

Report Prepared for
Goldman Johnson Pty Ltd

ratio:

ADVERTISED COPY

17 June 2020

Proposed Mixed-Use Development
12-14 Johnson Street, Oakleigh

traffic:report

r:

Date	Issue	Prepared By	Checked By
24/03/20	DRAFT	S NAIK	R FAIRLIE
07/04/20	DRAFT	S NAIK	R FAIRLIE
14/04/20	FINAL	S NAIK	R FAIRLIE
17/06/20	FINAL	S NAIK	R FAIRLIE

Directory Path	Y:\16501-17000\16676T - 12-14 Johnson Street, Oakleigh\Work\Reports\16676T-REP01-F02.docx
----------------	--

ratio:consultants pty ltd

This work is copyright. Apart from any use as permitted under Copyright Act 1968, no part may be reproduced without written permission of **ratio:consultants** pty ltd.

Disclaimer: neither **ratio:consultants** pty ltd nor any member or employee of **ratio:consultants** pty ltd takes responsibility in anyway whatsoever to any person or organisation (other than that for which this report is being prepared) in respect of the information set out in this report, including any errors or omissions therein. **ratio:consultants** pty ltd is not liable for errors in plans, specifications, documentation or other advice not prepared or designed by **ratio:consultants** pty ltd.

Table of contents:

Chapter / Section	Page No.
1 Introduction:	4
2 Existing Condition:.....	5
2.1 Site Location and Surroundings	5
2.2 Road Network.....	6
2.3 Parking Conditions	7
2.4 Sustainable Transport.....	9
3 The Proposal:	13
4 Car Parking Assessment:.....	14
4.1 Clause 52.06-5 – Car Parking Requirements	14
4.2 Car Parking Allocation.....	15
4.3 Car Parking Demand Assessment.....	15
4.4 Responsible Authority Considerations.....	18
4.5 Adequacy of the Proposed Car Parking Provision.....	20
5 Access and Car Parking Layout:	21
5.1 Clause 52.06-9 – Design Standard Assessment.....	21
5.2 Swept Path Assessment.....	24
6 Traffic Assessment:.....	25
6.1 Traffic Generation and Distribution.....	25
6.2 Traffic Impact	25
7 Bicycle Parking Assessment:	26
7.1 Clause 52.34-5 – Bicycle Parking Requirements	26
7.2 Bicycle Parking Layout.....	26
7.3 End of Trip Facilities.....	27
8 Loading & Waste Collection Arrangements:	28
8.1 Loading and Unloading Arrangements.....	28
8.2 Waste Collection Arrangements.....	28
9 Conclusion:.....	29

Appendices:

Appendix A	Survey Results
Appendix B	Car Stacker Specifications
Appendix C	Swept Path Assessment
Appendix D	Bicycle Parking Specifications
Appendix E	Loading Bay Swept Path Assessment
Appendix F	Waste Truck Swept Path Assessment

1 Introduction:

Ratio Consultants was commissioned by Goldman Johnson Pty Ltd to assess the traffic and parking implications of the proposed mixed-use development on the subject site located at 12-14 Johnson Street, in Oakleigh.

