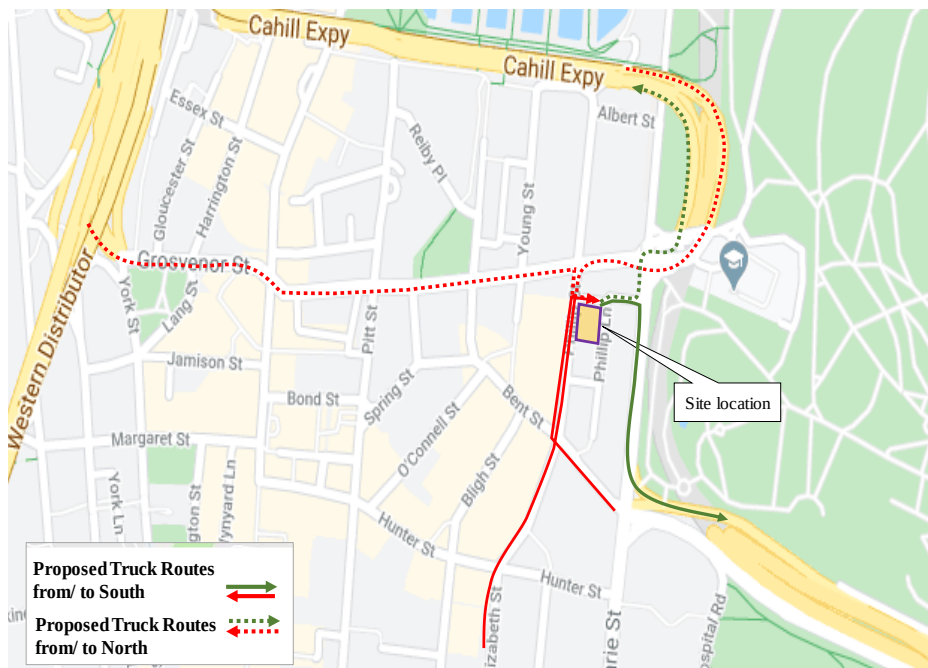


Figure 23: Proposed Construction Vehicle Routes

A detailed CPTMP will be prepared for the works following approval of the Stage 2 DA.

7 Conclusions

This assessment has described the potential traffic and transport impacts of the proposed mixed-use hotel/retail at 50 – 52 Phillip Street, Sydney. Key findings of the review are as follows:

- The site supports a low car mode share by its reduction of car parking on site and directing the guests (who drive to the site) to nearby public carparks. The site also encourages alternative modes such as bicycles, public transport, coaches, taxis, etc.
- A Transport Access Guide (TAG) will be distributed to staff, clients, customers and visitors to the site on their first visit or during any bookings to assist with information regarding:
 - Suitable nearby public drop-off/pick-up locations
 - Nearby train stations, Light rail stations and bus stops
 - Key walking routes between these locations
- Appropriate levels of bicycle parking are provided within the site for guests and staff;
- The site is located within the Sydney Local Government Area (LGA) and subject to maximum parking rates;
- The development will likely result in a very minor increase in traffic generation in peak hour traffic flows along surrounding key roads in the CBD precinct;
- The expected drop-off and pick-up activity over both peak periods will be up to 16 drop-off / pick-up trips during peak hours. The volumes during the peak periods would equate to a vehicle trips being generated every 3-4 minutes and is considered to result in minimal impacts on the surrounding road network;
- Three loading bays are proposed for the development. These bays will be located on Level 2 and entry will be located off the Phillip Lane level adjacent to the site;
- A turntable will facilitate the access and egress of loading vehicles;
- The Hotel Manager will monitor the loading dock and vehicle lift operations;
- A loading dock management plan will be prepared for distribution, once approved, to all relevant tenants and external users of the loading area; and

It is therefore considered the transport impacts of the proposal can be appropriately managed.

Appendix A

Crash data

A1 Crash data

Location	Crash ID	Degree of Crash	Description	Type of location	Natural Light	No. of injuries
1	1073305	Minor injury	Pedestrian nearside	Intersection	Daylight	1
	1133701	Serious injury	Right through	Intersection	Intersection	1
	1153868	Moderate injury	Pedestrian nearside	Intersection	Dawn	1
	1161610	Moderate injury	Pedestrian nearside	Intersection	Darkness	1
2	1150302	Minor injury	Pedestrian far side	2-way undivided	Dusk	1
3	1078892	Moderate injury	Off road-left	2-way undivided	Daylight	1
4	1044206	Non-casualty	Right through	Intersection	Daylight	—
	1056878	Moderate injury	On-road	Intersection	Dusk	1
	1071504	Minor injury	Right through	Intersection	Daylight	1
	1071722	Moderate injury	Right through	Intersection	Darkness	1
	1089992	Moderate injury	Right through	Intersection	Daylight	1
	1092564	Moderate injury	Right through	Intersection	Darkness	1
	1130334	Moderate injury	Right through	Intersection	Darkness	2
	1173531	Minor injury	Other same direction	Intersection	Daylight	1
	1186300	Serious injury	Pedestrian nearside	Intersection	Darkness	1
5	1015033	Non-casualty	Right through	Intersection	Darkness	—
	1030069	Non-casualty	Right through	Intersection	Darkness	—
	1032049	Serious injury	Right through	Intersection	Darkness	1
	1043313	Moderate injury	Right through	Intersection	Daylight	1
	1046327	Serious injury	Off road to right	Intersection	Dusk	1

Location	Crash ID	Degree of Crash	Description	Type of location	Natural Light	No. of injuries
	1058024	Moderate injury	Right through	Intersection	Daylight	1
	1066212	Minor injury	Rear end	Intersection	Daylight	1
	1101002	Non-casualty	Right turn sideswipe	Intersection	Daylight	—
	1144591	Non-casualty	Right through	Intersection	Daylight	—
	1149425	Serious injury	Right through	Intersection	Darkness	1
	1180516	Moderate injury	Pedestrian far side	Intersection	Darkness	1
6	1163034	Moderate injury	Reversing	2-way undivided	Daylight	1
7	1020609	Non-casualty	Right near	T-Junction	Daylight	—
	1036577	Minor injury	Rear end	2-way undivided	Daylight	1
	1060627	Minor injury	Pedestrian emerging	2-way undivided	Daylight	1
	1067684	Non-casualty	Emerging from drive	T-Junction	Daylight	—
	1131863	Minor injury	Leaving parking	2-way undivided	Darkness	1
	1022950	Non-casualty	Right through	2-way undivided	Daylight	—
	1108917	Non-casualty	Off road	2-way undivided	Darkness	—
	1159757	Moderate injury	Rear end	T-Junction	Daylight	1
	1183673	Serious injury	Right through	2-way undivided	Daylight	2
8	1114578	Serious injury	Leaving parking	2-way undivided	Daylight	1
	1137258	Minor injury	Other same direction	Divided road	Darkness	2
	1175535	Serious injury	Pedestrian far side	2-way undivided	Darkness	1
9	1088895	Moderate injury	Pedestrian on carriageway	2-way undivided	Daylight	1
	1113743	Moderate injury	Lane change right	2-way undivided	Darkness	1
	1125513	Moderate injury	Leaving parking	2-way undivided	Daylight	1

Location	Crash ID	Degree of Crash	Description	Type of location	Natural Light	No. of injuries
10	1167422	Minor injury	Right through	Intersection	Darkness	1
	1173549	Minor injury	Rear end	Intersection	Daylight	1
	1132170	Moderate injury	Right through	Intersection	Darkness	1
	1157713	Moderate injury	Right through	Intersection	Darkness	1
	1131019	Moderate injury	Right through	Intersection	Daylight	1
	1116690	Minor injury	Other adjacent	Intersection	Daylight	1
	1116134	Serious injury	Right through	Intersection	Dusk	1

Appendix B

Intersection surveys

TTM Reference: [15SYD](#)
 Location: [Shakespeare Pl & Macquarie St](#)
 Suburb: [Sydney](#)
 Date: [Tuesday, 28 July 2015](#)
 Survey Duration: [0600-1900](#) AM Peak: [0815-0915](#)
 Weather: [Fine](#) PM Peak: [1745-1845](#)
 Notes:

1

TTM Reference: 15SYD
Location: Shakespeare Pl & Macquarie St
Suburb: Sydney
Date: Wednesday, 29 July 2015
Survey Duration: 0600-1900
Weather: Fine
Notes:

AM Peak: 0815-0915
PM Peak: 1800-1900

1

TTM Data

TTM Reference: 15SYD
Location: Bent St & Phillip St
Suburb: Sydney
Date: Tuesday, 28 July 2015
Survey Duration: 0600-1900
Weather: Fine
Notes:

AM Peak: 0815-0915
PM Peak: 1645-1745



TTM Data

TTM Reference: 15SYD
Location: Bent St & Phillip St
Suburb: Sydney
Date: Tuesday, 28 July 2015
Survey Duration: 0600-1900
Weather: Fine
Notes:

