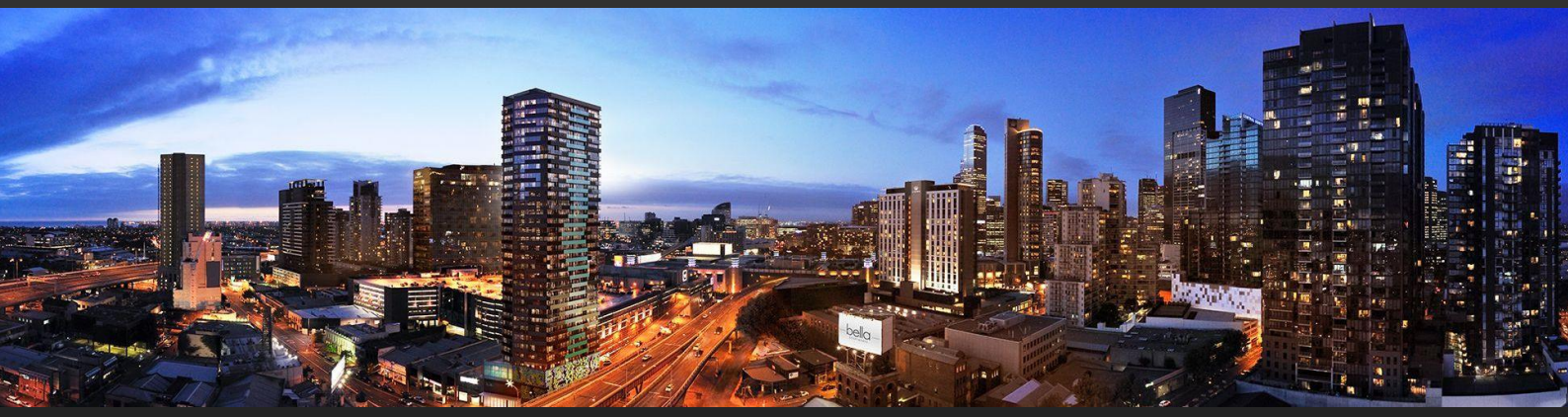
onemilegrid
TRAFFIC ENGINEERING

77-83 Sutton Street, North Melbourne

Transport Impact Assessment



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onemile**grid**

ABN: 79 168 115 679

(03) 9939 8250
56 Down Street

COLLINGWOOD, VIC 3066
www.onemilegrid.com.au

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***one**mile**grid** operates from Wurundjeri Woiworung Country of the Kulin nation. We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture, and the hopes of all Wurundjeri Peoples.*

CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

onemile**grid** has been requested by Fusion Project Management to prepare an amended Transport Impact Assessment of the mixed-use development at 77-83 Sutton Street, North Melbourne.

As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic data has been sourced and relevant background reports have been reviewed.

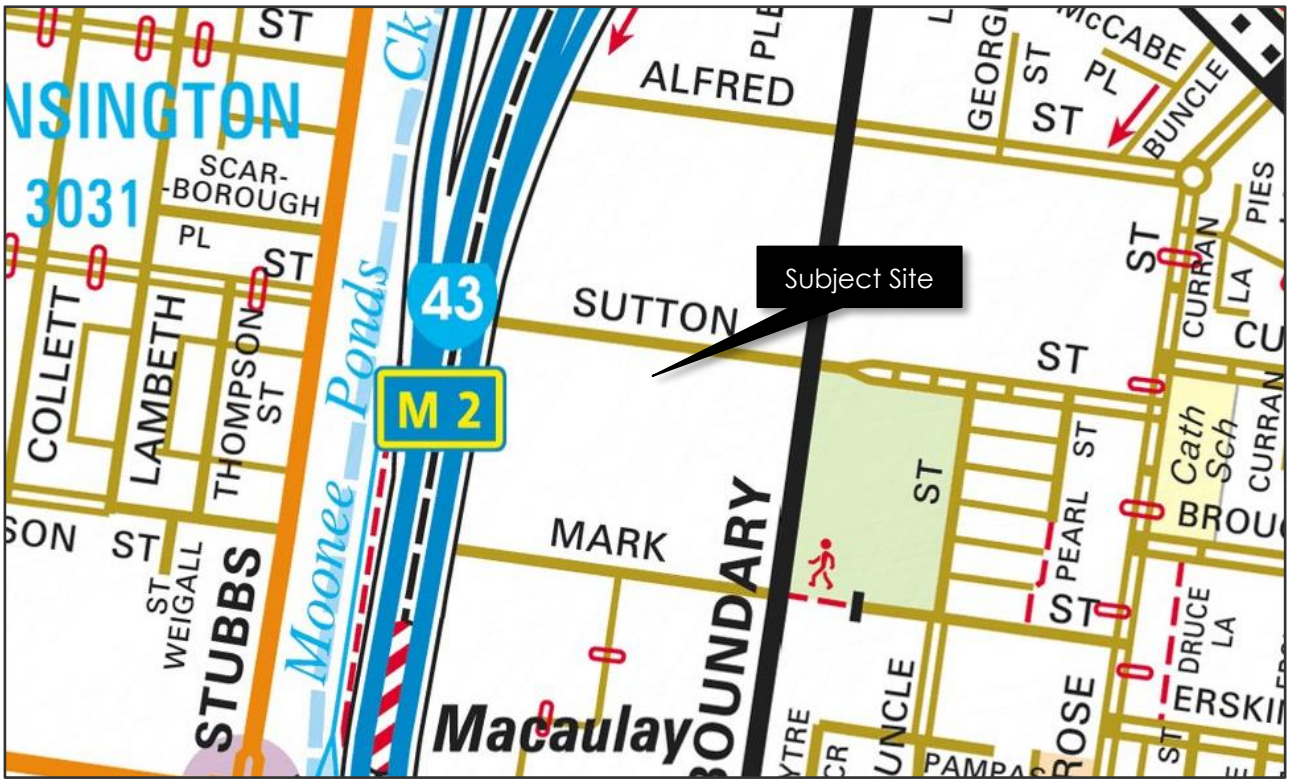
This amended report comes in response to the issuance of updated plans as part of a S72 application.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is located on the southern side of Sutton Street to the west of Boundary Road as shown in Figure 1. The site is addressed as 77-83 Sutton Street, North Melbourne.

Figure 1 Site Location



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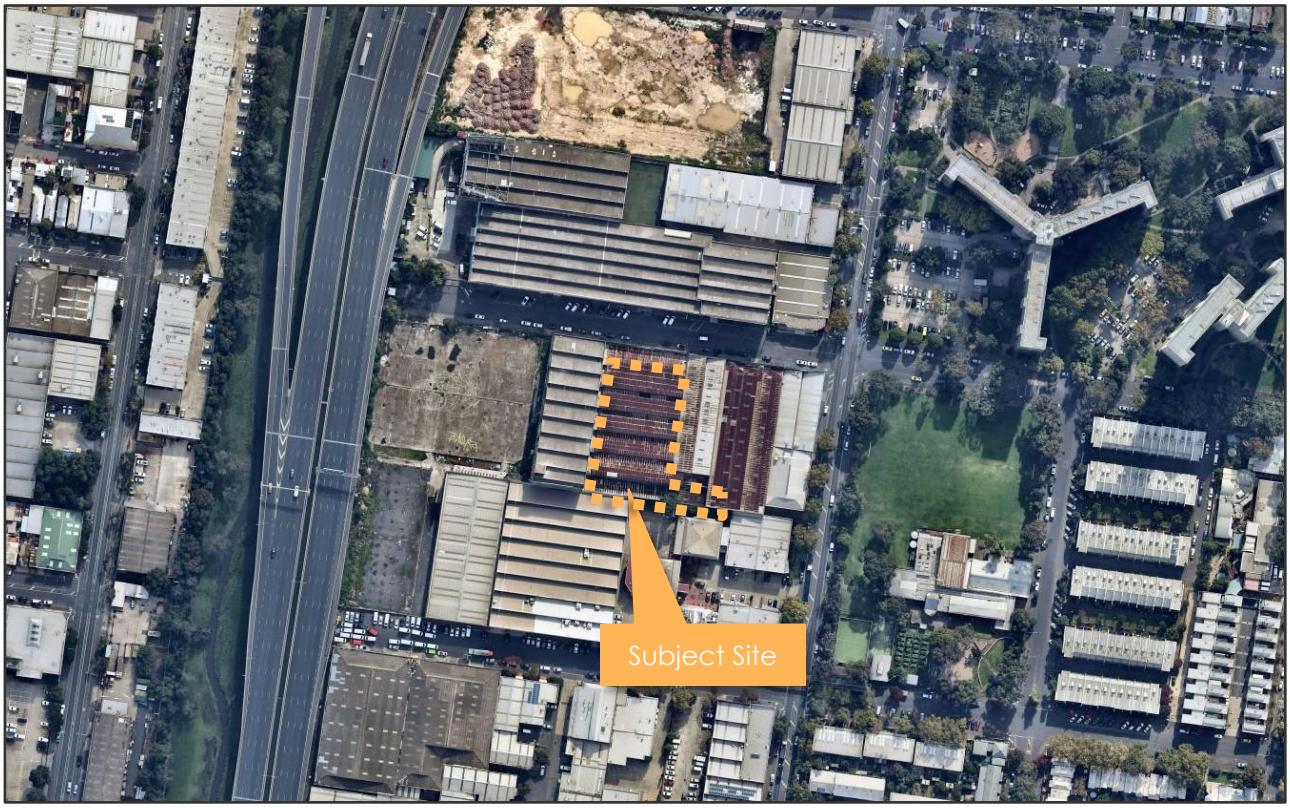
The site is currently occupied by a warehouse development with an approximate area of 3,340m². The site is irregular in shape with a frontage of 43 metres to Sutton Street and a depth of 74 metres. The south eastern corner of the site protrudes to the east approximately 19 metres with a depth of 16 metres.

The site currently has access to Sutton Street via two single width crossovers, each facilitating one-way movements.

Land use in the immediate vicinity is mixed, including a range of residential and commercial uses. Additionally, the site is located within the strategically defined Macaulay Structure Plan which guides the future use and development of the area, discussed in Section 2.6.

An aerial view of the subject site in the context of its surrounds is provided in Figure 2.

