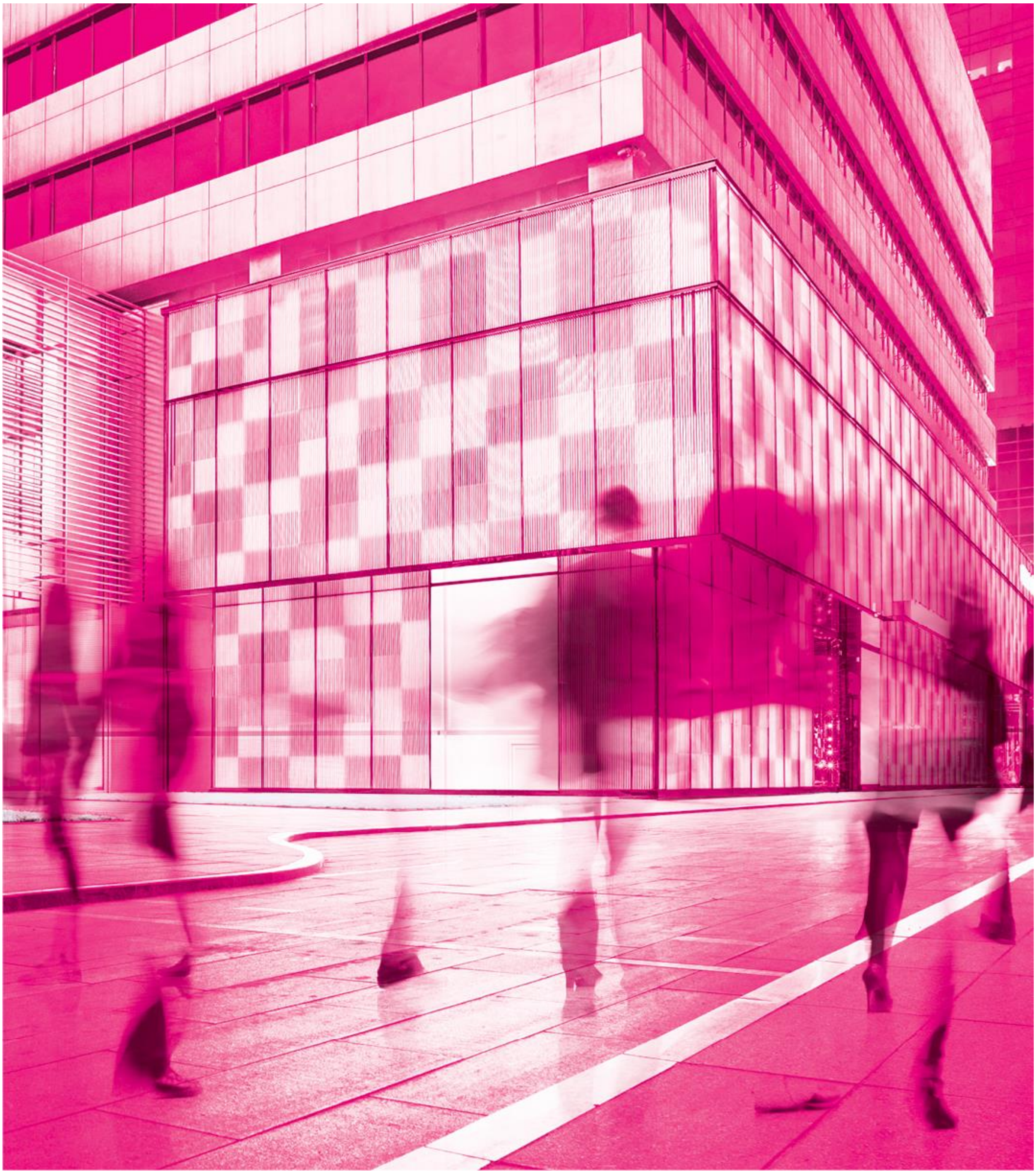


traffic impact assessment;

Liverpool Civic Place - Phase A, Stage 2 DA

For Built

28 September 2020

parking;
traffic;
civil design;
wayfinding;
ptc.

Document Control

Liverpool Civic Place - Phase A, Stage 2 DA, Traffic impact assessment

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	28/09/20	Final Issue	SH/FL/AM	AM	Barry Teeling
2					
3					

Andrew Morse
+61 2 8920 0800
+61 414 618 002
andrew.morse@ptcconsultants.co

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
info@ptcconsultants.co
t + 61 2 8920 0800
ptcconsultants.co

Contents

1. Executive Summary

ptc. has been engaged by Built to prepare a traffic impact assessment as part of the Stage 2 Development Application (DA) for a new mixed use civic and commercial concept development known as Liverpool Civic Place at 52 Scott Street, Liverpool.

This Concept Proposal seeks approval for a mixed-use concept comprising approximately 22,289m^2 of Gross Floor Area (GFA). Specifically, the following key components and development parameters:

- North western building - A building accommodating 6 storeys and 5,000m^2 GFA for the purpose of an information and education facility (public library) use.
- South western building - A building accommodating 13 storeys and 16,668m^2 of GFA for the purpose of a public administration building use, commercial office premises and a child care centre.
- A landscaping and public domain concept including the provision of a public through-site link connecting Scott Street to the north through to Terminus Street to the south; and
- A five-level shared basement car park to accommodate parking for the administration building a public car park.
- While the car park for the administration building the public car park are located in the same basement with a shared vertical circulation, separate vehicle access will be provided at the street level, through the access control system:
    - Access to the car park serving the administration building will be provided from Scott Street, via a Shared Zone through the public plaza,
    - Access to the public car park will be from Terminus Street. The access control system will limit car park access to the 156 public parking spaces and 46 council fleet vehicle spaces (202 total). This access will also provide access to the loading dock area.

The traffic analysis and modelling has been undertaken based on this access arrangement and demonstrates that the traffic activity associated with the proposal will be accommodated by the road network, noting that the public car park essentially replaces the existing two-storey public car park. Furthermore, TfNSW has developed plans to widen Terminus Street and the associated intersections to providing additional capacity, although the timing of this improvement is not known.

A review of the parking layout has been undertaken to assess the capability of the design to comply with the relevant Australian Standards. This has involved swept path assessments of B85/B99 vehicles entering and exiting the car parks as well as the internal circulation. Swept path assessments of the largest vehicle accessing and exiting the loading docks have also been undertaken during the detailed design stage to ensure the suitability of the design.

During the preparation of this report, we have had consideration for the information requests that have arisen through the approval of the concept scheme, the pre-DA feedback relating to this application and the comments provided by TfNSW in their review of the proposed access arrangements. The following tables outline these items and where they have been addressed in this report.

1.1 Concept Plan Conditions

Condition	Response	Section
7. Prior to the determination of a Detailed DA, a Local Area Traffic Management Plan is to be submitted to Council's Traffic and Transport Section and to the Liverpool Pedestrian Active Transport and Traffic Committee for endorsement. The Local Area Traffic Management Plan is to identify traffic infrastructure improvements including changes to the adjoining traffic signals, signs, line markings and timed parking restrictions.	A Local Area Traffic Management Plan will be prepared during the DA determination period in consultation with Council.	
8. Future Detailed DAs subject to this Concept Approval shall comply with all conditions provided by Transport for NSW dated 12 August 2020. A copy of the conditions is attached to this decision notice. Note: the conditions do not constitute a Section 138 concurrence under the Roads Act 1993.	Please refer to the following tables	1.3
23. Revised Traffic Impact Assessment (TIA) reports are to accompany future Detailed DAs for the site. The revised TIAs are to include the following: • Updated SIDRA analysis using traffic generation rates in the TfNSW Guide (1.6 and 1.2 vehicular trips per hour per 100m^2 GFA during the morning and afternoon peak period, respectively) for the 'Developer Buildings' component, at the minimum, to understand the traffic impact of the development under an alternative scenario. • Endorsed vehicular access arrangements – The revised reports are to outline and provide details of the endorsed left in/left out access arrangement off Terminus Street addressing all the requirements contained in the letter from TfNSW to Council in this consent. • Allocation of car parking spaces - information regarding the allocation of car parking spaces to the various land uses, including adequate provisions for bicycle and motorcycle parking in the revised TIA.	This report presents the revised TIA to address the Phase A building design and also includes the Concept Approval traffic activity associated with Phase B and C. The required trip generation rates have been applied and distributed based on the proposed access arrangements.	6
24. Car parking provision – future Detailed DAs are to provide car parking provisions in accordance with the car parking rates set out in the Liverpool LEP 2008 and Liverpool DCP 2008 as well as provide for the replacement of the existing public car parking spaces at the site as outlined in the TIA, as prepared by PTC, dated 22 April 2020.	Details of the parking provision are described in Section 8	8
25. Detailed design drawings of the driveways, ramps, aisles, loading bays and parking spaces, as well as for swept path analysis, footpath paving, street lighting, sign and line marking scheme, demonstrating that the design has been carried out in accordance with RMS	The detail car park plans have been prepared by FJMT and assessed by ptc with regard to compliance with AS2890.	9

Guidelines, DCP and AS: 2890 is to be submitted to Council with the detailed development applications.		
26. The drawings must be certified by a qualified traffic engineer and are to comply with the requirements of the DCP and Australian Standards in relation to the Terminus Street access.	As above	9
27. A Travel Plan that contains specific measures to promote the use of more sustainable modes of travel including walking, cycling, public transport and car sharing are to be submitted as part of any future Detailed DA.		8.6

1.2 Pre-Lodgement Review by Architectus

Item	Response	Section
1. The proposed Terminus Street basement access is now located at a closer distance to the Terminus / Pirie Street intersection. Agreement from Transport for NSW would be required for the proposed location of the basement access from Terminus Street.	The access location has been referred to TfNSW. Comments from TfNSW received on 12 Aug 2020 (see following table). The driveway location was not raised as an issue.	
2. The public car park accessible from Terminus Street needs to ensure that it has appropriate access separation from the private car park(s) servicing the remaining uses on the site. This is to ensure alignment with Transport for NSW's agreement of supporting the vehicular access point from Terminus Street as part of the assessment of DA-585/2019.	The public car park will accommodate 156 spaces, while a further 46 spaces will be dedicated to Council fleet vehicles, totalling 202 parking spaces having access from Terminus Street. While the access ramps will be shared, the council employee carpark will be nested (segregated) from the public car park via an access control system	9
The applicant is requested to submit a Traffic Impact Assessment (TIA) report addressing the traffic and parking issues associated with Stage 1 development, including:		
- Allocation of parking spaces to the various land uses and access arrangements.		9
- Proposed traffic management plan to assist access to the site. It is to be noted access off Scott Street and Terminus Street are to be restricted to left in / left out only.		9
- Swept path analysis incorporating the comments made by PTC on the draft presentation (for the pre-DA) and certification by independent qualified professional that the access, ramp and parking areas are designed in compliance with the requirements of Council's DCP and Australian Standards.		9
- Public transport and other sustainable modes of trave		4.2
- Proposed Travel Plan for the site to support sustainable modes of travel to the site and reduce dependence on single occupant vehicle travel.		8.6
- The application must demonstrate that access, car parking and manoeuvring details comply with AS2890		9

Parts 1, 2 & 6 and Council's Development Control Plan.		
- The application shall be supported by turning paths in accordance with AS2890 clearly demonstrating satisfactory manoeuvring on-site and forward entry and exit to and from the public road.		9

1.3 TfNSW Comments

Item	Response	Section
1. Access from Terminus Street will be limited to a maximum of 202 spaces and segregated from the total underground parking.	The public car park will accommodate 156 spaces, while a further 46 spaces will be dedicated to Council fleet vehicles, totalling 202 parking spaces having access from Terminus Street. While the access ramps will be shared, the council employee carpark will be nested (segregated) from the public car park via an access control system	9
2. Access from Terminus Street is to be a left in /left out movement. A median is to be installed along Terminus Street to physically restrict right turn movements into and out of the driveway. The median is to cover the full length of the driveway.	A concept plan illustrating a concept median design has been prepared.	Attachment 4
3. The proposed road works (median and lane widths) along Terminus Street shall be designed and constructed to meet TfNSW requirements and endorsed by a suitably qualified practitioner. The design requirements will be in accordance with AUSTROADS and other Australian Codes of Practice. The certified copies of the civil design plans shall be submitted to TfNSW for consideration and approval prior to the release of the Construction Certificate by the PCA and commencement of road works.	This design work will be undertaken following the approval of the subject DA.	
4. Redundant driveways along Terminus Street shall be removed and replaced with kerb and gutter to match existing. The design and construction of the kerb and gutter shall be in accordance with TfNSW requirements.	Noted and will be addressed following the approval of the subject DA.	
5. The developer will be required to enter into a Works Authorisation Deed for the above mentioned works.	Noted	

6. The largest vehicle to use this site shall be no bigger than 9.9m.	Noted and included within the loading dock design.	
7. Detailed design plans and hydraulic calculations of any changes to the stormwater drainage system are to be submitted to TfNSW for approval prior to the commencement of any works.	Noted and a matter for the civil design consultant to address when appropriate.	
8. Any new buildings or structures together with any improvements integral to the future use of the site are erected clear of Terminus street boundary, land reserved for road widening and land required for road (unlimited height or depth).	Noted and adopted within the DA plans	

2. Introduction

2.1 Project Summary

This Traffic Impact Assessment is submitted to Liverpool City Council (Council) on behalf of Built Development Group in support of a Stage 2 Development Application (DA) for Phase A of the Liverpool Civic Place development located at 52 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 at Figure 1, however the scope of this Stage 2 DA is limited to Phase A, as illustrated at Figure 2.

Phase B and Phase C will be subject to future Stage 2 DA(s).

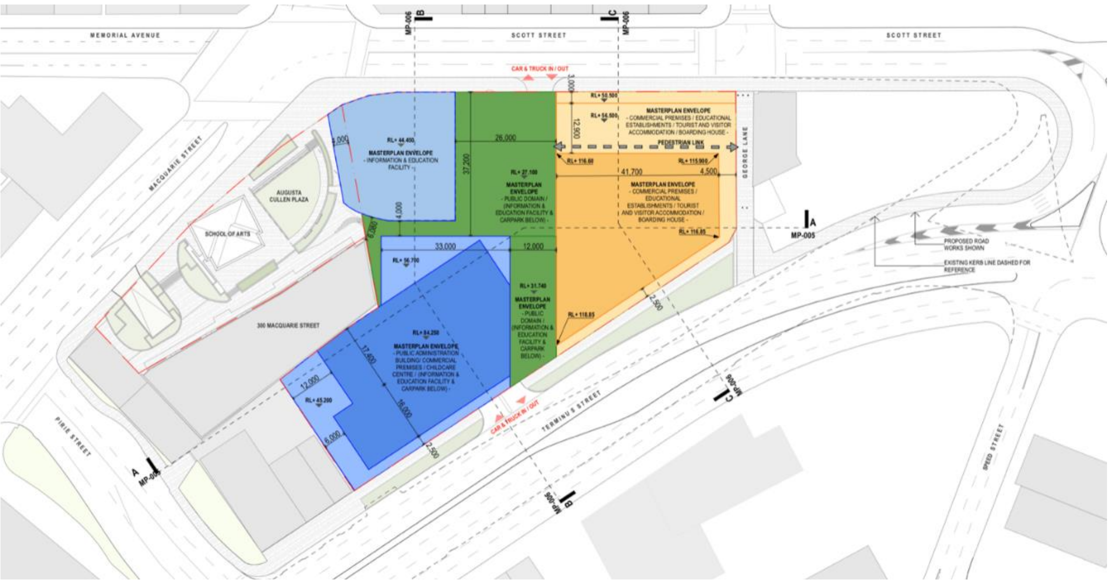


Figure 1 - Liverpool Civic Place Master Plan Site - *Source: FJMT*

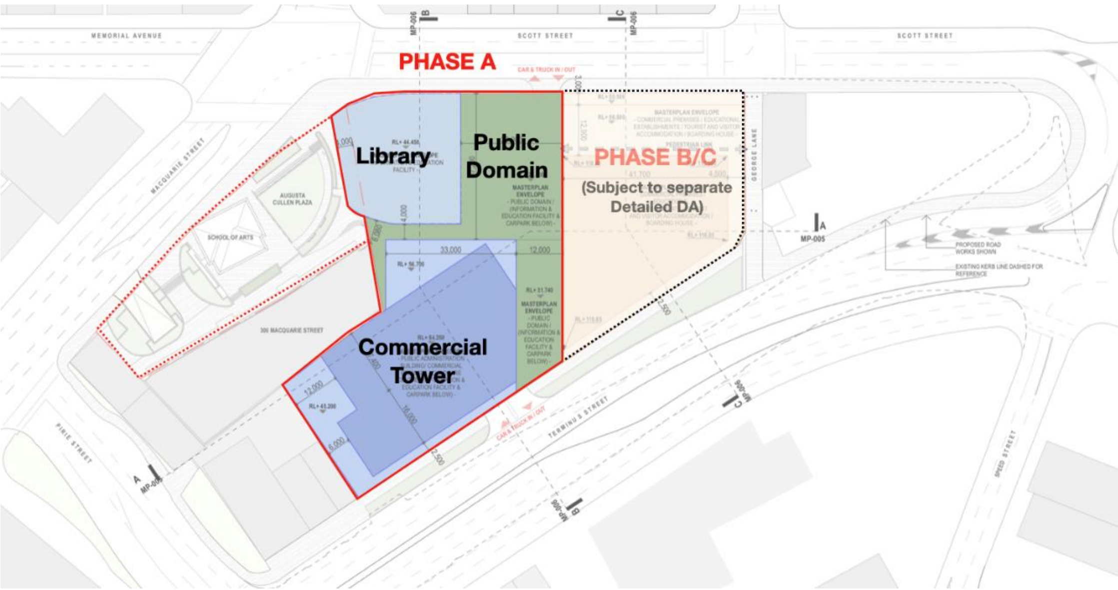


Figure 2 - Liverpool Civic Place Stage 1 site (subject site) - *Source: FJMT*

This Stage 2 DA seeks approval for:

- Construction and use of a six (6) storey information and education facility (public library);
- Construction and use of a fourteen (14) storey mixed use building comprising:
    - Eight (8) storeys of public administration building floor space to be occupied by Liverpool City Council;
    - Four (4) storeys of commercial premises (office) floor space;
    - Single storey above ground child care centre on Level 6; and
    - Single storey of rooftop plant.
- Partial construction and use of the overall site's common basement;
- Landscaping and public domain works including:
    - an internal shared road connecting to Scott Street with basement access;
    - a public plaza fronting Scott Street; and
    - an elevated pocket park fronting Terminus Street.
- Extension and augmentation of services and infrastructure as required.

This DA reflects the staged planning approval pathway for the Liverpool Civic Place redevelopment which has included two previously approved DAs, as outlined below:

2.2 Concept DA DA-585/2019:

The planning approval pathway for the Liverpool Civic Place development commenced in in 2019, with the submission of a Concept Proposal / Stage 1 DA for the Liverpool Civic Place master plan. On 31 August 2020, the Concept Proposal / Stage 1 DA (DA-585/2019) was approved by the Sydney Western City Planning Panel. 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.

2.3 Early Works DA DA-906/2019:

Development Application DA-906/2019 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. Early works commenced on site in September 2020 and are scheduled for completion in August 2021.

The following table presents a comparison between the Approved Concept and this Development Application:

Phase A Component	Approved Concept	This Application
Administration Building	17,748m^2	16,668m^2
Library	5,010m^2	5,000m^2
Council Car Park (private)	132 spaces	188 spaces
Public Car Park	200 spaces	156 spaces

For the purposes of this traffic assessment, the projected traffic activity established to support the Concept Approval of the Phase B and C envelopes has been included in this report in order to present a cumulative assessment of both developments.

It should be noted that the general yield of the development and the vehicle access locations are largely consistent with the Approved Concept and as such there is little variation in the findings of this traffic assessment in comparison the Approved Concept.

3. Site Analysis

3.1 Site Location and Context

The site is located at 52 Scott Street, within the Liverpool Local Government Area (LGA) as illustrated in Figure 3. The site is located at the southern fringe of the Liverpool CBD. The site is approximately 300m south west of the 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 at Figure 3.

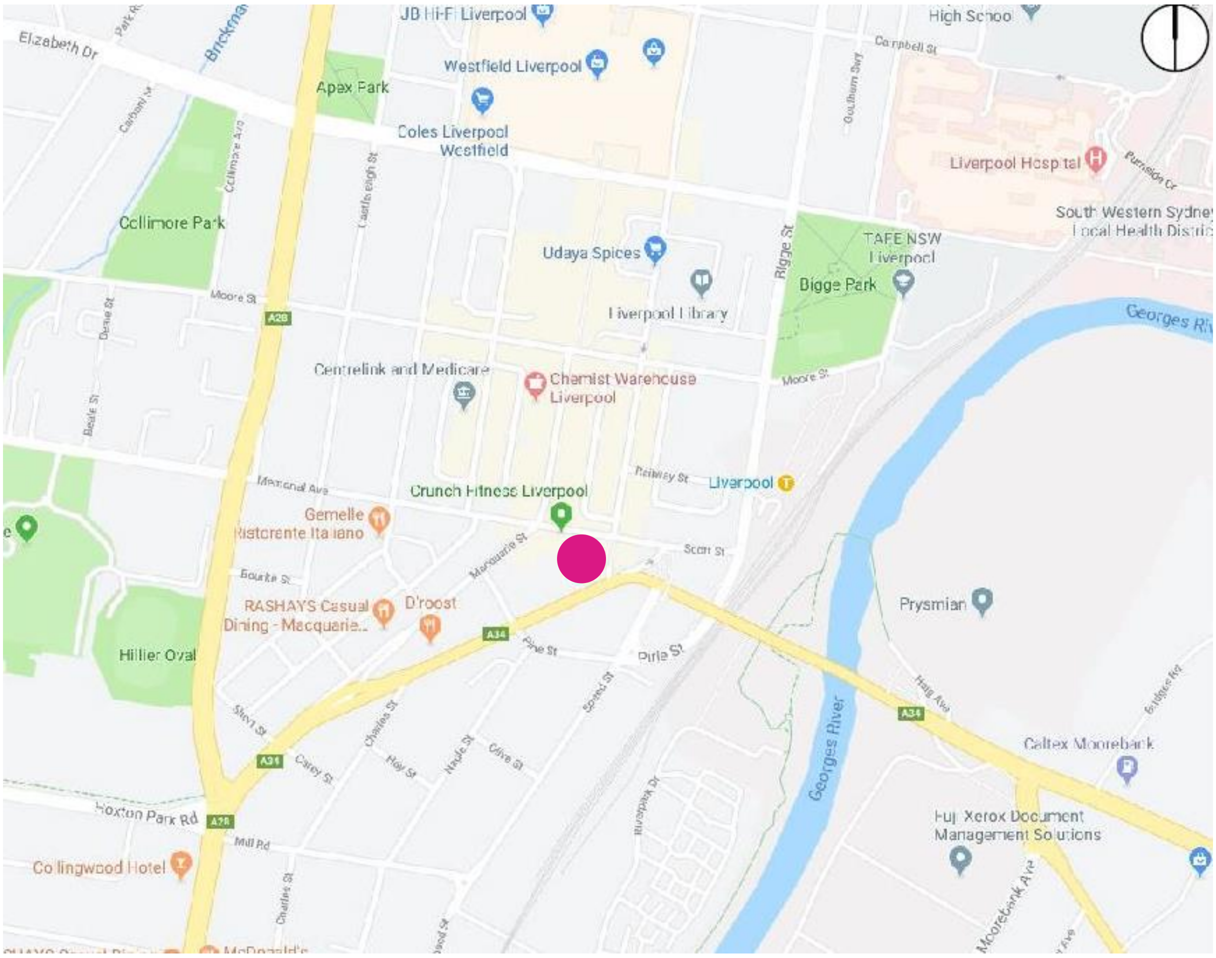


Figure 3 - Site Location

3.2 Site Description

This site is irregular in shape and comprises 5 Lots having a total area of 9,189.5m^2 and has three road frontages, including a primary frontage to Scott Street and Macquarie Street (140m frontage) to the north and Terminus Street (76m frontage) to the south.

