

ADVERTISED COPY

409 Clayton Road, Clayton

Transport Impact Assessment



200170TIA003A-F

8 August 2023

onemilegrid

ABN: 79 168 115 679

(03) 9939 8250
56 Down Street

COLLINGWOOD, VIC 3066

www.onemilegrid.com.au

DOCUMENT INFORMATION

Prepared for	Tango Projects Pty Ltd	Report Date	8 August 2023
File Name	200170TIA003A-F	Reviewed by	VG
Prepared by	MK	Signature	
Signature		Signature	

© One Mile Grid Pty Ltd. This document has been prepared by **onemilegrid** for the sole use and benefit of the client as per the terms of engagement. It may not be modified or altered, copied, reproduced, sold or transferred in whole or in part in any format to any person other than by agreement. **onemilegrid** does not assume responsibility or liability to any third party arising out of use or misuse of this document.

EXECUTIVE SUMMARY

It is proposed to develop the site for a mixed use, comprising, retail, commercial and residential uses. The development includes car parking across multiple levels and a generous bicycle parking provision.

The traffic and transport assessment of the development indicates that sufficient bicycle and car parking is provided on-site to meet the needs of the development, with an appropriate design outcome in relation to access, loading and parking.

Six development principals have been devised in order to guide the direction of the proposed development at 409 Clayton Road, Clayton, as listed below.

- Principal 1 – The 10 Minute Community;
- Principal 2 – Employment;
- Principal 3 – Diversity & Affordability;
- Principal 4 – Sustainability;
- Principal 5 – Health, Wellbeing & Security; and
- Principal 6 – Architectural Leadership.

This Transport Impact Assessment outlines a number of the measures which address Principal 1 – The 10 Minute Community, which seeks to provide substantial new housing with immediate access to employment opportunities, public transport and existing local services, all within 10 minutes of the home and office. In this regard, the location of the site is within close proximity to numerous goods and services, is afforded excellent access to public transport as well as large employment precincts such as Monash Hospital and Monash University.

CONTENTS

EXECUTIVE SUMMARY	3
1 INTRODUCTION.....	6
2 EXISTING CONDITIONS	6
2.1 Site Location	6
2.2 Planning Zones and Overlays.....	8
2.3 Road Network.....	9
2.3.1 Clayton Road	9
2.3.2 Centre Road.....	10
2.4 Sustainable Transport	11
2.4.1 Public Transport	11
2.4.2 Bicycle Facilities	13
2.5 Walkability	13
2.5.1 Pedestrian Accessibility	14
3 DEVELOPMENT PROPOSAL.....	15
3.1 General	15
3.2 Car Parking and Vehicular Access	15
3.3 Bicycle Parking	16
3.4 Waste Collection.....	16
4 DESIGN ASSESSMENT	17
4.1 Monash Planning Scheme – Clause 52.06.....	17
4.1.1 Design Standard 1 – Accessways	17
4.1.2 Design Standard 2 – Car Parking Spaces	18
4.1.3 Design Standard 3 – Gradients	18
4.2 Podium Circulation	18
4.3 Waste Collection.....	19
4.4 Bicycle Parking	19
4.5 Clause 52.29 – Land Adjacent to a Transport Zone	19
5 LOADING	20
6 BICYCLE PARKING	20
7 CAR PARKING	21
7.1 Statutory Car Parking Requirements.....	21
7.1.1 Car Parking Requirements – Clause 52.06	21
7.1.2 Proposed Car Parking Provision	21
7.2 Car Parking Demand Assessment	22
7.2.1 Residential	22
7.2.2 Shop	22
7.2.3 Office	23
7.3 Review of Car Parking Provision.....	23
7.3.1 On-Street Parking Restrictions.....	23
7.3.2 Alternative Modes of Transport	24
7.3.3 Adequacy of Car Parking Provision	24
7.4 Accessible Car Parking.....	24
8 TRAFFIC.....	25
8.1 Traffic Generation	25
8.1.1 Residential	25
8.1.2 Office	25
8.1.3 Retail.....	26
8.1.4 Anticipated Traffic Generation.....	26
8.1.5 Previous Use - Service Station	26
8.1.6 Net Change	27
8.2 Traffic Impact	27
9 CONCLUSIONS.....	28

TABLES

Table 1	Public Transport Provision	11
Table 2	Site Facilities.....	14
Table 3	Proposed Development	15
Table 4	Proposed Car Parking	15
Table 5	Clause 52.06-9 Design Assessment – Design Standard 1	17
Table 6	Clause 52.34 – Bicycle Parking Requirements	20
Table 7	Clause 52.34 – Bicycle Facility Requirements	20
Table 8	Clause 52.06 – Car Parking Requirements	21
Table 9	Proposed Car Parking	21
Table 10	2021 Census Car Ownership – City of Monash	22
Table 11	Residential Traffic Generation	25
Table 12	Office Traffic Generation	25
Table 13	Retail Traffic Generation	26
Table 14	Anticipated Traffic Generation.....	26
Table 15	Service Station Traffic Generation	26
Table 16	Unique Trips Traffic Generation	27
Table 17	Net Change in Traffic	27

FIGURES

Figure 1	Site Location.....	6
Figure 2	Site Context (24 April 2023).....	7
Figure 3	Planning Scheme Zones.....	8
Figure 4	Clayton Road, looking north from the subject site frontage.....	9
Figure 5	Clayton Road, looking south at the intersection with Centre Road	9
Figure 6	Centre Road, looking east past the frontage of the subject site	10
Figure 7	Centre Road, looking west from the frontage of the subject site	10
Figure 8	Public Transport Provision.....	11
Figure 9	Potential SRL Clayton Station Location.....	12
Figure 10	Strava Cycling Heatmap	13
Figure 11	Pedestrian Walk-Time Map.....	14

APPENDICES

APPENDIX A	VEHICLE SWEEP PATHS.....	29
-------------------	---------------------------------	-----------

1 INTRODUCTION

onemilegrid has been requested by Tango Projects Pty Ltd to undertake a Transport Impact Assessment of the proposed mixed-use development at 409 Clayton Road, Clayton.

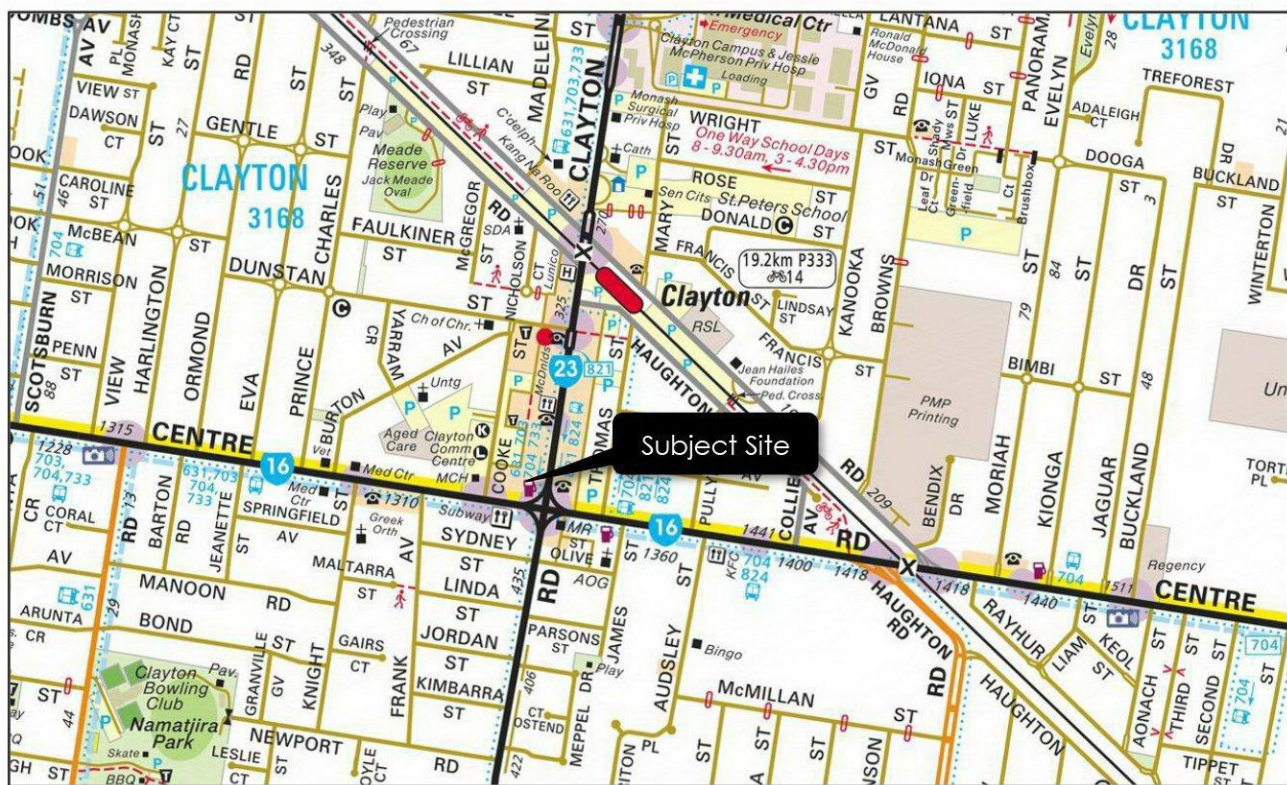
As part of this assessment the subject site has been inspected with due consideration of the development proposal, traffic and parking data has been sourced and relevant background reports have been reviewed.