Figure 2 Site Context (28 April 2020)



Copyright Nearmap

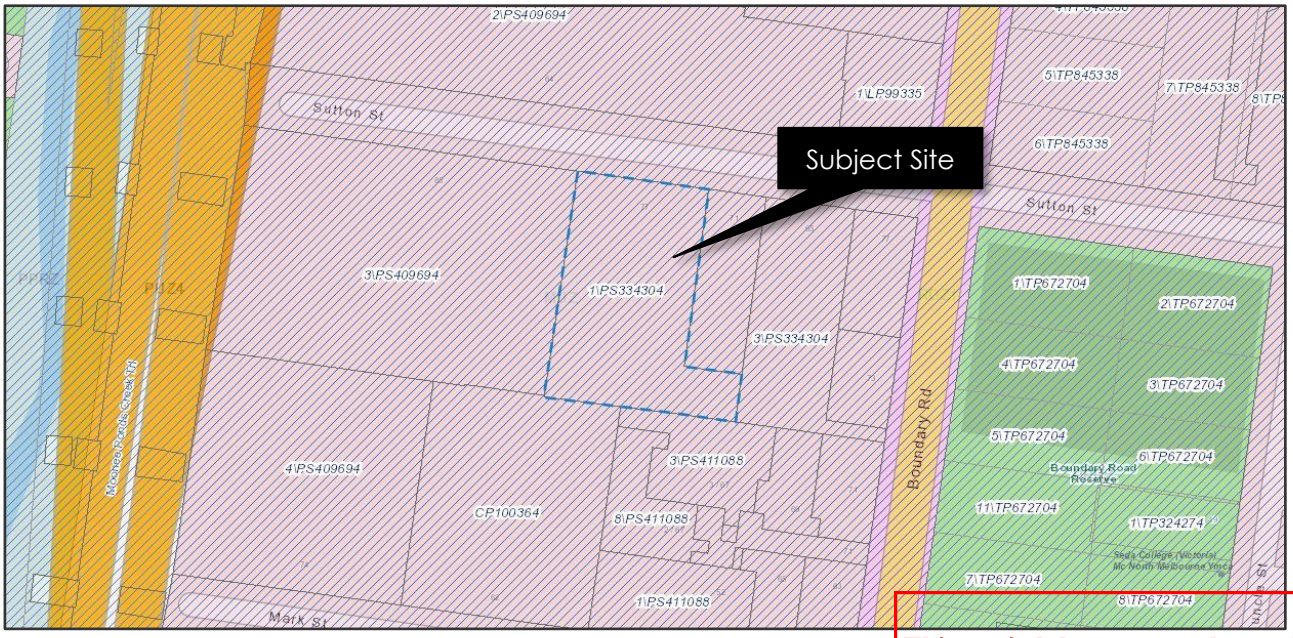
2.2 Planning Zones and Overlays

It is shown in Figure 3 that the site is located within a Mixed-Use Zone (MUZ).

Additionally, the site is within the Principal Public Transport Network (PPTN) as shown in Figure 4.

Figure 3 Planning Scheme Zones

Figure 4 Principal Public Transport Network (PPTN) Area



2.3 Road Network

2.3.1 Sutton Street

Sutton Street is a local road generally aligned east-west, connecting to Boundary Road in the east and terminating to the west of the site under the CityLink overpass.

Sutton Street acts as a two-way roadway in the vicinity of the site, providing kerbside parking along both sides. Parking on the southern side is typically unrestricted with parking on the northern side

subject to a range of restrictions. Kerbside parking on the north side of Sutton Street provides for short and medium term parking with 10 minute, 1-hour, 2-hour and 4-hour parking spaces. Restriction for all timed parking spaces apply between 7:30am and 6:30pm.

The cross-section of Sutton Street at the frontage of the site is shown in Figure 5.

Figure 5 Sutton Street, looking west (left) and east (right) from the subject site

2.3.2 Boundary Road

Boundary Road is an arterial road generally aligned north-south, running between Flemington Road in the north and Macaulay Road in the south.

Boundary Road provides a single traffic lane in each direction adjacent to the intersection with Sutton Street, with kerbside parking permitted on both sides. Kerbside parking is generally unrestricted on both sides of the road in the vicinity of the intersection.

A centrally located right-turn lane facilitates access into Sutton Street.

The cross-section of Boundary Road at the frontage of the site is shown in Figure 6.

Figure 6 Boundary Road, looking north (left) and south (right) from the subject site

2.4 Sustainable Transport

2.4.1 General

An extract of the TravelSmart Map for the City of Melbourne is shown in Figure 7, highlighting the public transport, bicycle and pedestrian facilities in the area.

The site has excellent access to sustainable transport modes, with train, tram and bus services easily accessible from the site, and excellent access to formal and informal cycling routes.

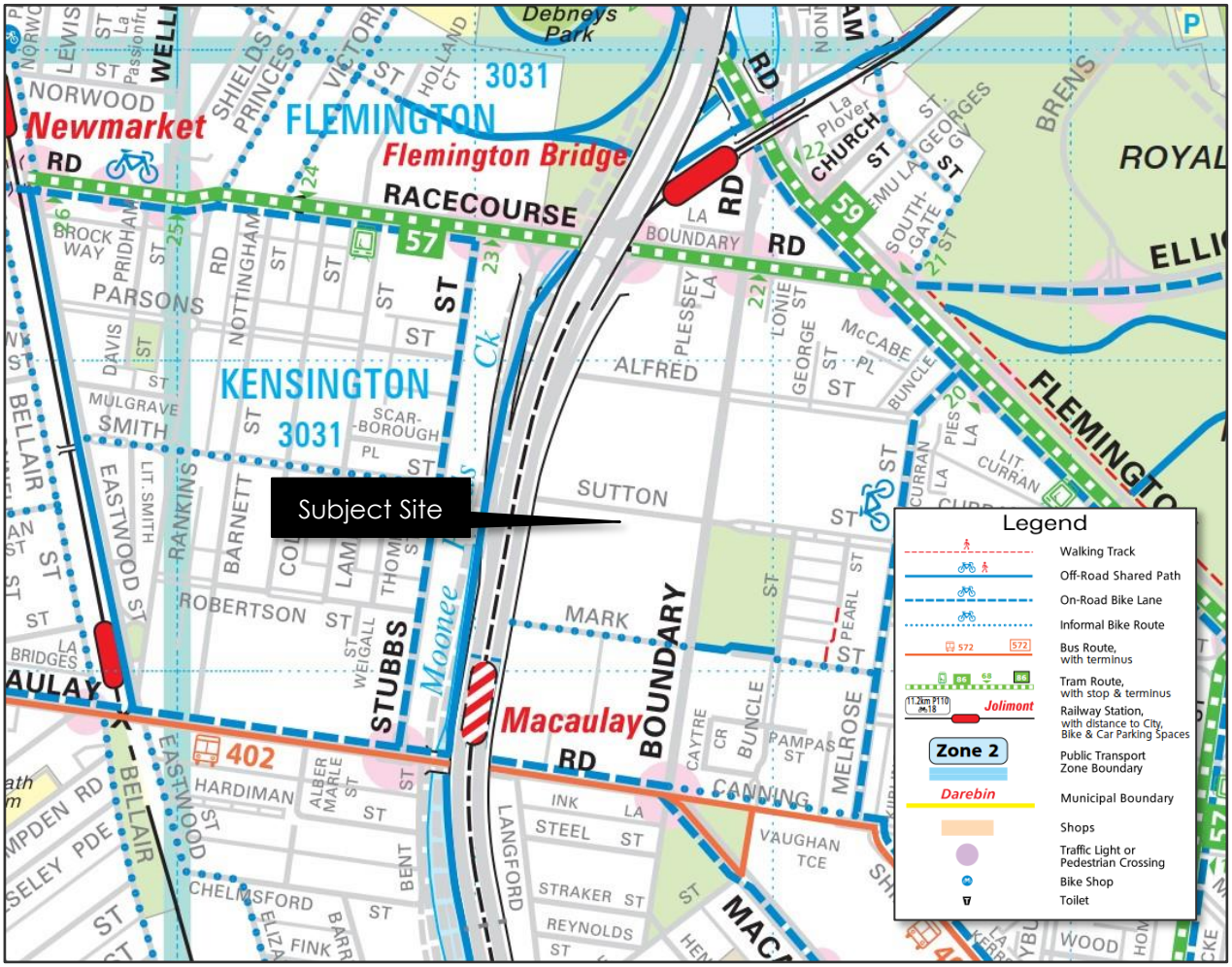
Macaulay Railway Station is located approximately 350 metres to the south and Flemington Bridge Railway Station is located approximately 430 metres north from the site, offering excellent access to the Upfield train line as well as access to the Melbourne CBD.

Tram stops are located 330 metres to the north on Racecourse Road and 450 metres to the east on Flemington Road, providing connections through to the CBD and the northwest.

Flemington Road to the east and Macaulay Road to the south provide access to the metropolitan bus network in compliment to the above train services.

In addition to the public transport above, the site has good access to cycling routes, with the Moonee Ponds Creek Trail to the site's west providing excellent north-south connectivity, and various on-road routes including Macaulay Road and Flemington Road, providing further cycling connectivity.

Figure 7 TravelSmart Map



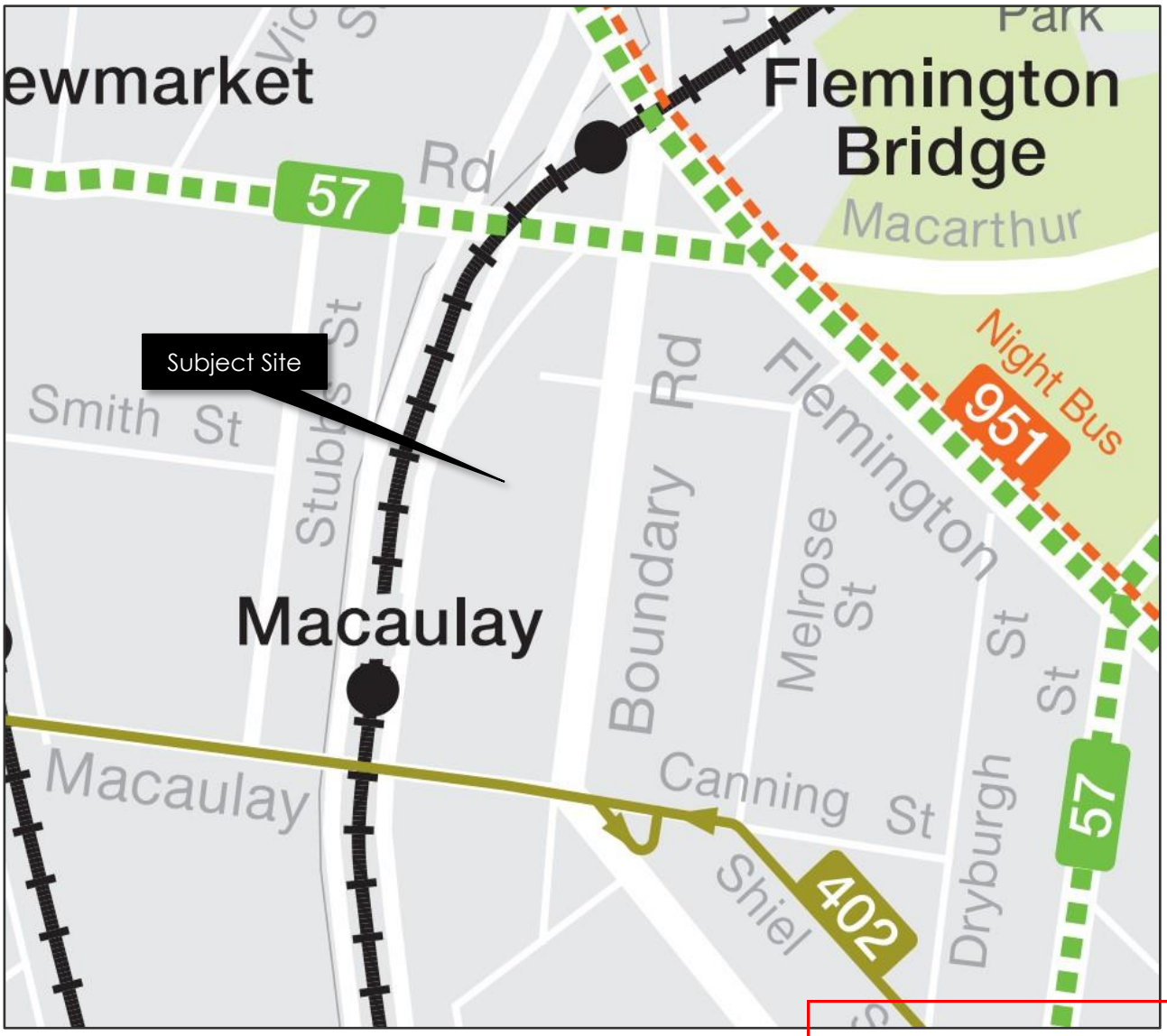
2.4.2 Public Transport

The full public transport provision in the vicinity of the site is shown in Figure 8 and detailed in Table 1 below.