It is noted that the broader site, which include properties to the east, is being developed in two stages as described in the Introduction of this report. This development application relates only to Phase A (the western part) of the development indicated in blue in the following figure.

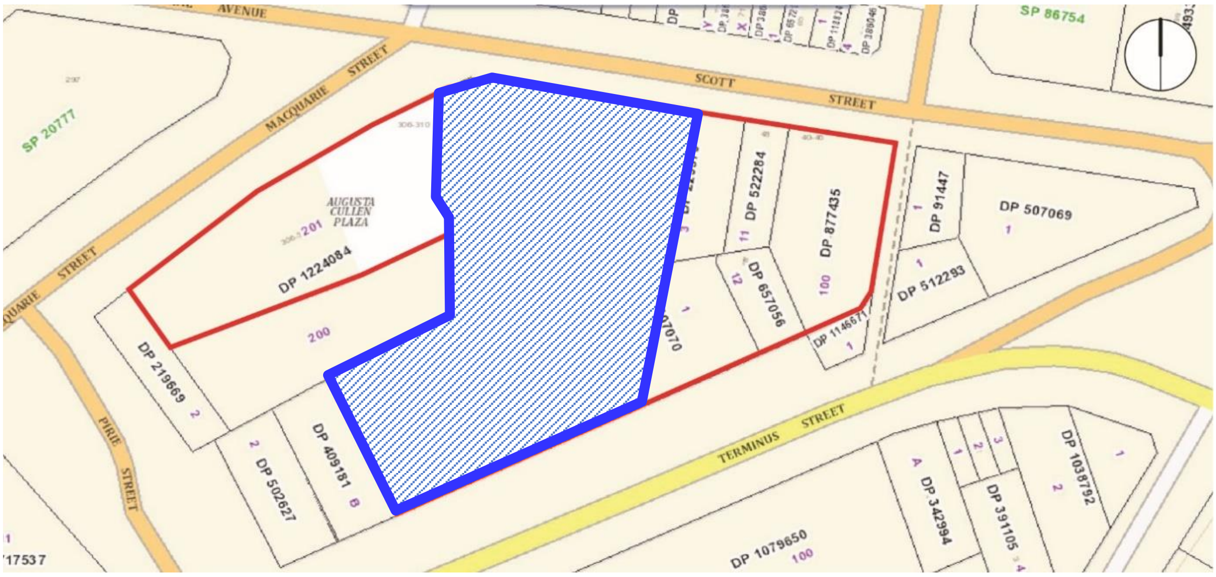


Figure 4 - Site and Lot boundaries

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

3.3 Development Proposal

The following key components and development parameters for the basis for the project:

- North western building - A building accommodating 6 storeys and 5,000m^2 GFA for the purpose of an information and education facility (public library) use.
- South western building - A building envelope accommodating 13 storeys and 16,668m^2 of GFA for the purpose of a public administration building use, commercial office premises and a child care centre.
- A landscaping and public domain concept including the provision of a public through-site link connecting Scott Street to the north through to Terminus Street to the south; and
- While the car park for the administration building the public car park are located in the same basement with a shared vertical circulation, separate vehicle access will be provided at the street level, through the access control system:
    - Access to the car park serving the administration building will be provided from Scott Street, via a Shared Zone through the public plaza,
    - Access to the public car park will be from Terminus Street. The access control system will limit car park access to the 202 parking spaces only, comprising 156 public spaces and 46 council owned fleet vehicles. This access will also provide access to the loading dock area.

The details of proposed yield for each land use are tabulated in Table 1.

Table 1 - Proposed Landuse Breakdown

Building	Potential Land Use	Proposed Development (GFA)
Library Building envelope	Library	5,000m^2
Council Building envelope	Council offices	16,668m^2
Total		21,668m^2

The relevant architectural drawings are presented as Attachment 1, while the refence scheem is presented as Attachment 2.

4. Existing Transport Facilities

4.1 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.

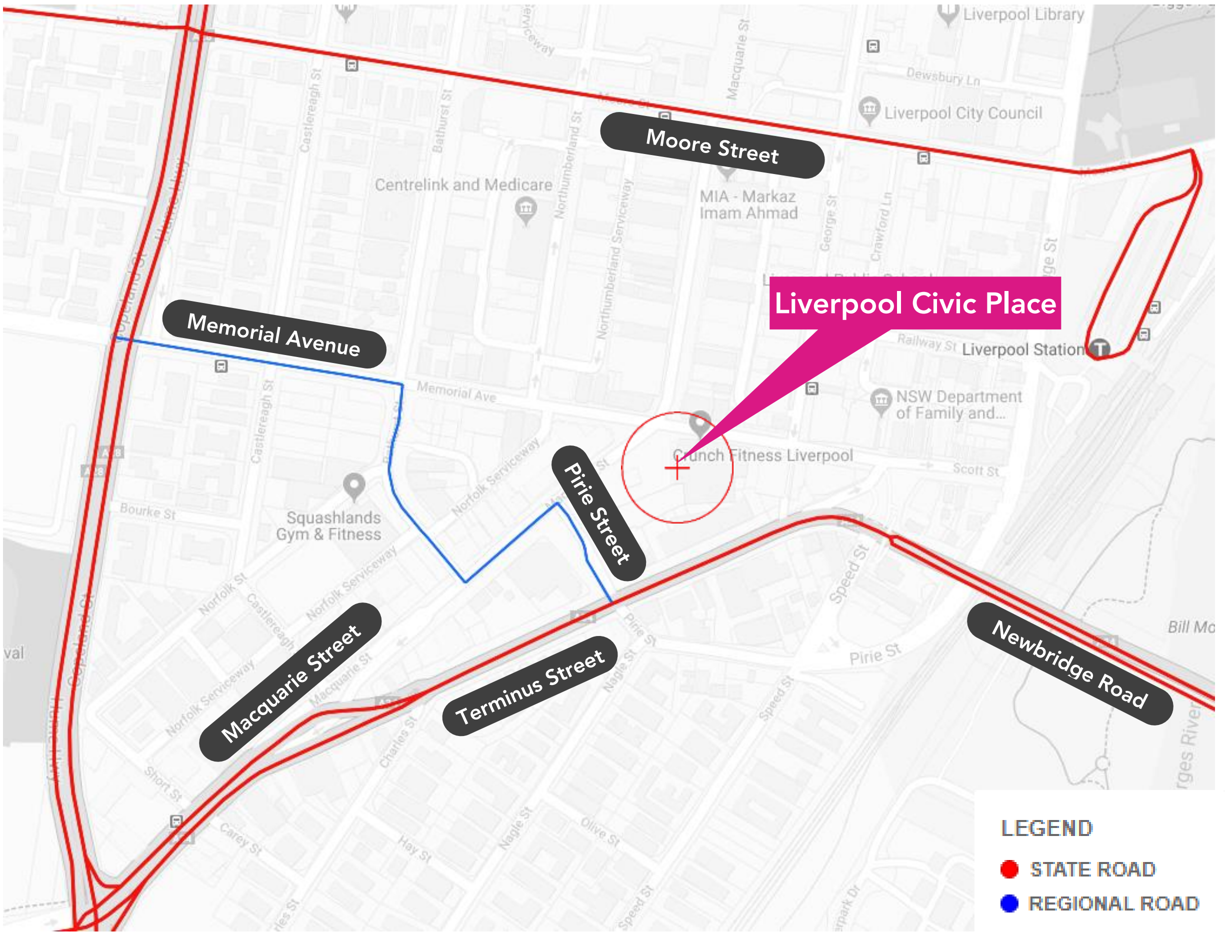


Figure 6 - Road Hierarchy (TfNSW Road Hierarchy Review)

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)

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)

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)\

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)

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)

4.2 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.

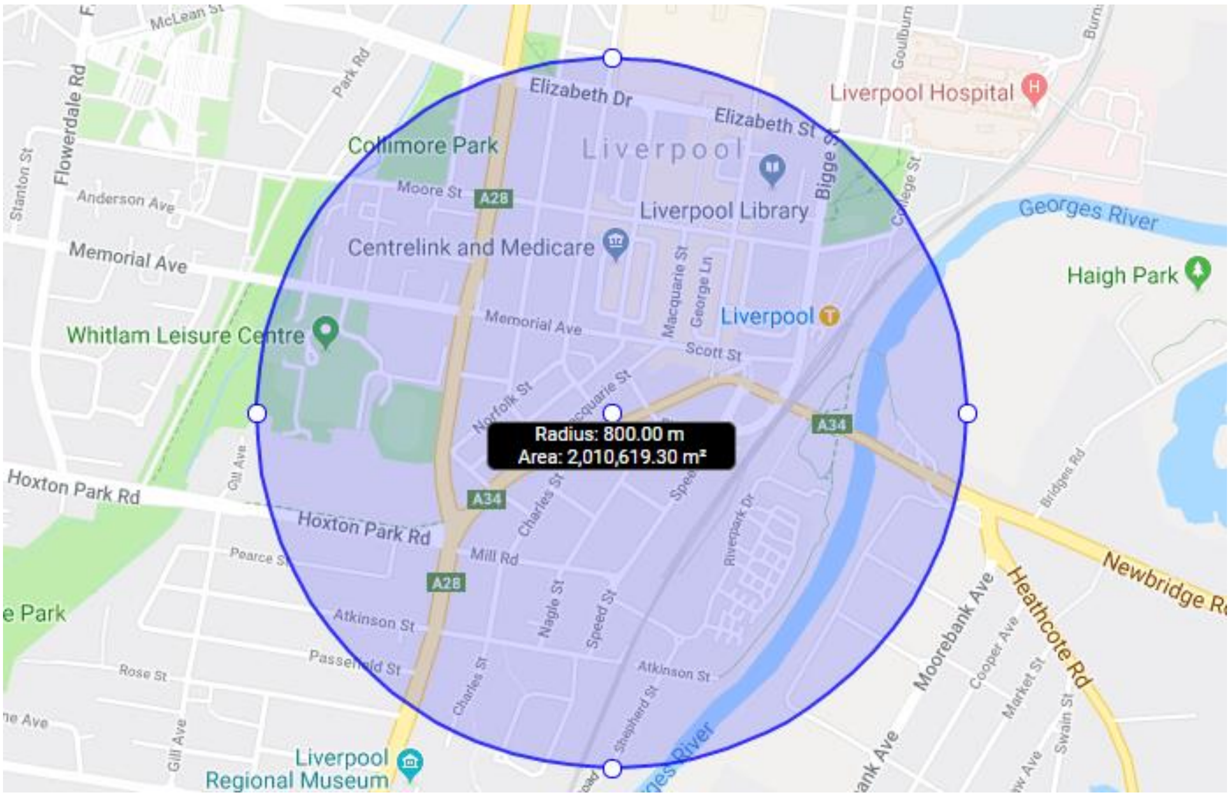


Figure 11 - 800m Walking Catchment

4.2.1 Train

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 2 - Train Service 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.

4.2.2 Bus

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

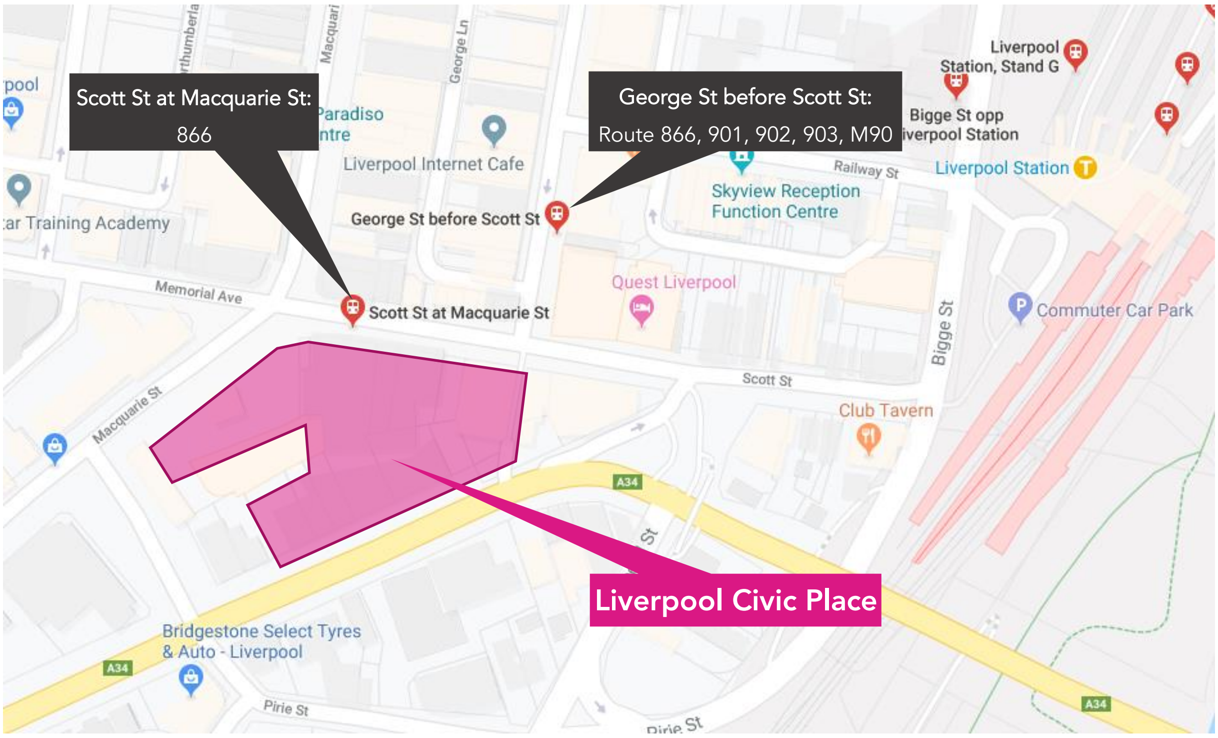


Figure 12 - Nearby Bus Stop Locations & Respective Bus Numbers

Table 3 - 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

4.3 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). 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.

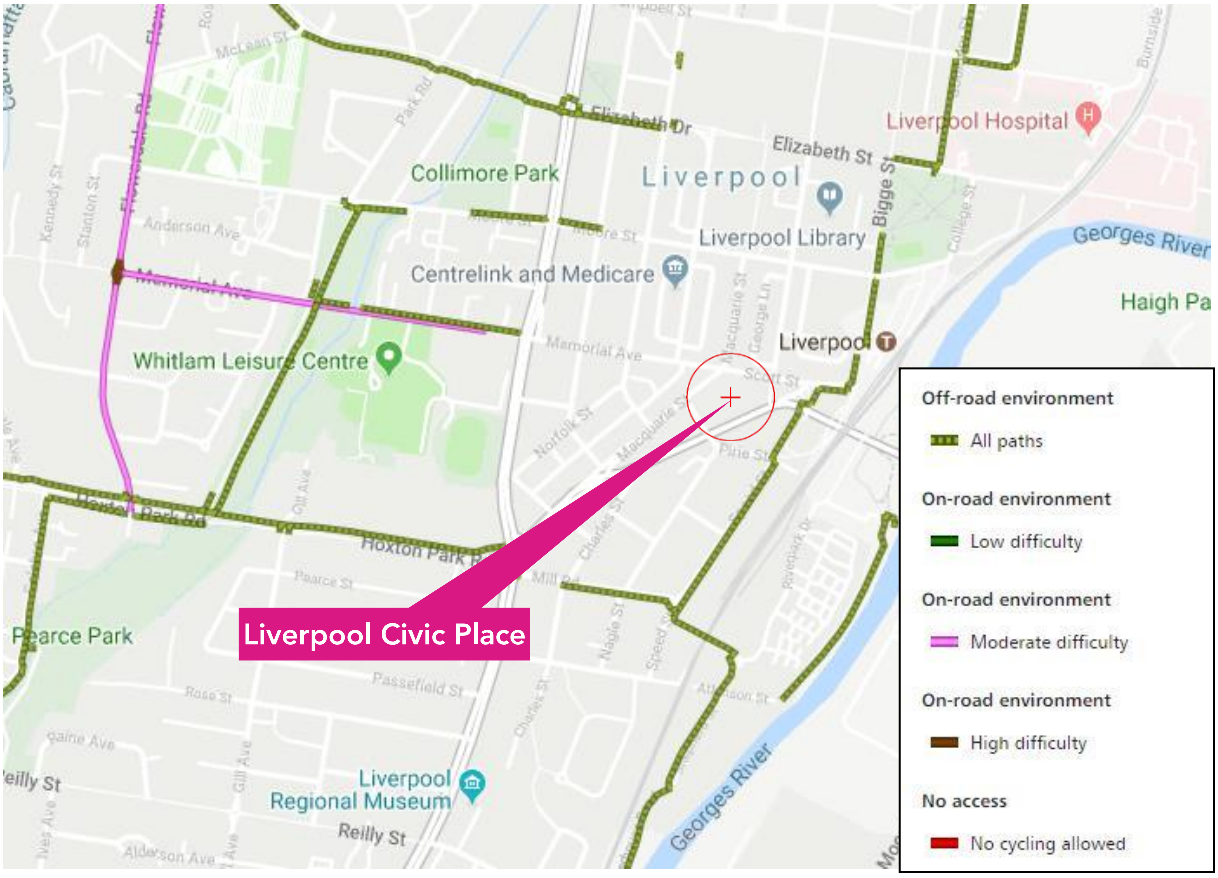


Figure 13 - Cycleways in the locality of the site (Source: NSW Cycleway Finder)

4.4 LCC Public Domain Masterplan – June 2020

We note that during the preparation of this development application, the Public Domain Masterplan has been published by Council, which includes a description of future active transport infrastructure planned for the CBD. The identified initiatives relevant to the site, include:

- Cycle lanes on Scott Street and George Street,
- George Street upgrade (including dedicated cycleway),
- Pedestrian Priority Spine along Macquarie Street,
- Strengthening pedestrian links throughout the city centre.

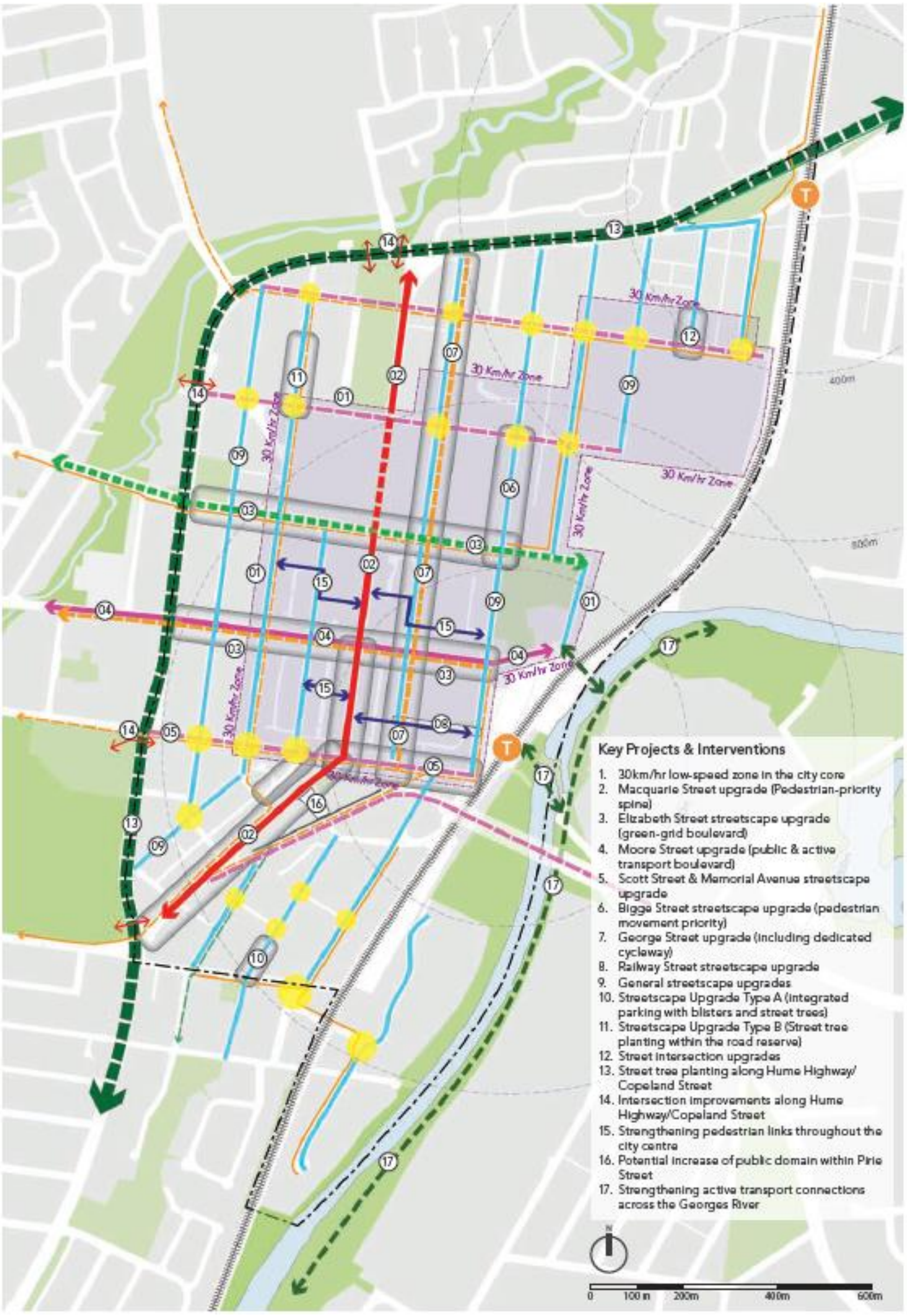


Figure 14 - Streets Typology Plan *(source: LCC Public Domain Masterplan)*

5. Future Road Amendments

There are two potential road upgrade projects in the vicinity of the site.

