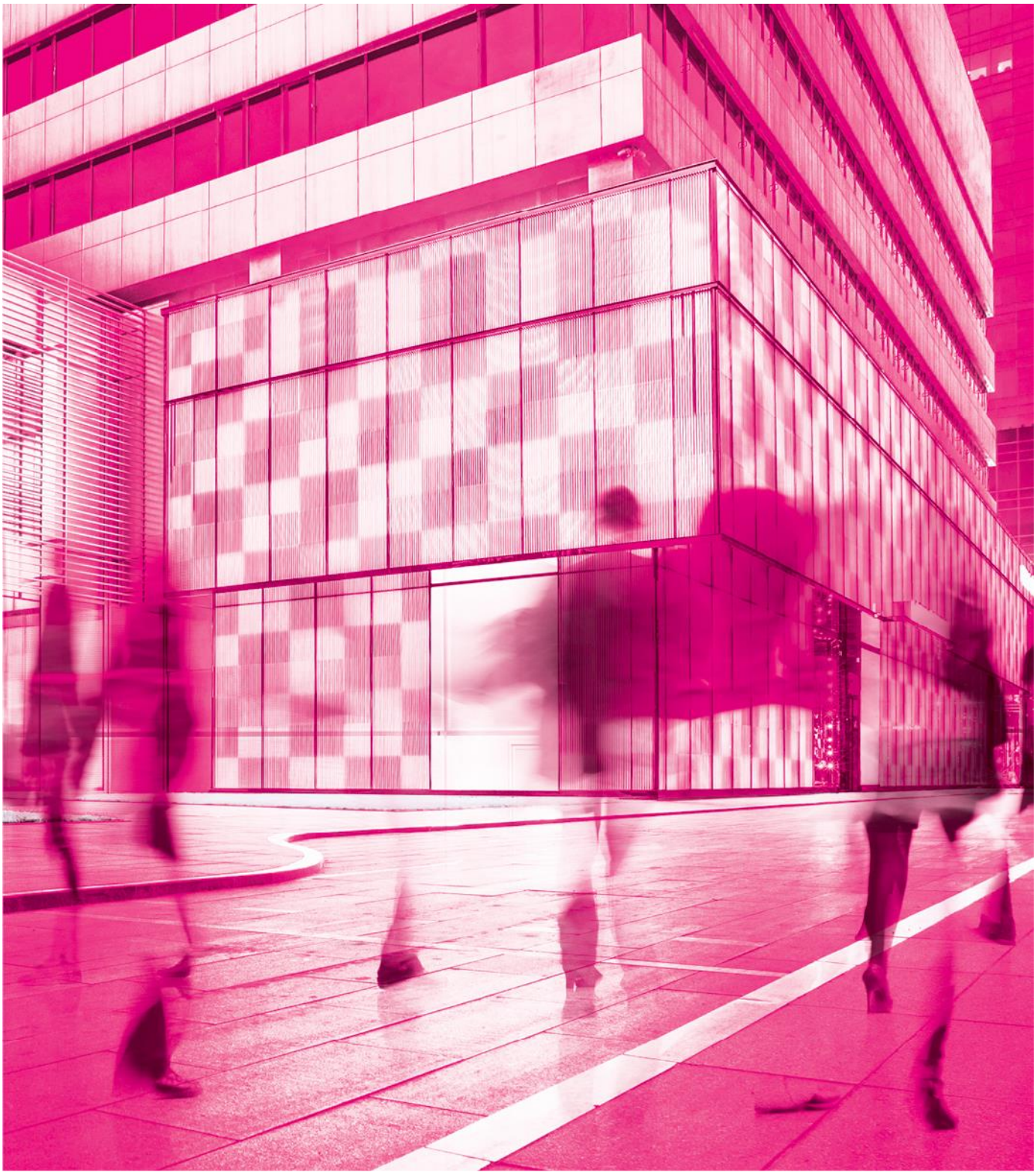

Traffic Impact Assessment;

Liverpool Civic Place - Phase B & C, Stage 2 DA

For Built

11 December 2020

parking;
traffic;
civil design;
wayfinding;

ptc.

Document Control

Liverpool Civic Place - Phase B & C, Stage 2 DA, Traffic Impact Assessment

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	27/11/20	Draft Issue	JJ	AM	Barry Teeling
2	11/12/20	Final Issue	JJ	AM	Barry Teeling
3					

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Contents

1. Introduction

1.1 Project Summary

This Traffic Impact Assessment (TIA) is submitted to Liverpool City Council on behalf of Built Development Group in support of a Stage 2 Development Application (DA) for Phase B and Phase C of the Liverpool Civic Place development located at 40-42 Scott Street, Liverpool. It follows the approval of a Concept Proposal / Stage 1 DA (DA-585/2019) for the broader Liverpool Civic Place master plan that has determined land uses, building envelopes, public domain and a multi-level common basement across the site. The full Liverpool Civic Place site, subject to the Concept Proposal / Stage 1 DA approval is illustrated in Figure 1, however the scope of this Stage 2 DA is limited to Phase B and C (refer to Figure 2) with the exception of embellishments to the Terminus Street pocket park.

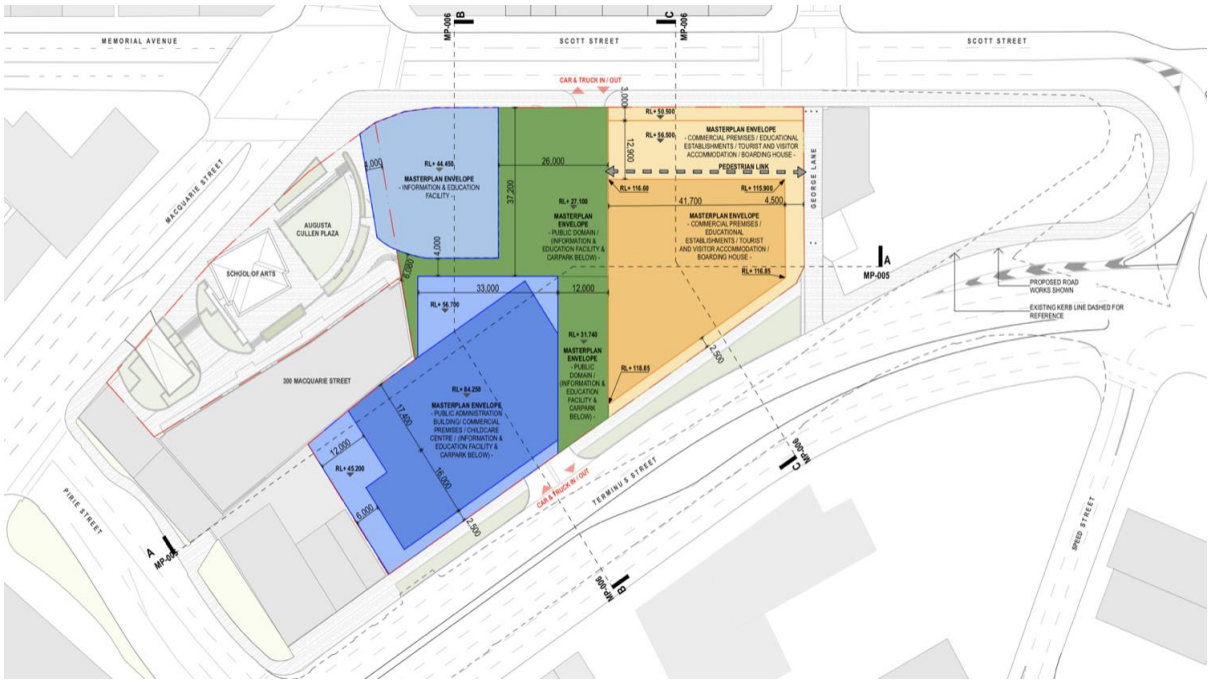


Figure 1 - Liverpool Civic Place Master Plan

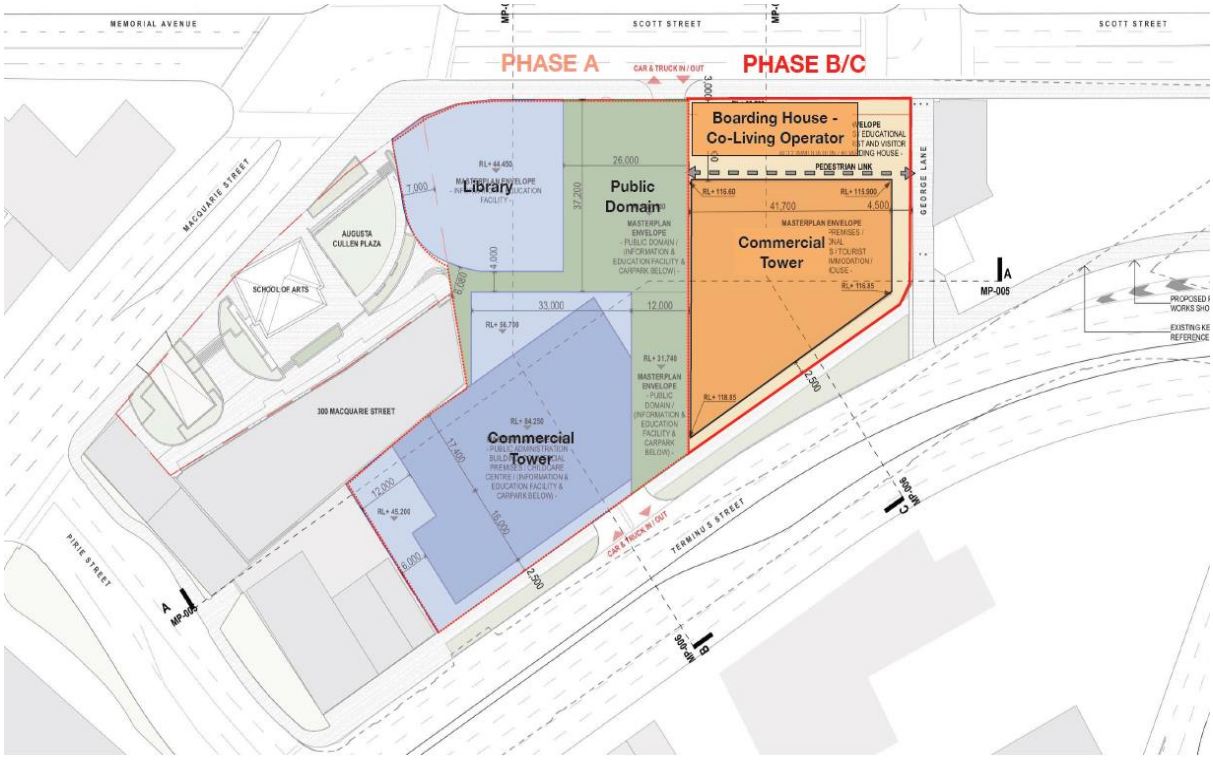


Figure 2 - Liverpool Civic Place Phase B & C Site

This Stage 2 DA seeks approval for:

- Construction and use of a nine (9) storey boarding house to be operated as a co-living facility, comprising;
    - Ground Floor Lobby and Retail Tenancies;
    - Eighty-four (84) rooms;
    - Communal facilities including living, kitchen and dining areas, gym, rooftop terrace and laundry.
- Construction and use of a twenty-two (22) storey commercial office building comprising;
    - Ground Floor Lobby and Retail Tenancies;
    - Nineteen (19) commercial office levels; and
    - Mid-level and rooftop plant.
- Construction and use of four basement levels.
- Landscaping and public domain works including:
    - Provision of a pocket park fronting Scott Street and George Lane;
    - Embellishment of the elevated pocket park fronting Terminus Street; and
    - Provision of a through-site link, connecting George Lane to the central public plaza.
- Extension and augmentation of services and infrastructures as required.

This DA reflects the staged planning approval pathway for the Liverpool Civic Place redevelopment which has included two previously approved DA's and a third DA currently under assessment, as outlined below:

1.1.1 Concept DA (DA-585/2019)

The planning approval pathway for the Liverpool Civic Place development commenced in 2019, with the submission of a Concept Proposal / Stage 1 DA for the Liverpool Civic Place master plan. The Concept Proposal / Stage 1 DA was approved by the Sydney Western City Planning Panel on 31 August 2020. The Concept Proposal / Stage 1 DA consent sets out the future development concept of the site, including the approved land uses, building envelopes, an expanse of public domain and a common basement. The Concept Proposal / Stage 1 DA did not approve any physical works.

1.1.2 Early Works DA (DA-906/2019)

The Early Works DA was approved by the Sydney Western City Planning Panel on 29 June 2020. The development consent relates to demolition of all structures, select tree removal and bulk earthworks including shoring through the use of piles. The approved works commenced on site in September 2020 and are scheduled for completion in August 2021.

1.1.3 Phase A Stage 2 DA (DA-836/2020)

DA-836/2020 was submitted to Council on 8 October 2020 and is currently under assessment (at the time of writing). The proposed development relates to Phase A of the Liverpool Civic Place redevelopment for the construction and use of a public library, as well as a mixed use building containing commercial office floor space, and public administration floor space to be occupied by Council. The proposal also comprises significant public domain works, including a public plaza and part of the site's five level common basement.

2. Site Context

2.1 Site Location

The site is located at 40-42 Scott Street, Liverpool which is within the Liverpool Local Government Area (LGA) as illustrated in Figure 3. The site is located at the southern side of the Liverpool CBD. The site is approximately 300m south west of Liverpool Railway Station and is also in the vicinity of a number of regionally significant land uses and features including Liverpool Hospital, Westfield Liverpool, Western Sydney University Liverpool Campus, the Georges River and Biggie Park public open space as illustrated in Figure 3.

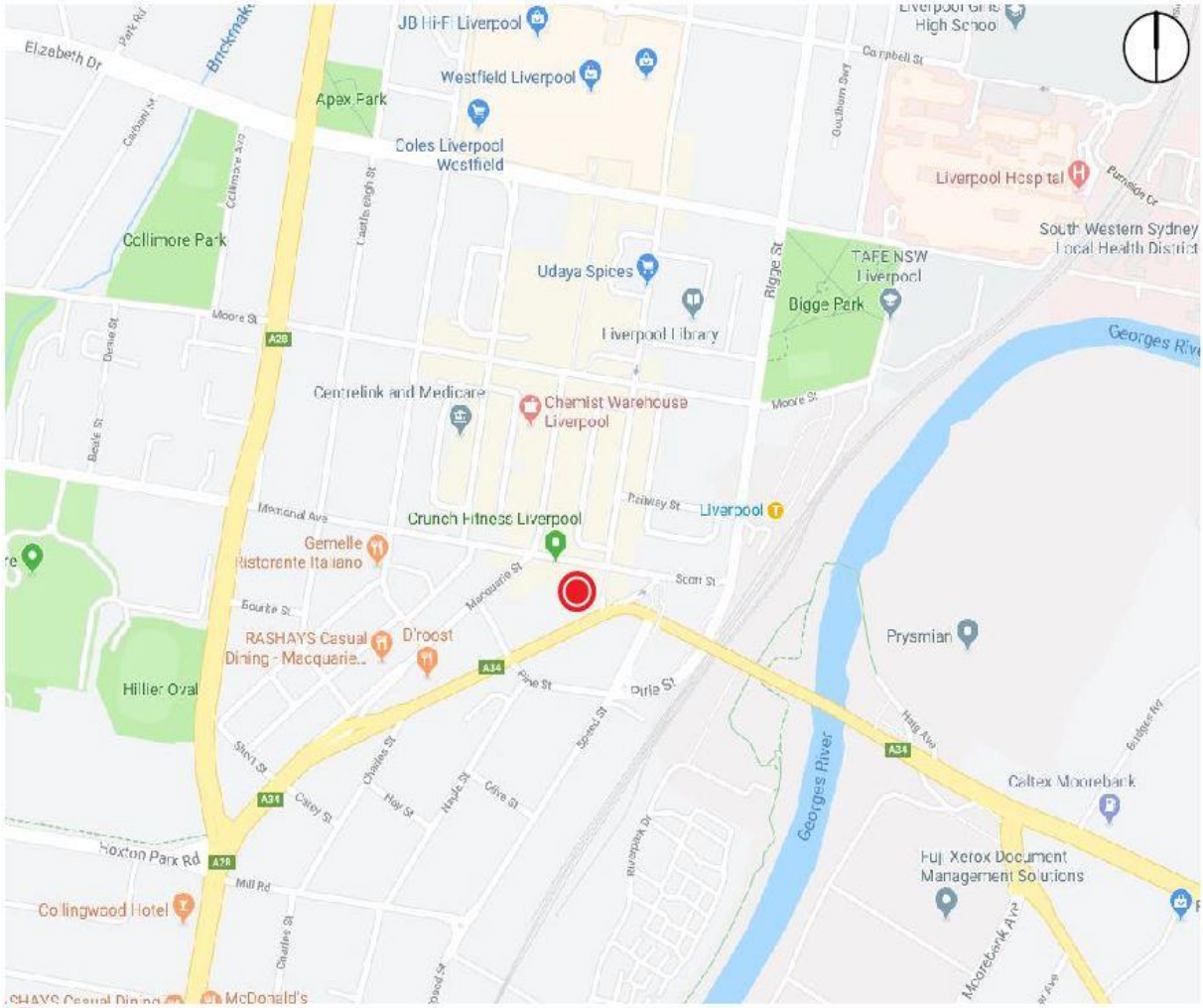


Figure 3 - Site Location

2.2 Site Description

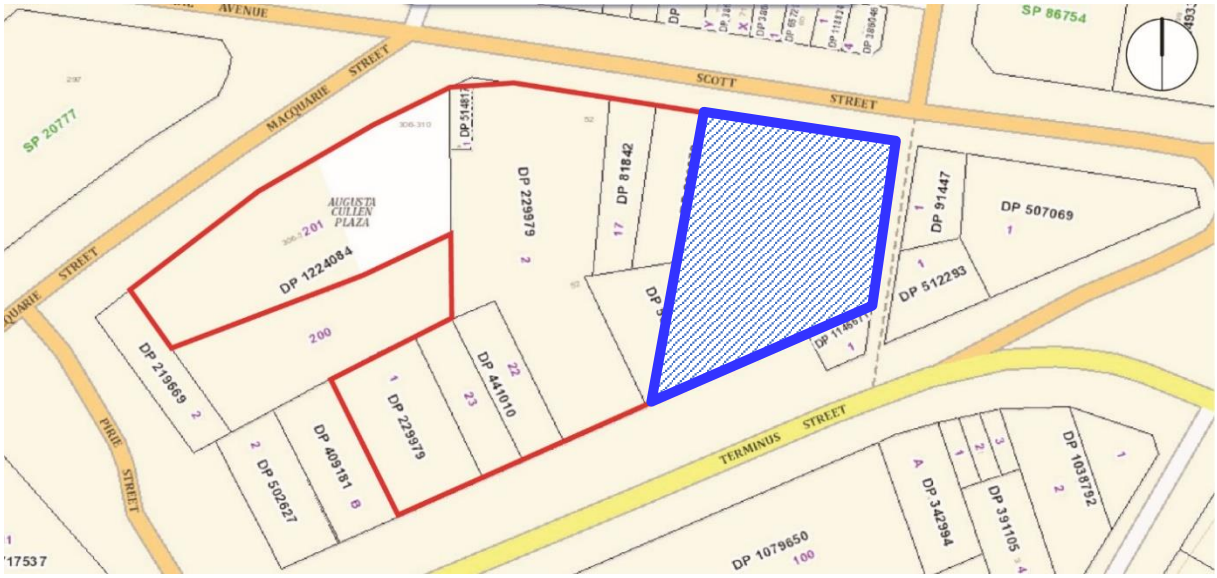


Figure 4 - Site and Lot Boundaries

The site comprises a total area of 2,440m^2 and has three road frontages, including a primary frontage to Scott Street.