2 EXISTING CONDITIONS

2.1 Site Location

The subject site is located at the northwest corner of Clayton Road and Centre Road, Clayton, as shown in Figure 1.

Figure 1 Site Location



Copyright Melway Publishing

The site is irregular in shape and includes frontages to Centre Road and Clayton Road of approximately 43 metres and 37 metres respectively, for an overall site area of approximately 2,100 square metres. In addition, the site has a partial abutment to a laneway in the northwest corner of the site.

The site is currently vacant but has historically operated as a service station. Site access is provided via two crossovers to each of Clayton Road and Centre Road allowing separate entry and exit movements.

Land use in the immediate vicinity of the site is mixed in nature and includes the Clayton strip shopping precinct along Clayton Road to the north, Clayton Station at the north, and a range of

residential development surrounding the site. In addition, there is a Coles supermarket which abuts the site directly to the west and a Council car park to the northwest.

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

Figure 2 Site Context (24 April 2023)



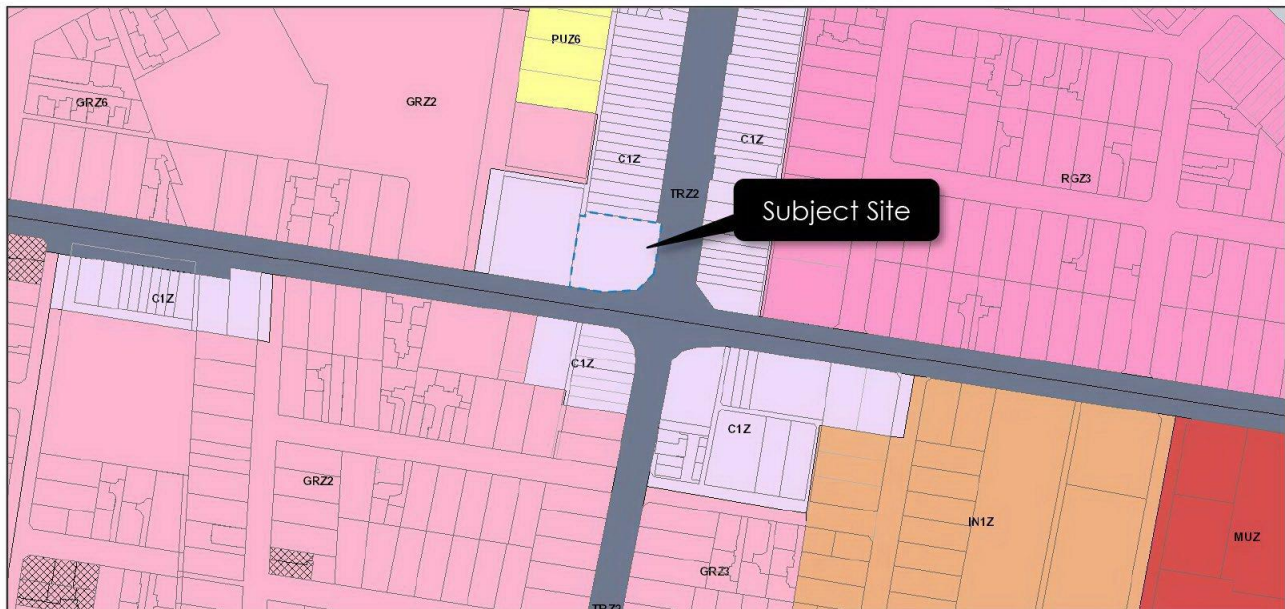
Copyright Nearmap

2.2 Planning Zones and Overlays

The site is located within a Commercial 1 Zone (C1Z). Additionally, the site sits at the corner of Clayton Road and Centre Road, both of which are within a Transport Zone (TRZ2); Principal Road Network.

Furthermore, the site is located within the Principal Public Transport Network (PPTN).

Figure 3 Planning Scheme Zones



2.3 Road Network

2.3.1 Clayton Road

Clayton Road is an arterial road generally aligned north to south, running between Ferntree Gully Road, approximately 3.3km north of the site, and the intersection of Kingston Road and Heatherton Road, approximately 3.3km to the south.

Along the frontage of the site, Clayton Road provides two traffic lanes in each direction with relatively wide footpaths provided on both sides which promote the highly pedestrianised area. To the north of the site, angled kerbside parking is provided on both sides of the road, generally restricted to 1-hour parking servicing the strip shopping centre.

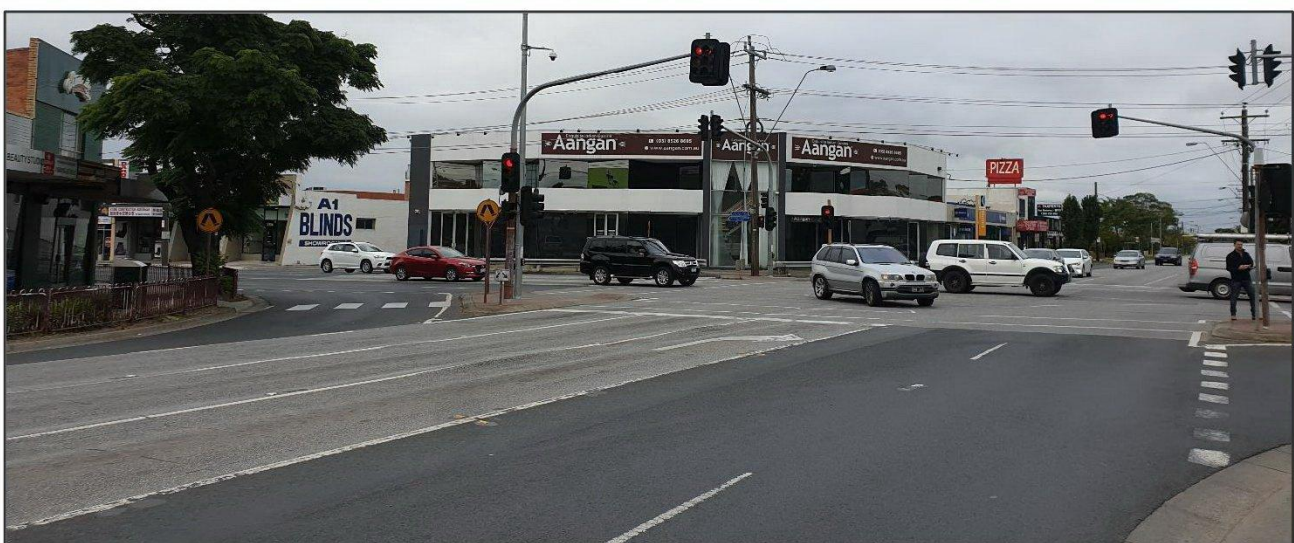
Clayton Road is generally subject to a 60km/h speed limit, with the limit reduced to 40km/h to the north of Centre Road, adjacent the site and through the Clayton shopping precinct.

Views of Clayton Road at the frontage of the site are shown in Figure 4 and Figure 5.

Figure 4 Clayton Road, looking north from the subject site frontage



Figure 5 Clayton Road, looking south at the intersection with Centre Road



2.3.2 Centre Road

Centre Road is an arterial road generally aligned east to west, running between Springvale Road, approximately 3.3km to the east of the site, and Hampton Street, Brighton, approximately 10km to the west. Centre Road generally operates with two traffic lanes in each direction.

The intersection of Centre Road and Clayton Road is controlled by traffic signals. On the approach to the signals, an auxiliary right turn lane is provided on each approach as well as a left turn slip lane.

A 60km/h speed limit applies to Centre Road in the vicinity of the site.

The cross-section of Centre Road at the frontage of the site is shown in Figure 6 and Figure 7.

Figure 6 Centre Road, looking east past the frontage of the subject site



Figure 7 Centre Road, looking west from the frontage of the subject site



2.4 Sustainable Transport

2.4.1 Public Transport

The site has excellent public transport accessibility, with a wide variety of transport modes and services servicing the immediate vicinity of the site. Of note, a bus stop is located at the southwest corner of the site. Typical of these areas, the bus uses the kerbside traffic lane to stop and collect passengers at the designated stop.

