

Proposed Mixed Use Development

Traffic Impact Assessment Report 251-265 Lygon Street and 1A Pitt Street, East Brunswick

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Project
251-265 Lygon Street and 1A Pitt Street, East
Brunswick

Prepared for
PACE Development Group

Our reference
18505T

Directory path

Version	Date	Issue	Prepared by	Checked by
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1. Introduction

Ratio Consultants Pty Ltd was engaged by PACE Development Group to assess the traffic and parking implications of a proposed mixed-use development on the site at 251-265 Lygon Street and 1A Pitt Street in East Brunswick.

This report has been prepared to address the parking and traffic matters of the proposed development and is based on surveys and observations in the vicinity of the site, and of previous studies of similar developments elsewhere in Melbourne.

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2. Existing Conditions

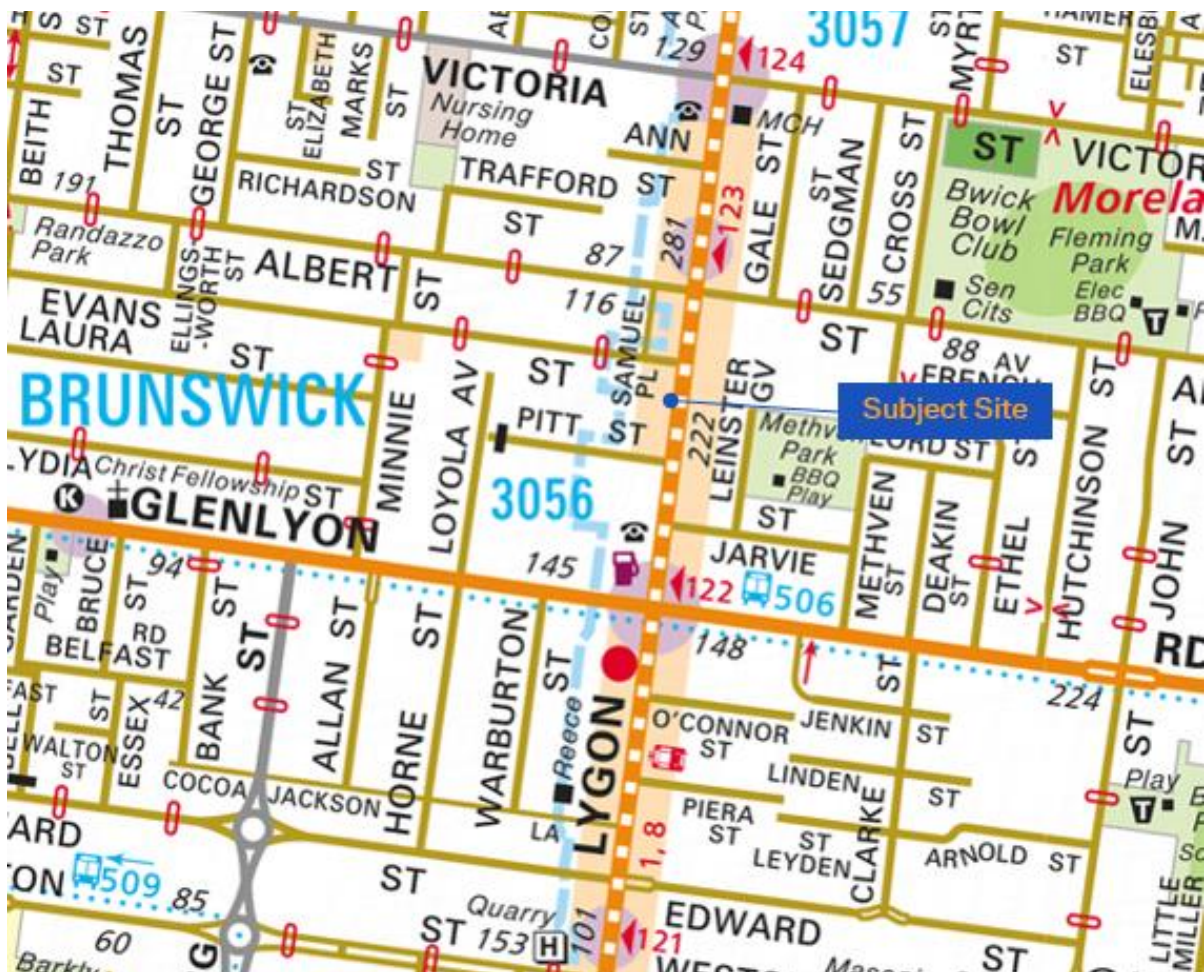
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2.1. Site Location

The subject site is located at 251-265 Lygon Street and 1A Pitt Street in East Brunswick. The site's location relative to the immediate surrounding road network is shown in Figure 2.1 below:

Figure 2.1: Site Location and Surrounding Road Network



SOURCE: MELWAYS - REFERENCE 29 K8

The site is irregular in shape with a frontage of 53.46 metres to Lygon Street and a frontage of 52.32 metres to Evans Street. The site has an overall site area of approximately 2,476 square metres.

The subject site comprises two separate parcels of land, occupied as follows:

- 251-265 Lygon Street, which is currently occupied by four retail tenancies. Vehicular access to the site is currently provided via a crossover connecting to/from Evans Street at the rear of the site.

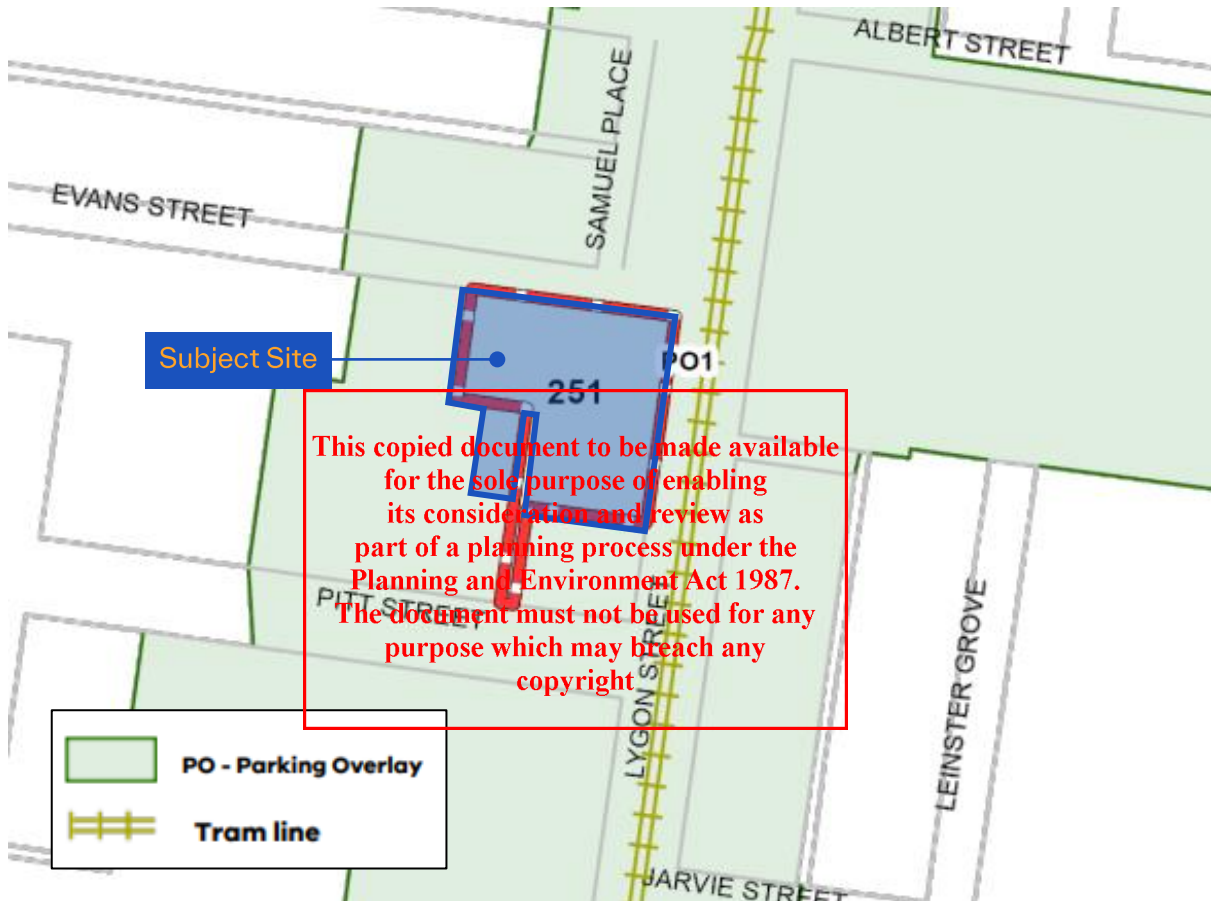
– 1A Pitt Street, which is currently occupied by a warehouse. Vehicular access to the site is currently provided via a Right-of-Way (RoW) which connects to Pitt Street.

The site is located within a Commercial Zone – Schedule 1 (C1Z) and subject to the following overlays:

- Design and Development Overlay – Schedule 19 (DDO19);
- Development Contributions Plan Overlay – Schedule 1 (DCPO1); and
- Parking Overlay – Schedule 1 (PO1).

The location of the subject site with respect to the Parking Overlay is illustrated in Figure 2.2.

Figure 2.2: Location of Parking Overlay (PO1) with respect to Subject Site



SOURCE: VICPLAN MAPSHARE

Land use in the vicinity of the site is predominantly commercial and retail along Lygon Street, with residential uses extending beyond to either side of Lygon Street.

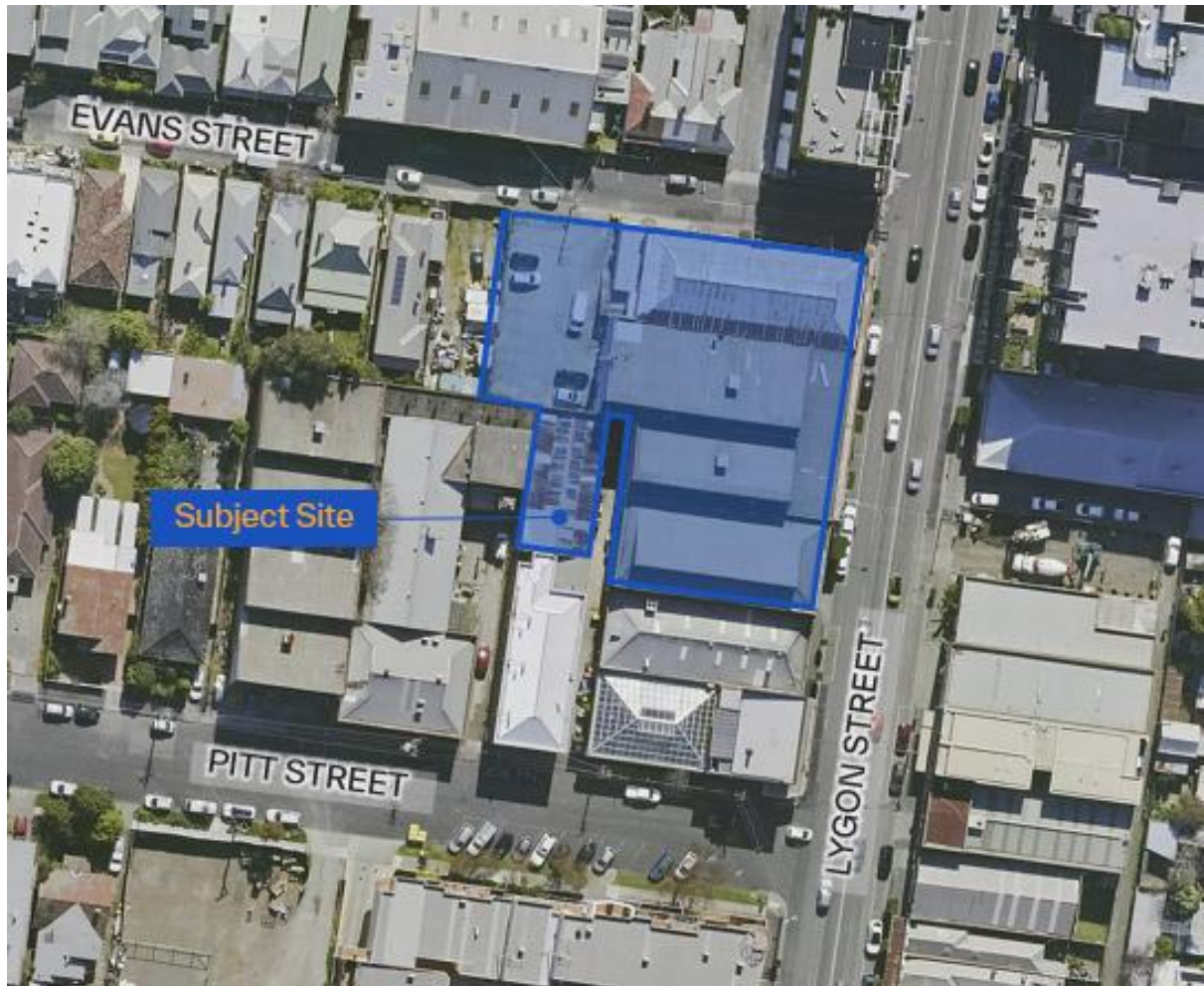
Some key non-residential land uses in the vicinity of the site include:

- Several commercial, retail, cafés, restaurants, and bars along Lygon Street.
- Methven Park, located approximately 300 metres east of the site;
- Fleming Park and Brunswick Bowls Club, located 350 metres north-east of the site.
- Barkly Square Shopping Centre located approximately 1.0km south-west of the subject site.

An aerial image of the site and surrounds is illustrated in Figure 2.3.

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Figure 2.3: Aerial View of Subject Site



SOURCE: LANDCHECKER

2.2. Road Network

Lygon Street is classified as a Major Road under the care and management of Council. Lygon Street runs in a north-south alignment between its continuation as Russell Street, south of Victoria Street, and its continuation as Holmes Street, north of Albion Street.

Within the vicinity of the site, Lygon Street has a carriageway width of approximately 14.5 metres, accommodating two traffic lanes in each direction, kerbside parallel parking on both sides of the road as well as a central tram corridor. The kerbside parallel parking on both sides of the road is subject to various restrictions including peak directional Clearways.

A posted speed limit of 40 km/hr applies in the vicinity of the site and there are concrete footpaths on both sides of the road.

Street views of Lygon Street near the site are provided at Figure 2.4 and Figure 2.5.

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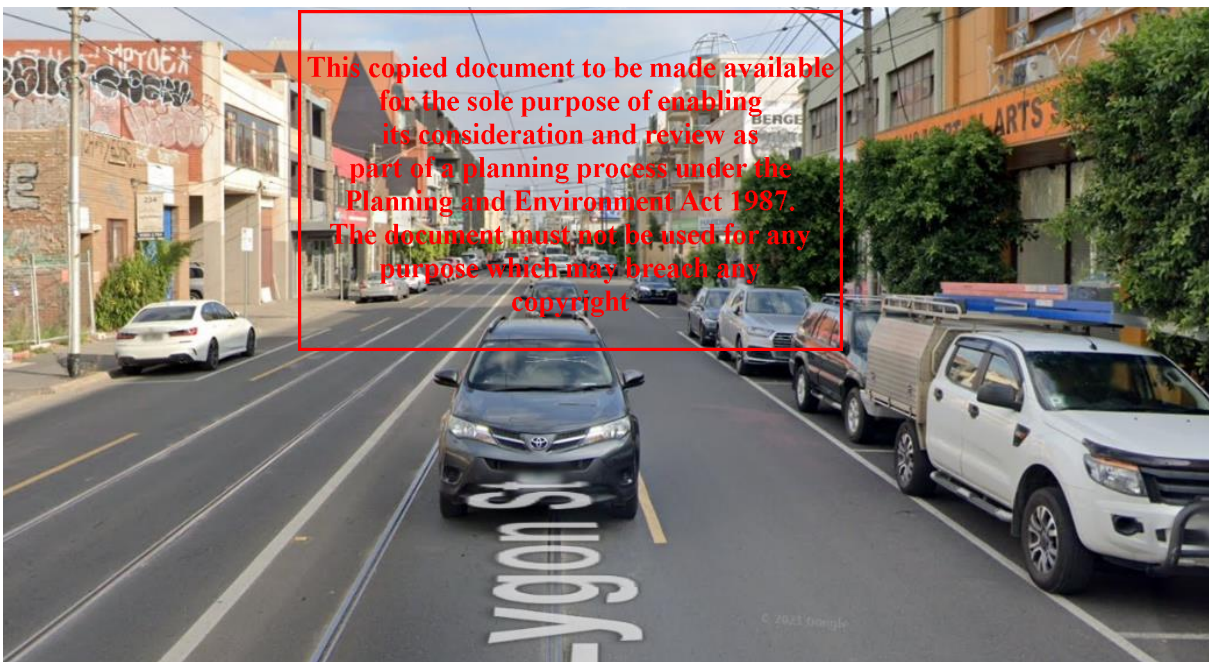
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Figure 2.4: Street View of Lygon Street (facing North)



SOURCE: GOOGLE MAPS

Figure 2.5: Street View of Lygon Street (facing South)



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SOURCE: GOOGLE MAPS

Pitt Street is a Local Road under the care and management of Council. It generally has an east-west alignment between Lygon Street and its termination approximately 200 metres to the west.

In the vicinity of the site, Pitt Street has a carriageway width of approximately 14.5 metres which caters for:

- Two-way vehicle movements;
- 60 degree angled car parking bays on the southern side of the road; and
- Parallel parking bays on the northern side of the road.

The road has a posted speed limit of 40 km/hr and concrete footpaths are provided on both sides of the road.

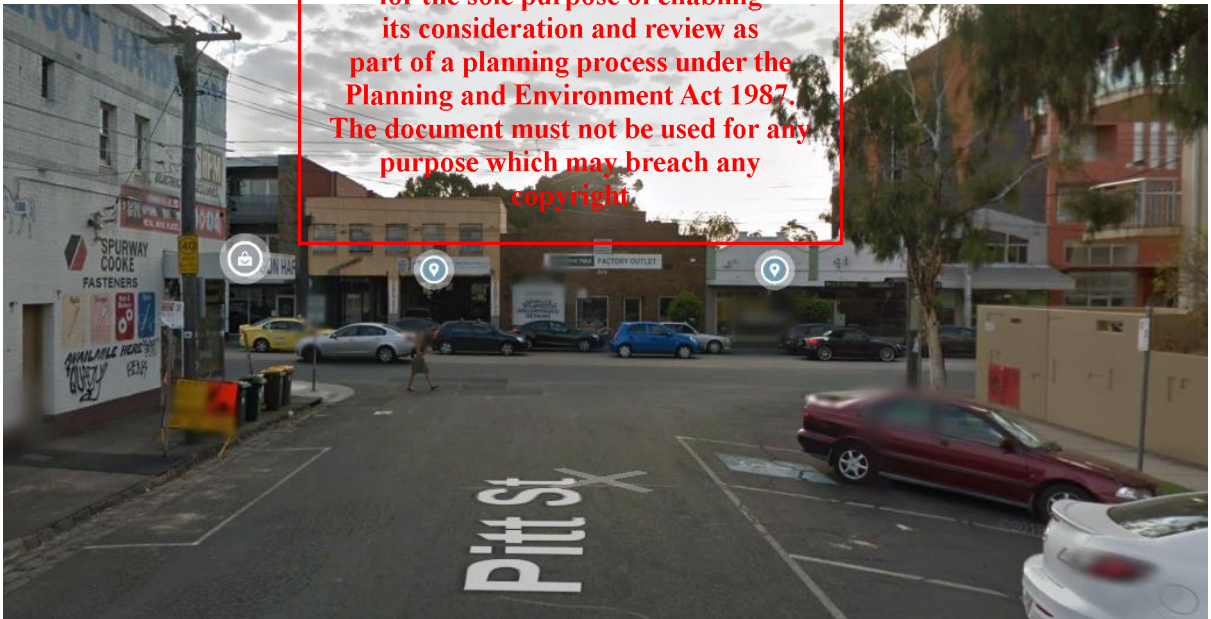
Street views of Pitt Street near the site are shown in Figure 2.6 and Figure 2.7.

Figure 2.6: Street View of Pitt Street (facing West)



SOURCE: GOOGLE MAPS

Figure 2.7: Street View of Pitt Street (facing East)



SOURCE: GOOGLE MAPS

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Evans Street is also a Local Road under the care and management of Council. It has an east-west alignment between Lygon Street and Blair Street.

In the vicinity of the site, Evans Street has a carriageway width of approximately 6.7 metres which accommodates two-way vehicle movements and kerbside parallel parking on both sides of the road. A speed hump is located along Evans Street which generally aligns with the western boundary of the subject site.

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The road has a posted speed limit of 40 km/hr and concrete footpaths are provided on both sides of the road.

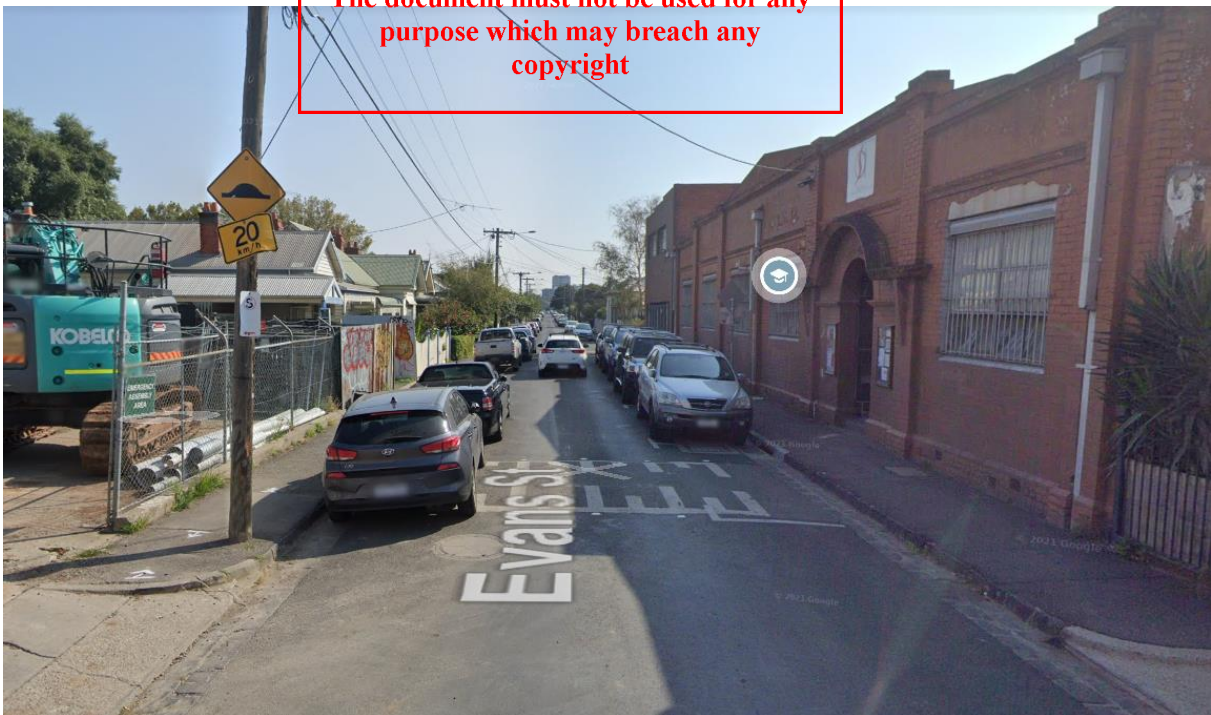
Street views of Evans Street near the site are shown in Figure 2.8 and Figure 2.9.

Figure 2.8: Street View of Evans Street (facing East)



SOURCE: GOOGLE MAPS

Figure 2.9: Street View of Evans Street (facing west)



SOURCE: GOOGLE MAPS

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2.3. Traffic Conditions

Through Volumes

In order to determine traffic volumes along the Evans Street in the vicinity of the site, reference is made to a previous tube count survey commissioned by Ratio Consultants for a continuous 7-day period from Friday 12 August 2022 to Thursday 18 August 2022, in Evans Street to the west of the proposed site access location, as displayed in Figure 2.10.

Figure 2.10: Tube Count Location



SOURCE: APP.LANDCHECKER.COM.AU

The tube count recorded an average weekday two-way volume of 515 vehicles per day, with a maximum AM peak hour traffic volume of 29 vehicles, recorded on Thursday 18 August, and a maximum PM peak hour traffic volume of 59 vehicles, recorded on Wednesday 17 August 2022.

The average weekday AM peak hour occurred from 8:00am to 9:00am, and the average weekday PM peak hour occurred from 5:00pm to 6:00pm.

The Saturday tube count recorded an average two-way volume of 566 vehicles with a maximum peak hour traffic volume of 40 vehicles recorded on Saturday 13 August 2022 between the peak hour of 10:30am and 11:30am.

Turning Movement Counts

Reference is also made to previous turning movement counts conducted at the T-intersection of Lygon Street / Evans Street on Friday 12 August 2022 from 7:00am to 10:00am and 3:00pm to 7:00pm and Saturday 13 August 2022 from 10:00am to 3:00pm.

The peak hour results of the surveys are shown below in Figure 2.11 and Figure 2.12, with detailed survey results presented in Appendix B.