5.1 Scott Street Slip lane

Council 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 15. This road realignment has been incorporated into the traffic impact assessment and SIDRA modelling.

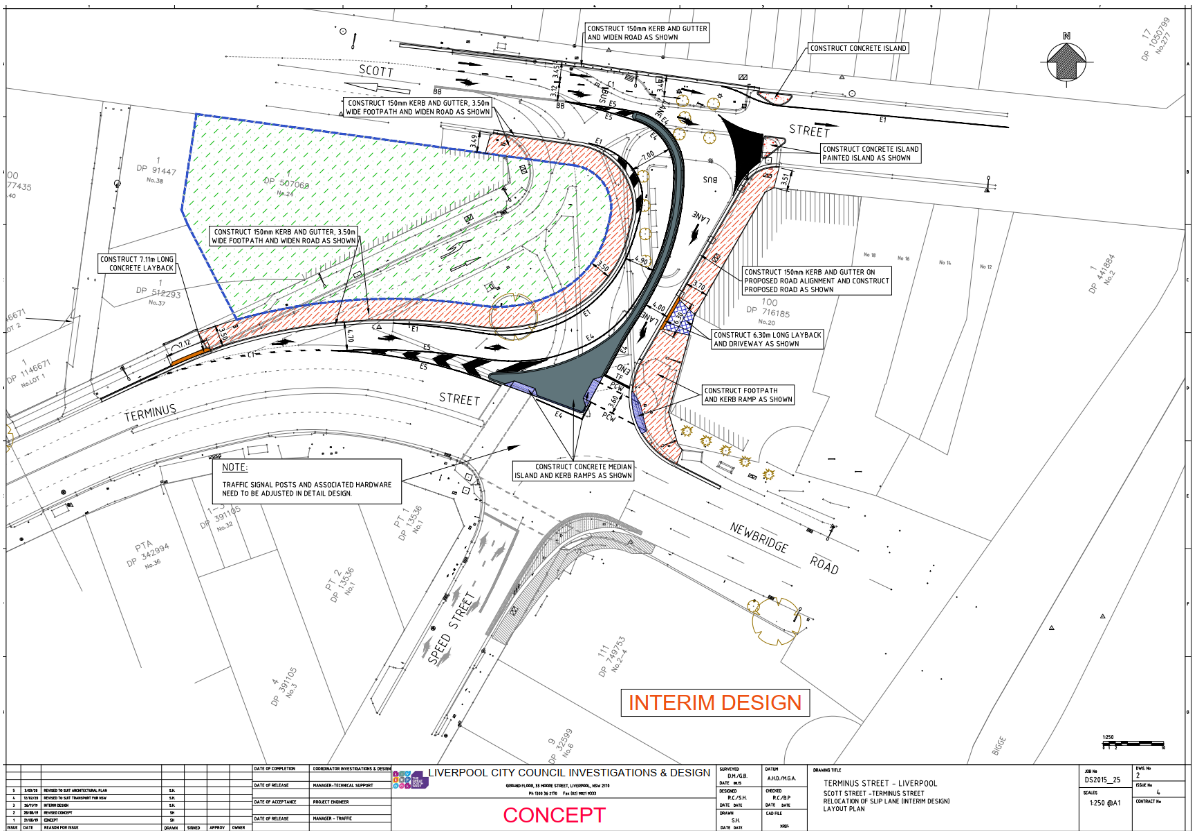


Figure 15 - Proposed slip lane relocation

5.2 Terminus Street Widening

TfNSW has plans for a future 6-lane widening along Terminus Street as shown in Figure 16. While it is noted that this proposal is currently at high level stages, 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 planned arrangements.

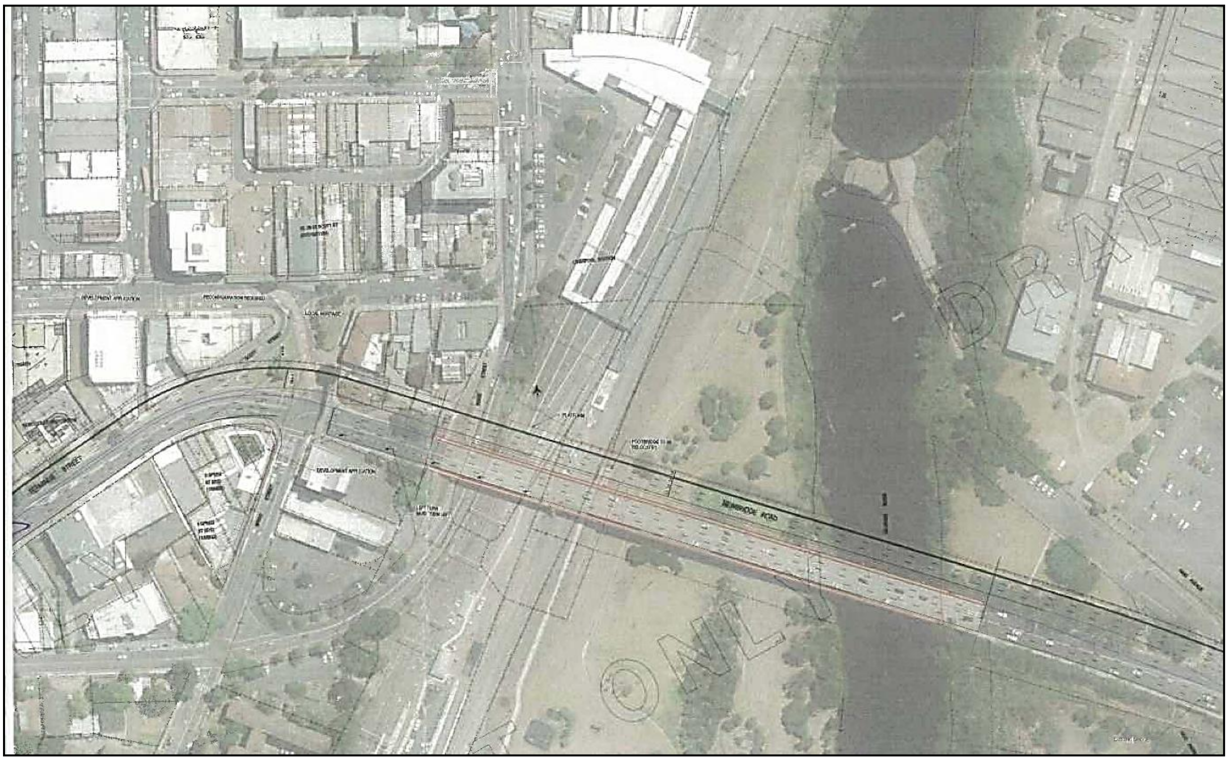


Figure 16 - Proposed Terminus Street Widening (with Aerial and TfNSW proposal overlay)

6. Traffic Impact Assessment

As stated in Section 2.1, the subject application seeks approval for a development comprising a library, Council offices, commercial office area and a child care centre with parking associated with the development plus a public car park. It is noted that 46 parking spaces will be allocated to Council fleet vehicles, which will access the car park from Terminus Street, these have been included within the trip generation on Terminus Street as part of the total provision of 202 parking spaces, comprising the public and fleet parking.

The Concept Approval application included a traffic assessment based on the maximum yield of the entire property, which included a commercial building within the eastern part of the site (Phase B and C). The projected traffic activity has been adjusted to align with the yields and parking provisions proposed within this Development Application, Phase A, which follows a more detailed development of the architectural plans. While this application does not include Phases B and C, (which will be subject to a separate DA), the following traffic analysis includes the traffic activity adopted in the Concept Approval for this part of the development in order to present a cumulative assessment. A Traffic Impact Assessment will be submitted with the DA for Phase B and C, which will further refine the traffic projections in line with a more detailed building design / yield outcome.

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.

6.1 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 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 components of the project.

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 proposed Car Park. 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.

6.1.1 Mixed use envelope (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. When applied to the Concept Proposal floor areas, the morning peak trip generation results comprise:

- Library = 5,000m^2 x 1.6 per 100m^2 = 80 trips
- Council Admin = 16,668 x 1.6 per 100m^2 = 267 trips
- Mixed-use commercial Building* = 27,944m^2 x 1.6 per 100m^2 = 447 trips

* Floor area referenced from the concept approval

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.

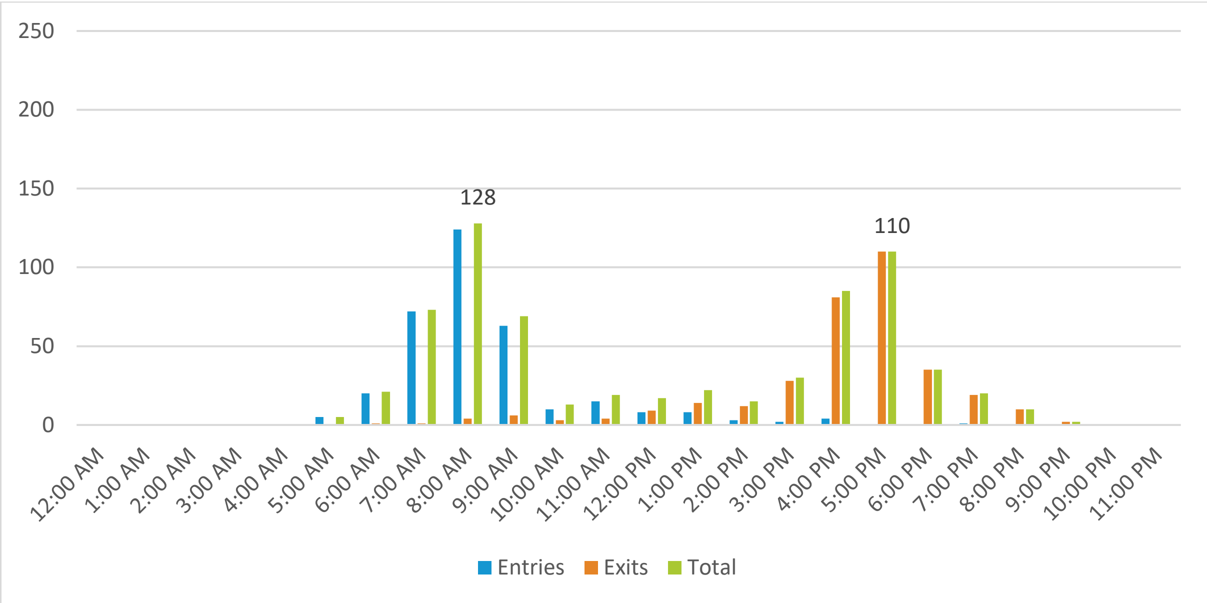


Figure 17 - Weekday Trips (Warren Serviceway CP - Council Parking Spaces)

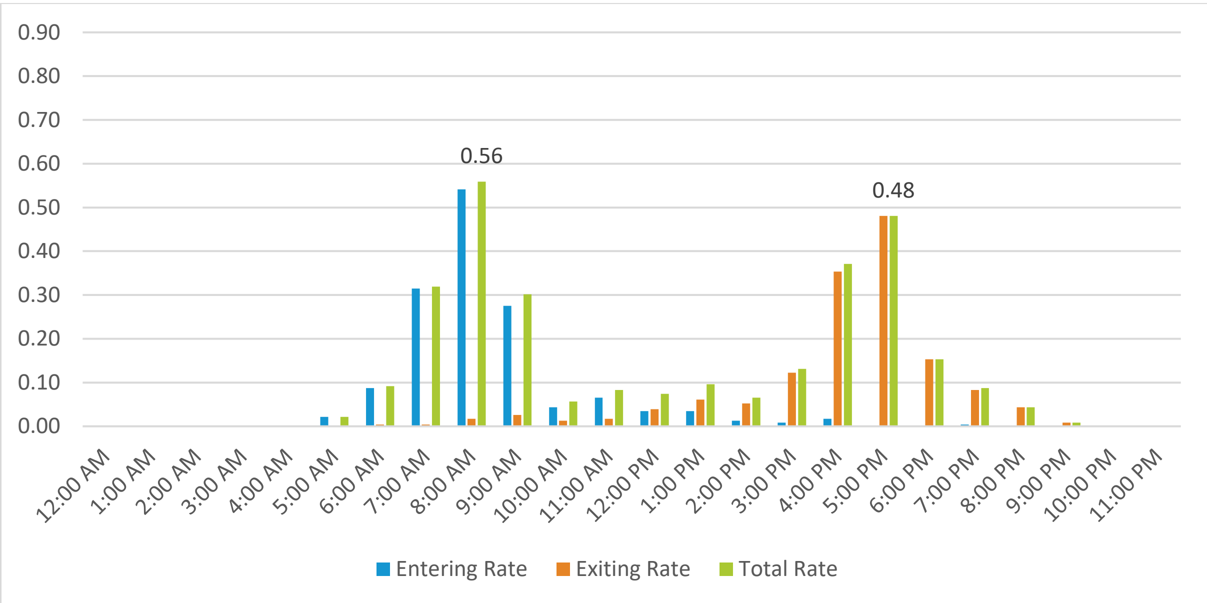


Figure 18 - Weekday Trip Rate per Space (Warren Serviceway CP - Council Parking Spaces)

6.1.2 Public Car Park

The proposed 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.

Figure 19 presents the entering and exiting traffic data collected at the Warren Serviceway car park. The volumes are based on the short-term parking spaces, which are available for casual parking.

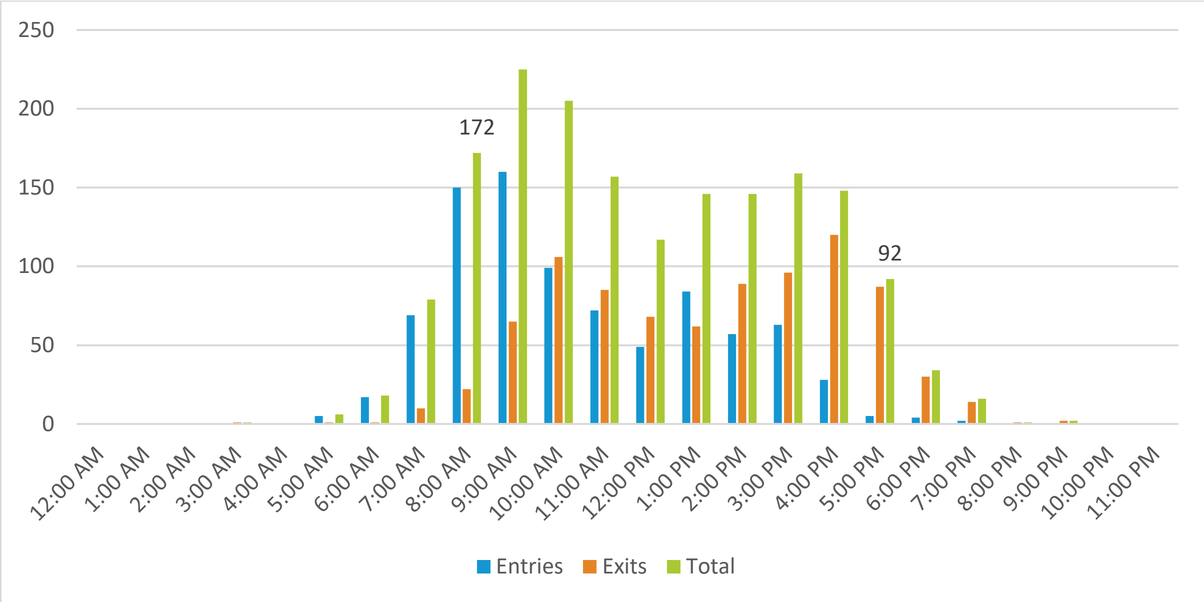


Figure 19 - Weekday Arrivals and Departures (Warren Serviceway CP - Public Spaces)

Figure 20 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

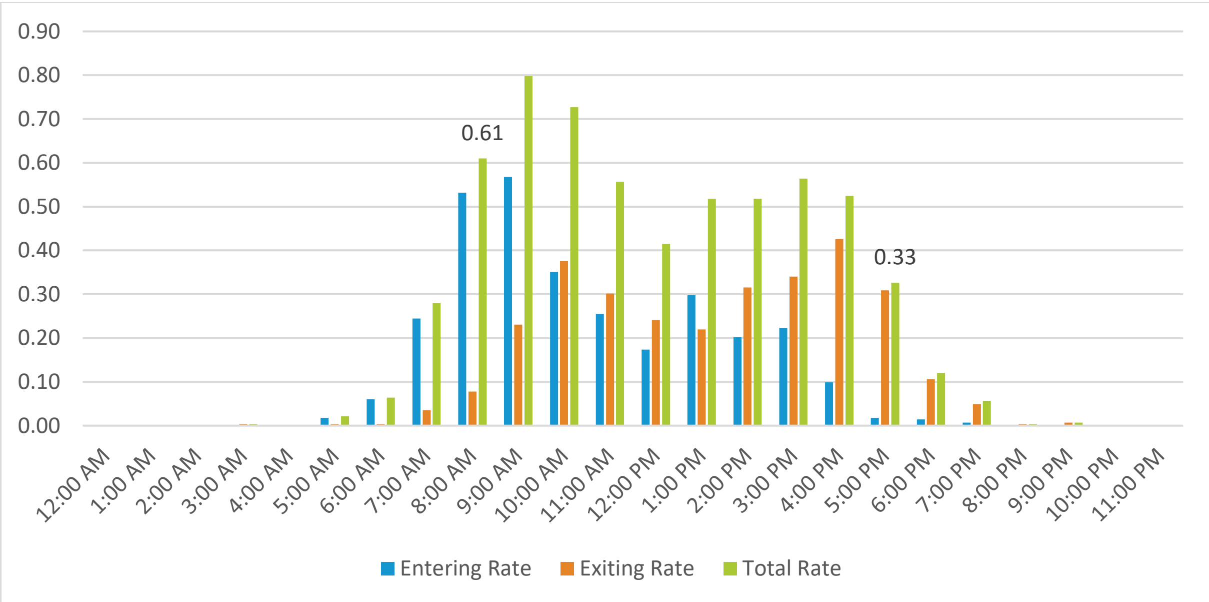


Figure 20 - Weekday Trip Rate per Space (Warren Serviceway CP - Public Spaces)

6.1.3 Development Vehicle Trip Generation Summary

Having regard to the above, the traffic generation of the proposed development, plus the future Phase B and C development, during the morning and evening peak periods is summarised in Table 4.

Table 4 - Traffic generation

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					-
DA Sub-total	**344**	-	-	**200**	**141**	-
Phase B and C*	128	0.56	0.48	72	61	Scott St
Total	**472**	-	-	**272**	**203**	-

* 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:

	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
Phase B and C*	72	61	72	61	0	0	Scott St
Total	**267**	**190**	**272**	**203**	**5**	**13**	-

* It is noted that the traffic activity associated with Phase B and C development is not yet able to be calculated in detail and is therefore unchanged.

The Phase A project involves a similar level of traffic compared with the concept approval, being an increase of 5 and 13 vehicles during the morning and evening peaks respectively, which is not considered to have any material impact on the road network given the daily variations that occur.

6.2 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 5 - 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			
Phase B and C*	97%	3%	0%	100%

* Not Part of this DA

Table 6 - Inbound and Outbound Trips

Land Use	Access	Morning Peak		Evening Peak	
		Entry	Exit	Entry	Exit
Council Admin, Commercial	Scott Street Access *	146	5	0	130
Public Parking + Fleet	Terminus Street Access	105	15	4	69

* Refer to Section 7.3.4 with regard to the Shard Zone usage

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.

These assumptions are represented in Figure 21.

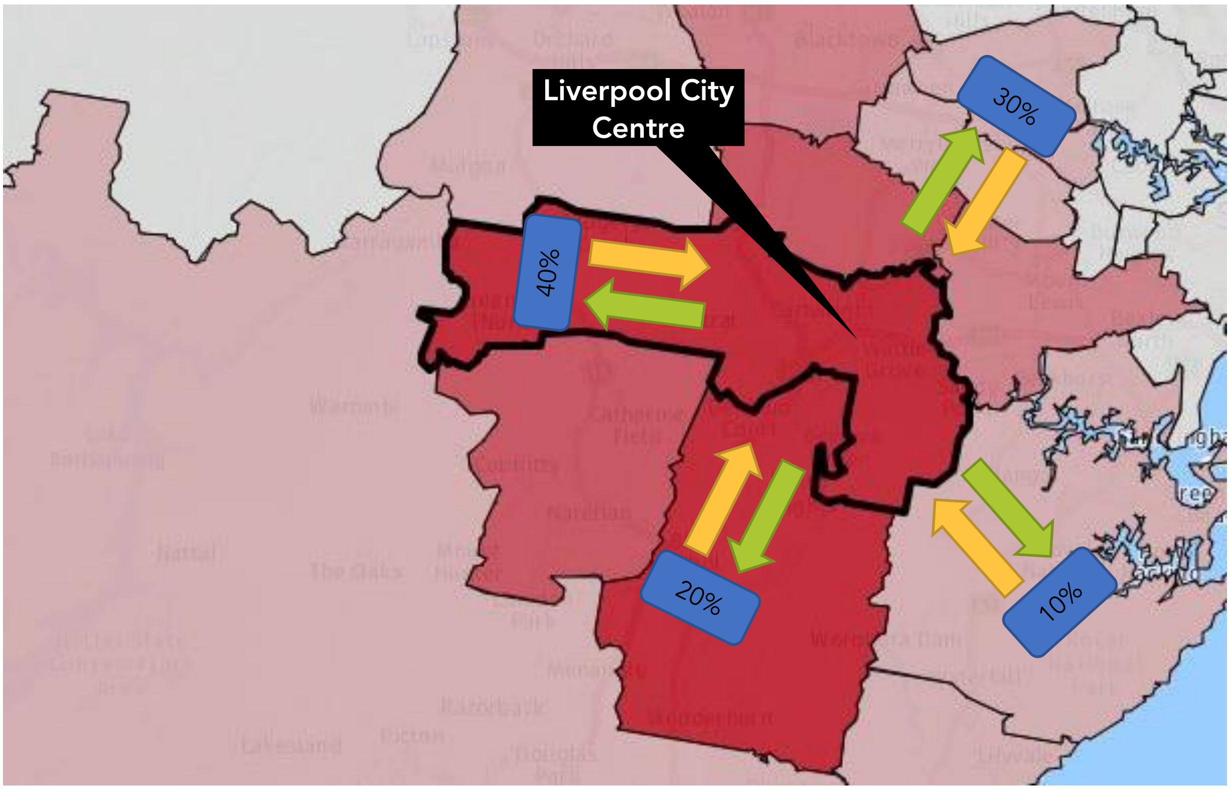


Figure 21 - Residential locations of workers in Liverpool 2016 (Source: profile id.)

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

Table 5 - Volume of additional vehicles travelling to and from each direction.