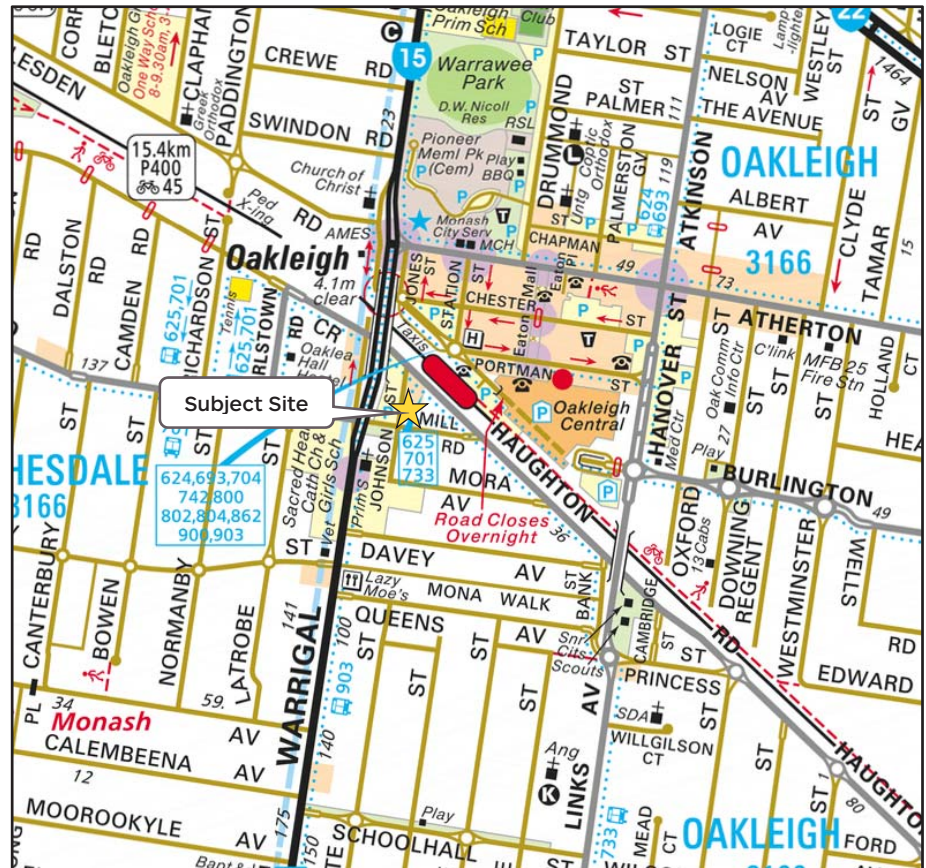
This report has been prepared to address the traffic and parking needs of the proposal and is based on surveys and observations in the vicinity of the subject site and on previous studies of similar developments elsewhere in Melbourne.

2.1 Site Location and Surroundings

The proposed development is located on north-eastern corner of the intersection of Johnson Street and Mill Road, in Oakleigh. The subject site is rectangular in shape with a frontage of 24.38 metres to Johnson Street and a frontage of 36.6 metres to Mill Road. The site has an overall area of approximately 890 square metres. The site currently comprises a single-storey building that accommodates four retail tenancies.

The site's location relative to the surrounding road network is shown in Figure 2.1 below:

Figure 2.1: Site Location and Surroundings



The site is located in a Commercial 1 Zone (C1Z) and is subject to a Design and Development Overlay – Schedule 11 (DDO11). Land use within the immediate vicinity of the site is residential to the south and commercial to the north and east, in addition to land for public use.

The site is located within the Oakleigh Activity Centre and is situated in close proximity to the Oakleigh Railway Station which is approximately 130 metres to the north-east of the subject site.

Some other key land uses nearby include:

- Sacred Heart Catholic Church, located approximately 130 metres to the south of the subject site.
- Sacred Heart Girls College, located approximately 150 metres to the south of the subject site.
- Sacred Heart Primary School, located approximately 170 metres to the south of the subject site.

2.2 Road Network

Johnson Street is a Council managed Local Road that runs essentially in a north-south alignment between Haughton Road and Mora Avenue. North of Mill Road, Johnson Street has an approximate carriageway width of 14.20 metres, accommodating a one traffic lane in each direction, and a mix of kerbside parallel parking and 60-degree angled parking along the eastern side of the road. A bus stop is located along the western side of the road within this section.

South of Mill Road, Johnson Street has an approximate carriageway width of 13.50 metres, accommodating a one traffic lane in each direction, and 90-degree angled parking along the western side of the road. Kerbside parallel parking is permitted along the eastern side of the road within this section.

Johnson Street has a default speed limit of 50 km/per applicable to a built-up area. Concrete footpaths are provided along both sides of the road.

Mill Road is a Council managed Local Road that runs essentially in an east-west alignment between Haughton Road and Warrigal Road. Mill Road has an approximate carriageway width of 9.30 metres accommodating one traffic lane in each direction. East of Johnson Street kerbside parallel parking is permitted on both sides of Mill Road. Mill Road has a default speed limit of 50 km/hr and footpaths are provided on both sides of the road.