Table 1 Public Transport Provision

Mode	Route No	Route Description	Nearest Stop/Station
Train		Upfield Line	Macaulay
Tram	57	West Maribyrnong - Flinders Street Station, City	Racecourse Road
	59	Airport West - Flinders Street Station, City	Flemington Road
Bus	402	Footscray Station - East Melbourne via North Melbourne	Macaulay Road
	951	Night Bus - City - - Glenroy	Flemington Road

Figure 8 Public Transport Provision



2.5 Walkability

Walkability is a measure of how friendly an area is to walking. Walkability has many health, environmental, and economic benefits. Factors influencing walkability include the presence or absence and quality of footpaths or other pedestrian rights-of-way, traffic and road conditions, land use patterns, building accessibility, and safety.

The site has a Walk Score rating of 84/100 and is very walkable, with most errands able to be accomplished on foot.

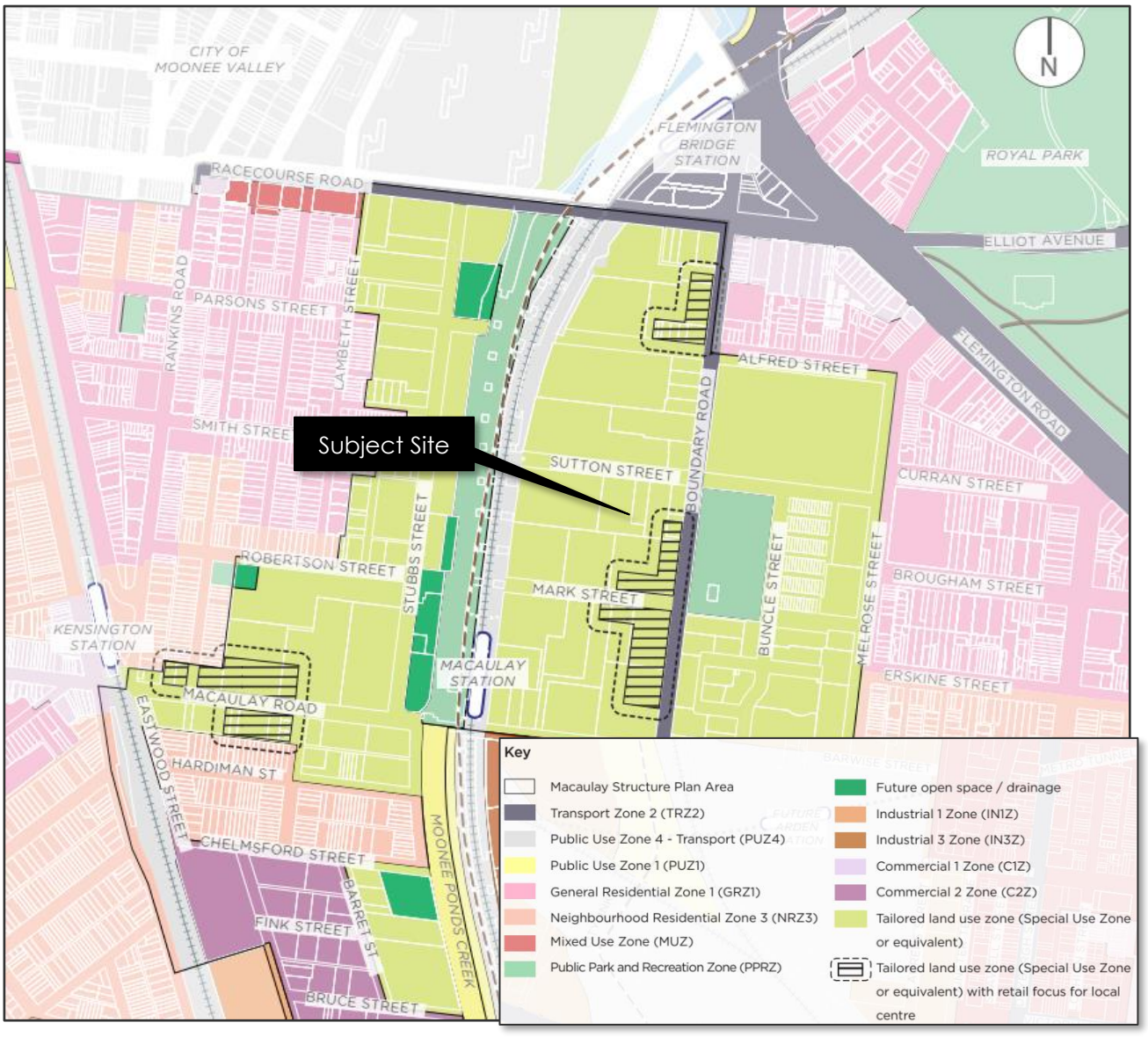
2.6 Macaulay Structure Plan (2021)

The site is located within the Macaulay Structure Plan area, for which an extract of the Structure Plan 'proposed land use zoning in Macaulay' is shown in Figure 9. The Macaulay Structure Plan considers strategies to stage the urban renewal across the Macaulay precinct.

As can be seen below, the site is in a precinct earmarked for mixed-use activities, to be facilitated via the use of a Special Use Zone. A network of laneways are identified surrounding the site, which are to "maximise permeability and pedestrian movement".

Furthermore, Boundary Road to the east and north, and Macaulay Road to the southwest of the site are planned to become local centres.

Figure 9 Macaulay Land Use Strategy



One key objective (Objective 12) of the plan identifies a desire to "Improve car parking requirements to support a less car dependent transport system".

This will be undertaken by removing and controlling on-street parking and by replacing minimum parking provision requirements with maximum provision requirements in new developments, to assist with encouraging walking, bike riding and use of public transport while minimising motor vehicle dependency.

3 DEVELOPMENT PROPOSAL

3.1 General

It is proposed to develop the site for the purposes of a mixed-use development, comprising apartments, a food and drink premises, a commercial tenancy and a coworking space and communal amenities.

The development schedule for the proposed mixed-use development is shown below in Table 2.

Table 2 Proposed Development

Use	*Component*	*No./Area*
Dwellings	1-Bedroom Apartment	93
	2-Bedroom Apartment	123
	3-Bedroom Apartment	11
	Total	**227**
Shop	Commercial	128 m²
Food and Drink Premises	Micro Cafe	28 m²
Office	Coworking Space	144 m²

Communal amenities proposed include a games room, cinema and various open space areas. These will be accessible only to residents of the development, and are ancillary to the primary use.

3.2 Access

The site is proposed to provide a number of access points across the site. Vehicle access to the parking area and basement will be provided by a crossover to Sutton Street, located in the northeast corner of the site. The accessway will allow for two-way vehicle movements and have a footpath running adjacent.

It is proposed to provide a laneway along the western and southern boundaries to provide for pedestrian and cyclist connectivity as indicated as part of the Macaulay Structure Plan. The laneways will connect to surrounding development in the future, providing increased permeability in the area.

Pedestrian access to the site will primarily be provided from the lobby access from the laneway at the Sutton Street frontage. Access to the food and drink premises will also be provided from the laneway. An additional entrance for residents will be located at the southwest corner of the building.

Cyclist access will be facilitated primarily through the southern lobby access via the laneway with cyclists also able to access the parking compound through the car parking area.

3.3 Parking

3.3.1 Bicycle Parking

A total of 208 bicycle parking spaces are proposed across the development with 188 spaces located in secure bike store on the ground floor and 20 spaces at horizontal rails along the north-south laneway and Sutton Street frontage. Resident, staff and residential visitor parking can be accommodated within the proposed ground floor bicycle store.

A total of 119 bicycle spaces are proposed at horizontal on-ground bicycle racks including 99 within the bicycle storage area and 20 spaces along the laneway and Sutton Street frontages.

3.3.2 Car Parking

Car parking is proposed across two basement levels and a portion of the ground level containing spaces for 194 cars, including one accessible space. It is proposed to allocate these spaces as shown in Table 3.

Table 3 Car Parking Allocations

Use	*Component*	*Allocation*
Dwellings	1-Bedroom Apartment	47
	2-Bedroom Apartment	123
	3-Bedroom Apartment	22
Shop	Commercial	1
Food and Drink Premises	Micro café	1
Office	Coworking Space	0
Total		**194**

The commercial tenancy and micro café will each be allocated an accessible space for use. As less than 6 parking spaces are allocated to each tenancy, the accessible bays are not required to be line marked as such, so as not to restrict their use.

3.4 Waste Collection

Waste collection will be undertaken on-site, with a mini rear-lift collection vehicle entering from Sutton Street and circulating through to the bin storage areas on Basement Level 1.

Further details of waste management are provided in the **one**mile**grid** Waste Management Plan.

4 DESIGN ASSESSMENT

4.1 Melbourne Planning Scheme – Clause 52.06

onemile**grid** has undertaken an assessment of the car parking layout and access for the proposed development with due consideration of the Design Standards detailed within Clause 52.06-9 of the Planning Scheme. A review of those relevant Design Standards is provided in the following section.

4.1.1 Design Standard 1 – Accessways

A summary of the assessment for Design Standard 1 is provided in Table 4.