	Morning Peak		Evening Peak	
	Inbound	Outbound	Inbound	Outbound
North	75	6	1	60
South	50	4	1	40
East	25	2	0	20
West	101	8	2	79
TOTAL	**252**	**20**	**4**	**199**

Note: The trip numbers are rounded to one trip.

6.3 Traffic Modelling

For the purposes of assessing the traffic impacts of the proposed building on the surrounding road network, we have been developed the intersection modelling by utilising SIDRA Intersection software. The following intersections have been included in 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
- Level of Service (LoS) – This is a categorization of average delay, intended for simple reference.
- 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 is a good indicator of overall performance for individual intersections, with each level summarised in Table 6.

Table 6 - Level of Service Definitions

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 movement counts for the existing condition.

The SIDRA results for the existing conditions and post-development scenario are summarised in the following sections. Detailed SIDRA results can be seen in Attachment 3.

6.3.1 Existing Conditions

Table 7 - Results Summary of Intersection Performance - Existing

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	48.0
	PM Peak	B	0.342	24.3	78.3
Macquarie Street/ Memorial Avenue/ Scott Street	AM Peak	B	0.350	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	25.0	114.2
Terminus Street / Newbridge Road/ Speed Street	AM Peak	B	0.827	18.5	298.8
	PM Peak	D	0.934	45.4	460.0
Terminus Street / Pirie Street	AM Peak	C	0.870	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.

6.3.2 Post Development Conditions

Table 8 - Results Summary of Intersection Performance – Post-development

Intersection	Period	Level of Service	Degree of Saturation	Average Delay (sec)	95% Queue Length (m)
Scott Street / George Street	AM Peak	B	0.275	26.7	58.4
	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	C	0.799	26.4	65.3
Macquarie Street / Pirie Street	AM Peak	B	0.420	24.1	85.8
	PM Peak	B	0.611	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	460.0
Terminus Street / Pirie Street	AM Peak	C	0.916	27.8	114.4
	PM Peak	B	0.510	23.6	101.9
Terminus Street/ Scott Street	AM Peak	A	0.116	5.6	3.4
	PM Peak	A	0.118	5.6	2.6
Scott Street Access	AM Peak	A	0.144	6.9	0.1
	PM Peak	A	0.269	6.9	4.0

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 26 seconds and 65m respectively during the PM peak which may impact the proposed access driveway along Scott Street with remained acceptable Level of Service.

7. Vehicular Access Arrangement

The building design includes a five-level basement car park with vehicle access from Scott Street and Terminus Street in an arrangement whereby only cars accessing the public car park and the Council fleet parking spaces will be accessible from the Terminus Street access. This has been proposed to retain consistent traffic activity on Terminus Street when compared with the existing public car park of 202 spaces, and to limit the traffic activity on the proposed Scott Street access, which is proposed as a shared zone.

7.1 Scott Street Access

The Scott Street access will accommodate one travel lane in each direction for vehicle arrival and departure. This driveway will provide the access for passenger vehicles to the Council car park and the future eastern development (car park and servicing). The right turn movement from the access into Scott Street will be prohibited due to the heavy right turn movements from George Street during the peak periods.

Access to the Council car park will be controlled by a boomgate requiring an access card (or similar) to restrict this access to authorised users only.

7.2 Terminus Street Access

This access will provide an entry/exit to the public car park, the childcare centre drop-off spaces and the loading area associated with the Council Admin building and the Library.

Access to the public car park will be controlled by an Access Control System (boomgates or similar) which will be linked to a payment system. This will prevent use of this access by Council employees, as the system will require payment on exit. The parking system will only permit up to 202 vehicles to access the public car park at any-one time and the access control area has been designed to enable vehicles to exit the car park if fully occupied.

In accordance with the Pre-DA feedback from TfNSW, a median island will be constructed along eth full width of the driveway to prevent the right turn movements to and from this driveway. The concept drawing is presented in Attachment 4.

7.3 Access Considerations

7.3.1 Council's Vision

The Liverpool Civic Place is a key strategic project in line with Liverpool City Council's ongoing Delivery and Operational Plan. The project was initiated by Council to act as a catalyst in activating the southern end of the Liverpool CBD.

The key drivers of the Liverpool Civic Place project include:

- Activating the southern end of Liverpool CBD,
- Provision of a new civic place encompassing new state of the art library, council chambers and offices,
- Provision of additional facilities for the South Western Sydney Campus of University of Wollongong.

The key objectives of the project are:

- To deliver a mixed-use development incorporating a combination of Civic and commercial uses, together with hotel and retail facilities,

- To provide a civic identity/focus and to anchor/activate the southern end of Liverpool CBD,
- To create a generous public space with an active ground plane connecting along Scott Street to Liverpool Railway Station.

To achieve these aims, the project will be designed as a major pedestrian-oriented development with activation along the Scott Street frontage and providing strong pedestrian connections to public transport and the CBD.

7.3.2 Urban Design Vision

The vision for the development of the Liverpool Civic Place is to provide a diverse, active, safe and accessible Civic Centre on the southern side of Liverpool City Centre,

The project seeks to create a vibrant Council office, integrated with a library, commercial offices, casual accommodation and retail spaces. The vision is to create a place of inclusion and opportunity that is extending and activating the southern part of the Liverpool CBD,

A central plaza and landscaped open space will be provided on the northern side of the project along with a pocket park connecting with Terminus Street to cater to diverse needs of the community, council staff, workers, tourists and anticipated visitors, each with a distinct character to provide a variety of experience. The central plaza is to be designed with high amenity to optimise greater community interaction and engagement and also to be major connection links to Liverpool CBD, in particular to the retail frontage along George Street and Macquarie Street.

7.3.3 Liverpool City Centre Transport Strategy

The Liverpool City Centre Transport Strategy was prepared in 2017 in order to support the intended increase in land use densities throughout the Liverpool CBD. The overall approaches identified in this Strategy include:

- Encouraging the use of public transport through the provision of improved bus and train operations;
- Encouraging the use of walking and cycling;
- Promoting business and other economic activity through the provision of short stay parking close to the business core of the central city;
- Facilitating long stay commuter parking through the provision of parking garages remote from the CBD but within walking / shuttlebus distance;
- Seeking to improve traffic circulation and reduce congestion within the central city through a package of street and intersection intervention, and
- Seeking to improve access to the primary road network through selective intersection upgrades and improvements.

A number of specific actions have also been identified in the Strategy providing a guidance to the design of the proposed Liverpool Civic Place, which include:

- Improving walking and cycling access to Liverpool Station by upgrading connection facilities along with the retail frontage (Penn's Railway Arcade at George Street and Stathis Arcade at Macquarie Street) and footpaths along Railway Street;
- Implementing wayfinding system to direct pedestrians and cyclists throughout Liverpool City Centre.
- Pedestrianising the southern end of Macquarie Street;
- Linking the city centre into Liverpool's strategic bike route network and providing bike parking facilities at popular destinations.

7.3.4 Pedestrian safety and amenity

The project has been designed to provide high pedestrian amenity and therefore, pedestrian connectivity and safety are key considerations in the design.

With regard to the traffic activity on the shared path, the following graphs illustrate the scenarios that have been tested, which comprise:

- Single Access from Scott Street (Council Employees only)
- Single Access from Scott Street (as above with the Phase B and C development)
- Single Access from Scott Street (as above with the Public Car Park)

The final graph illustrates the traffic comparison on the shared zone resulting from the second access from Terminus Street.

The results indicate that with the provision of a Terminus Street access for the public car park, the remaining traffic activity on the Shared Zone is suitably low for a shared zone environment, peaking at approximately 150 vehicle movements during the morning peak hour (including an allowance for the eastern building), which equates to a vehicle every 24 seconds. In reality, the bunching of vehicles caused by the surrounding traffic signals will group vehicles, providing longer gaps between vehicle groups.

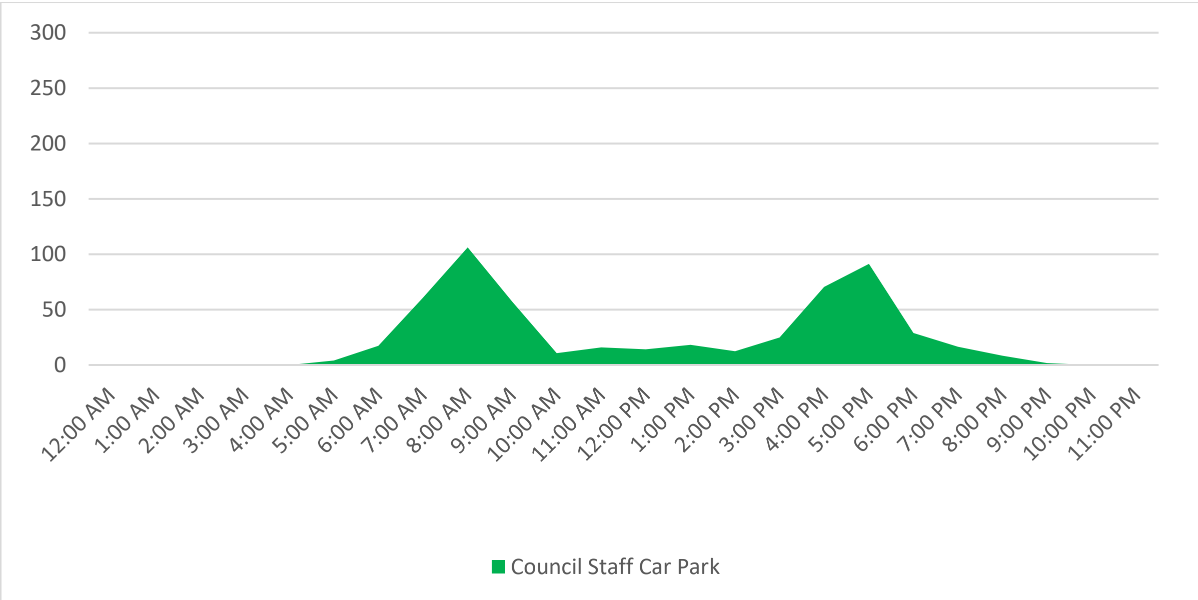


Figure 22 - Projected Traffic Volumes on the Shared Zone - Council Staff

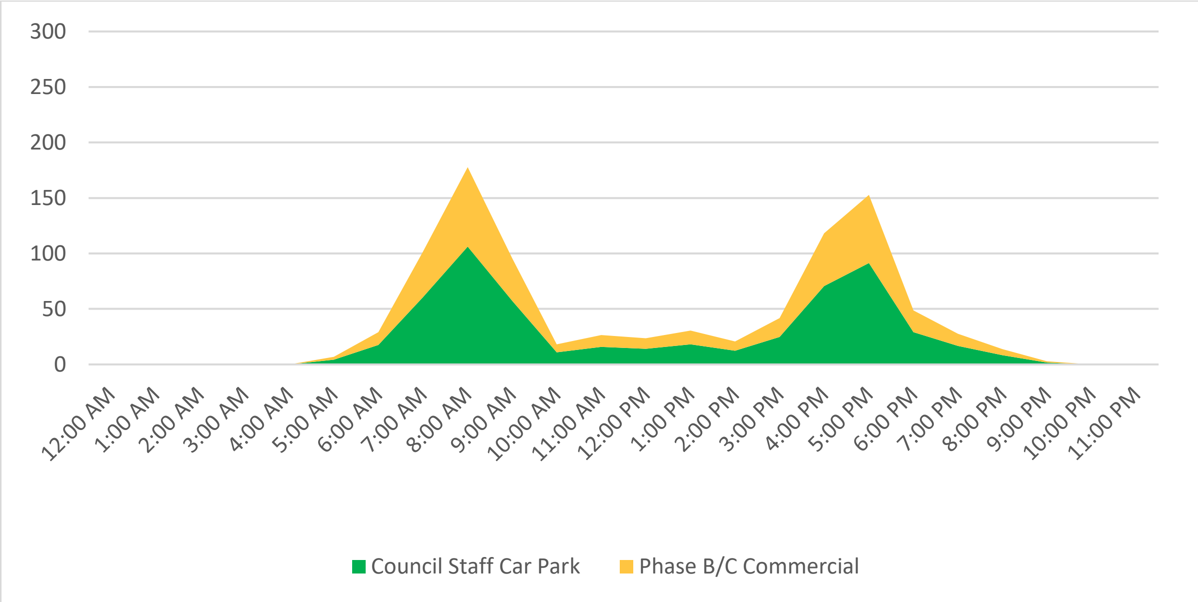


Figure 23 - Projected Traffic Volumes on the Shared Zone - Council Staff and Phase B and C development

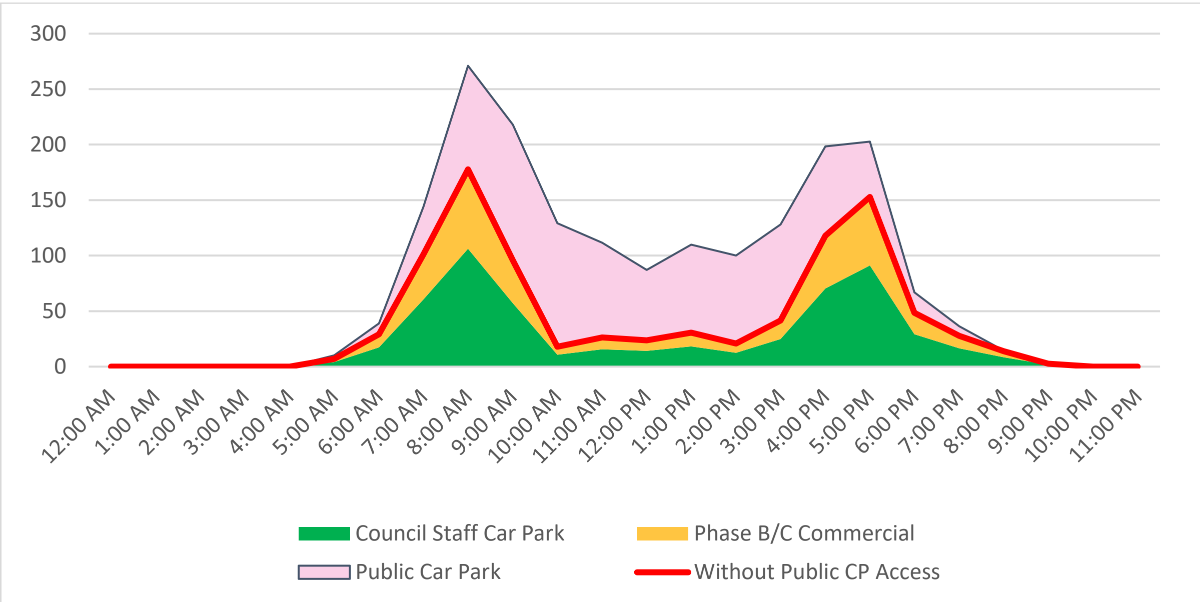


Figure 24 - Projected Traffic Volumes on the Shared Zone - Council Staff, Phase B and C development and Public Car Park

The final graph illustrates that providing access to the public car park via the shared zone would diminish the pedestrian priority over the shared zone, which supports the provision of an access from Terminus Street.

8. Parking Provision

8.1 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 4 – Development in Liverpool City Centre
- Liverpool Local Environmental Plan (LEP) 2008

8.2 Car Parking Provision

Considering that the site is within the Liverpool City Centre and lies within a B4 mixed use zone, the development is subject to the minimum parking provision requirements stipulated in the Liverpool LEP 2008:

- For the ground floor:
  - 1 space per 200m^2 GFA
- Any other part of the building:
  - 1 space per 100m^2 GFA for retail spaces
  - 1 space per 150m^2 GFA for any other purpose

Table 9 - Car Parking Provision (the final floor areas will be confirmed during the Stage 2 DA stage)

Component	Level	GFA (m2)	LEP Parking Rate	LEP Parking Requirement	Proposed Provision
Library	Ground	465	1 space per 200m^2	2	-
	Other Levels	4,535	1 space per 150m^2	30	-
Council Office	Ground	704	1 space per 200m^2	4	-
	Other Levels	15,964	1 space per 150m^2	106	-
TOTAL				**143**	**142***

* 142 spaces for staff, plus an additional 46 fleet vehicle parking spaces.

It is noted that the car park has been designed to accommodate private (Council) and public parking which will be controlled through a car park management system to separate these user groups. This means that the car park has a single circulation ramp system and can operate as a consolidated supply of parking if required. It is proposed that during weekends, the entire parking provision would be available for public use. This will require the nested Council parking area to be open and the access via Scott Street to be available to the public. It is important to note that the limitation of on the number of entries from Terminus Street would still apply and be managed by the access control system.

8.3 Accessible Car Parking

Based on the DCP Part 4, the development is required to provide accessible parking spaces based on the following minimum requirements:

- 2% of the total parking demand generated by the development

It is noted that the accessible parking provision is the included within the total parking capacity.

Table 10 - Accessible Parking Provision

Component	Total Parking Provision	DCP Parking Rate	DCP requirement (min)	Proposed Provision
Council Admin	190 spaces	2% of total capacity	4	4
Public CP	153 spaces	2% of total capacity	3	3

8.4 Bicycle Parking

The development must also provide bicycle parking spaces in accordance with the minimum requirements stipulated in the DCP Part 4 (May 2020 amendment):

- Office = 1 bicycle space per 200m^2 of GFA for staff and 1 per 750m^2 for visitors
- Library = 1 bicycle space per 10 staff and 4 spaces plus 1 per 1 per 200m^2 for visitors

Table 11 - Bicycle Parking Provision

Component	Total GFA	DCP requirements	DCP requirement (min)	Proposed Provision
Office Staff	16,668m^2	1 space per 200m^2	83	108
Office Visitors	16,668m^2	1 space per 750m^2	22	30*
Library Staff	5,000m^2	1 space per 10 staff	3	3
Library Visitors	5,000m^2	1 space per 200m^2	29	30*

* 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.

8.5 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 12 - Motorcycle Parking Provision

Component	Total Parking Provision	DCP requirements	DCP requirements (min)	Proposed Provision
Council Admin	190 spaces	1 space per 20 car spaces	10	10
Public CP	153 spaces	1 space per 20 car spaces	8	8

8.6 Travel Plan

Condition 27 of the Concept Approval requires the provision of a Travel Plan to promote the use of more sustainable modes of travel. Typically, this is established through the implementation of a Green Travel Plan, which is developed with input from the occupants of the building or campus. While this provides the ability for certain travel management measures to be adopted on an on-going basis, preparing 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 to note that in terms of the building design, the DA scheme in 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 providing spaces hidden in the basement car park.

8.7 Servicing

The proposal includes a loading dock within the ground floor, having access from Terminus Street. The loading dock has been designed to accommodate vehicles up to a Council refuse collection vehicle and a Medium Rigid Vehicle (MRV) for general deliveries. A courier / van space is also provided as well as a dedicated turning area.

The access to the loading dock will be shared with the public car park access but separates service vehicles within a short distance of the entry. The location of the loading in relation to the driveway and car park access has been determined in consultation with comments from TfNSW received during the assessment of the Approved Concept.

The layout of the loading dock and associated access is presented in the following figure:

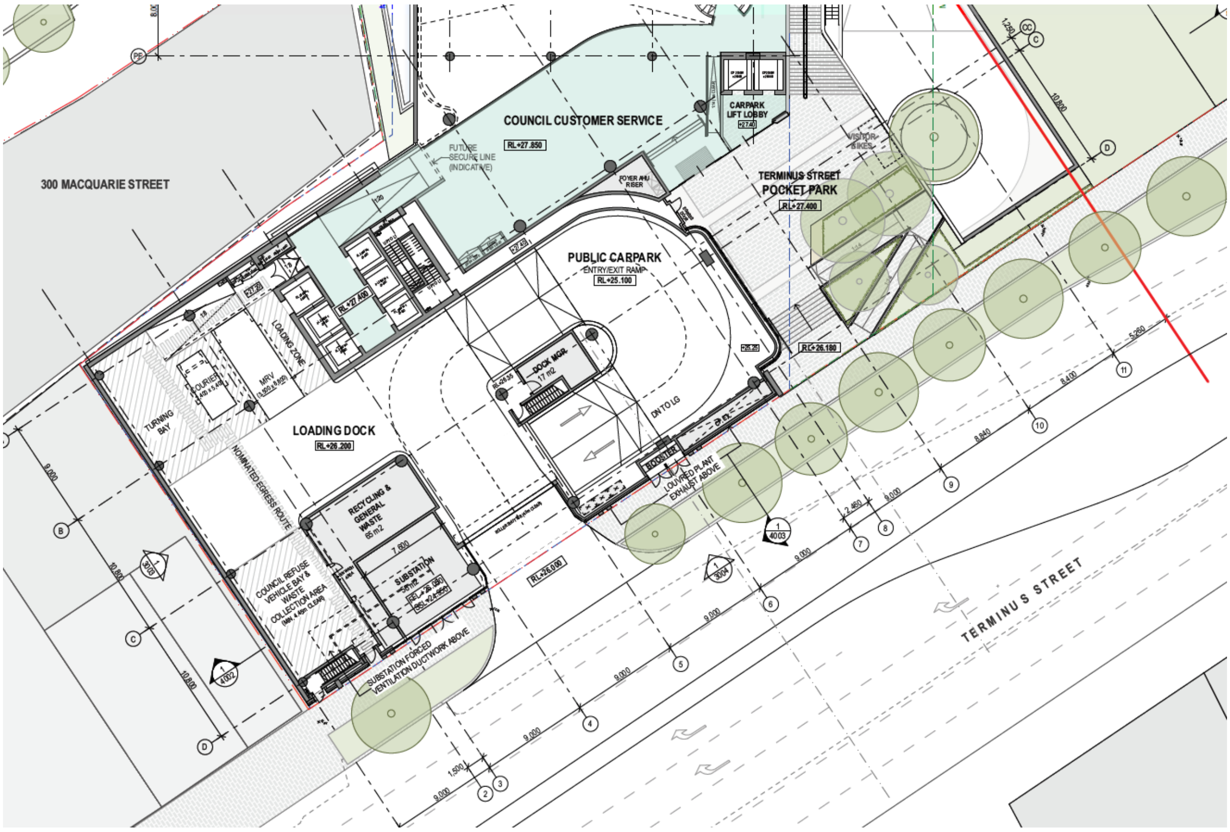


Figure 25 - Loading Dock and Terminus Street Access Arrangement

9. Access and Car Park Assessment

9.1 Parking Provision & Circulation

This application includes a basement car park of five levels to accommodate 190 spaces associated with the Council Admin building and 153 spaces for public parking. The car park has been designed to maximise the parking provision while providing an efficient and safe circulation system and a compliant parking layout.

9.1.1 Parking Circulation

The following section presents an assessment of the proposed development with reference to the requirements of AS2890.1: 2004 (Off – street parking), AS 2890.3: 2015 (Bicycle Parking) and AS2890.6:2009 (Off – Street parking for people with disabilities).