Figure 2.11: Friday 12 August 2022 - Peak Hour Turning Movement Results

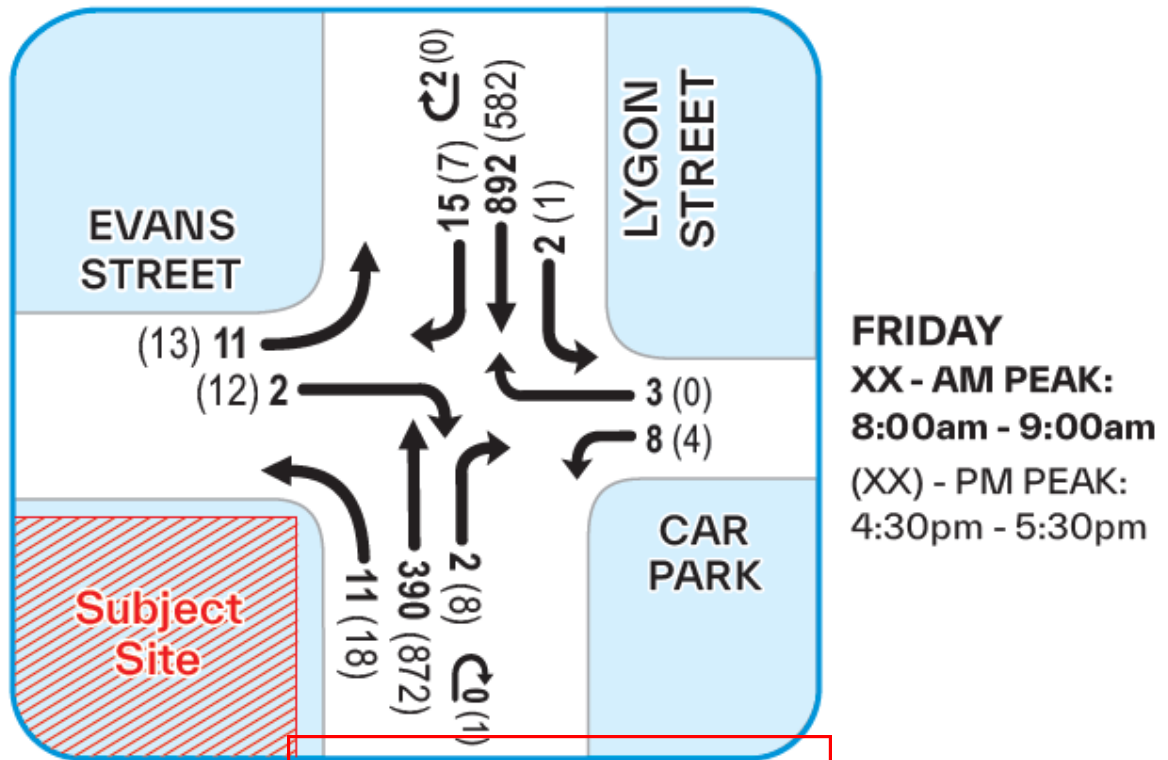
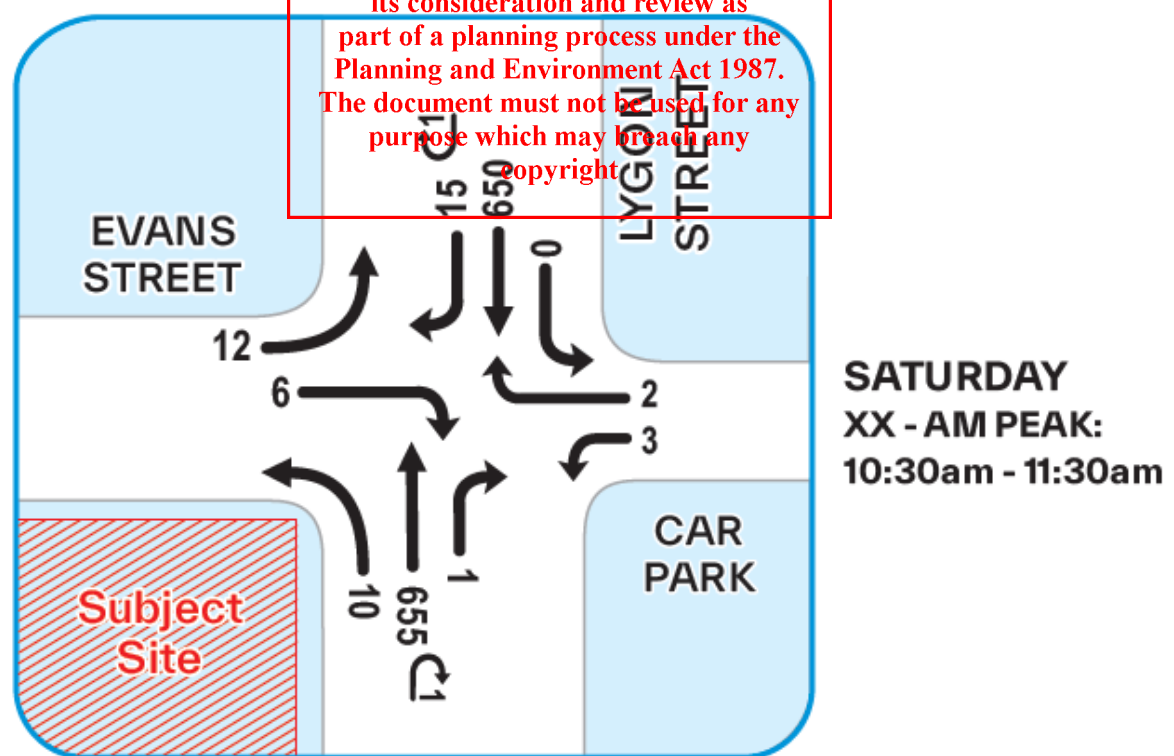


Figure 2.12: Saturday 13 August 2022 - Peak Hour Turning Movement Results



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2.4. Parking Conditions

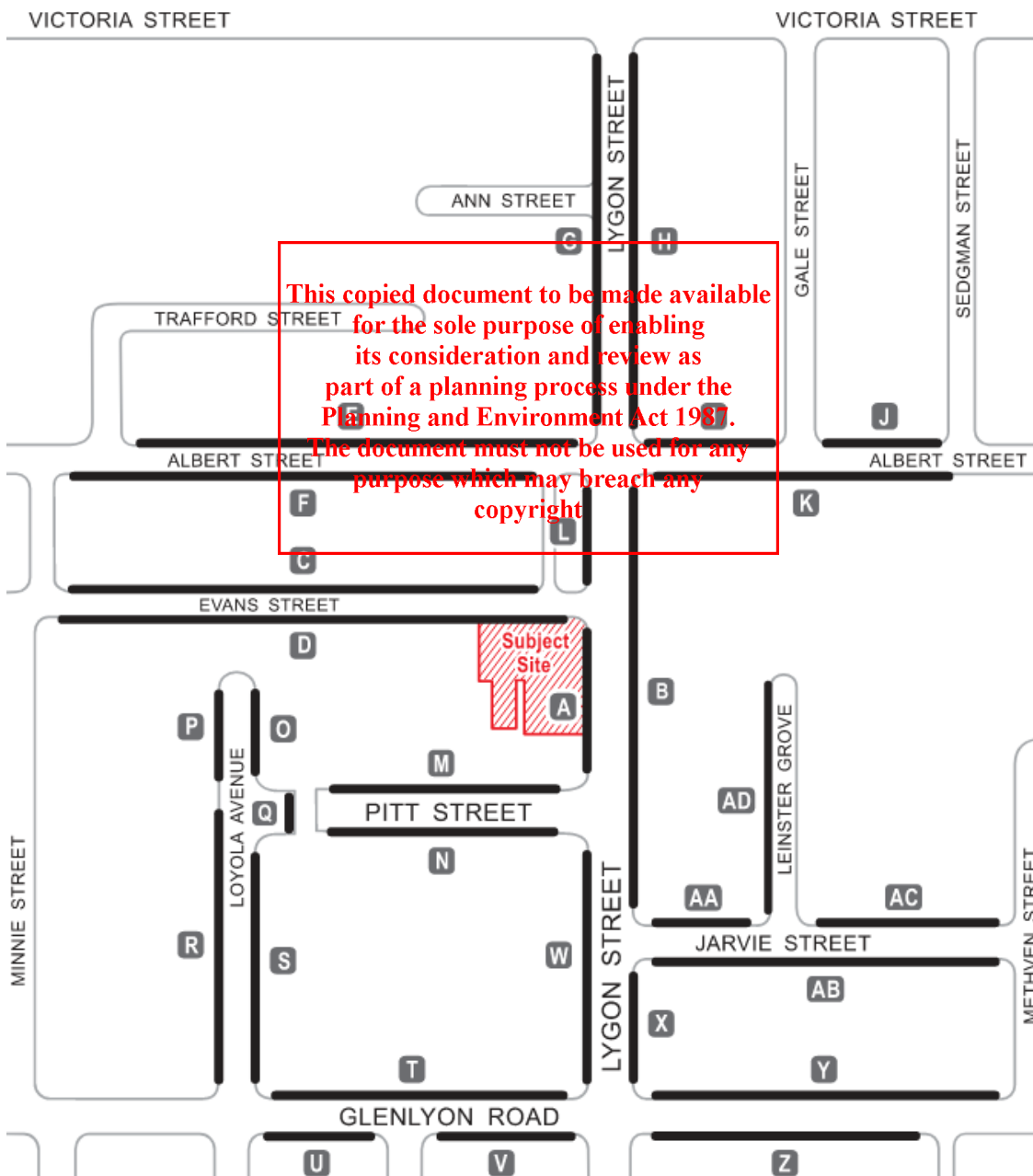
In order to establish typical parking conditions in the area, reference is made to previous parking occupancy surveys commissioned by Ratio Consultants in the streets surrounding the subject site. The surveys were conducted during the following days and times:

- Thursday 18 November 2021, between 9:00am and 7:00pm; and
- Saturday 13 November 2021, between 10:00am and 3:00pm.

The surveys encompassed an area of approximately 250 metres from the subject site. The parking inventory revealed the supply of parking in the precinct is predominately subject to short-term parking restrictions, which is expected given the location of the site.

The extent of the survey area is shown in Figure 2.13 with detailed survey results presented in Table A1 and Table A2 of Appendix C.

Figure 2.13: Parking Survey Area

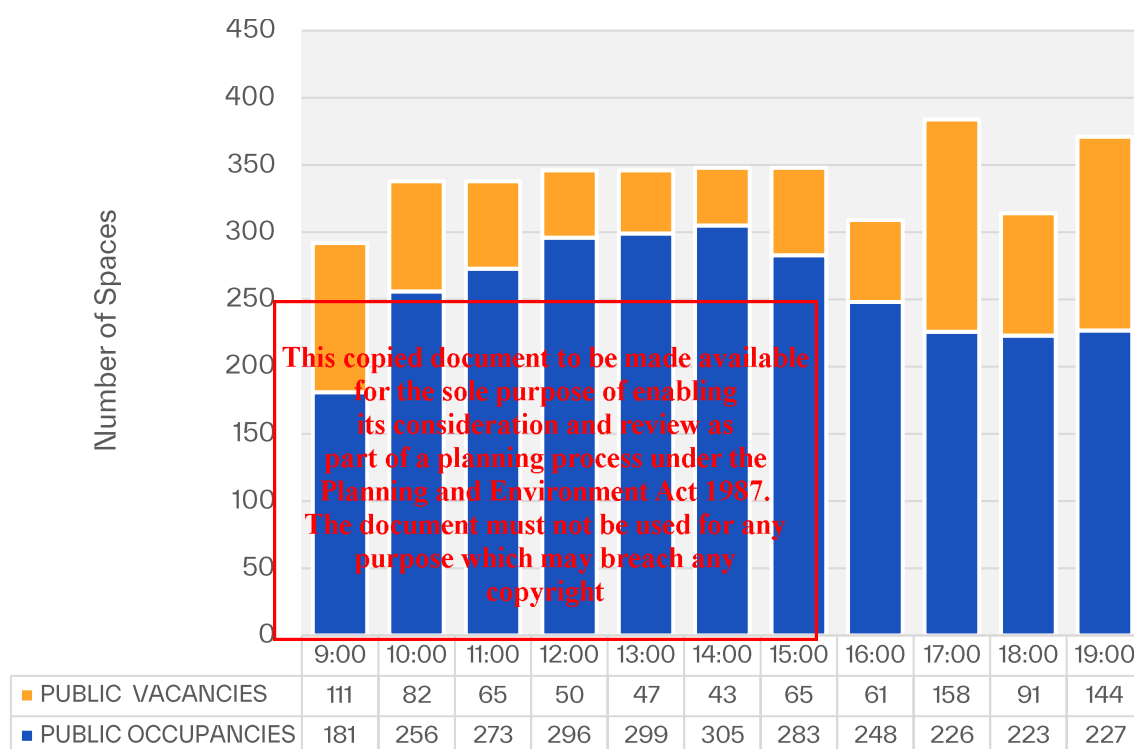


Thursday 18 November 2021

- There was observed to be a maximum supply of 371 publicly available on-street car parking spaces within the survey area, subject to a range of parking restrictions.
- The overall demand for parking during the survey period was moderate to high, ranging between 59% and 88%.
- The demand for car parking peaked at 2:00pm when a total of 305 car parking spaces were recorded occupied out of a supply of 348 car spaces, representing a demand percentage occupancy of 88%. There was a minimum of 43 available car parking spaces within the survey area at this time.

Figure 2.14 provides a graphical representation of the temporal profile of the Thursday parking demands.

Figure 2.14: Thursday 18 November - Temporal Profile of Parking Demand



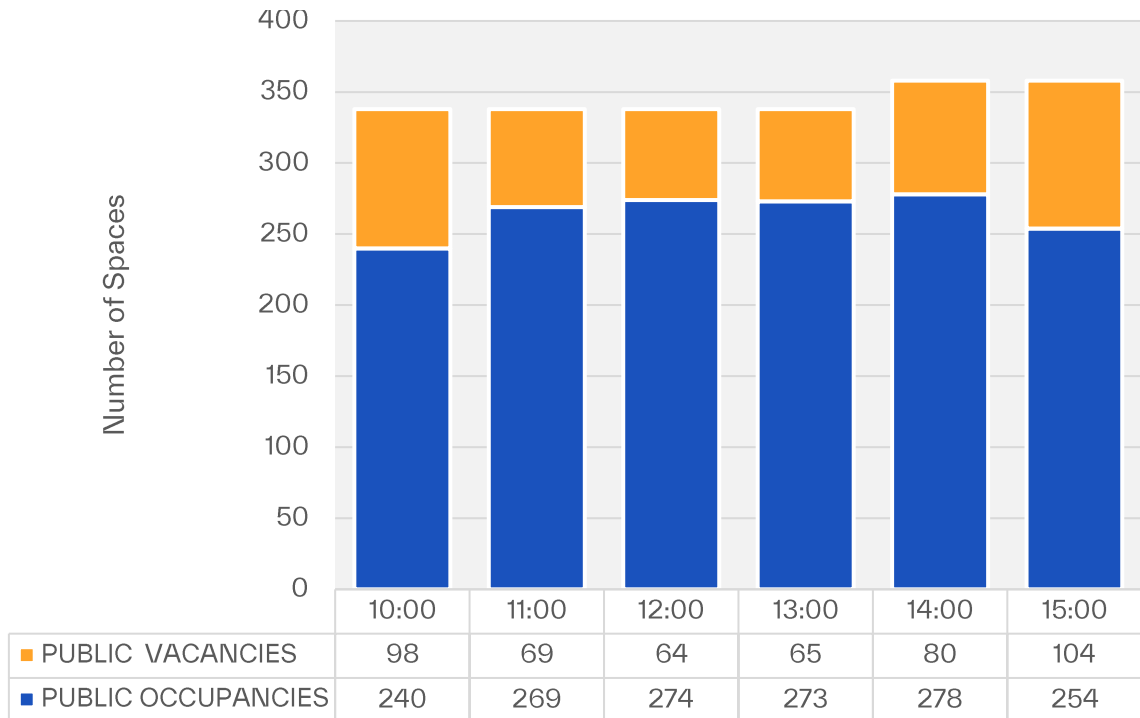
Saturday 13 November 2021

- There was observed to be a maximum supply of 358 publicly available on-street car parking spaces within the survey area, subject to a range of parking restrictions.
- The overall demand for parking during the survey period was moderate to high, ranging between 71% and 81%.
- The demand for car parking peaked at 12:00 noon when a total of 274 car parking spaces were recorded occupied out of a supply of 338 car spaces, representing a demand percentage occupancy of 81%. There was a minimum of 64 available car parking spaces within the survey area at this time.

Figure 2.15 provides a graphical representation of the temporal profile of the Saturday parking demands.

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Figure 2.15: Saturday 13 November - Temporal Profile of Parking Demand



Overall, the survey results demonstrate that there is some spare capacity to accommodate an increase in short-term visitor and customer car parking.

2.5. Sustainable Transport

Public Transport

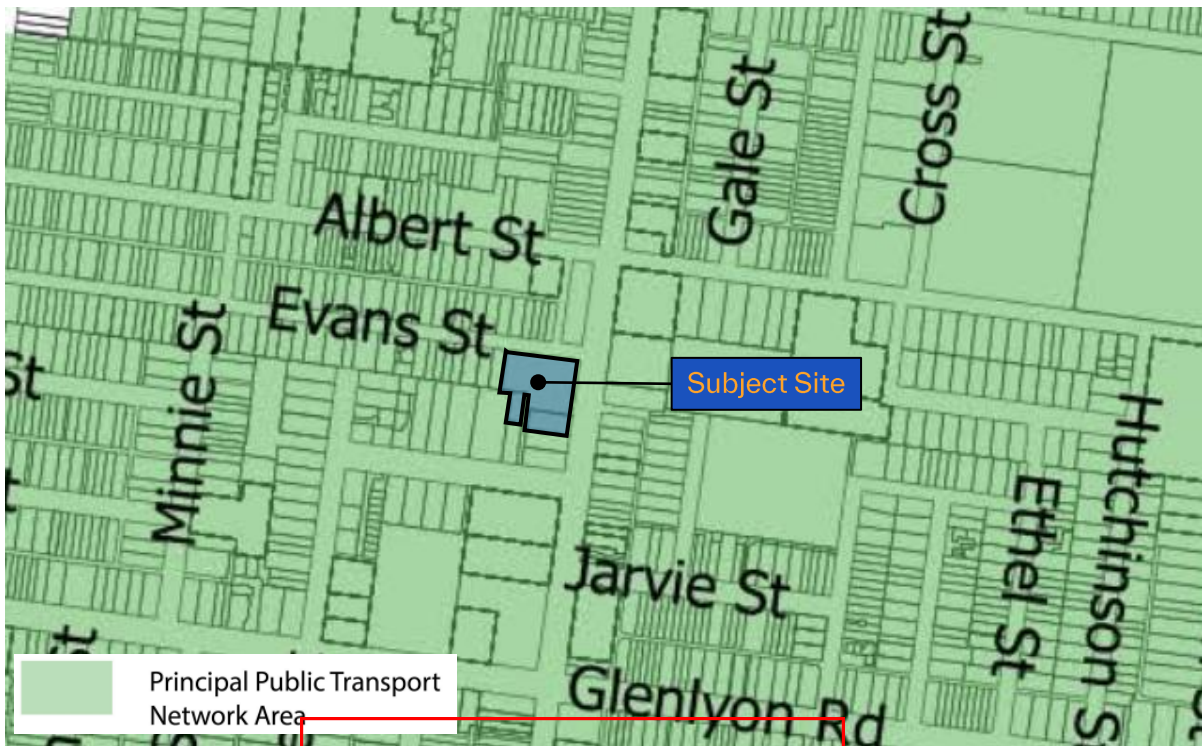
The subject site is located within the Principal Public Transport Network Area (PPTN) and has excellent access to the public transport network.

The location of the subject site with respect to the PPTN area is shown in Figure 2.16.

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Figure 2.16: Subject Site within the Principal Public Transport Network (PPTN) Area



SOURCE: DELWP

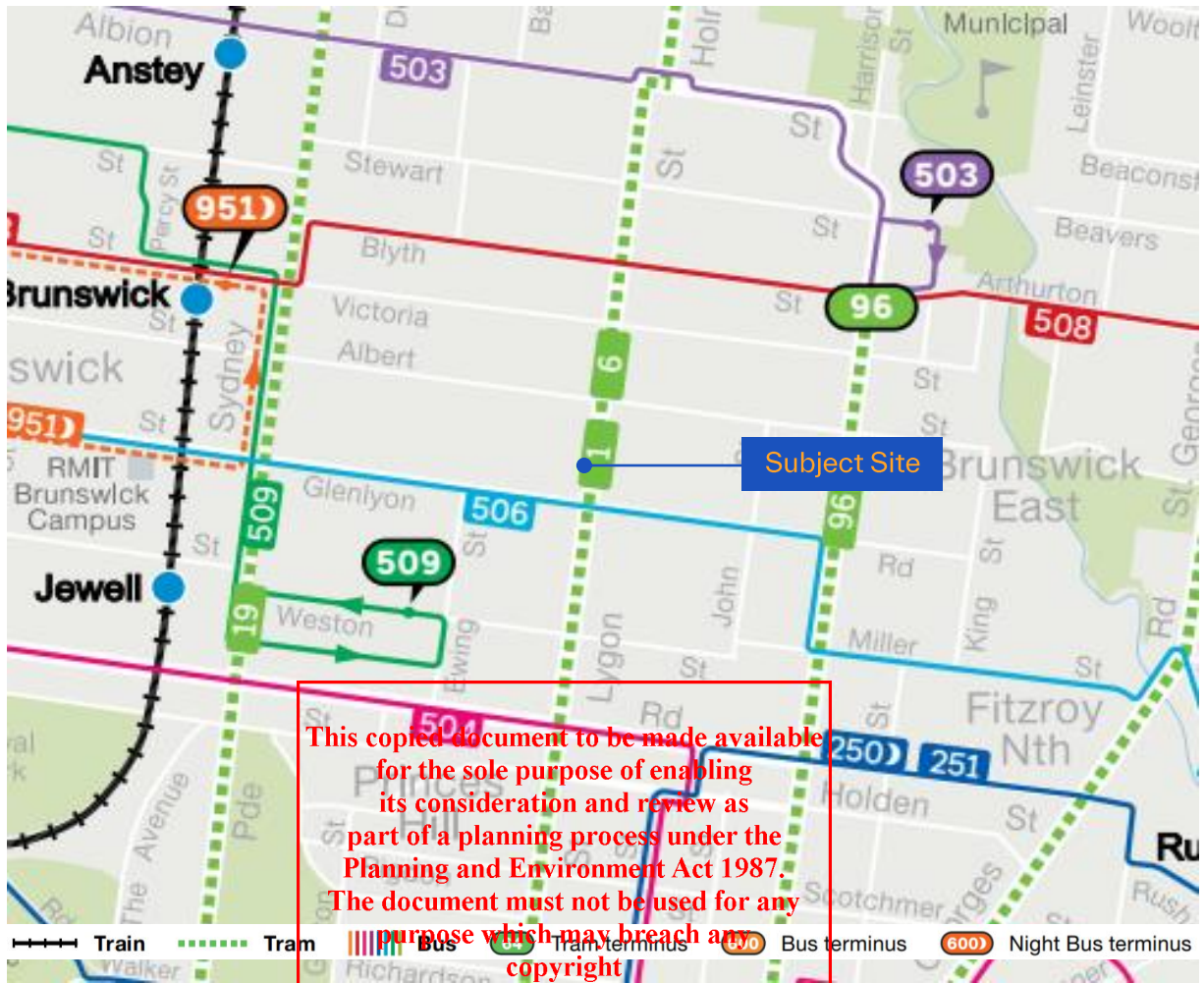
The public transport services which are conveniently located near the site are summarised in Table 2.1 and Figure 2.17.

Table 2.1: Public Transport Services

Service	Route	Route	Nearest Stop	Walking Distance
Tram	1	East Coburg – South Melbourne	Albert St/Lygon St	160 metres (2 minutes)
	6	Merri-bek – Glen Iris		
	96	East Brunswick – St Kilda Beach	Albert St / Nicholson St	850 metres (11 minutes)
	19	North Coburg – Flinders Street	Brunswick Rd / Sydney Rd	1.0 kilometres (13 minutes)
Bus	506	Moonee Ponds – Westgarth Station via Brunswick	Lygon St / Glenlyon Rd	220 metres (3 minutes)
	508	Alphington – Moonee Ponds via Northcote & Brunswick	Lygon St / Blyth St	550 metres (5 minutes)
Train		Upfield Line	Jewell Station	1.6 km (21 minutes) or via Route 506

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Figure 2.17: Public Transport Services Proximate to the Subject Site



SOURCE: PUBLIC TRANSPORT VICTORIA MAPS

Bicycle Network

The subject site has good access to Melbourne’s bicycle network, with numerous on and off-road paths throughout the suburb of East Brunswick and the City of Merri-bek. Notable bicycle paths within the vicinity of the site include:

- On-road bicycle paths along Blyth Street, Beith Street, Burchett Street, John Street, Glenlyon Road and Sections of Brunswick Road.
- Informal bicycle paths along Blair Street, Nash Street, George Street, Trafford Street, Ann Street, Blyth Street, Albert Street, Ewing Street, Edward Street, Miller Street, Barkly Street, Elesbury Avenue and Victoria Street.
- An off-road shared path which runs through Fleming Park.

The Merri Creek Trail (a shared path which runs between Fitzroy North to Coburg) is located 1.6 kilometres west of the subject site and can be accessed via Albert Street.

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Figure 2.18: Bicycle Network near Subject Site



SOURCE: MERRI-BEK CITY COUNCIL

Pedestrian Network

Pedestrian movements are also well facilitated with footpaths provided on both sides of the majority of the roads within the vicinity of the site, including both sides of Lygon Street and Pitt Street.

These pedestrian facilities provide access between the subject site, nearby public transport services and local shops and services within the Lygon Street Activity Centre.

The site achieves a 'Walk Score' of 94 points (out of a possible 100) and is described as a 'Walker's Paradise' on Walkscore.com, indicating that daily errands do not require a car.

A site's walk score is calculated based on the walking distance to local amenities, such as supermarkets, schools, parks, public transport, etc. Walkscore.com utilises data sources such as Google and road network data to calculate a 'Walk Score'.

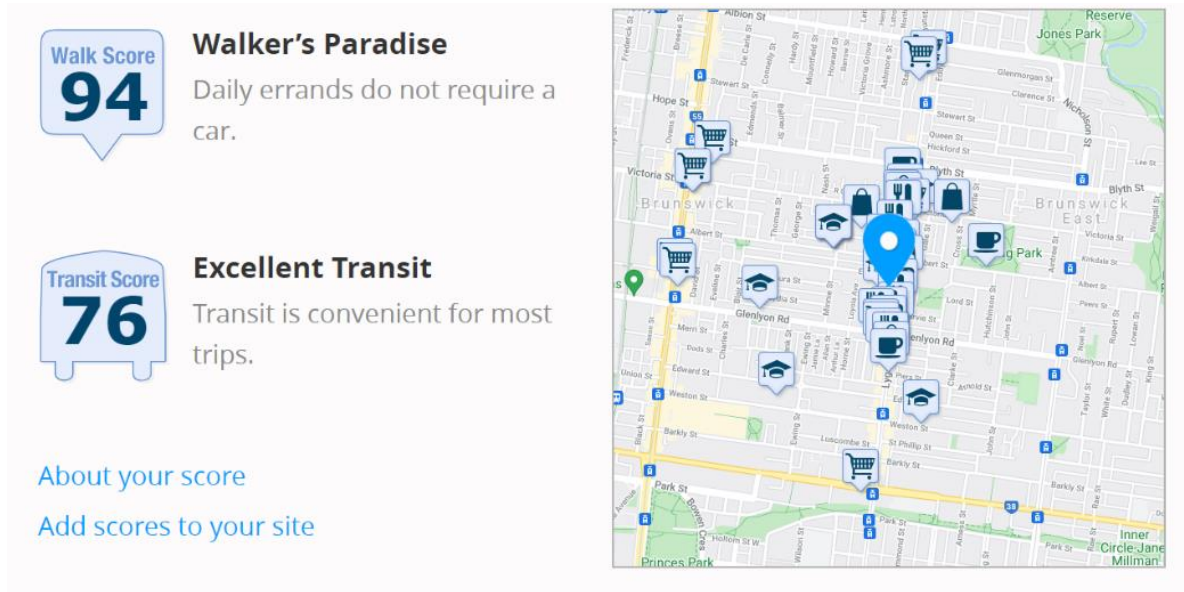
The convenient everyday services are illustrated in Figure 2.19.

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Figure 2.19: Walkable Services from the Subject Site



SOURCE: WALKSCORE

Car Share

Car share offers a viable mode of travel for those that require the use of a private motor vehicle from time to time.

The subject site has convenient access to several car share pods operated by Flexicar, GoGet and Green Share Car. A summary of the nearby carshare services is shown in Table 2.2 with their locations outlined in Figure 2.20.

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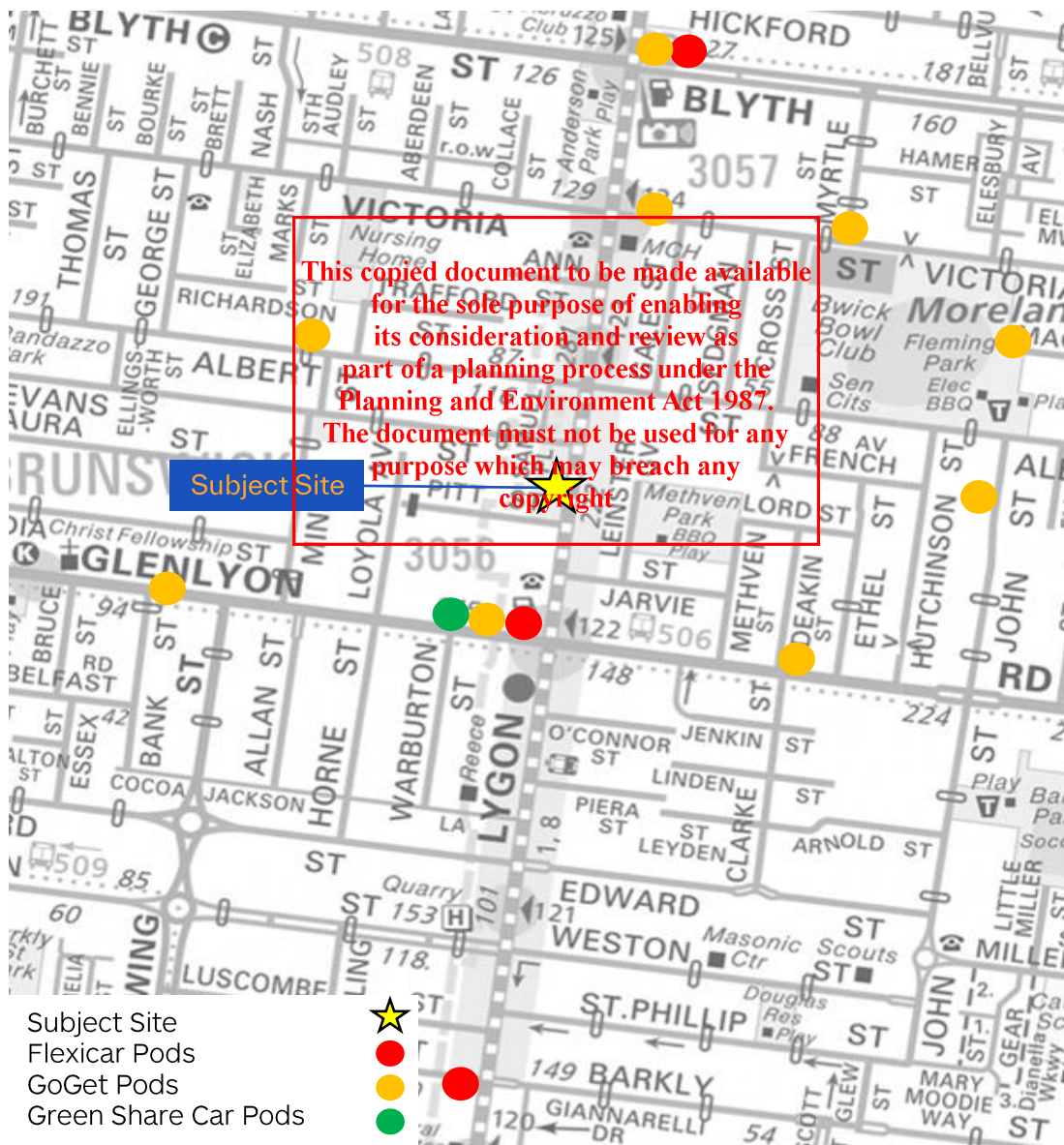
Table 2.2: Car Share Pods near the Subject Site

Operator	Location	Number of Cars	Walking Distance
GoGet	Glenlyon Road near Lygon Street	1	200 metres (3 minutes)
	Albert Street between Minnie Street and Trafford Street	1	350 metres (4 minutes)
	Victoria Street near Lygon Street	1	350 metres (4 minutes)
	Glenlyon Road between Deakin Street and Ethel Street	1	450 metres (6 minutes)
	Victoria Street next to Fleming Park	1	550 metres (7 minutes)
	Blyth Street near Lygon Street	1	500 metres (7 minutes)
	Bank Street near Glenlyon Road	1	600 metres (7 minutes)
	John Street near Albert Street	1	600 metres (8 minutes)

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	Maghull Street near Fleming Park	1	600 metres (8 minutes)
	Glenlyon Road near Lygon Street	1	200 metres (3 minutes)
Flexicar	Blyth Street near Lygon Street	1	600 metres (5 minutes)
	Barkly Street near Lygon Street	1	850 metres (11 minutes)
Green Share Car	Glenlyon Rd & Lygon St	1	300 metres (4 minutes)
Total		13 cars	

Figure 2.20: Locations of Car Share Pods near the Subject Site



SOURCE: GOGET, FLEXICAR, GREEN SHARE CAR

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2.6. Crash Analysis

A review has been conducted of the Department of Transport’s ‘Crashstats’ database for the most recent five-year period of available data from November 2018 to November 2023.