The site is currently occupied by a two-storey commercial building with a large frontage to Scott Street. The commercial building is associated with a two-storey car parking structure at the rear with a frontage and access from Terminus Street.

Figure 5 - Aerial Photograph of the Site

3. Existing Transport Facilities

3.1 Road Hierarchy

The subject site is located within Liverpool City Centre and is primarily serviced by Terminus Street (State Road) and local roads managed by Liverpool City Council.

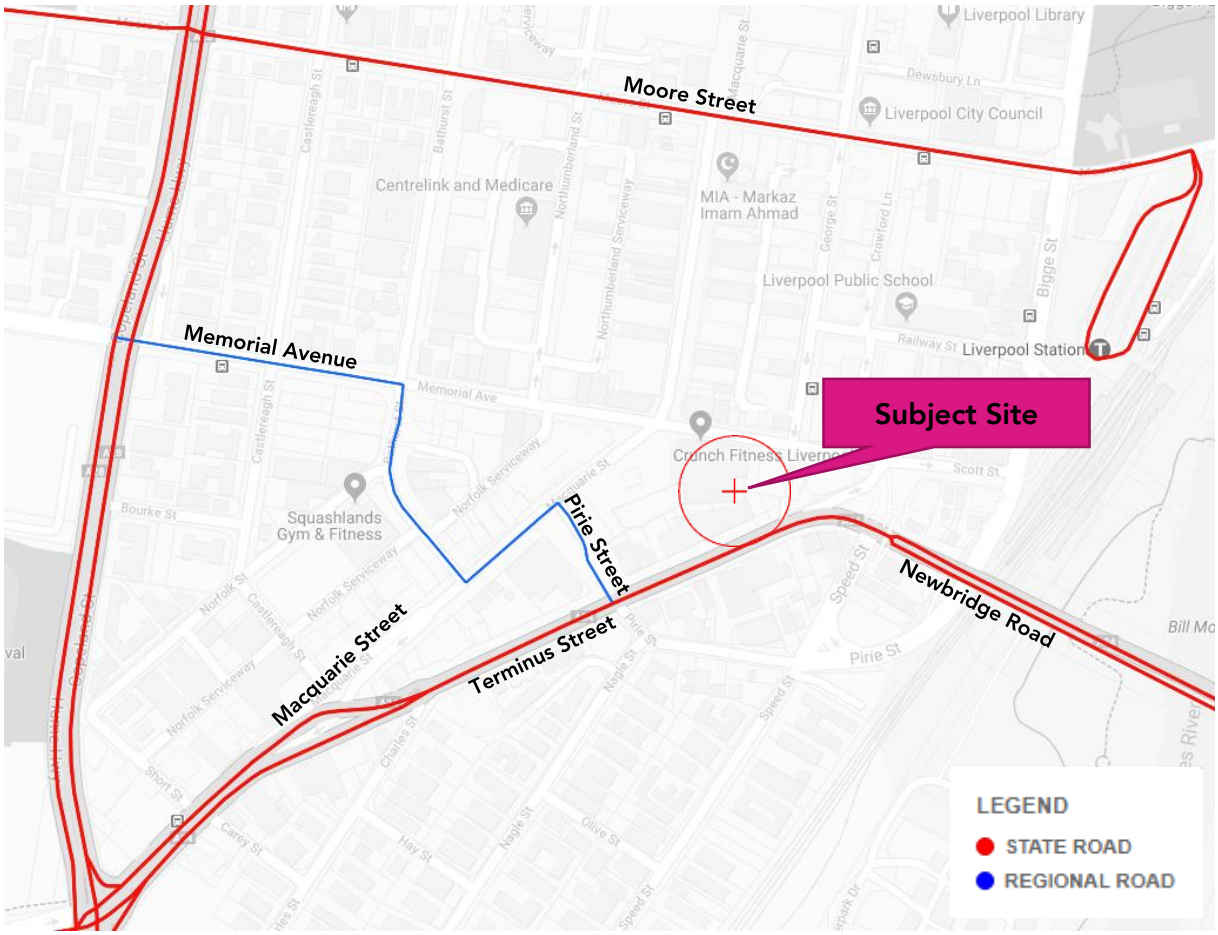


Figure 6 - Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads	- Freeways and Primary Arterials (TfNSW Managed)
Regional Roads	- Secondary or sub arterials (Council Managed, partly funded by the State)
Local Roads	- Collector and local access roads (Council Managed)

Table 1 - Existing Road Network - Terminus Street

Terminus Street	
Road Classification	State Road
Alignment	East-West
Number of Lanes	Generally, 2 lanes in each direction
Carriageway Type	Undivided
Carriageway Width	15m
Speed Limit	60 km/h
School Zone	No
Parking Controls	No Stopping & Clearway 6am-10am & 3pm-7pm (Mon-Fri) eastbound, No Parking & Clearway 6am-10am & 3pm-7pm (Mon-Fri) westbound
Forms Site Frontage	Yes

Figure 7 - Terminus Street (Eastbound towards Newbridge Road)

Table 2 - Existing Road Network - Pirie Street

Pirie Street	
Road Classification	Regional Road
Alignment	North-South
Number of Lanes	Generally, 2 lanes in each direction
Carriageway Type	Undivided
Carriageway Width	18m
Speed Limit	50 km/h
School Zone	No
Parking Controls	No Stopping both sides
Forms Site Frontage	No

Figure 8 - Pirie Street (Southbound towards Terminus Street)

Table 3 - Existing Road Network - Macquarie Street

Macquarie Street	
Road Classification	Local / Regional Road
Alignment	North-South
Number of Lanes	Generally, 2 lanes in each direction
Carriageway Type	Varies, divided / undivided
Carriageway Width	17m
Speed Limit	50 km/h
School Zone	No
Parking Controls	No Stopping & 1P parking northbound, No Stopping southbound
Forms Site Frontage	No

Figure 9 - Macquarie Street (Northbound towards Scott Street)

Table 4 - Existing Road Network - Scott Street

Scott Street	
Road Classification	Local Road
Alignment	East-West
Number of Lanes	Generally, 2 lanes westbound, 1 lane eastbound
Carriageway Type	Divided
Carriageway Width	12m
Speed Limit	50 km/h
School Zone	No
Parking Controls	1P Ticket 9am-6pm (Mon-Fri) & 1P 9am-12:30pm Sat eastbound & No Stopping westbound
Forms Site Frontage	Yes

Figure 10 - Scott Street (Westbound towards Macquarie Street)

3.2 Public Transport

The locality has been assessed in the context of available forms of public transport that may be utilised to access the proposed Civic Place. When defining accessibility, the NSW Guidelines to Walking & Cycling (2004) suggests that a walking catchment of 400-800 metres is a comfortable walking distance.

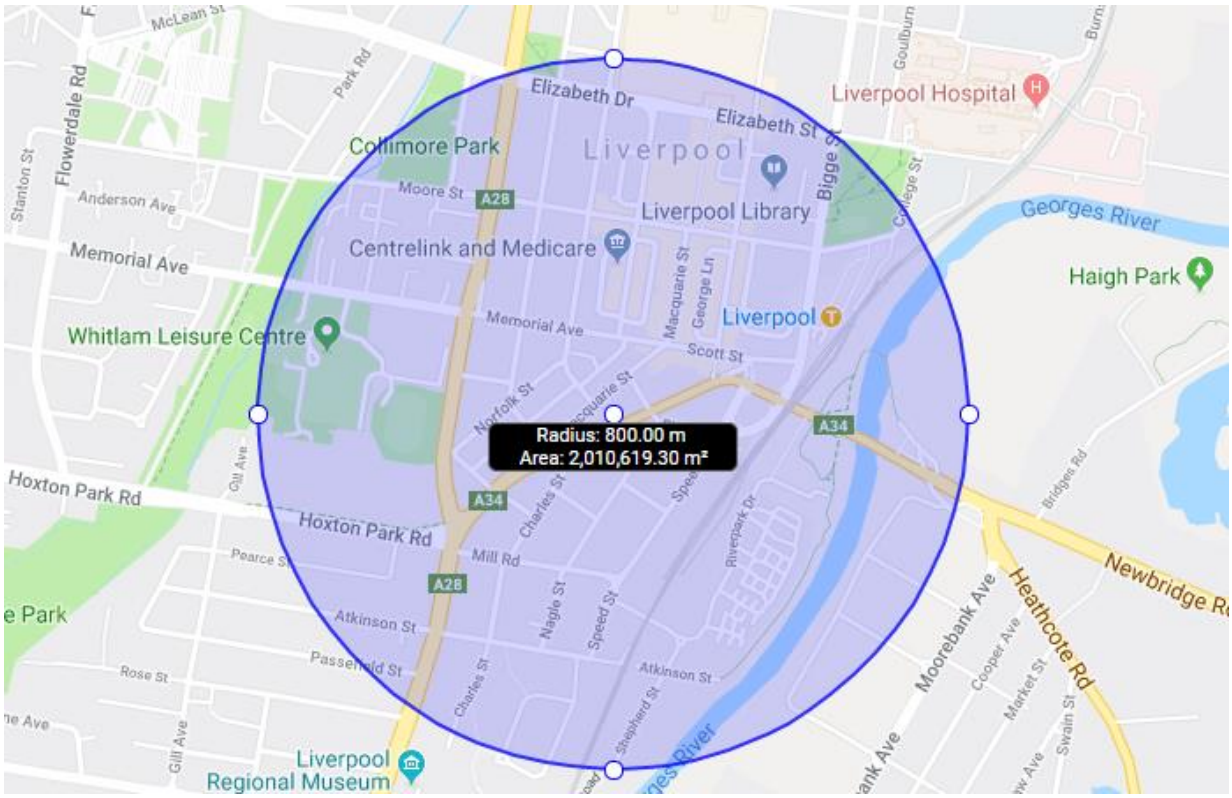


Figure 11 - 800m Catchment

3.2.1 Bus Services

The closest bus stops to the proposed LCP is located on Scott Street and George Street, as shown in Figure 12 below.

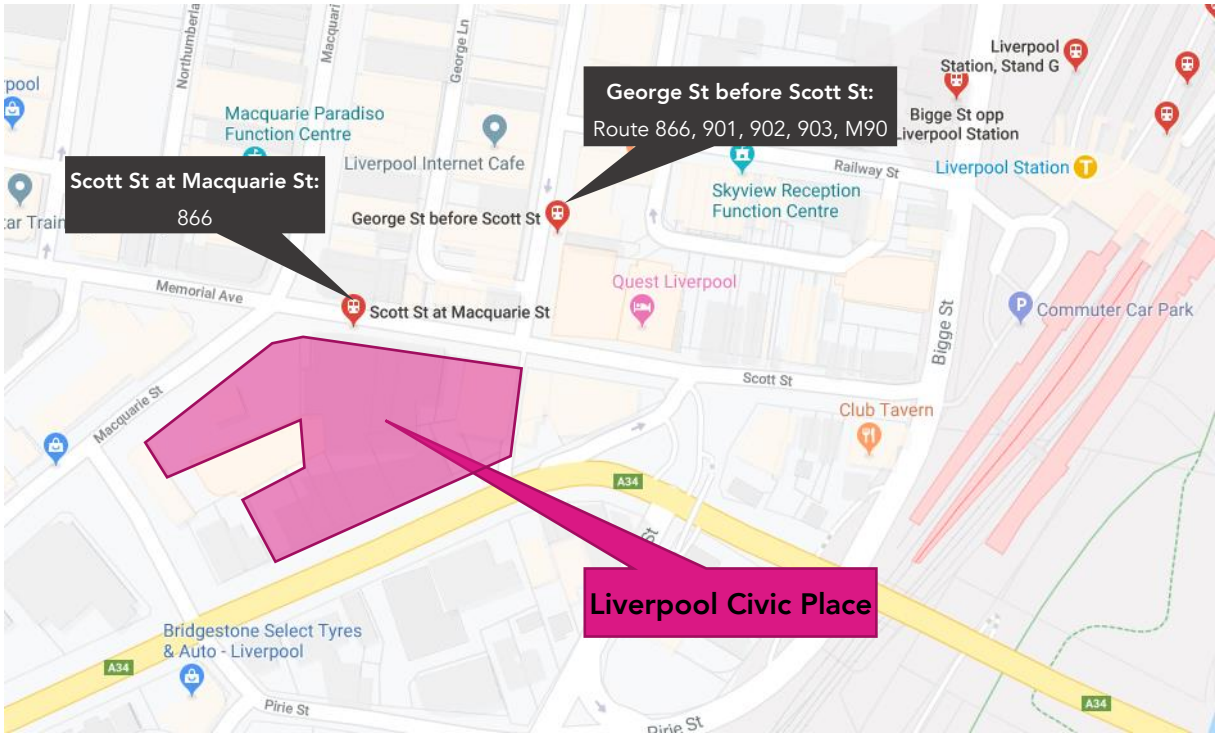


Figure 12 - Nearby Bus Stop Locations & Respective Bus Numbers

Table 5 - Bus Services Summary

Route No.	Coverage	Frequency (approximate)	Stop Location
866	**Casula to Liverpool**	**Approximately every 30 minutes (Mon-Fri) Approximately every 1 hour (Sat, Sun & Public Holidays)**	**Scott St at Macquarie St**
901	**Holsworthy to Liverpool**	**Approximately every 30 minutes (Mon-Fri) Approximately every 1 hour (Sat, Sun & Public Holidays)**	**George St before Scott St**
902	**Holsworthy to Liverpool via Moorebank**	**Approximately every 30 minutes (Mon-Fri) Approximately every 1 hour (Sat, Sun & Public Holidays)**	**George St before Scott St**
903	**Liverpool to Chipping Norton (Loop Service)**	**Approximately every 30-40 minutes (Mon-Fri) Approximately every 1 hour (Sat) Approximately every 2 hours (Sun & Public Holidays)**	**George St before Scott St**
M90	**Burwood to Liverpool**	**Approximately every 10-15 minutes (Mon-Fri) Approximately every 20 minutes (Sat, Sun & Public Holidays)**	**George St before Scott St**

3.2.2 Train Services

Liverpool Railway Station is located within comfortable walking distance to the proposed LCP, located on the T2 Inner West & Leppington Line, T3 Bankstown Line and T5 Cumberland Line, operated by Sydney Trains.

Table 6 - Train Services Summary

Train Line	From	To	Frequency (approx..)	Services operate approx. (Weekdays)	Services operate approx. (Weekends)
Inner West & Leppington	Leppington	City	Every 10-20 minutes More frequent during the peak hours	5:21am to 12:35am	3:57am to 12:27am
Inner West & Leppington	City	Leppington	Every 20-30 minutes More frequent during the peak hours	4:58am to 2:32am	5:24am to 2:17am
Bankstown	Liverpool	City	Every 10-15 minutes in the peak hours	3:54am to 12:24am	4:06am to 11:36pm
Bankstown	City	Liverpool	Every 15-20 minutes in the peak hours	6:02am to 2:32am	5:47am to 2:17am
Cumberland	Leppington	Richmond	Every 30 minutes	6:21 am to 12:18am	4:23am to 11:53pm
Cumberland	Richmond	Leppington	Every 30 minutes	7:19am to 12:28am	5:24am to 12:54am

The train services provide high frequency access between Liverpool, the City and neighbouring town centres, particularly during the commuter peak periods. The high frequency services make it a viable alternative mode of transport for prospective residents, visitors and staff.

3.3 Active Travel

In addition to public transport, the locality has been assessed for its active transport potential. It is noted that the subject site is adjacent to the Liverpool City Centre which will likely lead to higher rates of walking and cycling trips.

In terms of public infrastructure, the local road network offers a high level of amenity and safety for pedestrians, providing footpaths on either side of most roadways, signalised crossing, supporting signage and appropriate lighting throughout the locality.

In accordance with the TfNSW Cycleway Finder, the subject site is located within a bicycle network comprising of off-road paths as well as on-road cycle paths (see Figure 13). It is noted however, that there are no dedicated cycleways along the immediate frontage of the site, and the cycling network within the vicinity of the site is disconnected between Liverpool Hospital and the western side of the Liverpool City Centre. Notwithstanding this, the existing cycling infrastructure provides connection to Warwick Farm to the north, and the cycle route along the railway line, towards the south, provides linkage to Casula and Glenfield.

This will encourage and promote cycling as an alternative mode of transport for prospective occupants which is a healthy, low cost and environmentally friendly method of travel.

Figure 13 - Cycleways in the Locality of the Site (Source; NSW Cycleway Finder)

4. Future Road Network

Council currently has a proposal to relocate and realign the existing slip lane off Terminus Street into Scott Street, opposite to Speed Street as shown in Figure 14. The proposed road realignment has been incorporated into the traffic impact assessment and SIDRA modelling.

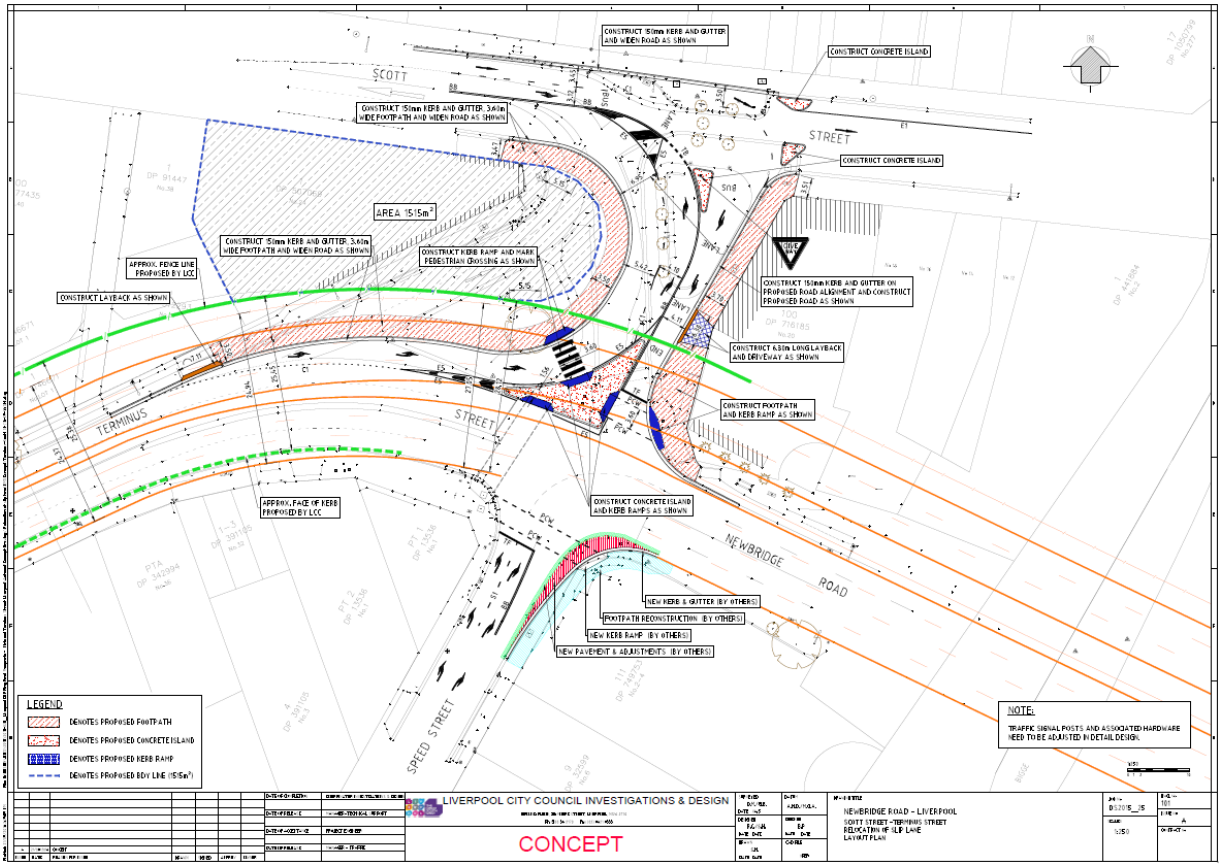


Figure 14 - Proposed Slip Lane Relocation

TfNSW has plans for a future 6-lane widening along Terminus Street as shown in Figure 15. It is noted that the proposal is currently at high level stages. However, the proposed road widening has been included within the traffic impact assessment and SIDRA modelling.