AM Peak: 0815-0915
PM Peak: 1645-1745



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ttm

TTM Reference: 15SYD
Location: Bridge St & Phillip St
Suburb: Sydney
Date: Tuesday, 21 July 2015
Survey Duration: 0600-1900 AM Peak: 0830-0930
Weather: Fine PM Peak: 1700-1800
Notes:

1

AM Peak: 0830-0930
PM Peak: 1730-1830

1

TTM Data

TTM Reference: 15SYD
Location: Bridge St & Macquarie St
Suburb: Sydney
Date: Tuesday, 21 July 2015
Survey Duration: 0600-1900
Weather: Fine
Notes:
AM Peak: 0815-0915
PM Peak: 1715-1815



TTM Data

TTM Reference: 15SYD
Location: Bridge St & Macquarie St
Suburb: Sydney
Date: Tuesday, 21 July 2015
Survey Duration: 0600-1900
Weather: Fine
Notes:
AM Peak: 0815-0915
PM Peak: 1715-1815



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TTM Reference: [15SYD](#)
 Location: [Bridge St & Macquarie St](#)
 Suburb: [Sydney](#)
 Date: [Wednesday, 22 July 2015](#)
 Survey Duration: [0600-1900](#) AM Peak: [0730-0830](#)
 Weather: [Fine](#) PM Peak: [1700-1800](#)
 Notes:

TTM Reference: [15SYD](#)
 Location: [Bridge St & Macquarie St](#)
 Suburb: [Sydney](#)
 Date: [Wednesday, 22 July 2015](#)
 Survey Duration: [0600-1900](#) AM Peak: [0730-0830](#)
 Weather: [Fine](#) PM Peak: [1700-1800](#)
 Notes:

Northern Approach: Macquarie St																				Southern Approach: Macquarie St																				Time																				Eastern Approach: Conservatorium Rd																				Western Approach: Bridge St																			
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6:00	2	1	0	3	0	7	6	0	13	3	0	0	0	0	0	0	16	3	0	21	4	0	25	2	17	3	0	20	2	27	5	0	32	0	0	77	4	1	6:00	49	3	0	52	0	15	0	0	15	0	8	0	0	8	0	0	75	0	19	10	2	0	12	0	3	0	3	0	30	2	4	36	0	0	51	0	8																							
6:15	3	0	0	3	0	11	2	0	13	0	0	0	0	0	0	0	16	0	0	27	4	0	31	0	27	2	0	29	0	35	3	0	38	0	0	98	0	2	6:15	68	2	0	70	0	29	1	2	32	0	23	0	0	23	0	0	125	0	5	10	0	0	10	0	3	3	1	7	0	49	3	0	62	0	0	69	0	19																						
6:30	3	1	0	4	0	14	1	1	16	1	0	0	0	0	0	0	20	1	1	30	5	1	36	1	32	0	0	22	2	45	2	1	48	0	0	106	3	3	6:30	76	1	0	77	0	25	0	3	28	0	8	0	0	8	0	0	113	0	19	5	0	0	11	1	0	12	0	45	2	0	47	1	0	64	1	20																								
6:45	4	1	0	5	0	12	0	1	13	0	0	0	0	0	0	0	18	0	2	56	4	0	60	1	25	4	0	39	0	34	1	0	35	0	0	134	1	3	6:45	106	2	1	109	0	33	0	3	36	0	19	1	0	20	0	0	165	0	17	14	1	1	16	0	8	0	0	8	0	51	3	0	54	0	0	78	0	29																						
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8:30	3	0	0	3	0	23	0	7	30	2	0	0	0	0	0	0	33	2	10	140	2	0	142	0	90	2	3	95	4	81	3	2	86	0	0	323	4	11	8:30	99	0	1	100	0	82	0	5	87	0	25	0	0	25	0	0	212	0	20	8	0	0	8	0	20	1	1	22	0	70	1	4	75	1	0	105	1	37																						
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11:15	12	0	1	13	0	28	1	6	35	0	0	0	2	2	0	0	50	0	11	61	3	1	65	0	50	1	4	55	2	88	3	0	91	0	0	211	2	25	11:15	75	1	0	76	0	33	0	0	33	0	11	0	1	12	0	0	121	0	44	16	0	0	16	0	25	1	0	26	0	83	3	1	87	0	0	129	0	36																						
11:30	14	3	0	17	0	37	1	4	42	0	0	0	0	0	0	0	59	0	12	71	5	1	77	0	54	4	2	60	0	107	1	1	90	0	0	246	0	109	11:30	62	0	0	62	1	28	0	0	28	0	12	0	0	12	0	0	102	1	32	17	2	4	23	0	20	1	0	21	0	70	6	0	76	0	0																									

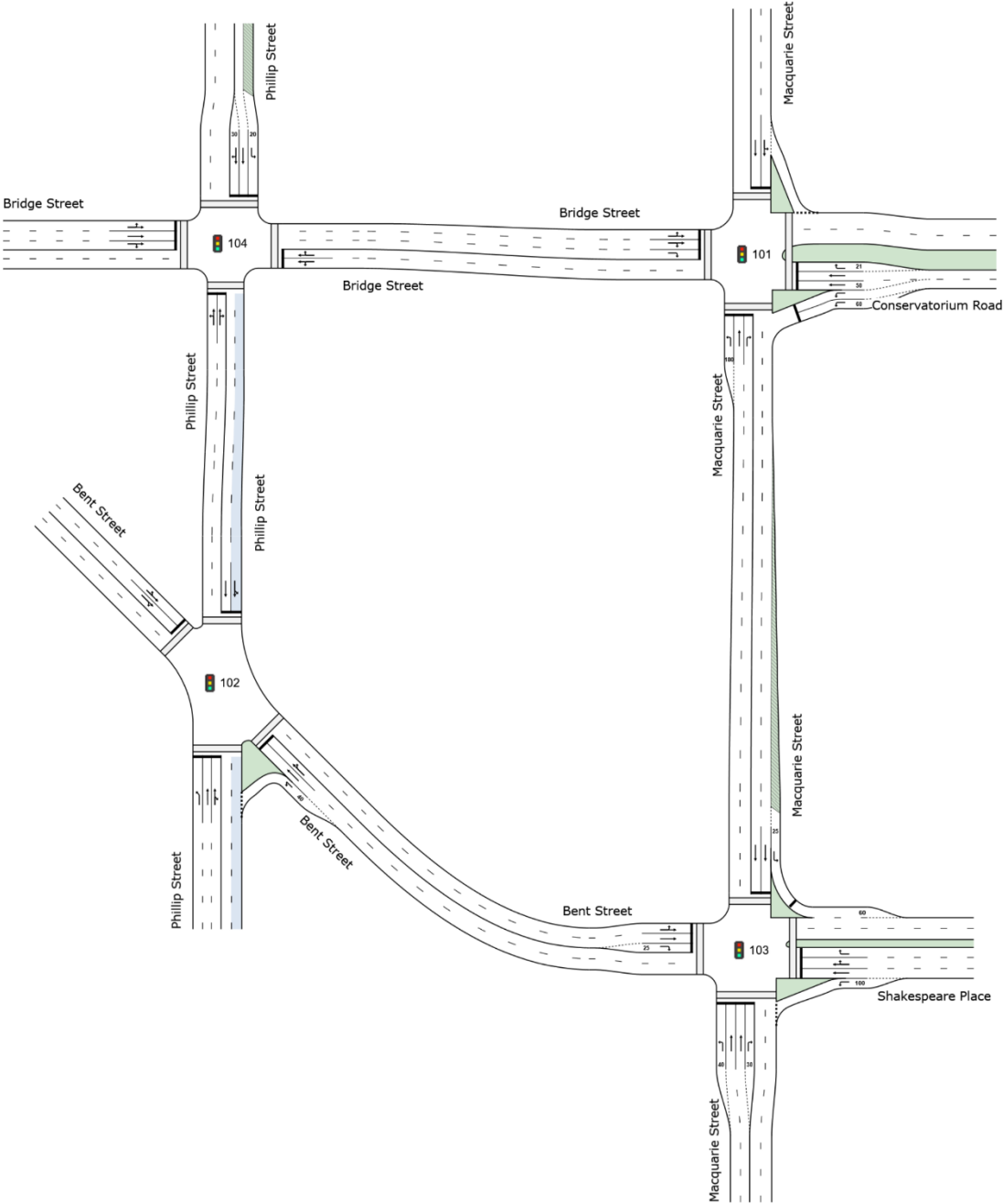
Appendix C

SIDRA outputs

NETWORK LAYOUT

Network: N101 [EX AM (8:15-9:15)]

New Network
Network Category: (None)