Warrigal Road is a Department of Transport (VicRoads) managed Road Zone Category 1 road that functions as a Primary State Arterial Road and runs in a north-south alignment between Canterbury Road, in Surrey Hills to Beach Road, in Mentone. In the vicinity of the site Warrigal Road accommodates two lanes of traffic in each direction, separated by a narrow median. 'No Stopping' restrictions apply on both sides of the road and it has a posted speed limit of 60km/hr.

Figure 2.2 below shows the aerial photograph of the subject site relative to the surroundings:

Figure 2.2: Aerial View of the Site and Surroundings



2.3 Parking Conditions

In order to assess the current parking conditions in the vicinity of the site, car parking occupancy surveys were conducted on Thursday 7 November 2019 from 8:00am to 8:00pm.

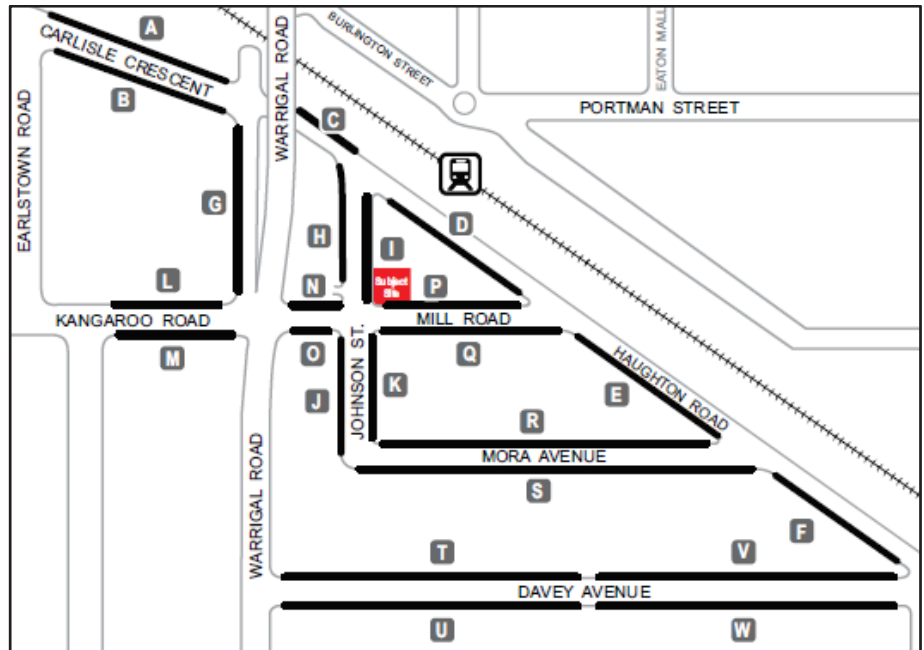
Parking Inventory

The parking survey inventory indicated a supply of 263 on-street car parking spaces in close proximity to the site. Typical of commercial zones and activity centres, on-street parking in the survey area is predominantly time restricted (1/2P, 1P, 2P & 4P) during weekday business hours and during the day on Saturdays, thereby encouraging a high turnover of parking and is generally not suitable for long-term car parking.

It is noted that the commuter car parks located near Oakleigh Railway Station have not been considered in the car parking occupancy survey as these car parks are specifically designated for the use of commuters.

The area surveyed is shown below in Figure 2.3, with the detailed results presented in Appendix A.