The car park access and parking arrangements have been designed in accordance with the requirements of Section 2 of AS2890.1.

Table 1.1 of AS2890.1 presents a number of classifications applicable to different land-uses. According to the Table, the most appropriate car park classification applicable to the subject car park will be a Class 2 facility, which is suitable for generally medium-term parking.

The parking space dimensions and associated aisle widths for each classification are presented in Table 2.2, and accordingly, a Class 2 facility requires parking space dimensions of 2.5 x 5.4 metres with an access aisle width of 5.8 metres. The proposed car park has been designed to provide compliant parking space widths of 2.5 metres and aisle widths of at least 5.8m, which meets the minimum requirement.

An assessment of the car park design has been undertaken including column locations, aisle extensions and ramp grades and in this regard, the car park design complies with the requirements of AS2890.1.

Figure 26 - Swept Paths of a B99 Entering the Car Park from Terminus Street

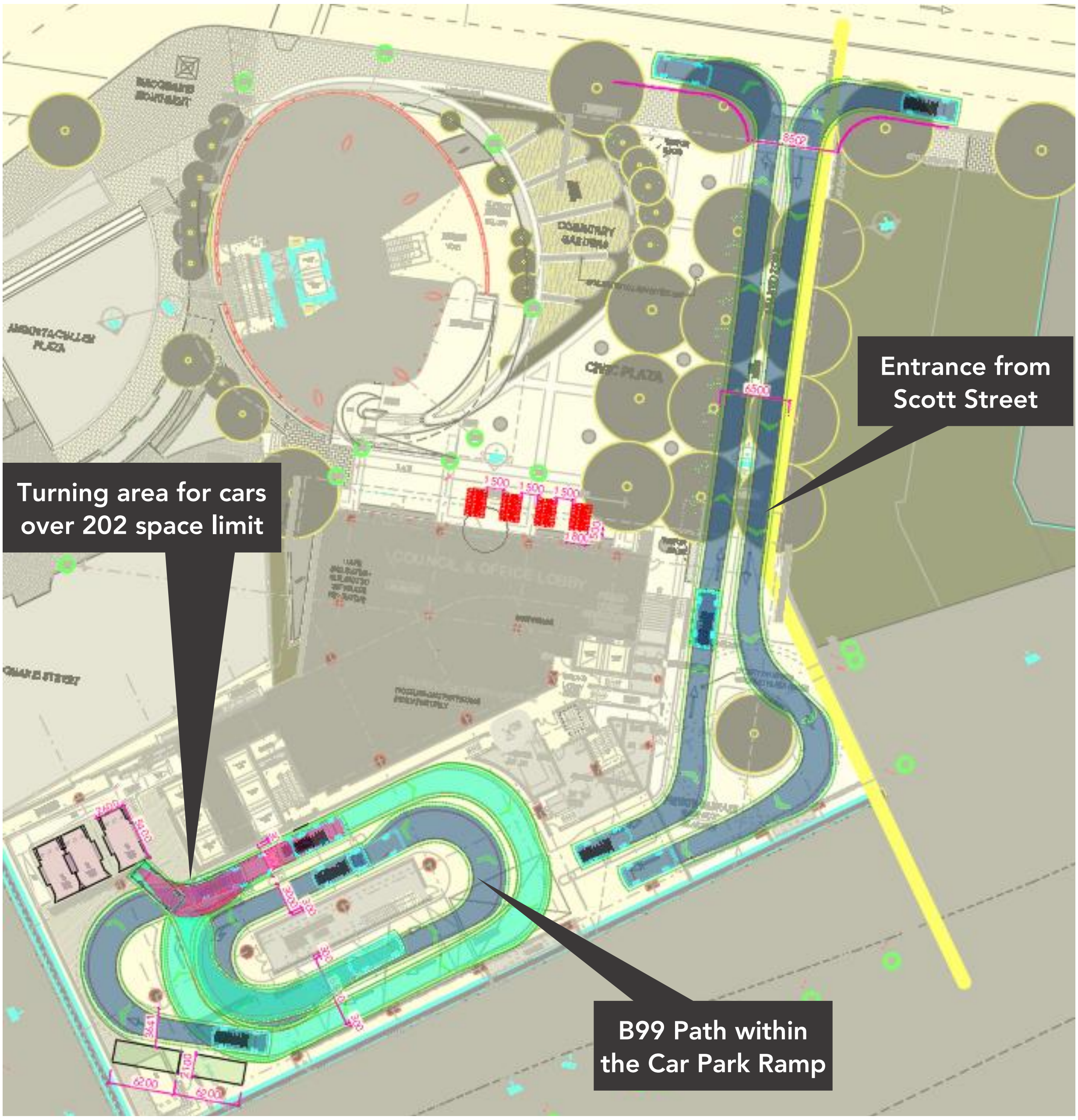


Figure 27 - Swept Paths of a B99 Entering the Car Park from Scott Street

The car park design review and swept paths are presented in Attachment 5.

10. Conclusion

This Traffic Impact Assessment report is submitted to Liverpool City Council in support of a Development Application for the development of a new mixed-use precinct known as Liverpool Civic Place at 52 Scott Street, Liverpool (the site). This application sets out the development of Phase A of the site under Section 4.23 of the Environmental Planning and Assessment Act 1979.

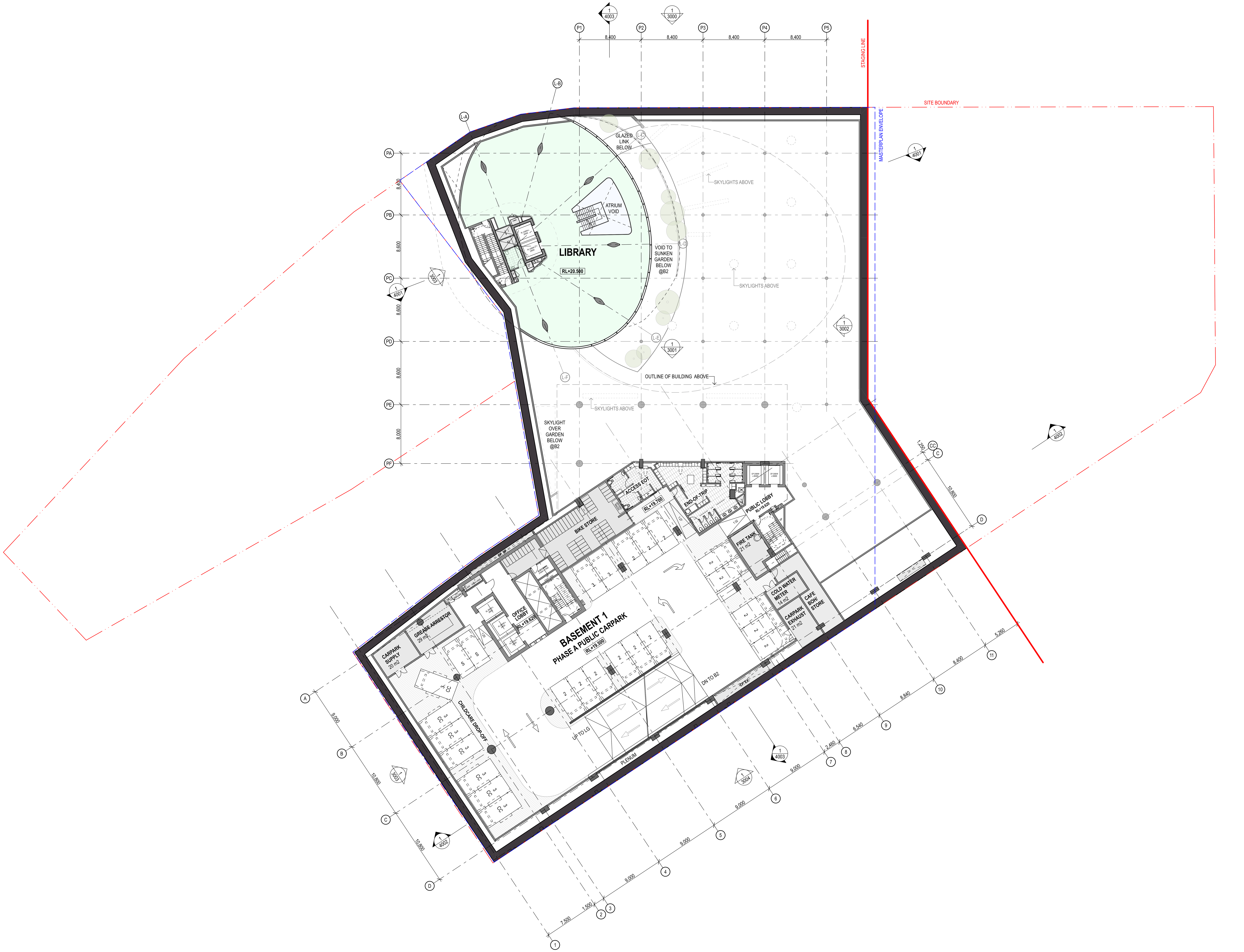
This application approval for a mixed-use building accommodating the following key components:

- North western building - A building accommodating 6 storeys and 5,000m^2 GFA for the purpose of an information and education facility (public library) use.
- South western building - A building accommodating 13 storeys and 16,668m^2 of GFA for the purpose of a public administration building use, commercial office premises and a child care centre.
- A landscaping and public domain concept including the provision of a public through-site link connecting Scott Street to the north through to Terminus Street to the south; and
- A five-level shared basement car park to accommodate parking for the administration building a public car park.
- While the car park for the administration building the public car park are located in the same basement with a shared vertical circulation, separate vehicle access will be provided at the street level, through the access control system:
    - Access to the car park serving the administration building will be provided from Scott Street, via a Shared Zone through the public plaza,
    - Access to the public car park will be from Terminus Street. The access control system will limit car park access to the 156 public parking spaces and 46 council fleet vehicle spaces (202 total). This access will also provide access to the loading dock area.

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 proposed car parking allocations will be provided with separate vehicles accesses and through the management system, this will ensure that the Terminus Street access will only provide access to the public car park, which replicates the current arrangement associated with the existing two-storey car park.
- The provision of two separate carpark access locations, reduces the traffic volumes on the Scott Street access, which is proposed as a shared zone.
- The access from Terminus Street will also provide access to the loading dock serving the Council Admin building and the Library, removing this activity from the shared zone.

Attachment 1 - Architectural Drawings



0 2.5 5 10m

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

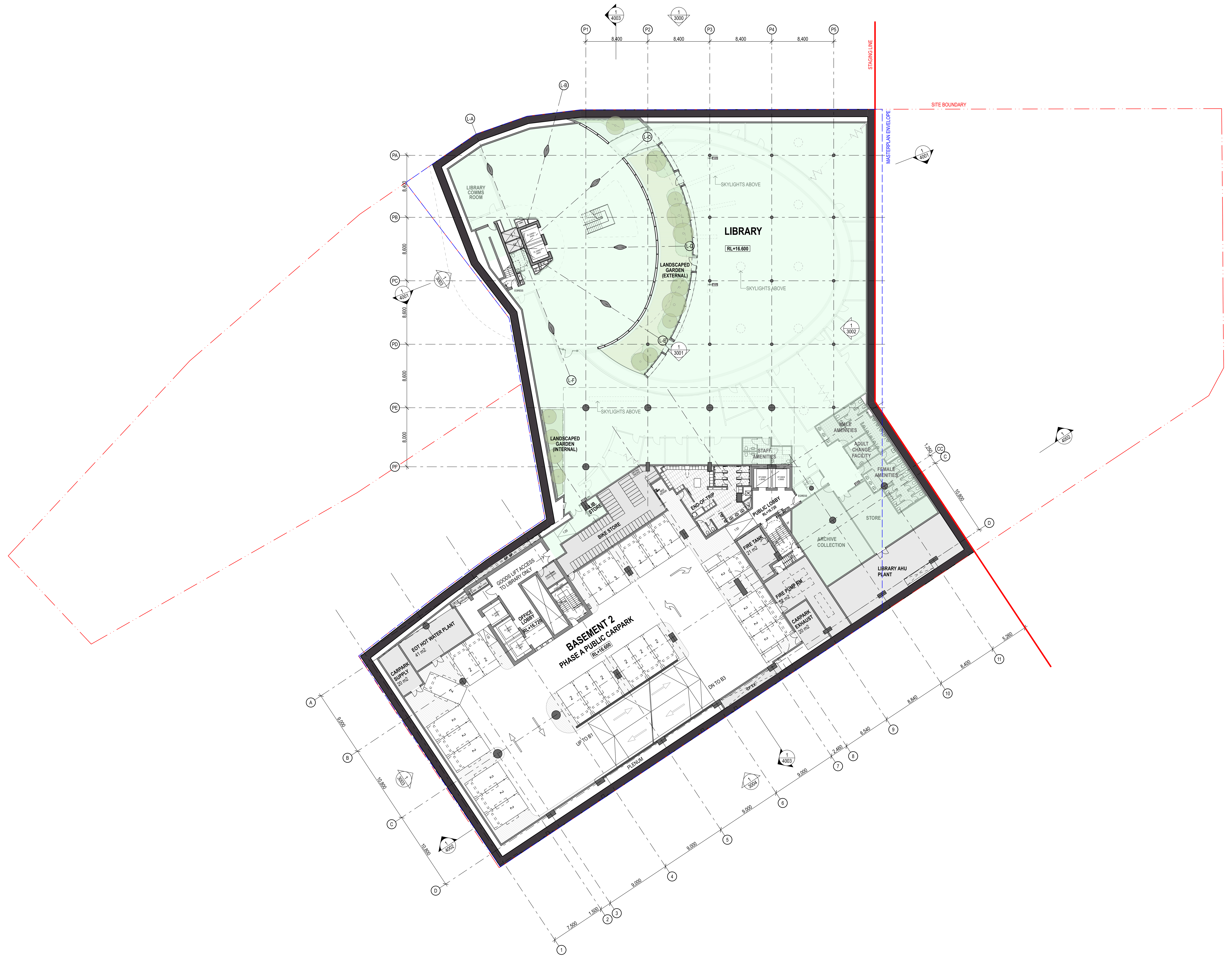
project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Basement 01

scale 1:250 @ A1 (1:500 @ A3) first issued 15/5/20

project code **BLCP** sheet no. **SD-AR-20B1** revision **E**

For Information



0 2.5 5 10m

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

fjmt

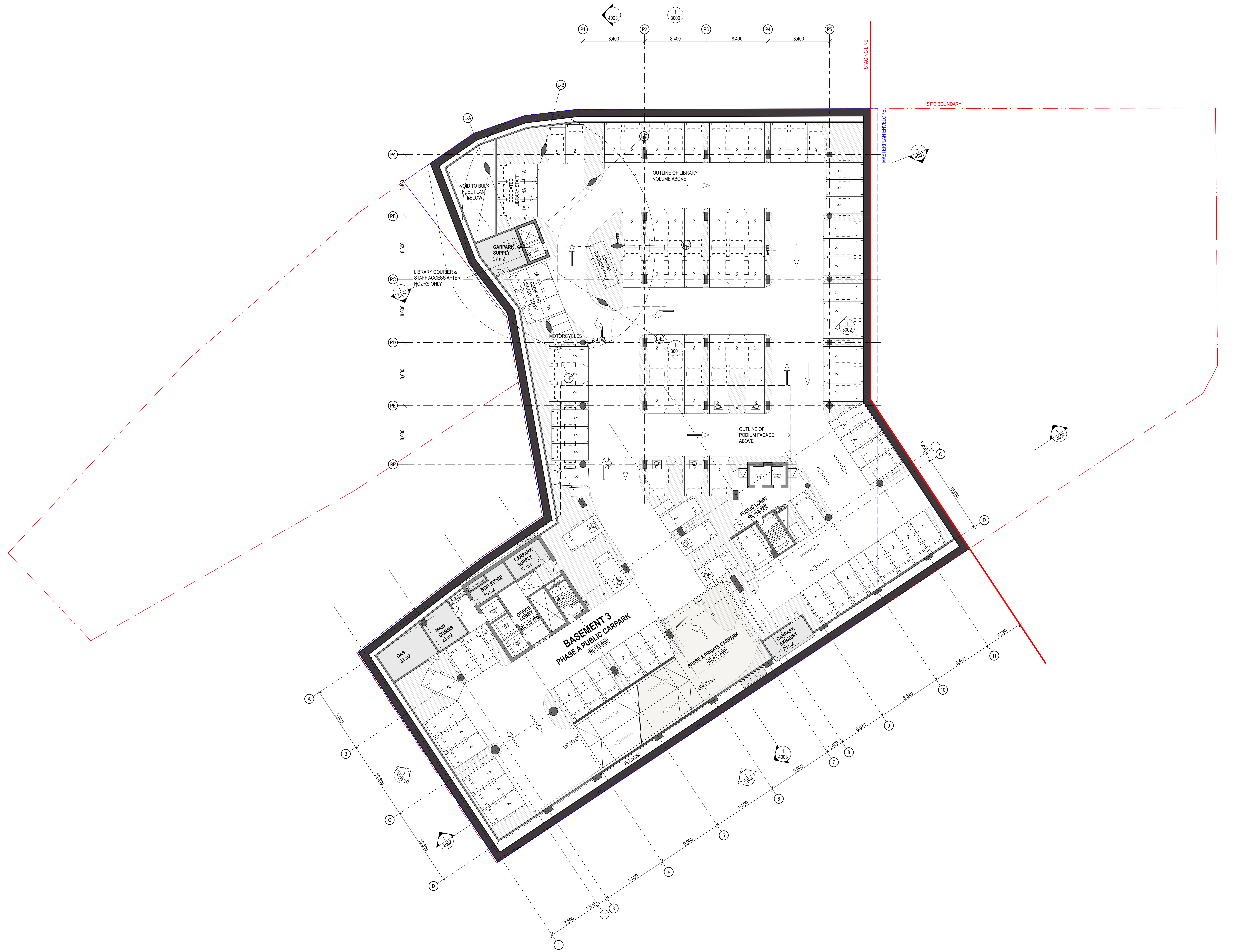
project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Basement 02

scale 1:250 @ A1 (1:500 @ A3) first issued 15/5/20

project code	sheet no.	revision
BLCP	SD-AR-20B2	E

For Information



GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street **t** +61 2 9251 7077 **w** fjmtstudio.com

fjmt

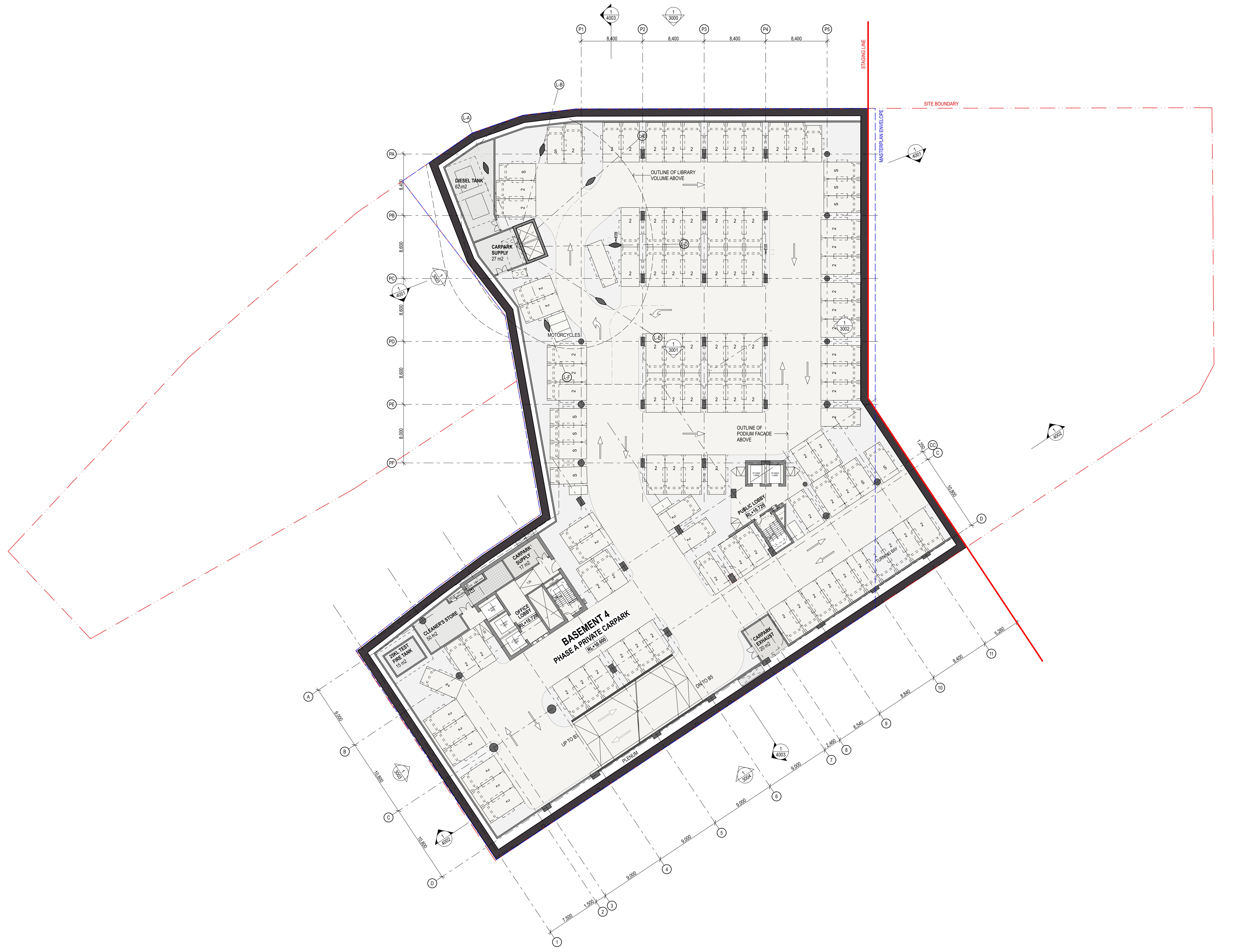
project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Basement 03

scale 1:250 @ A1 (1:500 @ A3) first issued 15/5/20

project code **BLCP** sheet no. **SD-AR-20B3** revision **E**

For Information



0 2.5 5 10m

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

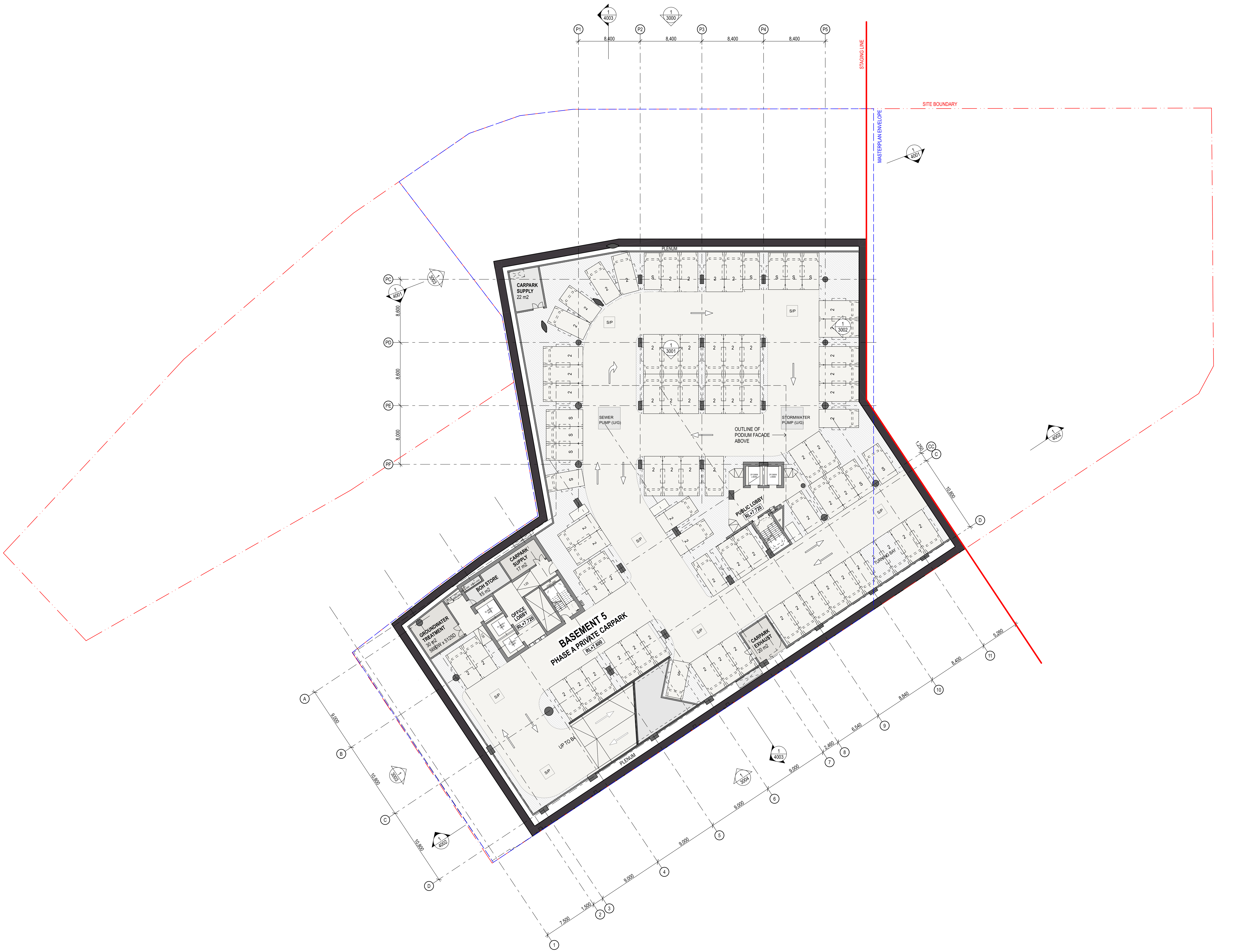
fjmt

project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Basement 04

scale 1:250 @ A1 (1:500 @ A3) | first issued 15/5/20
project code **BLCP** | sheet no. **SD-AR-20B4** | revision **E**