SITES IN NETWORK		
Site ID	CCG ID	Site Name
103	NA	EX AM Shakespeare Place / Macquarie Street (8:15-9:15)
102	NA	EX AM Bent Street / Phillip Street (8:15-9:15)
104	NA	EX AM Bridge Street / Phillip Street (8:15-9:15)
101	NA	EX AM Bridge Street / Macquarie Street (8:15-9:15)

MOVEMENT SUMMARY



Site: 103 [EX AM Shakespeare Place / Macquarie Street
(8:15-9:15)]



Network: N101 [EX AM
(8:15-9:15)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%				veh	m				
South: Macquarie Street														
1	L2	216	3.2	216	3.2	0.295	12.2	LOS B	2.8	20.3	0.45	0.63	0.45	16.0
2	T1	661	4.4	661	4.4	0.670	26.7	LOS C	8.0	58.1	0.81	0.70	0.81	10.1
3	R2	174	5.7	174	5.7	0.814	57.5	LOS E	5.7	41.5	1.00	1.11	1.60	19.5
Approach		1051	4.4	1051	4.4	0.814	28.8	LOS C	8.0	58.1	0.77	0.75	0.87	14.5
East: Shakespeare Place														
4	L2	371	3.8	371	3.8	0.343	10.3	LOS B	4.6	33.2	0.50	0.63	0.50	34.2
5	T1	573	10.6	573	10.6	0.935	67.6	LOS E	14.8	111.3	0.96	1.28	1.56	16.6
6	R2	519	2.9	519	2.9	0.935	69.0	LOS E	17.8	127.8	1.00	1.18	1.50	16.3
Approach		1463	6.2	1463	6.2	0.935	53.6	LOS D	17.8	127.8	0.86	1.08	1.27	19.3
North: Macquarie Street														
7	L2	350	15.1	350	15.1	0.480	19.8	LOS B	7.7	61.3	0.77	0.76	0.77	33.2
8	T1	683	6.3	683	6.3	0.870	51.2	LOS D	15.3	112.8	1.00	1.03	1.22	15.4
Approach		1033	9.3	1033	9.3	0.870	40.5	LOS D	15.3	112.8	0.92	0.94	1.07	21.6
West: Bent Street														
10	L2	55	1.8	55	1.8	0.527	40.6	LOS D	4.1	30.9	0.88	0.74	0.88	7.9
11	T1	244	13.1	244	13.1	0.527	41.7	LOS D	4.2	33.0	0.93	0.76	0.93	23.1
12	R2	40	12.5	40	12.5	0.147	44.3	LOS D	1.1	8.3	0.88	0.71	0.88	10.8
Approach		339	11.2	339	11.2	0.527	41.9	LOS D	4.2	33.0	0.91	0.75	0.91	20.6
All Vehicles		3886	6.9	3886	6.9	0.935	42.4	LOS D	17.8	127.8	0.86	0.93	1.08	19.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	210	40.2	LOS E	0.5	0.5	0.88	0.88
P2	East Full Crossing	179	41.0	LOS E	0.5	0.5	0.89	0.89
P3	North Full Crossing	56	45.3	LOS E	0.2	0.2	0.93	0.93
P4	West Full Crossing	121	26.5	LOS C	0.3	0.3	0.72	0.72
All Pedestrians		566	38.0	LOS D			0.85	0.85

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.

PHASING SUMMARY

 **Site: 103 [EX AM Shakespeare Place / Macquarie Street (8:15-9:15)]**

 **Network: N101 [EX AM (8:15-9:15)]**

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

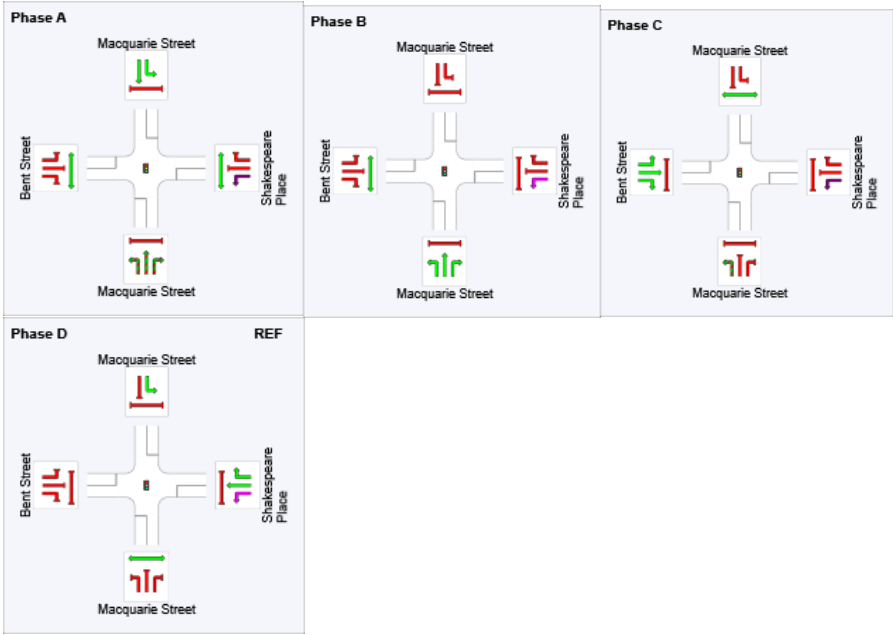
Timings based on settings in the Network Timing dialog
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase D
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

PHASE TIMING SUMMARY

Phase	A	B	C	D
Phase Change Time (sec)	51	86	99	18
Green Time (sec)	29	7	17	27
Phase Time (sec)	35	13	23	33
Phase Split	34%	13%	22%	32%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase
VAR: Variable Phase

-  Normal Movement
-  Slip/Bypass-Lane Movement
-  Stopped Movement
-  Other Movement Class (MC) Running
-  Mixed Running & Stopped MCs
-  Other Movement Class (MC) Stopped
-  Permitted/Opposed
-  Opposed Slip/Bypass-Lane
-  Turn On Red
-  Undetected Movement
-  Continuous Movement
-  Phase Transition Applied

MOVEMENT SUMMARY

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Phillip Street														
1a	L1	183	15.3	183	15.3	0.201	16.2	LOS B	2.9	23.0	0.55	0.66	0.55	20.9
2	T1	263	40.7	263	40.7	0.296	16.0	LOS B	4.0	38.2	0.59	0.64	0.59	21.0
3b	R3	121	19.0	121	19.0	0.296	22.3	LOS C	2.8	23.0	0.69	0.74	0.69	17.1
Approach		567	27.9	567	27.9	0.296	17.4	LOS B	4.0	38.2	0.60	0.67	0.60	20.0
SouthEast: Bent Street														
21b	L3	118	40.7	118	40.7	0.117	7.2	LOS A	0.8	7.6	0.40	0.64	0.40	31.7
22	T1	556	2.9	556	2.9	0.691	32.7	LOS C	10.0	71.4	0.94	0.81	0.94	11.0
23a	R1	115	3.5	115	3.5	0.691	36.0	LOS D	8.6	62.0	0.95	0.83	0.96	8.2
Approach		789	8.6	789	8.6	0.691	29.4	LOS C	10.0	71.4	0.86	0.79	0.86	12.8
North: Phillip Street														
7a	L1	104	9.6	104	9.6	0.256	26.0	LOS C	2.8	25.7	0.62	0.71	0.62	16.8
8	T1	229	24.9	229	24.9	0.256	22.5	LOS C	3.2	23.5	0.61	0.55	0.61	23.2
Approach		333	20.1	333	20.1	0.256	23.6	LOS C	3.2	25.7	0.61	0.60	0.61	21.5
NorthWest: Bent Street														
27b	L3	8	25.0	8	25.0	0.192	29.4	LOS C	2.6	19.3	0.74	0.61	0.74	6.3
28	T1	114	4.4	114	4.4	0.192	25.7	LOS C	2.6	19.3	0.74	0.61	0.74	6.3
29a	R1	26	19.2	26	19.2	0.192	43.2	LOS D	0.7	6.0	0.89	0.69	0.89	12.5
Approach		148	8.1	148	8.1	0.192	28.9	LOS C	2.6	19.3	0.77	0.63	0.77	8.1
All Vehicles		1837	16.6	1837	16.6	0.691	24.6	LOS C	10.0	71.4	0.73	0.70	0.73	16.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		
P1	South Full Crossing	929	31.2	LOS D	2.2	2.2	0.79	0.79
P5	SouthEast Full Crossing	781	26.5	LOS C	1.7	1.7	0.73	0.73
P3	North Full Crossing	773	29.5	LOS C	1.7	1.7	0.77	0.77
P7	NorthWest Full Crossing	591	16.0	LOS B	1.0	1.0	0.56	0.56
All Pedestrians		3074	26.6	LOS C			0.72	0.72

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.