The Terminus Street access has also been designed to anticipate the proposed widening to ensure that the scheme operates under the current and future arrangements.

The proposed road widening of Terminus Street will be included in the detailed design stages once more information is provided regarding the proposed works.

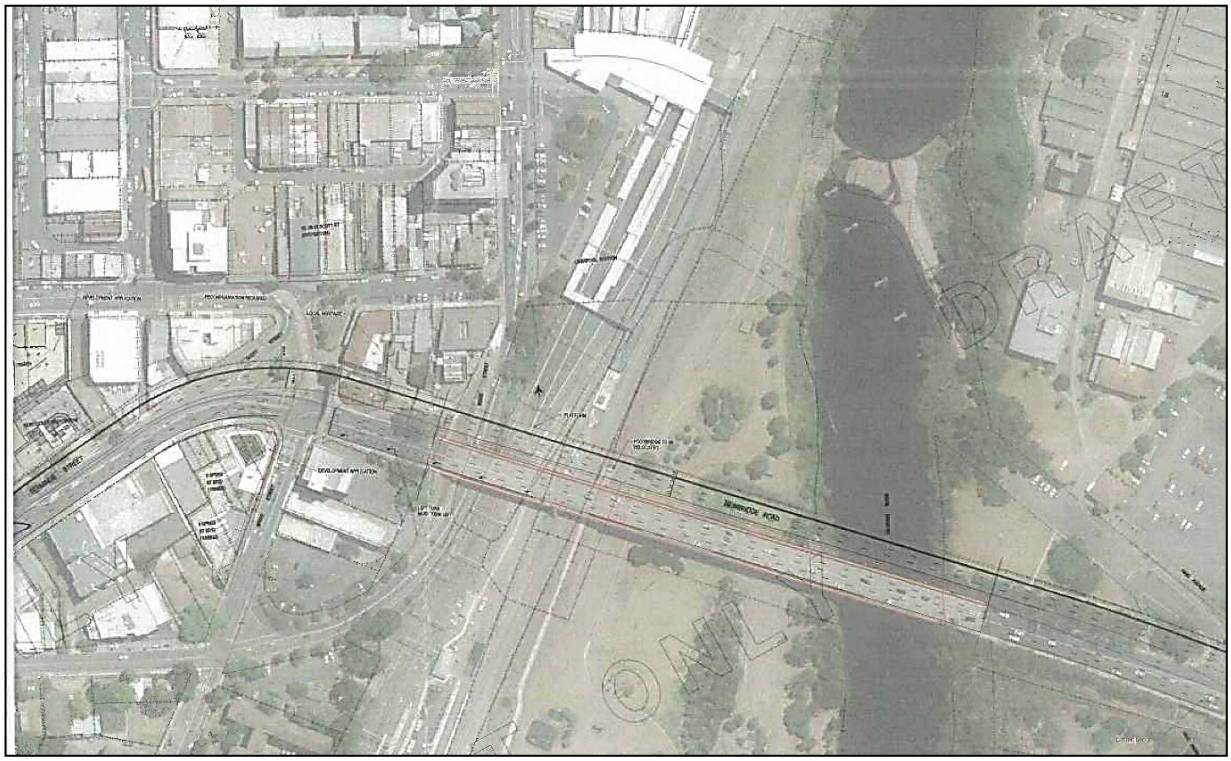


Figure 15 - Proposed Terminus Street Road Widening (Aerial View with TfNSW Proposal Overlay)

5. Traffic Impact Assessment

The subject application seeks approval for a development comprising 22-storey commercial office tower and a 9-storey boarding house (co-living).

The Concept DA consent included a traffic assessment based on the maximum yield of the concept master plan. This floor space associated with the following land uses - public library, council administration, commercial office, retail, and childcare centre. The Concept DA consent also included parking to service these land uses, as well as a public car park, contained within five basement levels. A Stage 2 DA was submitted for the construction of the buildings associated with Phase A as outlined in Section 1.1.3. The application involved adjustment to the yields and parking provisions which follows the detailed development of the architectural plans. The Development Application for the Phase A component which is currently under assessment has considered the traffic activity from the subject site, by adopting the 'worst case' rates applied to the Concept DA assessment.

The following traffic analysis has adopted the yields and parking provisions calculated in the Phase A application to undertake a cumulative assessment. The projected traffic activity associated with Phase B & C has been adjusted to align with the yields and parking provisions proposed within this Development Application which follows a more detailed development of the architectural plans.

The assessment has included the following:

- Traffic generation potential
- Traffic distribution
- Traffic modelling
- Traffic impact on the nearby intersections and road network

The assessment includes the prohibition of the right turn movements to/from the Terminus Street driveway.

5.1 Development Traffic Generation

This section presents an estimate of the traffic generation of the proposed development with reference to the Concept Approval, which established traffic generation rates based on the *Guide to Traffic Generating Development v2.2 (2002)* and traffic surveys / boomgate data of the Warren Serviceway Public Car Park, which is located within Liverpool CBD to the north of the current Liverpool Council administration building.

Warren Serviceway Car Park is a Council owned car park with approx. 704 parking spaces for public use, with a nested area for Council employees / fleet vehicles and was selected as a comparable car park for the purposes of forecasting the traffic generation associated with the public car park and Administration. It is noted that the public car park and administration component forms part of the Phase A DA. The following section has been included to provide more context towards the methodology used to calculate the development traffic generation. The following section is currently under assessment as part of the Phase A DA component however has been included in this report due to its relevance to the assessment the proposed Phase B & C development.

The car park is currently operated by Council and accommodates various users in dedicated areas with separate access control, including a nested area for Council staff, police station staff and employees of the adjacent businesses in the City Centre, as well as casual parking area for public parking.

This is a similar range of user groups that would be utilising the car park associated with the Phase A component of the site. As such, the Warren Serviceway Car Park was adopted as an appropriate site to determine the trip generation rates.

The record of arrival and departure dataset from the Warren Serviceway Car Park ticket control system on Tuesday 26 March 2019 was used to determine the trip generation rates for different land uses. Given the potential impacts on traffic activity caused by the Covid-19 pandemic through most of 2020, it is considered that this dataset is reliable and appropriate.

5.1.1 Commercial / Council Office / Library

The Roads and Maritime *Guide to Traffic Generating Development v2.2 (2002)* and the subsequent technical direction *TDT2013/04a (2013)* has set out the vehicle trip generation rates for commercial and office, which are as follows:

- Morning peak hour vehicle trips = 1.6 per 100 sqm GFA
- Evening peak hour vehicle trips = 1.2 per 100 sqm GFA

When TfNSW undertook Traffic Generation and Parking Generation Survey study in 2010 for updating the Guide to Traffic Generating Development v2.2 (2002), the suggested vehicle trip generation rates were derived from ten sites within both Sydney Urban area and regional areas, which largely have unconstrained parking provision. The morning peak trip generation results comprise when applied to the relevant GFAs:

- Library = 5,000m^2 x 1.6 per 100m^2 = 80 trips
- Council Admin = 16,668m^2 x 1.6 per 100m^2 = 267 trips
- Mixed-use commercial Building = 21,869m^2 x 1.6 per 100m^2 = 350 trips

It is evident that when the unrestrained trip generation rates are applied to the floor areas, this results in a higher traffic activity than the number of parking spaces proposed within the development.

A restrained parking provision is appropriate and aligned with the CBD location of the site given the high accessibility to alternative travel modes. Therefore, for the purpose of determining a more applicable trip generation rate, data collected from the Warren Serviceway Car Park has been used.

The results in the following figures present the traffic activity associated with a typical weekday and is consistent with the typical travel pattern during commuter peak hours. The figures indicate that peak entry is during 8:00am whilst peak exit is during 5:00pm.

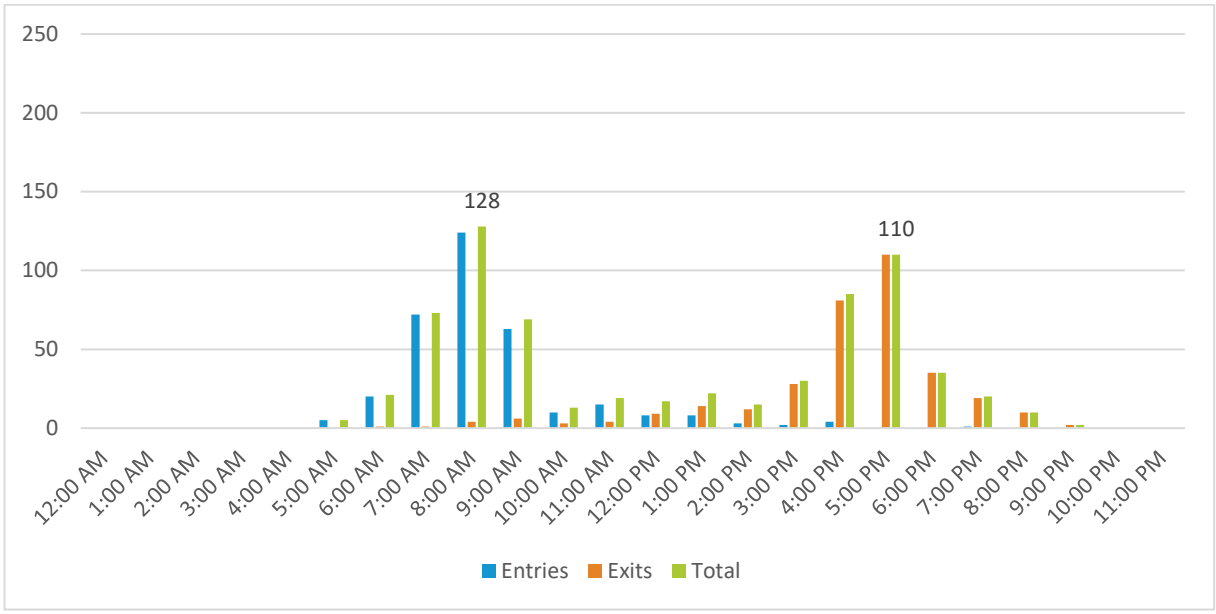


Figure 16 - Weekday Trips (Warren Serviceway CP - Council Parking Spaces)

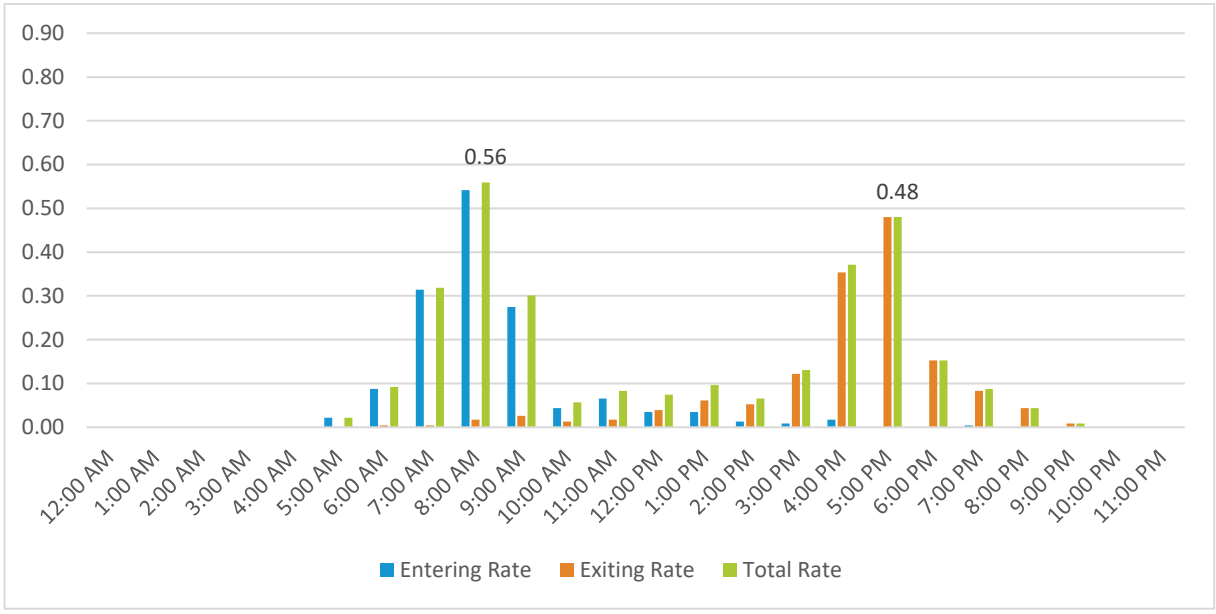


Figure 17 - Weekday Trip Rate per Space (Warren Serviceway CP - Council Parking Spaces)

The proposal involves the construction of a 22-storey commercial office tower and a 9-storey boarding house. The commercial component of this proposal represents a similar land use to the Library, Council Admin and mixed-use Commercial Building components discussed above. Therefore, the weekday trip rates for the AM and PM peak obtained from the Warren Serviceway CP surveys were adopted to calculate the development trip generation for the commercial component of this proposal.

5.1.2 Public Car Park

The public car park will accommodate 156 parking spaces, which is less than the 202 spaces currently located within the site. It is noted that the purpose of a public car park will alter the traffic generation outcome, i.e. if the car park is intended to be used by all-day workers within the CBD, the peak hour trip generation will be comparatively high, while the daily turnover may be relatively low. If the car park is

intended for visitors (for retail and general business etc.) the arrival and departure peaks may not be as pronounced, but turnover through the day will be higher.

The entering and exiting traffic data collected at the Warren Serviceway car park is illustrated in Figure 18. The volumes are based on the short-term parking spaces, which are available for casual parking.

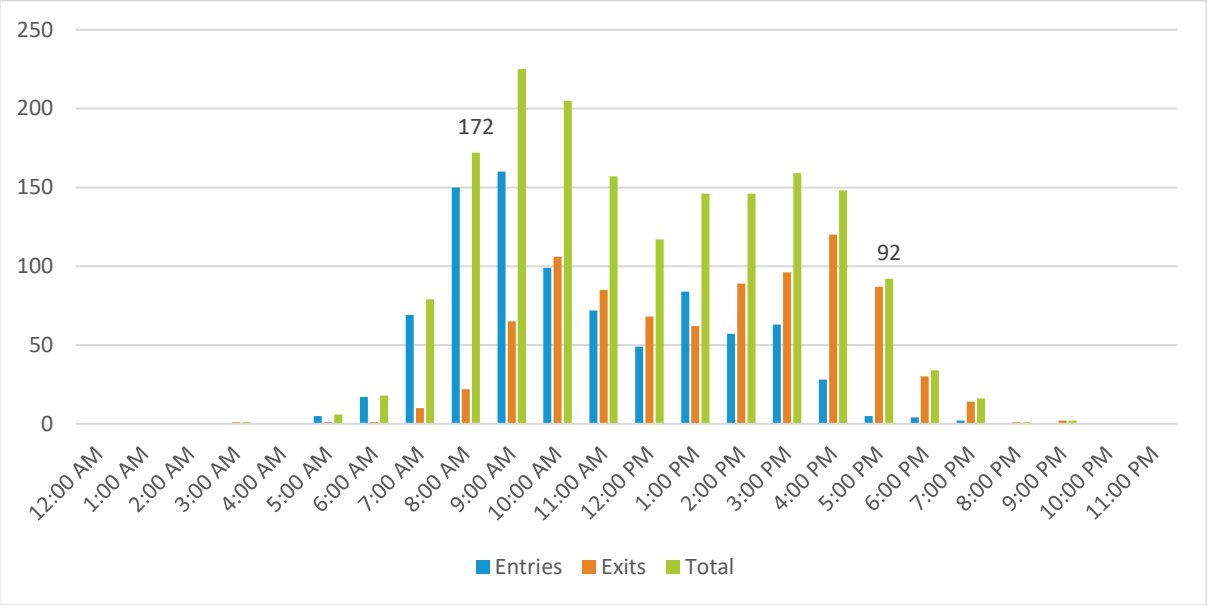


Figure 18 - Weekday Arrivals and Departures (Warren Serviceway CP - Public Spaces)

Figure 19 illustrates that the casual parking area will generate maximum rates of 0.80 trips per parking space during the morning and 0.56 trip per parking space during the evening, however it is noted that the peak trips are not aligned with the road network peak. During the morning network peak, the car park generated 0.61 trips per parking space and 0.33 trips per parking space during the PM network peak.

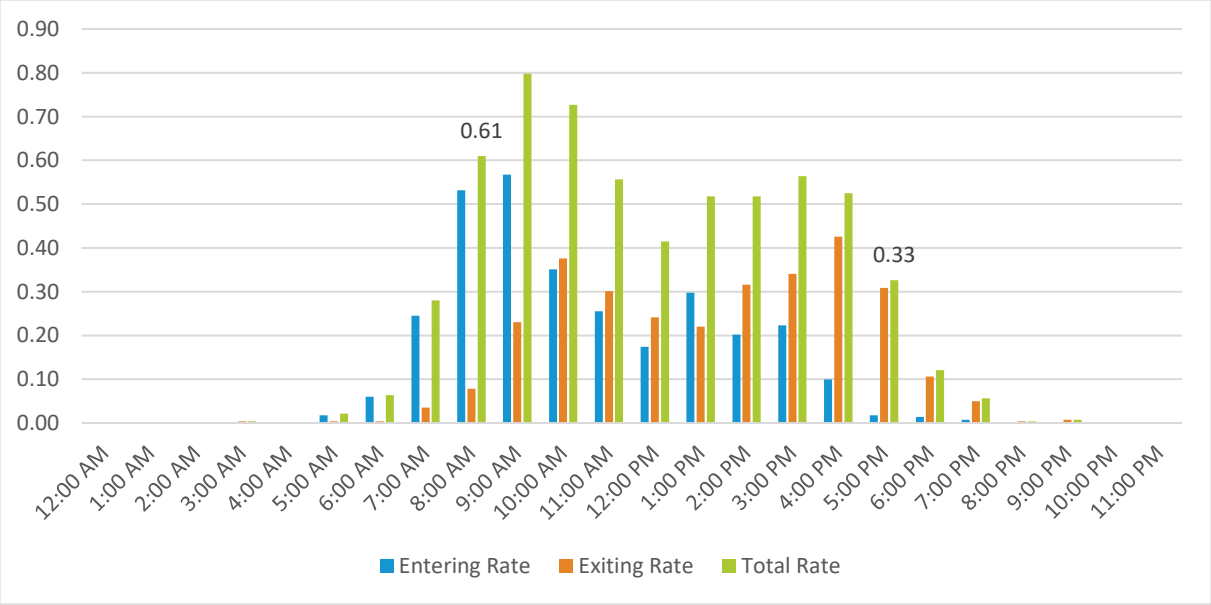


Figure 19 - Weekday Trip Rate per Space (Warren Serviceway CP - Public Spaces)

5.1.3 Development Vehicle Trip Generation Summary

The traffic generation of the proposed development, inclusive of the Phase A development, during the morning and evening peak periods is summarised in Table 7.