This database records all accidents causing injury that have occurred in Victoria since 1987 (as recorded by Victorian Police) and categorises these accidents as follows:

Fatal injury: at least one person was killed in the accident or died within 30 days as a result of the accident.

Serious injury: at least one person as sent to Hospital as a result of the accident.

Other injury: at least one person required medical treatment as a result of the accident.

A summary of the accidents along the frontages of the site on Lygon Street, Pitt Street and Evans Street are presented in Table 2.3:

Table 2.3: Summary of Crashes in the Vicinity of the Subject Site

Location	Accident No.		
	Fatality	Serious Injury	Other Injury
Site Frontages			
Lygon Street (between Pitt Street and Evans Street)	0	1	3
Pitt Street	0	0	0
Evans Street	0	0	0
Nearby Intersections			
Lygon Street/Pitt Street	0	0	0
Lygon Street/ Evans Street	0	0	1

SOURCE: DOT CRASHSTATS

A review of the crash history data indicates that no ‘fatality’ type crashes have been reported and there does not appear to be any crash trends that would warrant specific treatment.

Given the road classifications and associated traffic volumes, it is considered that the road network is operating in a relatively safe manner.

2.7. Relevant Planning Policy

CLAUSE 18.02-4L OF THE MERRI-BEK PLANNING SCHEME

Clause 18.02-4L of the Merri-bek Planning Scheme is Merri-bek’s Local Planning Policy Framework in relation to car a parking.

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The policy seeks to, amongst other things, encourage people to walk, cycle and use public transport.

Of particular relevance to this assessment, Clause 18.02-4L states that:

Support reduced car parking rates in developments:

- *Within and close to activity centres.*
- *With excellent access based on frequency and location to a range of public transport options.*
- *With increased provision of bicycle parking above the rates specified in Clause 52.34.*

Encourage shared car parking arrangements where uses are compatible, and efficiencies will be gained through sharing of car parking spaces.

The site is located within the Commercial Zone along Lygon Street is readily accessible by public transport, walking and cycling and has a generous bicycle parking provision well in excess of the statutory bicycle parking requirements (as discussed further in Section 6 of this report).

Under this policy, the proposal qualifies for reduced car parking rates.

MERRI-BEK INTEGRATED TRANSPORT STRATEGY

The Merri-bek Integrated Transport Strategy (MITS) was adopted by Council in March 2019. MITS seeks to, amongst other things, achieve a city-leading shift toward sustainable modes of travel through active transport and zero-emissions transport by 2040.

MITS also encourages the development of travel demand management measures, such as restricting parking, to discourage private car use. Council also strongly supports car sharing to reduce the demand for car ownership and reduce overall traffic congestion.

Of particular relevance to this assessment, the strategies under MITS state the following:

- Strategy 4 - Prioritise access by walking, cycling and public transport over car-based travel*
- Strategy 5 - Establish high quality pedestrian routes and places that are safe, comfortable and accessible.*
- Strategy 9 - Make cycling safe, comfortable and a preferred mode of travel in Merri-bek.*
- Strategy 11 - Encourage local trips to jobs, services and facilities by walking and cycling.*
- Strategy 20 - Collaborate with partners to deliver sustainable transport outcomes, provided they align with the vision and outcome for MITS.*
- Strategy 21 - Encourage new development to incorporate sustainable transport into its design.*

The site is readily accessible by public transport, walking and cycling and has a generous bicycle parking provision well in excess of the statutory bicycle parking requirements.

The policies align strongly with the transport related targets for the development and aim to further shift the modal usage towards active and public transport. Of particular note, Strategy 21 shows Council are ready and waiting for developments such as proposed for the subject site, to promote sustainable transport.

It should be noted that the MITS remains its adopted status despite Council's decision to abandon Amendment C183 on May 13, 2020 following a Panel Hearing ruling released on 1 April 2020. Amendment C183 related to the incorporation of parking overlays that introduced maximum and lower parking rates to developments in Activity Centres throughout the City of Merri-bek, which were one of the initiatives within MITS. The Panel report was expressly supportive of the underlying strategic basis of the MITS and noted that the Amendment itself was supported by state and local policy. The Panel did however take issue in some of the parking surveys and modelling work that underpinned the proposed amendment.

As of December 2020, Council has abandoned planned future MITS parking restrictions and changes in all activity and Neighbourhood centres. Instead, further MITS changes will be based on community support and/or high levels of parking demand on a street by street basis. Merri-bek Council at the December 2020 meeting reaffirmed the objective of mode shift to more sustainable transport options.

MERRI-BEK PARKING MANAGEMENT STRATEGY

The purpose of this policy is to outline tools that Council can use to manage parking in Merri-bek, including restriction, permits and fees. It provides guidelines on the conditions under which Council will apply parking restrictions and provide information on eligibility, application requirements and other conditions relating to parking permits.

The objectives of the policy of relevance to this development are identified below:

- *“Provide equitable access to on-street or public car parking areas for users, consistent with the user priority guidelines in this policy.”*
- *“Encourage residents and business operators to utilize sustainable transport modes.”*
- *“Manage traffic flow within the municipality.”*
- *“Support the objectives and actions of MITS 2019.”*

For new developments within Merri-bek, restrictions for residential on-street parking permits are limited where a planning permit for subdivision results in an increase in the number of separate occupancies on the site post August 2011. Therefore, residents of the proposed development would not be eligible for on-street parking permits and would need to rely on alternative transport and off-street parking, where provided.

Similarly, for business parking permits for on-street parking, proof of permanent location of the business within the City of Merri-bek is required and no more than two off-street parking spaces are to be available at the place of business to qualify for an on-street parking permit.

The eligible businesses may receive a maximum of one permit, or two permits if there are no off-street parking bays at the place of business.

Residents of the development would not be able to access permits, protecting existing residents access to on-street car parking if future parking demand levels lead to the introduction of permit restrictions. Similarly, business on-street parking permits will be restricted, regulating the level of parking demand for new commercial developments on-street.

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3. The Proposal

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It is proposed to construct a part-eight storey, part five-storey mixed use development with associated on-site car parking.

More specifically, the development is to comprise the following:

– A total of 109 dwellings, comprising:

- 48 x one-bedroom dwellings.
- 52 x two-bedroom dwellings.
- 7 x three-bedroom dwellings.
- 2 x four-bedroom dwellings.

– Four retail tenancies with a total leasable floor area of 1,134 square metres, located on ground level.

– A total of 103 car parking spaces (inclusive of one DDA parking space and six electric vehicle charging bay), provided within two levels of basement car parking.

– A total of six motorcycle parking spaces, provided within the basement car park.

– A total of 146 bicycle parking spaces, distributed across the ground level.

Vehicular access to the development will be via a crossover to/from Evans Street.

Access to/from the site is proposed to be restricted to 'left turn in' and 'right turn out' movements only. Right turn arrow line-marking is proposed to be provided at the site exit with associated 'Right Turn Only' symbolic signage. In addition, it is recommended that 'No Right Turn' signage facing west be provided adjacent the site entrance, to prohibit vehicles turning right into the site from Evans Street.

Primary pedestrian access to the residential development will be provided via Evans Street, with secondary access provided via the ROW connecting to/from Pitt Street. Pedestrian access to each retail tenancy will be provided directly to/from Lygon Street.

The proposed ground floor layout excerpt is shown in Figure 3.1.

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4. Car Parking Assessment

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4.1. Planning Scheme Assessment

Clause 52.06 – Parking Assessment

Car parking requirements for new developments are set out under Clause 52.06 of the Merri-bek Planning Scheme. The purpose of the Clause, among other things, is:

- To ensure that car parking is provided in accordance with the Municipal Planning Strategy and Planning Policy Framework.
- To ensure the provision of an appropriate number of car parking spaces having regard to the demand likely to be generated, the activities on the land and the nature of the locality.
- To support sustainable transport alternatives to the motor car.
- To promote the efficient use of car parking spaces through the consolidation of car parking facilities.
- To ensure that car parking does not affect the amenity of the locality.
- To ensure that the design and location of car parking is of a high standard, creates a safe environment for users and enables easy and efficient use.

The number of car parking spaces required for the specified uses is listed under Table 1 of Clause 52.06-5. The car parking requirement specified for a use listed in Table 1 does not apply if:

- A car parking requirement for the use is specified under another provision of the Planning Scheme: or
- A schedule to the Parking Overlay specifies the number of car parking spaces required for the use.

As per Amendment VC148, Column B rates of Table 1 from Clause 52.06 of the Merri-bek Planning Scheme apply if:

- Any part of the land is identified as being within the Principal Public Transport Network Area as shown in the Principal Public Transport Network Area Maps (State Government of Victoria, 2018); or
- A Schedule to the Parking Overlay or another provision of the planning scheme specifies that Column B applies.

As stated in Section 2.1, the site is subject to Parking Overlay – Precinct 1 Schedule (PO1). PO1 specifies the following rates:

For all uses listed in Table 1 of Clause 52.06-5, the number of car parking spaces required for a use is calculated using the Rate in Column B of that table.

Application of the Column B rates is shown in Table 4.1.

As discussed in Section 2.4, the subject site is located within the PPTN area, which would also require the number of car parking spaces for a use to be calculated by applying the Column B rate (if the site was not subject to the Parking Overlay).

Table 4.1: Statutory Car Parking Requirement

Use	Type	Size	Statutory Parking Rate	Statutory Requirement
Residential	One Bedroom	48 x 1-bed apartments	1 space per dwelling	48 spaces
	Two Bedroom	52 x 2-bed apartments	1 space per dwelling	52 spaces
	Three Bedroom	7 x 3-bed apartments	2 spaces per dwelling	14 spaces
	Four Bedroom	2 x 4-bed apartments		4 spaces
	Visitor	109 apartments	0 spaces	0 spaces
Retail	Shop	1,134 sqm	3.5 spaces to each 100 sqm of leasable floor area	39 spaces
Total Statutory Requirement				157 spaces

On the basis of the above, the proposal has a statutory requirement to provide a total of 157 car parking spaces.

A total of 103 parking spaces are proposed on site, allocated as shown in Table 4.2 below:

Table 4.2: Car Parking Allocation

Use	Size	Car Parking Requirement	Car Parking Allocation	Parking Reduction
Residential	1 bedroom	48 spaces	22 spaces	26 spaces
	2 bedroom	52 spaces	52 spaces	0 spaces
	3 bedroom	14 spaces	14 spaces	0 spaces
	4 bedroom	4 spaces	4 spaces	0 spaces
Retail	1,134 sqm	39 spaces	11 spaces	28 spaces
Total		157 spaces	103 spaces	54 spaces

Accordingly, the proposal seeks a reduction of 54 car parking spaces associated with the development against the statutory requirements of Clause 52.06-5 of the Merri-bek Planning Scheme.

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Under the provision of Clause 52.06, the Responsible Authority is able to reduce the parking requirements (including reduced to zero), provided the applicant satisfies the responsible authority that the provision of car parking is justified on the basis of:

- The car parking demand likely to be generated by the use; and
- Whether it is appropriate to allow fewer spaces to be provided than the number likely to be generated by the use.

4.2. Car Parking Demand Assessment

Clause 52.06-7 states the following with respect to applications to reduce car parking requirements:

“An application to reduce (including reduce to zero) the number of car parking spaces required under Clause 52.06-5 or in a schedule to the Parking Overlay must be accompanied by a Car Parking Demand Assessment.

The Car Parking Demand Assessment must assess the car parking demand likely to be generated by the proposed...new use”.

The following factors are to be addressed by a Car Parking Demand Assessment:

- The likelihood of multi-purpose trips within the locality which are likely to be combined with a trip to the land in connection with the proposed use.
- The variation of car parking demand likely to be generated by the proposed use over time.
- The short-stay and long-stay car parking demand likely to be generated by the proposed use.
- The availability of public transport in the locality of the land.
- The convenience of pedestrian and cyclist access to the land.
- The provision of bicycle parking and other facilities for cyclists in the locality of the land.
- The anticipated car ownership rates of likely or proposed visitors to or occupants (residents or employees) of the land.
- Any empirical assessment purpose study.

An assessment of those factors considered relevant to the development is provided below:

The Likelihood of Multi-Purpose Trips

As discussed in Practice Note 22 – Using the Car Parking Provisions, in some situations a trip will serve more than one function, and this will tend to reduce the need for car parking.

The dwellings within the development can be expected to generate a demand for resident car parking which will be ‘stand-alone’ residential parking and there is little likelihood of multi-purpose trips associated with residents of the proposed development.

The proposed retail tenancies will generate parking demands related to both employees and customers. It can be expected that employees will generate a stand-alone car parking demand, which is unlikely a consequence of a multi-purpose trip.

Customers to the retail tenancy can be expected to be drawn from people who will already be in the vicinity of the site, including existing residents in the surrounding area and future residents of the proposed development, and therefore the stand-alone customer car parking demand is expected to be significantly reduced.

Given the location of the subject site, located within the Commercial Zone along Lygon Street, there is potential for retail visitors to travel to the area for other reasons when visiting the site.

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Variation of Car Parking Demand

Typically, residential parking demand peaks outside of business hours, with maximum occupancies occurring during weekday evenings.

Demands for car parking associated with retail tenancies depend largely on the nature of the businesses operating on the site, including hours of operation.

Typical operation of the retail tenancy will predominantly occur during weekday business hours, with the tenancy also expected to incorporate weekend trade (mainly Saturdays). Car parking demands outside of these operational hours will be minimal.

Short-Stay and Long-Stay Car Parking Demand

Parking demand generated by the residential component of the development will be primarily long stay parking associated with residential use.

The same long stay parking demands will occur for employees of the retail tenancies, who require long-stay parking during business hours.

Short stay parking associated with retail tenancies will be related to customer parking.

The proposed retail tenancies will likely service residents, businesses and commuters in the surrounding area, and the relatively small proportion of short stay car parking demand associated with customers will be facilitated off site within available on-street spaces in the vicinity of the site.

The Availability of Public Transport in the Locality of the Land

As discussed in Section 5.2, the site has excellent access to a range of public transport services with tram, bus and train services operating in convenient proximity to the subject site.

The site is also located within the Principal Public Transport Network Area (PPTN). This is reflective of the site's high level of accessibility to public transport services.

Given the excellent access to public transport options, residents, staff and customers of the development are able to travel to and from the site without relying on the use of a private motor vehicle.

The Convenience of Pedestrian and Cyclist Access to the Land

Walking is the most sustainable way to travel. The site is located within a Commercial Zone with convenient access to local shops and services.

The site achieves a 'Walk Score' of 94 points (out of a possible 100) and is described as a 'Walkers Paradise' on WalkScore.com with 'daily errands not requiring a car'.

A site's walk score is calculated based on the walking distance to local amenities, such as supermarkets, cafes, restaurants, parks, public transport, etc. Walkscore.com utilises data sources such as Google and road network data to calculate a 'Walk Score'.

The site also has very good access to the principal bicycle network (PBN) in convenient proximity of the site, providing a convenient travel alternative for residents and visitors.

In turn, these facilities would allow residents, staff and customers the option of using active transport modes and reduce the need to own a vehicle.

Accordingly, the site exhibits the characteristics to support walking and cycling as an alternative form of transport.

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The Provision of Bicycle Parking and End of Trip Facilities for Cyclists in the Locality of the Land

The proposal includes a generous provision of 146 bicycle parking spaces, which is in excess of the statutory requirement for bicycle parking.

These facilities will help to encourage all users to choose to travel to/from the site via alternative transport modes.

Access to Car Share Pods

As discussed in Section 2.5, there are 13 car share pods within convenient walking distance of the subject site, which can be utilised by residents and staff of the development.

Empirical Assessment

RESIDENTIAL CAR PARKING DEMAND

As discussed, all dwellings within the proposal have been provided with the statutory requirement for car parking, with the exception of 26 one-bedroom dwellings.

Empirical data collected from the 2016 Census shows that 30% of residents of one-bedroom apartments within East Brunswick do not own a vehicle.

The site's close proximity to a number of public transport and car sharing options and the convenience of pedestrian and cyclist access to the site, as well as the provision of generous bicycle parking facilities, all facilitate access to the site without the need of a private vehicle.

RETAIL CAR PARKING DEMAND

As discussed, the ground floor retail tenancies are likely to draw a significant portion of their trade from walk-up customers from nearby residents and staff of the surrounding businesses, including residents of the proposed dwellings.

Therefore, the demand for customer parking is expected to be minimal.

It is proposed to provide a total of 11 staff car parking space on-site, providing each of the four tenancies with a minimum of two car parking spaces. Any additional staff of these tenancies would be expected to either cycle, walk or take public transport, given the lack of long-term on-street parking in the area.

For a development of this scale, nature and location, and available on-street parking, it is considered that the absence of any on-site parking for customers of the retail tenancies is a suitable outcome for this development (and consistent with the existing retail tenancies on the subject site).

4.3. Allowing Fewer Spaces to be Provided

Clause 52.06-7 sets out the factors to be considered when determining the appropriateness of allowing fewer car parking spaces to be provided than the assessed parking demand. Some of the relevant factors are:

- The Car Parking Demand Assessment.
- The availability of alternative car parking in the locality of the land, including:
 - Efficiencies gained from the consolidation of shared car parking spaces.
 - Public car parks intended to serve the land.
 - On street parking in non-residential zones.
 - Streets in residential zones specifically managed for non-residential parking.

- The access to or provision of alternative transport modes to and from the land.
- The Practicality of Providing Car Parking on the Site.
- Any other relevant consideration.

Those factors directly relevant to this assessment are discussed in more detail below:

The Availability of Alternate Car Parking in the Locality of the Land

As outlined in Section 2.4, the nature of on-street parking in the vicinity of the site that could potentially be utilised by staff of the development is constrained given that on-street parking is time restricted or subject to high occupancy levels.

This results in a disincentive for future residents and employees without an on-site car space to own or to travel to work via a private motor vehicle and will encourage alternative modes of transport.

Conversely, the short-term parking restrictions in the vicinity of the site will ensure any short-term visitors to the area are able to find a parking space within close proximity to the subject site even during periods of peak activity.

Accordingly, it is considered that any short-term users of the development can be accommodated in suitable off-site parking locations within convenient proximity of the site without adversely impacting on current parking conditions in the precinct.

Local Traffic Management

The suppressed provision of car parking will reduce motor vehicle travel to and from the site, resulting in a lessened impact to traffic congestion and pedestrian amenity in the vicinity of the site than what would otherwise be incurred were more on-site parking proposed.

Relevant Local Policy

The relevant planning policies are discussed in detail in Section 2.7 and include Clause 18.02-4L of the Merri-bek Planning Scheme, the Brunswick Structure Plan, the Merri-bek Integrated Transport Strategy (MITS) and the Merri-bek Parking Strategy.

The policies identify an intention to increase the utilisation of sustainable transport alternatives in the area, with reduced car parking rates to be supported where appropriate.

With a suppressed provision of car parking proposed, excellent access to public transport, bicycle infrastructure and a generous provision of bicycle parking, it is expected that a significant portion of users of the development will seek to utilise alternative transport modes such as public transport and bicycle, in line with the above policies.

The Parking Management Strategy identifies the need for change in regard to parking requirements and supporting existing residents access to on-street car parking. In addition, on-street parking restrictions would be introduced on local streets within Local Activity and Local Neighbourhood centres based on community support and/or high demand for on-street car parking. Effectively, Council have resolved to introduce parking controls (such as permits) on an as-needed, as-required basis, thus ensuring the availability of on-street parking to existing residents.

Access to Provision of Alternative Transport Modes to and from the Land

The site has excellent access to a range of public transport services, with train, tram and bus services operating within convenient proximity to the site. These facilities are detailed within Section 2.5. Additionally, the site has excellent access to the nearby bicycle network, pedestrian network and car share vehicles.

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Given the site's access to sustainable transport options, residents, employees, visitors and customers, are expected to be able to travel to and from the site without relying on the use of a private motor vehicle.

4.4. Appropriateness of the Proposed Car Parking Supply

It is proposed to provide a total of 103 car parking spaces on-site to meet the resident and employee parking demands of the proposed mixed-use development. This level of parking provision is considered satisfactory for the following reasons:

This level of parking provision is considered satisfactory for the following reasons:

- The proposed residential parking provision meets the requirements of the Merri-bek Planning Scheme for two, three and four-bedroom dwellings, with the exception of 26 one-bedroom dwellings not having any on-site parking.
- The provision of a total of 11 staff spaces on-site provides each tenancy with a minimum of two long-term parking spaces, satisfying the parking demand generated by the retail staff.
- The site is located close to several sustainable transport alternatives such as train, bus and tram routes, bicycle and pedestrian facilities. This will enable residents, staff and customers of the development to travel to and from the site using sustainable modes of transport and reduce the demand for car parking.
- The excellent level of pedestrian and cycling connectivity will encourage and facilitate an increase in walking, cycling and public transport modes to and from the site.
- The short-term on-street parking restrictions will ensure any short-term visitors and or customers to the area are able to find a parking space within close proximity to the subject site even during periods of peak activity. Further, the short-term nature of on-street car parking will deter residents or staff without an on-site car parking space from relying on such to store their vehicle.
- The development helps to achieve the objectives sought by Local Policy and strategic documents by reducing the dependence on private motor vehicles and supporting the use of sustainable modes of transport.
- The generous provision of bicycle parking and end of trip facilities will encourage the use of alternative transport modes and reduce the reliance on private vehicle use.
- The suppressed provision of car parking will reduce motor vehicle travel to and from the site, resulting in a lessened impact to traffic congestion and pedestrian amenity in the vicinity of the site than what would otherwise be incurred were more on-site parking proposed.

Based on the above factors, the proposed provision of car parking is considered appropriate and satisfactory.

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the frontage road from the edge of an exit lane and 2.5m along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the landscaping in those areas is less than 900mm in height.

egress lane of the site access point due to the location of the neighbouring property (western side) and the provision of a structural wall. Accordingly, it is proposed to provide a convex mirror on the eastern side of the site access point to enable sightlines between vehicles departing the site and pedestrians walking along the footpath (from the west). This is considered to be an acceptable arrangement.

Given that the site access is double-width where it meets the property boundary, a pedestrian sight triangle is not required adjacent to the ingress lane (eastern side).

If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6m from the road carriageway.

Not Applicable – Access to the car parking spaces is not from a road in a Road Zone.

If entry to the car space is from a road, the width of the accessway may include the road.

Not Applicable - Entry to the car spaces is not accessed directly from a road.

Existing Speed Hump on Evans Street

It has been identified that there is an existing speed hump along Evans Street which would be partially located in front of the proposed new crossover. It is recommended that either the speed hump be relocated along Evans Street (subject to discussions with Council and relevant landowners) or further analysis be undertaken to determine whether suitable access is achievable with the speed hump in its current location.

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Design Standard 2 – Car Parking Spaces

Design Standard 2 of Clause 52.06-9 relates to the design of car parking spaces. The requirements of Design Standard 2 are assessed against the proposal in Table 5.2 below:

Table 5.2: Design Standard 2 Assessment - Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2	<p>Satisfied – All standard car parking spaces meet the dimensional requirements set out in Table 2 of Design Standard 2.</p> <p>Typical standard car parking spaces are 2.6 meters wide, 4.9 metres long and are accessed via a 6.4-metre-wide aisle, meeting the minimum standards.</p> <p>The accessible space meets the dimensional requirements of AS2890.6:2009.</p> <p>Notably, Clause 52.06-9 of the Merri-bek Planning Scheme permits an accessible car parking space to encroach into the access aisle width by 500mm.</p>
A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked ‘clearance required’ on Diagram 1 of Design Standard 2, other than:	<p>Satisfied – Car parking spaces are typically clear of any encroachments within the area marked on Diagram 1 of Design Standard 2 in Clause 52.06-9 of the Planning Scheme.</p>

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<p>A column, tree, or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1</p> <p>A structure, which may project into the space if it is at least 2.1m above the space</p>	<p>Car parking spaces adjacent to encroachments that do not strictly comply with Diagram 1 of Design Standard 2 have been widened to 2.7 metres which accords with AS/NZS2890.1 (which requires car spaces for residents which are 2.4m metres wide to be widened by 300mm).</p>
<p>Car spaces in garages or carports must be at least 6m long and 3.5m wide for a single space and 5.5m wide for a double space measured inside the garage or carport.</p>	<p>Not Applicable – There are no spaces provided in garages or carports.</p>
<p>Where parking spaces are provided in tandem (one space behind the other) an additional 500mm in length must be provided between each space.</p>	<p>Not Applicable – There are no tandem spaces proposed.</p>
<p>Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.</p>	<p>Satisfied – All car parking spaces have been provided under cover.</p>

Design Standard 3 – Gradients

Design Standard 3 of Clause 52.06–9 relates to the design of gradients. The requirements of Design Standard 3 are assessed against the proposal in Table 5.3.

Table 5.3: Design Standard 3 Assessment - Gradients

Requirement	Comments
<p>Accessway grades must not be steeper than 1:10 (10%) within 5m of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.</p>	<p>Considered Satisfied – The Ground to Basement Level 1 ramp is provided with the following profile:</p> <ul style="list-style-type: none"> • Ascending 1:8 gradient for 1.6 metres • Flat for 2.0 metres • Descending 1:8 gradient for 2.83 metres • Descending 1:4 gradient for 11.745 metres • Descending 1:8 gradient for 2.5 metres <p>The resulting ramp grades within the first 5 metres from the title boundary are steeper than the maximum grade of 1:10, defined in Standard 3 of Clause 52.06. However, the proposed ramp provides an initial ascending gradient to meet an apex of RL 43.300.</p> <p>Accordingly, this resultant downgrade towards the site frontage will raise the height of the driver relative to the pedestrian path and therefore improve visibility to/from departing vehicles relative to a conventional basement ramp design with an ascending gradient for exiting vehicles.</p> <p>This outcome is a considered to be an acceptable arrangement from a traffic engineering perspective.</p>
<p>Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 of Design Standard 3 and be designed for vehicles travelling in a forward direction.</p>	<p>Satisfied – The proposed grades are provided in accordance with Table 3 of Design Standard 3, with grades no steeper than 1:4.</p>

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Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change, or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.

Plans must include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.

Satisfied – Appropriate grades have been provided to prevent vehicle scraping or bottoming.

5.2. Swept Path Assessment

An assessment of site accessibility was undertaken using the 'Autodesk Vehicle Tracking' software and is shown in Appendix D. The B99 vehicle was used in the assessment and it was found that two vehicles in opposing directions could pass the at the site access in a suitable manner and all vehicles are able to enter and exit the site in a forward direction.

An assessment of the accessibility to/from the car parking spaces was also undertaken using the B85 vehicle and it was found that each of the critical car parking space could be accessed (ingress and egress) in a satisfactory manner.

Some corrective manoeuvres may be required, which is in accordance with AS/NZS2890.1:2004 (Table 1.1), which specifies that the three-point turn movements to enter and exit 90-degree parking spaces are permitted for regular users.

The assessment indicates that the access arrangements and car parking layout have been designed appropriately and in accordance with the requirements of the Merri-bek Planning Scheme and/or AS/NZS 2890.1:2004.

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6. Bicycle Design Assessment

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6.1. Clause 52.34 Assessment

The provisions set out under Clause 52.34-3 of the Merri-bek Planning Scheme require that bicycle parking be provided at the following rates, as shown in Table 6.1:

Table 6.1: Bicycle Parking Statutory Requirements

Use	Type	Size	Statutory Parking Rate	Statutory Requirement
Residential	Resident	109 apartments	1 space per five residential dwellings in developments of four or more storeys	22 spaces
	Visitor		1 space per 10 residential dwellings in developments of four or more storeys	11 spaces
Retail	Staff	134 sqm of leasable floor area	One space per 300 sqm of leasable floor area	4 spaces
	Customer		One space per 150 sqm of leasable floor area	2 spaces
Total Statutory Requirement				39 spaces

Application of the above rates produce a statutory requirement of 39 bicycle spaces consisting of 22 resident spaces, 13 visitor/customer spaces and 4 employee spaces.

The development proposes to provide a generous provision of 146 bicycle parking spaces:

- 110 x secure resident bicycle spaces within the resident bicycle parking room.
- 22 x secure residential visitor bicycle spaces within the northern resident bicycle parking room. It is noted that residents would be able to accompany their visitors to the secure residential bicycle parking rooms.
- 8 x secure bicycle spaces within the retail staff bicycle parking rooms.
- 6 x horizontal bicycle spaces for visitors/customers located along the Evans Street site frontage.