PHASING SUMMARY



Site: 102 [EX AM Bent Street / Phillip Street (8:15-9:15)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog

Phase Times specified by the user

Phase Sequence: Variable Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C

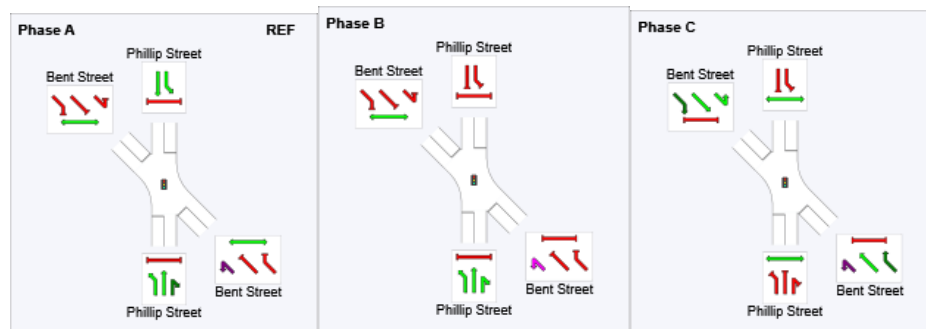
Output Phase Sequence: A, B, C

PHASE TIMING SUMMARY

Phase	A	B	C
Phase Change Time (sec)	40	86	102
Green Time (sec)	40	10	36
Phase Time (sec)	46	16	42
Phase Split	44%	15%	40%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase

VAR: Variable Phase



MOVEMENT SUMMARY

Site: 104 [EX AM Bridge Street / Phillip Street (8:15-9:15)]

Network: N101 [EX AM (8:15-9:15)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Phillip Street														
1	L2	182	26.4	182	26.4	0.542	43.4	LOS D	6.8	59.9	0.97	0.84	0.97	14.0
2	T1	147	42.2	147	42.2	0.542	34.7	LOS C	6.8	59.9	0.85	0.76	0.85	19.4
3	R2	57	5.3	57	5.3	0.542	33.3	LOS C	3.4	29.8	0.77	0.72	0.77	14.4
Approach		386	29.3	386	29.3	0.542	38.6	LOS D	6.8	59.9	0.89	0.79	0.89	16.2
East: Bridge Street														
4	L2	133	3.0	133	3.0	0.643	16.9	LOS B	7.8	57.0	0.58	0.58	0.58	14.3
5	T1	673	5.9	673	5.9	0.643	21.6	LOS C	9.4	69.2	0.71	0.67	0.71	15.2
6	R2	43	2.3	43	2.3	0.643	32.5	LOS C	9.4	69.2	0.84	0.75	0.84	17.1
Approach		849	5.3	849	5.3	0.643	21.4	LOS C	9.4	69.2	0.70	0.66	0.70	15.3
North: Phillip Street														
7	L2	25	8.0	25	8.0	0.059	32.1	LOS C	0.6	4.2	0.75	0.67	0.75	12.8
8	T1	62	54.8	62	54.8	0.150	31.7	LOS C	1.4	14.4	0.78	0.66	0.78	13.8
9	R2	27	22.2	27	22.2	0.150	42.6	LOS D	0.8	6.6	0.87	0.72	0.87	13.1
Approach		114	36.8	114	36.8	0.150	34.4	LOS C	1.4	14.4	0.79	0.68	0.79	13.4
West: Bridge Street														
10	L2	33	27.3	33	27.3	0.353	14.7	LOS B	4.8	37.4	0.53	0.52	0.53	26.4
11	T1	556	11.0	556	11.0	0.353	11.2	LOS B	4.8	37.4	0.52	0.50	0.52	16.0
12	R2	138	21.0	138	21.0	0.358	28.4	LOS C	3.3	27.0	0.82	0.78	0.82	7.7
Approach		727	13.6	727	13.6	0.358	14.6	LOS B	4.8	37.4	0.57	0.55	0.57	14.2
All Vehicles		2076	14.4	2076	14.4	0.643	22.9	LOS C	9.4	69.2	0.70	0.65	0.70	15.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	Average Delay	Level of Service	Average Back of Queue	Prop. Queued	Effective Stop Rate
		ped/h	sec		Pedestrian	Distance	
					ped	m	
P1	South Full Crossing	200	24.4	LOS C	0.4	0.4	0.69
P2	East Full Crossing	360	34.4	LOS D	0.9	0.9	0.82
P3	North Full Crossing	354	15.3	LOS B	0.6	0.6	0.55
P4	West Full Crossing	810	35.9	LOS D	2.0	2.0	0.85
All Pedestrians		1724	30.1	LOS D			0.76

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.

PHASING SUMMARY

 Site: 104 [EX AM Bridge Street / Phillip Street (8:15-9:15)]

 Network: N101 [EX AM (8:15-9:15)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog

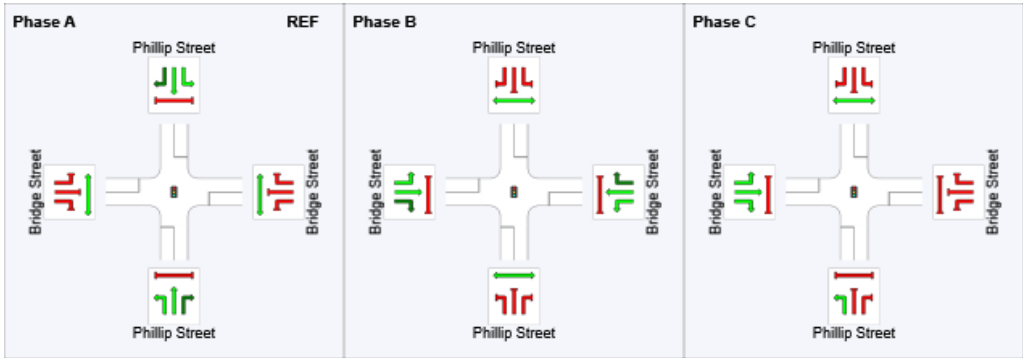
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

PHASE TIMING SUMMARY

Phase	A	B	C
Phase Change Time (sec)	0	36	83
Green Time (sec)	30	41	15
Phase Time (sec)	36	47	21
Phase Split	35%	45%	20%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase
VAR: Variable Phase

- Normal Movement
-
- Slip/Bypass-Lane Movement

Stopped MovementMixed Running & Stopped MCsPermitted/OpposedTurn On RedContinuous Movement

MOVEMENT SUMMARY

Site: 101 [EX AM Bridge Street / Macquarie Street (8:15-9:15)]Network: N101 [EX AM (8:15-9:15)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Macquarie Street														
1	L2	532	2.8	532	2.8	0.915	47.9	LOS D	18.2	130.5	0.88	1.00	1.17	13.3
2	T1	326	4.6	326	4.6	0.371	20.6	LOS C	7.2	52.6	0.77	0.67	0.77	27.5
3	R2	377	4.0	377	4.0	0.686	31.9	LOS C	8.6	62.0	0.84	0.89	1.00	27.8
Approach		1235	3.6	1235	3.6	0.915	35.8	LOS D	18.2	130.5	0.84	0.88	1.01	22.0
East: Conservatorium Road														
4	L2	481	2.9	481	2.9	0.353	15.9	LOS B	2.9	20.8	0.75	0.73	0.75	30.1
5	T1	317	9.5	317	9.5	0.837	52.0	LOS D	6.2	47.2	0.95	1.02	1.32	19.3
6	R2	116	1.7	116	1.7	0.355	44.1	LOS D	3.2	22.9	0.92	0.77	0.92	24.2
Approach		914	5.0	914	5.0	0.837	32.0	LOS C	6.2	47.2	0.84	0.83	0.97	24.6
North: Macquarie Street														
7	L2	41	7.3	41	7.3	0.260	31.4	LOS C	1.5	12.3	0.91	0.73	0.91	28.5
8	T1	123	28.5	123	28.5	0.260	35.6	LOS D	2.4	21.1	0.88	0.72	0.88	15.5
Approach		164	23.2	164	23.2	0.260	34.6	LOS C	2.4	21.1	0.89	0.72	0.89	20.2
West: Bridge Street														
10	L2	80	7.5	80	7.5	0.680	49.0	LOS D	6.4	48.3	1.00	0.86	1.04	14.5
11	T1	129	10.1	129	10.1	0.680	45.7	LOS D	6.4	48.3	1.00	0.86	1.04	21.3
12	R2	429	11.0	429	11.0	0.731	50.7	LOS D	6.8	52.3	1.00	0.88	1.10	5.1
Approach		638	10.3	638	10.3	0.731	49.5	LOS D	6.8	52.3	1.00	0.88	1.08	11.1
All Vehicles		2951	6.6	2951	6.6	0.915	37.5	LOS D	18.2	130.5	0.88	0.86	1.01	20.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	73	25.0	LOS C	0.1	0.1	0.69	0.69
P2	East Full Crossing	86	46.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	56	43.5	LOS E	0.2	0.2	0.92	0.92
P4	West Full Crossing	318	21.9	LOS C	0.6	0.6	0.65	0.65
All Pedestrians		533	28.5	LOS C			0.73	0.73

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.