It is noted that the proposal includes the construction of a 9-storey boarding house. The following factors have been taken into consideration when determining the parking provision requirements and the trip generation associated with the proposed boarding house:

- The proposed development is located in the vicinity of Liverpool Train Station which provides high frequency train services;
- The occupants are likely to walk to their main commuting destination (education campuses), particularly given that the Western Sydney University campus and University of Wollongong campus are likely to be the predominant places of study and are within the walking catchment to the site;
- The occupants are typically less likely to own private vehicles than regular residential occupants;
- Alternative mode of transport such as public transport, walking and cycling will be promoted through the Green Travel Plan initiatives;
- The exclusion of on-site parking is consistent with other co-living facilities located in the Greater Sydney region.

It is anticipated that the boarding house component of the proposed development will not require car parking spaces due to the factors mentioned above. Therefore, the proposed provision of 150 car parking spaces has been allocated to the commercial component and the prospective staff associated with the boarding house component of the development. The development trip generation has been calculated accordingly for the AM and PM peaks using these allocations.

Table 7 - Development Trip Generation Summary

Land Use	Parking Spaces	Vehicle trip rates		Vehicle trip generation		Access
		AM	PM	AM	PM	
Council Admin.*	142	0.56	0.48	79	68	Scott St
Fleet Parking*	46	0.56	0.48	26	22	Terminus St
Public Parking*	156	0.61	0.33	95	51	Terminus St
Library*	Included in Council Admin and Public Car Parks					-
Sub-total	**344**	**-**	**-**	**200**	**141**	**-**
Commercial & Boarding House	145	0.56	0.48	81	70	Scott St
Total	**489**	**-**	**-**	**281**	**211**	**-**

*Not part of this DA

A comparison of the peak hour traffic activity associated with the Concept Approval and the subject DA is presented in the following table:

Table 8 - Comparison of Concept Approval & Development Application

Land Use	Concept Approval		Subject DA		Difference		Access
	AM	PM	AM	PM	AM	PM	
Council Admin.*	74	63	79	68	6	5	Scott St
Public P + Fleet*	122	65	121	73	-1	8	Terminus St
Commercial & Boarding House	72	61	81	70	10	8	Scott St
Total	267	190	281	211	14	21	-

*Not Part of this DA

The Phase B & C project involves a similar level of traffic compared with the Concept Approval, being an increase of 12 and 11 vehicles during the morning and evening peaks, respectively. This results in a total increase of 17 and 24 vehicles during the morning and evening peaks respectively when including the Phase A project. This level of increase in traffic is not considered to have a significant impact on the road network given the daily fluctuations that occur.

5.2 Traffic Distribution

Two scenarios have been assessed as part of the SIDRA analysis:

- Existing Conditions (based on the 2019 surveys that supported the Concept Application)
- Post-Development – Two-way access on Scott Street (Council Admin Building and Eastern Development) and Terminus Street (Public Car Park and service vehicles), plus the Scott Street slip lane project and the TfNSW widening scheme on Terminus Street.

The distribution of entry and exit trips has been adopted from the car park survey data, as follows:

Table 9 - Percentage Entry / Exit Movements

Land Use	Morning Peak		Evening Peak	
	Entry %	Exit %	Entry %	Exit %
Council Admin.*	97%	3%	0%	100%
Public Parking*	87%	13%	5%	95%
Library*	Included in Council Admin and Public Car Parks			
Commercial & Boarding House	97%	3%	0%	100%

*Not Part of this DA

Table 10 - Summary of Inbound & Outbound Trip Volumes

Land Use	Access	Morning Peak		Evening Peak	
		Entry	Exit	Entry	Exit
Council Admin, Commercial & Boarding House	Scott Street Access *	156	5	0	138
Public Parking + Fleet	Terminus Street Access	105	15	4	69

The traffic distribution has been separated into northbound, eastbound, southbound and westbound trips and have been based on the data provided by the website of profile id (profile.id.com.au), which utilises the Census of Population and Housing 2016 data (Australian Bureau of Statistics). The census data provides information in regard to the residential locations of workers by Local Government Areas (LGA).

The following assumptions have been made based on the census data:

Inbound

- Approximately 37.8% of employees working in Liverpool live within the Liverpool LGA. When considering that the larger residential precinct of Liverpool is in the western area of LGA, approximately 40% of inbound vehicles will travel to the site via Hoxton Park Road;
- Approximately 20% of employees working in Liverpool live within the southern neighbouring LGAs such as Campbelltown and Camden. Therefore, approximately 20% of inbound vehicles will be via Hume Highway;
- Approximately 25% of employees live in the northern neighbouring LGAs such as Fairfield and Bankstown. Approximately 30% of inbound vehicles will travel from the north; and
- Approximately 5% of employees live in the eastern LGAs such as the Sutherland Shire LGA. Therefore 10% of inbound vehicles will travel from the east.

Outbound

- When considering that the primary users of the development will be employees, it has been assumed that majority of outbound vehicles will return to their original destination.

The assumptions are illustrated in Figure 20.

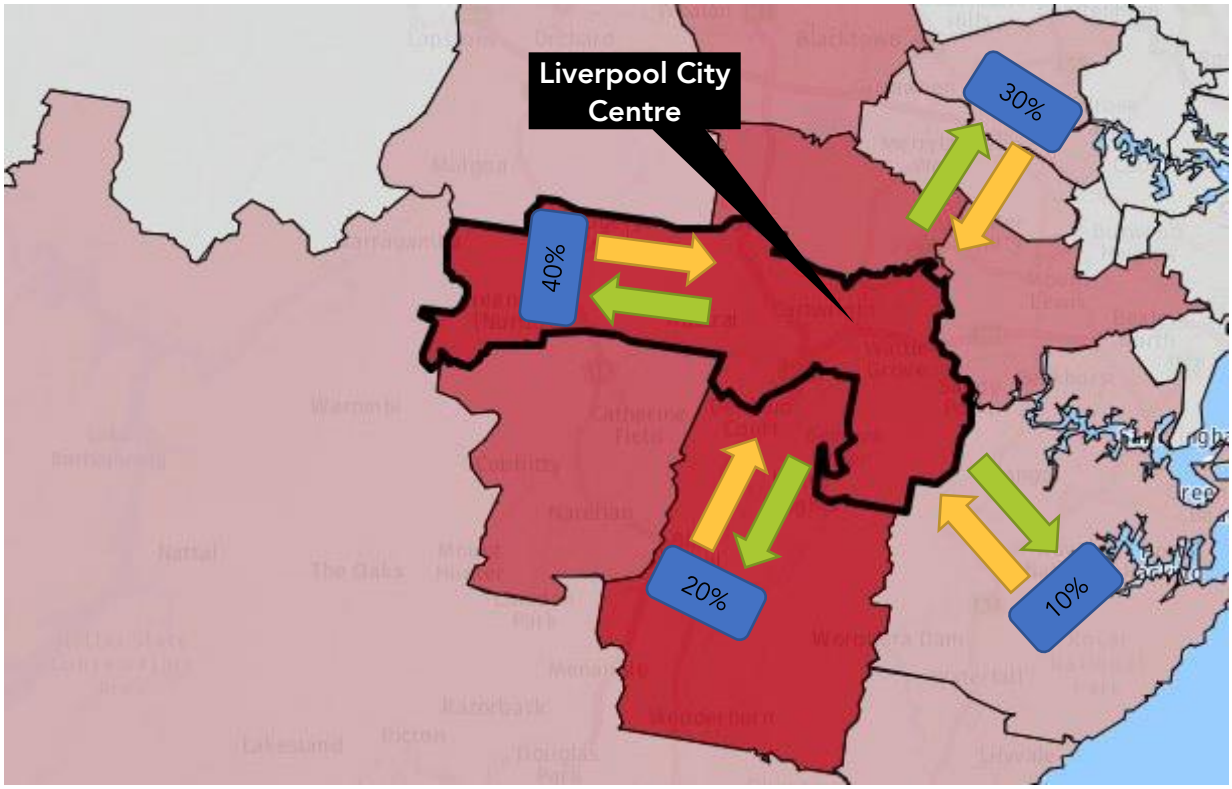


Figure 20 - Residential Locations of Workers in Liverpool 2016

The volume of additional vehicles travelling to and from the site during the AM and PM peaks have been tabulated below.

Table 11 - Traffic Distribution Volume

	Morning Peak		Evening Peak	
	Inbound	Outbound	Inbound	Outbound
North	78	6	1	62
South	52	4	1	41
East	26	2	0	21
West	104	8	2	83
TOTAL	**261**	**20**	**4**	**207**

Note: The trip numbers are rounded to the nearest whole number.

5.3 Traffic Modelling

For the purposes of assessing the traffic impacts of the proposed building on the surrounding road network, the intersections have been modelled using the SIDRA Intersection software. The following intersections have been included in the traffic modelling:

- Scott Street / George Street
- Scott Street / Macquarie Street / Memorial Avenue
- Macquarie Street / Pirie Street
- Terminus Street / Pirie Street
- Terminus Street / Scott Street

SIDRA provides a number of performance indicators, outlined below:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- 95% Queue Lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- Level of Service (LoS) – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

Table 12 - Intersection Performance - Levels of Service

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

The Base Model was developed based on the traffic volumes and signal information extracted from the intersection movements counts for the existing conditions.

The SIDRA results for the existing conditions and post-development scenario are summarised in the following sections.

A more detailed SIDRA results can be seen in Attachment 1.

5.3.1 Existing Conditions

Table 13 - SIDRA Results - Existing Scenario

Intersection	Period	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue Length (m)
Scott Street / George Street	AM Peak	B	0.241	27.7	48
	PM Peak	B	0.342	24.3	78.3
Macquarie Street / Memorial Avenue / Scott Street	AM Peak	B	0.35	23.5	75.4
	PM Peak	B	0.677	19.7	49.6
Macquarie Street / Pirie Street	AM Peak	B	0.375	19.7	78.7
	PM Peak	B	0.547	25	114.2
Terminus Street / Newbridge Road / Speed Street	AM Peak	B	0.827	18.5	298.8
	PM Peak	D	0.934	45.4	460
Terminus Street / Pirie Street	AM Peak	C	0.87	29.9	171.4
	PM Peak	B	0.451	25.2	91.7
Terminus Street / Scott Street	AM Peak	A	0.106	2.7	2.8
	PM Peak	A	0.095	2.2	1.4

All intersections within the study are currently operated in LOS D or better with acceptable delay, except for the intersection of the Terminus Street and Newbridge Road intersection, which is currently operating at capacity during the PM peak period. Significant queuing is identified on the eastern approach of Newbridge Road during both the AM and PM peak periods.

5.3.2 Post Development Conditions

Table 14 - SIDRA Results - Post-Development Scenario

Intersection	Period	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue Length (m)
Scott Street / George Street	AM Peak	B	0.279	26.7	60.8
	PM Peak	B	0.327	24.5	73.8
Macquarie Street / Memorial Avenue / Scott Street	AM Peak	B	0.379	26.4	81.3
	PM Peak	B	0.802	26.6	65.3
Macquarie Street / Pirie Street	AM Peak	B	0.42	24.1	85.8
	PM Peak	C	0.563	28.8	114.2
Terminus Street / Newbridge Road / Speed Street	AM Peak	B	0.827	15.9	298.8
	PM Peak	D	0.934	44.8	460
Terminus Street / Pirie Street	AM Peak	B	0.916	27.8	114.4
	PM Peak	B	0.53	23.5	104.9
Terminus Street / Scott Street	AM Peak	A	0.115	5.6	3.4
	PM Peak	A	0.118	5.6	2.7
Terminus Street Access	AM Peak	A	0.325	6.6	0.5
	PM Peak	A	0.349	6.6	3
Scott Street Access	AM Peak	A	0.149	6.9	0.1
	PM Peak	A	0.301	6.9	4.9

The SIDRA results indicate that the Scott Street and Terminus Street Accesses will operate with acceptable delay and queuing in both AM and PM peaks. The George Street and Scott Street intersection will operate in similar level of delay and queuing as the existing conditions.

It is noted that the average delay and queuing for the eastern leg of the Macquarie Street/ Memorial Avenue/ Scott Street intersection will increase during the post-development scenario. The average delay and queuing distance will be approximately 27 seconds and 65m respectively during the PM peak which may impact the proposed access driveway along Scott Street with remained acceptable Level of Service.

6. Parking Provision

6.1 Planning Policy

The proposed development is subject to the parking provision rates stipulated in the following planning documents:

- Liverpool Development Control Plan (DCP) 2008 Part 1 – General Controls for all development
- Liverpool Development Control Plan (DCP) 2008 Part 4 – Development in Liverpool City Centre
- Liverpool Local Environmental Plan (LEP) 2008

6.1.1 Liverpool DCP

The Liverpool DCP Part 1 refers to Clause 7.3 of the LEP and Section 4.4.2 of the DCP when calculating the minimum off-street parking requirements for developments within the Liverpool City Centre. The development site is within the city centre as defined in the LEP and therefore LEP 2008 applies.

6.1.2 Liverpool LEP 2008 Clause 7.3 – Car Parking in Liverpool City Centre

The development site is within the Liverpool City Centre and is zoned B4 Mixed Use. In order to ascertain the parking requirements, reference is made to the relevant planning controls for the different land uses proposed within the development.

6.2 Car Parking Provision

6.2.1 Office and Retail Component

Clause 7.3 of the LEP sets outs the required minimum parking rate for the proposal. Importantly however, subclause (5) notes that "Council owned public car parking and parts of a building used for residential purposes must not be included as part of a building's Gross Floor Area (GFA) for the purposes of this clause". Therefore, for this project, it defines the minimum car parking rate for the proposed retail and office uses.

Table 15 - Car Parking Provision – LEP Requirement

Component	Level	Building / Use	GFA (m2)	LEP Parking Requirement	Proposed Provision
Ground Floor Clause 7.3 (2)(a)	1 space per 200m2 GFA regardless of use on ground floor levels	Phase B Upper & Lower Ground Floor	784	5	145
		Phase C Lower Ground Floor	175		
Any other part of the building Clause 7.3 (2)(b)(ii)	1 space per 150m2 GFA for any use other than retail	Phase B Office	21243	142	
TOTAL				**147**	**145**

6.2.2 Boarding House Component

The LEP does not stipulate a parking rate for residential purposes or boarding houses within the City Centre, therefore we have interpreted that no parking is required for this component. This aligns with the site location and the supporting services / transport environment of the city centre in that the use of private vehicles is not necessary.

6.2.3 Parking Provision Summary

Considering that the site is within the Liverpool City Centre and is within close proximity to public transport as previously discussed in Section 5.1.3, the proposed provision of 145 car parking spaces for the Phase B & C development is sufficient to accommodate the likely parking demand to be generated by the development.

6.3 Accessible Car Parking

The accessible car parking rate stipulated in the Council DCP has been used to calculate the accessible car parking requirements for the proposed development. The requirements and proposed parking provision are summarised in Table 16.

Table 16 - Accessible Parking Provision

Component	Total Parking Provision	DCP Parking Rate	DCP Requirement (min)	Proposed Provision
Office	145	2% of total capacity	2.9	4
Co-Living				

Note: The accessible parking provision is included within the total car parking capacity

6.4 Bicycle Parking Provision

The development must also provide bicycle parking spaces in accordance with the minimum requirements stipulated in the DCP Part 4 (May 2020 amendment which refers to DCP Part 1 for the bicycle parking requirements:

- Office
    - 1 bicycle space per 200m^2 GFA for staff
    - 1 bicycle space per 750m^2 GFA for visitors
- Group Homes
    - 1 bicycle space per 10 beds for residents
    - 1 bicycle space per 10 units/rooms for visitors

Table 17 - Bicycle Parking Provision

Component	GFA (m2) / No. Beds	DCP Parking Rate	DCP requirement (min)	Proposed Provision
Office				
Staff	22027	1 space per 200m2	110	109
Visitors	22027	1 space per 750m2	29	30*
Co-Living				
Residents	84	1 space per 10 beds	8	38
Visitors	84	1 space per 10 units/rooms	8	8

* The visitor bike parking is proposed within the public domain by way of bike hoops totalling 30 spaces for use by all visitors to the building. It is unlikely that the peak demand for visitor bike parking relating to the office and the library would coincide, therefore a sharing of these facilities is appropriate.

6.5 Motorcycle Parking

The development must also provide motorcycle parking spaces in accordance with the minimum requirements stipulated in the DCP Part 4:

- 1 motorcycle space per 20 car spaces

Table 18 - Motorcycle Parking Provision

Component	Total Parking Provision	DCP Parking Rate	DCP requirement (min)	Proposed Provision
Office	145	1 space per 20 car spaces	7	12

6.6 Travel Plan

It is noted that Condition 27 of the Concept Approval requires the provision of a Travel Plan to promote the use of more sustainable modes of travel. This is typically established through the implementation of a Green Travel Plan, which is developed with input from the occupants of the building or campus.

The preparation of the Green Travel Plan at a later stage risks losing the opportunity to include physical measures within the design, therefore it is important to establish facilities required to support sustainable transport within the building design.

In this regard, there are essentially two parts to a Green Travel Plan, comprising an outline plan to inform the building design team, and an implantation plan, which is adopted by the users of the building.

The preparation of the outline Green Travel Plan could be prepared as a Condition of the DA consent, or during the determination period in order to comply with Condition 27.

It is important that in terms of the building design, the DA scheme includes the bike parking requirements stipulated in the DCP and Green Star rating system, while end-of-trip facilities are also proposed.

The bike parking for the public will be provided within the public domain areas where they will be visible and in proximity to the public entrances. This encourages use, rather than provides spaces hidden in the basement car park.

6.7 Service Vehicle Parking Provision

The service vehicle parking provision requirement has been extracted from the Council DCP which stipulates the following:

"*Sufficient service and delivery vehicle parking adequate to provide for the needs of the development*"

The proposed loading dock has been designed to accommodate vehicles up to a Medium Rigid Vehicle (MRV) for general deliveries. The loading dock provides two (2) MRV spaces and two (2) Small Rigid Vehicle (SRV) spaces which is anticipated to be sufficient to accommodate both components of the proposed development.

7. Access and Car Park Assessment

The following section presents an assessment of the proposed development with reference to the requirements of AS2890.1:2004 (Off-street Car Parking), AS2890.2:2018 (Off-street Commercial Vehicle Facilities), AS2890.3:2015 (Bicycle Parking) and AS2890.6:2009 (Off-street Parking for People with Disabilities). This section is to be read in conjunction with the following architectural plans provided by *Francis-Jones Morehen Thorp Pty Ltd* (see Attachment 2):

- Lower Ground Floor Plan (Drawing No. DA-AR-20LG, Dated 20 November 2020)
- Basement 01 (Drawing No. DA-AR-20B1, Dated 17 November 2020)
- Basement 02 (Drawing No. DA-AR-20B2, Dated 17 November 2020)
- Basement 03 (Drawing No. DA-AR-20B3, Dated 17 November 2020)
- Basement 04 (Drawing No. DA-AR-20B4, Dated 17 November 2020)
- Ramp Sections (Drawing No. SK-AR-4102, Dated 17 November 2020)

7.1 Shared Zone

The project has been designed to provide high pedestrian amenity therefore pedestrian connectivity and safety are key considerations in the design. The following safety features is proposed to ensure the safety of the pedestrians and minimise potential conflict between the user:

- The implementation of a low speed limit (10km/h) along the Scott Street access. The shared zone will be reinforced with appropriate line marking and signage to raise awareness to all users.
- The trees and garden beds along either side of the traffic aisle acts as a physical barrier between the pedestrians and vehicles. The barrier provides a safe area for pedestrians to wait whilst vehicles are utilising the Scott Street access, minimising potential conflict between users.
- The pavement design of the traffic aisle and pedestrianised area has been designed differently to clearly delineate the extents of each area. This is also reinforced by the presence of the trees and garden beds.