Table 4 Clause 52.06-9 Design Assessment – Design Standard 1

Requirement	*Comments*
Be at least 3 metres wide	Satisfied – Minimum width of 5.5 metres
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied – At least 4.2 metres wide
Allow vehicles parked in the last space of a dead-end accessway in public car parks to exit in a forward direction with one manoeuvre	N/A – Private car park
Provide at least 2.1 metres headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8 metres	Satisfied – A minimum height clearance of 2.2 metres is achieved
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	Satisfied – All cars can exit in a forward direction
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	Satisfied – Accessway facilitates two-way movements
Have a corner splay or area at least 50 per cent clear of visual obstructions extending at least 2 metres along the frontage road from the edge of an exit lane and 2.5 metres 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.	Generally satisfied – Adequate sight distance is provided across the adjacent entry lane. Sight distances to the left of the exit lane are partially obstructed by a column. It is proposed to provide the pedestrian gate as 50 percent visually permeable. It is also proposed to provide a convex mirror on the eastern side of the accessway to further assist pedestrian sightlines
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 6 metres from the road carriageway.	N/A – Does not connect to a Transport Zone

Swept path diagrams are provided in Appendix A demonstrating access to and from the site and throughout the basement and parking levels with a B99 design vehicle (99.8th percentile length passenger car).

4.1.2 Design Standard 2 – Car Parking Spaces

In general, standard car spaces have been designed with a length of 5.4 metres, a width of 2.4 metres and are accessed from aisles of no less than 5.8 metres in accordance with the Australian Standard for Off-Street Car Parking AS2890.1 for employee and resident parking. It is noted that Design Standard 2 recommends the use of the Planning Scheme dimensions in preference to the Australian Standard, however, the Australian Standard dimensions still provides for safe and efficient access to car spaces and is considered acceptable.

A number of spaces along the southern wall of basement level 1 and basement level 2 have been provided with dimensions in accordance with Design Standard 2 of the Planning Scheme to allow for wider spaces and a narrower access aisle. Specifically, the spaces to the east are provided with a width of 3 m, length of 4.9 m and an access aisle of at least 5.5 m wide, in excess of the requirements. The spaces to the west are provided with a width of 2.6 m, length of 4.9 m and an access aisle of approximately 6.3 m in general accordance with the requirements.

Spaces adjacent to walls or other obstructions should be provided with clearance of 300mm or suitably widened in accordance with Diagram 1 of Clause 52.06 for Planning Scheme spaces or in accordance with Figure 5.2 of the AS2890.1 for Australian Standard spaces.

Where structural constrains permit, it is recommended that columns are positioned in accordance with the requirements of Clause 52.06 or the Australian Standard to ensure adequate access is provided to each parking space and to allow for door opening to occur.

Adequate height clearance is provided above all car parking spaces.

The accessible spaces are provided with a length of 5.4 metres and a width of 2.4 metres, and an adjacent shared area of the same dimensions, in accordance with the Australian Standard for Off-Street Parking for People with Disabilities AS2890.6. The proposed column within the shared area sits outside of the permitted zone for a bollard/or column to be situated (as identified in Figure 2.3 of AS2890.6:2022) and may require approval from a Building Surveyor. It is further noted that no over-bonnet storage will be permitted within the accessible spaces.

As less than 6 (i.e., no more than 5) car spaces are provided for the proposed commercial uses (which requires the provision of accessible parking), the accessible bay does not need to be designated, so as to restrict the use of the car parking space only for people with a disability.

4.1.3 Design Standard 3 – Gradients

The accessway at the Sutton Street entrance is proposed with a maximum grade of 1:14 within the first 5 metres and therefore does not exceed a grade of 1:10.

The internal basement ramp has a maximum grade of 1:4 and transition lengths have been provided where changes in grade exceed 12.5%.

The ramps and grades proposed are in accordance with Design Standard 3 of the Planning Scheme and are considered acceptable.

4.2 Waste Collection

A bin storage area is provided within Basement Level 1 for residential waste and on the ground level for commercial waste. Council collection will be utilised to collect all waste streams associated with the residential component of the development and a private contractor will be engaged to collect commercial waste.

The basement has been designed to accommodate a mini rear-loader waste collection vehicle. Swept path diagrams are provided in Appendix A demonstrating access to and from the site with the mini rear-loader, and throughout the basement and parking levels.

Refer to the Waste Management Plan for further information.

4.3 Bicycle Parking

Bicycle parking is proposed to be provided in a mixture of vertically mounted and staggered bicycle racks, on-ground horizontal bicycle racks and multi-tier horizontal racks.

The vertical mounted racks have been designed in accordance with the Australian Standards; specifically, they are located at 500 mm centres, with an envelope of 1.2 metres provided for bicycles and a 1.5 metre access aisle.

The horizontal bicycle racks have been designed in accordance with the Australian Standards; specifically, they are provided with 500mm separation between spaces, with an envelope of 1.8 metres provided for bicycles and a 1.5 metre access aisle.

The multi-tier horizontal bicycle racks have been designed with 400 mm separation, providing 800mm between bikes at the same level. Bikes are provided with an envelope of 1.8 metres and a 2 metre access aisle in accordance with the Australian Standard.

In addition, 119 of the 208 bicycle parking spaces proposed have been provided at on-ground horizontal racks exceeding the Australian Standard requirement for 20% of spaces being provided on-ground.

5 LOADING

Clause 65 (Decision Guidelines) of the Melbourne Planning Scheme identifies that "*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.*"

An on-site loading bay has been provided capable of accommodating a 6.4m small rigid vehicle (SRV). Swept paths are provided in Appendix A demonstrating access to the loading bay. It is noted that a clearance height of 3.5 m should be provided for the accommodation of a 6.4m small rigid vehicle (SRV).

The provision for loading is therefore considered appropriate for the proposed use.

6 BICYCLE PARKING

The bicycle parking requirements for the subject site are identified in Clause 52.34 of the Melbourne Planning Scheme, which specifies the following requirements for the different components of the proposed development.

Table 5 Clause 52.34 – Bicycle Parking Requirements

Component	No/Area	Requirement	Total
Dwelling (four or more storeys)	227 dwellings	1 space per 5 dwellings for residents 1 space per 10 dwellings for visitors	45 23
Retail premises (Commercial & Micro Café)	156 m²	1 space per 300m² for employees 1 space per 500m² for visitors	1 0
Office (greater than 1000m²)	144 m²	1 space per 300m² for employees 1 space per 1000m² for visitors	0 0
Total		**Residents** **Employees** **Visitors**	**45** **1** **23**

Based on the above, there is a requirement to provide a total of 69 bicycle parking spaces for the development comprising 45 resident, 1 employee and 23 visitor spaces.

Furthermore, where 5 or more employee bicycle spaces are provided, employee facilities are required in accordance with Clause 52.34 of the Melbourne Planning Scheme, as identified below.

Table 6 Clause 52.34 – Bicycle Facility Requirements

Facility	Employee Bicycle Spaces	Requirement	Total
Showers	1 spaces	1 shower for the first 5 employee bicycle spaces; plus 1 to each 10 employee bicycle spaces thereafter	0

Showers must have access to a communal change room, or combined shower and change room

As only one staff space is required, additional facilities are not required.

It is proposed to provide 188 spaces in a secure bicycle store on the ground floor for resident, employee and residential visitor use. It is considered appropriate for visitor bicycle parking to be provided within these areas, as residents will simply allow the visitor access to the basement or ground-floor parking areas as required.

Additionally, a total of 20 spaces at on-ground hoops for use by visitors will be provided along the laneway.

Considering the above, the proposed provision of resident, employee and visitor bicycle parking exceeds the requirements of the Planning Scheme, and is therefore considered appropriate.

7 CAR PARKING

7.1 Statutory Car Parking Requirements

7.1.1 Car Parking Requirements – Clause 52.06

The car parking requirements for the subject site are identified in Clause 52.06 of the Melbourne Planning Scheme. In this regard, Clause 52.06 also identifies that where any part of the land is identified as being within the Principal Public Transport Network Area, the Column B car parking rates apply to the proposed development. As shown in Figure 4, the site is located within the Principal Public Transport Network Area, and therefore, the Column B rates apply, as shown below.

Table 7 Clause 52.06 – Car Parking Requirements

Use	*No/Area*	*Rate*	*Car Parking Measure*	*Total*
Dwelling	216	1	to each one or two bedroom dwelling, plus	216
	11	2	to each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms), plus	22
	227	0	for visitors to every 5 dwellings for developments of 5 or more dwellings	0
Food and drink premises	28 m²	3.5	to each 100m² of leasable floor area	0
Shop	128 m²	3.5	to each 100m² of leasable floor area	4
Office	144 m²	3	to each 100m² of net floor area	4
Total				**246**

Based on the above calculations, a total of 246 parking spaces are required for the proposed development, comprising 238 spaces for the dwellings, 4 spaces for the commercial tenancies and 4 spaces for the coworking office space.

7.1.2 Proposed Car Parking Provision

It is proposed to provide one car parking space for the commercial tenancy and one space for the food and drinks premises.

Zero car parking is to be provided for the Coworking Space (office).

With regard to the residential component, it is proposed to provide a total of 192 car parking spaces, fully satisfying the requirements for 2- and 3-bedroom apartments. The proposed provision of 47 spaces to 1-bedroomon apartments equates to a shortfall of 46 spaces when compared to the Planning Scheme requirements.

The proposal thus seeks a waiver of 53 total parking spaces, comprising 46 spaces for residents, 3 spaces for the commercial tenancy and 4 spaces for the Coworking Space.

In this regard, Clause 52.06-7 of the Melbourne Planning Scheme indicates that an application to reduce (including reduce to zero) the requirement for car spaces must be accompanied by a Car Parking Demand Assessment. The Assessment must assess the car parking demand likely to be generated by the proposed development, having consideration to:

- 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 end of trip 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 or case study.

An assessment of the likely parking demands is set out below.

7.2 Car Parking Demand Assessment

7.2.1 Residential

With parking provision for the 2- and 3-bedroom apartments, and the commercial component of the use provided in accordance with Clause 52.06, our Car Parking Demand Assessment will be limited to 1-bedroom apartments only.

In order to establish the likely parking demands generated, car ownership data from the 2016 Census for the City of Melbourne was sourced from the Australian Bureau of Statistics (ABS).

The ABS data was assessed to determine the proportion of comparable dwellings in North Melbourne where residents do not own or otherwise have the need to park a vehicle at their place of residence. The data identifies that residents of 62.8% of one-bedroom apartments, units or flats do not own or otherwise park a vehicle at their place of residence.

Application of this rate to the proposed 93 1-bedroom apartments indicates that there would be a demand for only 35 car parking spaces. Considering the location of the site is in close proximity to two future activity centres, local amenities and public transport, it is expected that rates drawn from the Census are suitable for the subject site.

It is expected that the proposed provision of 47 parking spaces for the 1-bedroom apartments will readily satisfy the expected demand for 35 parking spaces.

7.2.2 Coworking Space

Noting the small size of the use, and its proximity to a future catchment of significant residential development, it is expected that the use will primarily service the needs of residents within the precinct. Additionally, it is expected that the majority of workers would walk or cycle to the site rather than drive and park on-street or on-site.

Furthermore, demand for long-term parking is largely driven by the supply of parking, with workers unlikely to drive to the site if they know that long-term car parking is not available on-site or on-street.

With no parking proposed to be allocated for the use, and limited unrestricted parking available in the precinct, it is not anticipated the Coworking Space will generate any material demand for car parking.

This approach is also supported within the Macaulay Structure Plan, which speaks to eliminating minimum parking provisions for new developments in order to support use of active and sustainable transport modes.