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

Figure 8 Public Transport Provision

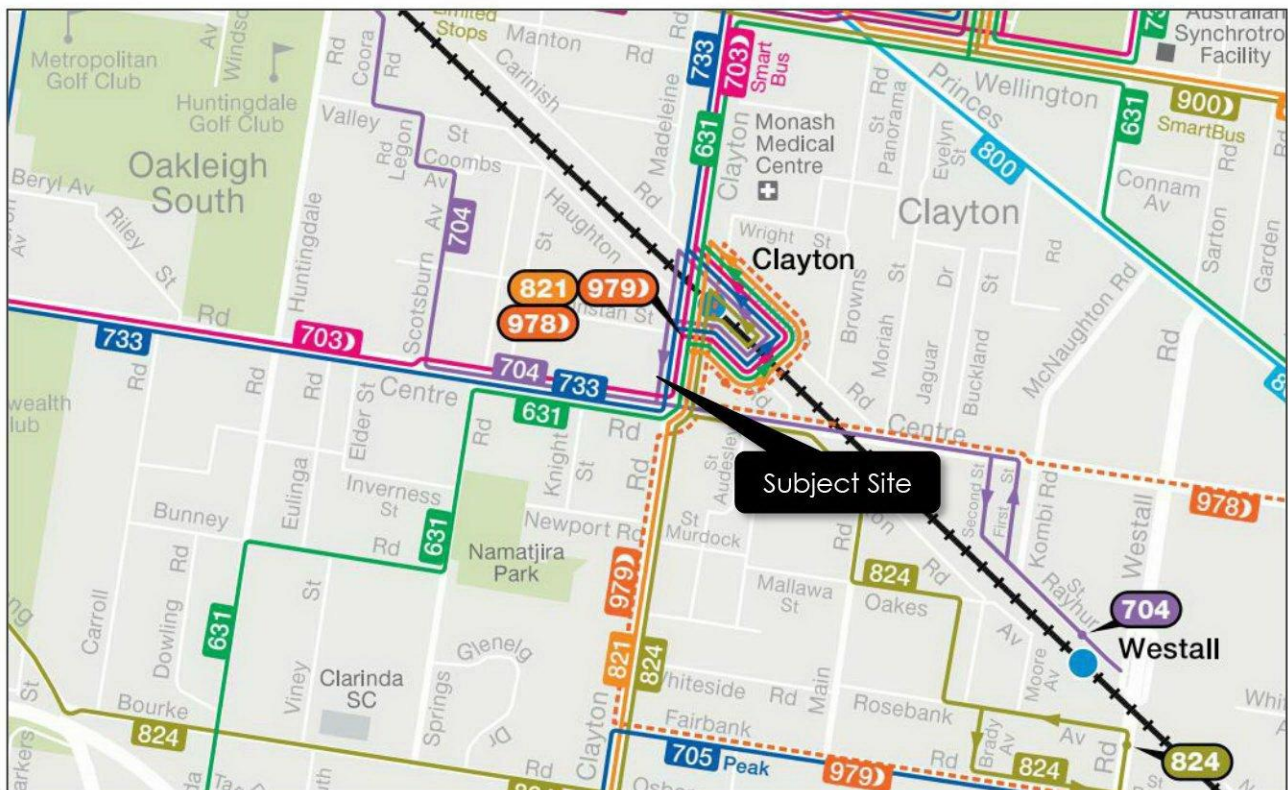
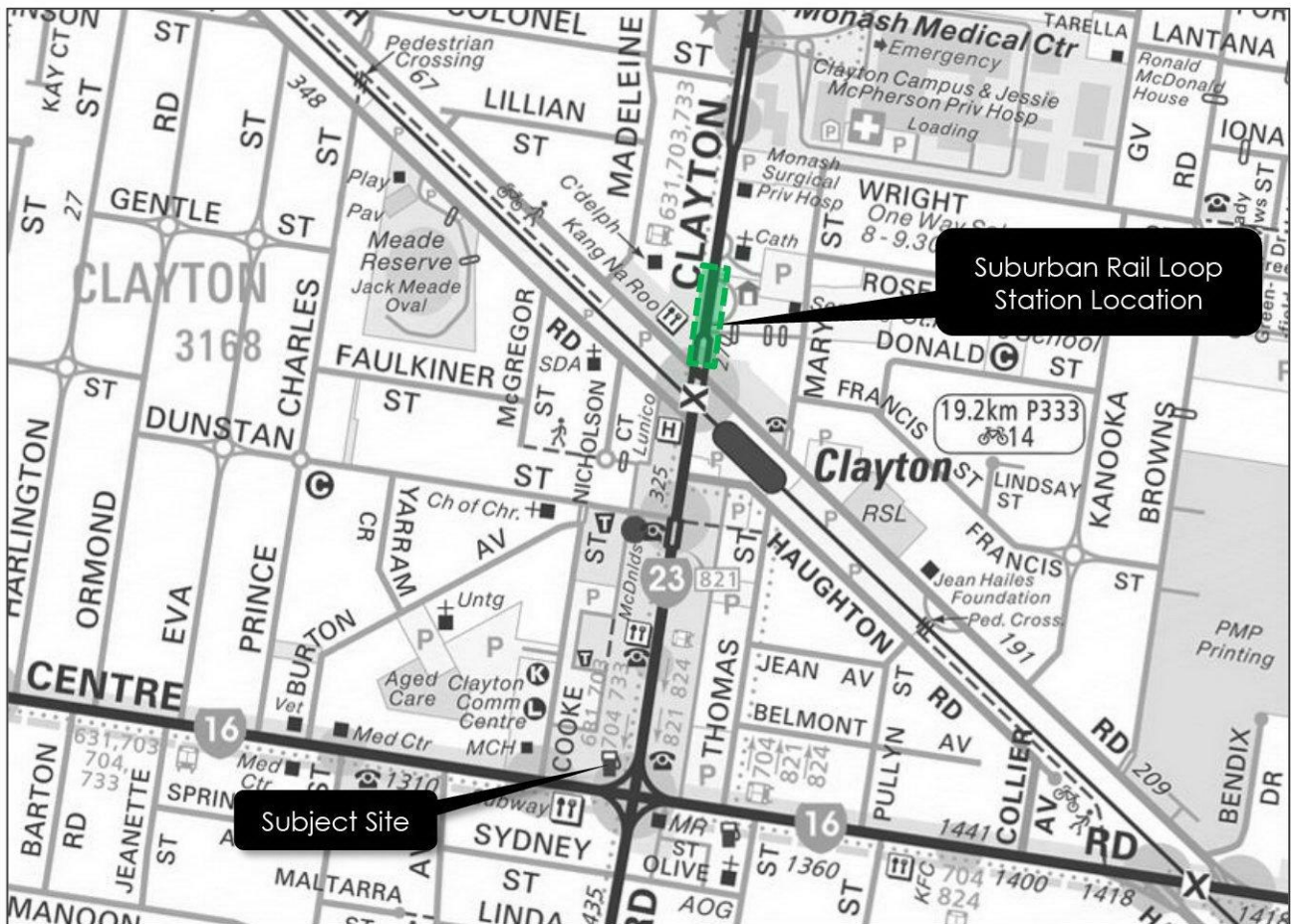


Table 1 Public Transport Provision

Mode	Route No	Route Description	Nearest Stop/Station
Train		Cranbourne Line Pakenham Line	Clayton Station
	631	Southland - Waverley Gardens via Clayton, Monash University	
Bus	703	Middle Brighton - Blackburn via Bentleigh, Clayton, Monash University	Centre Road (at the site frontage)
	704	East Clayton - Oakleigh via Clayton, Huntingdale	
	733	Oakleigh - Box Hill via Clayton, Monash University, Mt Waverley	
	821	Southland - Clayton via Heatherton	
	824	Moorabbin - Keysborough via Clayton, Westall	
	979	Clayton Station - Dandenong Station via Keysborough	Clayton SC
	978	Clayton Station - Dandenong Station via Mulgrave	

Further to the existing public transport services in the vicinity, it is noted that the Suburban Rail Loop (SRL) will run through Clayton Station, connecting the middle suburbs of Melbourne as well as regionally. The SRL is still in the planning stages however the station is proposed along Clayton Road approximately 500 metres north of the site, as shown in Figure 9. Of note, the proposed tunnels are proposed to travel underneath the subject site.

Figure 9 Potential SRL Clayton Station Location



Copyright Melway Publishing

In addition, it is noted that Clayton station is identified to become the busiest suburban station in Melbourne with trains running in all four different directions, including connections to Gippsland, Cranbourne and Pakenham.

2.4.2 Bicycle Facilities

Strava is a social network and training tool for cyclists, runners and swimmers. Users record their physical activity using a dedicated GPS device or utilise the mobile app, and upload the file to their profile.

Strava anonymised this information and makes it available through their "Global Heatmap" tool, showing aggregated all public activities over the last two years across the world.

A view of the cycling heatmap in proximity to the study area is provided below in Figure 10. Routes of higher usage are brighter in colour.

Figure 10 Strava Cycling Heatmap



As shown above, primary routes in and out of the study area comprise:

- Clayton Road;
- Centre Road; and
- The Station Trail that runs under the Cranbourne/Pakenham train line.

It is noted that this information includes all cycling activities recorded on the platform, inclusive of weekend trips, and all trips throughout the day. Additionally, the data is skewed towards sports cyclists, given that the bulk of commuter and recreational cyclists will not be tracking their rides. Notwithstanding, this tool provides a good indication of the attractiveness of certain routes in the vicinity of the site.

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.