It is noted that the anticipated traffic activity along the Scott Street access is considered to be low for a typical shared zone environment, peaking at approximately 160 vehicular movements throughout the morning peak. This equates to a vehicle every 22 seconds. However, the bunching of vehicles due to the surrounding traffic signals will effectively group vehicles and provide longer gaps.

Therefore, the relatively low volume of vehicles utilising the shared zone and the implementation of the safety measured mentioned above will minimise potential conflict between pedestrians and vehicles.

7.2 Vehicular Access

The proposed access ramp and internal ramps have been assessed in relation to its width and relevant grades. The maximum grade for the proposed ramp is to be 1 in 5 with 1 in 8 transitional grades provided for a minimum 2.0m on both the sag and summit of the proposed ramp. A vertical clearance assessment has been undertaken along the ramps using a typical B99 vehicle which indicates that there are no issues with headroom clearance or underbody scraping. The proposed access ramp is to maintain a minimum 2.2m height clearance (additional clearance may be required at crests/sags along the ramp subject to further assessment in the detailed design stage).

The proposed internal ramps have been designed to provide 5.6m wide roadway with 300mm kerb extensions provided on either side. A swept path assessment has been undertaken using a typical B85 and B99 vehicle which indicates that the proposed ramp design has the ability to accommodate two-way traffic flow.

7.3 Sight Distance

The sight distance requirements are outlined in Section 3.2 of AS2890.1 and are prescribed on the basis of the posted speed limit of 85th percentile vehicle speeds along the frontage road.

Scott Street has a posted speed limit of 50km/h, which requires a desirable visibility distance of 69 metres and a minimum stopping sight distance of 45 metres. The proposed driveway is located on a straight/flat section of the road where sufficient sight distance is provided.

The proposed access arrangement also allows for all vehicles to enter and exit in a forward direction, therefore minimising potential conflict points and maintaining the overall safety of the road network.

7.4 Car Park Arrangement

7.4.1 Typical Requirements

The car parking arrangements have been assessed against the requirements of AS2890.1:2004, with reference to Class 1A (residential/employees) and Class 2 (long-term city and town centre parking) facilities:

Class 1A (residential/employee) facilities:

- Car Spaces: 2.4m x 5.4m
- Aisle Width: 5.8m (double-sided aisles)
- Aisle Width: 6.1m (single-sided aisles)

Class 2 (long term city & town centre parking) facilities:

- Car Spaces: 2.5m x 5.4m
- Aisle Width: 5.8m (double-sided aisles)
- Aisle Width: 6.1m (single-sided aisles)

Small Car Space

- Car Spaces: 2.3m x 5.0m
- Aisle Width: 5.8m (double-sided aisles)
- Aisle Width: 6.1m (single-sided aisles)

All parking spaces have been individually assessed and found to be compliant with the minimum requirements of AS2890.1. All spaces are to meet the clearance requirements (door opening, entry flanges, column locations) of the parking space envelope requirements provided in Figure 5.2 of AS2890.1. The traffic aisles servicing the parking spaces have been measured to be a minimum 6.2m in width which complies with the minimum requirement.

7.4.2 Accessible & Adaptable Parking

All accessible parking spaces have been individually assessed against the requirements of AS2890.6. The parking spaces are to be designed based on the following dimensions:

- Accessible Spaces: 2.4m x 5.4m
- Adjacent Shared Bay: 2.4m x 5.4m

All accessible spaces and shared bays have been individually assessed and found to be compliant with the minimum requirements of AS2890.6, with relevant pavement markings and bollards. A minimum height clearance of 2.5m is to be maintained directly above the above mentioned spaces and 2.2m throughout the path of travel.

7.4.3 Headroom Clearance

The following are the requirements stipulated in the Australian Standards:

- Minimum 2.2m above all general spaces;
- Minimum 2.5m above all accessible spaces and adjacent shared bays;

The proposed car park is to provide the minimum height clearance as per the requirements stipulated in the Australian Standards.

7.4.4 Bicycle Parking

Approved bicycle parking devices (BPD's) shall be installed as per the following requirements of AS2890.3:2015:

- Horizontal Bicycle Parking: 1.8m x 0.5m
- Vertical Bicycle Parking 1.2m x 0.5m
- Access Aisle: 1.5m

All bicycle parking spaces have been individually assessed and found to be compliant with the minimum requirements of AS2890.3. The bicycle parking arrangement has taken into consideration that a minimum 20% of the total provision is to be horizontal bicycle parking spaces. The parking provision has been assessed and found to meet the minimum requirement stipulated in AS2890.3.

7.4.5 Service Vehicle Parking

The loading dock has been designed to accommodate up to a Medium Rigidi Vehicle (MRV) and provisions for up to two (2) MRVs and two (2) Small Rigid Vehicles (SRV). The loading dock has been provided with a 6.6m wide access and a 4.8m wide roadway.

It is noted that the swept path assessment indicates that the heavy vehicles are provided with limited room to manoeuvre into its dedicated parking spaces. Therefore, the proposal involves the provision of a turn table to assist heavy vehicles in entering/exiting the parking spaces in a safe and efficient manner. The assessment indicates that the heavy vehicles are able to enter and exit the parking spaces with the assistance of the turn table.

The operation of the loading dock will require an appropriate Loading Dock Management Plan to effectively manage the ingress and egress movements of the heavy vehicles.

8. Conclusion

ptc. has been engaged by Built to prepare a Traffic Impact Assessment to accompany a Development Application to Liverpool City Council for the construction of a 22-storey commercial office tower and a 9-storey boarding house operated as a co-living facility. The development forms part of Phase B & C of the Liverpool Civic Place project and is located at 40-42 Scott Street, Liverpool.

The proposal involves the following key components:

- Commercial Building – A building accommodating 22 storeys and 21,869m^2 GFA for the purpose of commercial office premises.
- Co-Living Building – A building accommodating 9 storeys and 84 rooms for residential purposes.
- A four-level basement car park to accommodate parking for the commercial office component of the development.

The following findings have been identified during the course of study:

- The peak hour traffic activity associated with the proposal will be accommodated within the road network having regard for the separation of movements between Scott Street and Terminus Street and the future widening of Terminus Street.
- The access from Scott Street will provide access for both the car park serving the administration building and the car park serving the commercial building.
- The access from Scott Street will also provide access to the loading dock serving the commercial component of the development. The loading dock has been designed and assessed to accommodate up to an 8.8m long MRV and is to be restricted to allow up to a MRV.

Attachment 1 SIDRA Results

MOVEMENT SUMMARY

Site: 101 [Macquarie & Memorial & Scott AM Existing]

Network: N101A [Existing - AM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
4a	L1	239	2.1	239	2.1	0.347	10.1	LOS A	3.1	22.1	0.22	0.53	0.22	20.1
5	T1	121	3.3	121	3.3	0.347	16.8	LOS B	3.1	22.1	0.42	0.43	0.42	35.3
6	R2	18	0.0	18	0.0	0.347	23.2	LOS B	3.1	22.1	0.45	0.41	0.45	30.2
Approach		378	2.4	378	2.4	0.347	12.9	LOS A	3.1	22.1	0.30	0.49	0.30	30.0
North: Macquarie St (N)														
7	L2	13	0.0	13	0.0	0.312	57.3	LOS E	3.2	23.3	0.94	0.68	0.94	17.9
9a	R1	32	3.1	32	3.1	0.312	57.5	LOS E	3.2	23.3	0.97	0.74	0.97	17.8
9	R2	24	4.2	24	4.2	0.312	59.4	LOS E	3.2	23.3	0.97	0.74	0.97	25.8
Approach		69	2.9	69	2.9	0.312	58.1	LOS E	3.2	23.3	0.96	0.73	0.96	21.2
West: Memorial Ave (W)														
10	L2	57	1.8	57	1.8	0.089	32.3	LOS C	2.2	15.7	0.70	0.70	0.70	32.0
11	T1	61	9.9	61	9.9	0.280	44.6	LOS D	4.1	31.5	0.89	0.72	0.89	22.3
12b	R3	21	9.5	21	9.5	0.280	50.0	LOS D	4.1	31.5	0.89	0.72	0.89	22.3
Approach		139	6.5	139	6.5	0.280	40.4	LOS C	4.1	31.5	0.81	0.71	0.81	27.1
SouthWest: Macquarie St (SW)														
30b	L3	253	0.8	253	0.8	0.350	26.3	LOS B	10.7	75.4	0.78	0.80	0.78	30.9
30a	L1	208	0.5	208	0.5	0.240	23.1	LOS B	8.5	59.5	0.76	0.75	0.76	28.6
32a	R1	107	2.0	107	2.0	0.103	10.7	LOS A	1.4	9.8	0.24	0.57	0.24	17.5
Approach		568	0.9	568	0.9	0.350	22.2	LOS B	10.7	75.4	0.67	0.73	0.67	29.2
All Vehicles		1154	2.2	1154	2.2	0.350	23.5	LOS B	10.7	75.4	0.58	0.65	0.58	28.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
P8	SouthWest Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		211	41.3	LOS E			0.81	0.81

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

MOVEMENT SUMMARY

Site: 3068 [Macquarie & Pirie AM Existing]

Network: N101A [Existing - AM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (SE)														
21	L2	412	4.9	412	4.9	0.148	5.7	LOS A	1.5	10.6	0.12	0.56	0.12	43.1
23	R2	205	0.5	205	0.5	0.369	8.7	LOS A	1.7	12.2	0.15	0.56	0.15	18.0
Approach		617	3.4	617	3.4	0.369	6.7	LOS A	1.7	12.2	0.13	0.56	0.13	40.0
NorthEast: Macquarie St (NE)														
24	L2	145	0.7	145	0.7	0.172	37.0	LOS C	7.6	53.5	0.97	0.82	0.97	7.2
25	T1	149	4.7	149	4.7	0.315	52.7	LOS D	4.2	30.1	0.97	0.75	0.97	22.3
Approach		294	2.7	294	2.7	0.315	45.0	LOS D	7.6	53.5	0.97	0.78	0.97	17.7
SouthWest: Macquarie St (SW)														
31	T1	378	1.3	378	1.3	0.375	16.2	LOS B	11.1	78.7	0.58	0.52	0.58	34.6
32	R2	247	2.8	247	2.8	0.375	27.4	LOS B	11.1	78.7	0.68	0.71	0.68	29.2
Approach		625	1.9	625	1.9	0.375	20.6	LOS B	11.1	78.7	0.62	0.59	0.62	32.2
All Vehicles		1536	2.7	1536	2.7	0.375	19.7	LOS B	11.1	78.7	0.49	0.61	0.49	30.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P5	SouthEast Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P6	NorthEast Full Crossing	53	41.8	LOS E	0.1	0.1	0.84	0.84
All Pedestrians		105	48.0	LOS E			0.89	0.89

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

MOVEMENT SUMMARY

Site: 1484 [Terminus & Pirie AM Existing]

Network: N101A [Existing - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (S)														
1	L2	106	4.7	106	4.7	0.350	49.6	LOS D	6.4	46.3	0.91	0.77	0.91	31.0
2	T1	104	1.0	104	1.0	0.350	51.5	LOS D	6.4	46.3	0.95	0.75	0.95	20.9
Approach		210	2.9	210	2.9	0.350	50.5	LOS D	6.4	46.3	0.93	0.76	0.93	26.7
NorthEast: Terminus St exit (E)														
4	L2	88	2.3	88	2.3	0.207	10.6	LOS A	2.5	18.7	0.20	0.35	0.20	45.5
5	T1	383	7.3	383	7.3	0.207	3.6	LOS A	2.5	18.7	0.15	0.19	0.15	54.5
6	R2	512	4.1	512	4.1	0.549	32.0	LOS C	10.0	72.2	0.98	0.83	0.98	18.2
Approach		983	5.2	983	5.2	0.549	19.0	LOS B	10.0	72.2	0.59	0.54	0.59	35.4
NorthWest: Pirie St (N)														
7	L2	320	2.8	320	2.8	0.182	26.0	LOS B	9.1	64.9	0.65	0.72	0.65	7.7
8	T1	31	3.2	31	3.2	0.130	57.2	LOS E	1.8	13.0	1.00	0.73	1.00	20.9
9	R2	7	0.0	7	0.0	0.063	65.6	LOS E	0.4	2.9	1.00	0.67	1.00	20.1
Approach		358	2.8	358	2.8	0.182	29.5	LOS C	9.1	64.9	0.69	0.72	0.69	11.3
SouthWest: Terminus St (W)														
10	L2	10	0.0	10	0.0	0.644	35.4	LOS C	23.5	171.4	0.86	0.76	0.86	30.7
11	T1	906	5.1	906	5.1	0.644	28.9	LOS C	23.5	171.4	0.83	0.73	0.83	31.2
12	R2	175	0.0	175	0.0	0.870	72.5	LOS F	11.5	80.2	1.00	0.95	1.34	26.1
Approach		1091	4.2	1091	4.2	0.870	36.0	LOS C	23.5	171.4	0.86	0.77	0.91	29.6
All Vehicles		2642	4.3	2642	4.3	0.870	29.9	LOS C	23.5	171.4	0.74	0.68	0.76	29.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	SouthEast Full Crossing	53	11.7	LOS B	0.1	0.1	0.44	0.44
P3	NorthWest Full Crossing	53	30.9	LOS D	0.1	0.1	0.72	0.72
P4	SouthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	32.3	LOS D			0.70	0.70

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

MOVEMENT SUMMARY

Site: 101 [Terminus & Speed & Newbridge AM Existing]

Network: N101A [Existing - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Speed St (S)														
1	L2	17	0.0	17	0.0	0.042	44.3	LOS D	0.8	5.4	0.82	0.68	0.82	7.9
3	R2	328	1.9	328	1.9	0.827	59.0	LOS E	20.1	142.7	1.00	0.92	1.15	22.2
Approach		345	1.8	345	1.8	0.827	58.3	LOS E	20.1	142.7	0.99	0.91	1.14	21.8
East: Newbridge Rd (E)														
4	L2	1006	3.3	1006	3.3	0.816	20.0	LOS B	41.5	298.8	0.78	0.86	0.78	37.6
5	T1	977	4.0	977	4.0	0.756	13.2	LOS A	36.8	266.4	0.71	0.67	0.71	42.0
Approach		1983	3.7	1983	3.7	0.816	16.6	LOS B	41.5	298.8	0.75	0.76	0.75	39.5
North: Terminus St (N)														
7	L2	22	71.4	22	71.4	0.359	70.7	LOS F	1.4	15.9	1.00	0.72	1.00	18.6
Approach		22	71.4	22	71.4	0.359	70.7	LOS F	1.4	15.9	1.00	0.72	1.00	18.6
West: Terminus St approach (W)														
10	L2	158	1.9	158	1.9	0.086	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	43.2
11	T1	1145	4.9	1145	4.9	0.533	10.4	LOS A	14.1	102.8	0.43	0.38	0.43	48.4
Approach		1303	4.6	1303	4.6	0.533	9.8	LOS A	14.1	102.8	0.37	0.40	0.37	48.1
All Vehicles		3654	4.2	3654	4.2	0.827	18.5	LOS B	41.5	298.8	0.64	0.65	0.65	39.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: 101 [Terminus & Scott AM Existing]

Network: N101A [Existing - AM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Terminus St (S)														
1	L2	34	0.0	34	0.0	0.018	4.7	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
3	R2	131	2.4	131	2.4	0.106	5.5	LOS A	0.4	2.8	0.26	0.60	0.26	48.3
Approach		164	1.9	164	1.9	0.106	5.3	LOS A	0.4	2.8	0.21	0.60	0.21	47.4
West: Scott St(W)														
11	T1	178	4.1	178	4.1	0.094	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	24	65.2	24	65.2	0.019	4.2	LOS A	0.0	0.0	0.00	0.55	0.00	30.4
Approach		202	11.5	202	11.5	0.094	0.5	NA	0.0	0.0	0.00	0.07	0.00	49.4
All Vehicles		366	7.2	366	7.2	0.106	2.7	NA	0.4	2.8	0.09	0.30	0.09	48.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [George & Scott AM Existing]

Network: N101A [Existing - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
5	T1	30	0.0	30	0.0	0.021	24.8	LOS B	0.6	4.0	0.70	0.50	0.70	8.8
Approach		30	0.0	30	0.0	0.021	24.8	LOS B	0.6	4.0	0.70	0.50	0.70	8.8
North: George St (N)														
7	L2	31	45.4	31	45.4	0.056	27.8	LOS B	1.1	10.8	0.65	0.65	0.65	25.1
9	R2	344	2.9	344	2.9	0.241	30.0	LOS C	6.7	48.0	0.71	0.75	0.71	24.2
Approach		375	6.4	375	6.4	0.241	29.8	LOS C	6.7	48.0	0.71	0.74	0.71	24.3
West: Scott St (W)														
11	T1	171	4.2	171	4.2	0.240	23.5	LOS B	5.3	38.4	0.57	0.47	0.57	11.1
Approach		171	4.2	171	4.2	0.240	23.5	LOS B	5.3	38.4	0.57	0.47	0.57	11.1
All Vehicles		576	5.4	576	5.4	0.241	27.7	LOS B	6.7	48.0	0.66	0.65	0.66	21.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	17.6	LOS B	0.1	0.1	0.54	0.54
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	42.1	LOS E			0.82	0.82

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

MOVEMENT SUMMARY

Site: 101 [Macquarie & Memorial & Scott PM Existing]

Network: N101B [Existing - PM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
4a	L1	489	1.6	489	1.6	0.647	4.9	LOS A	2.7	18.9	0.10	0.52	0.10	28.8
5	T1	175	0.6	175	0.6	0.285	9.8	LOS A	3.9	27.5	0.32	0.35	0.32	40.1
6	R2	44	6.8	44	6.8	0.285	14.4	LOS A	3.9	27.5	0.32	0.35	0.32	34.4
Approach		708	1.7	708	1.7	0.647	6.7	LOS A	3.9	27.5	0.17	0.47	0.17	35.6
North: Macquarie St (N)														
7	L2	20	5.0	20	5.0	0.112	57.7	LOS E	1.1	8.0	0.94	0.70	0.94	17.8
9a	R1	72	1.4	72	1.4	0.677	60.7	LOS E	7.0	49.4	1.00	0.85	1.08	17.3
9	R2	46	0.0	46	0.0	0.677	62.6	LOS E	7.0	49.4	1.00	0.85	1.08	25.3
Approach		138	1.4	138	1.4	0.677	60.9	LOS E	7.0	49.4	0.99	0.82	1.06	20.6
West: Memorial Ave (W)														
10	L2	36	0.0	36	0.0	0.033	15.2	LOS B	0.9	6.0	0.44	0.63	0.44	37.7
11	T1	50	2.1	50	2.1	0.097	20.8	LOS B	2.1	14.9	0.61	0.53	0.61	31.5
12b	R3	12	0.0	12	0.0	0.097	26.2	LOS B	2.1	14.9	0.61	0.53	0.61	31.5
Approach		98	1.1	98	1.1	0.097	19.4	LOS B	2.1	14.9	0.55	0.57	0.55	34.5
SouthWest: Macquarie St (SW)														
30b	L3	144	2.1	144	2.1	0.291	40.6	LOS C	7.0	49.6	0.87	0.79	0.87	25.6
30a	L1	119	0.8	119	0.8	0.203	37.3	LOS C	5.6	39.4	0.85	0.76	0.85	24.0
32a	R1	106	2.8	106	2.8	0.183	5.7	LOS A	0.3	2.4	0.06	0.51	0.06	25.1
Approach		369	1.9	369	1.9	0.291	29.5	LOS C	7.0	49.6	0.63	0.70	0.63	24.8
All Vehicles		1313	1.7	1313	1.7	0.677	19.7	LOS B	7.0	49.6	0.42	0.58	0.42	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	22.9	LOS C	0.1	0.1	0.62	0.62
P4	West Full Crossing	53	36.1	LOS D	0.1	0.1	0.78	0.78
P8	SouthWest Full Crossing	53	26.7	LOS C	0.1	0.1	0.67	0.67
All Pedestrians		211	35.0	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.