7.2.3 Food and Drink Premises

With respect to the ground floor food and drink premises, it is anticipated that the bulk of patronage will be generated by the upper levels, residents in the area and from other nearby uses. As a result, parking demands are expected to only be attributable to staff.

It is typically adopted that food and drink premises uses generate staffing parking demands at approximately 1 space per 100 m² of floor area, and on this basis a staff demand of up to 1 parking space can be expected.

7.2.4 Commercial Tenancy

With respect to the ground floor commercial tenancy, it is anticipated that the bulk of patronage will be generated by the residents of the upper levels, residents in the area and from other nearby uses. As a result, parking demands are expected to be minimal, and likely attributable to staff only.

While the ultimate use of this space is unknown, we expect staffing parking demands at approximately 1 space per 100 m² of floor area, and on this basis a staff demand of up to 1 parking space can be expected.

7.2.5 Anticipated Parking Demands

Based on the above assessment, it is expected that the development will generate a total parking demand of 182 spaces, with the proposed allocation shown in Table 8.

Table 8 Car Parking Allocations

Use	*Component*	*Demand*	*Allocation*	*Surplus*
Dwellings	1-Bedroom Apartment	35	47	+12
	2-Bedroom Apartment	123	123	-
	3-Bedroom Apartment	22	22	-
Shop	Commercial	1	1	-
Food and Drink Premises	Micro café	1	1	-
Office	Coworking Space	-	0	-
Total		**182**	**194**	**+12**

The provision of car parking is therefore considered to be appropriate to satisfy the parking demands generated by the development.

8 TRAFFIC

8.1 Traffic Generation

8.1.1 Residential

Surveys undertaken by other traffic engineering firms at residential dwellings have shown that the daily traffic generation rates vary depending on the size, location and type of the dwelling, the parking provision and proximity to local facilities and public transport.

Medium to high density dwellings in inner areas generate traffic with rates between 3.0 and 6.0 movements per dwelling. Considering the location of the subject site and moreover the excellent access to public transport, it is expected that generation rates will be towards the lower end of the range. Nevertheless, for the purposes of this assessment a daily rate of in the order of 5.0 movements per day per dwelling will be adopted with 10% occurring during the peak hours.

Application of the above rates indicates that the 181 dwellings with car parking will generate 905 movements per day, inclusive of approximately 91 vehicle movements during each of the morning and afternoon peak hours.

During the morning peak, it is estimated that 80% of the residential traffic will be outbound, while during the afternoon peak, 60% of the residential traffic will be inbound.

It is therefore anticipated that the 91 projected vehicle movements will comprise 18 arrival and 73 departures during the AM peak and 55 arrivals and 36 departures during the PM peak.

8.1.2 Commercial Tenancies

With regard to the commercial spaces, it is anticipated that each allocated parking space may generate one inbound trip during the AM peak period, and one outbound trip during the PM peak period, equivalent to two vehicle trips per hour in each peak.

8.1.3 Total

Based on the above expected traffic generation for each use, the anticipated traffic generated by the proposed development is shown in Table 9.

Table 9 Anticipated Traffic Generation

Period	*Inbound*	*Outbound*	*Total*
AM Peak	20	73	93
PM Peak	55	38	93

8.2 Traffic Impact

All traffic generated by the use will be distributed via Sutton Street to Boundary Road.

The majority of traffic generated is anticipated to be generated to and from the north to access Racecourse Road, Citylink and Flemington Road, with the remainder of traffic generated to the south via Boundary Road or east via Sutton Street.

When considering the split of inbound and outbound vehicles, and further distributions to the left and right on Boundary Road, the additional traffic generated to each individual movement will be

relatively low, less than one additional movement each minute, is not expected to have a significant impact on the surrounding road network.

The proposed access arrangements and traffic generation are therefore considered acceptable.

It is noted that the Macaulay Structure Plan identifies objectives for providing additional laneway connections in the precinct, in order to maximise permeability and pedestrian movement.

The proposed development provides for a north-south aligned laneway, and a setback from the southern boundary to facilitate an east-west aligned laneway. The proposed north-south aligned laneway will be accessible to pedestrians and cyclists only, while the east-west aligned laneway may accommodate a shared zone for vehicles depending on the future redevelopment of neighbouring sites.

Having regard to the relatively low levels of traffic generated by the development, and noting that the Sutton Street / Boundary Road intersection is specifically designed (with turn lanes, parking restrictions, and suitable splays) to cater for significant traffic volumes, it is our view that there will not be any appreciable benefits in locating the site's vehicular access from the laneway network.

Further, there is no guarantee that the extended laneway network will necessarily be completed, with the eastern and southern connections contingent on redevelopment of neighbouring sites.

It is our view that providing a network of laneways prioritising pedestrian and cyclist use will be more closely aligned with the Structure Plan objectives.

9 CONCLUSIONS

It is proposed to develop the subject site for the purposes of a mixed-use development comprising 227 dwellings, a commercial tenancy, a food and drink premises and a coworking office space, with car parking provided across two basement levels and a ground level.

Considering the analysis presented above, it is concluded that:

- The proposed car parking and access design is considered appropriate;
- The proposed resident, employee and visitor bicycle parking design is considered appropriate;
- The proposed provision of resident and visitor bicycle parking exceeds the requirements of the Planning Scheme, and is therefore considered appropriate;
- The proposed supply of car parking is appropriate for the proposed development;
- The proposed development is not expected to have a significant impact on the surrounding road network; and
- There are no traffic engineering reasons which should preclude a permit from being issued for this proposal.

Appendix A Swept Path Diagrams

ADVERTISED
PLAN

N

SUTTON STREET

COMMERCIAL
128 m²

CINEMA

GAMES ROOM
84 m²

UP

Mini Loader (V)
onemilegrid

6.41
0.98
3.40

WASTE MINI LOADER meters

Width	: 1.85
Track	: 1.85
Lock to Lock Time	: 4.0
Steering Angle	: 33.6

LEGEND

– – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED

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Date Plotted: 11-09-2024 8:23:55 AM

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Phone (03) 9939 8250

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - G
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Scale 1:200 @ A3 (0 1 2 4)

Project Number	Drawing Number	Revision
200032	SPA100	K

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Aerial Photography
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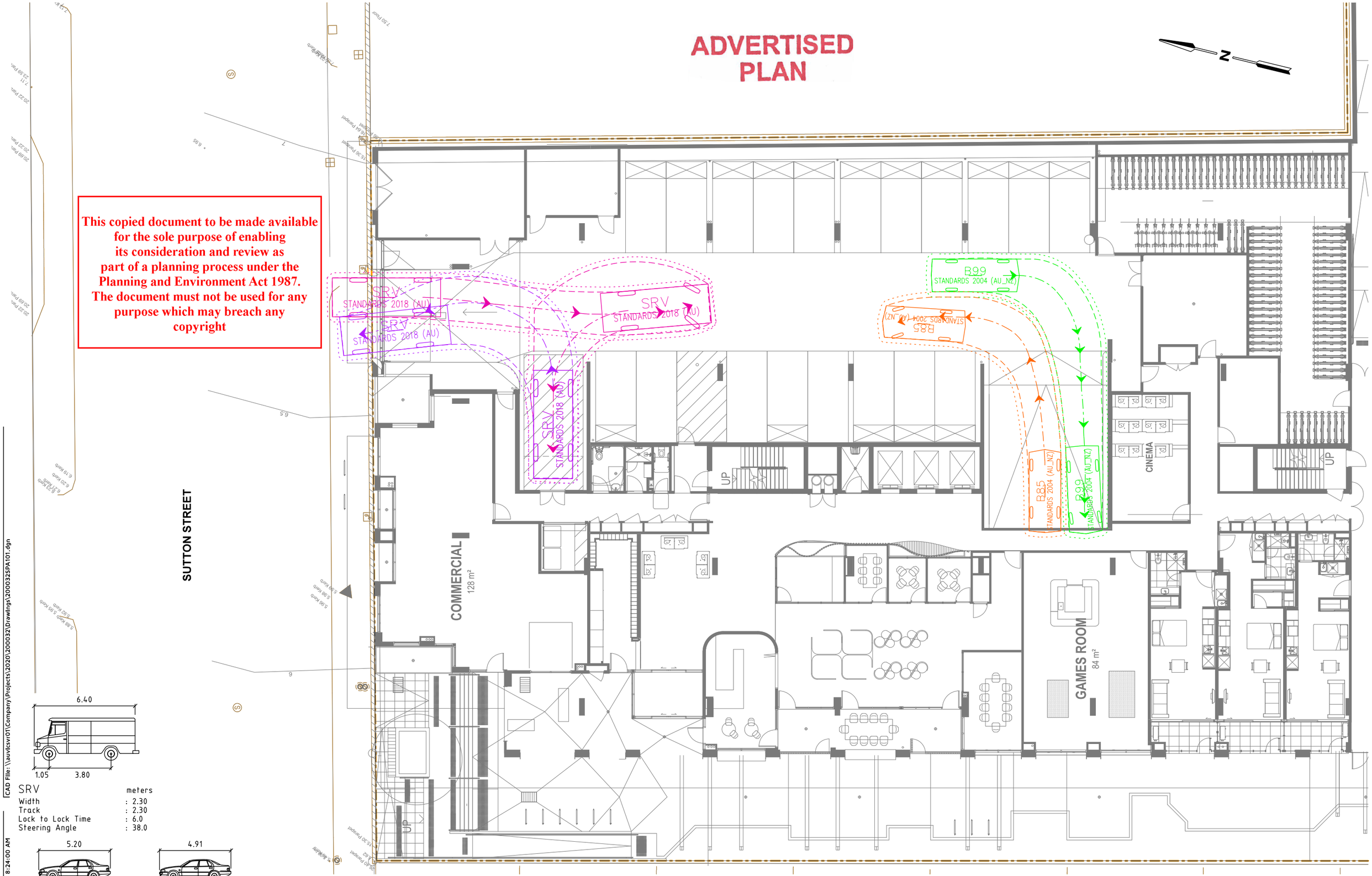

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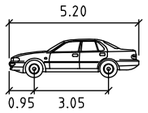
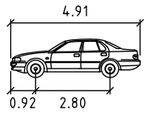
Steering Angle	: 38.0





B99	meters	B85	meters
Width	: 1.94	Width	: 1.87
Track	: 1.84	Track	: 1.77
Lock to Lock Time	: 6.0	Lock to Lock Time	: 6.0
Steering Angle	: 33.9	Steering Angle	: 34.1

LEGEND

– – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED

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Wurundjeri Woiworung Country
56 Down Street, Collingwood, VIC 3066
Email:Info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale
1:200 @ A3
0 1 2 4

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - G
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA101	K