Figure 2.3: Parking Occupancy Survey Area



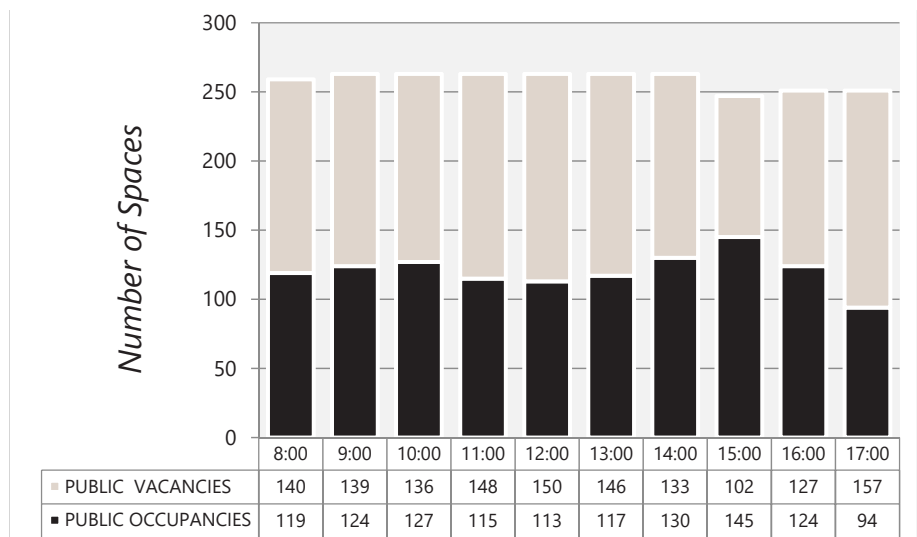
In summary, the survey results showed the following:

Thursday 7 November 2019

- There was a total supply of between 247 to 263 publicly available car parking spaces within the survey area (depending on the time of day).
- Overall, the demand for parking was low to moderate with parking occupancy levels varying between 37% and 59%.
- The peak demand for parking occurred at 3:00pm, when a total of 145 parking spaces were recorded occupied out of the available supply of 247 spaces, representing a parking occupancy of 59%. There were a minimum of 102 spaces available for parking at this time.
- The parking demand remained consistent throughout the survey period and was observed to decline during the afternoon and evening period (after 3:00pm).

The temporal parking demands for the survey period on Thursday are shown in Graph 2.1 below:

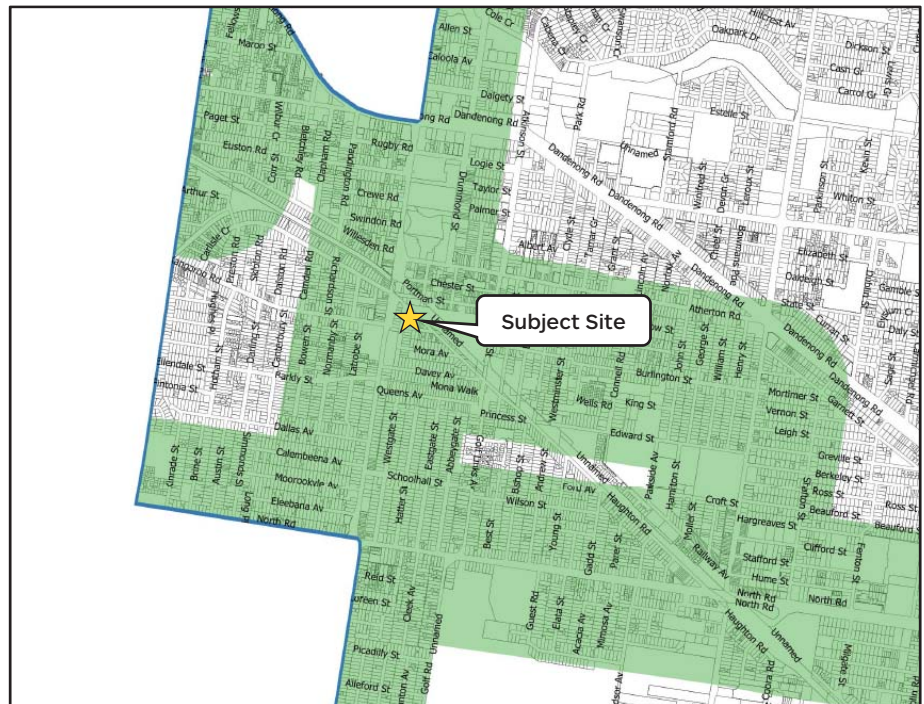
Graph 2.1: Thursday 7 November 2019 - Temporal Profile of Parking Demand



2.4 Sustainable Transport

The subject site is located within the heart of the Principal Public Transport Network (PPTN) Area as shown on the PPTN Maps of the State Government of Victoria (July 2018). The location of the subject site relative to the PPTN area is shown in Figure 2.4 below:

Figure 2.4: Subject Site with respect to the PPTN Area

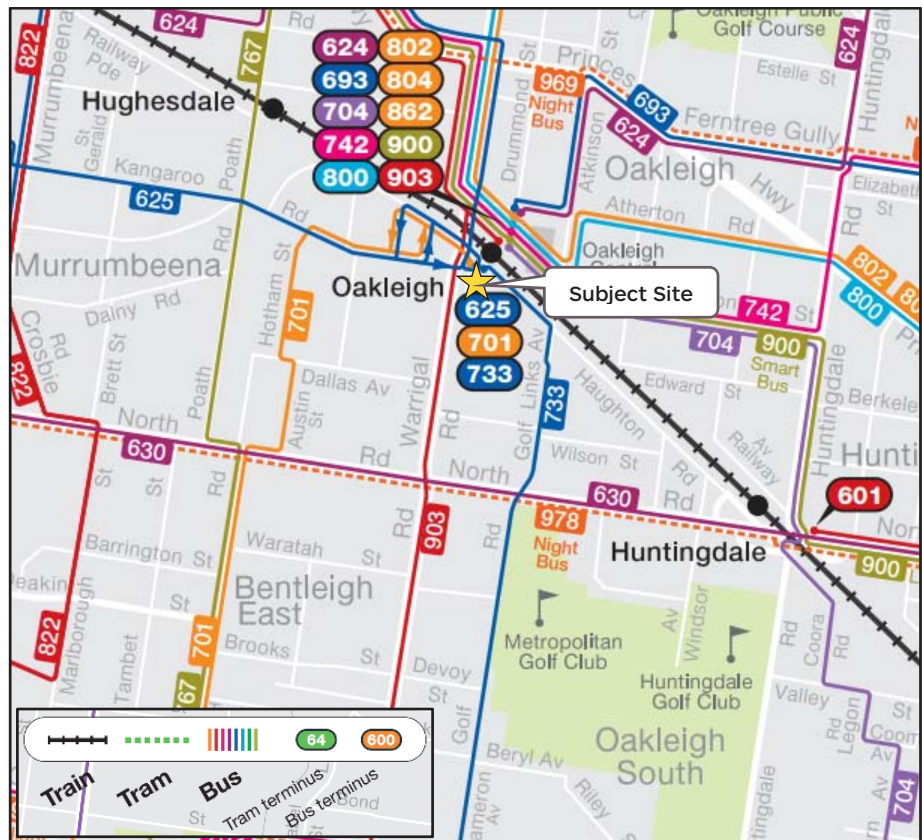


The subject site has excellent access to the public transport services primarily via Oakleigh Railway Station, located approximately 130 metres from the subject site. The public transport services available in close proximity of the subject site are summarised in Table 2.1 and illustrated in Figure 2.5:

Table 2.1: Summary of Public Transport Services

Mode	Route Number	Route	Nearest Stop	Distance
Train	Cranbourne and Pakenham Lines		Oakleigh	130m (~2 mins walk)
Bus	625	Elsternwick - Chadstone via Ormond & Oakleigh	Oakleigh Railway Station / Johnson Street	Site Frontage (~1 min walk)
	701	Oakleigh - Bentleigh via Mackie Road & Brady Road		
	733	Oakleigh - Box Hill via Clayton & Monash University & Mt Waverley		
	624	Kew - Oakleigh via Caulfield & Carnegie & Darling and Chadstone	Oakleigh Railway Station	350m (~5 mins walk)
	693	Belgrave - Oakleigh via Ferntree Gully & Brandon Park		
	700	Oakleigh Station - Chadstone SC		
	704	East Clayton - Oakleigh via Clayton & Huntingdale		
	742	Eastland - Chadstone via Vermont South & Glen Waverley & Oakleigh		
	800	Dandenong - Chadstone via Princes Highway & Oakleigh		
	802	Dandenong - Chadstone via Mulgrave & Oakleigh		
	804	Dandenong - Chadstone via Wheelers Hill & Oakleigh		
	862	Chadstone via North Dandenong & Oakleigh		
	900	Stud Park SC (Rowville) - Caulfield via Monash University & Chadstone (SMARTBUS Service)		
903	Altona - Mordialloc (SMARTBUS Service)			