MOVEMENT SUMMARY

Site: 3068 [Macquarie & Pirie PM Existing]

Network: N101B [Existing - PM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (SE)														
21	L2	492	1.8	492	1.8	0.187	7.0	LOS A	3.8	27.1	0.17	0.57	0.17	42.0
23	R2	152	2.0	152	2.0	0.415	36.2	LOS C	6.2	44.3	0.73	0.73	0.73	6.0
Approach		644	1.9	644	1.9	0.415	13.9	LOS A	6.2	44.3	0.30	0.61	0.30	34.5
NorthEast: Macquarie St (NE)														
24	L2	340	0.9	340	0.9	0.547	36.3	LOS C	16.2	114.2	0.91	0.83	0.91	7.3
25	T1	263	1.9	263	1.9	0.420	46.8	LOS D	7.1	50.6	0.96	0.77	0.96	23.8
Approach		603	1.3	603	1.3	0.547	40.9	LOS C	16.2	114.2	0.93	0.81	0.93	17.5
SouthWest: Macquarie St (SW)														
31	T1	196	1.5	196	1.5	0.416	12.2	LOS A	11.1	77.7	0.48	0.45	0.48	36.7
32	R2	419	0.2	419	0.2	0.416	25.2	LOS B	11.1	77.7	0.65	0.71	0.65	30.2
Approach		615	0.7	615	0.7	0.416	21.0	LOS B	11.1	77.7	0.60	0.63	0.60	32.0
All Vehicles		1862	1.3	1862	1.3	0.547	25.0	LOS B	16.2	114.2	0.60	0.68	0.60	27.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P5	SouthEast Full Crossing	53	51.5	LOS E	0.2	0.2	0.93	0.93
P6	NorthEast Full Crossing	53	52.4	LOS E	0.2	0.2	0.94	0.94
All Pedestrians		105	51.9	LOS E			0.93	0.93

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

MOVEMENT SUMMARY

Site: 1484 [Terminus & Pirie PM Existing]

Network: N101B [Existing - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (S)														
1	L2	164	0.6	164	0.6	0.367	43.9	LOS D	8.4	58.8	0.87	0.78	0.87	32.5
2	T1	105	0.0	105	0.0	0.367	51.0	LOS D	8.4	58.8	0.95	0.75	0.95	21.1
Approach		269	0.4	269	0.4	0.367	46.7	LOS D	8.4	58.8	0.90	0.77	0.90	28.7
NorthEast: Terminus St exit (E)														
4	L2	54	0.0	54	0.0	0.245	6.4	LOS A	0.6	4.2	0.04	0.15	0.04	50.1
5	T1	495	6.1	495	6.1	0.245	0.7	LOS A	0.6	4.2	0.03	0.08	0.03	58.4
6	R2	550	2.0	550	2.0	0.451	24.4	LOS B	8.6	61.0	0.86	0.80	0.86	21.8
Approach		1099	3.7	1099	3.7	0.451	12.8	LOS A	8.6	61.0	0.45	0.44	0.45	41.2
NorthWest: Pirie St (N)														
7	L2	631	1.0	631	1.0	0.327	19.2	LOS B	11.0	78.0	0.58	0.72	0.58	9.9
8	T1	117	0.0	117	0.0	0.450	52.9	LOS D	6.2	43.6	0.93	0.74	0.93	21.9
9	R2	16	0.0	16	0.0	0.162	65.0	LOS E	0.9	6.5	0.96	0.69	0.96	20.2
Approach		764	0.8	764	0.8	0.450	25.3	LOS B	11.0	78.0	0.64	0.72	0.64	15.3
SouthWest: Terminus St (W)														
10	L2	16	6.3	16	6.3	0.438	39.1	LOS C	12.4	91.4	0.83	0.71	0.83	28.9
11	T1	531	5.8	531	5.8	0.438	33.5	LOS C	12.5	91.7	0.83	0.71	0.83	29.0
12	R2	87	0.0	87	0.0	0.402	60.0	LOS E	4.9	34.1	0.97	0.77	0.97	28.6
Approach		634	5.1	634	5.1	0.438	37.3	LOS C	12.5	91.7	0.85	0.72	0.85	28.9
All Vehicles		2766	2.9	2766	2.9	0.451	25.2	LOS B	12.5	91.7	0.64	0.62	0.64	30.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	SouthEast Full Crossing	53	12.6	LOS B	0.1	0.1	0.46	0.46
P3	NorthWest Full Crossing	53	38.5	LOS D	0.1	0.1	0.80	0.80
P4	SouthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	35.1	LOS D			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.

MOVEMENT SUMMARY

Site: 101 [Terminus & Speed & Newbridge PM Existing]

Network: N101B [Existing - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Speed St (S)														
1	L2	22	0.0	22	0.0	0.032	29.5	LOS C	0.8	5.6	0.66	0.66	0.66	11.0
3	R2	638	1.7	638	1.7	0.927	62.8	LOS E	44.6	316.8	1.00	1.01	1.25	21.4
Approach		660	1.6	660	1.6	0.927	61.7	LOS E	44.6	316.8	0.99	1.00	1.23	21.3
East: Newbridge Rd (E)														
4	L2	676	4.7	676	4.7	0.934	54.8	LOS D	61.5	447.0	1.00	1.03	1.21	23.9
5	T1	1140	4.1	1140	4.1	0.934	48.4	LOS D	63.5	460.0	1.00	1.07	1.20	23.1
Approach		1816	4.3	1816	4.3	0.934	50.8	LOS D	63.5	460.0	1.00	1.06	1.20	23.5
North: Terminus St (N)														
7	L2	28	55.6	28	55.6	0.427	70.7	LOS F	1.8	18.7	1.00	0.73	1.00	18.6
Approach		28	55.6	28	55.6	0.427	70.7	LOS F	1.8	18.7	1.00	0.73	1.00	18.6
West: Terminus St approach (W)														
10	L2	116	1.8	116	1.8	0.063	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	43.2
11	T1	1054	3.8	1054	3.8	0.697	29.4	LOS C	25.7	186.0	0.84	0.75	0.84	35.8
Approach		1170	3.6	1170	3.6	0.697	27.1	LOS B	25.7	186.0	0.76	0.73	0.76	36.0
All Vehicles		3674	4.0	3674	4.0	0.934	45.4	LOS D	63.5	460.0	0.92	0.94	1.07	26.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: 101 [Terminus & Scott PM Existing]

Network: N101B [Existing - PM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Terminus St (S)														
1	L2	49	4.3	49	4.3	0.027	4.7	LOS A	0.0	0.0	0.00	0.56	0.00	31.2
3	R2	67	0.0	67	0.0	0.054	5.5	LOS A	0.2	1.4	0.25	0.60	0.25	48.5
Approach		117	1.8	117	1.8	0.054	5.2	LOS A	0.2	1.4	0.15	0.58	0.15	46.0
West: Scott St(W)														
11	T1	182	2.9	182	2.9	0.095	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	31	58.6	31	58.6	0.023	4.2	LOS A	0.0	0.0	0.00	0.55	0.00	30.4
Approach		213	10.9	213	10.9	0.095	0.6	NA	0.0	0.0	0.00	0.08	0.00	49.3
All Vehicles		329	7.7	329	7.7	0.095	2.2	NA	0.2	1.4	0.05	0.26	0.05	48.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [George & Scott PM Existing]

Network: N101B [Existing - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
5	T1	52	3.8	52	3.8	0.063	39.9	LOS C	1.2	8.6	0.82	0.60	0.82	5.8
Approach		52	3.8	52	3.8	0.063	39.9	LOS C	1.2	8.8	0.82	0.60	0.82	5.8
North: George St (N)														
7	L2	35	45.8	35	45.8	0.045	16.8	LOS B	0.9	9.0	0.48	0.60	0.48	29.5
9	R2	693	1.3	693	1.3	0.342	19.7	LOS B	11.1	78.3	0.59	0.74	0.59	28.0
Approach		728	3.4	728	3.4	0.342	19.6	LOS B	11.1	78.3	0.59	0.73	0.59	28.0
West: Scott St (W)														
11	T1	141	2.2	141	2.2	0.339	43.0	LOS D	7.3	52.2	0.93	0.75	0.93	6.7
Approach		141	2.2	141	2.2	0.339	43.0	LOS D	7.3	52.2	0.93	0.75	0.93	6.7
All Vehicles		921	3.3	921	3.3	0.342	24.3	LOS B	11.1	78.3	0.65	0.73	0.65	24.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	29.5	LOS C	0.1	0.1	0.70	0.70
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	46.0	LOS E			0.87	0.87

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

MOVEMENT SUMMARY

Site: 3068 [Macquarie & Pirie AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (SE)														
21	L2	434	4.9	434	4.9	0.156	6.2	LOS A	2.6	19.3	0.17	0.57	0.17	42.6
23	R2	216	0.5	216	0.5	0.420	33.9	LOS C	8.0	56.3	0.68	0.73	0.68	6.3
Approach		649	3.4	649	3.4	0.420	15.4	LOS B	8.0	56.3	0.34	0.63	0.34	32.2
NorthEast: Macquarie St (NE)														
24	L2	153	0.7	153	0.7	0.177	35.8	LOS C	8.0	56.0	0.96	0.82	0.96	7.3
25	T1	162	4.5	162	4.5	0.342	53.0	LOS D	4.5	33.0	0.97	0.76	0.97	22.2
Approach		315	2.7	315	2.7	0.342	44.7	LOS D	8.0	56.0	0.97	0.79	0.97	17.9
SouthWest: Macquarie St (SW)														
31	T1	398	1.3	398	1.3	0.414	17.6	LOS B	12.1	85.8	0.62	0.55	0.62	33.8
32	R2	260	2.8	260	2.8	0.414	30.9	LOS C	12.1	85.8	0.75	0.75	0.75	27.6
Approach		658	1.9	658	1.9	0.414	22.9	LOS B	12.1	85.8	0.67	0.63	0.67	31.1
All Vehicles		1622	2.7	1622	2.7	0.420	24.1	LOS B	12.1	85.8	0.59	0.66	0.59	28.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P5	SouthEast Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P6	NorthEast Full Crossing	53	40.1	LOS E	0.1	0.1	0.82	0.82
All Pedestrians		105	47.2	LOS E			0.89	0.89

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

MOVEMENT SUMMARY

Site: [Scott Access AM Peak Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SCOTT ST ACCESS														
1	L2	5	0.0	5	0.0	0.005	0.4	LOS A	0.0	0.1	0.19	0.06	0.19	9.7
Approach		5	0.0	5	0.0	0.005	0.4	LOS A	0.0	0.1	0.19	0.06	0.19	9.7
East: SCOTT ST														
4	L2	166	0.0	166	0.0	0.149	6.9	LOS A	0.0	0.0	0.00	0.66	0.00	22.5
5	T1	393	2.4	393	2.4	0.149	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	38.1
Approach		559	1.7	559	1.7	0.149	2.0	NA	0.0	0.0	0.00	0.32	0.00	30.1
West: SCOTT ST														
11	T1	191	4.4	191	4.4	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		191	4.4	191	4.4	0.057	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		755	2.4	755	2.4	0.149	1.5	NA	0.0	0.1	0.00	0.24	0.00	32.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [Macquarie & Memorial & Scott AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
4a	L1	257	2.0	257	2.0	0.374	14.1	LOS A	5.7	40.7	0.38	0.59	0.38	10.6
5	T1	127	3.3	127	3.3	0.374	23.7	LOS B	5.7	40.7	0.57	0.53	0.57	31.0
6	R2	19	0.0	19	0.0	0.374	29.3	LOS C	4.3	30.9	0.60	0.52	0.60	26.6
Approach		403	2.3	403	2.3	0.374	17.9	LOS B	5.7	40.7	0.45	0.56	0.45	24.0
North: Macquarie St (N)														
7	L2	14	0.0	14	0.0	0.074	57.2	LOS E	0.7	5.2	0.94	0.68	0.94	17.9
9a	R1	34	3.1	34	3.1	0.320	57.6	LOS E	3.3	24.0	0.97	0.75	0.97	17.8
9	R2	25	4.2	25	4.2	0.320	59.4	LOS E	3.3	24.0	0.97	0.75	0.97	25.8
Approach		73	2.9	73	2.9	0.320	58.2	LOS E	3.3	24.0	0.96	0.73	0.96	21.2
West: Memorial Ave (W)														
10	L2	60	1.8	60	1.8	0.238	48.0	LOS D	4.3	31.2	0.88	0.74	0.88	28.5
11	T1	64	9.8	64	9.8	0.238	45.5	LOS D	4.3	31.2	0.89	0.73	0.89	21.8
12b	R3	22	9.5	22	9.5	0.238	52.4	LOS D	3.0	23.1	0.90	0.72	0.90	21.6
Approach		146	6.5	146	6.5	0.238	47.6	LOS D	4.3	31.2	0.89	0.73	0.89	25.2
SouthWest: Macquarie St (SW)														
30b	L3	266	0.8	266	0.8	0.379	27.0	LOS B	11.5	81.3	0.80	0.80	0.80	30.6
30a	L1	219	0.5	219	0.5	0.273	23.7	LOS B	9.1	64.2	0.77	0.76	0.77	28.3
32a	R1	113	1.9	113	1.9	0.109	12.3	LOS A	1.7	12.4	0.29	0.58	0.29	16.0
Approach		598	0.9	598	0.9	0.379	23.0	LOS B	11.5	81.3	0.69	0.74	0.69	28.8
All Vehicles		1220	2.2	1220	2.2	0.379	26.4	LOS B	11.5	81.3	0.65	0.68	0.65	26.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	44.3	LOS E	0.2	0.2	0.86	0.86
P4	West Full Crossing	53	17.1	LOS B	0.1	0.1	0.53	0.53
P8	SouthWest Full Crossing	53	49.6	LOS E	0.2	0.2	0.91	0.91
All Pedestrians		211	41.3	LOS E			0.81	0.81

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

MOVEMENT SUMMARY

Site: 101 [George & Scott AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
5	T1	30	0.0	30	0.0	0.031	38.3	LOS C	0.7	5.2	0.89	0.63	0.89	6.0
Approach		30	0.0	30	0.0	0.031	38.3	LOS C	0.7	5.2	0.89	0.63	0.89	6.0
North: George St (N)														
7	L2	31	45.4	31	45.4	0.044	19.8	LOS B	0.9	8.8	0.53	0.61	0.53	28.1
9	R2	510	2.0	510	2.0	0.279	22.0	LOS B	8.5	60.8	0.62	0.72	0.62	27.1
Approach		541	4.4	541	4.4	0.279	21.9	LOS B	8.5	60.8	0.61	0.71	0.61	27.1
West: Scott St (W)														
11	T1	171	4.2	171	4.2	0.275	39.9	LOS C	6.7	48.8	0.91	0.73	0.91	4.4
Approach		171	4.2	171	4.2	0.275	39.9	LOS C	6.7	48.8	0.91	0.73	0.91	4.4
All Vehicles		742	4.2	742	4.2	0.279	26.7	LOS B	8.5	60.8	0.69	0.71	0.69	22.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	25.4	LOS C	0.1	0.1	0.65	0.65
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	44.6	LOS E			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.

MOVEMENT SUMMARY

Site: 101 [Terminus & Scott AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName														
1	L2	34	0.0	34	0.0	0.018	4.7	LOS A	0.0	0.0	0.00	0.57	0.00	31.2
3	R2	142	2.2	142	2.2	0.115	5.6	LOS A	0.5	3.4	0.27	0.60	0.27	48.3
Approach		176	1.8	176	1.8	0.115	5.4	LOS A	0.5	3.4	0.22	0.59	0.22	47.4
West: Scott St(W)														
11	T1	178	4.1	178	4.1	0.108	0.1	LOS A	0.0	0.0	0.00	0.10	0.00	51.4
12	R2	16	100.0	16	100.0	0.108	4.3	LOS A	0.0	0.0	0.00	0.10	0.00	46.8
Approach		194	12.0	194	12.0	0.108	0.7	NA	0.0	0.0	0.00	0.10	0.00	51.4
All Vehicles		369	7.1	369	7.1	0.115	2.8	NA	0.5	3.4	0.10	0.33	0.10	49.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [Terminus & Speed & Newbridge AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Speed St (S)														
1	L2	17	0.0	17	0.0	0.042	44.3	LOS D	0.8	5.4	0.82	0.68	0.82	7.9
3	R2	328	1.9	328	1.9	0.827	59.0	LOS E	20.1	142.7	1.00	0.93	1.15	22.4
Approach		345	1.8	345	1.8	0.827	58.3	LOS E	20.1	142.7	0.99	0.91	1.14	22.0
East: Newbridge Rd (E)														
4	L2	1006	3.3	1006	3.3	0.816	20.0	LOS B	41.5	298.8	0.78	0.86	0.78	37.6
5	T1	977	4.0	977	4.0	0.378	8.5	LOS A	11.9	86.5	0.46	0.41	0.46	47.0
Approach		1983	3.7	1983	3.7	0.816	14.3	LOS A	41.5	298.8	0.62	0.64	0.62	41.3
North: Terminus St (N)														
7	L2	22	71.4	22	71.4	0.359	68.6	LOS E	1.4	15.8	1.00	0.72	1.00	18.9
Approach		22	71.4	22	71.4	0.359	68.6	LOS E	1.4	15.8	1.00	0.72	1.00	18.9
West: Terminus St (W)														
10	L2	169	1.8	169	1.8	0.092	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	41.6
11	T1	1149	4.9	1149	4.9	0.349	6.4	LOS A	6.7	49.0	0.26	0.22	0.26	52.0
Approach		1318	4.5	1318	4.5	0.349	6.3	LOS A	6.7	49.0	0.22	0.26	0.22	51.5
All Vehicles		3669	4.2	3669	4.2	0.827	15.9	LOS B	41.5	298.8	0.52	0.53	0.53	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: 101 [Terminus Access AM Scenario 1 (Left-In Left-Out)]

Network: N102A [Scenario 1 - AM Peak]

Terminus & Access AM
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
NorthEast: Terminus St E														
5	T1	994	3.9	994	3.9	0.325	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		994	3.9	994	3.9	0.325	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthWest: Access														
7	L2	16	0.0	16	0.0	0.016	1.4	LOS A	0.1	0.5	0.38	0.22	0.38	9.9
Approach		16	0.0	16	0.0	0.016	1.4	LOS A	0.1	0.5	0.38	0.22	0.38	9.9
SouthWest: Terminus St W														
10	L2	106	0.0	106	0.0	0.238	6.6	LOS A	0.0	0.0	0.00	0.32	0.00	53.0
11	T1	1238	4.5	1238	4.5	0.238	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	52.2
Approach		1344	4.1	1344	4.1	0.238	0.5	NA	0.0	0.0	0.00	0.11	0.00	52.6
All Vehicles		2354	4.0	2354	4.0	0.325	0.3	NA	0.1	0.5	0.00	0.06	0.00	50.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 1484 [Terminus & Pirie AM Scenario 1]

Network: N102A [Scenario 1 - AM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (S)														
1	L2	112	4.7	112	4.7	0.363	48.8	LOS D	6.9	49.8	0.90	0.77	0.90	31.3
2	T1	109	1.0	109	1.0	0.363	49.9	LOS D	6.9	49.8	0.94	0.75	0.94	21.4
Approach		221	2.9	221	2.9	0.363	49.4	LOS D	6.9	49.8	0.92	0.76	0.92	27.1
NorthEast: Terminus St (E)														
4	L2	88	2.3	88	2.3	0.080	4.0	LOS A	0.1	0.8	0.02	0.55	0.02	45.3
5	T1	383	7.3	383	7.3	0.171	0.6	LOS A	0.3	2.0	0.03	0.02	0.03	59.0
6	R2	512	4.1	512	4.1	0.510	15.7	LOS B	6.2	45.0	0.61	0.72	0.61	11.7
Approach		983	5.2	983	5.2	0.510	8.8	LOS A	6.2	45.0	0.33	0.43	0.33	39.5
NorthWest: Pirie St (N)														
7	L2	323	2.8	323	2.8	0.164	23.3	LOS B	8.8	63.1	0.65	0.72	0.65	8.4
8	T1	33	3.2	33	3.2	0.121	55.9	LOS D	1.9	13.7	1.00	0.74	1.00	21.4
9	R2	7	0.0	7	0.0	0.059	64.3	LOS E	0.4	3.1	1.00	0.67	1.00	20.5
Approach		363	2.8	363	2.8	0.164	27.1	LOS B	8.8	63.1	0.69	0.72	0.69	12.3
SouthWest: Terminus St (W)														
10	L2	11	0.0	11	0.0	0.507	37.9	LOS C	15.7	114.2	0.84	0.73	0.84	29.5
11	T1	1022	4.5	1022	4.5	0.507	32.3	LOS C	15.7	114.4	0.84	0.73	0.84	29.5
12	R2	184	0.0	184	0.0	0.916	78.5	LOS F	12.7	89.0	1.00	1.00	1.46	25.0
Approach		1217	3.8	1217	3.8	0.916	39.4	LOS C	15.7	114.4	0.86	0.77	0.93	28.2
All Vehicles		2784	4.1	2784	4.1	0.916	27.8	LOS B	15.7	114.4	0.66	0.64	0.69	28.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	SouthEast Full Crossing	53	12.6	LOS B	0.1	0.1	0.46	0.46
P3	NorthWest Full Crossing	53	36.1	LOS D	0.1	0.1	0.78	0.78
P4	SouthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	34.3	LOS D			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.