For Information



0 2.5 5 10m

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

fjmt

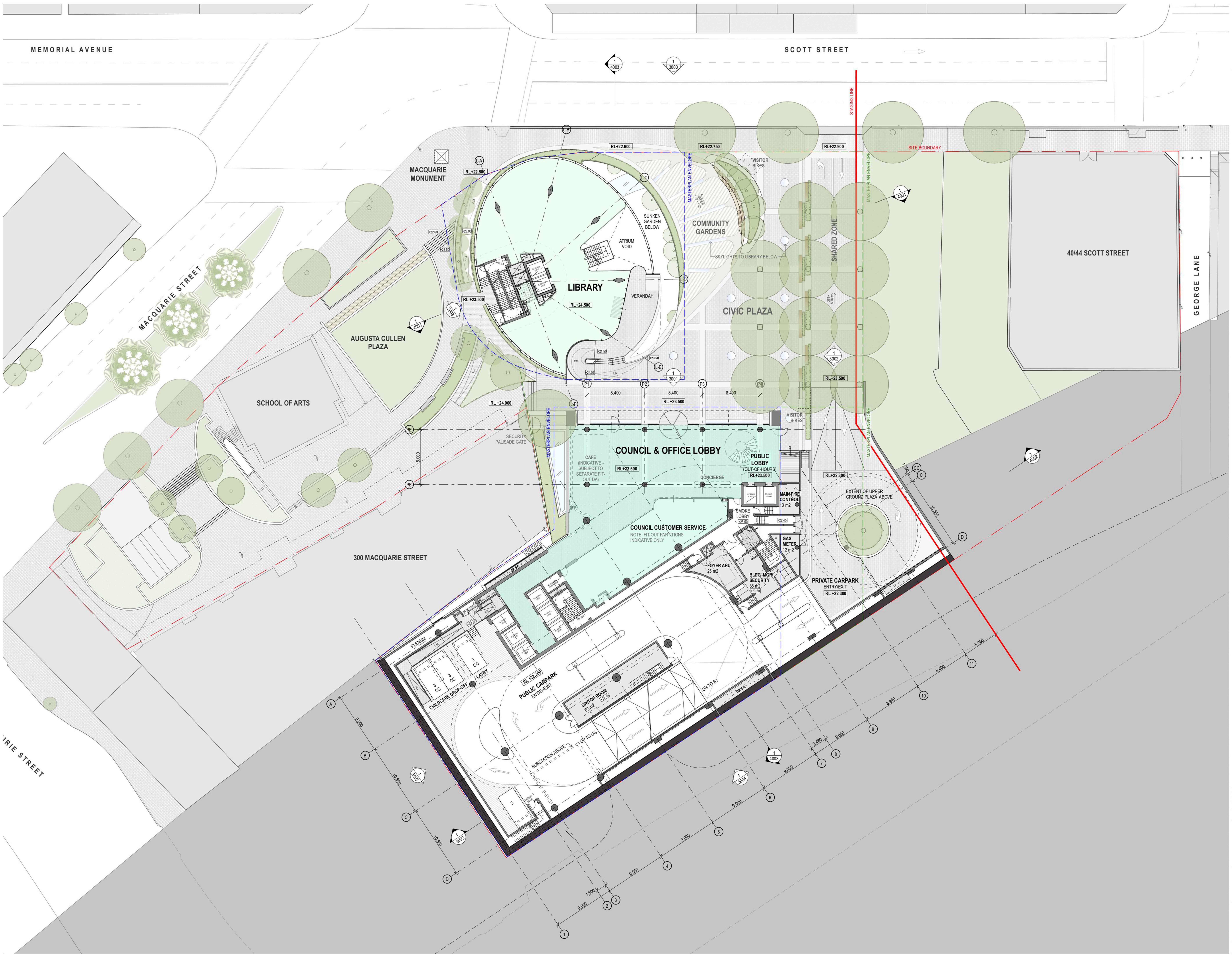
project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Basement 05

scale 1:250 @ A1 (1:500 @ A3) first issued 10/8/20

project code **BLCP** sheet no. **SD-AR-20B5** revision **E**

For Information



GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-XX	FACADE TYPE XX
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/6/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

fjmt

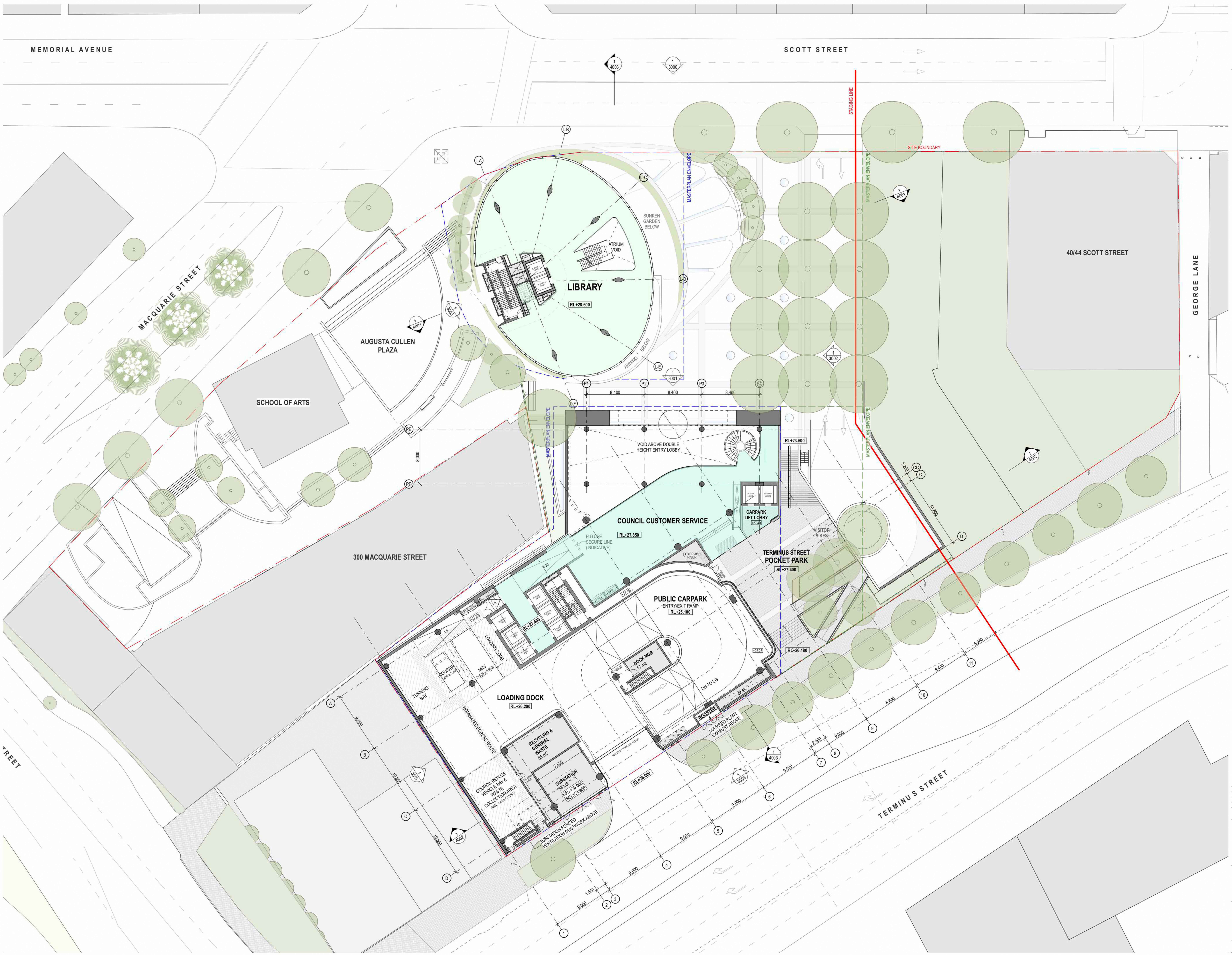
project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

title
GA FLOOR PLANS
Lower Ground Floor Plan

scale 1:250 @ A1 (1:500 @ A3) | first issued 15/5/20

project code BLCP | sheet no. SD-AR-20LG | revision E

For Information



0 2.5 5 10m

GENERAL NOTES

- ALL DIMENSIONS AND EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED BY THE CONTRACTOR BEFORE PROCEEDING WITH THE WORK.
- ALL LEVELS RELATIVE TO 'AUSTRALIAN HEIGHT DATUM'.
- DO NOT SCALE DRAWINGS. USE FIGURED DIMENSIONS ONLY.

legend

CODE	DESCRIPTION
BOH	BACK OF HOUSE
CC	CHILDCARE DESIGNATED CAR SPACE
CP	CARPARK
CP-EX	CARPARK EXHAUST AIR RISER
CP-SP	CARPARK SUPPLY AIR RISER
DP	DOWN PIPE
DR	DRY RISER
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FT-*XX*	FACADE TYPE *XX*
GA	GENERAL ARRANGEMENT
GFA	GROSS FLOOR AREA
GL	GOODS LIFT
HYD	HYDRAULIC PIPES / RISER
LOA	LIBRARY OUTSIDE AIR
NLA	NET LEASABLE AREA
OA	OUTSIDE AIR
P	MECHANICAL PIPEWORK RISER
PL	PASSENGER LIFT
PV	PHOTOVOLTAICS
RA	RETURN AIR PLANT
RL	REDUCED LEVEL
RWDP	RAINWATER DOWN PIPE
SA	SUPPLY AIR PLANT
SFIP	SUB FIRE INDICATOR PANEL
SP	STAIR PRESSURISATION
S/P	STORMWATER PIT
TCOMMS	TENANT COMMS RISER
TE	TOILET EXHAUST
TKE	TENANT KITCHEN EXHAUST
TOA	TENANT OUTSIDE AIR
TP	TOP OF PARAPET

rev	date	name	by	chk
E	28/8/20	ISSUED FOR CONSULTANTS' REPORTS	GG	
D	10/8/20	ISSUED FOR COST PLAN	GG	
C	7/7/20	ISSUED FOR COORDINATION	LB	
B	5/6/20	ISSUED FOR COORDINATION	LB	
A	15/5/20	ISSUED FOR COORDINATION	LB	

fjmt studio architecture interiors landscape urban community
sydney melbourne uk
Level 5, 70 King Street t +61 2 9251 7077 w fjmtstudio.com

project
LIVERPOOL CIVIC PLACE PROJECT
52 SCOTT STREET
LIVERPOOL NSW 2170

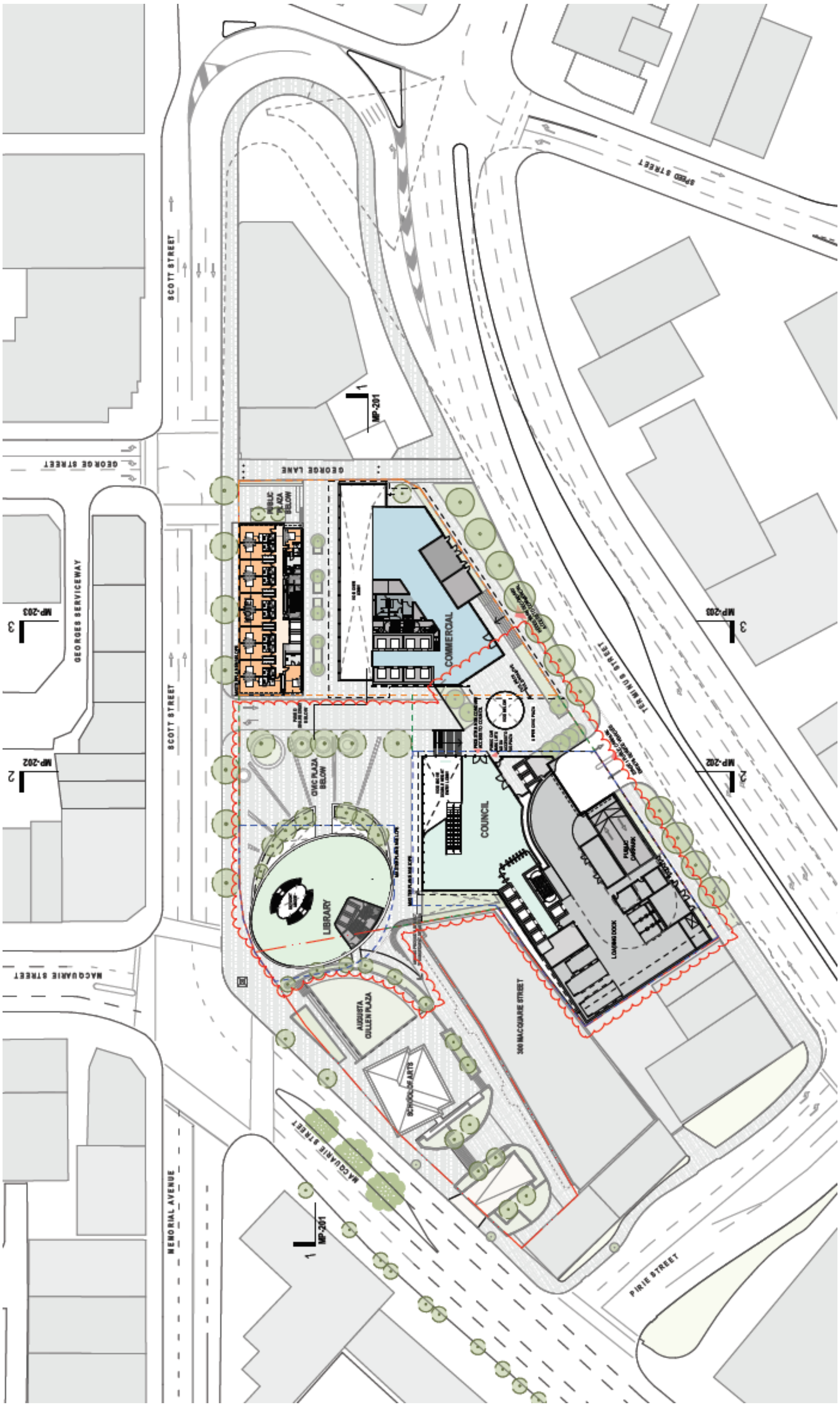
title
GA FLOOR PLANS
Upper Ground Floor Plan

scale 1:250 @ A1 (1:500 @ A3) first issued 15/5/20

project code	sheet no.	revision
BLCP	SD-AR-20UG	E

For Information

Attachment 2 - Reference Design



Attachment 3 - SIDRA Outputs

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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	492	2.0	492	2.0	0.269	21.9	LOS B	8.2	58.4	0.62	0.71	0.62	27.1
Approach		523	4.6	523	4.6	0.269	21.8	LOS B	8.2	58.4	0.61	0.71	0.61	27.2
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		724	4.3	724	4.3	0.275	26.7	LOS B	8.2	58.4	0.69	0.71	0.69	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	Average Back of Queue 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 [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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	Average Back of Queue 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 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	Average Back of Queue 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	0.20	0.07	0.20	9.7
Approach		5	0.0	5	0.0	0.005	0.4	LOS A	0.0	0.1	0.20	0.07	0.20	9.7
East: SCOTT ST														
4	L2	148	0.0	148	0.0	0.144	6.9	LOS A	0.0	0.0	0.00	0.62	0.00	23.0
5	T1	393	2.4	393	2.4	0.144	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	38.1
Approach		541	1.8	541	1.8	0.144	1.9	NA	0.0	0.0	0.00	0.30	0.00	31.0
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		737	2.4	737	2.4	0.144	1.4	NA	0.0	0.1	0.00	0.22	0.00	33.6

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.
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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	Average Back of Queue 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: 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	143	2.2	143	2.2	0.116	5.6	LOS A	0.5	3.4	0.27	0.60	0.27	48.3
Approach		177	1.8	177	1.8	0.116	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		371	7.1	371	7.1	0.116	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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	170	1.8	170	1.8	0.093	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	48.9	0.26	0.22	0.26	52.0
Approach		1319	4.5	1319	4.5	0.349	6.3	LOS A	6.7	48.9	0.22	0.26	0.22	51.5
All Vehicles		3670	4.2	3670	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	Average Back of Queue 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	17	0.0	17	0.0	0.017	1.4	LOS A	0.1	0.5	0.38	0.22	0.38	9.9
Approach		17	0.0	17	0.0	0.017	1.4	LOS A	0.1	0.5	0.38	0.22	0.38	9.9
SouthWest: Terminus St W														
10	L2	107	0.0	107	0.0	0.238	6.6	LOS A	0.0	0.0	0.00	0.32	0.00	52.9
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		1345	4.1	1345	4.1	0.238	0.5	NA	0.0	0.0	0.00	0.11	0.00	52.5
All Vehicles		2356	4.0	2356	4.0	0.325	0.3	NA	0.1	0.5	0.00	0.06	0.00	50.3

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 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	Average Back of Queue 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 [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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Scott St (E)														
4a	L1	646	1.3	646	1.3	0.799	9.0	LOS A	9.2	65.3	0.39	0.65	0.41	14.7
5	T1	184	0.6	184	0.6	0.371	28.1	LOS B	8.4	59.8	0.67	0.60	0.67	29.1
6	R2	46	6.8	46	6.8	0.371	31.5	LOS C	8.4	59.8	0.67	0.60	0.67	25.8
Approach		877	1.4	877	1.4	0.799	14.2	LOS A	9.2	65.3	0.46	0.64	0.48	23.8
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	0.761	63.3	LOS E	7.6	53.8	1.00	0.92	1.19	16.9
9	R2	48	0.0	48	0.0	0.761	65.1	LOS E	7.6	53.8	1.00	0.92	1.19	24.8
Approach		145	1.4	145	1.4	0.761	63.1	LOS E	7.6	53.8	0.99	0.88	1.15	20.2
West: Memorial Ave (W)														
10	L2	38	0.0	38	0.0	0.086	21.0	LOS B	2.4	17.2	0.55	0.55	0.55	36.4
11	T1	53	2.0	53	2.0	0.086	19.4	LOS B	2.4	17.2	0.58	0.57	0.58	31.5
12b	R3	13	0.0	13	0.0	0.086	39.2	LOS C	0.9	6.6	0.76	0.66	0.76	25.1
Approach		103	1.0	103	1.0	0.086	22.4	LOS B	2.4	17.2	0.59	0.57	0.59	33.1
SouthWest: Macquarie St (SW)														
30b	L3	152	2.1	152	2.1	0.378	45.4	LOS D	7.4	52.5	0.87	0.79	0.87	24.2
30a	L1	125	0.8	125	0.8	0.264	41.9	LOS C	5.8	41.2	0.84	0.75	0.84	22.8
32a	R1	112	2.8	112	2.8	0.238	35.2	LOS C	4.4	31.6	0.71	0.71	0.71	7.1
Approach		388	1.9	388	1.9	0.378	41.4	LOS C	7.4	52.5	0.81	0.75	0.81	21.0
All Vehicles		1514	1.5	1514	1.5	0.799	26.4	LOS B	9.2	65.3	0.61	0.69	0.64	22.9