As such, the development readily exceeds the requirements of the Merri-bek Planning Scheme and is considered satisfactory.

Each bicycle parking space has been designed in accordance with AS2890.3:2015.

Provision of bicycle parking specifications have been included in Appendix E of this report.

7. Loading Arrangements

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7.1. Loading and Unloading Arrangements

Clause 65.01 'Decision Guidelines' of the Merri-bek Planning Scheme outlines the provision of loading requirements, and states the following:

"Before deciding on an application or approval of a plan, the responsible authority must consider, as appropriate:

- The adequacy of loading and unloading facilities and any associated amenity, traffic flow and road safety impacts."*

Loading and unloading activities associated with the proposed development will primarily be related to the delivery of goods for the retail tenancies. Some vans / trucks may occasionally seek to access the site for the loading / unloading of furniture and goods into and out of the dwellings. This will largely occur when residents initially move into a dwelling, and relatively infrequently thereafter.

Loading and unloading for the proposed development can be accommodated on-street. An existing on-street Loading Zone is provided in close proximity to the site along Pitt Street (operating from 8:00am to 6:00pm, Monday to Friday), which can be used for the loading and unloading needs of the proposed development. Additionally, a large proportion of the surrounding on-street parking supply is subject to short-term parking restrictions which will encourage a high-turnover of parking and create capacity for delivery and services vehicles.

This is considered to be an acceptable arrangement from a traffic engineering perspective. The on-street Loading Zone along Pitt Street is shown in Figure 7.1.

Figure 7.1: Loading Zone on Pitt Street



SOURCE: GOOGLE MAPS

7.2. Waste Collection

Separate refuse and recyclables storage areas for the residential and retail uses have been located on the basement level and waste and recyclables are proposed to be collected via a private waste contractor.

A swept path assessment was conducted and demonstrated that a 6.4m truck can access the site in a forward direction, prop in the aisle, manoeuvre and depart in a forwards direction.

This is considered to be an acceptable arrangement from a traffic engineering perspective.

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8. Traffic Assessment

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8.1. Overview

The following assessment is based on traffic activity during the AM and PM weekday commuter peak hours.

8.2. Traffic Generation

Proposed Development Traffic – Residential

In consideration of the locality of the site and based on surveys of residential dwellings conducted by Ratio Consultants and others, it is estimated that the proposed dwellings could be expected to generate traffic at a daily rate of three vehicle movements per dwelling allocated one car space and six vehicle movements per dwelling allocated two car spaces.

Therefore, the 74 dwellings allocated one car parking space and 9 dwellings allocated 2 car parking spaces would be expected to generate in the order of 276 vehicle trips per day.

Generally, 10 percent of the trips, which equates to about 28 peak hour vehicle movements, will occur in each of the morning and evening peak hours.

The majority of the traffic generated by the residential development during the morning peak period will be residents departing the site (80 percent out and 20 percent in) and the majority of the traffic during the evening peak period will be residents returning to the site (40 percent out and 60 percent in).

Accordingly, the expected trip generation for a typical weekday AM and PM peak hours, is estimated as shown in Table 8.1.

Table 8.1: Residential Traffic Generation

Direction	AM Peak	PM Peak
Arriving Trips	6 vph	17 vph
Departing Trips	22 vph	11 vph
Total Trips	28 vph	28 vph

Proposed Development Traffic – Retail

Retail traffic generation from the site will be limited to the turnover of those spaces allocated to staff.

On the basis that each car space allocated to shop staff will generate a vehicle movement during peak periods, the development would generate up to eleven staff movements in the AM and PM peak hours.

The retail traffic generation for the AM and PM peak hours is shown in Table 8.2.

Table 8.2: Retail Traffic Generation

Direction	AM Peak	PM Peak
Arriving Trips:	11 vph	0 vph
Departing Trips:	0 vph	11 vph
Total Trips:	11 vph	11 vph

Overall

A summary of the peak hour traffic generation for the proposed development is presented in Table 8.3:

Table 8.3: Overall Trip Generation

	AM Peak			PM Peak		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Residential	6	22	28	17	11	28
Retail	11	0	11	0	11	11
Total	17	22	39	17	22	39

On the basis of the above, it is anticipated that the development will generate traffic in the order of 39 vehicle movements during the AM and PM peak hour periods, equating to approximately one vehicle movement every one to two minutes on average during peak hour periods.

Traffic accessing the site will initially utilise Evans Street and then Lygon Street to the east or the residential streets to the west (Minnie Street, Albert Street etc) which will disperse the overall peak hour vehicle movements. It is considered that Evans Street and the surrounding road network can readily accommodate this increase in traffic.

8.3. SIDRA Analysis

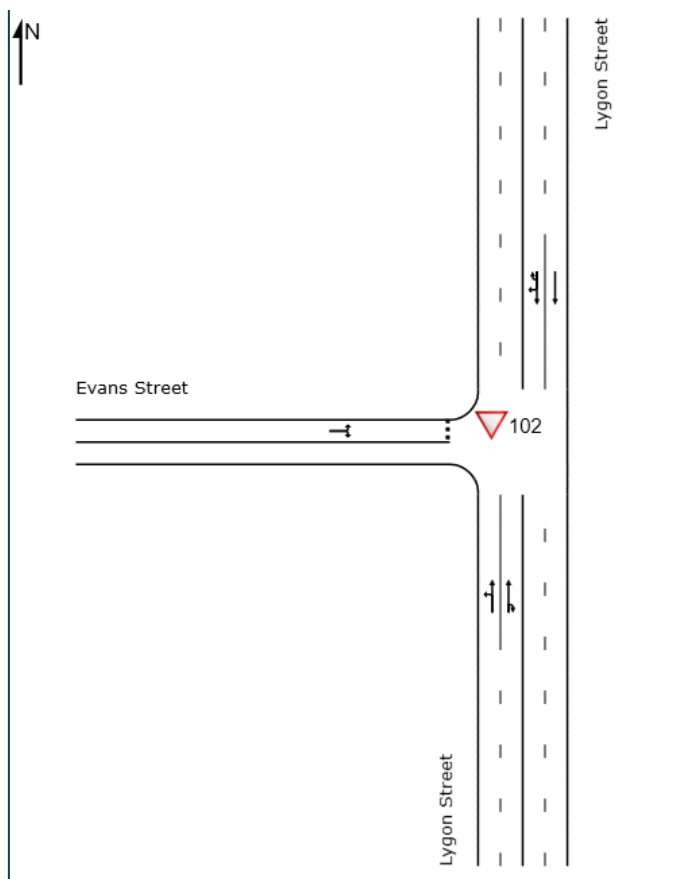
A SIDRA analysis was undertaken of the weekday and Saturday volumes displayed in Figure 2.11 and Figure 2.12 of Section 2 in order to understand the existing operating conditions of the Lygon Street / Evans Street intersection. The SIDRA assessment also considers the Clearway restrictions and car parking conditions on Lygon Street in each peak hour period.

The intersection layouts, as analysed in SIDRA, are displayed in Figure 8.1.

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Figure 8.1: SIDRA Layout – Lygon Street/ Evans Street



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SIDRA Parameters

The key parameters used to determine the operational capacity of an intersection are queue length, average delay and degree of saturation (or volume to capacity ratio).

Degree of Saturation is a ratio of arrival (or demand) flow to capacity. Degrees of saturation above 1.0 represent oversaturated conditions and degrees of saturation below 1.0 represent undersaturated conditions. The operational rating associated with the degree of saturation is summarized in Table 8.4 below.

Table 8.4: Ratings of Degree of Saturation

Degree of Saturation (DOS)	Rating
Up to 0.6	Excellent
0.61 – 0.70	Very Good
0.71 – 0.80	Good
0.81 – 0.90	Fair
0.91 – 1.00	Poor
Greater than 1.00	Very Poor

Although operating conditions with degrees a degree of saturation around 1.00 are undesirable, it is acknowledged that this level of congestion is typical of many metropolitan intersections during AM and PM peak hours.

Note that the 95th percentile queue length is extremely conservative measure of anticipated queue length associated with each movement at the intersection. Only 5% of all queues are expected to exceed the 95th percentile queue. This parameter is used to determine the adequacy of short lanes in particular to minimise the likelihood of queued vehicles impeding the adjacent through lane.

Average delay is the average time, in seconds, that all vehicles making a particular movement can expect to wait at an intersection.

Existing Conditions

The results of the SIDRA analysis are summarised below in Table 8.5, with detailed results provided in Appendix F.

Table 8.5: SIDRA Results – Lygon Street / Evans Street (Existing)

Approach	Existing Weekday Volumes AM Peak			Existing Weekday Volumes PM Peak			Existing Saturday Peak Volumes		
	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)
South: Lygon Street	0.11	0.6	0.4	0.24	0.2	0.2	0.19	0.3	0.1
North: Lygon Street	0.25	1.7	0.3	0.34	1.9	0.5	0.38	2.5	0.6
West: Evans Street	0.03	0.6	10.7	0.11	2.5	20.4	0.05	1.2	14.3
All Vehicles	0.25	1.7	0.4	0.34	2.5	0.6	0.38	2.5	0.5

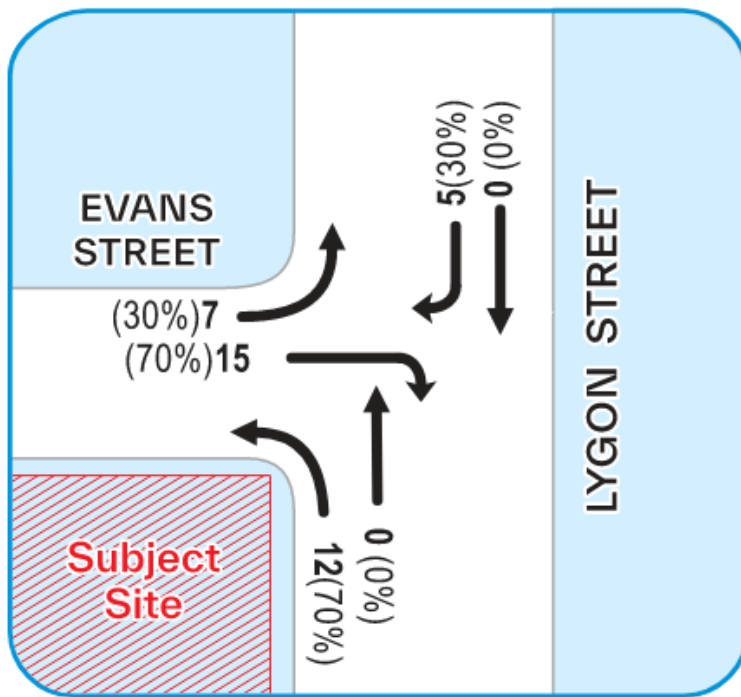
A review of the above results shows that the intersection of Lygon Street / Evans Street is currently operating under ‘excellent’ conditions during the AM and PM peak hours on weekdays as well as the Saturday peak period.

Accordingly, the site generated peak hour movements at the intersection of Lygon Street/ Evans Street are displayed in Figure 8.2.

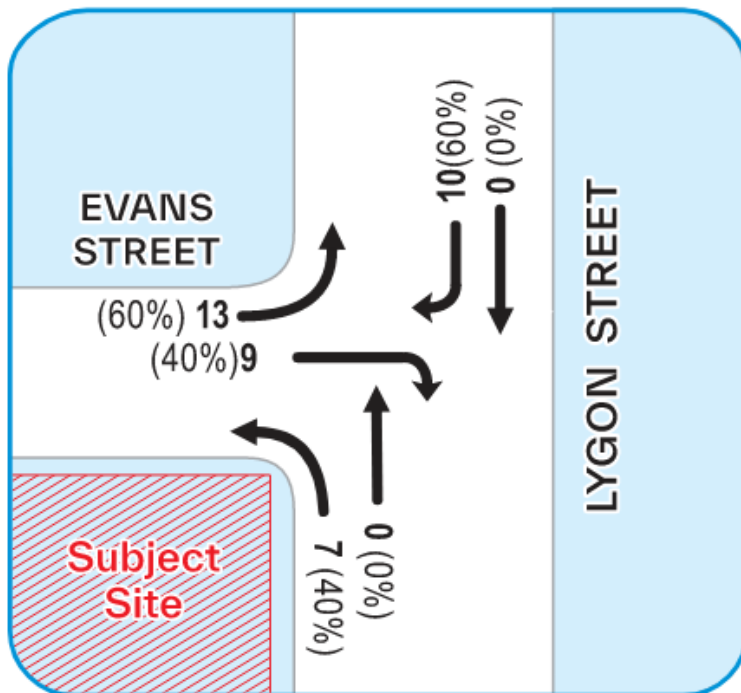
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Figure 8.2: Site Generated Peak Hour Movements Distribution at the Lygon Street/ Evans Street Intersection



XX - AM PEAK - IN 17, OUT 22.



(XX) - PM PEAK - IN 22, OUT 17.

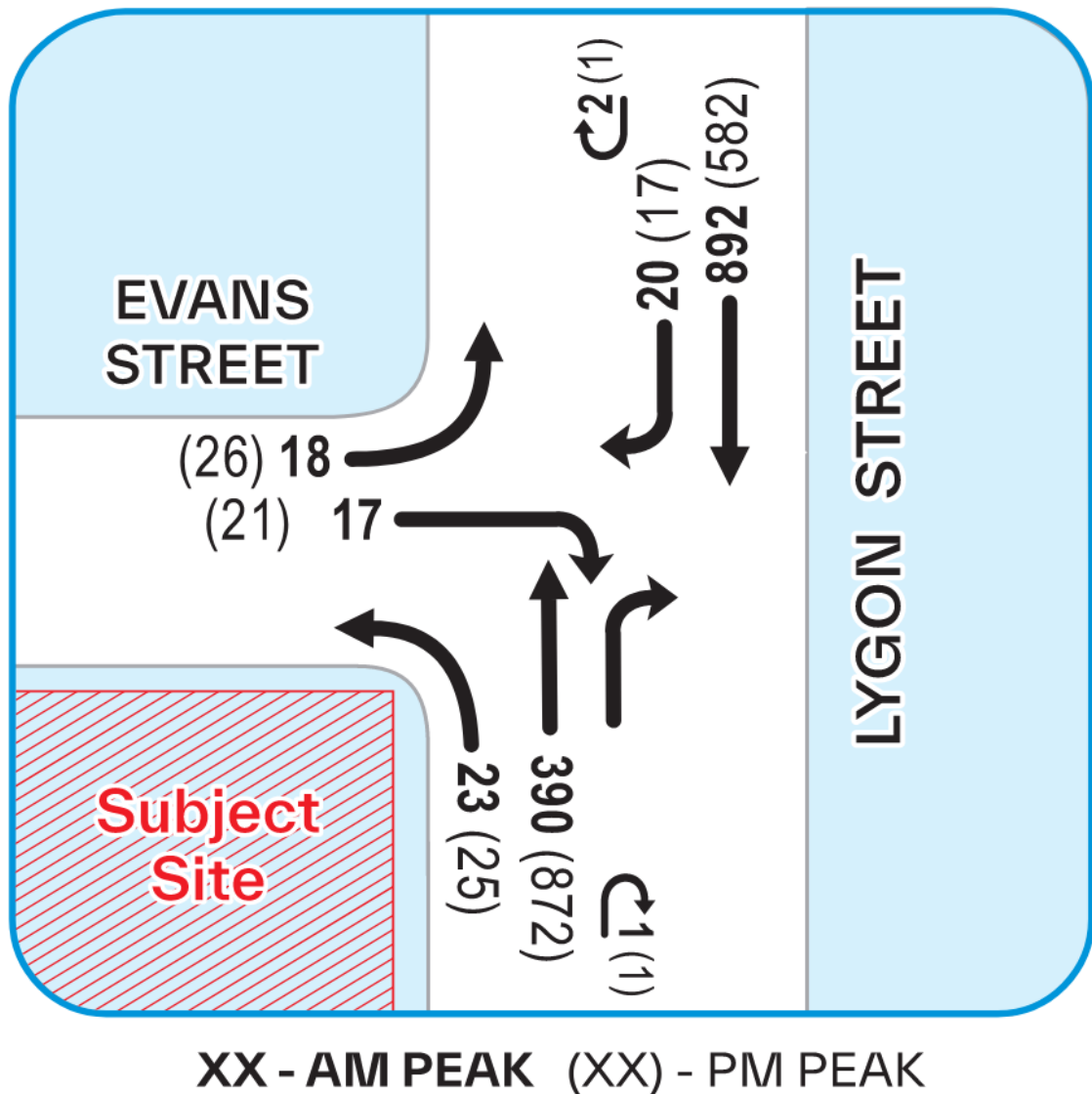
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Future Demand

The resulting weekday future peak hour movements at the intersection of Lygon Street/ Evans Street are displayed in Figure 8.3.

Figure 8.3: Future Weekday Peak Hour Movements at the Lygon Street / Evans Street Intersection



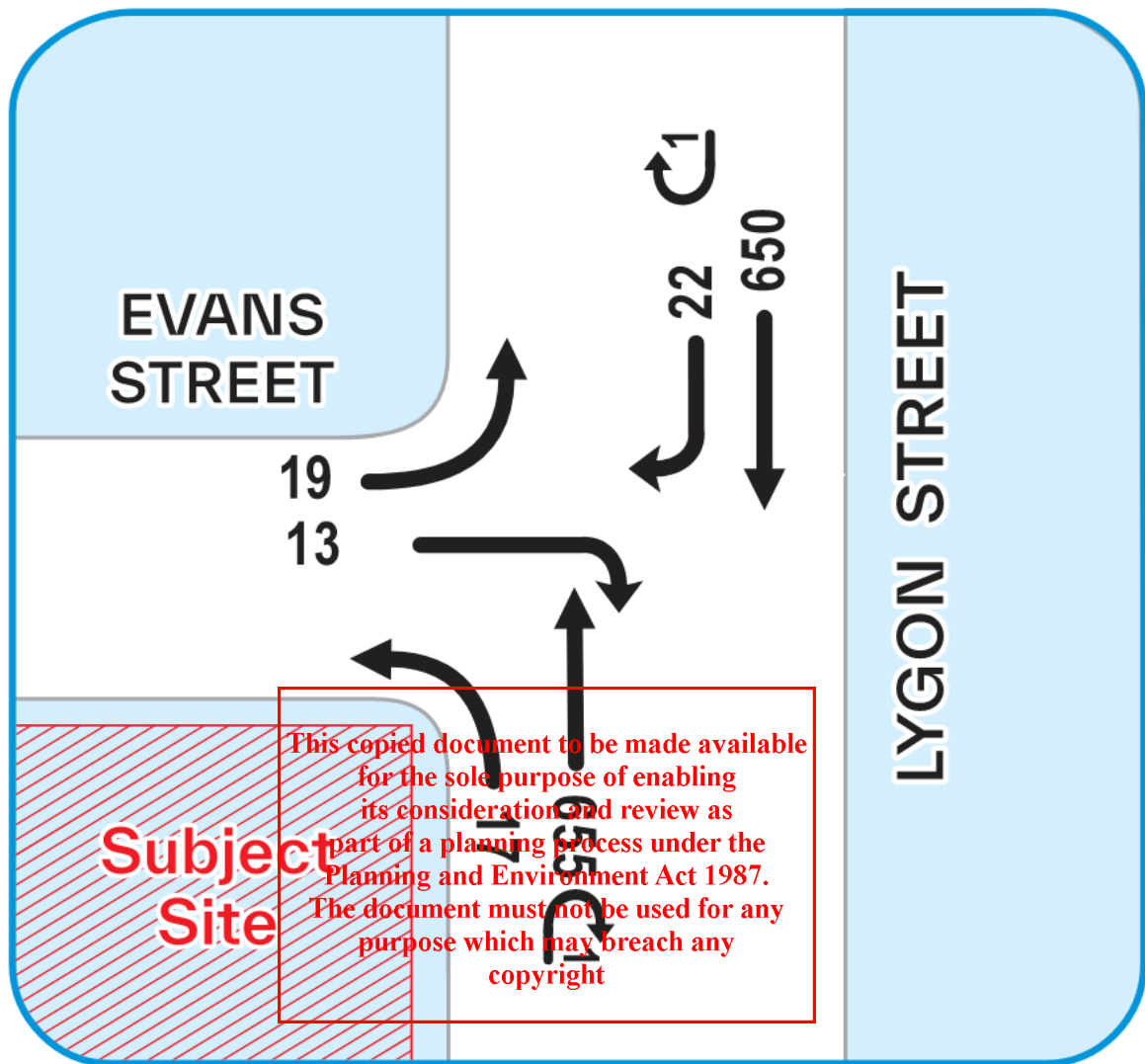
The Saturday peak hour vehicle movements are based on the traffic generation of the residential component of the proposed development, as retail staff are not expected to generate any trips during the period 10:30am to 11:30am. Accordingly, the Saturday AM peak period is expected to generate up to 28 movements per hour with a 50% split between inbound and outbound movements and, as per the weekday volumes, it has been assumed that 100% of vehicular traffic generated by the development will access and depart the site to/from the east, via the Lygon Street / Evans Street intersection, in accordance with proposed signage, with a 50%/50% split of movements northbound and southbound along Lygon Street.

The resulting distribution of traffic movements for the proposed development during the Saturday AM peak period is shown below in Figure 8.4.

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Figure 8.4: Future Saturday Peak Hour Movements at the Lygon Street / Evans Street Intersection



Traffic Impacts

Traffic generated by the site will be distributed directly onto Evans Street then dispersed throughout the wider road network.

It is anticipated that the development will generate up to 39 vehicle movements during AM and PM peak hours on weekdays and up to 28 vehicle movements during the AM peak hour on a Saturday. As previously discussed, it is anticipated that 100% of site generated traffic will access the site from the east via the Lygon Street / Evans Street intersection, in accordance with proposed signage.

A SIDRA analysis of the volumes displayed in Figure 8.3 and Figure 8.4 was undertaken in order to understand the change to traffic conditions at Lygon Street / Evans Street intersection, associated with the proposed development.

The results of the analysis, displayed in Table 8.6 with detailed results provided in Appendix F.

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Table 8.6: SIDRA Results – Lygon Street / Evans Street (Future)

Approach	Proposed Weekday Volumes AM Peak			Proposed Weekday Volumes PM Peak			Proposed Saturday Peak Volumes		
	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)	D.O.S.	95%ile Queue (m)	Avg Delay (s)
South: Lygon Street	0.12	0.6	0.6	0.24	0.2	0.2	0.19	0.3	0.2
North: Lygon Street	0.26	2.2	0.3	0.36	4.0	1.1	0.39	3.9	0.8
West: Evans Street	0.17	3.8	21.6	0.21	4.9	21.0	0.11	2.5	16.5
All Vehicles	0.26	3.8	1.0	0.36	4.9	1.2	0.39	3.9	0.9

A review of the above results shows that the Lygon Street / Evans Street intersection post-development is expected to continue to operate under ‘excellent’ conditions during the AM and PM peak hours on weekdays and the Saturday peak period.

Overall, it is noted that the results displayed above are similar to that of the existing operations of the intersection, as previously displayed in Table 8.5, with no significant increase to degree of saturation, queue length and average delays, with no discernible change to existing ‘day to day’ operating conditions at the intersection. As such, the Lygon Street / Evans Street intersection is expected to effectively function in a similar manner to its current operations.

As such, the traffic generated by the development is expected to have a negligible impact on the safety or operation of Evans Street or the surrounding road network.

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9. Conclusion

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Having assessed the car parking and traffic merits of the mixed-use development proposed at 251-265 Lygon Street and 1a Pitt Street in East Brunswick, it is concluded that:

Car Parking Provision

It is proposed to provide a total of 103 car parking spaces on-site to meet the resident and employee parking demands of the proposed mixed-use development. This level of parking provision is considered satisfactory for the following reasons:

This level of parking provision is considered satisfactory for the following reasons:

- The proposed residential parking provision meets the requirements of the Merri-bek Planning Scheme for two, three and four-bedroom dwellings, with the exception of 26 one-bedroom dwellings not having any on-site parking.
- The provision of a total of 11 staff spaces on-site provides each tenancy with a minimum of two long-term parking space, satisfying the parking demand generated by the retail staff.
- The site is located close to several sustainable transport alternatives such as train, bus and tram routes, bicycle and pedestrian facilities. This will enable residents, staff and customers of the development to travel to and from the site using sustainable modes of transport and reduce the demand for car parking.
- The excellent level of pedestrian and cycling connectivity will encourage and facilitate an increase in walking, cycling and public transport modes to and from the site.
- The short-term on-street parking restrictions will ensure any short-term visitors and or customers to the area are able to find appropriate parking space within close proximity to the subject site even during periods of peak activity. Further, the short-term nature of on-street car parking will deter residents or staff without an on-site car parking space from relying on such to store their vehicle.
- The development helps to achieve the objectives sought by Local Policy and strategic documents by reducing the dependence on private motor vehicles and supporting the use of sustainable modes of transport.
- The generous provision of bicycle parking and end of trip facilities will encourage the use of alternative transport modes and reduce the reliance on private vehicle use.
- The suppressed provision of car parking will reduce motor vehicle travel to and from the site, resulting in a lessened impact to traffic congestion and pedestrian amenity in the vicinity of the site than what would otherwise be incurred were more on-site parking proposed.

Car Park Design

- The proposed car park and access arrangements are suitably designed and are in general accordance with the requirements of the Merri-bek Planning Scheme and/or AS/NZS2890.1:2004.

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Bicycle Parking

- The proposed bicycle parking provision readily exceeds the requirements of the Merri-bek Planning Scheme.
- The proposed bicycle parking provision has been designed in accordance with the design standards of AS2890.3:2015.

Loading and Waste Considerations

- Waste is proposed to be collected on-site via a private waste contractor. The proposed waste arrangements are considered acceptable from a traffic perspective.
- Loading and unloading activities will be undertaken within the surrounding on-street parking supply. This is considered to be an acceptable arrangement for the proposed development and is consistent with the existing use of the site.

Traffic Impact

- The development is estimated to generate up to 39 vehicle movements during the AM and PM peak hour. This level of traffic will not result in adverse impacts on the operation of the wider road network.

Overall, the proposed development is not expected to create adverse traffic or parking impacts in the precinct.