MOVEMENT SUMMARY

Site: 3068 [Macquarie & Pirie PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (SE)														
21	L2	518	1.8	518	1.8	0.255	16.4	LOS B	8.1	57.7	0.58	0.71	0.58	35.2
23	R2	160	2.0	160	2.0	0.517	43.5	LOS D	7.6	54.3	0.84	0.77	0.84	5.1
Approach		678	1.9	678	1.9	0.517	22.8	LOS B	8.1	57.7	0.64	0.73	0.64	29.0
NorthEast: Macquarie St (NE)														
24	L2	358	0.9	358	0.9	0.543	29.5	LOS C	16.2	114.2	0.83	0.83	0.83	8.6
25	T1	424	1.2	424	1.2	0.563	40.0	LOS C	11.0	77.8	0.94	0.78	0.94	25.8
Approach		782	1.1	782	1.1	0.563	35.2	LOS C	16.2	114.2	0.89	0.80	0.89	21.2
SouthWest: Macquarie St (SW)														
31	T1	206	1.5	206	1.5	0.542	11.4	LOS A	13.3	93.7	0.44	0.40	0.44	37.6
32	R2	441	0.2	441	0.2	0.542	34.8	LOS C	13.3	93.7	0.82	0.79	0.82	26.1
Approach		647	0.7	647	0.7	0.542	27.4	LOS B	13.3	93.7	0.70	0.67	0.70	28.9
All Vehicles		2107	1.2	2107	1.2	0.563	28.8	LOS C	16.2	114.2	0.75	0.74	0.75	26.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P5	SouthEast Full Crossing	53	40.9	LOS E	0.1	0.1	0.83	0.83
P6	NorthEast Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	47.6	LOS E			0.89	0.89

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

MOVEMENT SUMMARY

Site: 101 [Macquarie & Memorial & Scott PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
4a	L1	662	1.3	662	1.3	0.802	9.2	LOS A	9.2	65.3	0.40	0.66	0.43	14.4
5	T1	184	0.6	184	0.6	0.379	30.6	LOS C	8.9	63.5	0.71	0.63	0.71	28.1
6	R2	46	6.8	46	6.8	0.379	34.0	LOS C	8.9	63.5	0.71	0.63	0.71	25.0
Approach		893	1.4	893	1.4	0.802	14.9	LOS B	9.2	65.3	0.48	0.65	0.50	23.0
North: Macquarie St (N)														
7	L2	21	5.0	21	5.0	0.117	57.8	LOS E	1.2	8.4	0.94	0.70	0.94	17.8
9a	R1	76	1.4	76	1.4	0.772	63.7	LOS E	7.7	54.1	1.00	0.93	1.20	16.8
9	R2	48	0.0	48	0.0	0.772	65.6	LOS E	7.7	54.1	1.00	0.93	1.20	24.8
Approach		145	1.4	145	1.4	0.772	63.5	LOS E	7.7	54.1	0.99	0.89	1.16	20.1
West: Memorial Ave (W)														
10	L2	38	0.0	38	0.0	0.088	21.0	LOS B	2.5	17.6	0.55	0.55	0.55	36.4
11	T1	53	2.0	53	2.0	0.088	19.0	LOS B	2.5	17.6	0.58	0.57	0.58	31.8
12b	R3	13	0.0	13	0.0	0.088	40.2	LOS C	0.9	6.1	0.77	0.67	0.77	24.7
Approach		103	1.0	103	1.0	0.088	22.3	LOS B	2.5	17.6	0.59	0.57	0.59	33.2
SouthWest: Macquarie St (SW)														
30b	L3	152	2.1	152	2.1	0.378	45.3	LOS D	7.3	52.3	0.87	0.79	0.87	24.2
30a	L1	125	0.8	125	0.8	0.264	41.8	LOS C	5.8	41.0	0.84	0.75	0.84	22.8
32a	R1	112	2.8	112	2.8	0.238	33.5	LOS C	4.2	30.2	0.68	0.70	0.68	7.4
Approach		388	1.9	388	1.9	0.378	40.8	LOS C	7.3	52.3	0.80	0.75	0.80	21.1
All Vehicles		1529	1.5	1529	1.5	0.802	26.6	LOS B	9.2	65.3	0.62	0.69	0.65	22.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	18.7	LOS B	0.1	0.1	0.56	0.56
P4	West Full Crossing	53	41.8	LOS E	0.1	0.1	0.84	0.84
P8	SouthWest Full Crossing	53	22.3	LOS C	0.1	0.1	0.61	0.61
All Pedestrians		211	34.3	LOS D			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.

MOVEMENT SUMMARY

Site: [Scott Access PM Peak Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SCOTT ST ACCESS														
1	L2	147	0.0	147	0.0	0.301	1.6	LOS A	0.6	4.5	0.41	0.32	0.41	8.9
Approach		147	0.0	147	0.0	0.301	1.6	LOS A	0.6	4.5	0.41	0.32	0.41	8.9
East: SCOTT ST														
4	L2	1	0.0	1	0.0	0.176	6.9	LOS A	0.7	4.9	0.00	0.00	0.00	34.4
5	T1	685	0.0	685	0.0	0.176	0.0	LOS A	0.7	4.9	0.00	0.00	0.00	49.8
Approach		686	0.0	686	0.0	0.176	0.0	NA	0.7	4.9	0.00	0.00	0.00	49.8
West: SCOTT ST														
11	T1	142	0.0	142	0.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
Approach		142	0.0	142	0.0	0.039	0.0	NA	0.0	0.0	0.00	0.00	0.00	50.0
All Vehicles		976	0.0	976	0.0	0.301	0.3	NA	0.7	4.9	0.06	0.05	0.06	32.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [George & Scott PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
5	T1	52	3.8	52	3.8	0.078	44.6	LOS D	1.3	9.1	0.87	0.63	0.87	5.3
Approach		52	3.8	52	3.8	0.078	44.6	LOS D	1.3	9.3	0.87	0.63	0.87	5.3
North: George St (N)														
7	L2	35	45.8	35	45.8	0.043	15.3	LOS B	0.9	8.5	0.46	0.59	0.46	30.2
9	R2	693	1.3	693	1.3	0.327	17.6	LOS B	10.4	73.8	0.56	0.70	0.56	28.9
Approach		728	3.4	728	3.4	0.327	17.5	LOS B	10.4	73.8	0.56	0.70	0.56	29.0
West: Scott St (W)														
11	T1	141	2.2	141	2.2	0.319	53.3	LOS D	6.3	44.8	0.97	0.76	0.97	3.4
Approach		141	2.2	141	2.2	0.319	53.3	LOS D	6.3	44.8	0.97	0.76	0.97	3.4
All Vehicles		921	3.3	921	3.3	0.327	24.5	LOS B	10.4	73.8	0.64	0.70	0.64	24.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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
P2	East Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
P3	North Full Crossing	53	31.6	LOS D	0.1	0.1	0.73	0.73
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	46.7	LOS E			0.88	0.88

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

MOVEMENT SUMMARY

Site: 101 [Terminus & Scott PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: RoadName														
1	L2	49	4.3	49	4.3	0.027	4.7	LOS A	0.0	0.0	0.00	0.56	0.00	31.2
3	R2	122	0.0	122	0.0	0.099	5.6	LOS A	0.4	2.7	0.28	0.60	0.28	48.4
Approach		172	1.2	172	1.2	0.099	5.3	LOS A	0.4	2.7	0.20	0.59	0.20	47.0
West: Scott St(W)														
11	T1	182	2.9	182	2.9	0.118	0.1	LOS A	0.0	0.0	0.00	0.11	0.00	52.1
12	R2	31	58.6	31	58.6	0.118	4.3	LOS A	0.0	0.0	0.00	0.11	0.00	47.5
Approach		213	10.9	213	10.9	0.118	0.7	NA	0.0	0.0	0.00	0.11	0.00	52.0
All Vehicles		384	6.6	384	6.6	0.118	2.8	NA	0.4	2.7	0.09	0.32	0.09	49.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [Terminus Access PM Scenario 1 (Left-In Left-Out)]

Network: N102B [Scenario 1 - PM Peak]

Terminus & Access AM
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
NorthEast: Terminus St E														
5	T1	1162	4.0	1162	4.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1162	4.0	1162	4.0	0.122	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
NorthWest: Access														
7	L2	73	0.0	73	0.0	0.106	3.9	LOS A	0.4	3.0	0.56	0.51	0.56	9.8
Approach		73	0.0	73	0.0	0.106	3.9	LOS A	0.4	3.0	0.56	0.51	0.56	9.8
SouthWest: Terminus St W														
10	L2	4	0.0	4	0.0	0.349	6.6	LOS A	0.0	0.0	0.00	0.01	0.00	55.3
11	T1	1211	3.2	1211	3.2	0.349	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
Approach		1216	3.2	1216	3.2	0.349	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.3
All Vehicles		2450	3.5	2450	3.5	0.349	0.1	NA	0.4	3.0	0.02	0.02	0.02	37.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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 SUMMARY

Site: 101 [Terminus & Speed & Newbridge PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Isolated Cycle Time = 120 seconds (Site User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Speed St (S)														
1	L2	22	0.0	22	0.0	0.032	29.5	LOS C	0.8	5.6	0.66	0.66	0.66	11.0
3	R2	638	1.7	638	1.7	0.927	62.8	LOS E	44.6	316.8	1.00	1.01	1.25	21.4
Approach		660	1.6	660	1.6	0.927	61.7	LOS E	44.6	316.8	0.99	1.00	1.23	21.3
East: Newbridge Rd (E)														
4	L2	676	4.7	676	4.7	0.934	54.8	LOS D	61.5	447.0	1.00	1.03	1.21	23.9
5	T1	1140	4.1	1140	4.1	0.934	48.4	LOS D	63.5	460.0	1.00	1.07	1.20	23.1
Approach		1816	4.3	1816	4.3	0.934	50.8	LOS D	63.5	460.0	1.00	1.06	1.20	23.5
North: Terminus St (N)														
7	L2	28	55.6	28	55.6	0.427	68.6	LOS E	1.8	18.3	1.00	0.73	1.00	19.0
Approach		28	55.6	28	55.6	0.427	68.6	LOS E	1.8	18.3	1.00	0.73	1.00	19.0
West: Terminus St (W)														
10	L2	170	1.2	170	1.2	0.093	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	41.6
11	T1	1072	3.7	1072	3.7	0.728	29.7	LOS C	28.4	205.0	0.87	0.77	0.87	35.0
Approach		1242	3.4	1242	3.4	0.728	26.4	LOS B	28.4	205.0	0.75	0.74	0.75	35.3
All Vehicles		3746	3.9	3746	3.9	0.934	44.8	LOS D	63.5	460.0	0.91	0.94	1.06	26.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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	53	54.3	LOS E	0.2	0.2	0.95	0.95
P4	West Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		105	54.3	LOS E			0.95	0.95

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

MOVEMENT SUMMARY

Site: 1484 [Terminus & Pirie PM Scenario 1]

Network: N102B [Scenario 1 - PM Peak]

New Site
Site Category: (None)
Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
SouthEast: Pirie St (S)														
1	L2	173	0.6	173	0.6	0.487	46.6	LOS D	9.5	67.1	0.90	0.80	0.90	31.8
2	T1	111	0.0	111	0.0	0.487	52.8	LOS D	9.5	67.1	0.96	0.77	0.96	20.7
Approach		283	0.4	283	0.4	0.487	49.0	LOS D	9.5	67.1	0.93	0.79	0.93	28.1
NorthEast: Terminus St (E)														
4	L2	54	0.0	54	0.0	0.050	4.0	LOS A	0.1	0.5	0.02	0.55	0.02	45.4
5	T1	495	6.1	495	6.1	0.226	0.6	LOS A	0.4	2.7	0.03	0.02	0.03	58.9
6	R2	550	2.0	550	2.0	0.519	10.1	LOS A	4.2	30.0	0.41	0.66	0.41	16.1
Approach		1099	3.7	1099	3.7	0.519	5.5	LOS A	4.2	30.0	0.22	0.37	0.22	45.7
NorthWest: Pirie St (N)														
7	L2	657	1.0	657	1.0	0.319	18.1	LOS B	11.6	81.6	0.59	0.73	0.59	10.4
8	T1	123	0.0	123	0.0	0.505	54.3	LOS D	7.0	48.8	0.99	0.79	0.99	21.7
9	R2	17	0.0	17	0.0	0.229	69.2	LOS E	1.0	7.3	1.00	0.68	1.00	19.4
Approach		797	0.8	797	0.8	0.505	24.8	LOS B	11.6	81.6	0.66	0.74	0.66	15.6
SouthWest: Terminus St (W)														
10	L2	17	6.3	17	6.3	0.530	44.0	LOS D	13.9	102.4	0.89	0.76	0.89	26.8
11	T1	557	5.8	557	5.8	0.530	38.4	LOS C	14.3	104.9	0.89	0.76	0.89	26.9
12	R2	92	0.0	92	0.0	0.348	56.7	LOS E	4.9	34.6	0.95	0.77	0.95	29.4
Approach		666	5.0	666	5.0	0.530	41.1	LOS C	14.3	104.9	0.90	0.76	0.90	27.5
All Vehicles		2845	2.9	2845	2.9	0.530	23.5	LOS B	14.3	104.9	0.57	0.61	0.57	28.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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

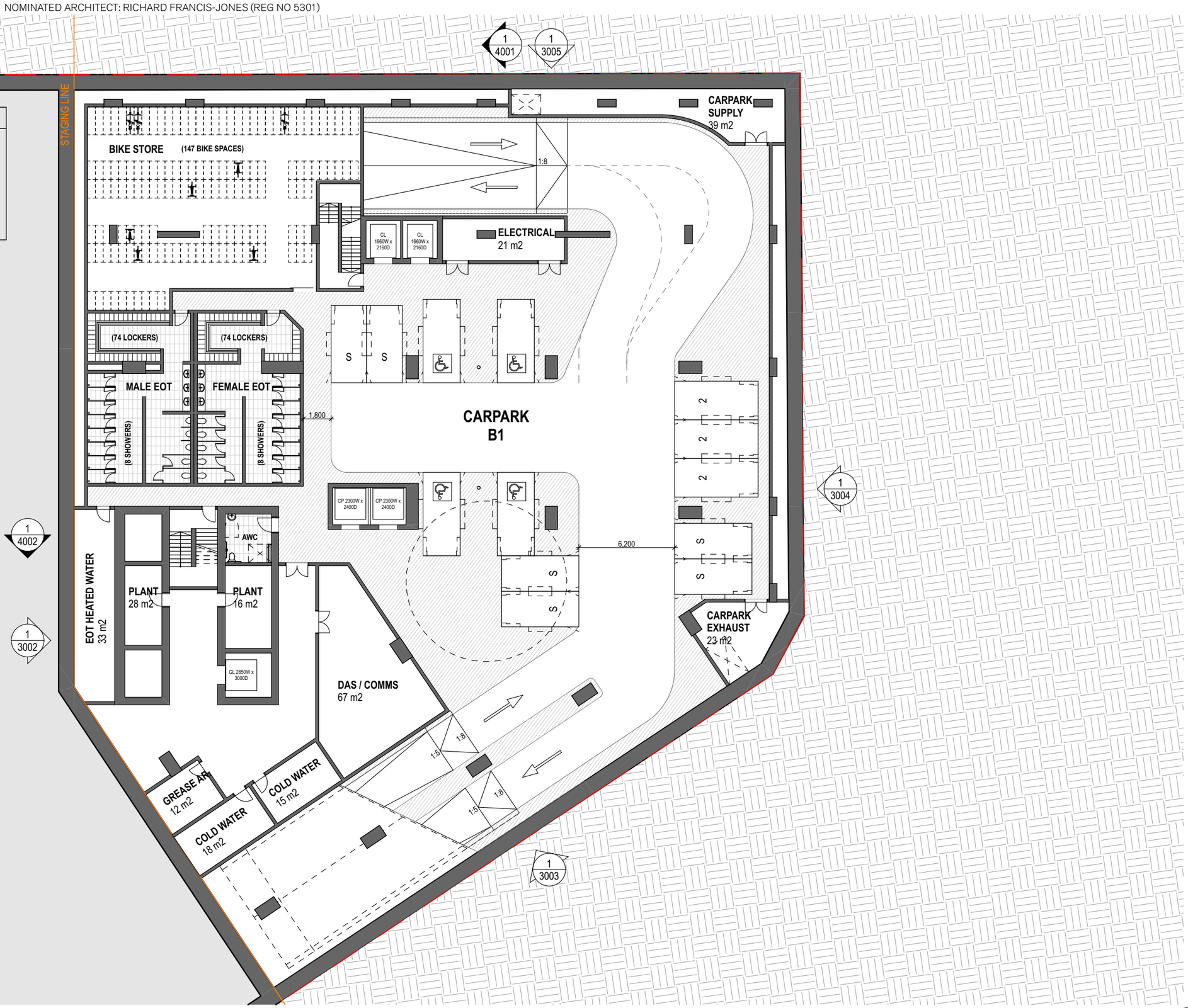
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P1	SouthEast Full Crossing	53	13.6	LOS B	0.1	0.1	0.48	0.48
P3	NorthWest Full Crossing	53	42.6	LOS E	0.2	0.2	0.84	0.84
P4	SouthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	36.8	LOS D			0.76	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.