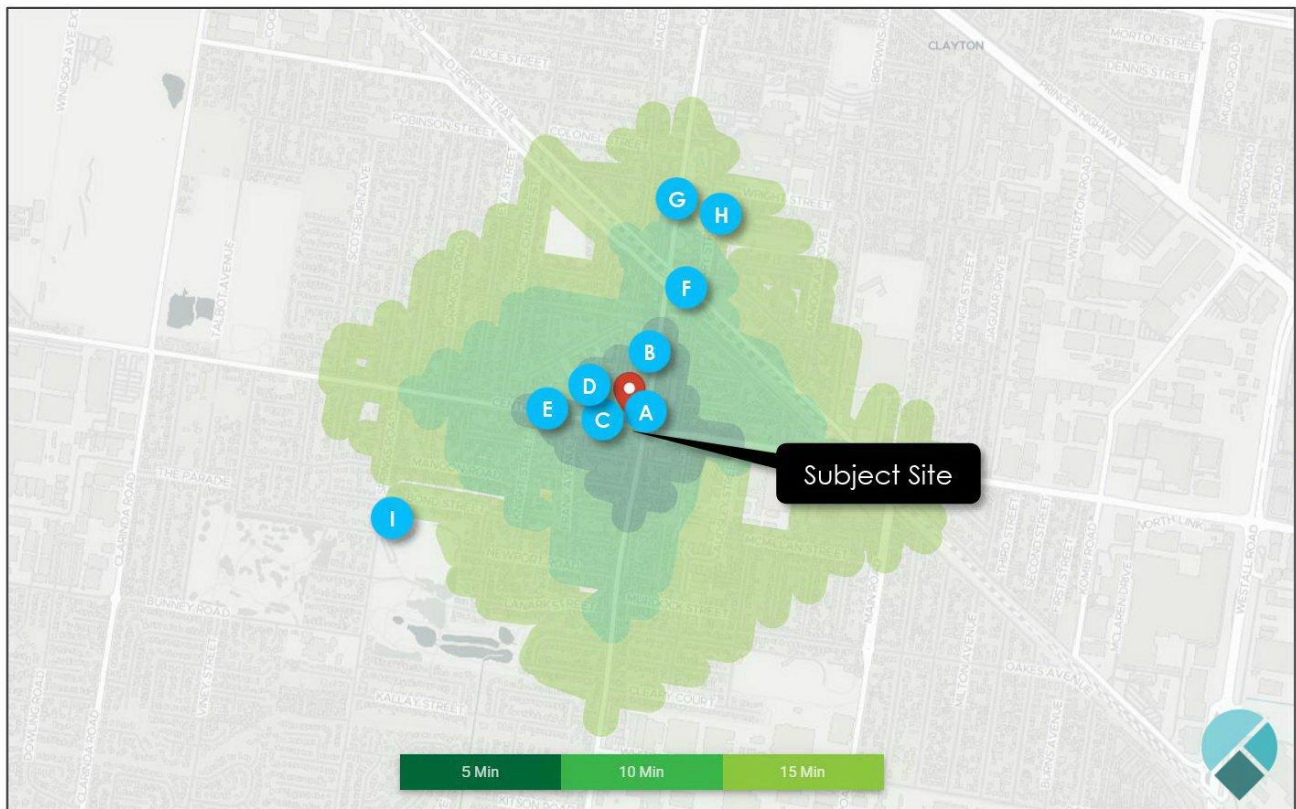
The site has a Walk Score rating of 90/100 and is very walkable, with most errands able to be accomplished on foot.

2.5.1 Pedestrian Accessibility

In addition to having excellent access to public transport modes, the site is well-located for pedestrian accessibility, with a number of recreation, education, shopping and employment uses located within 10 - 15 minutes' walk of the site.

Figure 11 shows a pedestrian walk time map for the site, with the major facilities in the vicinity of the site identified in Table 2.

Figure 11 Pedestrian Walk-Time Map



Courtesy of [Targomo](#)

Table 2 Site Facilities

Ref	Facility	Approx. Distance
A	Clayton Road Commercial Strip	Adjacent
B	Clayton Shopping Plaza	190m
C	Clayton Preschool	200m
D	Clayton Aquatics and Health Club	200m
E	South Eastern Animal Hospital	400m
F	Clayton Railway Station	450m
G	Catholic Parish of St. Peter	600m
H	St Peters Primary School	700m
I	Namatjira Park	1.2km

3 DEVELOPMENT PROPOSAL

3.1 General

it is proposed to develop the subject site for the purposes of a multi-level mixed-use development, containing ground floor retail tenancies, podium office space and residential dwellings on the levels above, as shown in Table 3.

Table 3 Proposed Development

<i>Component</i>	<i>No/Area</i>
1-Bedroom Apartment	49
2-Bedroom Apartment	87
3-Bedroom Apartment	8
Total Apartments	144
Retail	717 m ²
Office	1,646 m ²

Private communal amenities are provided on level 16, which will only be accessible by residents of the development. It is understood that the communal amenities may include a gym, library, working spaces, and/or veggie garden.

3.2 Car Parking and Vehicular Access

A total of 147 car spaces are proposed across a basement, ground and three podium level car park as summarised below.

Table 4 Proposed Car Parking

<i>Level</i>	<i>No/Area</i>
Basement 01	48
Ground	17
Level 1	26
Level 1 (Mez)	28
Level 2	28
Total	147

Access to the site is proposed via a double width crossover to Centre Road generally located in the location of the existing western most crossover. The proposed site access will be restricted to left in / left out movements only. All remaining crossovers to the site on Centre Road (1) and Clayton Road (2) will be reinstated with kerb and channel.

Access between levels is provided by a ramp system with one ramp leading to the basement and a second ramp providing access to the podium levels.

Included within the provision are two accessible spaces located on the ground and first level.

It is proposed to allocate the car parking across the various uses as follows: -

- 104 residential spaces;
- 7 retail spaces; and
- 36 office spaces.

3.3 Bicycle Parking

A total of 121 bicycle spaces are proposed on-site which includes secure bicycle parking spaces across the five car parking levels and visitor parking spaces at the Centre Road and Clayton Road frontages of the site.

The bicycle parking provisions includes:

- 26 spaces within 13 x ground mounted hoops along Centre Road and Clayton Road for visitors;
- 77 secure bicycle parking spaces within 73 x vertical bike racks and 2 x ground mounts hoops in the basement, level 1 and level 2 for residents; and
- 18 secure bicycle parking spaces within 6 x double tier racks and 6 x vertical bike racks on the ground level for staff.

End of trip facilities for staff are provided on the ground levels in the form of showers and change rooms.

3.4 Waste Collection

A bin storage room is provided on the basement level for all waste streams. Waste will be collected on-site by a private contractor using a mini rear lift waste collection vehicle.

Refer to the waste management plan prepared by **onemilegrid** for more information.

4 DESIGN ASSESSMENT

4.1 Monash Planning Scheme – Clause 52.06

onemilegrid 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 5.

Table 5 Clause 52.06-9 Design Assessment – Design Standard 1

<i>Requirement</i>	<i>Comments</i>
Be at least 3 metres wide	Satisfied – Minimum width of the ramps is 6.1 metres between walls
Have an internal radius of at least 4 metres at changes of direction or intersection or be at least 4.2 metres wide	Satisfied – All accessways exceed 4 metres in width
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 2.1 metres is achieved
If the accessway serves four or more car spaces or connects to a road in a Road Zone, the accessway must be designed so that cars can exit the site in a forward direction	Satisfied – All vehicles 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 Road Zone	Satisfied – A passing area is provided which is 6.6 metres wide and in excess of 7 metres long
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.	Satisfied – A pedestrian splay provided on exit side of site access to Centre Road
If an accessway to four or more car parking spaces is from land in a Road Zone, the access to the car spaces must be at least 6 metres from the road carriageway.	Satisfied – The first car space is located in excess of 6 metres from the Centre Road carriageway.

4.1.2 Design Standard 2 – Car Parking Spaces

All car spaces on-site are proposed with a minimum width of 2.6 metres, length of 4.9 metres and are accessed from aisles of no less than 6.4 metres. Spaces adjacent to walls have been suitably widened in accordance with Design Standard 2 of the Planning Scheme.

It is noted that AS/NZS 2890.1:2004 requires that a 1.0m aisle extension is provided for all parking spaces within a dead-end aisle to allow for vehicles to enter and exit the parking space without the need of multiple corrective manoeuvres, which is not provided for the most eastern parking spaces on the podium levels. To ensure all affected parking spaces are suitably designed, and provide for appropriate access, **onemilegrid** has undertaken a swept path analysis for these parking spaces which are included in Appendix A. The swept path assessment demonstrates access to the critical parking space on each level with no corrective manoeuvres on entry but requiring a corrective manoeuvre on exit, with only minor encroachment of the clearance envelope. The need for some resident and commercial spaces to undertake a single corrective movement is deemed to be acceptable, in accordance with Australian Standards, and not an uncommon requirement in both new and existing residential developments. Furthermore, it should be noted that:

- Vehicles smaller than the B85 vehicle may be able to exit the parking space without a corrective movement; and
- Residents and staff will become familiar with the access conditions, and may accept a smaller clearance than the 300mm identified in the Australian Standard, allowing them to exit the parking space in a single movement.

Based on the above, it is considered that the proposed arrangements are satisfactory and will provide for ease of access to car spaces.

The accessible bays are provided with a length of 5.4 metres and a width of 2.4 metres, in accordance with the Australian Standard for Parking facilities, Part 6: Off-street parking for people with disabilities (AS 2890.6:2022). A shared area is provided adjacent to the space which includes a structural column generally centrally. This is considered appropriate noting that it will not inhibit access to and from the parked vehicle and is not dissimilar to the bollard requirement for an accessible car space.

4.1.3 Design Standard 3 – Gradients

The first 2 metres at the top and bottom of each ramp has been provided with a grade of 1:8 while the maximum grade of the remainder of the ramp is no more than 1:4, in accordance with the requirements of Design Standard 3. Transitions are provided where changes of grade exceed 12.5%, and transition lengths have been designed to prevent potential scraping.

4.2 Podium Circulation

A swept path assessment has been undertaken by **onemilegrid** for the circulation of the car parking levels. The swept path assessment demonstrates that the B99 design vehicle can circulate the parking levels with the required vehicle clearances. However, at some locations there is limited room for a B99 and B85 vehicle to pass. It is noted that this generally occurs at bends at the bottom or top of ramps.