CAD File: \\auvtcsvr01\Company\Projects\2020\200032\Drawings\200032SPA101.dgn
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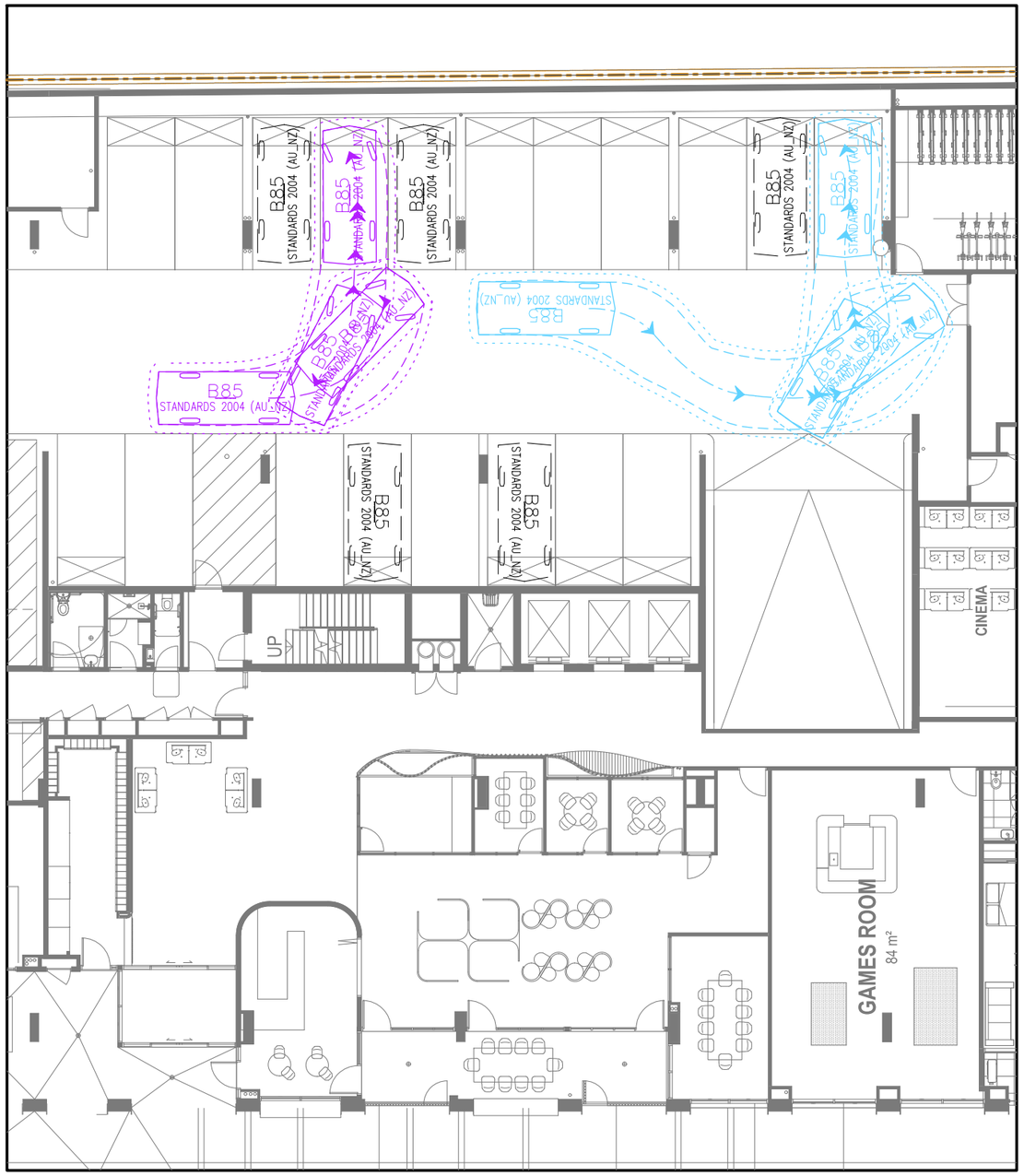

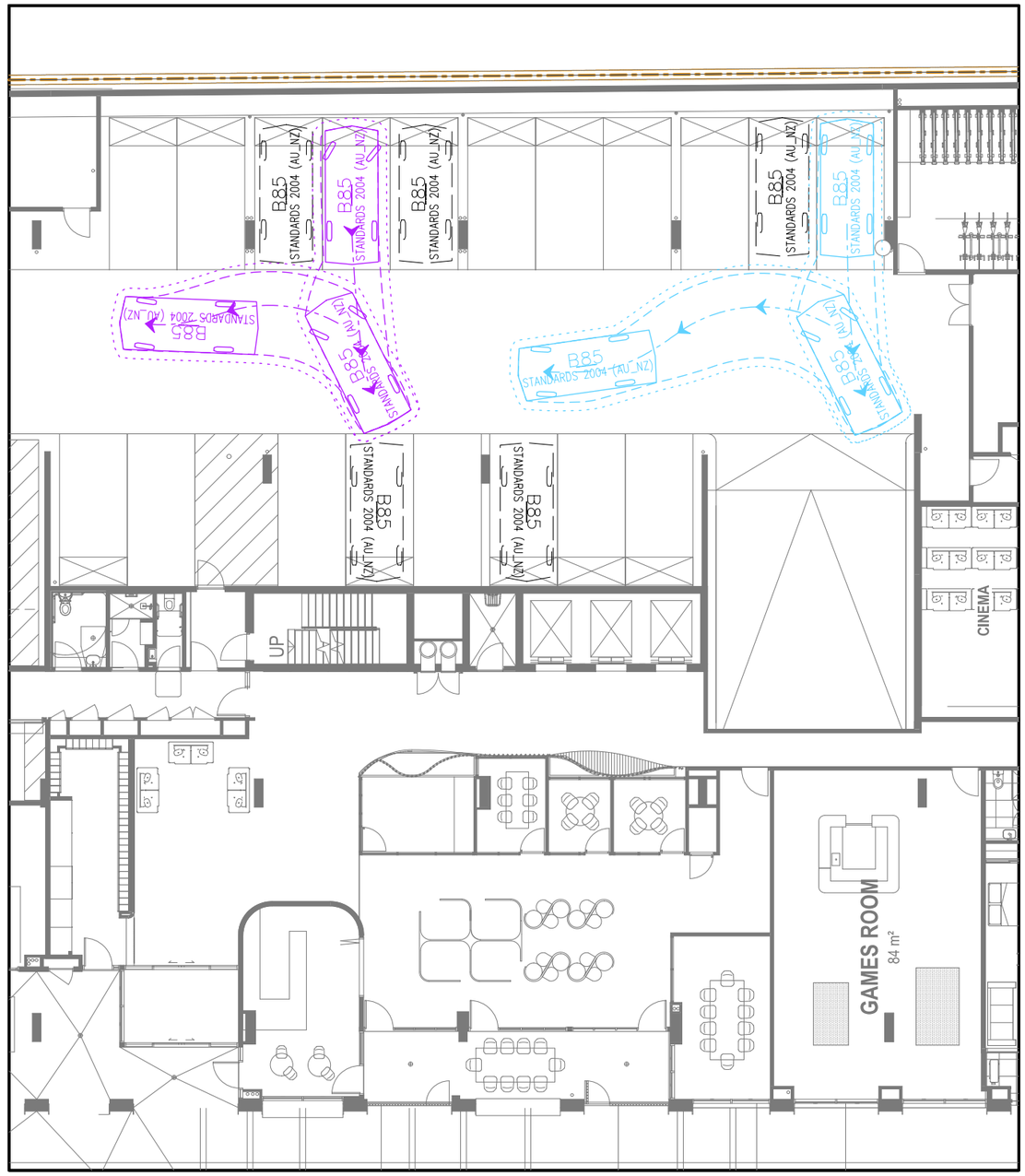

ENTRY MANOEUVRES

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--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED

EXIT MANOEUVRES

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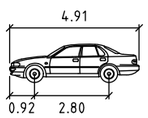
--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED



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Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

CAD File: \\avvlcsvr01\Company\Projects\2020\200032\Drawings\2000325PA102.dgn
Date Plotted: 11-09-2024 8:24:04 AM

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Email:Info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale
1:200 @ A3
0 1 2 4

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - G
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA102	K

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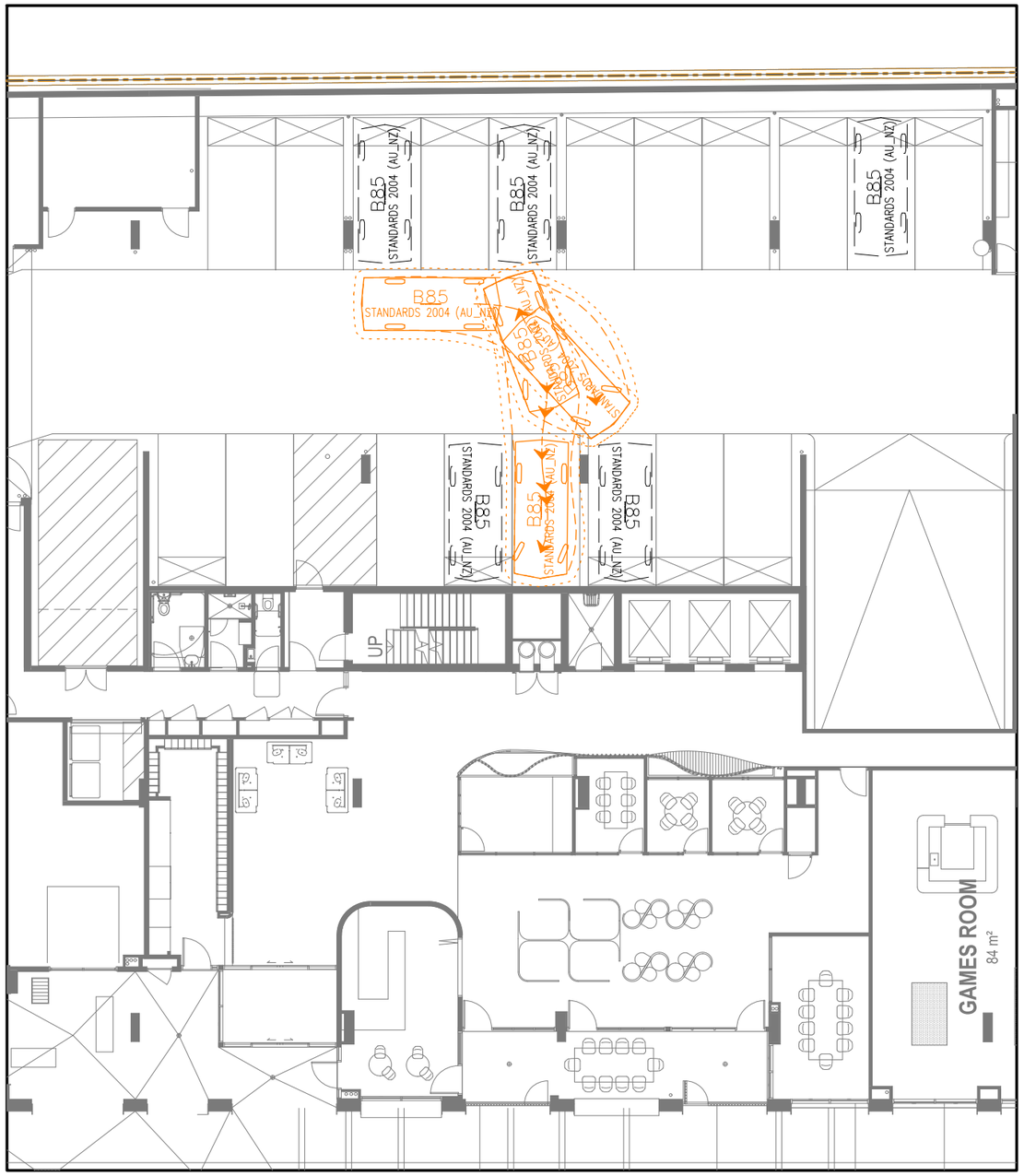