Attachment 2 Architectural Plans

CARPARK SCHEDULE

	CARS	SMALL	ACC.	**TOTAL**	MOTORBIKE
B1	3	6	4	13	0
B2	42	3	0	45	4
B3	42	3	0	45	4
B4	44	3	0	47	4
TOTAL	131	15	4	150	12



fjmt

Basement 01

BUILT - LIVERPOOL CIVIC PLACE PROJECT

0 2.5 5 10m

1:250 @ A3

17/11/20

For Information

DA-AR-20B1

CARPARK SCHEDULE

	CARS	SMALL	ACC.	**TOTAL**	MOTORBIKE
B1	3	6	4	13	0
B2	42	3	0	45	4
B3	42	3	0	45	4
B4	44	3	0	47	4
TOTAL	131	15	4	150	12

fjmt

Basement 02

BUILT - LIVERPOOL CIVIC PLACE PROJECT

0 2.5 5 10m

1:250 @ A3

17/11/20

For Information

DA-AR-20B2

CARPARK SCHEDULE

	CARS	SMALL	ACC.	**TOTAL**	MOTORBIKE
B1	3	6	4	13	0
B2	42	3	0	45	4
B3	42	3	0	45	4
B4	44	3	0	47	4
TOTAL	131	15	4	150	12

Basement 03

BUILT - LIVERPOOL CIVIC PLACE PROJECT

0 2.5 5 10m

1:250 @ A3

17/11/20

For Information

DA-AR-20B3

CARPARK SCHEDULE

	CARS	SMALL	ACC.	**TOTAL**	MOTORBIKE
B1	3	6	4	13	0
B2	42	3	0	45	4
B3	42	3	0	45	4
B4	44	3	0	47	4
TOTAL	131	15	4	150	12

fjmt

Basement 04

BUILT - LIVERPOOL CIVIC PLACE PROJECT

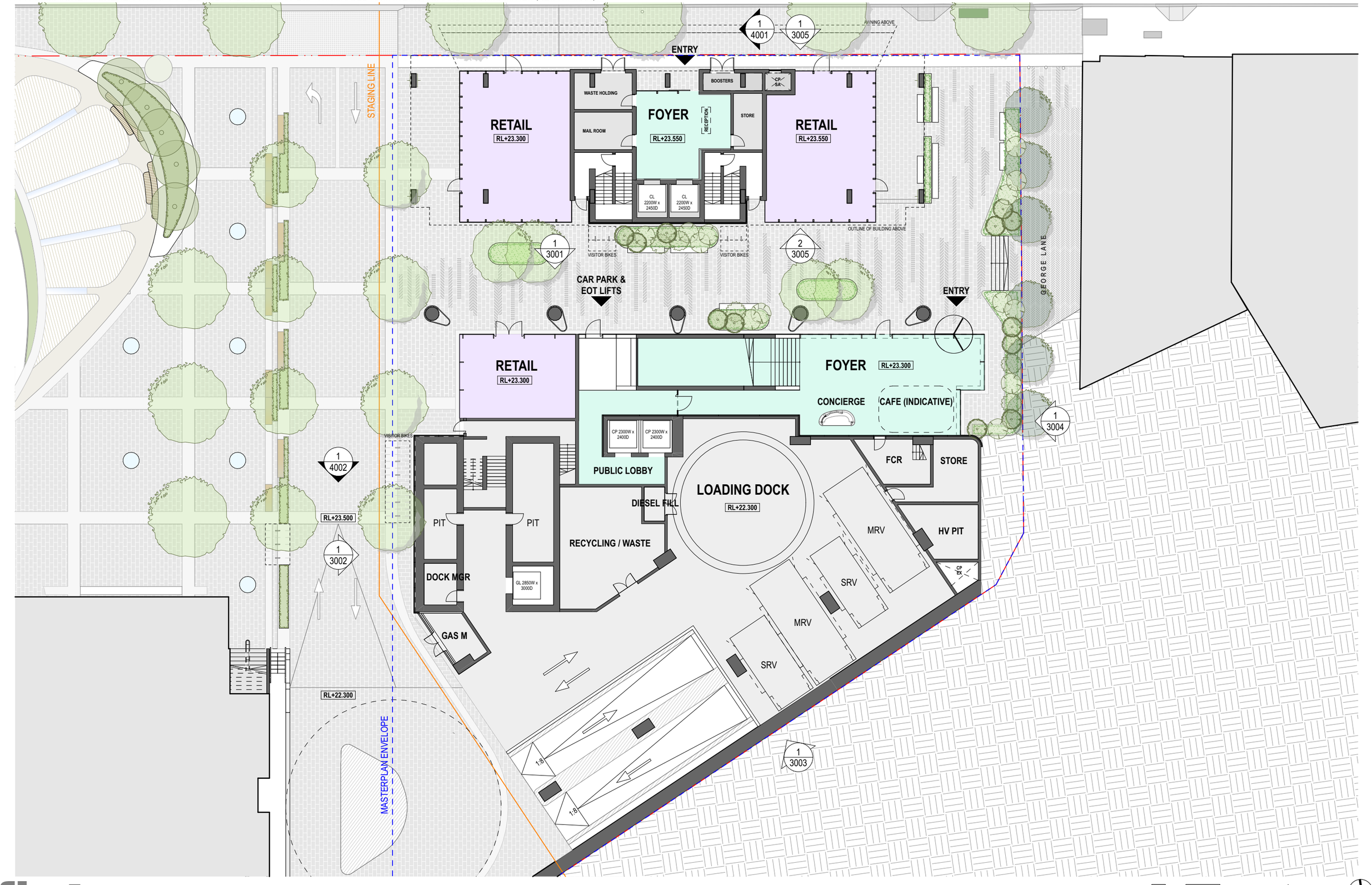
0 2.5 5 10m

1:250 @ A3

17/11/20

For Information

DA-AR-20B4



fjmt

Lower Ground Floor Plan

BUILT - LIVERPOOL CIVIC PLACE PROJECT

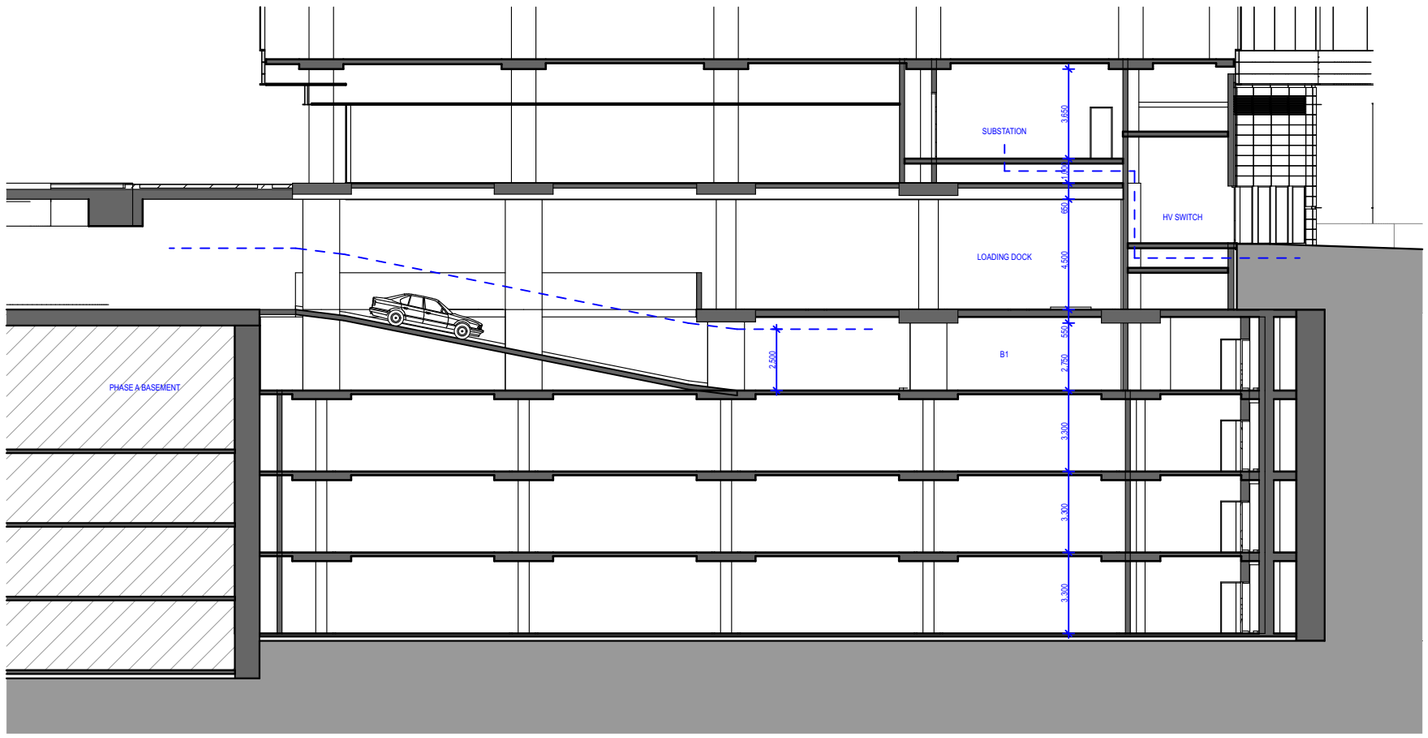
0 2.5 5 10m

1:250 @ A3

20/11/20

For Information

DA-AR-20LG



1 SECTION CARPARK ENTRY RAMP
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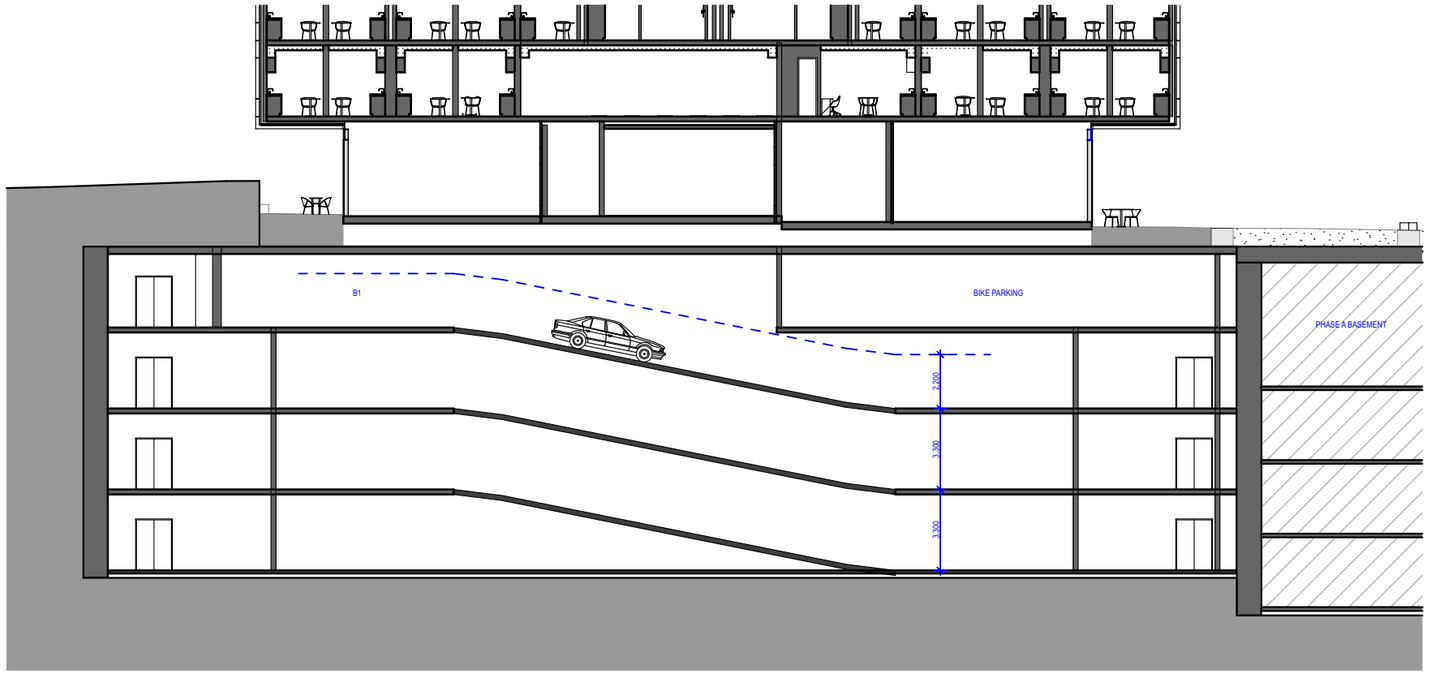


2 SECTION CARPARK RAMP
1:250

fjmt

Ramp Sections

BUILT - LIVERPOOL CIVIC PLACE PROJECT

0 2.5 5 10m

1:250 @ A3

17/11/20

For Information

SK-AR-4102

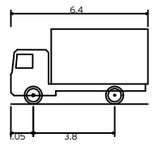
Attachment 3 Car Park Review

comments A3

VEHICLE PROFILES

FORWARD

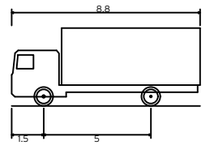
REVERSE



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

FORWARD

REVERSE



MRV - Medium Rigid Vehicle	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

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rev	date	comment / description	drawn	reviewed
5	27/11/20	for submission	JJ	AM
4	19/11/20	for review	JJ	AM
3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

drawing title
East Site
Loading Dock Review
MRV & SRV Swept Path
Enter Space

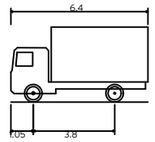
client	Built	for review
drawing #	ptc-001	rev 5
project #	AM-2572B	
scale	1 : 200	

comments | A3

VEHICLE PROFILES

FORWARD

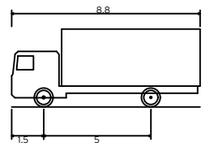
REVERSE



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

FORWARD

REVERSE



MRV - Medium Rigid Vehicle	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	10.000m

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3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

drawing title
East Site
Loading Dock Review
MRV & SRV Swept Path
Exit Space

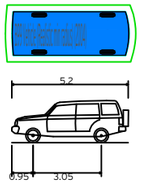
client	Built
drawing #	ptc-002
project #	AM-2572B
scale	1 : 200

for review

rev 5

comments A3

VEHICLE PROFILES



B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

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rev	date	comment / description	drawn	reviewed
5	27/11/20	for submission	JJ	AM
4	19/11/20	for review	JJ	AM
3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

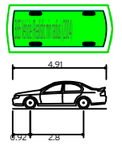
drawing title
East Site
Car Park Review
Swept Path Assessment
B99 Vehicle

client	Built
drawing #	ptc-002
project #	AM-2572B
scale	1 : 200

for review
rev 5

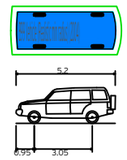
comments A3

VEHICLE PROFILES



B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

PARKING TEMPLATES

Class 1A Facility
Length 5.4m
Width 2.4m

Class 2 Facility
Length 5.4m
Width 2.5m

Small Car Space
Length 5.0m
Width 2.3m

Accessible Car Space
Length 5.4m
Width 2.4m

Shared Bay
Length 5.4m
Width 2.4m

Motorcycle Space
Length 2.5m
Width 1.2m

Bicycle Space - Vertical
Length 1.2m
Width 0.5m

Bicycle Space - Horizontal
Length 1.8m
Width 0.5m

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rev	date	comment / description	drawn	reviewed
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4	19/11/20	for review	JJ	AM
3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

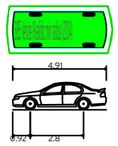
drawing title
East Site
Basement Level 1
Car Park Review

client	Built
drawing #	ptc-003
project #	AM-2572B
scale	1 : 250

for review
rev 5

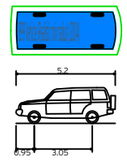
comments | A3

VEHICLE PROFILES



B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

PARKING TEMPLATES

Class 1A Facility
Length 5.4m
Width 2.4m

Class 2 Facility
Length 5.4m
Width 2.5m

Small Car Space
Length 5.0m
Width 2.3m

Accessible Car Space
Length 5.4m
Width 2.4m

Shared Bay
Length 5.4m
Width 2.4m

m/c
Motorcycle Space
Length 2.5m
Width 1.2m

Bicycle Space - Vertical
Length 1.2m
Width 0.5m

Bicycle Space - Horizontal
Length 1.8m
Width 0.5m

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rev	date	comment / description	drawn	reviewed
5	27/11/20	for submission	JJ	AM
4	19/11/20	for review	JJ	AM
3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

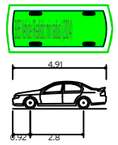
drawing title
East Site
Basement Level 2
Car Park Review

client	Built
drawing #	ptc-004
project #	AM-2572B
scale	1 : 250

for review
rev 5

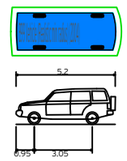
comments A3

VEHICLE PROFILES



B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m



B99 Vehicle (Realistic min radius) (2004)

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Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

PARKING TEMPLATES

Class 1A Facility
Length 5.4m
Width 2.4m

Class 2 Facility
Length 5.4m
Width 2.5m

Small Car Space
Length 5.0m
Width 2.3m

Accessible Car Space
Length 5.4m
Width 2.4m

Shared Bay
Length 5.4m
Width 2.4m

m/c
Motorcycle Space
Length 2.5m
Width 1.2m

Bicycle Space - Vertical
Length 1.2m
Width 0.5m

Bicycle Space - Horizontal
Length 1.8m
Width 0.5m

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3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

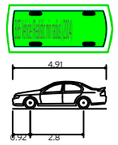
drawing title
East Site
Basement Level 3
Car Park Review

client	Built
drawing #	ptc-005
project #	AM-2572B
scale	1 : 250

for review
rev 5

comments | A3

VEHICLE PROFILES



B85 Vehicle (Realistic min radius) (2004)

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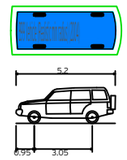
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m



B99 Vehicle (Realistic min radius) (2004)

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Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

PARKING TEMPLATES

Class 1A Facility
Length 5.4m
Width 2.4m

Class 2 Facility
Length 5.4m
Width 2.5m

Small Car Space
Length 5.0m
Width 2.3m

Accessible Car Space
Length 5.4m
Width 2.4m

Shared Bay
Length 5.4m
Width 2.4m

Motorcycle Space
Length 2.5m
Width 1.2m

Bicycle Space - Vertical
Length 1.2m
Width 0.5m

Bicycle Space - Horizontal
Length 1.8m
Width 0.5m

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3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

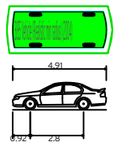
drawing title
East Site
Basement Level 4
Car Park Review

client	Built
drawing #	ptc-006
project #	AM-2572B
scale	1 : 250

for review
rev 5

comments A3

VEHICLE PROFILES



B85 Vehicle (Realistic min radius) (2004)

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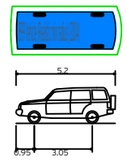
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m



B99 Vehicle (Realistic min radius) (2004)

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Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

PARKING TEMPLATES

Class 1A Facility
Length 5.4m
Width 2.4m

Class 2 Facility
Length 5.4m
Width 2.5m

Small Car Space
Length 5.0m
Width 2.3m

Accessible Car Space
Length 5.4m
Width 2.4m

Shared Bay
Length 5.4m
Width 2.4m

m/c
Motorcycle Space
Length 2.5m
Width 1.2m

Bicycle Space - Vertical
Length 1.2m
Width 0.5m

Bicycle Space - Horizontal
Length 1.8m
Width 0.5m

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4	19/11/20	for review	JJ	AM
3	16/11/20	for review	JJ	AM
2	01/10/20	for review	JJ	AM
1	18/09/20	for review	JJ	AM

project
Liverpool Civic Place

drawing title
East Site
Basement Level 4
Swept Path Assessment
B85 Vehicle

client	Built
drawing #	ptc-007
project #	AM-2572B
scale	1 : 100

for review
rev 5