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Appendix A Tube Count Results

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AUTOMATIC COUNT SUMMARY

Street Name :	Evans Street	Location :	Outside Property 126
Suburb :	Brunswick	Start Date :	00:00 Fri 12/August/2022
Machine ID:	L790N9JW	Finish Date :	00:00 Fri 19/August/2022
Site ID:	14175	Speed Zone :	40 km/h
Prepared By :	Vo Son Binh	Email:	binh@trafficsurvey.com.au

GPS information		Lat 37° 46' 13.56 South Long 144° 58' 16.28 East	Direction of Travel		
			Both directions	Westbound	Eastbound
Traffic Volume : (Vehicles/Day)	Weekdays Average	516	293	223	
	7 Day Average	515	296	219	
Weekday	AM 08:00	38	20	18	
Peak hour start	PM 17:00	48	27	21	
Speeds : (Km/Hr)	85th Percentile	21.3	21.7	20.9	
	Average	18.3	18.7	17.9	
Classification % :	Light Vehicles up to 5.5m	97.7%	98.0%	97.3%	

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Site Evans Street

Direction ▼

[Back to Site Summary Page](#)

Day Date	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	7 days		Weekday		Weekend	
	15/08/2022	16/08/2022	17/08/2022	18/08/2022	12/08/2022	13/08/2022	14/08/2022	Total	Average	Total	Average	Total	Average
AM Peak	08:00	08:00	09:00	08:00	11:00	11:00	11:00	N/A	11:00	N/A	08:00	N/A	11:00
PM Peak	17:00	17:00	17:00	17:00	14:00	13:00	12:00	N/A	17:00	N/A	17:00	N/A	12:00
00:00	3	5	2	4	3	10	16	43	6	17	3	26	13
01:00	0	2	2	0	0	9	7	20	3	4	1	16	8
02:00	1	0	7	2	1	4	7	22	3	11	2	11	6
03:00	2	0	1	0	0	3	8	14	2	3	1	11	6
04:00	1	4	1	1	1	1	3	12	2	8	2	4	2
05:00	4	3	4	4	3	1	3	22	3	18	4	4	2
06:00	7	3	13	11	9	7	1	51	7	43	9	8	4
07:00	14	23	21	17	17	7	2	101	14	92	18	9	5
08:00	34	37	28	50	41	14	15	219	31	190	38	29	15
09:00	29	21	34	31	32	24	17	188	27	147	29	41	21
10:00	15	27	30	25	20	35	32	184	26	117	23	67	34
11:00	17	31	34	35	45	40	37	239	34	162	32	77	39
12:00	29	27	33	28	32	48	48	245	35	149	30	96	48
13:00	25	27	38	24	30	51	43	238	34	144	29	94	47
14:00	37	34	36	35	55	36	28	261	37	197	39	64	32
15:00	29	40	30	35	45	46	40	265	38	179	36	86	43
16:00	24	41	40	36	44	42	28	255	36	185	37	70	35
17:00	43	51	59	47	40	33	34	307	44	240	48	67	34
18:00	29	46	42	40	46	37	29	269	38	203	41	66	33
19:00	26	23	33	30	42	39	24	217	31	154	31	63	32
20:00	28	32	27	27	26	25	25	190	27	140	28	50	25
21:00	15	23	14	17	21	16	9	115	16	90	18	25	13
22:00	10	9	9	10	17	21	8	84	12	55	11	29	15
23:00	6	8	5	7	14	17	3	60	9	40	8	20	10
Total	428	517	543	516	584	566	467	3621	515	2588	518	1033	522
% Heavy	2.34%	2.13%	2.76%	1.74%	3.77%	0.71%	1.71%	2.18%		2.59%		1.16%	

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Appendix B Turning Movement Count Results

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Intersection of Carpark and Lygon St, Brunswick East

GPS -37.770564, 144.971866

Date:	Fri 12/08/22
Weather:	Fine
Suburban:	Brunswick East
Customer:	Ratio

North:	Lygon St
East:	Carpark
South:	Lygon St
West:	Evans St

Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-7:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:30 PM-5:30 PM

All Vehicles

Time		North Approach Lygon St				East Approach Carpark				South Approach Lygon St				West Approach Evans St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	1	116	0	0	0	0	2	0	0	62	0	0	1	0	2	932	
7:15	7:30	0	1	168	0	0	0	0	0	0	0	55	1	0	1	0	0	1059	
7:30	7:45	1	3	176	0	0	0	0	2	0	0	52	2	0	0	0	1	1177	
7:45	8:00	0	2	204	0	0	0	0	0	0	0	65	1	0	0	0	2	1272	
8:00	8:15	1	8	216	0	0	1	0	0	0	0	81	1	0	0	0	2	1338	Peak
8:15	8:30	0	1	229	1	0	0	0	0	1	0	104	4	0	0	0	3	1305	
8:30	8:45	0	3	228	1	0	2	0	3	0	0	89	4	0	0	0	2	1228	
8:45	9:00	1	3	219	0	0	0	0	3	0	1	116	2	0	2	0	4	1144	
9:00	9:15	1	4	154	0	0	0	0	0	0	0	107	1	0	4	0	6	1068	
9:15	9:30	1	2	163	1	0	0	0	0	0	0	95	1	0	2	0	1		
9:30	9:45	0	3	139	0	0	0	0	2	0	0	101	2	0	0	0	1		
9:45	10:00	1	2	143	0	0	1	0	0	0	0	126	2	0	0	0	0		
15:00	15:15	0	8	117	0	0	0	0	1	0	0	156	2	0	1	0	5	1317	
15:15	15:30	0	5	178	1	0	0	0	1	0	0	170	5	0	0	0	3	1401	
15:30	15:45	0	3	123	0	0	0	0	0	0	2	207	2	0	4	0	1	1398	
15:45	16:00	0	0	137	0	0	0	0	1	0	1	178	1	0	0	0	4	1437	
16:00	16:15	0	3	147	0	0	0	0	1	0	2	214	4	0	1	0	2	1498	
16:15	16:30	0	2	143	0	0	1	0	1	0	1	205	3	0	2	0	2	1495	
16:30	16:45	0	3	153	0	0	0	0	1	0	1	217	2	0	1	0	3	1518	Peak
16:45	17:00	0	2	147	1	0	0	0	0	0	1	218	6	0	2	0	6	1489	
17:00	17:15	0	2	134	0	0	0	0	1	1	2	219	5	0	5	0	2	1476	
17:15	17:30	0	0	148	0	0	0	0	2	0	4	218	5	0	4	0	2	1451	

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17:30	17:45	0	3	141	0	0	0	0	1	0	1	196	5	0	3	0	2	1378	
17:45	18:00	0	0	165	0	0	1	0	0	0	2	194	2	0	1	0	5	1343	
18:00	18:15	0	4	158	3	0	1	0	1	0	0	172	5	0	0	0	2	1251	
18:15	18:30	0	3	163	0	0	0	0	1	0	1	136	2	0	0	0	4		
18:30	18:45	0	0	152	1	0	0	0	3	0	0	155	5	0	0	0	1		
18:45	19:00	0	1	135	1	0	0	0	1	0	1	132	3	0	1	0	3		

Peak Time		North Approach Lygon St				East Approach Carpark				South Approach Lygon St				West Approach Evans St				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
8:00	9:00	2	15	892	2	0	3	0	8	0	2	390	11	0	2	0	11	1338	
16:30	17:30	0	7	582	1	0	0	0	4	1	8	872	18	0	12	0	13	1518	

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Intersection of Carpark and Lygon St, Brunswick East

GPS -37.770564, 144.971866

Date:	Sat 13/08/22
Weather:	Fine
Suburban:	Brunswick East
Customer:	Ratio

North:	Lygon St
East:	Carpark
South:	Lygon St
West:	Evans St

Survey Period	AM:	10:00 AM-12:00 PM
	PM:	12:00 PM-3:00 PM
Traffic Peak	AM:	10:30 AM-11:30 AM
	PM:	12:00 PM-1:00 PM

All Vehicles

Time		North Approach Lygon St				East Approach Carpark				South Approach Lygon St				West Approach Evans St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
10:00	10:15	0	2	132	0	0	0	0	1	0	0	155	3	0	2	0	1	1304	
10:15	10:30	0	0	184	0	0	0	0	0	0	0	118	3	0	1	0	2	1323	
10:30	10:45	0	4	176	0	0	0	0	1	0	1	169	3	0	3	0	3	1356	Peak
10:45	11:00	0	2	167	0	0	0	0	0	0	0	162	4	0	0	0	3	1318	
11:00	11:15	1	4	146	0	0	0	0	0	0	0	158	2	0	2	0	2	1295	
11:15	11:30	0	5	161	0	0	0	0	1	0	0	166	1	0	1	0	4	1323	
11:30	11:45	0	6	164	0	0	0	0	1	0	0	147	3	0	1	0	0	1305	
11:45	12:00	0	3	153	1	0	0	0	1	0	0	152	4	0	0	0	3	1339	
12:00	12:15	0	3	165	0	0	0	0	1	0	0	167	4	0	0	0	1	1347	
12:15	12:30	0	1	155	0	0	0	0	0	0	1	154	7	0	2	0	1	1310	
12:30	12:45	1	2	168	0	0	0	0	1	0	1	173	1	0	2	0	4	1331	
12:45	13:00	0	3	159	0	0	0	0	1	0	1	151	6	0	2	0	2	1313	
13:00	13:15	0	4	150	1	0	0	0	0	0	0	140	4	0	1	0	6	1319	
13:15	13:30	0	5	165	1	0	0	0	1	0	0	164	5	0	2	0	1	1341	
13:30	13:45	0	4	162	1	0	0	0	1	0	0	162	3	0	0	0	5	1306	
13:45	14:00	0	5	159	0	0	0	0	1	0	1	162	1	0	0	0	2	1319	
14:00	14:15	0	2	157	2	0	0	0	1	0	0	155	6	0	0	0	5	1308	
14:15	14:30	0	0	147	2	0	0	0	0	0	0	155	4	0	1	0	0		
14:30	14:45	0	2	185	1	0	0	0	0	0	0	157	2	0	0	0	4		
14:45	15:00	0	2	156	0	0	0	0	0	0	0	159	2	0	0	0	1		

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Peak Time		North Approach Lygon St				East Approach Carpark				South Approach Lygon St				West Approach Evans St				Peak total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L		
10:30	11:30	1	15	650	0	0	2	0	3	1	1	655	10	0	6	0	12	1356	

Appendix C Parking Survey Results

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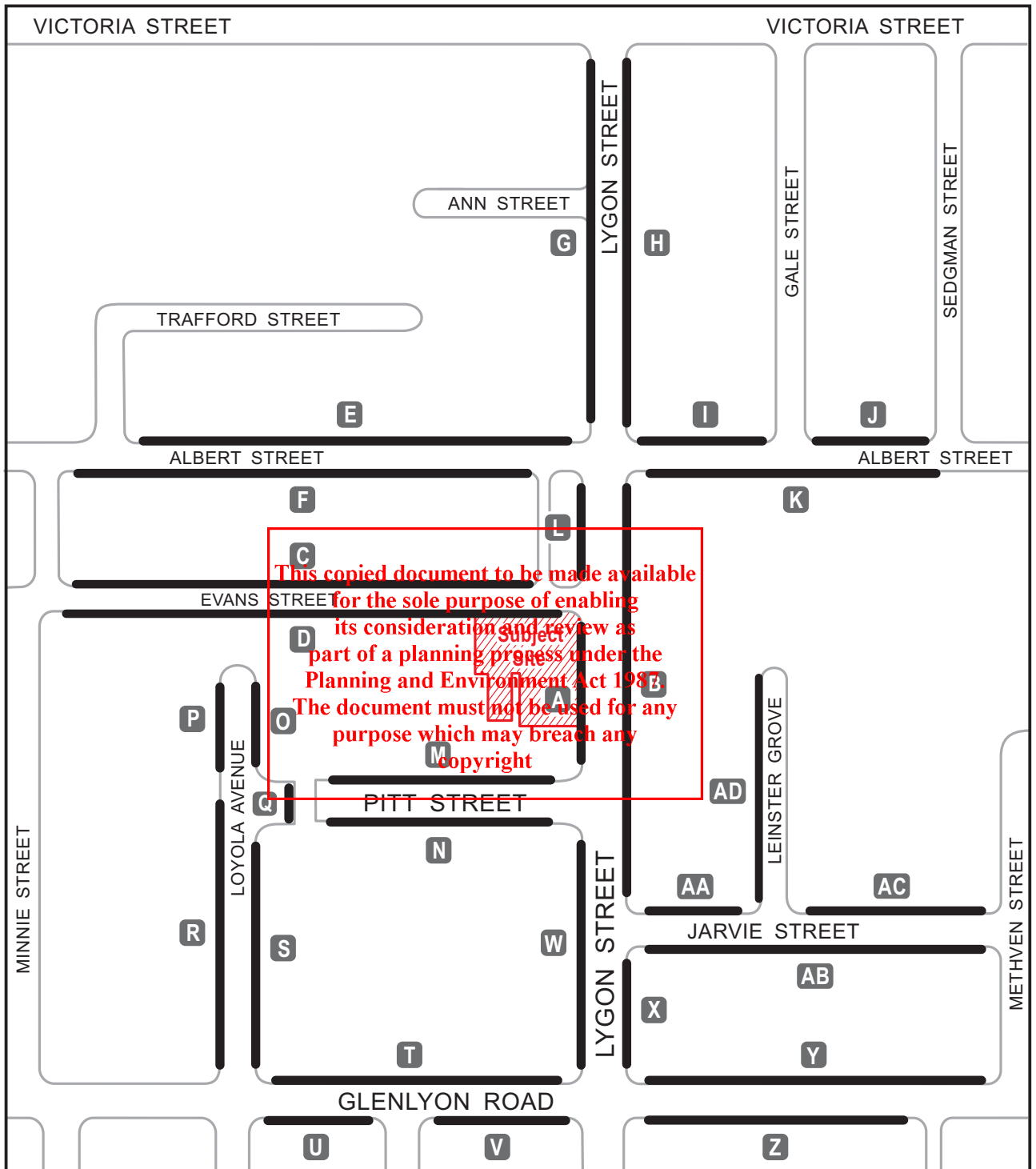


Table A1



Date:	Saturday, 13 November 2021
Location:	251 Lygon Street & 1A Pitt Street, East Brunswick
GPS:	-37.771380, 144.971392
Weather:	Fine
Customer:	Ratio

Public Parking (10)	Map Ref	Street	Section (GPS/Street Address if Off-Street Car Park)	Side	Restriction	Clear Way	Capacity	Parking Occupancy						
								10:00	11:00	12:00	13:00	14:00	15:00	
1	A	Lygon St	From Pitt St To Evans St	W	1/2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	2	2	2	2	2	1	0	
1					2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	6	6	6	6	6	5	5	
1	B		From Albert St To Jarvie St	E	2P 8am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	22	19	20	20	20	19	19	
1	C	Evans St	From Lygon St To Minnie St	N	1P 8am-6pm		26	21	22	22	23	23	22	
1					P Disabled		1	1	1	1	1	1	0	
1					Unrestricted		3	3	3	3	3	3	3	
1	D			S	P Disabled 8am-5pm Mon-Fri		1	0	1	1	1	1	0	
1					Unrestricted		23	20	22	23	23	23	18	
1					P Disabled		1	0	0	0	1	1	0	
1					Permit Zone 8am-11pm Mon-Sat		1	0	0	0	1	1	1	
1	E	Albert St	From Lygon St To Trafford St	N	Unrestricted		9	7	8	8	8	8	7	
1					P Disabled		1	0	1	1	1	1	0	
1					2P 8am-6pm Mon-Fri, 8am-1pm Sat		8	6	7	7	7	7	6	
1					Permit Zone 8am-6pm Mon-Fri		1	1	1	0	0	0	0	
1					1/4P		1	0	0	0	0	0	0	
1	F		From Lygon St To Minnie St	S	Unrestricted	No Stopping 8am-5pm Mon-Fri	5	3	3	2	1	0	3	
1					2P 8am-6pm Mon-Fri		18	14	15	16	16	16	14	
1	G	Lygon St	From Albert St To Victoria St	W	2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	16	13	14	15	15	14	13	
1					Unrestricted	Clearway 4pm-6pm Mon-Fri, No Parking 8am-4pm Mon-Fri, 8am-1pm Sat	1	0	0	0	0	0	0	
1	H			E	2P 8am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	19	17	18	19	19	19	18	
1					Loading Zone 9am-6pm Mon-Sat	Clearway 7am-9am Mon-Fri	1	1	1	1	1	1	1	
1	I	Albert St	From Lygon St To Gale St	N	Unrestricted	No Stopping 7am-6pm Mon-Fri, 8am-3pm Sat	3	0	0	0	0	0	0	
1					1/2P 8am-11pm		3	3	3	3	3	3	3	
1	J		From Gale St To Sedgman St	N	Unrestricted		8	3	4	4	4	4	4	
1	K		From Sedgman St To Lygon St	S	Unrestricted	No Stopping 8am-6pm Mon-Fri	10	4	4	4	4	4	4	
1					Works Zone 7am-6pm Mon-Fri, 8am-3pm Sat		1	1	1	0	0	0	0	
1	L	Lygon St	From Evans St To Albert St	W	P Disabled 8am-4pm Mon-Fri	Clearway 4pm-6pm Mon-Fri	1	1	1	1	1	0	0	
1					2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	4	4	4	4	4	4	3	
1	M	Pitt St	From Glenlyon Rd To End	W	Unrestricted		4	3	4	4	4	4	4	
1					1/2P 8am-11pm		1	0	1	1	1	0	0	
1					Permit Zone 8am-11pm		3	1	2	2	1	0	1	
1					Unrestricted		2	1	2	2	2	2	2	
1					Loading Zone 8am-6pm Mon-Fri		3	0	1	2	1	0	2	
1	N		From Glenlyon Rd To End	S	P Disabled		1	1	1	0	1	1	0	
1					1/2P 8am-11pm		1	0	1	1	1	1	1	
1					Permit Zone 8am-11pm		4	0	1	2	2	2	0	
1					5P 8am-11pm		7	7	7	7	7	7	6	
1					Unrestricted		8	6	7	8	8	7	7	
1	O	Loyola Ave	From Pitt St To End	E	Unrestricted		6	4	5	5	5	5	4	
1	P			W	2P 8am-11pm		4	0	1	1	1	0	0	
1	Q	Pitt St	From End To End	W	Unrestricted	No Stopping 6:30am-1:30pm Thu	2	0	1	2	2	2	0	
1					Unrestricted		2	2	2	2	1	0	0	
1	R	Loyola Ave	From Glenlyon Rd To Pitt St	W	2P 8am-11pm		8	1	2	2	2	2	0	
1	S			E	Unrestricted		14	12	13	13	13	12	12	
1	T	Glenlyon Rd	From Loyola Ave To Lygon St	N	2P 8am-6pm Mon-Fri, 8am-1pm Sat		3	0	1	1	2	3	3	
1					2P 8am-11pm		8	4	5	5	5	5	5	
1					Permit Zone Carshare		2	2	2	2	2	2	2	
1	U		From Warburton St To Loyola Ave	S	2P 8am-11pm		5	5	5	5	5	5	5	
1	V		From Lygon St To Warburton St	S	Permit Zone Carshare		1	0	0	0	0	0	0	
1					2P 8am-11pm		2	2	2	2	2	1	0	
1	W	Lygon St	From Glenlyon Rd To Pitt St	W	2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	10	8	8	8	8	8	7	
1	X		From Jarvie St To Glenlyon Rd	E	2P 8am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	4	0	1	1	1	0	0	
1	Y	Glenlyon Rd	From Lygon St To Methven St	N	Permit Zone Carshare		1	1	1	1	1	1	1	
1					4P 8am-11pm		18	16	16	16	15	14	11	
1					P Disabled		2	0	1	1	2	2	0	
1	Z		From Jenkin St To Lygon St	S	2P 8am-11pm		14	9	10	10	10	10	9	
1					P Disabled		2	2	2	2	2	2	2	
1	AA	Jarvie St	From Lygon St To Leinster Gr	N	Permit Zone		2	0	1	1	2	2	0	
1					1P 8am-11pm		4	3	4	4	4	4	4	

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Table A1

1	AB		From #19 To Lygon St	S	1P 8am-11pm		19	14	16	17	18	18	16	
1	AC		From Leinster Gr To #19	N	1P 8am-11pm		7	6	6	6	6	6	6	
1	AD	Leinster Gr	From Jarvie St To End	W	2P 8am-11pm		14	6	7	7	7	7	7	
PUBLIC CAPACITY														
PUBLIC OCCUPANCIES									384	384	384	384	384	
PUBLIC VACANCIES									266	301	306	309	294	261
PUBLIC % OCCUPANCIES									118	83	78	75	90	123
PUBLIC % OCCUPANCIES									69%	78%	80%	80%	77%	68%

not available for public parking

ADVERTISED PLAN

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Table A2



Date:	Thursday, 18 November 2021
Location:	251 Lygon Street & 1A Pitt Street, East Brunswick
GPS:	S37 17'1390; 144 07'1392
Weather:	Fine
Customer:	Ratio

Public Parking (100)	Map Ref	Street	Section (GPS/Street Address if Off-Street Car Park)	Side	Restriction	Clear Way	Capacity	Parking Occupancy											
								9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	
1	A	Lygon St	From Pitt St To Evans St	W	1/2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	2	0	1	2	2	1	2	2	0	0	0	1	
1					2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	6	5	6	6	6	6	6	5	0	0	0	4	
1	B		From Albert St To Jarvie St	E	2P 9am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	22	0	18	21	22	22	21	19	19	19	18	15	
1	C	Evans St	From Lygon St To Minnie St	N	1P 8am-6pm		26	14	17	20	23	25	25	24	24	23	23	22	
1					P Disabled		1	1	1	0	0	0	0	0	0	0	0	0	
1					Unrestricted		3	3	3	3	3	3	3	3	3	3	3	3	
1	D			S	P Disabled 8am-5pm Mon-Fri		1	0	0	0	0	0	0	1	1	1	0	0	
1					Unrestricted		23	20	22	23	23	23	23	22	21	19	18	16	
1					P Disabled		1	1	1	0	1	1	1	1	1	1	1	0	
1					Permit Zone 8am-11pm Mon-Sat		1	0	0	0	0	0	0	0	1	1	1	0	
1	E	Albert St	From Lygon St To Trafford St	N	Unrestricted		9	7	8	9	9	9	8	7	7	6	6	5	
1					P Disabled		1	0	1	1	1	1	1	1	1	1	1	0	
1					2P 8am-6pm Mon-Fri, 8am-1pm Sat		8	5	6	6	7	8	8	8	8	7	7	7	
1					Permit Zone 8am-6pm Mon-Fri		1	1	1	0	0	0	1	1	1	0	1	1	
1					14P		1	1	1	0	0	0	1	1	1	1	1	1	
1	F		From Lygon St To Minnie St	S	Unrestricted	No Stopping 8am-5pm Mon-Fri	5	0	0	0	0	0	0	0	0	0	0	1	
1					2P 8am-6pm Mon-Fri		18	12	13	13	14	15	15	14	14	13	12	12	
1	G	Lygon St	From Albert St To Victoria St	W	2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	16	12	14	16	16	16	16	16	0	0	0	8	
1					Unrestricted	Clearway 4pm-6pm Mon-Fri, No Parking 8am-4pm Mon-Fri, 8am-1pm Sat	1	0	0	0	0	0	0	0	0	0	0	0	
1	H			E	2P 9am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	19	0	18	19	19	19	19	18	16	14	14	13	
1					Loading Zone 9am-6pm Mon-Sat	Clearway 7am-9am Mon-Fri	1	0	0	0	1	1	1	0	0	0	0	0	
1	I	Albert St	From Lygon St To Gale St	N	Unrestricted	No Stopping 7am-6pm Mon-Fri, 8am-3pm Sat	3	0	0	0	0	0	0	0	0	0	0	0	
1					1/2P 8am-11pm		3	2	3	3	3	3	3	3	3	2	3	3	
1	J		From Gale St To Sedgman St	N	1/2P 8am-11pm		8	4	5	5	6	6	6	5	4	4	4	4	
1	K		From Sedgman St To Lygon St	S	Unrestricted	No Stopping 8am-6pm Mon-Fri	10	0	0	0	0	0	0	0	0	0	0	1	
1					2P 8am-4pm Mon-Fri, 8am-1pm Sat		0	0	0	0	0	1	1	1	0	0	0	0	
1	L	Lygon St	From Evans St To Albert St	W	P Disabled 8am-11pm Mon-Fri	Clearway 4pm-6pm Mon-Fri	1	1	1	1	1	0	1	1	0	0	0	0	
1					2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	4	2	3	3	3	3	3	3	0	0	0	2	
1	M	Pitt St	From Glenlyon Rd To End	N	2P 8am-4pm Mon-Fri, 8am-1pm Sat		4	3	4	4	4	4	4	3	3	3	3	3	
1					Permit Zone 8am-11pm Mon-Sat		1	0	1	1	1	0	0	1	1	1	1	1	
1					Unrestricted		3	0	1	1	1	1	1	1	1	0	0	0	
1					P Disabled		2	0	1	1	1	1	0	2	2	1	2	2	
1					Unrestricted		3	3	2	1	1	0	0	0	0	0	1	1	
1	N		From Glenlyon Rd To End	S	P Disabled		1	0	0	0	0	0	0	0	1	1	1	0	
1					1/2P 8am-11pm		1	0	1	1	1	1	1	0	0	0	0	0	
1					Permit Zone 8am-11pm		4	3	4	4	4	4	4	3	3	3	3	2	
1					5P 8am-11pm		7	6	7	7	7	7	7	6	6	6	6	6	
1					Unrestricted		8	4	5	5	6	6	6	6	6	5	6	6	
1	O	Loyola Ave	From Pitt St To End	E	Unrestricted		6	4	5	5	6	6	6	6	6	6	6	6	
1	P			W	2P 8am-11pm		4	3	3	3	4	4	4	3	3	3	3	3	
1	Q	Pitt St	From End To End	W	Unrestricted	No Stopping 6:30am-1:30pm Thu	2	0	0	0	0	0	1	1	0	0	1	1	
1					Unrestricted		2	0	1	2	1	0	1	1	1	0	0	0	
1	R	Loyola Ave	From Glenlyon Rd To Pitt St	W	2P 8am-11pm		8	3	3	3	3	3	3	3	3	2	2	2	
1	S			E	Unrestricted		14	7	8	9	10	11	11	10	10	9	9	9	
1	T	Glenlyon Rd	From Loyola Ave To Lygon St	N	2P 8am-6pm Mon-Fri, 8am-1pm Sat		3	1	1	0	1	1	2	2	3	3	3	3	
1					2P 8am-11pm		8	3	4	4	5	5	5	4	4	4	4	4	
1					Permit Zone Carshare		2	2	2	2	2	2	1	1	1	1	2	2	
1	U		From Warburton St To Loyola Ave	S	2P 8am-11pm		5	4	5	5	5	5	5	5	4	4	4	4	
1	V		From Lygon St To Warburton St	S	Permit Zone Carshare		1	0	1	1	1	0	1	1	1	1	1	0	
1					2P 8am-11pm		2	1	2	2	1	0	1	2	2	2	1	0	
1	W	Lygon St	From Glenlyon Rd To Pitt St	W	2P 8am-4pm Mon-Fri, 8am-1pm Sat	Clearway 4pm-6pm Mon-Fri	10	5	6	6	7	8	8	7	0	0	0	3	
1	X		From Jarvie St To Glenlyon Rd	E	2P 9am-6pm Mon-Fri, 9am-1pm Sat	Clearway 7am-9am Mon-Fri	4	0	2	1	1	1	1	0	0	0	0	0	
1	Y	Glenlyon Rd	From Lygon St To Methven St	N	Permit Zone Carshare		1	1	1	1	1	1	1	1	1	1	1	1	
1					4P 8am-11pm		18	14	16	18	18	18	17	15	15	15	14	12	
1					P Disabled		2	1	2	2	2	1	2	2	1	0	0	0	
1	Z		From Jenkin St To Lygon St	S	2P 8am-11pm		14	8	10	12	13	14	13	12	11	12	12	12	
1					P Disabled		2	0	1	2	2	2	2	1	1	0	0	0	
1	AA	Jarvie St	From Lygon St To Leinster Gr	N	Permit Zone		2	0	1	1	1	0	0	0	0	0	1	2	
1					1P 8am-11pm		4	2	3	3	4	4	4	3	3	2	1	0	
1	AB		From #19 To Lygon St	S	1P 8am-11pm		19	13	15	16	18	19	19	18	18	17	15	14	
1	AC		From Leinster Gr To #19	N	1P 8am-11pm		7	5	6	7	7	7	7	6	6	6	6	5	
1	AD	Leinster Gr	From Jarvie St To End	W	2P 8am-11pm		14	7	8	8	9	10	10	10	10	10	10	10	
PUBLIC CAPACITY								384	384	384	384	384	384	384	384	384	384	384	
PUBLIC OCCUPANCIES								194	275	289	308	307	315	292	256	231	233	232	
PUBLIC VACANCIES								190	109	95	76	77	69	92	128	153	151	152	
PUBLIC % OCCUPANCIES								51%	72%	75%	80%	80%	82%	76%	67%	60%	61%	60%	