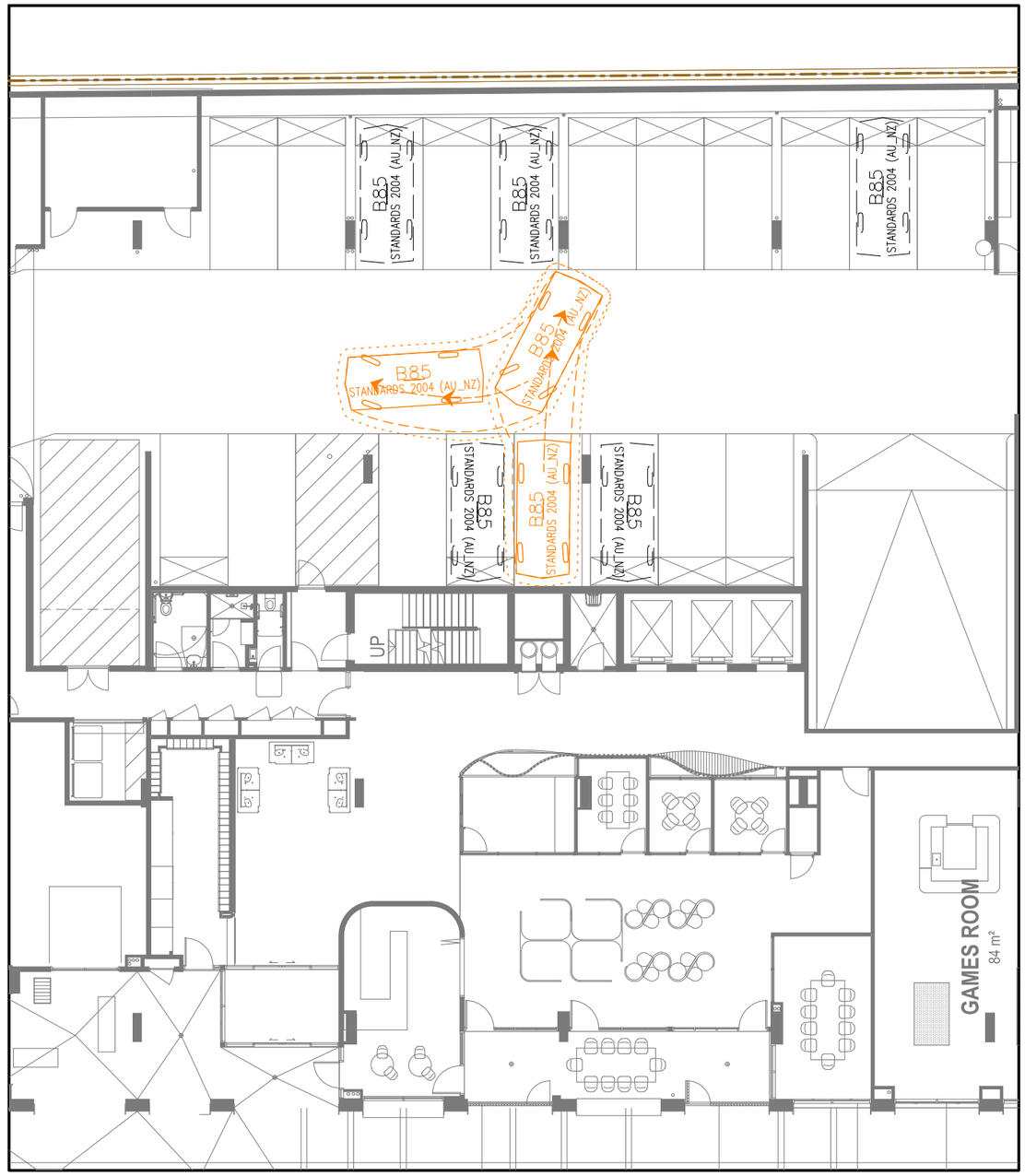

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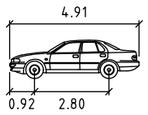
--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED

EXIT MANOEUVRES

– – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
--------- 300mm CLEARANCE ENVELOPE SHOWN DOTTED



B85	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

CAD File: \\auvlcsvr01\Company\Projects\2020\200032\Drawings\2000325PA103.dgn
Date Plotted: 11-09-2024 8:24:07 AM

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Wurundjeri Woiworung Country
56 Down Street, Collingwood, VIC 3066
Email:info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale
1:200 @ A3
0 1 2 4

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - G
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA103	K

ADVERTISED PLAN

N

SUTTON STREET

COMMERCIAL
128 m²

GAMES ROOM
84 m²

CINEMA

UP

Mini Loader
onemilegrid

2.0

6.41
0.98 3.40

WASTE MINI LOADER meters

Width	: 1.85
Track	: 1.85
Lock to Lock Time	: 4.0
Steering Angle	: 33.6

LEGEND

– – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
- - - - - - - - - 300mm CLEARANCE ENVELOPE SHOWN DOTTED

onemilegrid
Wurundjeri Woiworung Country
56 Down Street, Collingwood, VIC 3066
Email:Info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

Scale 1:200 @ A3 (0 1 2 4)

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - G
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA104	K

CAD File: \\auvlcsvr01\Company\Projects\2020\200032\Drawings\200325PA104.dgn

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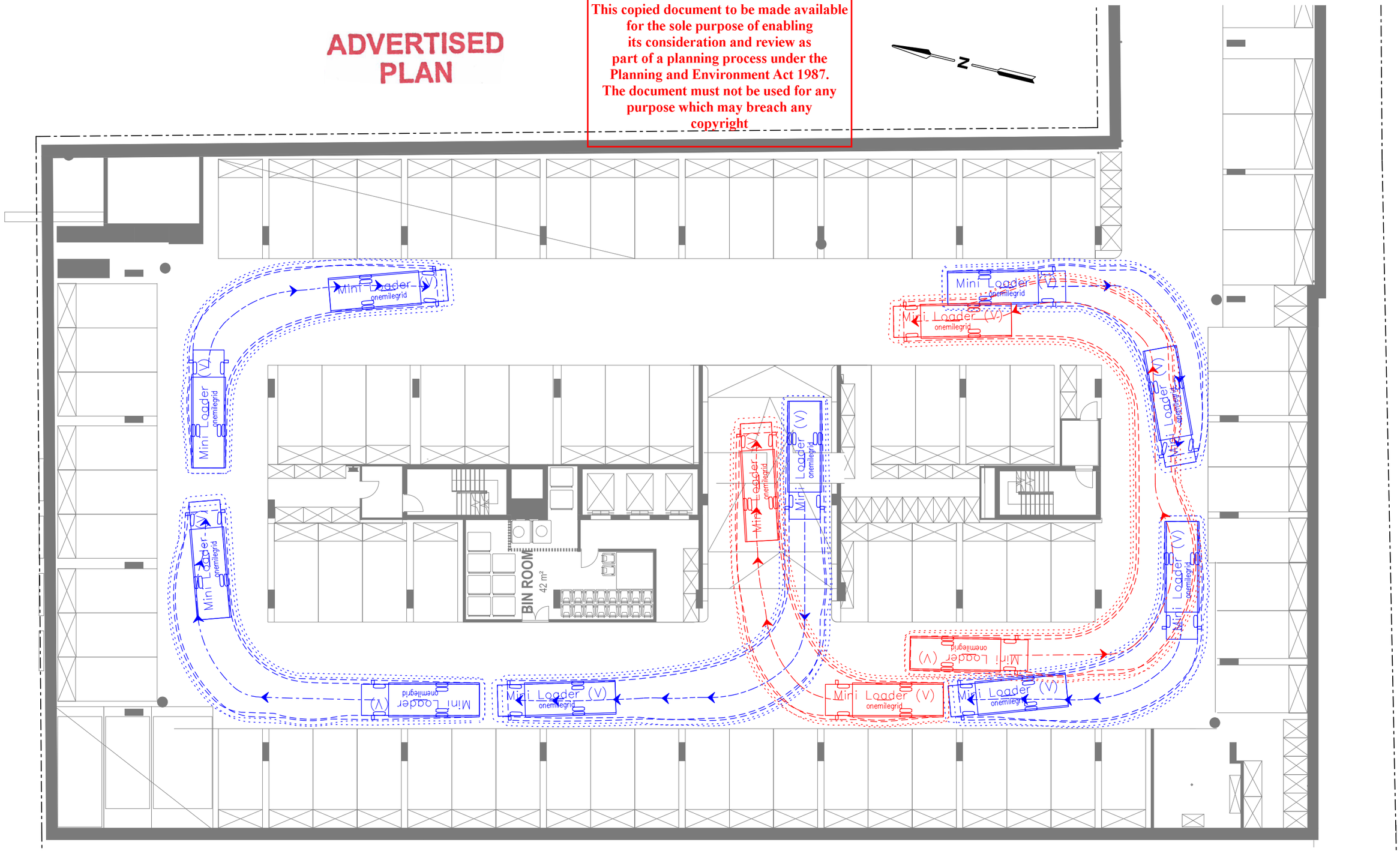

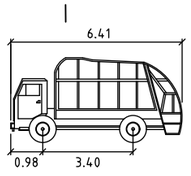

WASTE MINI LOADER meters

Width	: 1.85
Track	: 1.85
Lock to Lock Time	: 4.0
Steering Angle	: 33.6

LEGEND

- – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
- ·· ·· ·· 300mm CLEARANCE ENVELOPE SHOWN DOTTED

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Wurundjeri Woiworung Country
56 Down Street, Collingwood, VIC 3066
Email:info@onemilegrid.com.au Web:www.onemilegrid.com.au
Phone (03) 9939 8250