To reduce the potential for opposing vehicles to meet, it is proposed to install a traffic warning light system at the bottom and top of each ramp which will be complimented by hold lines at the bottom / top of the ramp. The system will activate when a vehicle drives onto the ramp, triggering the light sequence to alert any motorists approaching from the opposite side of the ramp that a vehicle is approaching. The driver located at the signals will be required to wait behind the hold line or within their designated car space until the other vehicles has passed.

4.3 Waste Collection

A bin storage area is located within the basement. A private contractor will be engaged to collect and remove waste directly from the basement level. Swept paths have been undertaken which demonstrate access to and from the basement with a 6.4m length waste collection vehicle, which are attached in Appendix A.

4.4 Bicycle Parking

Bicycle parking is proposed to be provided as a combination of dual height horizontal racks, vertical racks and on-ground bicycle hoops.

The dual height bike racks are double sided and are spaced at 0.7 metre centres, with a combined length of 3.2 metres, an aisle width of 2 metres, and are provided with a height clearance of 2.7 metres on the ground floor and 2.35 metres height clearance on the podium levels.

The bicycle hoops have been designed in accordance with the Australian Standards; specifically, they are provided at one metre centres, with an envelope of 1.8 metres provided for bicycles and a 1.5 metre access aisle.

Furthermore, well in excess of 20% of spaces are provided on-ground in excess of the Australian Standard requirements.

4.5 Clause 52.29 – Land Adjacent to a Transport Zone

The development proposal is subject to the requirements of Clause 52.29 of the Monash Planning Scheme which applies to land adjacent to the Principal Road Network (Centre Road) and aims to ensure appropriate access is provided to identified roads.

Relevant to the proposed development, the Clause states that a permit is required to create or alter access to a road in a Transport Zone 2, and that the proposal is to be referred to the relevant referral authority (in this case the Department of Transport and Planning (VicRoads)).

Before deciding on the appropriateness or otherwise of an application to alter access to the Road Zone, the responsible authority must consider the following:

- The Municipal Planning Strategy and the Planning Policy Framework.
- The views of the relevant road authority.
- The effect of the proposal on the operation of the road and on public safety.
- Any policy made by the relevant road authority pursuant to Schedule 2, Clause 3 of the Road Management Act 2004 regarding access between a controlled access road and adjacent land.

The proposed development seeks to maintain one crossover to Centre Road, while removing the remaining three crossovers. Furthermore, the proposed development is expected to see a small increase in traffic intensity compared to the existing service station use. Similarly, the proposal will provide adequate sight distance at the property boundary to pedestrian along the frontage. As such, the development is not expected to have any material impact on the operation of the road or any impacts on public safety.

In light of the above, it is considered that the proposed development will satisfy the requirements of Clause 52.29.

It is noted that as part of a previous hearing for the site that DTP had concerns in relation to the proposed access point however it was determined that the proposed access to Centre Road was the most appropriate for access to and from the site compared to Clayton Road.

5 LOADING

Clause 65 (Decision Guidelines) of the Monash 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."

It is proposed to accommodate all loading within the car parking areas using small vans. As such, retail uses may be required to schedule deliveries around peak staffing periods to provide an available space for loading vehicles. In relation to waste collection, a separate collection location is provided within the basement specifically for waste vehicles.

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 Monash Planning Scheme, which specifies the following requirements for the different components of the proposed development.

Table 6 Clause 52.34 – Bicycle Parking Requirements

Component	No/Area	Requirement	Total
Dwelling	144 dwellings	1 space per 5 dwellings for residents	29
		1 space per 10 dwellings for visitors	14
Office	1,646 m ²	1 space per 300m ² for employees	5
		1 space per 1000m ² for visitors	2
Retail premises	717 m ²	1 space per 300m ² for employees	2
		1 space per 500m ² for visitors	1
Total		Residents	29
		Employees	7
		Visitors	17

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

Table 7 Clause 52.34 – Bicycle Facility Requirements

Facility	Employee Bicycle Spaces	Requirement	Total
Showers	7 spaces	1 shower for the first 5 employee bicycle spaces; plus 1 to each 10 employee bicycle spaces thereafter	1

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

It is proposed to provide a total of 95 bicycle parking spaces within the ground level and basement, available for employee and resident use, with an additional 26 spaces along the street frontages available for use by visitors. Considering the above, the proposed provision of bicycle parking exceeds the requirements of the Planning Scheme. In relation to end of trip facilities, these are provided for staff and are located adjacent the secure staff bike parking spaces provided on the ground floor.

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 Monash 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 noted in Section 2.2, the site is located within the Principal Public Transport Network Area, and therefore, the Column B rates apply, as shown below.

Table 8 Clause 52.06 – Car Parking Requirements

<i>Use</i>	<i>No/Area</i>	<i>Rate</i>	<i>Car Parking Measure</i>	<i>Total</i>
Dwelling	136	1	to each one or two bedroom dwelling, plus	136
	8	2	to each three or more bedroom dwelling (with studies or studios that are separate rooms counted as bedrooms), plus	16
	144	0	for visitors to every 5 dwellings for developments of 5 or more dwellings	0
Office	1,646 m ²	3	to each 100m ² of net floor area	49
Shop	717 m ²	3.5	to each 100m ² of leasable floor area	25
Total				226

Based on the above calculations, a total of 226 parking spaces are required for the proposed development.

It is noted that the above assessment for shop / retail tenancies has been based on the shop rate which provides for flexibility to allow the use of the tenancy for a food and drink premises if required.

7.1.2 Proposed Car Parking Provision

The proposed car parking provision and allocation is outlined in Table 9 below.

Table 9 Proposed Car Parking

<i>Use</i>	<i>52.06 Requirement</i>	<i>Proposed Allocation</i>	<i>Reduction Sought</i>
Dwellings	152	104	48
Office	49	36	13
Shop	25	7	18
Total	226	147	79

As shown above, the proposed development seeks a reduction in car parking for 79 car spaces with 48 spaces associated with the residential component, 13 spaces associated with the office component and 18 spaces for the shop / retail component.

Clause 52.06-7 of the Monash 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 and the appropriateness of reducing the car parking provision below them is set out below.

7.2 Car Parking Demand Assessment

7.2.1 Residential

Car ownership data from the 2021 Census for the City of Monash was sourced from the Australian Bureau of Statistics (ABS). For development types similar to that proposed, the data is outlined in Table 10.

Table 10 2021 Census Car Ownership – City of Monash

<i>Dwelling Type</i>	<i>No. of Bedrooms</i>	<i>Average Car Ownership</i>	<i>% Dwellings with no Vehicles</i>
Flat, unit or apartment	1	0.69 vehicles	40%
	2	1.13 vehicles	14.6%
	3	1.56 vehicles	4.7%

Applying these rates to the proposed development, we could expect 20 one-bedroom and 13 two-bedroom apartments do not require a car space.

The ABS data clearly indicates that there is a market for dwellings that do not provide, and therefore do not attract the price premium associated with a car parking space. Given the site's location within an Activity Centre and in respect to existing and proposed public transport services and other services, it is expected that dwellings within the subject site would be particularly appealing to potential owners/tenants who do not have the need to park a vehicle at their place of residence.

Furthermore, it should be recognised that resident parking demands are, in part, dependent on car parking provisions, insofar as an owner/tenant with the need to park a vehicle is unlikely to occupy a dwelling that does not provide a car parking space. This is particularly true in areas where on-street parking is restricted to short durations, meaning on-street parking is not a viable alternative to on-site parking for residents.

With the site's location in regard to public transport and other amenities, and on-street parking in the area generally being time restricted, it is considered reasonable to assume that resident parking demands generated by the proposed dwellings will amount to the parking provision of 104 spaces.

7.2.2 Shop

While the final uses which will lease the retail tenancies have not been finalised, the Planning Scheme rate for a shop use has been adopted to provide some flexibility for the final tenants, noting that food and drink uses are also required to provide 3.5 space per 100m².

In locations such as the subject site where a variety of complimentary uses exist, it has been our experience that car parking demands range from 2 – 3.5 spaces per 100 square metres. These

reduced demands are exhibited whereby a tenancy generates a demand from those already in the area rather than a demand in their own right. In this regard it is expected that the demands generated will be towards the lower end of the range.

Nevertheless, for retail, shop and food and drink uses alike, car parking demands are comprised of staff demands and customer demands. In this regard, staff demands typically equate to in the order of 1 space per 100m², with the remaining demand associated with visitors / customers which is expected to be accommodated within the public car parking in the vicinity.

For the purposes of this assessment, it will be assumed that a total demand for 2.0 spaces per 100 square metres will be generated which equates to a demand for 14 spaces comprising of 7 staff spaces and the remaining 7 spaces attributed to visitors / customers.

It is reiterated that a large proportion of visitors (if not all) to the proposed ground floor tenancies are expected to be visitors to the broader activity centre, and as such each shop use will not necessarily generate a demand for visitor / customer parking in its own right, with visitors to each tenancy expected to visit a number of other uses as part of the one trip. This is already evident with the existing strip shopping centre where there are multiple complementary uses across the centre. Furthermore, this site has the benefit of a large residential and office catchment above which will further demonstrate multiple trips.

Noting the above, it is expected that the proposed provision of 7 parking space on-site is expected to meet the car parking demands generated by staff.

7.2.3 Office

It is typically recognised that the rates outlined under Clause 52.06 of the Planning Scheme are excessive for developments within the Activity Centres, where sites are generally better served by sustainable transport access.