not available for public parking

ADVERTISED PLAN

Appendix D Swept Path Assessment

**ADVERTISED
PLAN**

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EXISTING SPEED HUMP
TO BE RELOCATED
ALONG EVANS STREET

EXISTING SPEED HUMP
TO BE RELOCATED
ALONG EVANS STREET

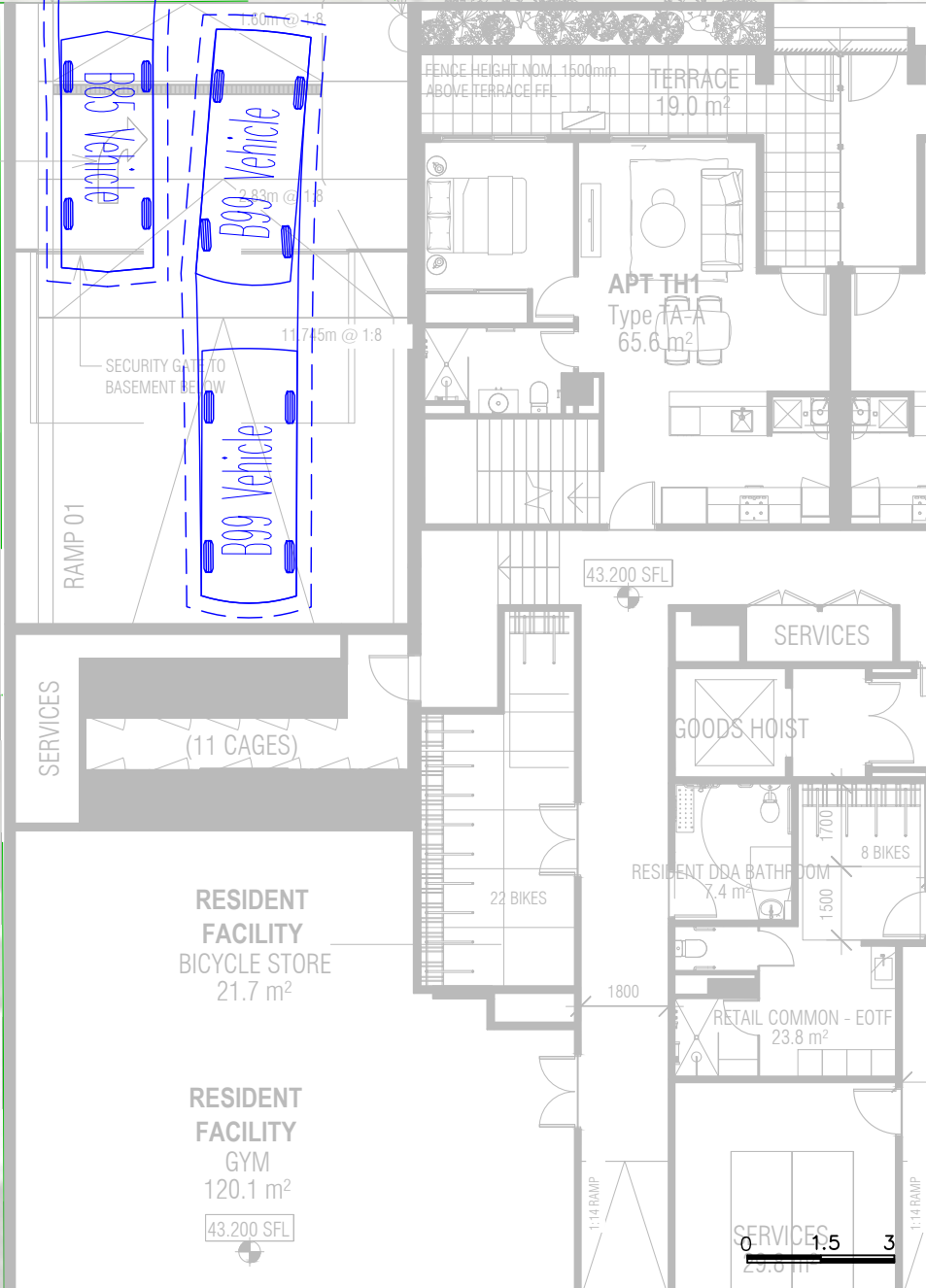
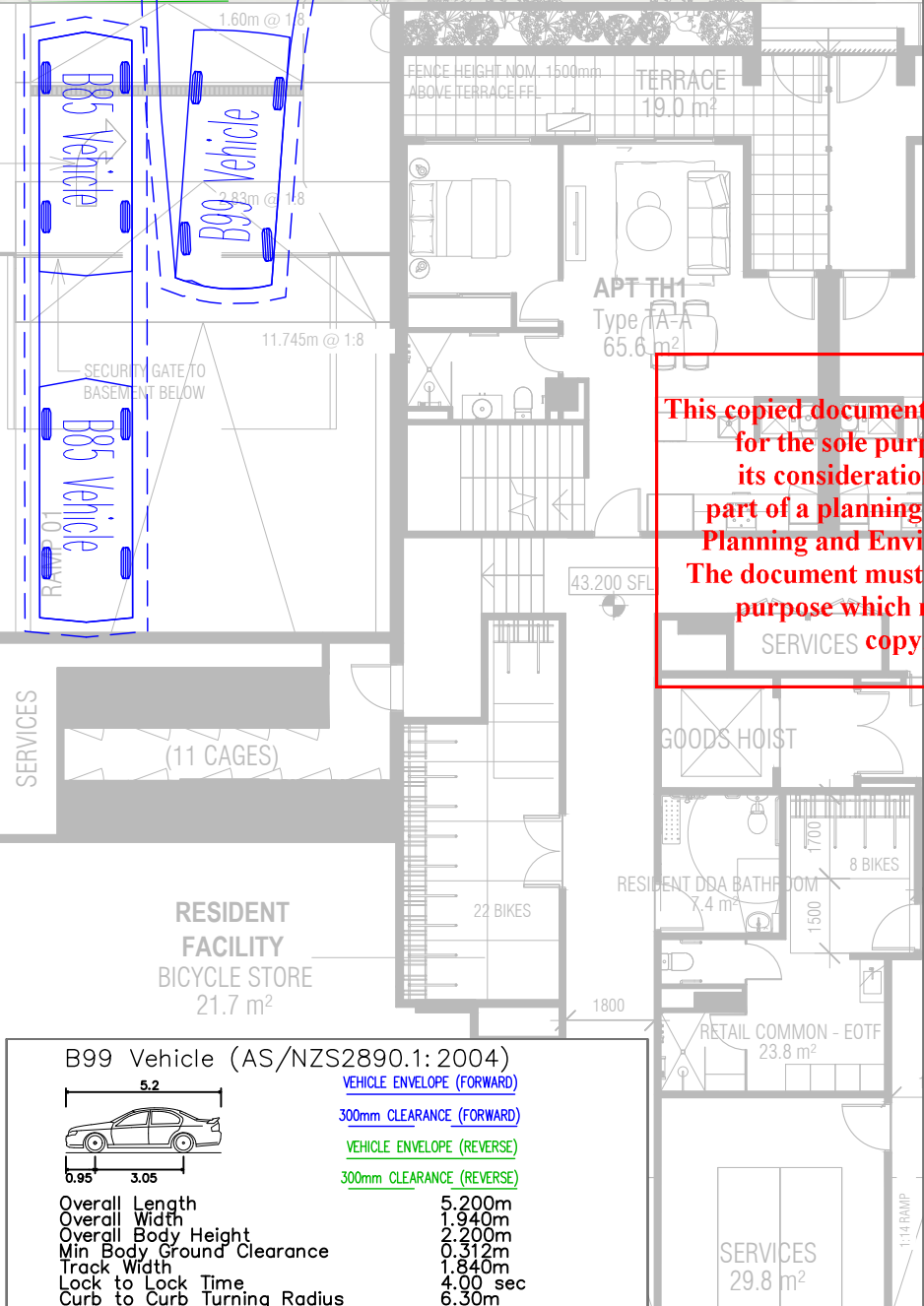
PROPOSED CROSSOVER
DESIGNED AS PER COUNCIL'S
CROSSOVER SPECIFICATIONS

PROPOSED CROSSOVER
DESIGNED AS PER COUNCIL'S
CROSSOVER SPECIFICATIONS

DIRECTIONAL ARROW TO GUIDE
TRAFFIC EAST TOWARDS
LYGON STREET UPON EXIT

DIRECTIONAL ARROW TO GUIDE
TRAFFIC EAST TOWARDS
LYGON STREET UPON EXIT

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B99 Vehicle (AS/NZS2890.1: 2004)

	VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)	
	VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

B85 Vehicle (AS/NZS2890.1: 2004)

	VEHICLE ENVELOPE (FORWARD)
300mm CLEARANCE (FORWARD)	
	VEHICLE ENVELOPE (REVERSE)
300mm CLEARANCE (REVERSE)	
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	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Mixed-Use Development
251 Lygon Street and 1A Pitt Street, Brunswick East
Swept Path Assessment – Ground Floor Plan

**ADVERTISED
PLAN**



NOTE:
1) Base Plan Supplied by Pace on 21/08/2024
2) Maximum Design Speed 10km/h

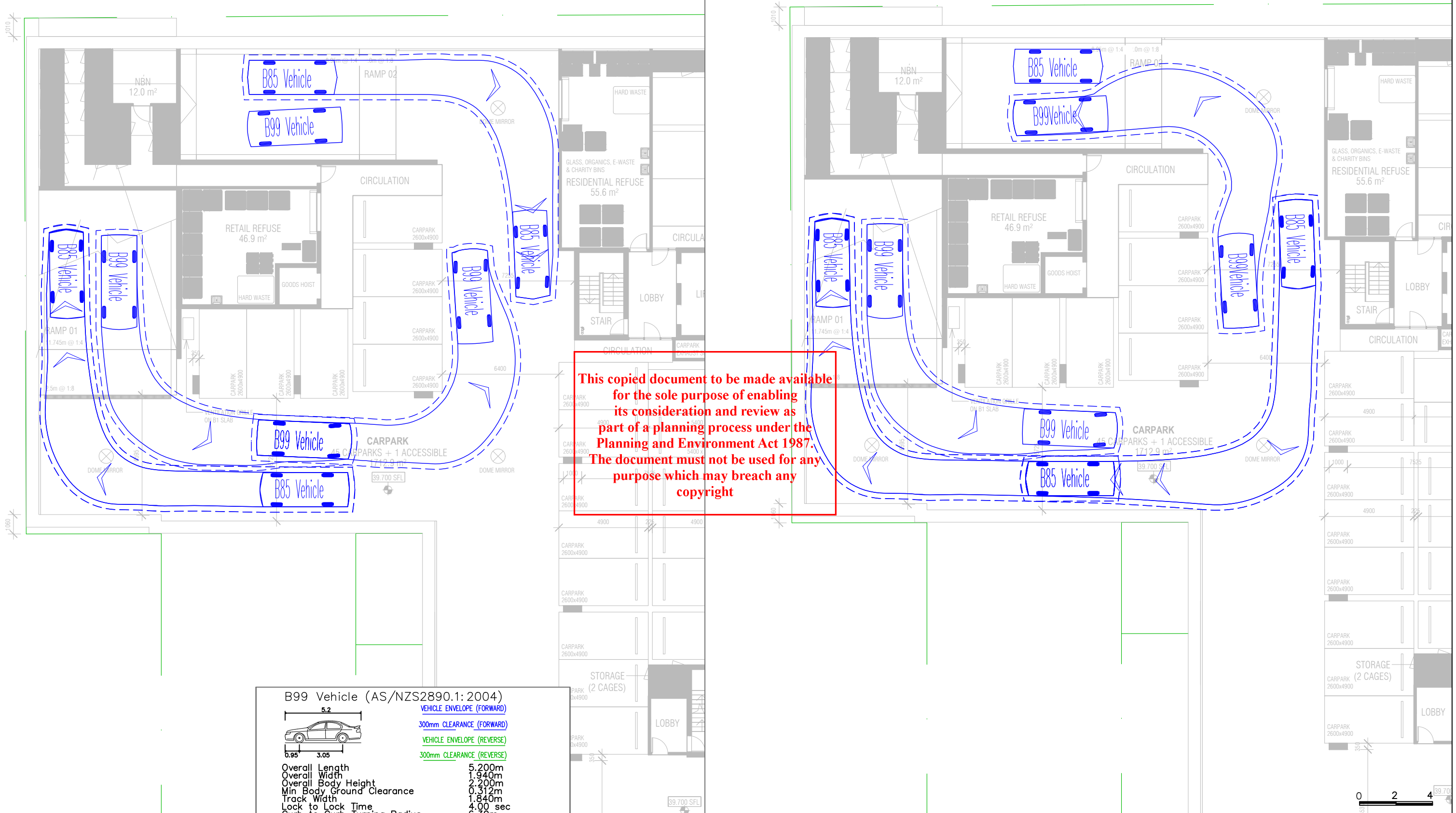
RATIO REFERENCE 18505T-SK11/LB	SHEET No. 1 of 12	SCALE 1:150@A3	DATE 14/08/2024
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ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
Level 5/65 Dover Street
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

22/08/2024 9:19:04 AM C:\USERS\LAURA.BROWN\RATIO CONSULTANTS\18505T - GENERAL\DESIGN\SKETCH (INCLUDING SWEEP PATHS)\SK11\18505T-SK11.DWG

ADVERTISED PLAN



B99 Vehicle (AS/NZS2890.1: 2004)	
	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

B85 Vehicle (AS/NZS2890.1: 2004)	
	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
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	4.00 sec
Curb to Curb Turning Radius	5.80m

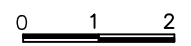
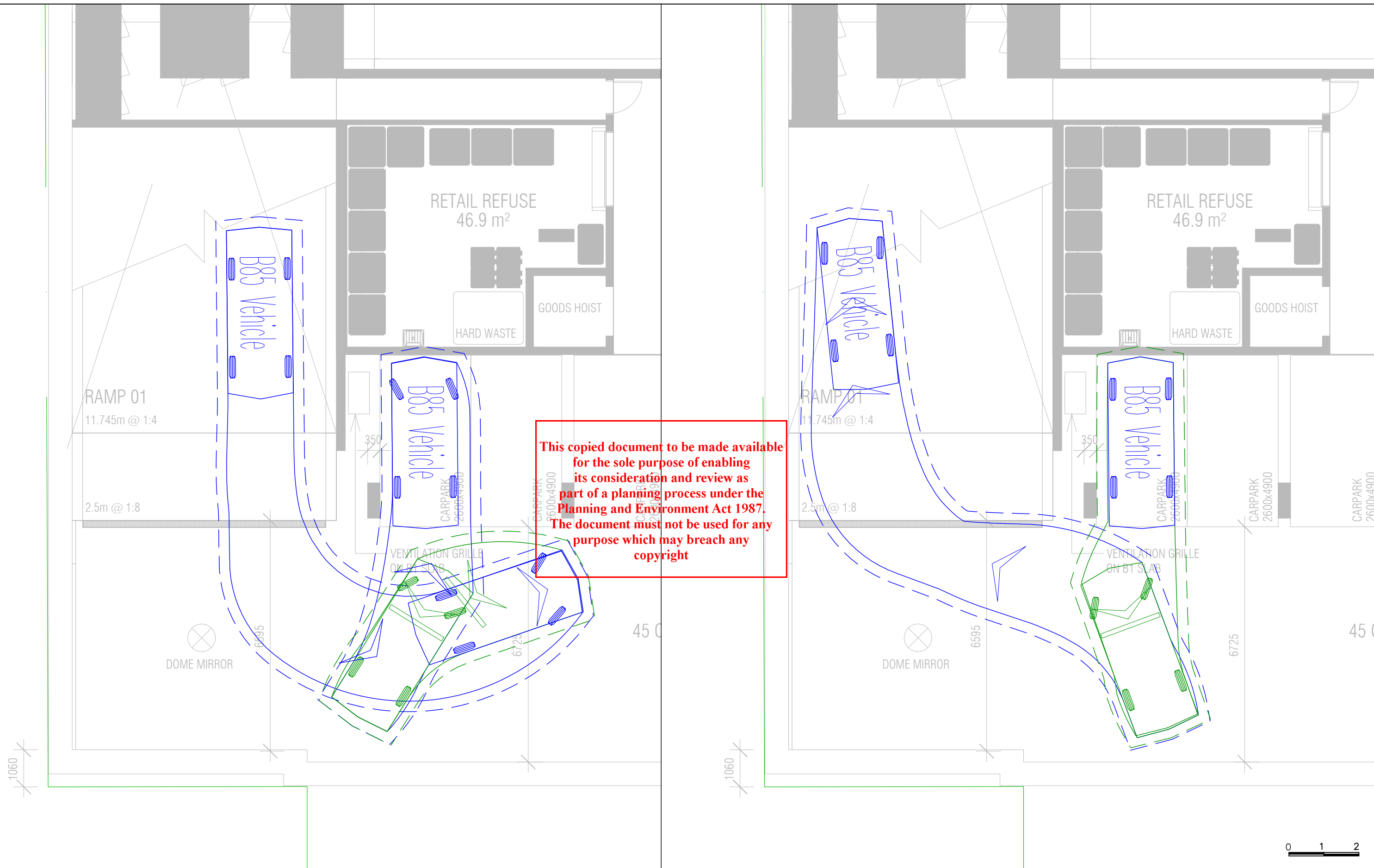
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Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 1

NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h



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ratio:
 RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 Level 5/65 Dover Street
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
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	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 1

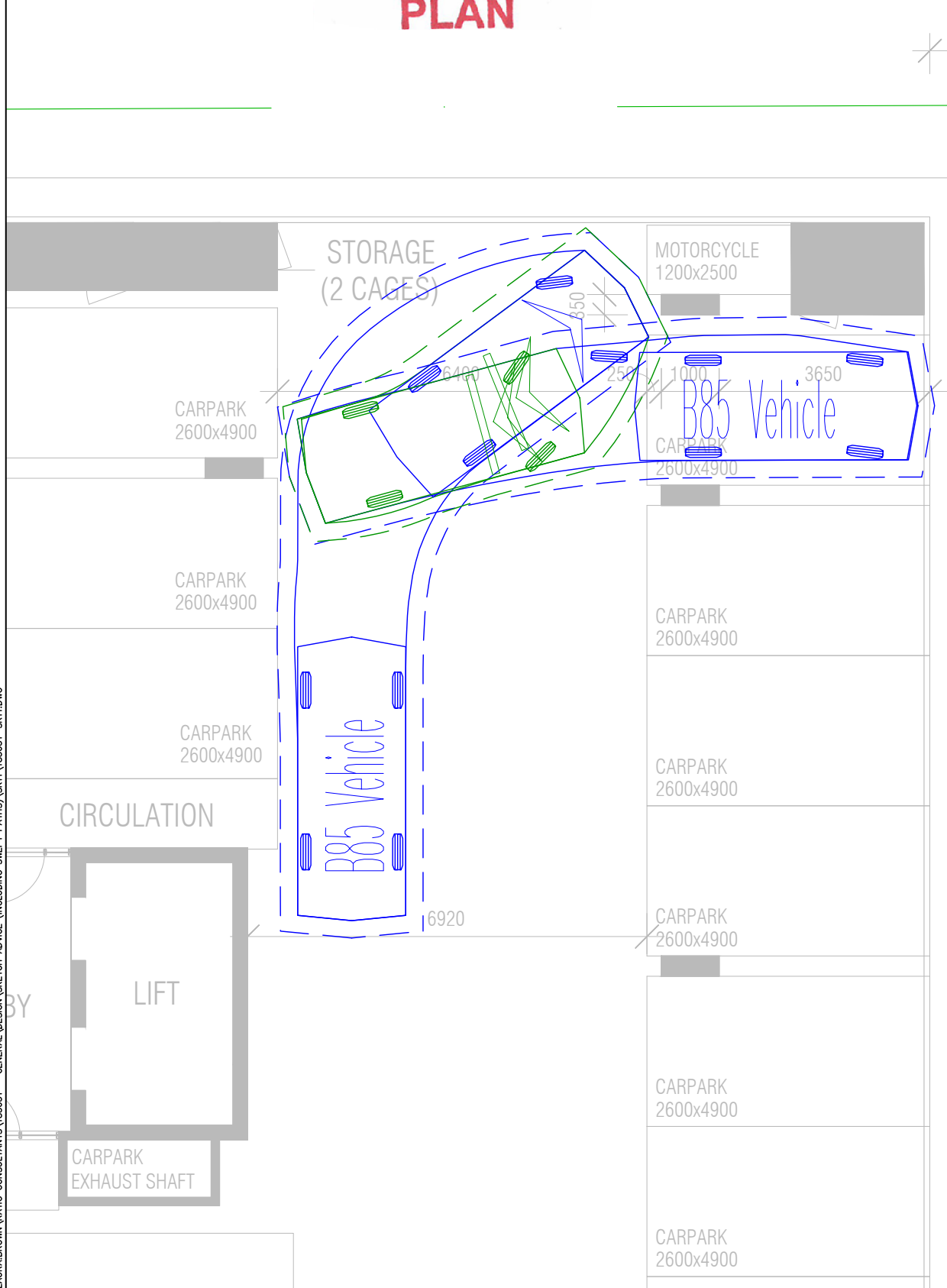
NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

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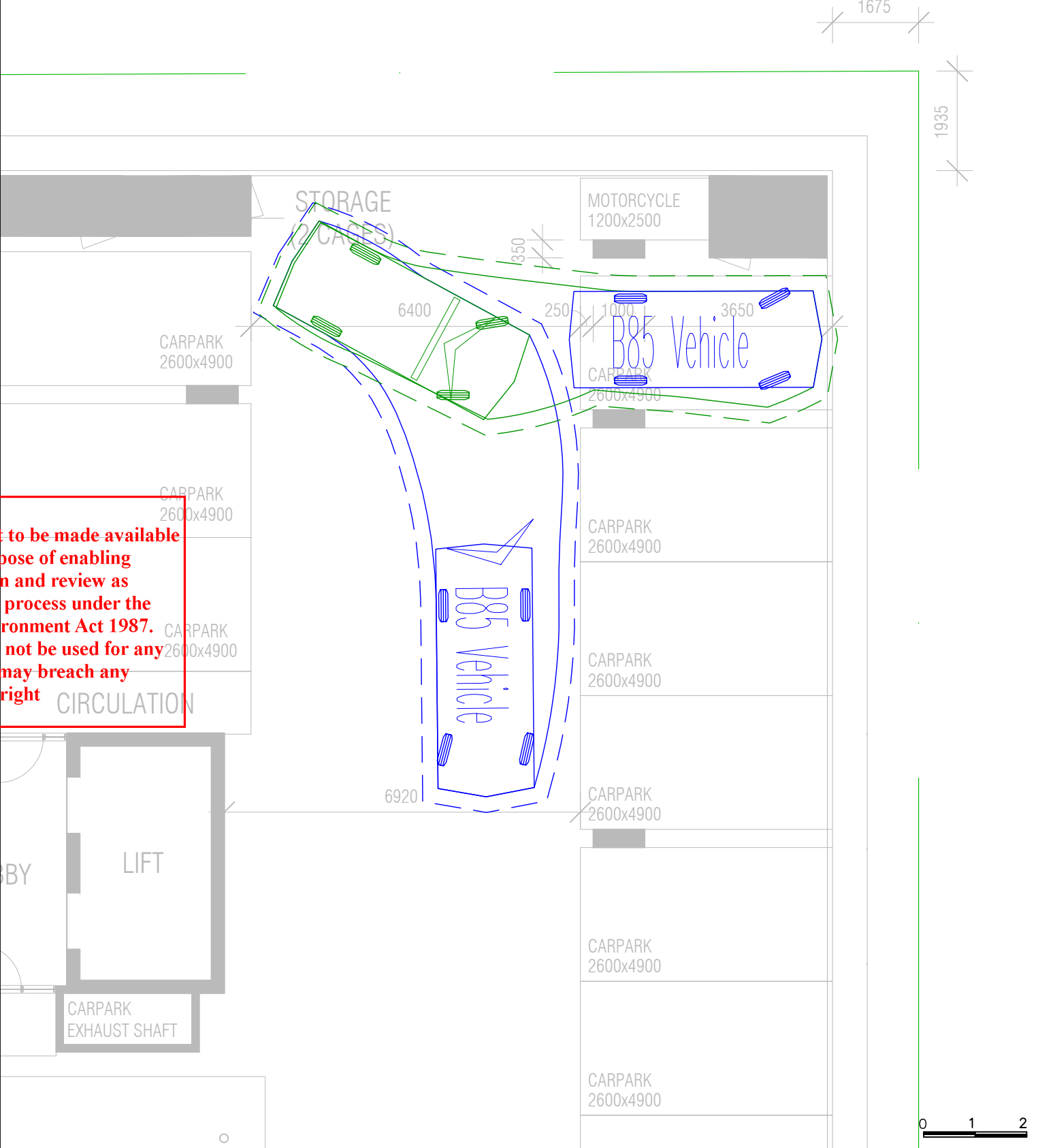


RATIO REFERENCE 18505T-SK11/RT	SHEET No. 3 of 12	SCALE 1:100@A3	DATE 14/08/2024
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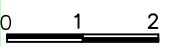
ratio:
 RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 Level 5/65 Dover Street
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)	
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	VEHICLE ENVELOPE (REVERSE)
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	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 1

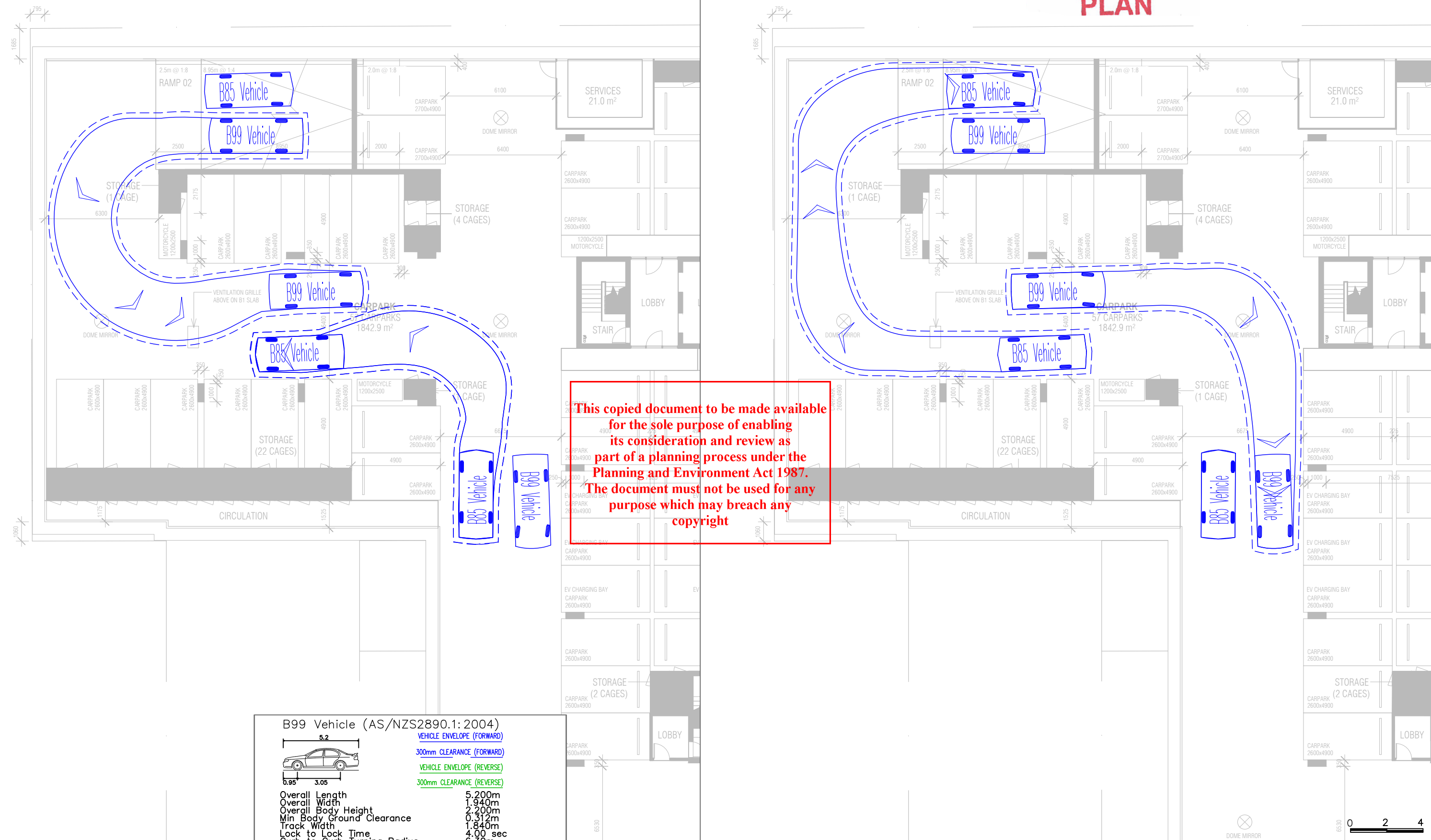
NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18505T-SK11/RT	SHEET No. 4 of 12	SCALE 1:100@A3	DATE 14/08/2024
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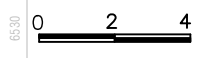
B99 Vehicle (AS/NZS2890.1: 2004)	
	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

B85 Vehicle (AS/NZS2890.1: 2004)	
	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
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	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Mixed-Use Development
251 Lygon Street and 1A Pitt Street, Brunswick East
Swept Path Assessment – Basement 2

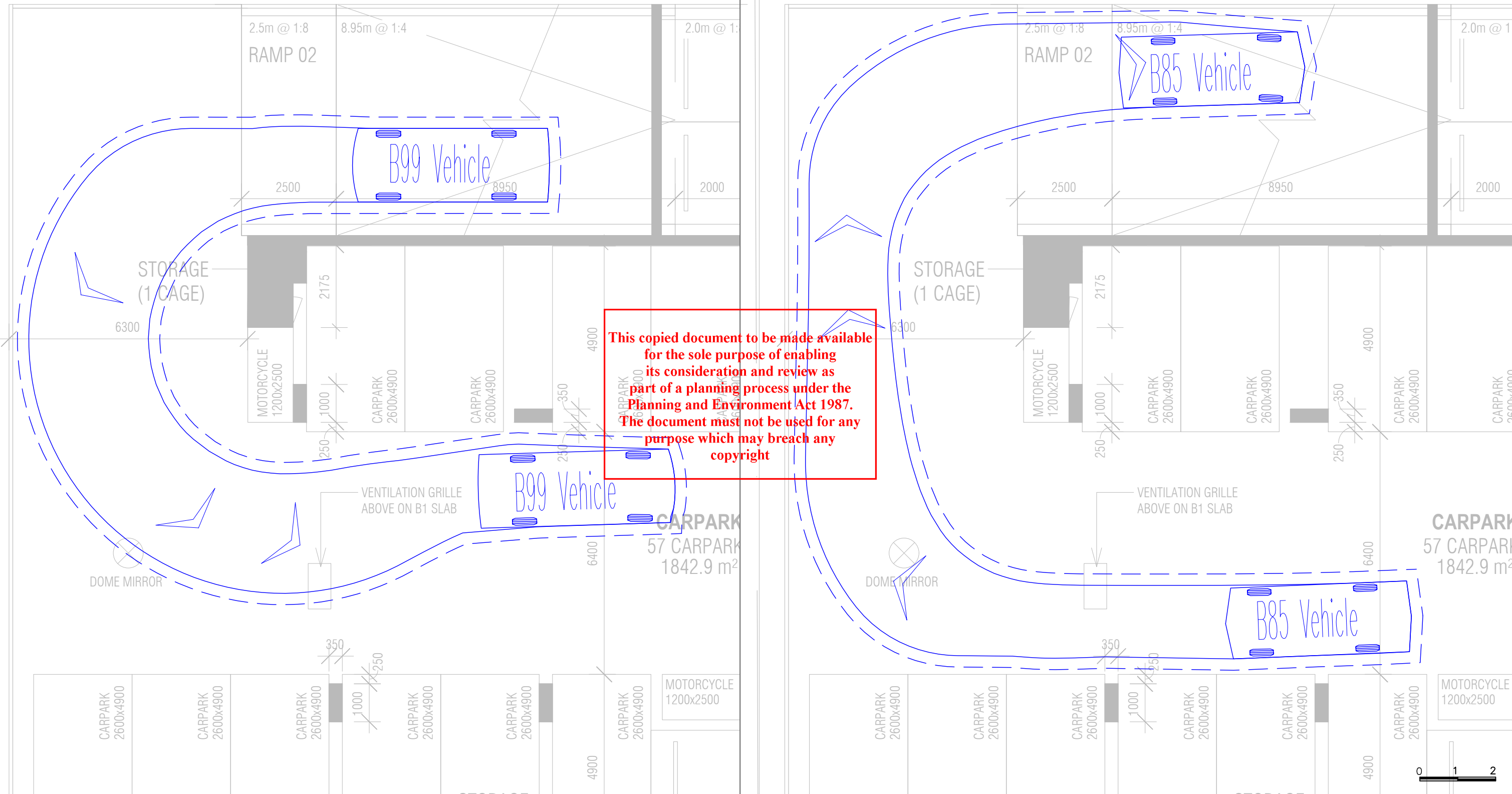
NOTE:
1) Base Plan Supplied by Pace on 21/08/2024
2) Maximum Design Speed 10km/h