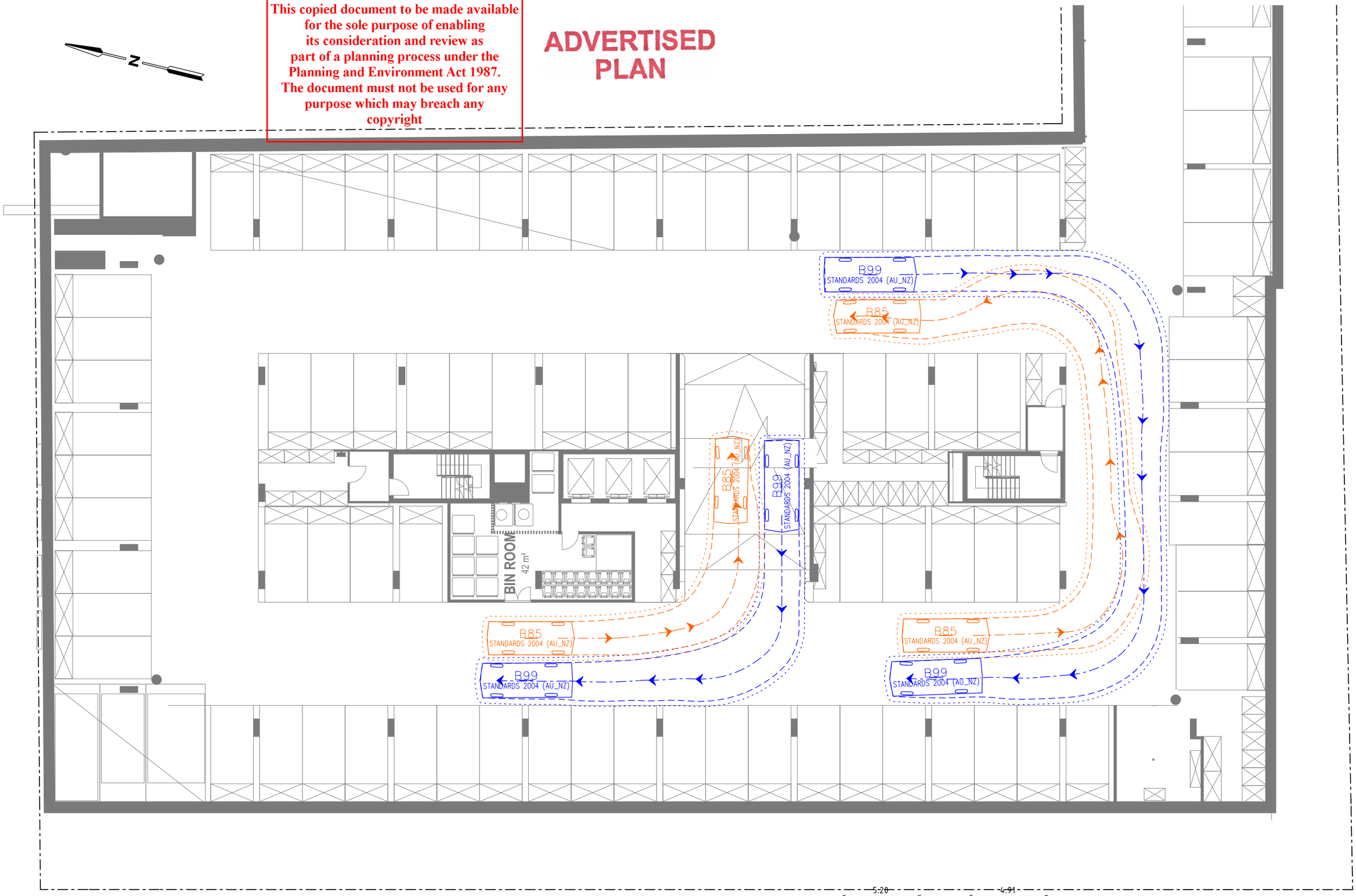
Scale 1:200 @ A3 (0 1 2 4)

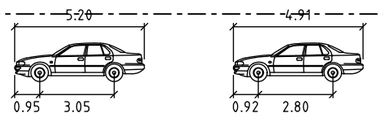
Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - B1
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA200	K

ADVERTISED
PLAN





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Width	: 1.94	Width	: 1.87
Track	: 1.84	Track	: 1.77
Lock to Lock Time	: 6.0	Lock to Lock Time	: 6.0
Steering Angle	: 33.9	Steering Angle	: 34.1

LEGEND

– – – – – DESIGN VEHICLE SWEPT PATHS SHOWN DASHED
- - - - - - - - 300mm CLEARANCE ENVELOPE SHOWN DOTTED

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Email:info@onemilegrid.com.au Web:www.onemilegrid.com.au
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Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - B1
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA201	K

CAD File: \\auvicsvr01\Company\Projects\2020\200032\Drawings\200032SPA201.dgn
Date Plotted: 11-09-2024 08:36:51

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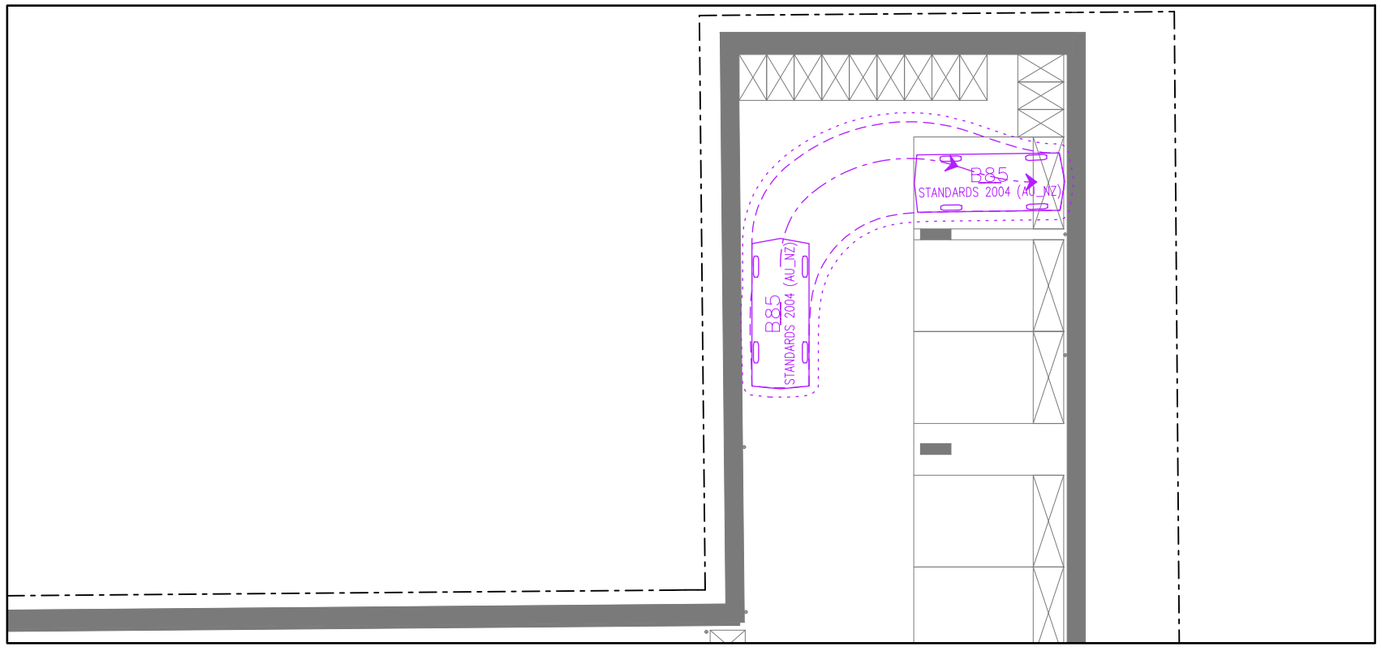

ENTRY MANOEUVRES

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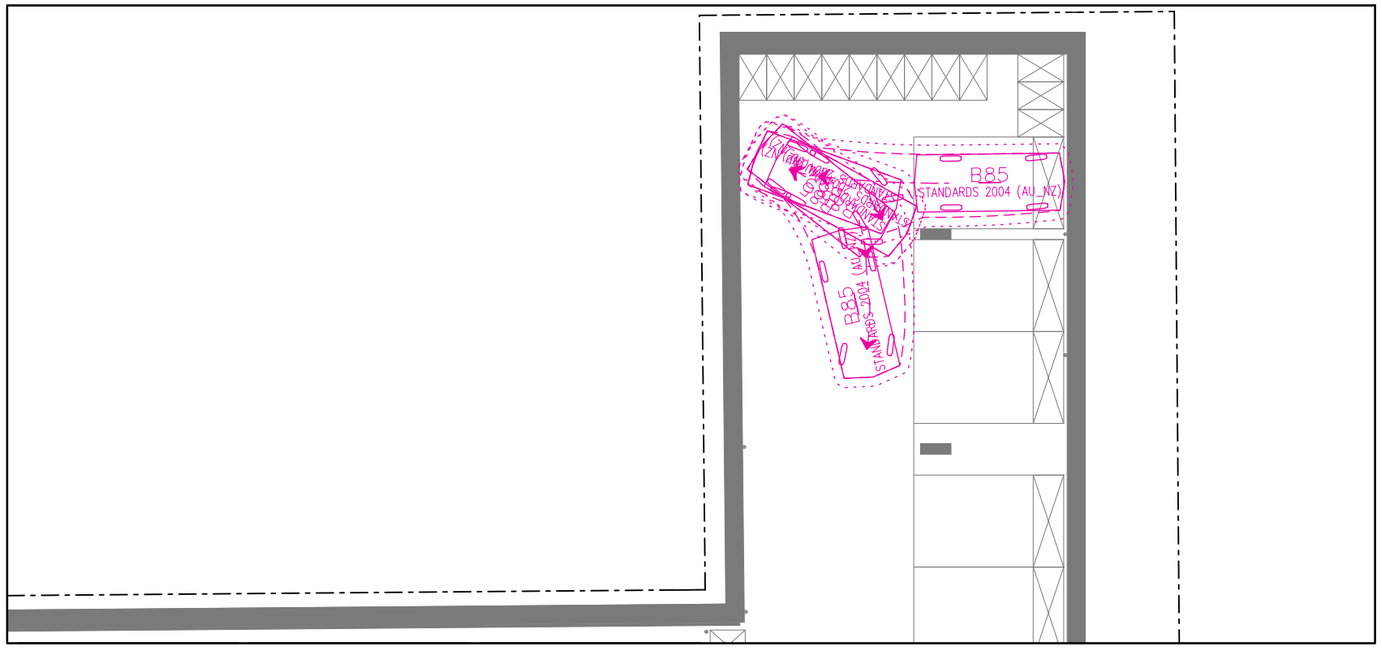
..... 300mm CLEARANCE ENVELOPE SHOWN DOTTED



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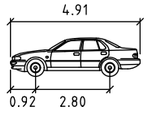
..... 300mm CLEARANCE ENVELOPE SHOWN DOTTED



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Lock to Lock Time	: 6.0
Steering Angle	: 34.1

CAD File: \\auvlcsvr01\Company\Projects\2020\200032\Drawings\200325PA202.dgn

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56 Down Street, Collingwood, VIC 3066
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Phone (03) 9939 8250

Scale
1:200 @ A3
0 1 2 4

Drawing Title
77-83 SUTTON STREET NORTH MELBOURNE
SITE VEHICLE ACCESS - B1
SWEPT PATH ANALYSIS

Designed	Approved	Melway Ref
JPB	AG	43 B2

Project Number	Drawing Number	Revision
200032	SPA202	K