Figure 2.5: Public Transport Services in Close Proximity of the Site



Bicycle Network

The site also has very good bicycle accessibility, primarily via the Djerring Trail which runs approximately 100 metres to the north of the subject site. Other bicycle facilities providing a very good connection to the subject site via the broader bicycle network include:

- Off-road shared paths along the Djerring Trail, Belgrave Road, Golf Road, and North Road;
- On-road bicycle lanes along Atkinson Street, Atherton Road, Kangaroo Road, Murrumbeena Road, and Neerim Road;
- Informal bicycle routes running along Paddington Road, Golf Links Avenue, Westminster Street, Murrumbeena Crescent, Ferntree Gully Road, and Princes Highway (Dandenong Road).

The bicycle paths within the vicinity of the site are presented in the TravelSmart Map shown in Figure 2.6 below:

Figure 2.6: Bicycle Routes - TravelSmart Map

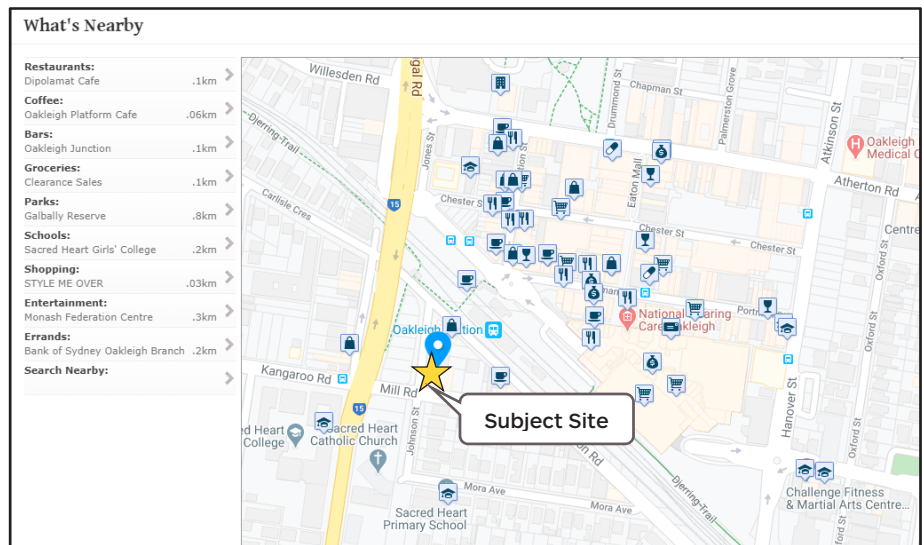


Pedestrian Facilities

Pedestrian movements are well facilitated with footpaths provided on both sides of the road on Johnson Street and Mill Road. Pedestrian ‘Zebra Crossings’ are located across Johnson Street and Houghton Road approximately 80 metres to the north of the subject site. In addition, pedestrians are well facilitated by the nearby Djerring Trail shared path which provides connectivity to several activity centres.

The site achieves a ‘Walk Score’ of 95 points (out of a possible 100) and is described as a ‘Walkers Paradise’ on WalkScore.com, noting that daily errands do not require a car. A site’s walk score is calculated based on the walking distance to local amenities, such as supermarkets, schools, parks, public transport, etc. Walkscore.com utilises data sources such as Google and road network data to calculate a ‘Walk Score’. The convenient everyday services are illustrated on a map in Figure 2.7 below:

Figure 2.7: Walkable Services from the Subject Site



3 The Proposal:

It is proposed to demolish the existing buildings on-site to construct a six-storey mixed-use development on the land located at 12-14 Johnson Street, in Oakleigh. More specifically, the development will comprise the following land uses:

- Two retail tenancies located at the ground floor with a combined floor area of 272 sqm; and
- Five levels of office use with a combined floor area of 2,990 sqm.