It is noted that office parking demands are typically dictated by the availability of parking, either on-site or off-site, and if parking is constrained by either restrictions or availability, as is the case in the site's vicinity, then employees will elect to utilise alternative modes of transport to access the site.

The vast proportion of parking in the area is time restricted, and what little all-day parking is available is highly utilised during typical business hours.

In practice, the high utilisation of long-term car parking in the area substantially reduces the attractiveness and convenience of travelling to the site via private vehicle without having allocated parking available. Combined with the very good accessibility of the site by public transport (including the future SRL interchange), it is expected that staff will change their behaviour if necessary and as such generate reduced parking demands in line with the provision of allocated parking.

With 36 car spaces allocated to the office component, this equates to a provisional rate of 2.19 spaces per 100 square metres of floor area. Considering the location of the site in relation to existing and future public transport facilities, the proposed provision of car parking is considered appropriate.

7.3 Review of Car Parking Provision

7.3.1 On-Street Parking Restrictions

A review of parking restrictions in the area surrounding the proposed development indicates that on-street parking is heavily restricted, and there is limited opportunity for long term resident or staff parking in the area.

These restrictions are therefore expected to ensure that visitors to the broader area will be able to conveniently park their vehicle short-term on-street in the vicinity of the site, by ensuring public space regularly turn over.

7.3.2 Alternative Modes of Transport

As indicated in Section 2.4, the site has excellent access to public transport, with numerous train and bus services in the immediate vicinity, in addition to the future Suburban Rail Loop. The provision of excellent public transport ensures that residents, staff and visitors have good access to alternate transportation modes.

7.3.3 Adequacy of Car Parking Provision

Based on the above, due to the heavily restricted on-street parking in the vicinity of the site, there is limited opportunity for long-term staff or resident parking in the area. Therefore, it is not expected that staff without a car space will drive to the site and residents who require a parking space will not occupy a dwelling without a parking space. In relation to customers, short term public parking is available in the vicinity to accommodate any potential customer / visitor demands which is typical of commercial uses within Activity Centres where parking public parking is shared between different uses.

Further to the above, a Green Travel Plan has been prepared for the site which will directly target staff and residents within the development, aiming to reduce their reliance on vehicular travel.

Based on the foregoing assessment, and with regard to the array of public transport services within the immediate vicinity of the site, the proposed level of car parking is considered appropriate for the proposed development.

7.4 Accessible Car Parking

The Building Code of Australia (BCA) specifies the minimum requirements for provision of accessible car parking.

It is noted that an office development, classified as a Class 5 building, requires provision of one accessible car spaces for every 100 car parking spaces or part thereof, while a retail use, classified as a Class 6 building, requires provision of one accessible car spaces for every 50 car parking spaces or part thereof.

Noting the proposed provision of 36 spaces allocated to the office, and 7 spaces allocated to the retail uses, the BCA requires at least two accessible car spaces are provided on-site.

The proposed provision of two spaces thus satisfies the BCA requirements.

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 dwelling 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 4.0 movements per day per dwelling will be adopted with 10% occurring during the peak hours.

Application of the above rates indicates that the 104 dwellings with car parking will generate 416 movements per day, inclusive of 42 vehicle movements during the morning and afternoon peak hours.

Furthermore, 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. The projected peak hour traffic volumes are detailed in Table 11 below.

Table 11 Residential Traffic Generation

	<i>AM Peak</i>	<i>PM Peak</i>
Inbound	8	25
Outbound	34	17
Total	42	42

8.1.2 Office

For the purposes of the following assessment it will be assumed that 50% of the parking allocated to office staff (36 spaces) will fill in the AM peak hour and vacate in the PM peak hour, equating to 18 movements in each peak period. As such, the peak hour traffic volumes are detailed in Table 12 below.

Table 12 Office Traffic Generation

	<i>AM Peak</i>	<i>PM Peak</i>
Inbound	18	0
Outbound	0	18
Total	18	18

8.1.3 Retail

With regard to the retail tenancies, it is anticipated that all of the allocated parking spaces may turnover during each the AM and PM peak periods. The projected peak hour traffic volumes are detailed below in Table 13.

Table 13 Retail Traffic Generation

	AM Peak	PM Peak
Inbound	7	0
Outbound	0	7
Total	7	7

8.1.4 Anticipated Traffic Generation

Based on the above, the anticipated traffic generated by the proposed development is shown in Table 14.

Table 14 Anticipated Traffic Generation

	AM Peak	PM Peak
Inbound	33	25
Outbound	34	42
Total	67	67

8.1.5 Previous Use - Service Station

In order to determine the resulting traffic impact of the proposed development to the local road network, the existing traffic generated by the previous use of the site has been estimated.

It is noted that the traffic generated by a service station use depends on the location of the site, time of day, surrounding traffic volumes, and whether a convenience store or other uses are included in the development.

It has been commonly shown via case studies at similar service station developments in various locations that peak traffic generation typically varies between 100 and 180 movements during the weekday commuter peak hours.

Considering the location of the site, it has been assumed the site previously generated 160 movements during both peak hours, equally split between inbound and outbound movements as summarised in Table 15.

Table 15 Service Station Traffic Generation

	AM Peak	PM Peak
Inbound	80	80
Outbound	80	80
Total	160	160

Of service station traffic, it is commonly accepted that a large majority of trips are that of passing trade. These are movements diverted to the service station as part of an existing trip. It has been our experience that passing trade accounts for approximately 80% of service station traffic. In this regard, Table 16 below outlines the expected unique traffic generated by the existing service station.

Table 16 Unique Trips Traffic Generation

	<i>AM Peak</i>	<i>PM Peak</i>
Inbound	16	16
Outbound	16	16
Total	32	32

8.1.6 Net Change

Based on the foregoing assessment, the net change in traffic outlined below, based on the removal of the traffic generated by the existing service station use and the addition of the traffic generated by the dwellings, shop and office uses. It is noted that the net increase in weekend traffic would be significantly less than the below considering the office will not be operating.

Table 17 Net Change in Traffic

	<i>AM Peak</i>	<i>PM Peak</i>
Inbound	17	9
Outbound	18	26
Total	35	35

8.2 Traffic Impact

Reviewing the volumes above, the additional traffic which is anticipated to be generated by the proposed mixed-use development is considered low, with a maximum of 35 additional movements per hour projected. Importantly when considering the movements in and out of the site, the above results in less than one outbound movement every two movements during the critical PM peak hour. This level of traffic is expected to be easily absorbed into the surrounding road network.

Furthermore, it is noted that movements to and from the site will be restricted to left in / left out movements only thus further minimising the impact to the road network.

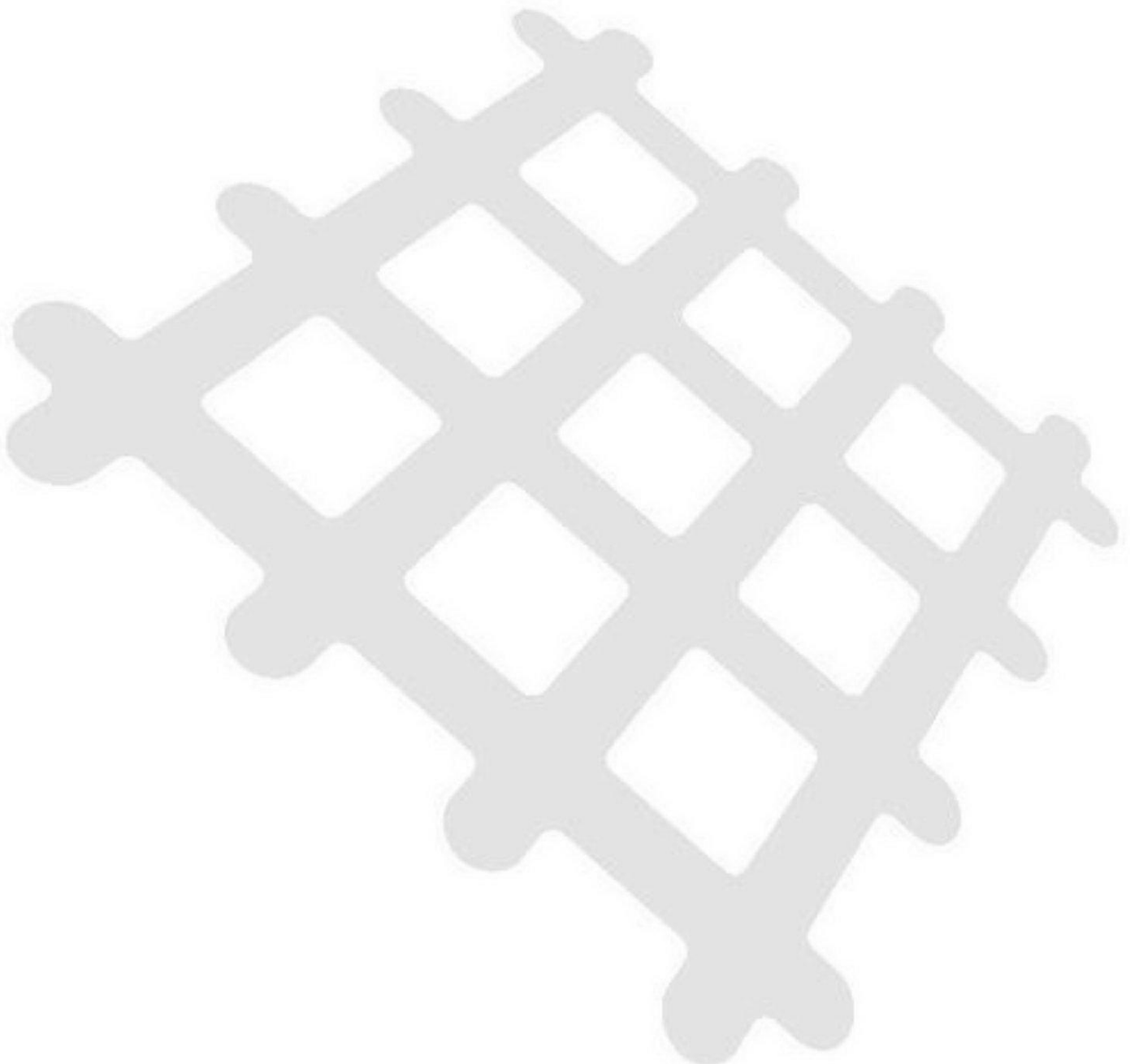
9 CONCLUSIONS

It is proposed to develop the subject site for the purposes of a mixed-use development.