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18505T-SK11/RT	5 of 12	1:200@A3	14/08/2024



22/08/2024 9:19:14 AM C:\USERS\LAURA.BROWN\RATIO CONSULTANTS\18505T-SK11\18505T-SK11.DWG - GENERAL DESIGN\SKETCH\ADVICE (INCLUDING SWEEP PATHS)\SK11\18505T-SK11.DWG

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 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)	
	VEHICLE ENVELOPE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min. Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

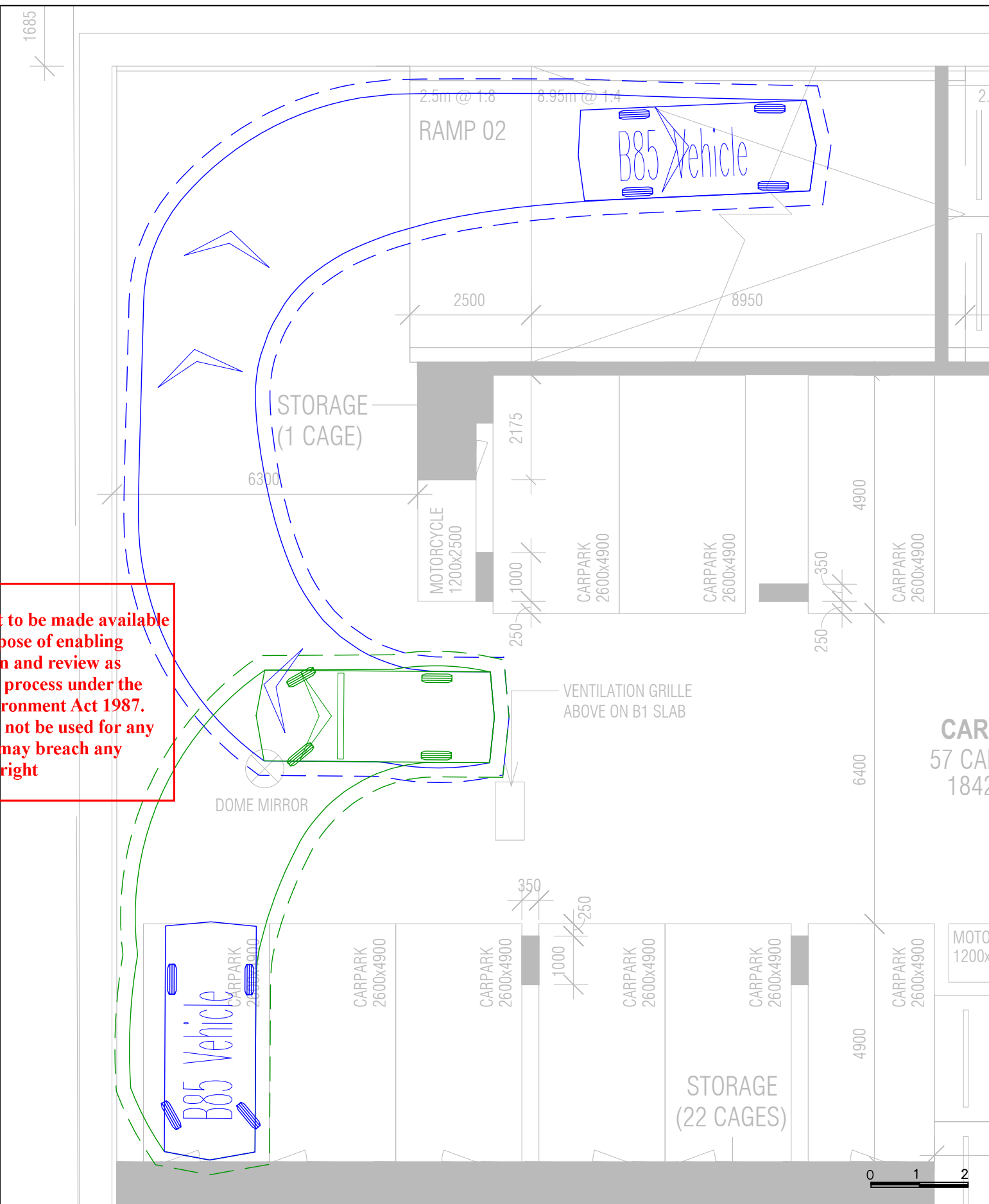
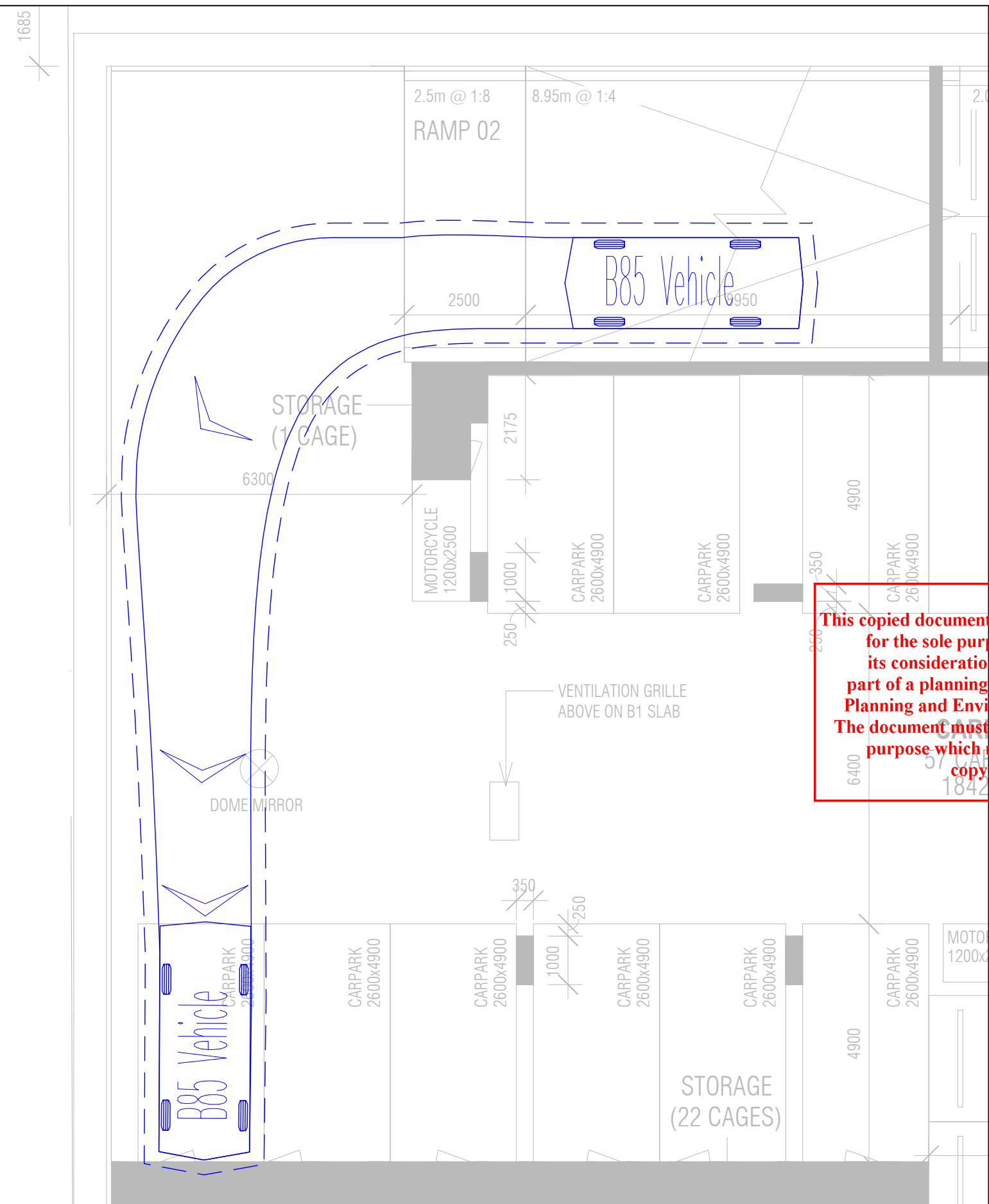
Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 2

NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

RATIO REFERENCE	SHEET No.	SCALE	DATE
18505T-SK11/RT	6 of 12	1:100@A3	14/08/2024

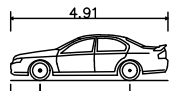
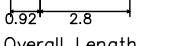


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 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)	
	VEHICLE ENVELOPE (FORWARD)
	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
	300mm CLEARANCE (REVERSE)
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	4.00 sec
Curb to Curb Turning Radius	5.80m

Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 2

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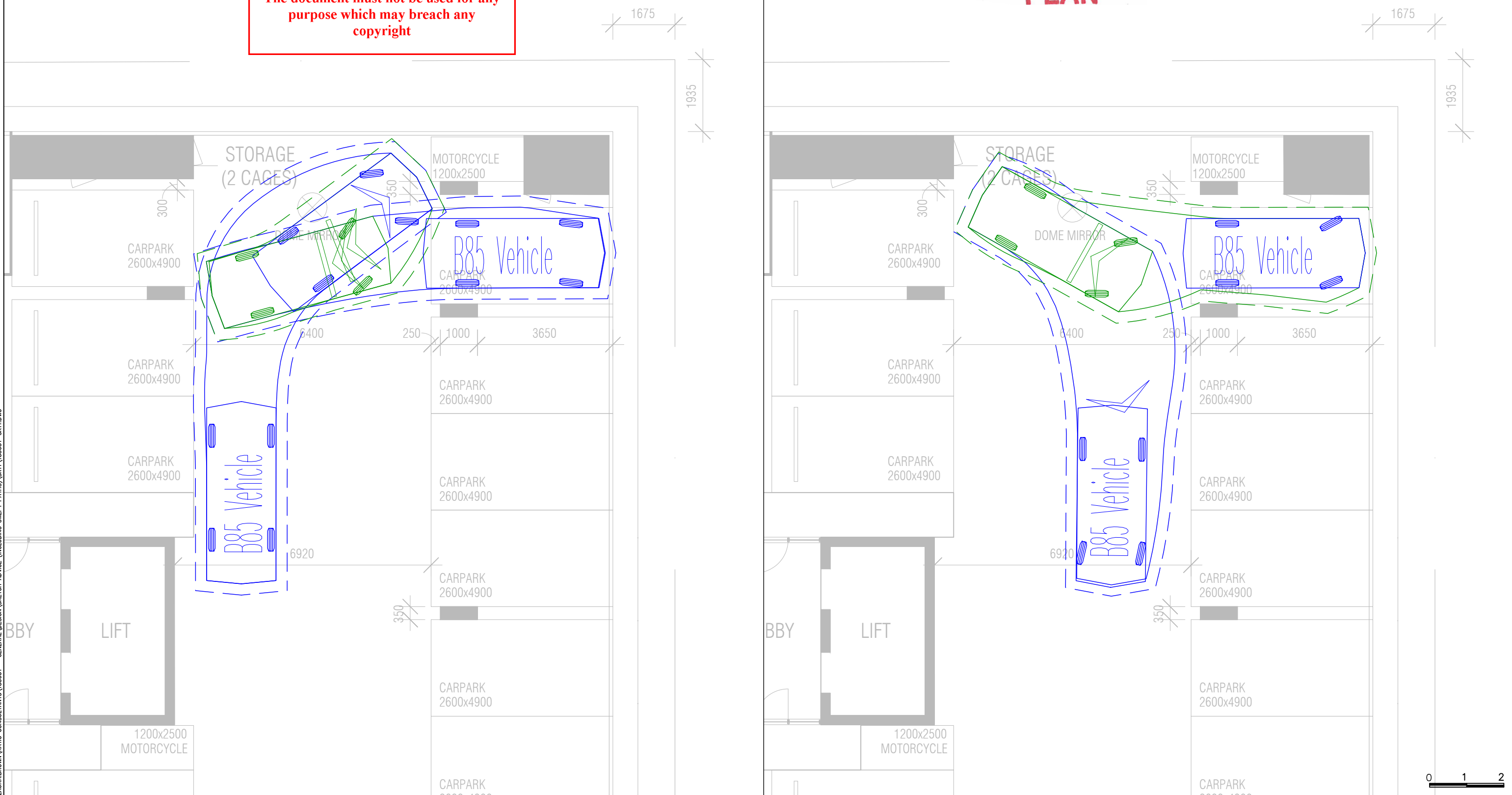


NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

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 Level 5/65 Dover Street
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

Overall Length	4.91m
Overall Width	2.8m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

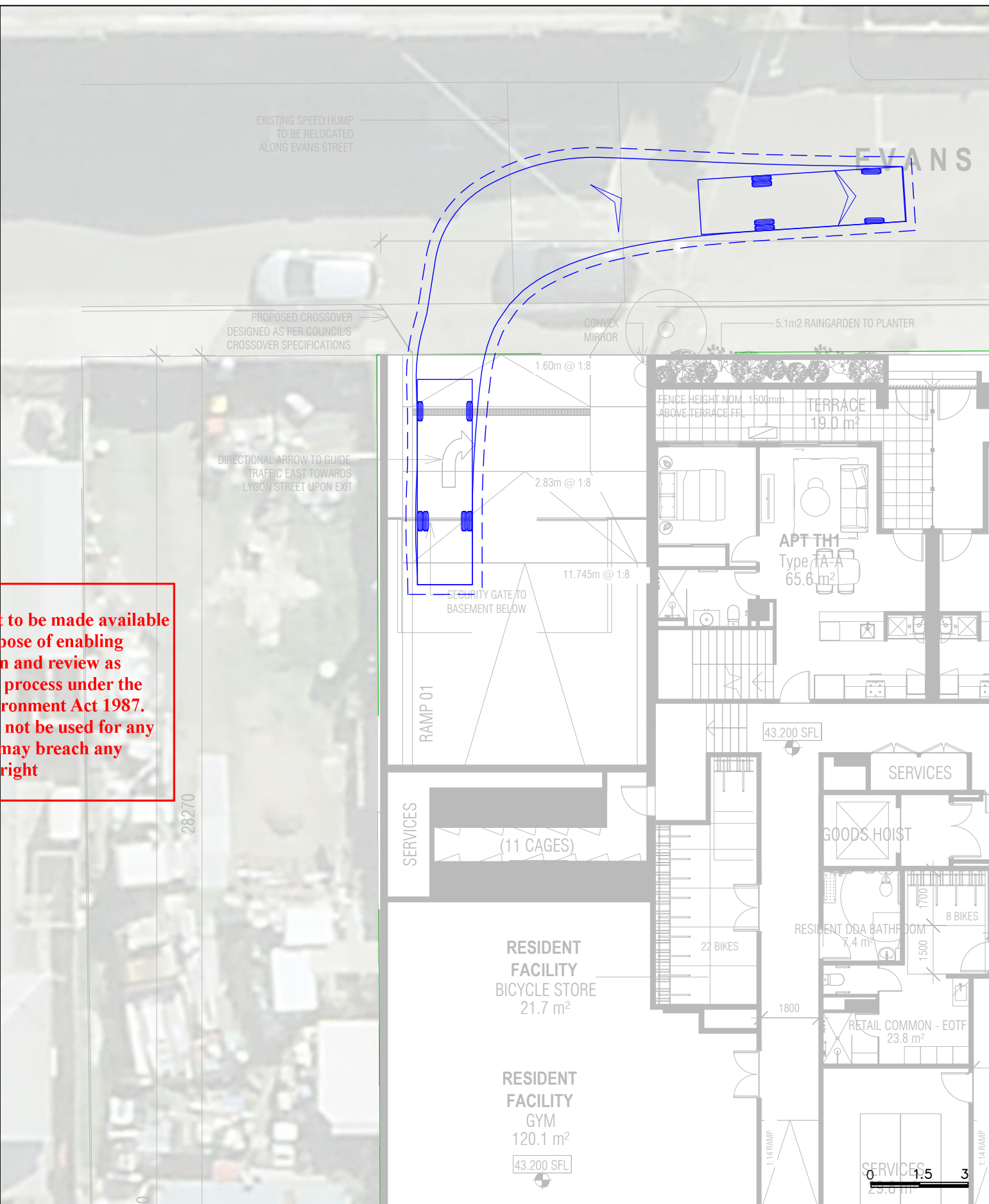
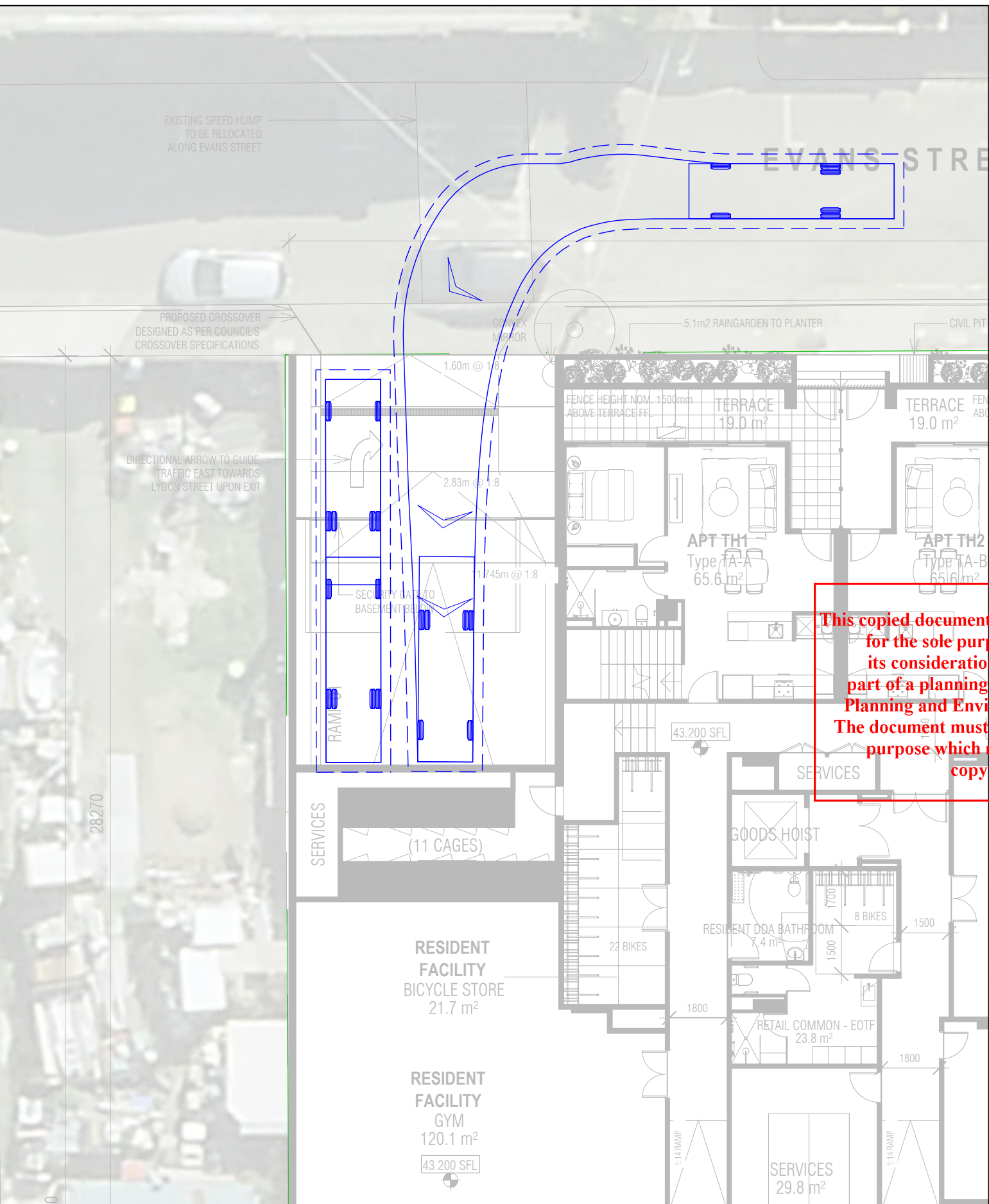
VEHICLE ENVELOPE (FORWARD)
 300mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 300mm CLEARANCE (REVERSE)

Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 2

NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

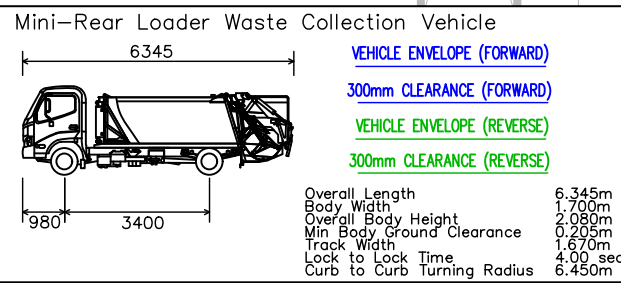
RATIO REFERENCE 18505T-SK11/RT	SHEET No. 8 of 12	SCALE 1:100@A3	DATE 14/08/2024
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 FACSIMILE (03)9429 3011



Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Ground Floor Plan

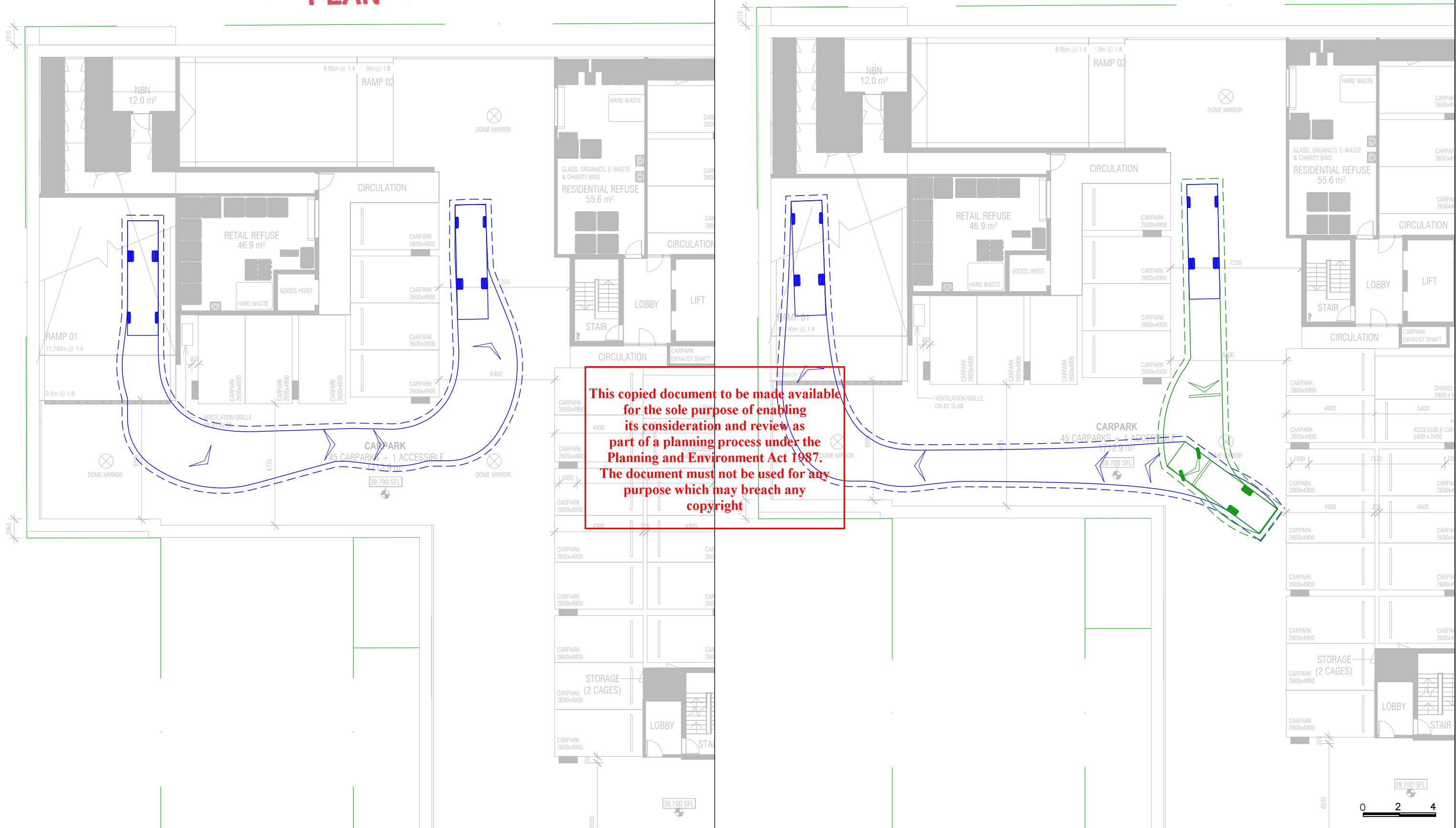
NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

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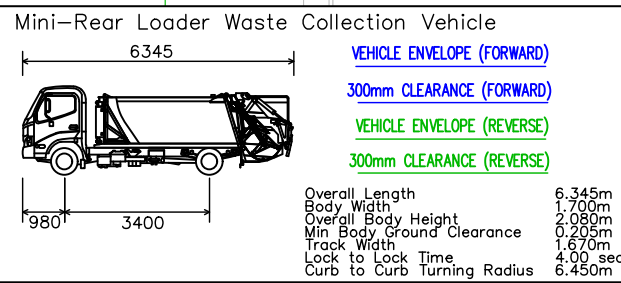
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 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011



Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Swept Path Assessment – Basement 1

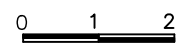
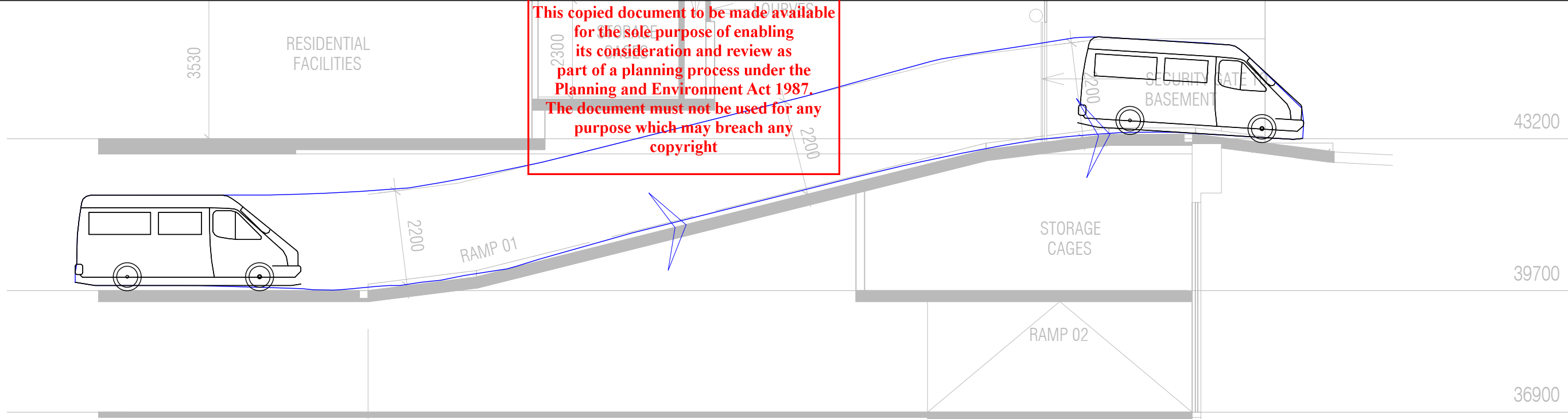
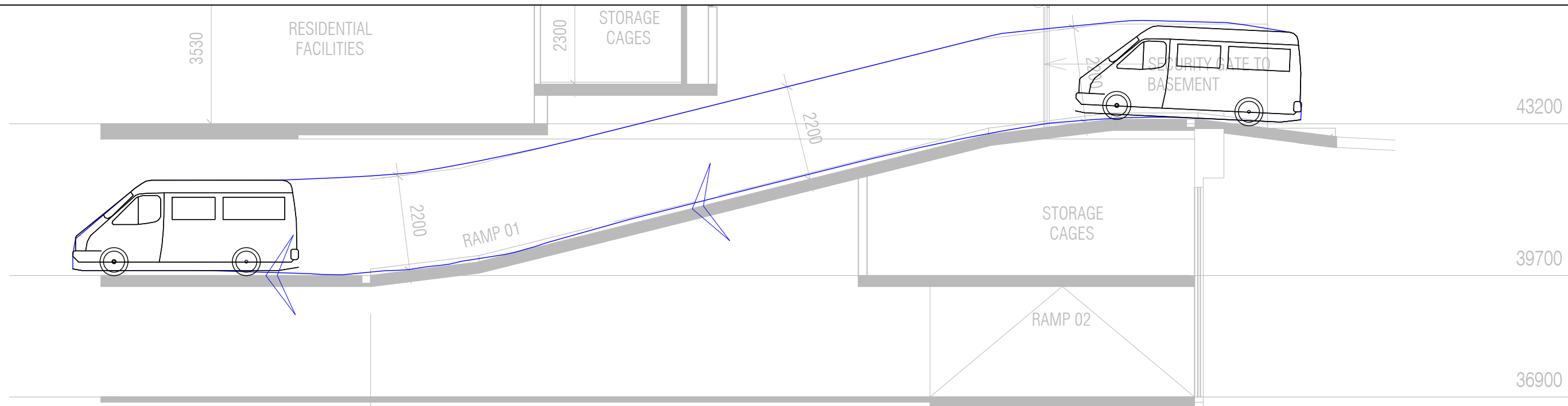
NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18505T-SK11/RT	SHEET No. 10 of 12	SCALE 1:200@A3	DATE 14/08/2024
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 Level 5/65 Dover Street
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vertical Model (AS/NZS2890.1:2004)