Vehicular access to the on-site car park is proposed via a double width crossover located along Mill Road. A total of 61 car parking spaces (including one DDA space) and five motorcycle parking spaces are proposed within the ground floor and two levels of basement.

A total of 21 bicycle parking spaces are proposed on-site to cater the needs of the employees, visitors and customers of the proposed development.

Primary pedestrian access is provided to/from Johnson Street.

An on-site loading bay is proposed within the ground floor. Refuse and recycling storage is proposed on the ground floor in a designated room.

4.1 Clause 52.06-5 – Car Parking Requirements

Parking requirements for new use developments are set out under Clause 52.06 of the Monash Planning Scheme. The purpose of Clause 52.06, amongst other things, is:

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

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

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

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

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

As discussed in Section 2.3, the subject site falls within the Principle Public Transport Network Area, and therefore Column B rates of Table 1 in Clause 52.06 are applicable for the number of car spaces to be provided, which are outlined in Table 4.1 below:

Table 4.1: Statutory Car Parking Requirement

Land Use	Size	Column B Rate	Statutory Requirement
Retail (Shop)	272 sqm	3.5 spaces to each 100 sqm of leasable floor area	9 spaces
Office	2,990 sqm	3.0 spaces to each 100 sqm of net floor area	89 spaces
TOTAL			98 spaces

Accordingly, the proposed development has a statutory requirement to provide 98 car parking spaces on-site in accordance with the Monash Planning Scheme.

4.2 Car Parking Allocation

A total of 61 car parking spaces are proposed on-site (2 car spaces allocated to staff of the retail tenancies and 59 spaces allocated to the office tenancies at a provision rate of 1.97 spaces per 100sqm). Accordingly, the proposed development seeks a reduction of 37 spaces against the parking requirements of the Monash Planning Scheme.

In regards to reducing the car parking requirement, Clause 52.06-7 states that:

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

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

4.3 Car Parking Demand Assessment

In accordance with Clause 52.06-7 of the Monash Planning Scheme, the Car Parking Demand Assessment **must** address the following matters, to the satisfaction of the responsible authority:

- 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.

These factors are discussed below in more detail below:

Likelihood of Multi-Purpose Trips within the Locality

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

Variation in Car Parking Demand

Demands for car parking associated with the office tenancies depend largely on the nature of the businesses operating on the site, including hours of operation. Typical operation of the retail and office tenancies will predominantly occur during weekday business hours, with the retail tenancies also expected to incorporate weekend trade (mainly Saturdays).

RETAIL PARKING DEMAND

The retail component of the development is likely draw most of its trade from walk-up customers associated with visitors to the activity centre, public transport commuters, and nearby residents and staff of the surrounding businesses (including the office component of the proposed development). Therefore, the customer demand for car parking associated with the retail component of the development is expected to be minimal.

OFFICE CAR PARKING DEMAND

Studies of car parking demands associated with office developments of varying sizes located in areas providing good access to public transport, have typically shown parking generation rates of between 1.0 and 3.0 spaces per 100sqm.

The proposed development has excellent access to a range of public transport services, in particular the nearby Oakleigh Railway Station, and is accessible to bicycle infrastructure and proposes bicycle parking in excess of the statutory requirements. The offices will also have access to ride share services like Uber and taxi services.

Accordingly, future office employees who are not provided with an on-site car parking space will have the opportunity to use alternative modes of transport to access the site, rather than utilise a private vehicle.

In addition to the above, the surrounding areas are well regulated and restricted to a mix of shorter term parking, making it difficult for an employee to park their vehicle proximate to the site if not allocated an on-site car parking space.

In this regard, it is expected that the office car parking demands will generally be limited to the supply of parking provided by the development.

The application plans show a total of 59 car parking spaces for the 2990 sqm of net floor area of office, which results in a car parking provision rate of 1.97 spaces per 100sqm, which is considered suitable for the office component on the basis of the above discussion.

Short and Long Stay Parking Demands

Both the land uses of the proposed development will generate demands for short and long stay car parking, with short stay demands related to visitor and customer trips and long stay to employees/staff.

It is expected that majority of the overall parking demands generated by the development will be long-stay staff parking, with the on-site car parking allocation seeking to accommodate these demands.