Considering the analysis presented above, it is concluded that:

- The location of the site with respect to good, services, public transport services and employment precincts satisfies the '10 Minute Community' development principal;
- The car parking layouts and accesses have generally been designed in accordance with the requirements of the Planning Scheme and are considered appropriate;
- The accessible car parking needs to be relocated to ensure that the parking meets the Australian Standard;
- The proposed provision of bicycle parking exceeds the statutory requirements;
- It is recommended relocate and reconfigure the bicycle parking to ensure that all spaces are easily accessible and be in accordance with the manufacturer specifications;
- It is recommended to re-allocate the car parking to better meet the anticipated demands for the different uses on-site;
- Following the re-allocation of car parking, the proposed provision of car parking is considered appropriate; and
- The anticipated traffic volumes generated by the development are not expected to have a notable impact on the operation of Centre Road or Clayton Road.

Appendix A Vehicle Swept Paths





BASEMENT LEVEL 1

----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED

GROUND LEVEL

----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED



Vehicle Code	Width (meters)	Track (meters)	Lock to Lock Time	Steering Angle
B99	5.20	3.05	6.0	33.9
B85	4.91	2.80	6.0	34.1

CAD File: N:\Projects\2020\200170\Drawings\200170SPA 101.dgn

Date Plotted: 27-07-2023 1:20:58 PM

Copyright
 This document may only be used for its commissioned purpose. No part of this document may be reproduced, modified or transmitted without the written authority of onemilegrid. Unauthorised use of this document in any form is prohibited.

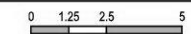
onemilegrid operates from Wurundjeri Woiwurrung Country of the Kulin nation.
 We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land.
 We pay our respects to leaders and Elders past, present and emerging for they hold the memories,
 the traditions, the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

Aerial Photography
 Aerial photography provided by Nearmap



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

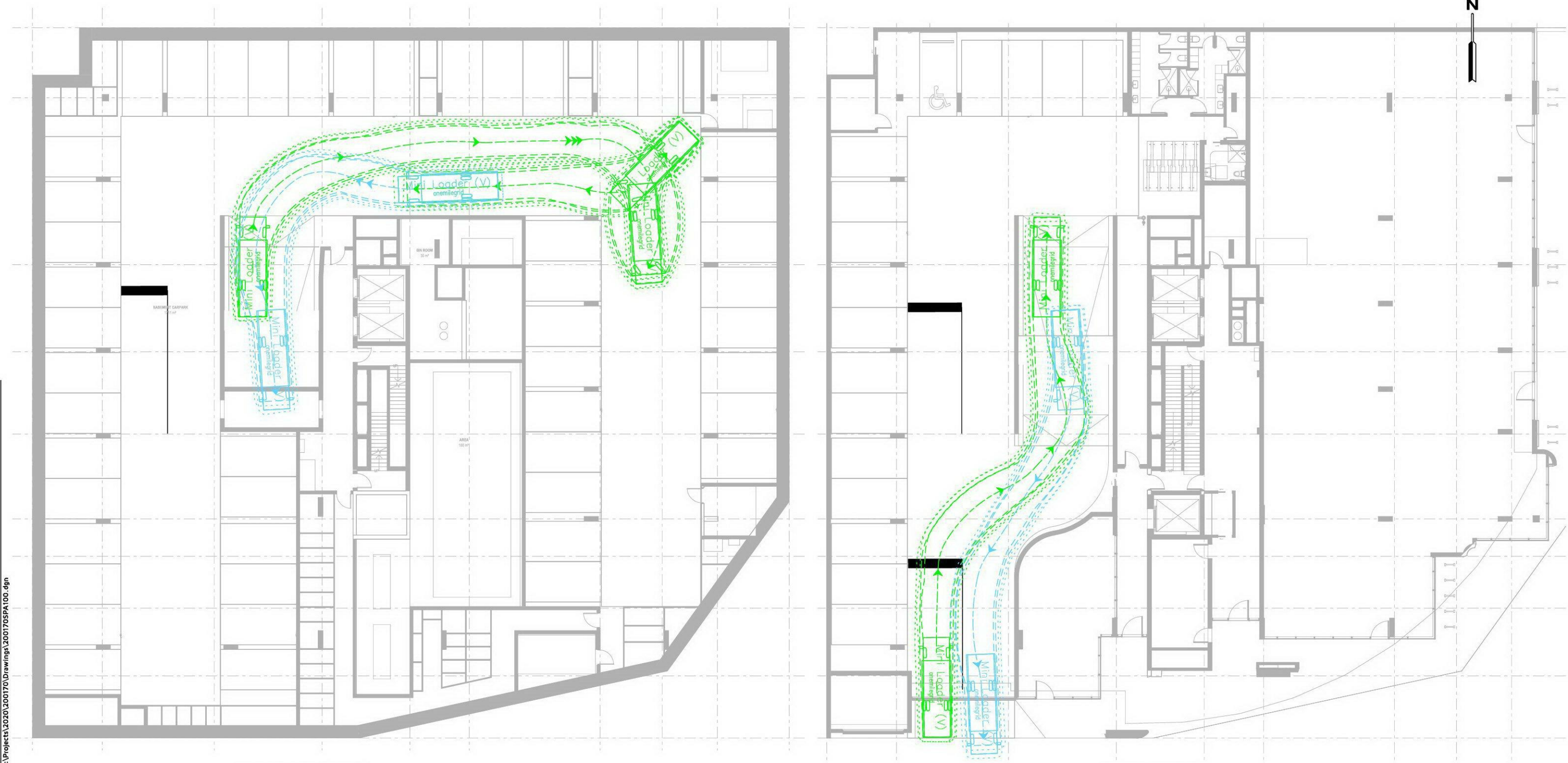
Scale
 1:250 @ A3



Drawing Title
**409 CLAYTON ROAD CLAYTON
 CAR PARK ACCESS ACCESS
 SWEEP PATH ANALYSIS**

Designed	Approved	Melway Ref
TCW	VG	79 C3

Project Number	Drawing Number	Revision
200170	SPA101	E

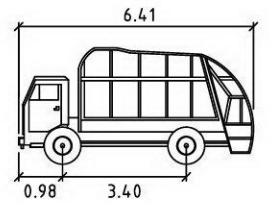


BASEMENT LEVEL 1

----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED

GROUND LEVEL

----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED



WASTE MINI LOADER meters
 Width : 1.85
 Track : 1.85
 Lock to Lock Time : 4.0
 Steering Angle : 33.6

CAD File: N:\Projects\2020\200170\Drawings\200170SPA 100.dgn

Date Plotted: 27-07-2023 1:20:56 PM

Copyright
 This document may only be used for its commissioned purpose. No part of this document may be reproduced, modified or transmitted without the written authority of onemilegrid. Unauthorised use of this document in any form is prohibited.

onemilegrid operates from Wurundjeri Woiwurrung 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.

Aerial Photography
 Aerial photography provided by Nearmap

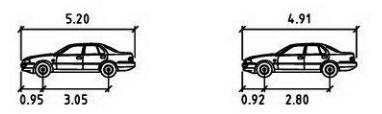
Wurundjeri Woiwurrung Country
 56 Down Street, Collingwood, VIC 3066
 Email: info@onemilegrid.com.au Web: www.onemilegrid.com.au
 Phone: (03) 9939 8250

Scale
 1:250 @ A3

Drawing Title 409 CLAYTON ROAD CLAYTON WASTE VEHICLE ACCESS SWEEP PATH ANALYSIS		
Designed TCW	Approved VG	Melway Ref 79 C3
Project Number 200170	Drawing Number SPA100	Revision E



LEVEL 2
 - - - - DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 ······ 300mm CLEARANCE ENVELOPE SHOWN DOTTED



Model	Width (meters)	Track (meters)	Lock to Lock Time (meters)	Steering Angle (degrees)
B99	5.20	3.05	0.95	33.9
B85	4.91	2.80	0.92	34.1

CAD File: N:\Projects\2020\200170\Drawings\200170SPA 103.dgn

Date Plotted: 27-07-2023 1:20:59 PM

Copyright
 This document may only be used for its commissioned purpose. No part of this document may be reproduced, modified or transmitted without the written authority of onemilegrid. Unauthorised use of this document in any form is prohibited.