PHASING SUMMARY

 Site: 101 [EX AM Bridge Street / Macquarie Street (8:15-9:15)]

 Network: N101 [EX AM (8:15-9:15)]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog

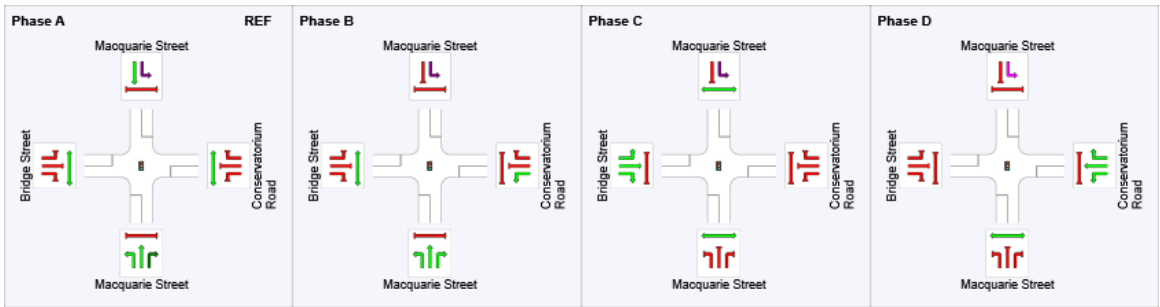
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase A
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

PHASE TIMING SUMMARY

Phase	A	B	C	D
Phase Change Time (sec)	27	56	82	2
Green Time (sec)	23	21	18	19
Phase Time (sec)	28	27	24	25
Phase Split	27%	26%	23%	24%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



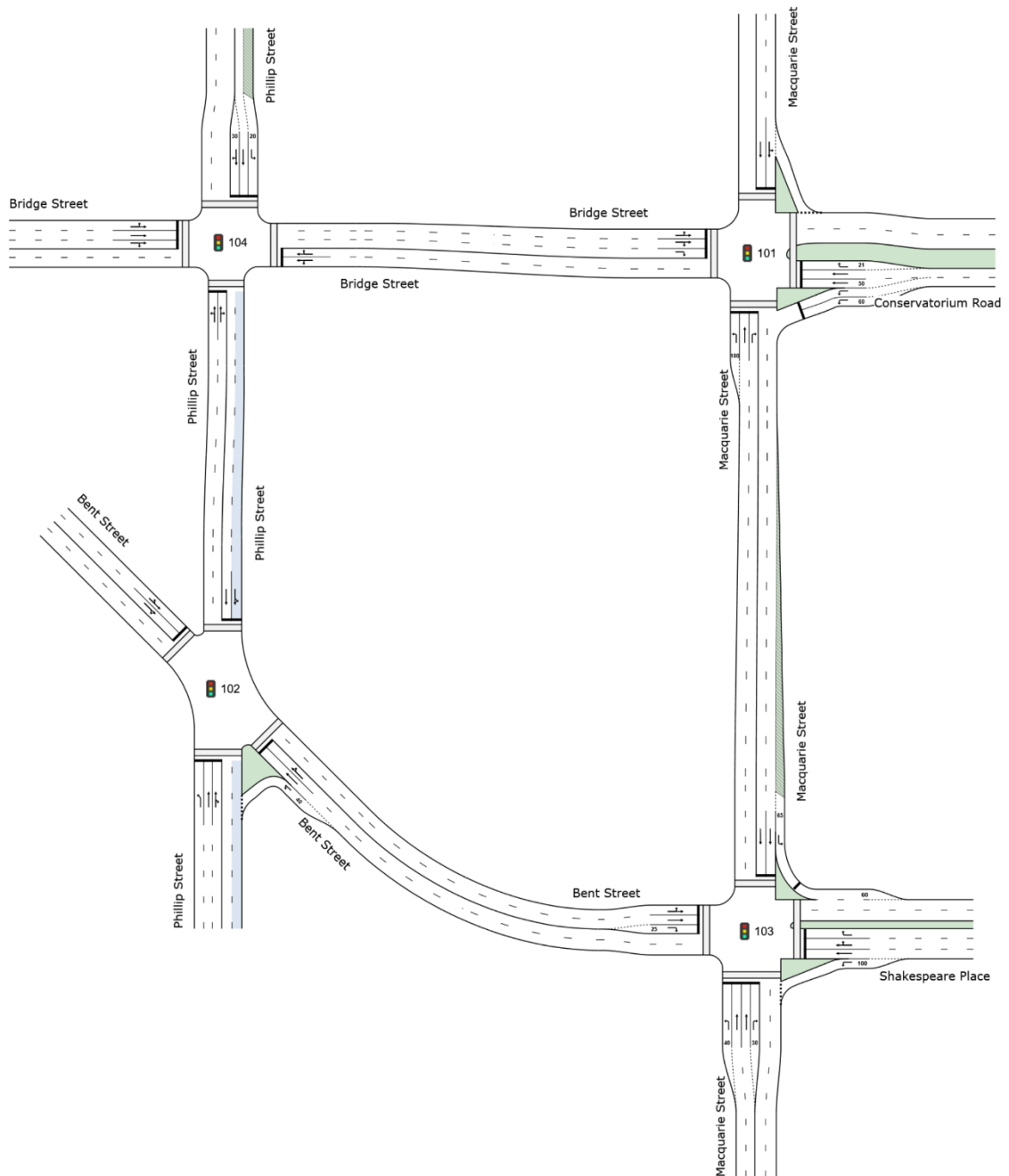
REF: Reference Phase
VAR: Variable Phase

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

NETWORK LAYOUT

Network: N101 [EX PM (17:30-18:30)]

New Network
Network Category: (None)



SITES IN NETWORK		
Site ID	CCG ID	Site Name
 103	NA	EX PM Shakespeare Place / Macquarie Street (17:30-18:30)
 102	NA	EX PM Bent Street / Phillip Street (17:30-18:30)
 104	NA	EX PM Bridge Street / Phillip Street (17:30-18:30)
 101	NA	EX PM Bridge Street / Macquarie Street (17:30-18:30)

MOVEMENT SUMMARY

 Site: 103 [EX PM Shakespeare Place / Macquarie Street (17:30-18:30)]

 Network: N101 [EX PM Macquarie Street (17:30-18:30)]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%				veh	m				
South: Macquarie Street														
1	L2	233	7.7	233	7.7	0.209	8.9	LOS A	2.4	17.7	0.36	0.60	0.36	19.5
2	T1	739	3.0	739	3.0	0.622	18.3	LOS B	9.3	66.7	0.69	0.61	0.69	13.3
3	R2	293	0.3	293	0.3	0.872	53.2	LOS D	10.2	71.9	1.00	1.12	1.43	20.3
Approach		1265	3.2	1265	3.2	0.872	24.7	LOS C	10.2	71.9	0.70	0.73	0.80	17.7
East: Shakespeare Place														
4	L2	266	4.9	266	4.9	0.234	6.3	LOS A	2.0	14.8	0.34	0.56	0.34	37.0
5	T1	334	8.1	334	8.1	0.779	48.9	LOS D	7.9	58.2	1.00	0.94	1.15	19.8
6	R2	374	4.8	374	4.8	0.779	52.2	LOS D	7.9	58.2	1.00	0.93	1.15	19.2
Approach		974	6.0	974	6.0	0.779	38.5	LOS D	7.9	58.2	0.82	0.83	0.93	22.7
North: Macquarie Street														
7	L2	665	1.4	665	1.4	0.798	20.5	LOS C	14.4	102.0	0.71	0.78	0.75	31.8
8	T1	616	1.9	616	1.9	0.457	27.8	LOS C	7.4	52.4	0.82	0.71	0.82	21.4
Approach		1281	1.6	1281	1.6	0.798	24.0	LOS C	14.4	102.0	0.76	0.74	0.78	27.8
West: Bent Street														
10	L2	60	0.0	60	0.0	0.857	57.7	LOS E	9.1	64.2	1.00	1.04	1.27	5.9
11	T1	442	1.1	442	1.1	0.857	54.1	LOS D	9.1	64.2	1.00	1.05	1.29	20.0
12	R2	57	5.3	57	5.3	0.200	44.7	LOS D	1.6	11.4	0.90	0.73	0.90	10.8
Approach		559	1.4	559	1.4	0.857	53.5	LOS D	9.1	64.2	0.99	1.02	1.25	18.5
All Vehicles		4079	3.1	4079	3.1	0.872	31.7	LOS C	14.4	102.0	0.79	0.80	0.89	22.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	Average Delay	Level of Service	Average Back of Queue		Prop. Queued	Effective Stop Rate
					Pedestrian	Distance		
		ped/h	sec		ped	m		
P1	South Full Crossing	202	46.6	LOS E	0.6	0.6	0.95	0.95
P2	East Full Crossing	356	34.4	LOS D	0.9	0.9	0.82	0.82
P3	North Full Crossing	84	45.4	LOS E	0.2	0.2	0.94	0.94
P4	West Full Crossing	145	20.4	LOS C	0.3	0.3	0.63	0.63
All Pedestrians		787	36.1	LOS D			0.83	0.83