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 4.00 sec
 Curb to Curb Turning Radius 8.000m

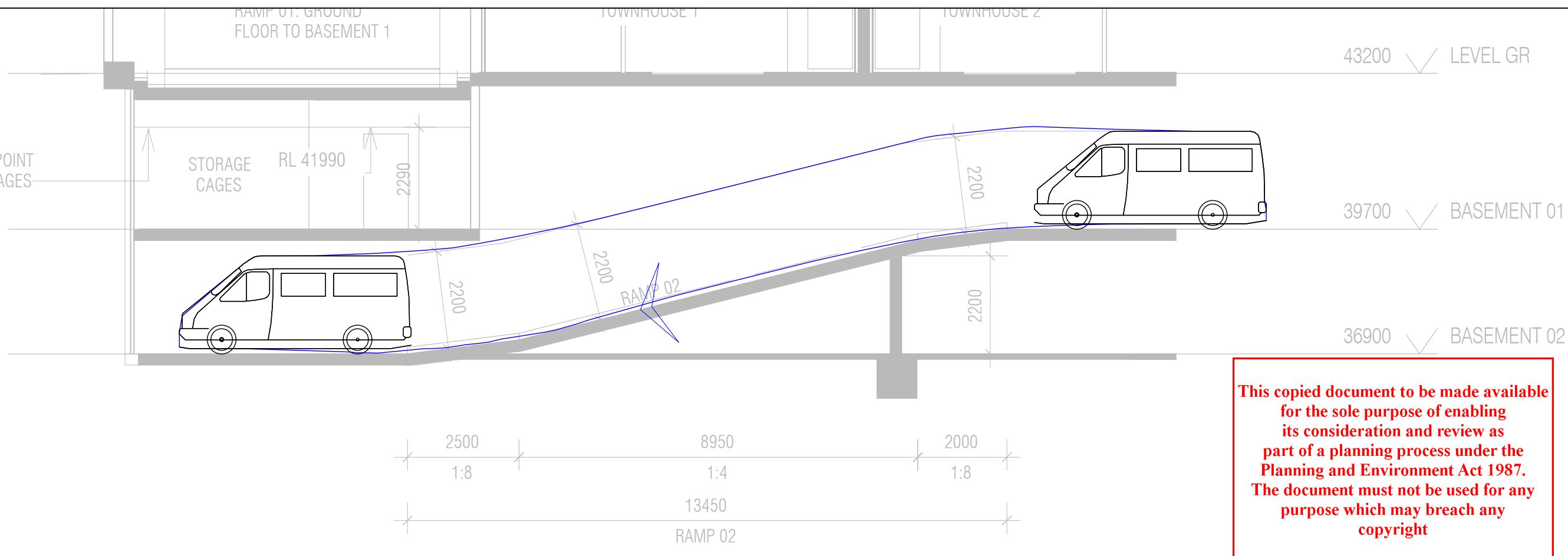
Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Vertical Clearance Assessment – Ground to Basement 1

NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

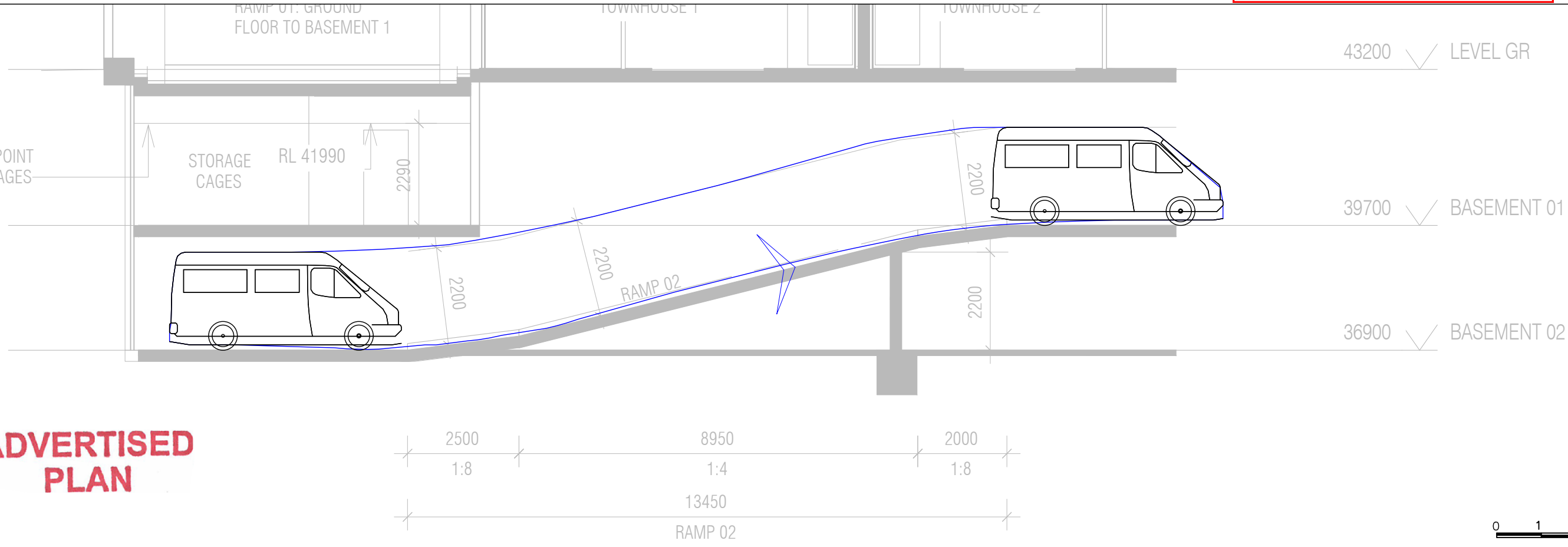
RATIO REFERENCE 18505T-SK11/RT	SHEET No. 11 of 12	SCALE 1:100@A3	DATE 14/08/2024
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RAMP 01 LOWEST POINT ABOVE STORAGE CAGES



RAMP 01 LOWEST POINT ABOVE STORAGE CAGES



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 Level 5/65 Dover Street
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vertical Model (AS/NZS2890.1:2004)

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	4.00 sec
Curb to Curb Turning Radius	8.000m

Proposed Mixed-Use Development
 251 Lygon Street and 1A Pitt Street, Brunswick East
 Vertical Clearance Assessment – Basement 1 to Basement 2

NOTE:
 1) Base Plan Supplied by Pace on 21/08/2024
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18505T-SK11/RT	SHEET No. 12 of 12	SCALE 1:100@A3	DATE 14/08/2024
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Appendix E Bicycle Parking Specifications

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Arc de Triomphe™



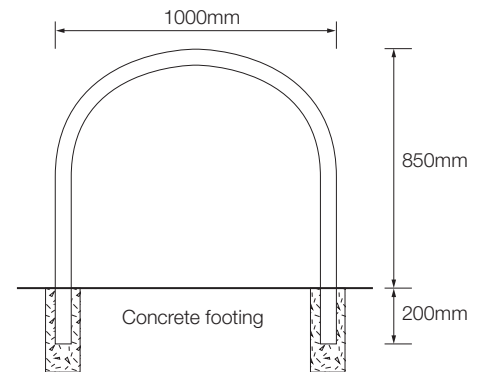
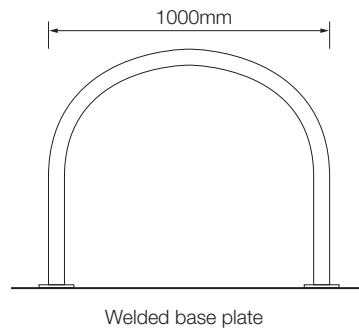
Galvanised finish / Stainless Steel finish

Features



- Each rail supports two adult bikes in an upright position
- Can be either bolted to a concrete slab or concreted in situ
- Available in stainless steel or galvanised steel
- Provides the ability to lock both wheels and frame
- Suitable for foyers and entry areas

Dimensions



Specifications

Material options

- Galvanised (Duragal)
- 316 Marine grade stainless steel

Fixing options

- Welded flange - Bolt on
- In situ

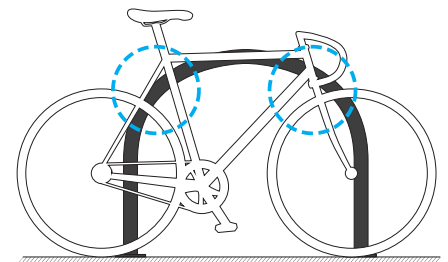
Recommended fasteners

- Galvanised Dynabolts (M10 x 65mm)
- Stainless Dynabolts (M10 x 65mm)
- Shear Nut security fasteners

Dimensions

1000mm [w] x 850mm [h]

Locking Points



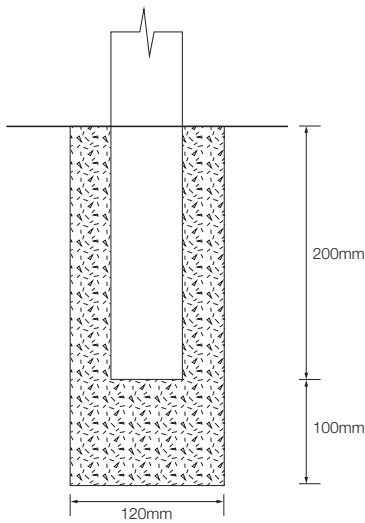
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V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

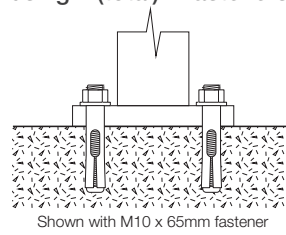
Fixing options

In situ (Concrete footing)

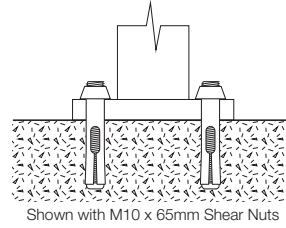


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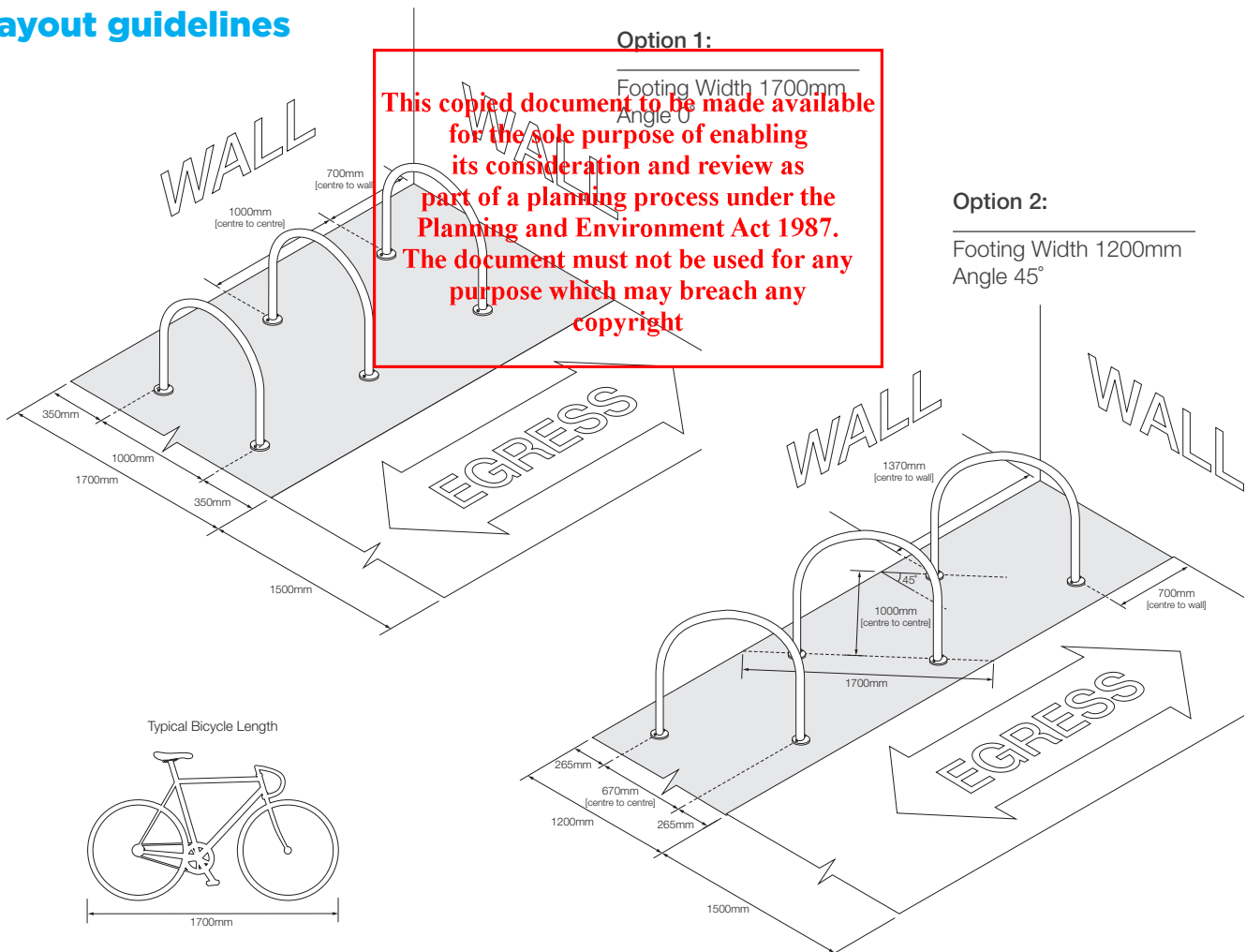
Welded flange (Bolt on)
using 4 (total) x fasteners



Welded flange (Security heads)
using 4 (total) x fasteners



Layout guidelines



V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

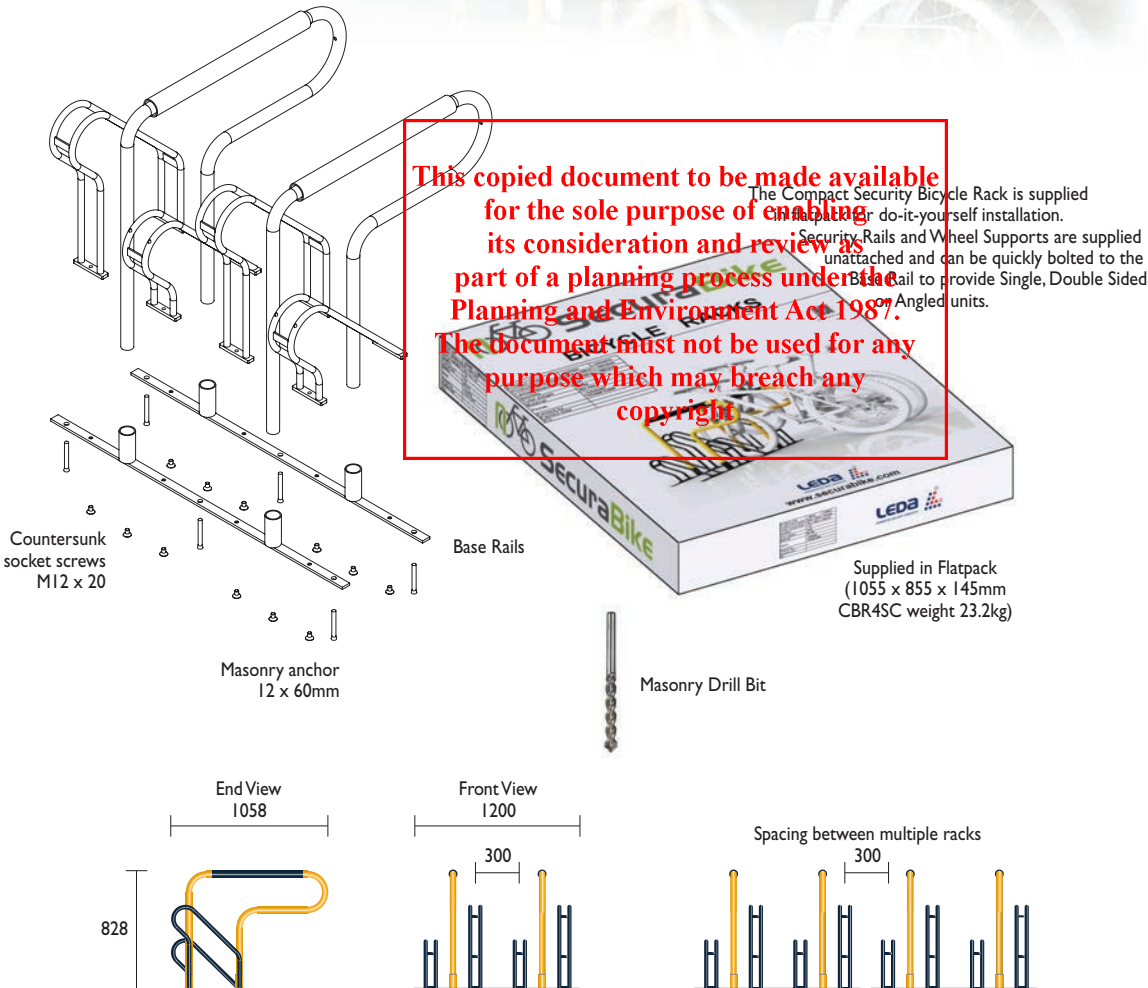
Compact CBR4SC Flat Pack

CBR4SC
Powder Coated
CBR4SCG
Hot Dipped Galvanised

Thousands installed



OUR MOST POPULAR RACK



Material Specifications (General)

Rails 32NB (38.0) x 1.5mm Pipe / Powder coated / Hot dipped galvanised finish
Supports Ø19 x 1.2mm Pipe / Powder coated / Hot dipped galvanised finish



Appendix F SIDRA Results

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Existing AM Peak - Weekday
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	[Dist] m				km/h
South: Lygon Street															
1	L2	All MCs	12	0.0	12	0.0	0.114	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.2
2	T1	All MCs	411	4.4	411	4.4	0.114	0.2	LOS A	0.1	0.6	0.01	0.03	0.01	59.6
3u	U	All MCs	1	0.0	1	0.0	0.114	21.8	LOS C	0.1	0.6	0.02	0.03	0.02	56.5
Approach			423	4.2	423	4.2	0.114	0.4	NA	0.1	0.6	0.01	0.03	0.01	59.5
North: Lygon Street															
8	T1	All MCs	939	2.0	939	2.0	0.254	0.1	LOS A	0.2	1.7	0.03	0.03	0.03	59.7
9	R2	All MCs	16	0.0	16	0.0	0.254	7.9	LOS A	0.2	1.7	0.06	0.07	0.06	56.9
9u	U	All MCs	2	0.0	2	0.0	0.254	11.2	LOS B	0.2	1.7	0.06	0.07	0.06	56.5
Approach			957	2.0	957	2.0	0.254	0.3	NA	0.2	1.7	0.03	0.03	0.03	59.6
West: Evans Street															
10	L2	All MCs	12	0.0	12	0.0	0.028	6.3	LOS A	0.1	0.6	0.51	0.58	0.51	49.2
12	R2	All MCs	2	0.0	2	0.0	0.028	34.6	LOS D	0.1	0.6	0.51	0.58	0.51	49.1
Approach			14	0.0	14	0.0	0.028	10.7	LOS B	0.1	0.6	0.51	0.58	0.51	49.2
All Vehicles			1394	2.6	1394	2.6	0.254	0.4	NA	0.2	1.7	0.03	0.04	0.03	59.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Existing PM Peak - Weekday
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: Lygon Street															
1	L2	All MCs	19	0.0	19	0.0	0.237	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.2
2	T1	All MCs	918	0.5	918	0.5	0.237	0.0	LOS A	0.0	0.2	0.00	0.01	0.00	59.8
3u	U	All MCs	1	0.0	1	0.0	0.237	8.5	LOS A	0.0	0.2	0.01	0.01	0.01	56.9
Approach			938	0.5	938	0.5	0.237	0.2	NA	0.0	0.2	0.00	0.01	0.00	59.7
North: Lygon Street															
8	T1	All MCs	613	1.2	613	1.2	0.336	0.4	LOS A	0.3	1.9	0.04	0.05	0.04	59.5
9	R2	All MCs	7	0.0	7	0.0	0.336	13.0	LOS B	0.3	1.9	0.04	0.05	0.04	57.0
9u	U	All MCs	1	0.0	1	0.0	0.336	22.7	LOS C	0.3	1.9	0.04	0.05	0.04	56.6
Approach			621	1.2	621	1.2	0.336	0.5	NA	0.3	1.9	0.04	0.05	0.04	59.4
West: Evans Street															
10	L2	All MCs	14	0.0	14	0.0	0.114	7.2	LOS A	0.4	2.5	0.78	0.89	0.78	43.5
12	R2	All MCs	13	0.0	13	0.0	0.114	34.7	LOS D	0.4	2.5	0.78	0.89	0.78	43.5
Approach			26	0.0	26	0.0	0.114	20.4	LOS C	0.4	2.5	0.78	0.89	0.78	43.5
All Vehicles			1585	0.8	1585	0.8	0.336	0.6	NA	0.4	2.5	0.03	0.04	0.03	59.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Existing Peak - Saturday (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
 Site Category: (None)
 Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: Lygon Street															
1	L2	All MCs	11	0.0	11	0.0	0.186	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
2	T1	All MCs	689	4.4	689	4.4	0.186	0.0	LOS A	0.0	0.3	0.00	0.01	0.00	59.8
3u	U	All MCs	1	0.0	1	0.0	0.186	10.2	LOS B	0.0	0.3	0.01	0.01	0.01	56.9
Approach			701	4.3	701	4.3	0.186	0.1	NA	0.0	0.3	0.00	0.01	0.00	59.8
North: Lygon Street															
8	T1	All MCs	684	2.0	684	2.0	0.383	0.3	LOS A	0.3	2.5	0.05	0.07	0.05	59.5
9	R2	All MCs	16	0.0	16	0.0	0.383	10.5	LOS B	0.3	2.5	0.05	0.07	0.05	56.9
9u	U	All MCs	1	0.0	1	0.0	0.383	17.1	LOS C	0.3	2.5	0.05	0.07	0.05	56.5
Approach			701	2.0	701	2.0	0.383	0.6	NA	0.3	2.5	0.05	0.07	0.05	59.4
West: Evans Street															
10	L2	All MCs	13	0.0	13	0.0	0.053	6.7	LOS A	0.2	1.2	0.70	0.71	0.70	47.0
12	R2	All MCs	6	0.0	6	0.0	0.053	29.4	LOS D	0.2	1.2	0.70	0.71	0.70	46.9
Approach			19	0.0	19	0.0	0.053	14.3	LOS B	0.2	1.2	0.70	0.71	0.70	46.9
All Vehicles			1421	3.1	1421	3.1	0.383	0.5	NA	0.3	2.5	0.04	0.05	0.04	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Proposed AM Peak - Weekday]
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. Dist]				km/h	
			veh/h		veh/h					veh	m				
South: Lygon Street															
1	L2	All MCs	24	0.0	24	0.0	0.117	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	56.9
2	T1	All MCs	411	4.4	411	4.4	0.117	0.2	LOS A	0.1	0.6	0.01	0.05	0.01	59.4
3u	U	All MCs	1	0.0	1	0.0	0.117	22.4	LOS C	0.1	0.6	0.02	0.03	0.02	56.5
Approach			436	4.1	436	4.1	0.117	0.6	NA	0.1	0.6	0.01	0.05	0.01	59.3
North: Lygon Street															
8	T1	All MCs	939	2.0	939	2.0	0.257	0.2	LOS A	0.3	2.2	0.04	0.04	0.04	59.6
9	R2	All MCs	21	0.0	21	0.0	0.257	8.0	LOS A	0.3	2.2	0.08	0.09	0.08	56.8
9u	U	All MCs	2	0.0	2	0.0	0.257	11.3	LOS B	0.3	2.2	0.08	0.09	0.08	56.4
Approach			962	2.0	962	2.0	0.257	0.3	NA	0.3	2.2	0.04	0.04	0.04	59.6
West: Evans Street															
10	L2	All MCs	19	0.0	19	0.0	0.167	6.4	LOS A	0.5	3.8	0.81	0.75	0.81	42.9
12	R2	All MCs	18	0.0	18	0.0	0.167	37.7	LOS E	0.5	3.8	0.81	0.75	0.81	42.8
Approach			37	0.0	37	0.0	0.167	21.6	LOS C	0.5	3.8	0.81	0.75	0.81	42.9
All Vehicles			1435	2.6	1435	2.6	0.257	1.0	NA	0.5	3.8	0.05	0.06	0.05	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Proposed PM Peak - Weekday]
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
			veh/h		veh/h					veh	m				
South: Lygon Street															
1	L2	All MCs	26	0.0	26	0.0	0.239	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.1
2	T1	All MCs	918	0.5	918	0.5	0.239	0.0	LOS A	0.0	0.2	0.00	0.02	0.00	59.8
3u	U	All MCs	1	0.0	1	0.0	0.239	8.5	LOS A	0.0	0.2	0.01	0.01	0.01	56.9
Approach			945	0.5	945	0.5	0.239	0.2	NA	0.0	0.2	0.00	0.02	0.00	59.7
North: Lygon Street															
8	T1	All MCs	613	1.2	613	1.2	0.359	0.7	LOS A	0.6	4.0	0.09	0.10	0.09	58.9
9	R2	All MCs	18	0.0	18	0.0	0.359	13.2	LOS B	0.6	4.0	0.09	0.10	0.09	56.5
9u	U	All MCs	1	0.0	1	0.0	0.359	22.8	LOS C	0.6	4.0	0.09	0.10	0.09	56.1
Approach			632	1.2	632	1.2	0.359	1.1	NA	0.6	4.0	0.09	0.10	0.09	58.8
West: Evans Street															
10	L2	All MCs	27	0.0	27	0.0	0.208	7.8	LOS A	0.7	4.9	0.80	0.91	0.85	43.2
12	R2	All MCs	22	0.0	22	0.0	0.208	37.4	LOS E	0.7	4.9	0.80	0.91	0.85	43.2
Approach			49	0.0	49	0.0	0.208	21.0	LOS C	0.7	4.9	0.80	0.91	0.85	43.2
All Vehicles			1626	0.7	1626	0.7	0.359	1.2	NA	0.7	4.9	0.06	0.08	0.06	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 102 [Evans St/Lygon St - Proposed Peak - Saturday
(Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.4.221

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed	
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. Dist]				km/h	
			veh/h		veh/h					veh	m				
South: Lygon Street															
1	L2	All MCs	18	0.0	18	0.0	0.188	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.2
2	T1	All MCs	689	4.4	689	4.4	0.188	0.0	LOS A	0.0	0.3	0.00	0.02	0.00	59.8
3u	U	All MCs	1	0.0	1	0.0	0.188	10.3	LOS B	0.0	0.3	0.01	0.01	0.01	56.9
Approach			708	4.2	708	4.2	0.188	0.2	NA	0.0	0.3	0.00	0.02	0.00	59.7
North: Lygon Street															
8	T1	All MCs	684	2.0	684	2.0	0.394	0.5	LOS A	0.5	3.9	0.08	0.09	0.08	59.2
9	R2	All MCs	23	0.0	23	0.0	0.394	10.7	LOS B	0.5	3.9	0.08	0.09	0.08	56.6
9u	U	All MCs	1	0.0	1	0.0	0.394	17.4	LOS C	0.5	3.9	0.08	0.09	0.08	56.2
Approach			708	1.9	708	1.9	0.394	0.8	NA	0.5	3.9	0.08	0.09	0.08	59.1
West: Evans Street															
10	L2	All MCs	20	0.0	20	0.0	0.111	6.7	LOS A	0.4	2.5	0.75	0.79	0.75	45.6
12	R2	All MCs	14	0.0	14	0.0	0.111	30.9	LOS D	0.4	2.5	0.75	0.79	0.75	45.5
Approach			34	0.0	34	0.0	0.111	16.5	LOS C	0.4	2.5	0.75	0.79	0.75	45.6
All Vehicles			1451	3.0	1451	3.0	0.394	0.9	NA	0.5	3.9	0.06	0.07	0.06	59.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
 Two-Way Sign Control Capacity Model: SIDRA Standard.
 Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
 Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
 Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
 Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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