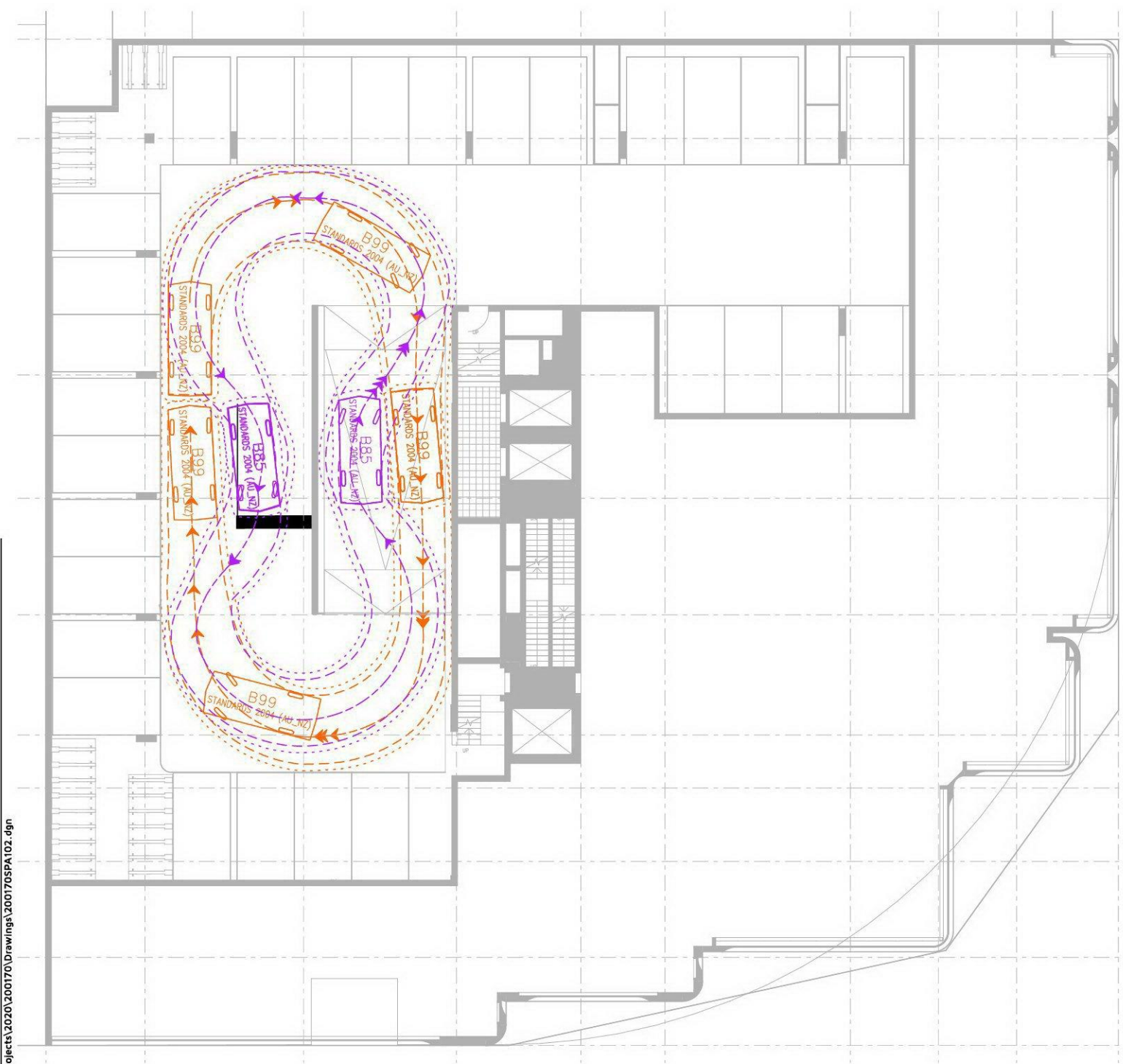
onemilegrid operates from Wurundjeri Woiwurrung Country of the Kulin nation. We acknowledge and extend our appreciation to the Wurundjeri People, the Traditional Owners of the land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture,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

Aerial Photography
 Aerial photography provided by Nearmap

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

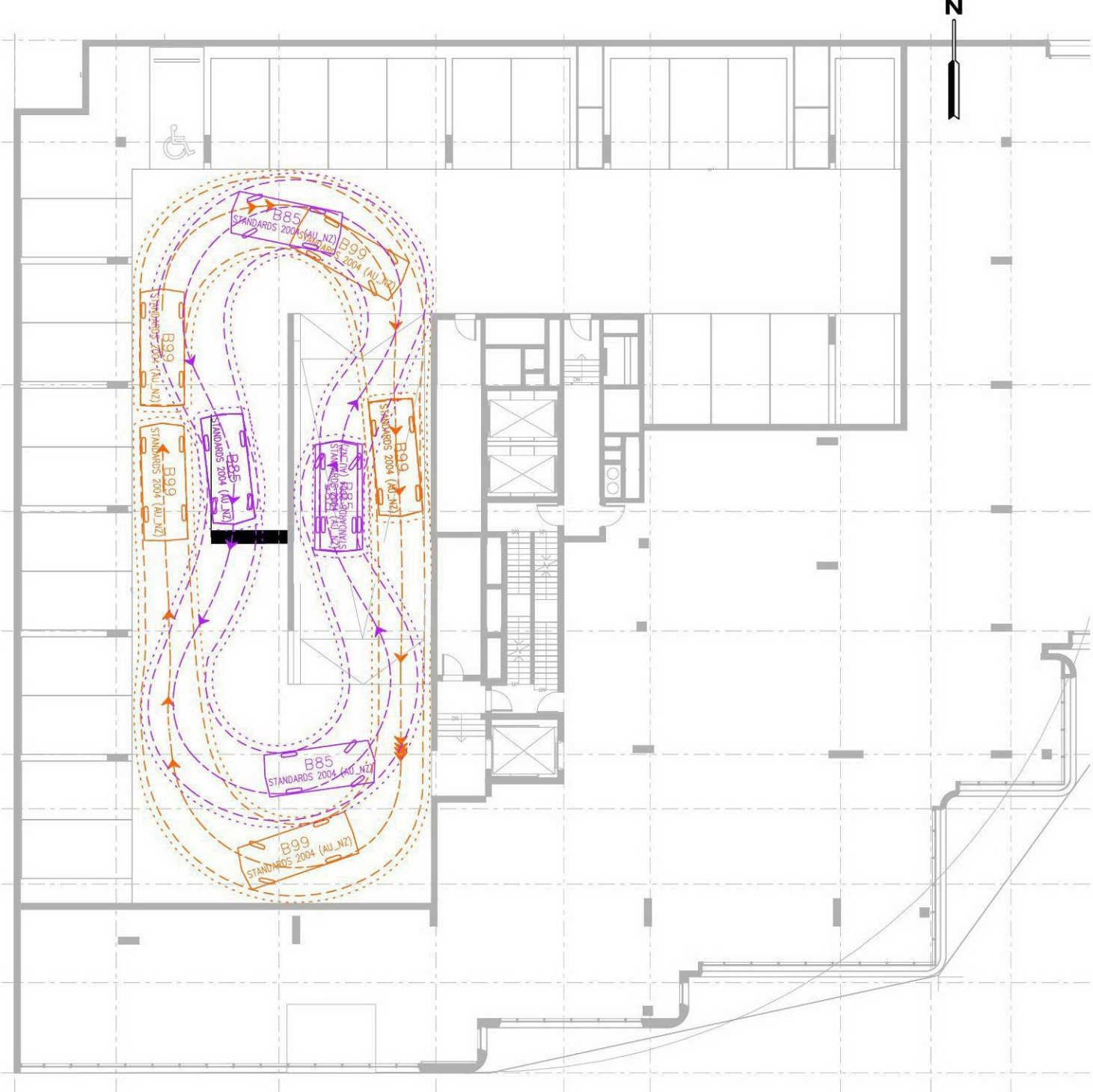
Scale: 1:250 @ A3

Drawing Title 409 CLAYTON ROAD CLAYTON CAR PARK ACCESS ACCESS SWEEP PATH ANALYSIS		
Designed TCW	Approved VG	Melway Ref 79 C3
Project Number 200170	Drawing Number SPA103	Revision E



LEVEL 1 - MEZZ

----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED

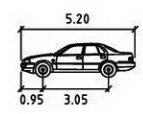


LEVEL 1

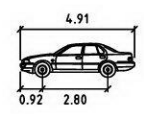
----- DESIGN VEHICLE SWEEP PATHS SHOWN DASHED
 300mm CLEARANCE ENVELOPE SHOWN DOTTED

CAD File: N:\Projects\2020\200170 Drawings\200170SPA 102.dgn

Date Plotted: 27-07-2023 1:20:59 PM



B99 meters
 Width : 1.94
 Track : 1.84
 Lock to Lock Time : 6.0
 Steering Angle : 33.9



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



Scale: 1:250 @ A3
 0 1.25 2.5 5

Drawing Title
**409 CLAYTON ROAD CLAYTON
 CAR PARK ACCESS ACCESS
 SWEEP PATH ANALYSIS**

Designed TCW	Approved VG	Melway Ref 79 C3
Project Number 200170	Drawing Number SPA102	Revision E

Copyright
 This document may only be used for its commissioned purpose. No part of this document may be reproduced, modified or transmitted without the written authority of onemilegrid. Unauthorised use of this document in any form is prohibited.

onemilegrid operates from Wurundjeri Woiwurrung 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.

Aerial Photography
 Aerial photography provided by Nearmap