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

PHASING SUMMARY

 Site: 103 [EX PM Shakespeare Place / Macquarie Street (17:30-18:30)]

 Network: N101 [EX PM (17:30-18:30)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

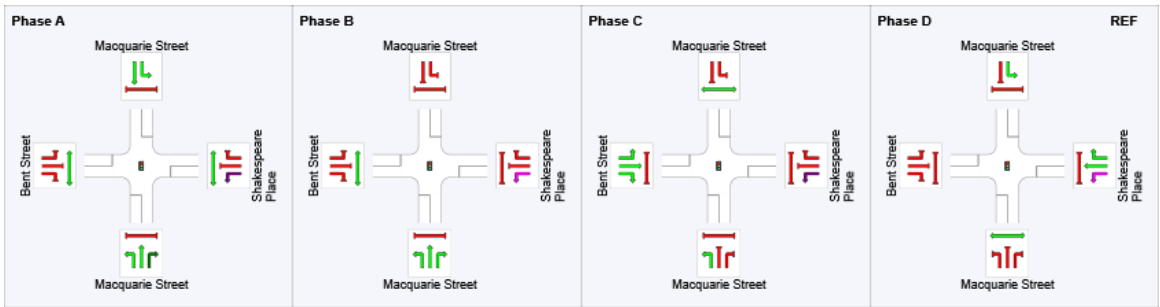
Phase Times specified by the user
Phase Sequence: Variable Phasing
Reference Phase: Phase D
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D

PHASE TIMING SUMMARY

Phase	A	B	C	D
Phase Change Time (sec)	24	67	81	0
Green Time (sec)	37	8	17	18
Phase Time (sec)	43	14	23	24
Phase Split	41%	13%	22%	23%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 102 [EX PM Bent Street / Phillip Street (17:30-18:30)]

Network: N101 [EX PM (17:30-18:30)]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Phillip Street														
1a	L1	218	11.5	218	11.5	0.201	11.9	LOS B	2.9	22.0	0.46	0.63	0.46	24.0
2	T1	311	21.2	311	21.2	0.300	10.8	LOS B	4.4	36.4	0.49	0.56	0.49	25.2
3b	R3	152	3.9	152	3.9	0.310	17.6	LOS B	2.5	18.2	0.62	0.72	0.62	18.6
Approach		681	14.2	681	14.2	0.310	12.6	LOS B	4.4	36.4	0.51	0.62	0.51	23.0
SouthEast: Bent Street														
21b	L3	106	2.8	106	2.8	0.093	5.2	LOS A	0.4	3.2	0.22	0.54	0.22	36.0
22	T1	416	7.9	416	7.9	0.645	39.3	LOS D	7.3	54.4	0.94	0.80	0.95	9.7
23a	R1	45	20.0	45	20.0	0.645	45.8	LOS D	5.8	44.2	0.97	0.83	1.00	6.8
Approach		567	7.9	567	7.9	0.645	33.5	LOS C	7.3	54.4	0.81	0.75	0.82	12.3
North: Phillip Street														
7a	L1	105	0.0	105	0.0	0.267	21.8	LOS C	3.0	26.6	0.65	0.72	0.65	18.7
8	T1	265	29.8	265	29.8	0.267	20.0	LOS C	4.1	31.7	0.66	0.64	0.66	25.1
Approach		370	21.4	370	21.4	0.267	20.5	LOS C	4.1	31.7	0.65	0.66	0.65	23.7
NorthWest: Bent Street														
27b	L3	9	0.0	9	0.0	0.531	38.4	LOS D	5.2	36.6	0.88	0.73	0.88	4.9
28	T1	302	0.7	302	0.7	0.531	37.3	LOS D	5.2	36.6	0.90	0.74	0.90	4.6
29a	R1	31	9.7	31	9.7	0.531	43.8	LOS D	4.0	28.9	0.94	0.77	0.94	12.2
Approach		342	1.5	342	1.5	0.531	38.0	LOS D	5.2	36.6	0.90	0.74	0.90	5.5
All Vehicles		1960	11.5	1960	11.5	0.645	24.6	LOS C	7.3	54.4	0.69	0.69	0.69	16.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	Average Delay	Level of Service	Average Back of Queue	Pedestrian	Queue Distance	Prop. Queued	Effective Stop Rate
		ped/h	sec			ped	m		
P1	South Full Crossing	300	37.7	LOS D	0.8	0.8	0.86	0.86	
P5	SouthEast Full Crossing	690	21.6	LOS C	1.3	1.3	0.65	0.65	
P3	North Full Crossing	386	36.1	LOS D	1.0	1.0	0.84	0.84	
P7	NorthWest Full Crossing	341	11.2	LOS B	0.5	0.5	0.47	0.47	
All Pedestrians		1717	25.6	LOS C			0.69	0.69	

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.

PHASING SUMMARY



Site: 102 [EX PM Bent Street / Phillip Street (17:30-18:30)]



Network: N101 [EX PM (17:30-18:30)]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times specified by the user

Phase Sequence: Variable Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C

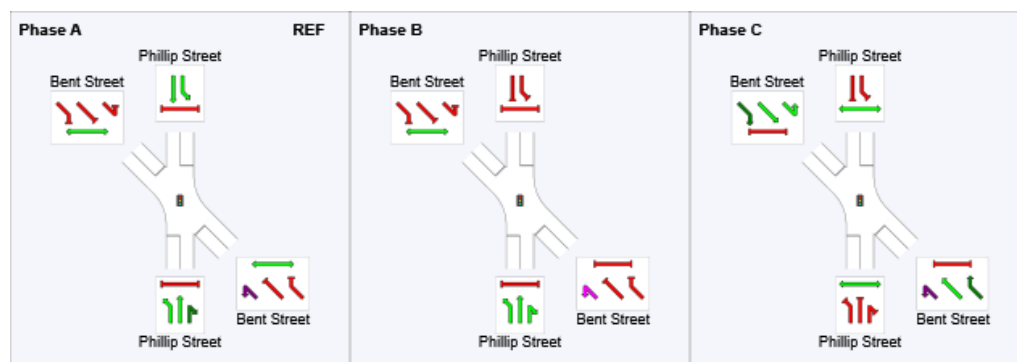
Output Phase Sequence: A, B, C

PHASE TIMING SUMMARY

Phase	A	B	C
Phase Change Time (sec)	0	53	71
Green Time (sec)	47	12	27
Phase Time (sec)	53	18	33
Phase Split	51%	17%	32%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase

VAR: Variable Phase



MOVEMENT SUMMARY

Site: 104 [EX PM Bridge Street / Phillip Street (17:30-18:30)]

Network: N101 [EX PM (17:30-18:30)]

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows	Arrival Flows	Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV		Vehicles	Distance			

		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Phillip Street														
1	L2	193	20.2	193	20.2	0.559	34.7	LOS C	6.9	59.3	0.85	0.79	0.85	16.4
2	T1	84	41.7	84	41.7	0.559	32.4	LOS C	6.9	59.3	0.85	0.79	0.85	20.1
3	R2	88	1.1	88	1.1	0.626	43.2	LOS D	2.4	17.3	0.89	0.80	0.98	11.0
Approach		365	20.5	365	20.5	0.626	36.2	LOS D	6.9	59.3	0.86	0.80	0.88	15.9
East: Bridge Street														
4	L2	92	0.0	92	0.0	0.596	31.7	LOS C	9.6	70.0	0.86	0.77	0.86	8.7
5	T1	377	5.8	377	5.8	0.596	31.0	LOS C	9.6	70.0	0.88	0.78	0.88	12.0
6	R2	54	22.2	54	22.2	0.596	48.5	LOS D	3.4	26.4	0.97	0.82	0.99	12.9
Approach		523	6.5	523	6.5	0.596	32.9	LOS C	9.6	70.0	0.88	0.78	0.89	11.7
North: Phillip Street														
7	L2	44	2.3	44	2.3	0.123	30.0	LOS C	0.9	6.8	0.73	0.67	0.73	13.3
8	T1	118	33.1	118	33.1	0.221	30.5	LOS C	2.5	22.1	0.78	0.69	0.78	14.0
9	R2	47	0.0	47	0.0	0.221	41.0	LOS D	1.5	11.2	0.87	0.73	0.87	13.7
Approach		209	19.1	209	19.1	0.221	32.7	LOS C	2.5	22.1	0.79	0.70	0.79	13.8
West: Bridge Street														
10	L2	29	3.4	29	3.4	0.671	17.1	LOS B	8.2	58.0	0.62	0.55	0.62	24.2
11	T1	856	0.9	856	0.9	0.671	14.5	LOS B	8.2	58.0	0.62	0.55	0.62	13.2
12	R2	160	25.0	160	25.0	0.671	36.0	LOS D	5.9	47.6	0.91	0.82	0.95	6.6
Approach		1045	4.7	1045	4.7	0.671	17.9	LOS B	8.2	58.0	0.66	0.59	0.67	11.9
All Vehicles		2142	9.2	2142	9.2	0.671	26.1	LOS C	9.6	70.0	0.76	0.68	0.77	13.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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	of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	South Full Crossing	229	25.9	LOS C	0.5	0.5	0.71	0.71
P2	East Full Crossing	461	32.2	LOS D	1.1	1.1	0.79	0.79
P3	North Full Crossing	245	16.9	LOS B	0.4	0.4	0.57	0.57
P4	West Full Crossing	409	32.9	LOS D	1.0	1.0	0.80	0.80
All Pedestrians		1344	28.5	LOS C			0.74	0.74

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.