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	Average Back of Queue 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: 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	57.6	0.58	0.71	0.58	35.2
23	R2	160	2.0	160	2.0	0.611	46.5	LOS D	8.0	56.9	0.88	0.78	0.88	4.8
Approach		678	1.9	678	1.9	0.611	23.5	LOS B	8.1	57.6	0.65	0.73	0.65	28.6
NorthEast: Macquarie St (NE)														
24	L2	358	0.9	358	0.9	0.552	30.3	LOS C	16.2	114.2	0.84	0.83	0.84	8.5
25	T1	408	1.3	408	1.3	0.533	39.7	LOS C	10.6	74.7	0.94	0.77	0.94	25.8
Approach		766	1.1	766	1.1	0.552	35.3	LOS C	16.2	114.2	0.89	0.80	0.89	21.0
SouthWest: Macquarie St (SW)														
31	T1	206	1.5	206	1.5	0.532	11.1	LOS A	13.2	92.7	0.44	0.39	0.44	37.8
32	R2	441	0.2	441	0.2	0.532	34.0	LOS C	13.2	92.7	0.81	0.79	0.81	26.4
Approach		647	0.7	647	0.7	0.532	26.7	LOS B	13.2	92.7	0.69	0.66	0.69	29.2
All Vehicles		2092	1.2	2092	1.2	0.611	28.8	LOS C	16.2	114.2	0.75	0.73	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	Average Back of Queue 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: [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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: SCOTT ST ACCESS														
1	L2	132	0.0	132	0.0	0.269	1.6	LOS A	0.6	4.0	0.41	0.32	0.41	8.9
Approach		132	0.0	132	0.0	0.269	1.6	LOS A	0.6	4.0	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	0.3	2.1	0.00	0.00	0.00	34.4
5	T1	685	0.0	685	0.0	0.176	0.0	LOS A	0.3	2.1	0.00	0.00	0.00	49.8
Approach		686	0.0	686	0.0	0.176	0.0	NA	0.3	2.1	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		960	0.0	960	0.0	0.269	0.2	NA	0.6	4.0	0.06	0.04	0.06	33.9

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.
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 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	0.473	46.5	LOS D	9.5	66.6	0.90	0.79	0.90	31.8
2	T1	111	0.0	111	0.0	0.473	52.7	LOS D	9.5	66.6	0.96	0.77	0.96	20.7
Approach		283	0.4	283	0.4	0.473	48.9	LOS D	9.5	66.6	0.92	0.79	0.92	28.1
NorthEast: Terminus St (E)														
4	L2	54	0.0	54	0.0	0.049	4.0	LOS A	0.1	0.5	0.02	0.55	0.02	45.4
5	T1	495	6.1	495	6.1	0.223	0.6	LOS A	0.4	2.7	0.03	0.02	0.03	59.0
6	R2	550	2.0	550	2.0	0.510	11.1	LOS A	4.6	32.6	0.45	0.67	0.45	14.9
Approach		1099	3.7	1099	3.7	0.510	6.0	LOS A	4.6	32.6	0.24	0.37	0.24	44.8
NorthWest: Pirie St (N)														
7	L2	657	1.0	657	1.0	0.327	19.1	LOS B	11.6	81.6	0.61	0.73	0.61	9.9
8	T1	123	0.0	123	0.0	0.505	54.3	LOS D	7.0	49.0	0.99	0.79	0.99	21.7
9	R2	17	0.0	17	0.0	0.222	69.7	LOS E	1.0	7.3	1.00	0.69	1.00	19.3
Approach		797	0.8	797	0.8	0.505	25.6	LOS B	11.6	81.6	0.67	0.74	0.67	15.2
SouthWest: Terminus St (W)														
10	L2	17	6.3	17	6.3	0.500	42.1	LOS C	13.6	100.1	0.87	0.75	0.87	27.6
11	T1	557	5.8	557	5.8	0.500	36.5	LOS C	13.9	101.9	0.87	0.75	0.87	27.7
12	R2	92	0.0	92	0.0	0.370	57.8	LOS E	5.0	35.1	0.95	0.77	0.95	29.1
Approach		666	5.0	666	5.0	0.500	39.6	LOS C	13.9	101.9	0.88	0.75	0.88	28.0
All Vehicles		2845	2.9	2845	2.9	0.510	23.6	LOS B	13.9	101.9	0.58	0.61	0.58	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	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P1	SouthEast Full Crossing	53	13.1	LOS B	0.1	0.1	0.47	0.47
P3	NorthWest Full Crossing	53	40.9	LOS E	0.1	0.1	0.83	0.83
P4	SouthWest Full Crossing	53	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		158	36.1	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: 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	116	0.0	116	0.0	0.094	5.6	LOS A	0.4	2.6	0.28	0.60	0.28	48.4
Approach		165	1.3	165	1.3	0.094	5.3	LOS A	0.4	2.6	0.19	0.59	0.19	46.9
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		378	6.7	378	6.7	0.118	2.7	NA	0.4	2.6	0.08	0.32	0.08	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 & 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	164	1.3	164	1.3	0.089	5.6	LOS A	0.0	0.0	0.00	0.53	0.00	41.6
11	T1	1071	3.7	1071	3.7	0.725	29.7	LOS C	28.2	203.7	0.87	0.77	0.87	35.0
Approach		1234	3.4	1234	3.4	0.725	26.5	LOS B	28.2	203.7	0.75	0.74	0.75	35.3
All Vehicles		3739	3.9	3739	3.9	0.934	44.8	LOS D	63.5	460.0	0.92	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	Average Back of Queue 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 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	Demand Flows HV %	Arrival Flows Total veh/h	Arrival Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue 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	65	0.0	65	0.0	0.095	3.8	LOS A	0.4	2.7	0.56	0.50	0.56	9.8
Approach		65	0.0	65	0.0	0.095	3.8	LOS A	0.4	2.7	0.56	0.50	0.56	9.8
SouthWest: Terminus St W														
10	L2	4	0.0	4	0.0	0.348	6.6	LOS A	0.0	0.0	0.00	0.01	0.00	55.3
11	T1	1211	3.2	1211	3.2	0.348	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
Approach		1216	3.2	1216	3.2	0.348	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.3
All Vehicles		2443	3.5	2443	3.5	0.348	0.1	NA	0.4	2.7	0.01	0.02	0.01	38.8

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.

Attachment 4 - Concept Terminus Street Median

comments

A3

ALL EXISTING DRIVEWAYS WITHIN THE SITE FRONTAGE WILL BE REMOVED AND REPLACED WITH FULL HEIGHT KERBS

rev	date	comment / description	drawn	reviewed
1	05/08/20	FOR INFORMATION	AM	AM

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

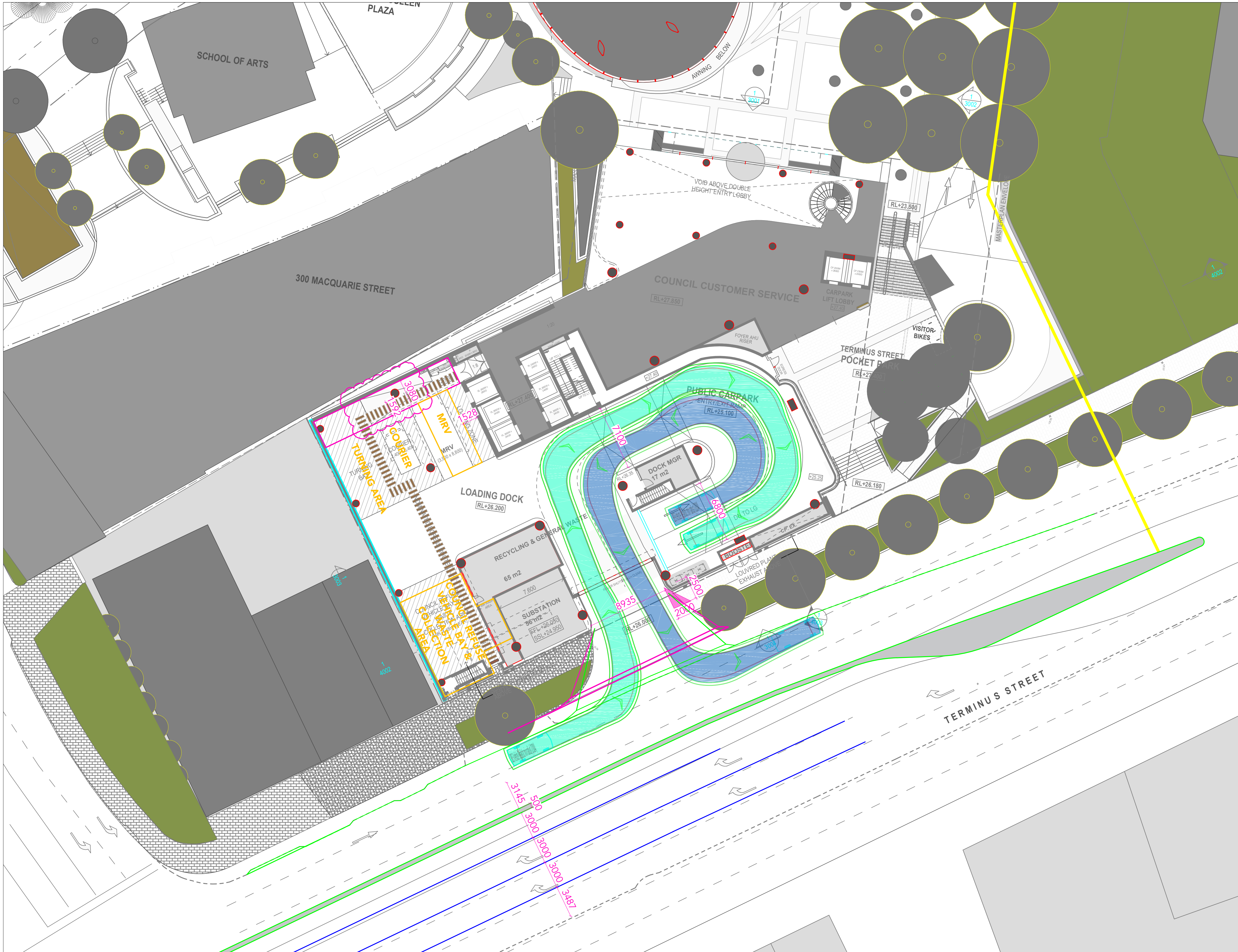
project: LIVERPOOL CIVIC PLACE

drawing title: **CONCEPT DESIGN LAYOUT TERMINUS STREET (EXISTING ROAD ALIGNMENT)**

client: BUILT
drawing #: PTC-UG-TS-01
project #: 2572
scale: 1 : 400

rev 1

Attachment 5 - Car Park Assessment and Swept Paths



comments

4.91
0.92 2.8

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

5.2
0.95 3.05

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

A3

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

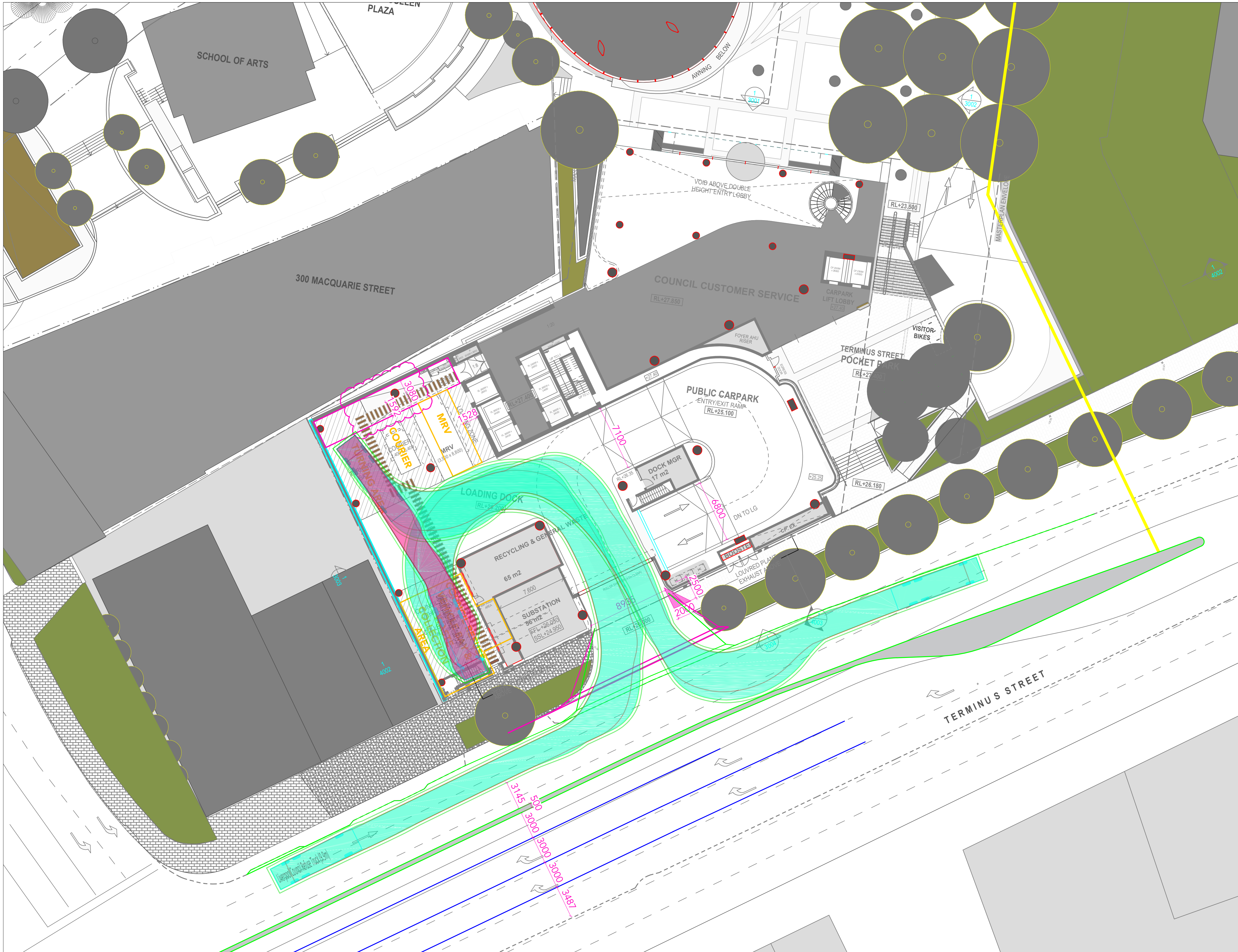
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

UPPER GROUND FLOOR
B99/B85 ACCESS

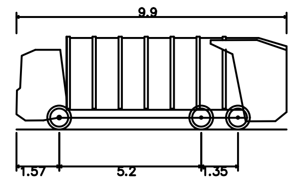
client	BUILT
drawing #	PTC-UG-001
project #	2572
scale	1 : 400

rev 1

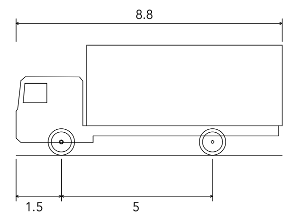


comments

A3



Liverpool Council Refuse Truck (9.9m)	
Overall Length	9.900m
Overall Width	2.500m
Overall Body Height	3.400m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock–to–lock time	6.00s
Curb to Curb Turning Radius	10.500m



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

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

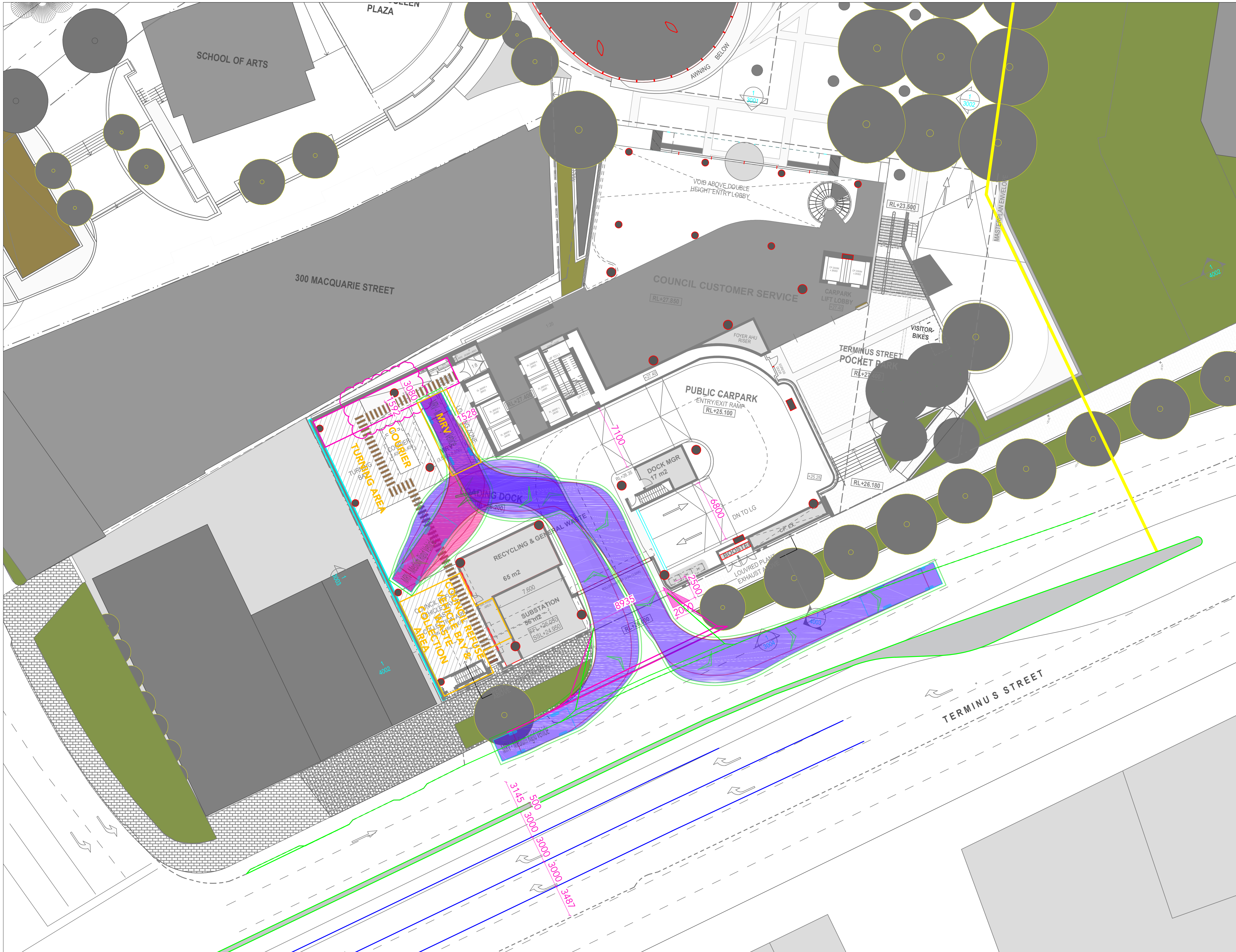
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

UPPER GROUND FLOOR
Refuse Truck

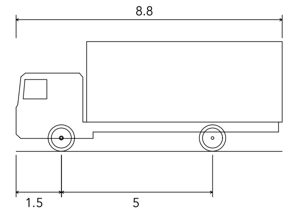
client BUILT
drawing # PTC-UG-002
project # 2572
scale 1 : 400

rev 1



comments

A3



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

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

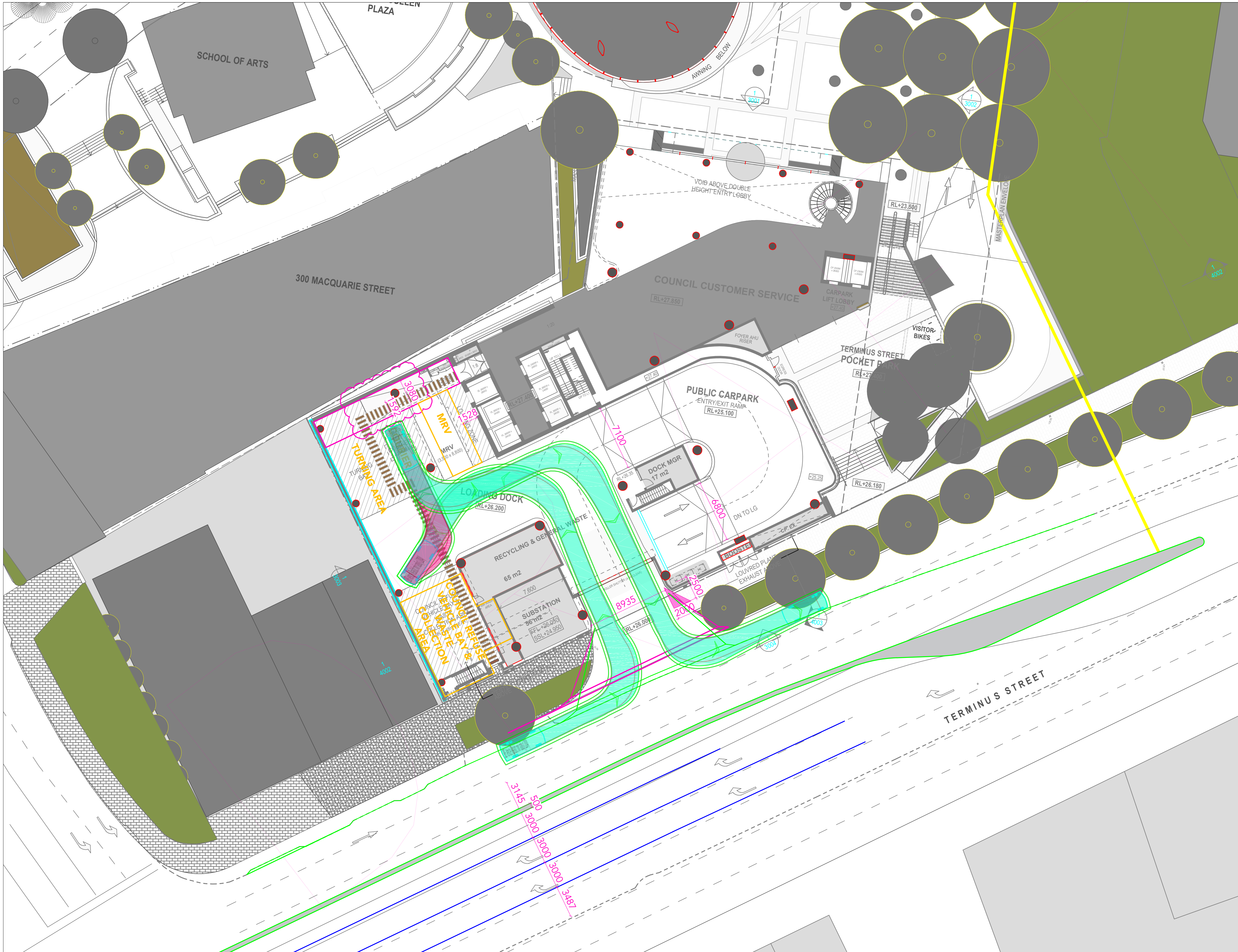
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