PHASING SUMMARY

 **Site: 104 [EX PM Bridge Street / Phillip Street (17:30-18:30)]**

 **Network: N101 [EX PM (17:30-18:30)]**

New Site

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 104 seconds (Network Site User-Given Phase Times)

Timings based on settings in the Network Timing dialog

Phase Times specified by the user

Phase Sequence: Variable Phasing

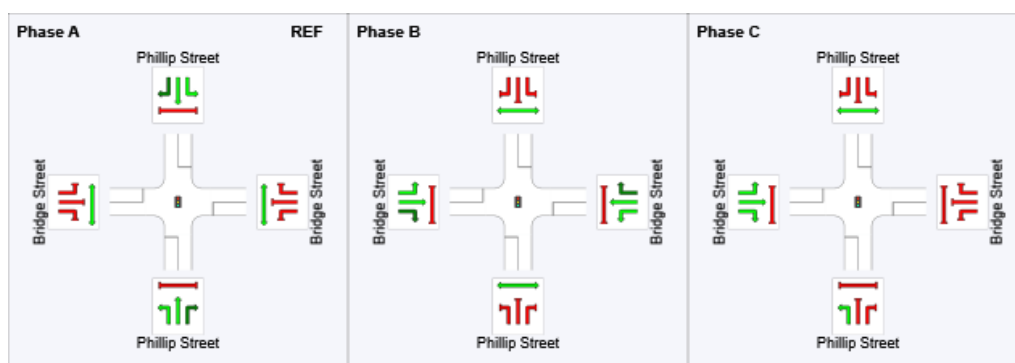
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

PHASE TIMING SUMMARY

Phase	A	B	C
Phase Change Time (sec)	0	39	84
Green Time (sec)	33	39	14
Phase Time (sec)	39	45	20
Phase Split	38%	43%	19%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE



REF: Reference Phase
VAR: Variable Phase



MOVEMENT SUMMARY

Site: 101 [EX PM Bridge Street / Macquarie Street (17:30-18:30)]

Network: N101 [EX PM (17:30-18:30)]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	Aver. Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV %	Total	HV %	v/c	sec		Vehicles	Distance			km/h
		veh/h		veh/h					veh	m			
South: Macquarie Street													
1	L2	405	6.7	405	6.7	0.866	38.6	LOS D	11.9	87.7	0.64	0.85	15.4
2	T1	303	2.3	303	2.3	0.296	16.0	LOS B	5.8	41.6	0.58	0.52	29.5

3	R2	465	1.3	465	1.3	0.702	36.4	LOS D	11.9	84.4	0.90	1.03	1.22	26.6
Approach		1173	3.4	1173	3.4	0.866	31.9	LOS C	11.9	87.7	0.73	0.83	0.93	24.1
East: Conservatorium Road														
4	L2	327	2.4	327	2.4	0.251	18.0	LOS B	2.2	15.9	0.74	0.71	0.74	29.1
5	T1	115	6.1	115	6.1	0.504	59.3	LOS E	2.8	20.3	0.99	0.75	1.00	17.9
6	R2	111	2.7	111	2.7	0.850	70.9	LOS E	4.4	31.5	1.00	1.01	1.37	19.5
Approach		553	3.3	553	3.3	0.850	37.2	LOS D	4.4	31.5	0.84	0.78	0.92	23.3
North: Macquarie Street														
7	L2	117	2.6	117	2.6	0.488	30.1	LOS C	3.3	23.9	0.94	0.78	0.94	28.3
8	T1	230	2.6	230	2.6	0.488	42.6	LOS D	6.1	43.9	0.93	0.77	0.93	13.3
Approach		347	2.6	347	2.6	0.488	38.4	LOS D	6.1	43.9	0.94	0.78	0.94	19.7
West: Bridge Street														
10	L2	86	0.0	86	0.0	0.626	49.0	LOS D	8.6	61.0	0.96	0.81	0.96	14.5
11	T1	178	1.7	178	1.7	0.626	45.6	LOS D	8.6	61.0	0.96	0.81	0.96	21.1
12	R2	724	1.0	724	1.0	0.886	64.0	LOS E	9.2	65.0	1.00	1.01	1.25	4.1
Approach		988	1.0	988	1.0	0.886	59.4	LOS E	9.2	65.0	0.99	0.95	1.17	8.9
All Vehicles		3061	2.5	3061	2.5	0.886	42.5	LOS D	11.9	87.7	0.86	0.86	1.01	18.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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 Distance		Prop. Queued	Effective Stop Rate
P1	South Full Crossing	99	32.4	LOS D	0.2	0.2	0.74	0.74
P2	East Full Crossing	250	54.7	LOS E	0.8	0.8	0.96	0.96
P3	North Full Crossing	60	43.5	LOS E	0.2	0.2	0.85	0.85
P4	West Full Crossing	299	18.9	LOS B	0.6	0.6	0.57	0.57
All Pedestrians		708	35.5	LOS D			0.75	0.75

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.

PHASING SUMMARY

 Site: 101 [EX PM Bridge Street / Macquarie Street (17:30-18:30)]

 Network: N101 [EX PM (17:30-18:30)]

New Site

Site Category: (None)

Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site Practical Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Downstream lane blockage effects included in determining phase times

Phase Sequence: Variable Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D

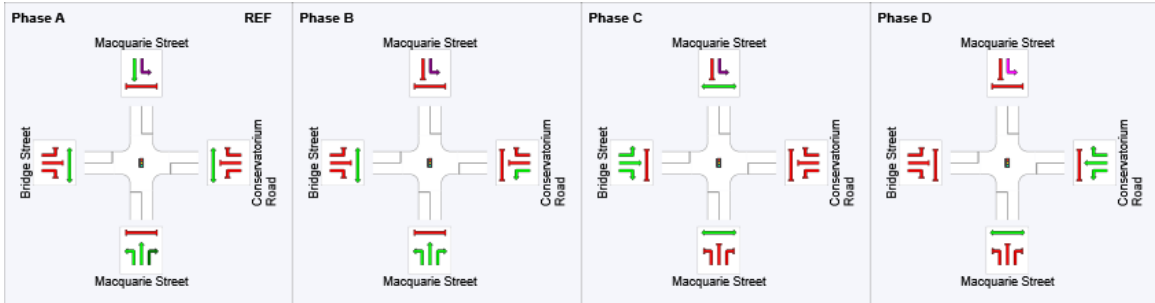
Output Phase Sequence: A, B, C, D

PHASE TIMING SUMMARY

Phase	A	B	C	D
Phase Change Time (sec)	0	31	71	104
Green Time (sec)	25	34	27	10
Phase Time (sec)	31	40	33	16
Phase Split	26%	33%	28%	13%

See the Phase Information section in the Detailed Output report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