UPPER GROUND FLOOR
8.8M MRV ACCESS

client	BUILT
drawing #	PTC-UG-003
project #	2572
scale	1 : 400

rev 1



comments

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

A3

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

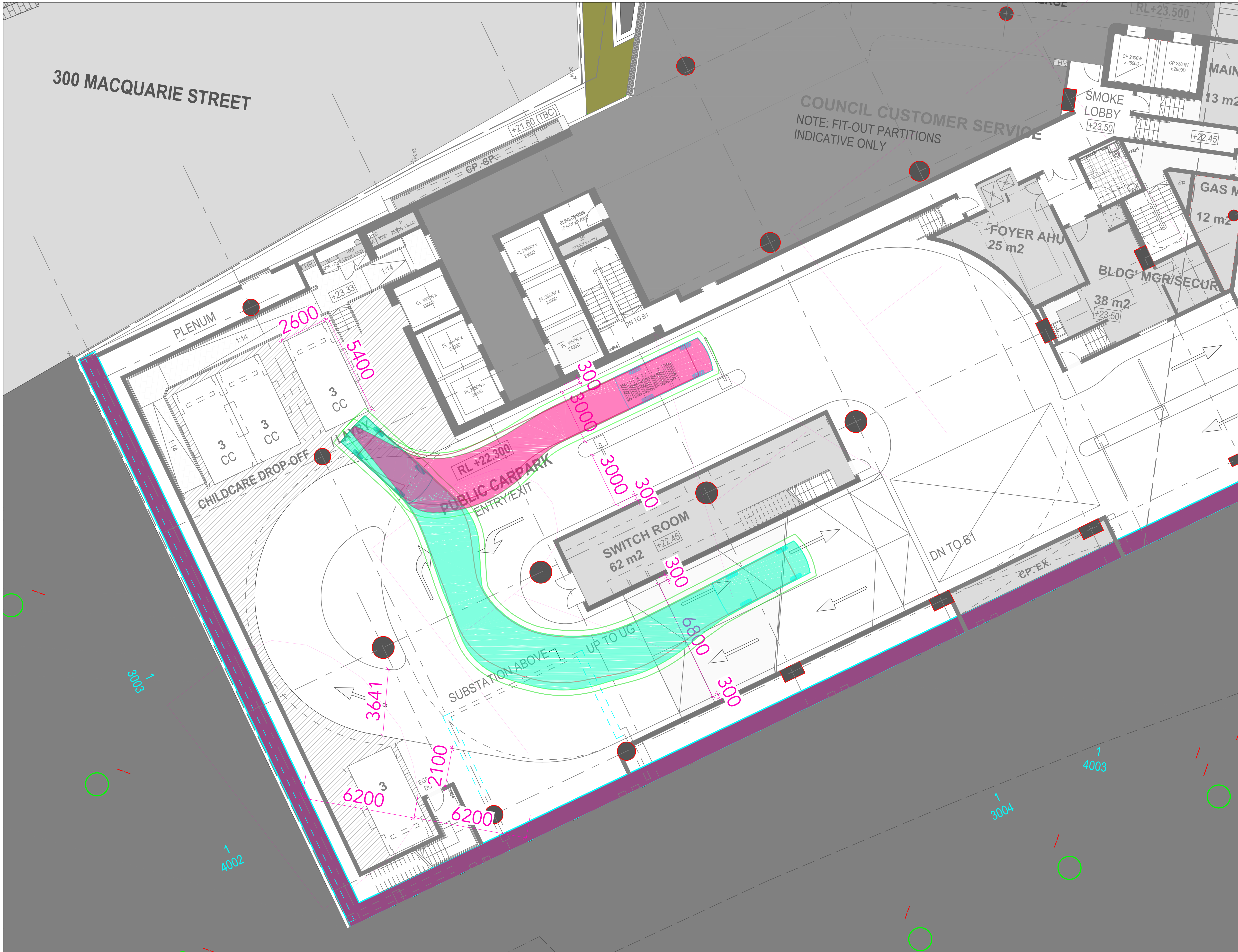
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

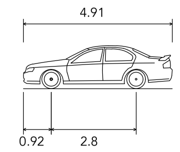
UPPER GROUND FLOOR COURIER ACCESS

client	BUILT
drawing #	PTC-UG-005
project #	2572
scale	1 : 400

rev 1

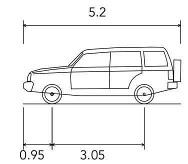


comments



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

A3

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

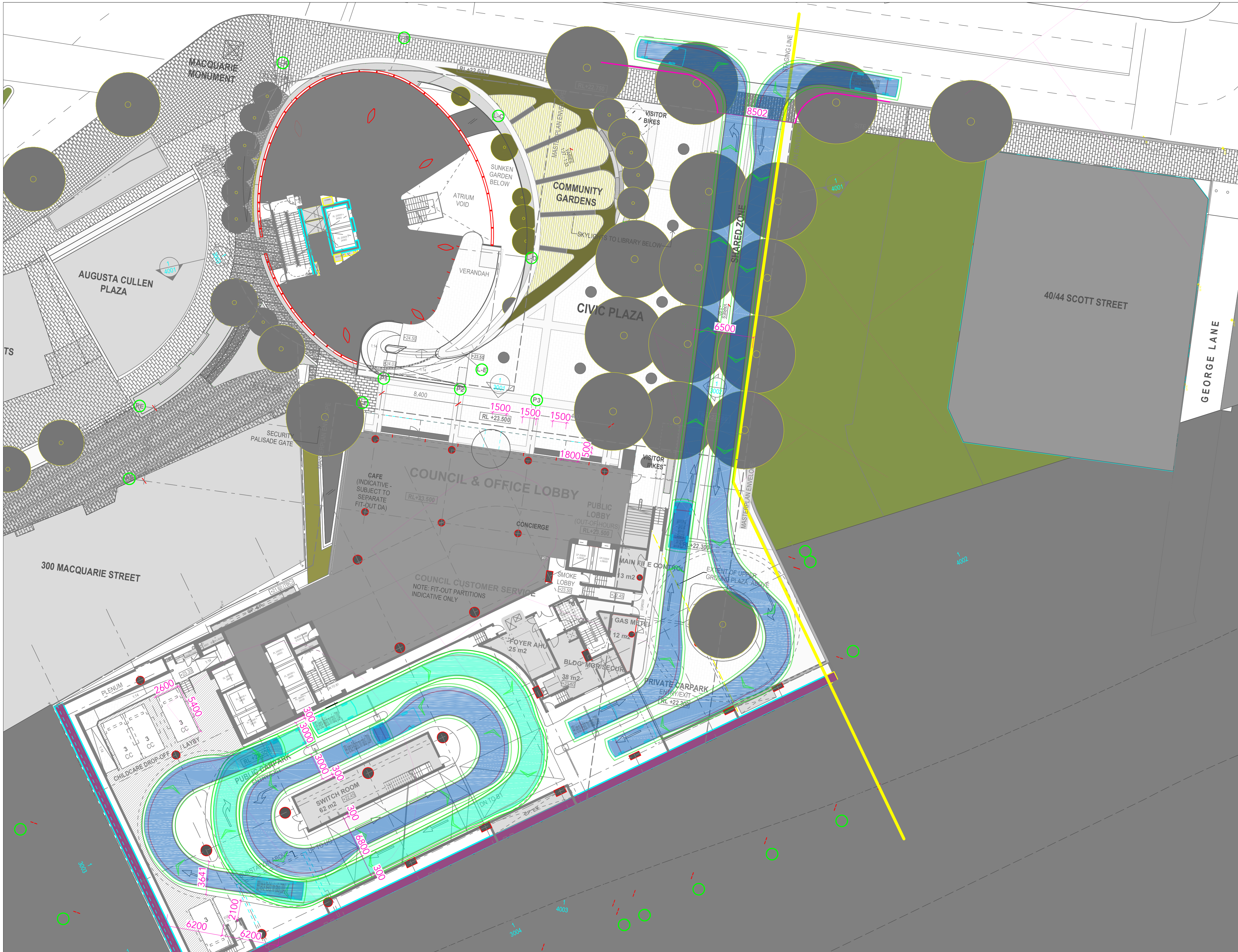
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

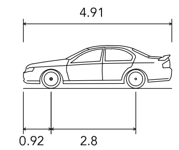
UPPER GROUND FLOOR
B99/B85 ACCESS (Car 203 exit path)

client	BUILT
drawing #	PTC-UG-006
project #	2572
scale	1 : 400

rev 1

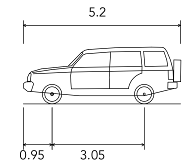


comments



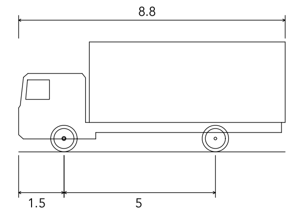
B85 Vehicle (Realistic min radius) (2004)

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



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

A3

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

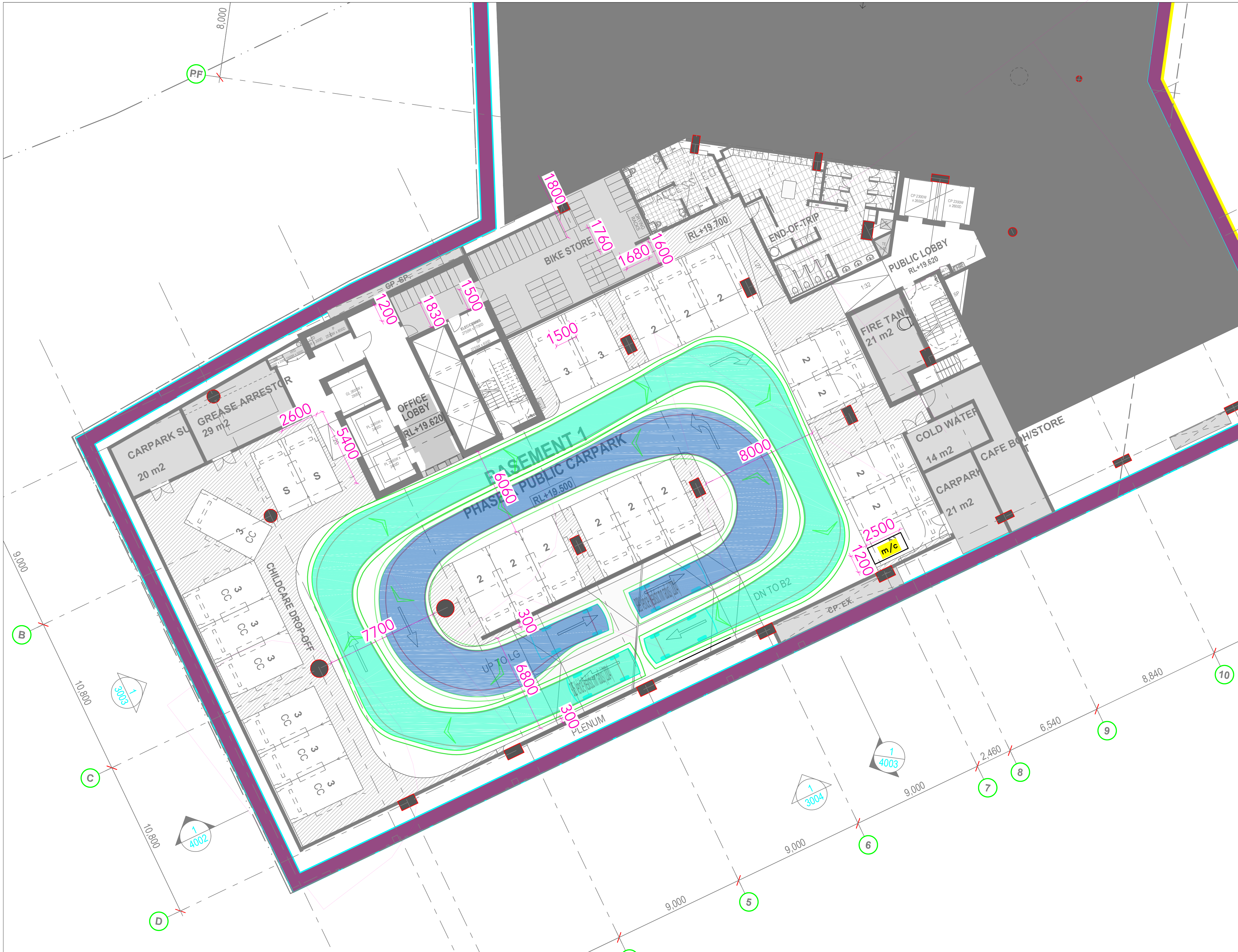
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

LOWER GROUND FLOOR
B99/B85 ACCESS

client	BUILT
drawing #	PTC-LG-001
project #	2572
scale	1 : 400

rev 1



comments

A3

4.91
0.92
2.8

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

5.2
0.95
3.05

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

ptc.

Suite 502, 1 James Place
North Sydney NSW 2060

t +61 2 8920 0800

ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

project

LIVERPOOL CIVIC PLACE

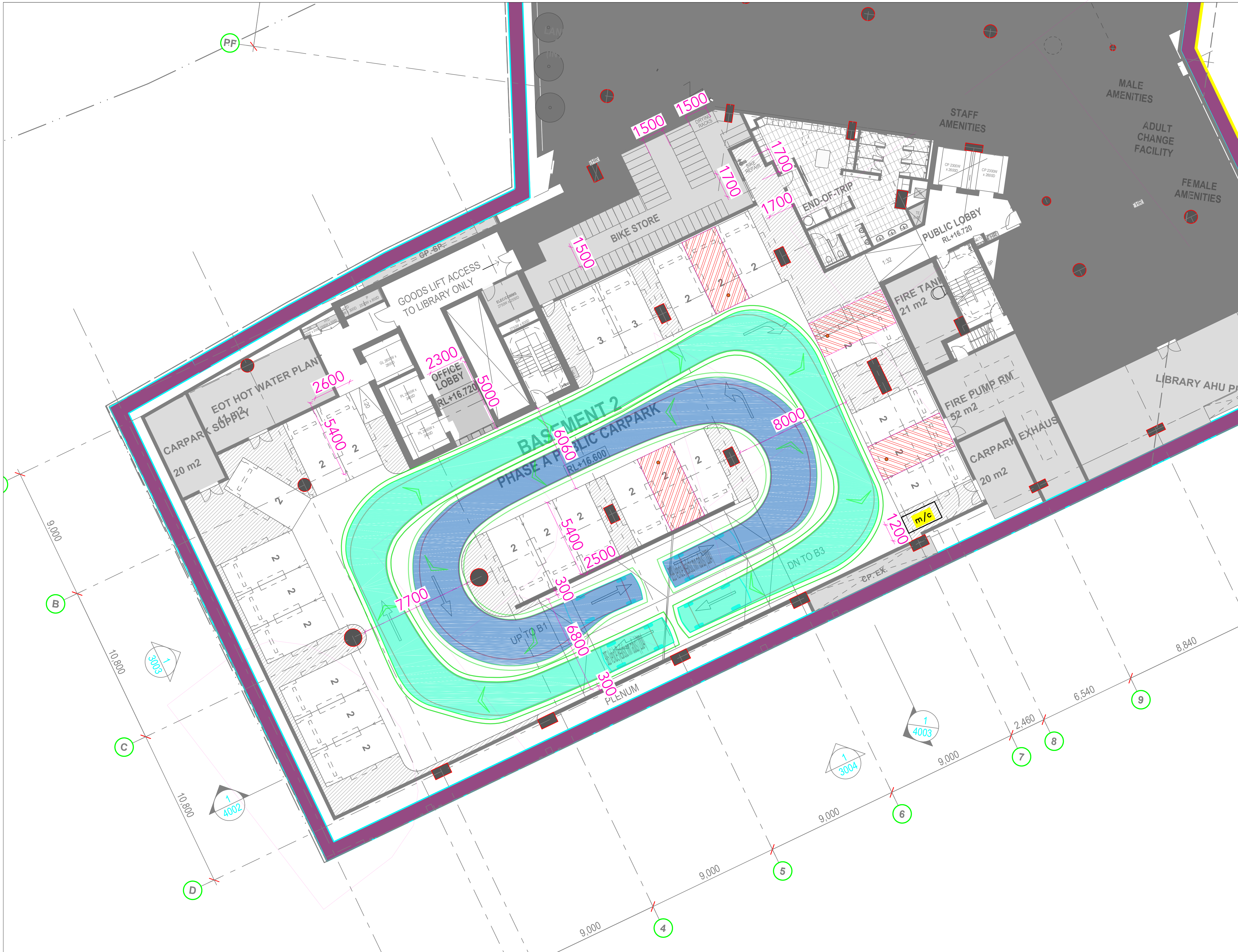
drawing title

HIGH-LEVEL SWEPT PATH ASSESSMENT

BASEMENT 1
B99/B85 ACCESS

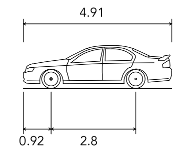
client	BUILT
drawing #	PTC-BM-001
project #	2572
scale	1 : 250

rev 1



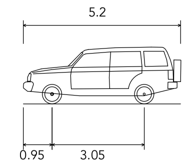
comments

A3



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

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

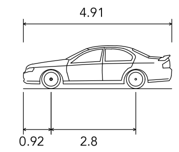
BASEMENT 2
B99/B85 ACCESS

client	BUILT
drawing #	PTC-BM-002
project #	2572
scale	1 : 250

rev 1

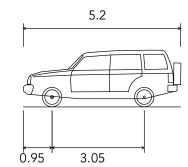
comments

A3



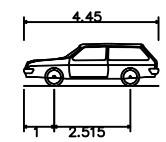
B85 Vehicle (Realistic min radius) (2004)

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



B50 Vehicle (Corolla)

Overall Length	4.450m
Overall Width	1.700m
Overall Body Height	1.406m
Min Body Ground Clearance	0.248m
Track Width	1.700m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	5.500m

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

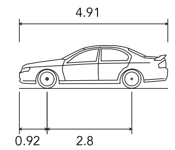
BASEMENT 3
B99/B85/B50 ACCESS

client	BUILT
drawing #	PTC-BM-003
project #	2572
scale	1 : 250

rev 1

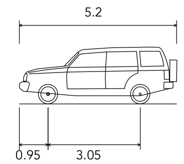
comments

A3



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

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

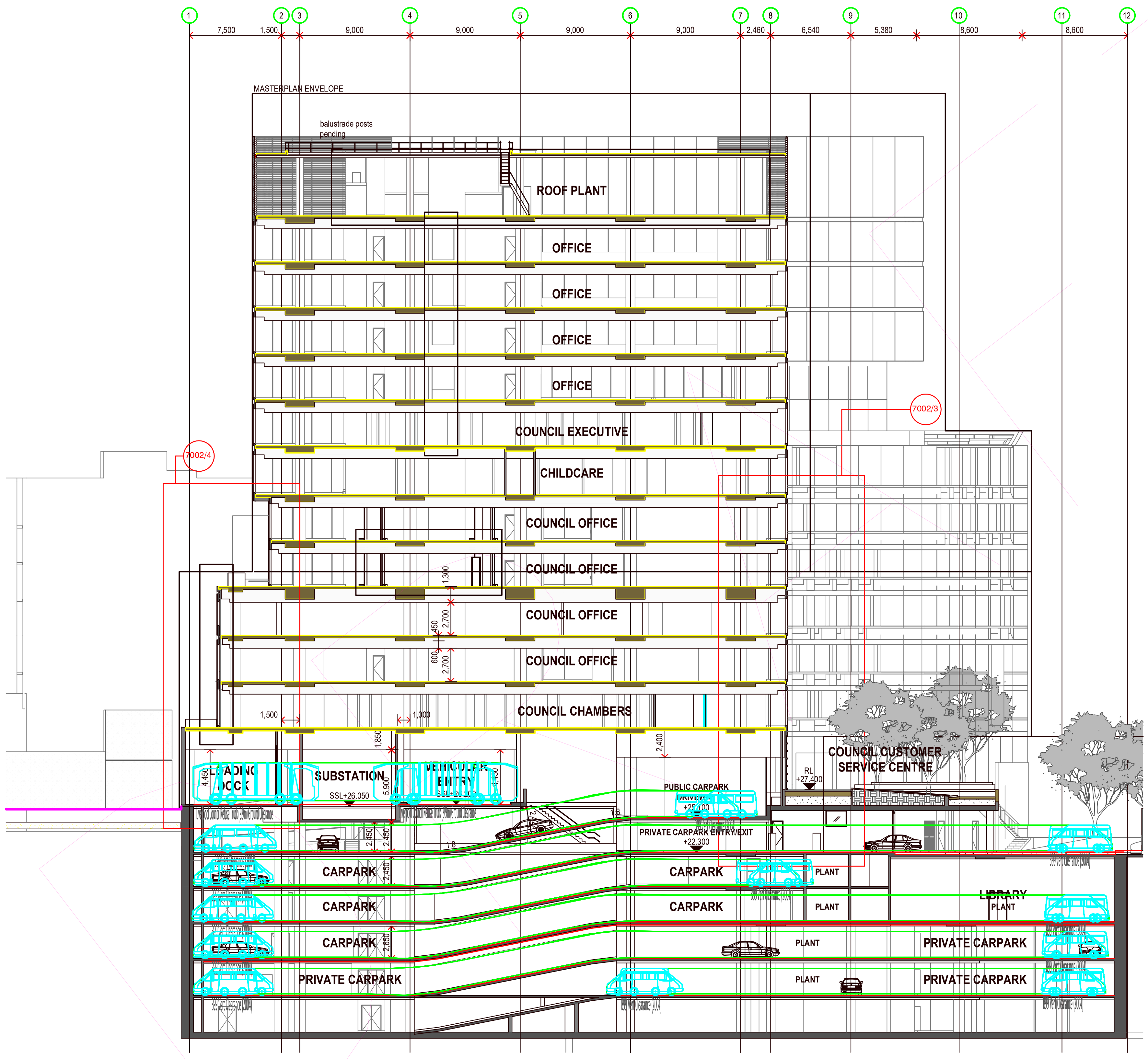
project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

BASEMENT 4
B99/B85 ACCESS

client	BUILT
drawing #	PTC-BM-004
project #	2572
scale	1 : 250

rev 1



comments

A3

5.2

0.95 3.05

B99 Vert Clearance (2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.120m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	8.000m

9.9

1.57 5.2 1.35

Liverpool Council Refuse Truck (9.9m)	
Overall Length	9.900m
Overall Width	2.500m
Overall Body Height	3.400m
Min Body Ground Clearance	0.304m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	10.500m

ptc.

Suite 502, 1 James Place
North Sydney NSW 2060

t +61 2 8920 0800

ptcconsultants.co

rev	date	comment / description	drawn	reviewed
5	16/06/20	FOR INFORMATION	CNL	AM
4	25/05/20	FOR INFORMATION	CNL/HL	AM
3	19/05/20	FOR INFORMATION	CNL/HL	AM
2	22/04/20	FOR INFORMATION	CNL/HL	AM
1	05/08/20	FOR INFORMATION	AM	AM

project
LIVERPOOL CIVIC PLACE

drawing title
HIGH-LEVEL SWEPT PATH ASSESSMENT

VERTICAL CLEARANCE

client	BUILT
drawing #	PTC-VC-001
project #	2572
scale	1 : 400

rev 1