OUTPUT PHASE SEQUENCE

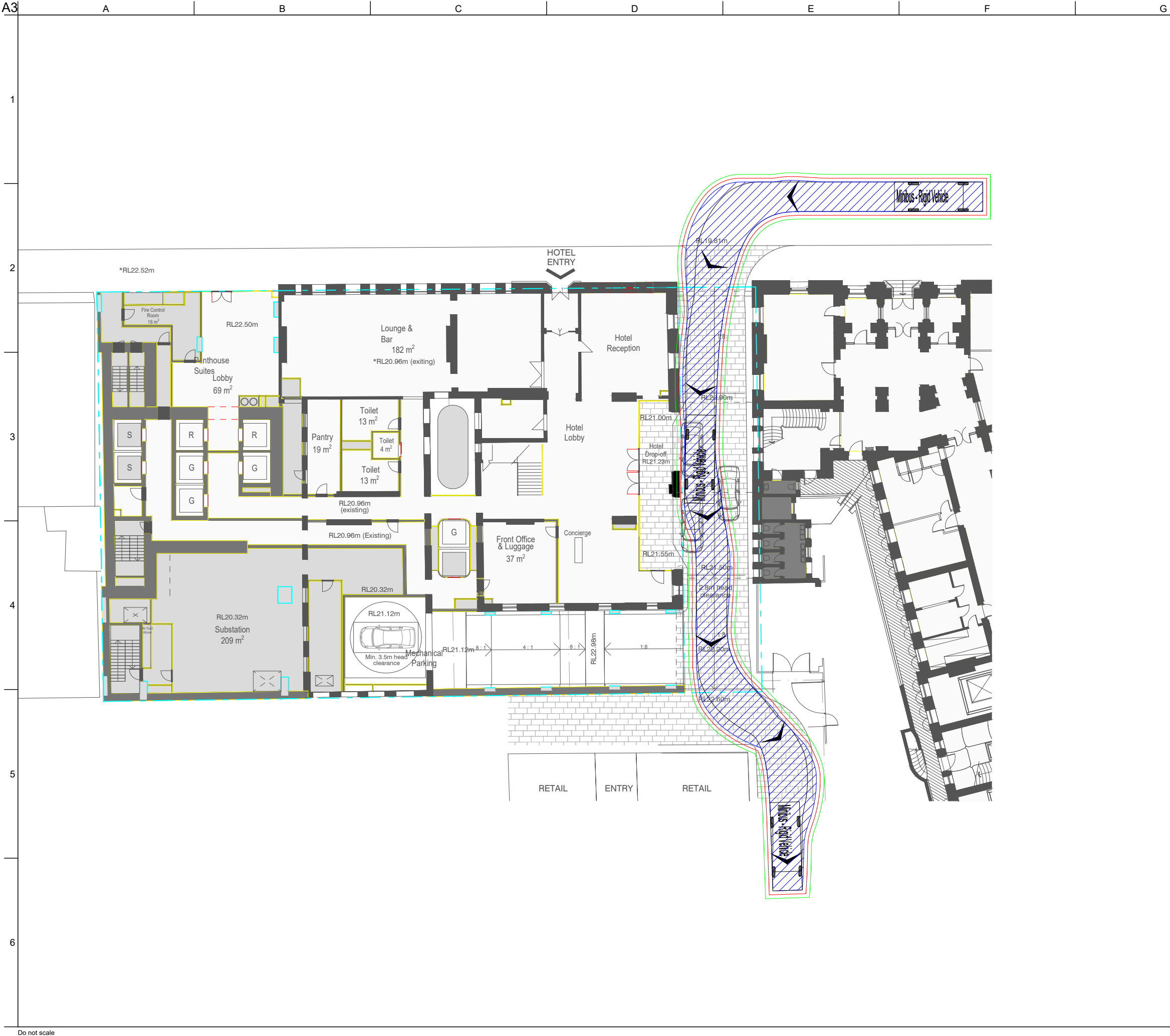


REF: Reference Phase
VAR: Variable Phase



Appendix D

Swept path analysis



Legend

Body Envelope

300mm Envelope

600mm Envelope

Wheel Envelope

Design Vehicle(s)

Minibus - Rigid Vehicle (height=2547mm)

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock-to-lock time

Curb to Curb Turning Radius

6.990m

2.330m

2.547m

0.185m

2.330m

4.00s

7.500m

C	14/12/20	AMH	JRT	JRT
B	07/12/20	AMH	JRT	JRT
A	15/09/20	LK	JRT	JRT
For Information				
Issue	Date	By	Chkd	Appd

ARUP

Arup, Level 5, 151 Clarence St
Sydney, NSW, 2000
Tel +61(02)9320 9320 Fax +61(02)9320 9321
www.arup.com.au

Client

Job Title

52 - 55 Phillip Street

Drawing Title

Turning Paths
Minibus/Van Circulation

Scale at A3

1:300

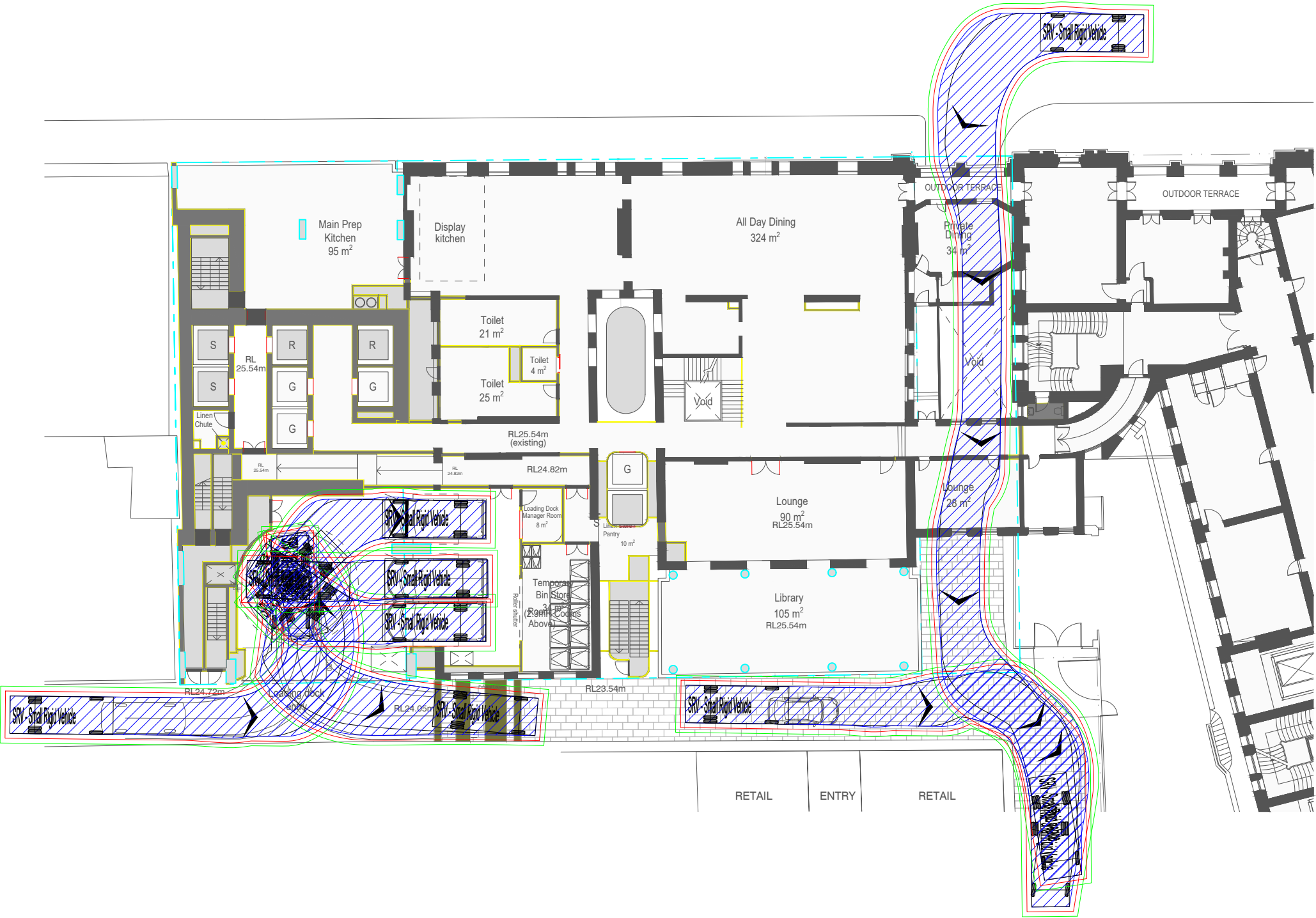
Discipline

Transport

Drawing Status

Draft

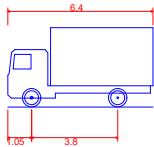
Job No	Drawing No	Issue
273826-00	SKT001	C



Legend

- Body Envelope
- 300mm Envelope
- 600mm Envelope
- Wheel Envelope

Design Vehicle(s)



SRV - Small Rigid Vehicle
Overall Length 6.400m
Overall Width 2.330m
Overall Body Height 3.500m
Min Body Ground Clearance 0.398m
Track Width 2.330m
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 7.100m

C	07/12/20	AMH	JRT	JRT
B	28/08/20	LK	JRT	JRT
A	16/06/20	JRT	JRT	JRT

For Information				
Issue	Date	By	Chkd	Appd

ARUP

Arup, Level 5, 151 Clarence St
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Tel +61(02)9320 9320 Fax +61(02)9320 9321
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Client

Job Title
52 - 55 Phillip Street

Drawing Title
Turning Paths
SRV Circulation

Scale at A3
1:300

Discipline
Transport

Drawing Status

Draft

Job No 273826-00	Drawing No SKT002	Issue C
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