The relatively small proportion of short stay parking (visitor and customer parking) will be facilitated off-site within available on-street spaces in the vicinity of the site.

Availability of Public Transport in the Locality

The site has excellent access to a range of public transport services with train and several bus services operating in close proximity to the subject site. The site has ideal access to Oakleigh Railway Station, located within 130 metres of the site. The site is also located within close proximity to bus stops running along 14 different routes (Bus Routes 624, 625, 693, 700, 701, 704, 733, 742, 800, 802, 804, 862, 900 and 903). These services are outlined in more detail in Section 2.4 of this report.

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

Convenience of Pedestrian and Cyclist Access to the Site

Pedestrian access is well facilitated with constructed footpaths on both sides of Johnson Street, Mill Road and other streets in the vicinity of the site, which generally are in excellent condition. Pedestrian 'Zebra Crossings' are located across Johnson Street and Haughton Road approximately 80 metres to the north of the subject site.

The site also has very good accessibility with formal and informal bicycle routes, primarily via the Djerring Trail which runs approximately 100 metres to the north of the subject site. Other bicycle facilities providing a very good connection to the subject site via the broader bicycle network include:

- Off-road shared paths along the Djerring Trail, Belgrave Road, Golf Road and North Road;
- On-road bicycle lanes along Atkinson Street, Atherton Road, Kangaroo Road, Murrumbeena Road, and Neerim Road;
- Informal bicycle routes running along Paddington Road, Golf Links Avenue, Westminster Street, Murrumbeena Crescent, Ferntree Gully Road, and Princes Highway (Dandenong Road).

These facilities provide a viable means of alternative sustainable transport that is expected to reduce future reliance on private motor vehicles.

Provision of Bicycle Parking and End of Trip Facilities for Cyclists

The proposal includes a generous provision of 21 bicycle spaces which is in excess of the statutory requirement for bicycle parking. The facilities are designed to support bicycle use by employees, visitors and customers by providing end of trip facilities which complement the good access to the available bicycle connections.

Empirical Data or Case Study – 511 Church Street, Richmond

Surveys undertaken by Cardno in May 2016 of an office development at 511 Church Street, in Richmond recorded a peak parking demand of 1.76 spaces per 100 square metres of floor area. Parking conditions were unconstrained, with no more than 122 of the 174 car parking spaces provided occupied at any one time.

Cardno also undertook concurrent surveys of the on-street car parking in the area of the 511 Church Street (Richmond) site, with these showing that available long-term parking was saturated (98 percent occupied) and short-term parking was also highly utilised (91 percent occupied) at the time of the recorded on-site peak parking demand.

It is understood that access to the on-site car parking at 511 Church Street, Richmond is secured for staff use only and is available at no cost.

As such, the abovementioned on-site peak parking demand rate was unlikely to be artificially low due to incidences of building occupants choosing to park on-street and likely reflects that:

- The site is easily accessible by alternate transport, with:
 - Tram route 70 operates along Swan Street, just north of the site;
 - East Richmond train station located 450 metres to the west; and

- The Main Yarra bicycle trail extending along the Yarra River to the south.
- These alternate transport modes are more attractive for many staff than driving and searching for all day parking.

The subject site has very similar characteristics to this site having regard to accessibility, on-street parking supply and availability, and road network conditions. As discussed in Section 2.3, the on-street parking in the surrounding streets is typically subject to time restrictions that encourage a high turnover of parking and is generally not suitable for long-term car parking. The proposed office component of the development is likely to occasionally attract some visitors (meetings etc.) to the subject site. As such, it is anticipated that visitors to the office will be able to suitably park within the surrounding on-street short-term parking.

In light of the preceding, there is good opportunity to encourage a shift from private vehicle use to alternate transport through the suppression of car parking. As such, the site is a prime candidate to reduce on-site parking provisions in favour of implementing sustainable transport initiatives.

The site is readily accessible by public transport and the development scheme actively promotes alternate transport use through provision of a generous number of bicycle parking spaces and end of trip facilities.

Based on the preceding case study, it is considered that there are sufficient controls to suppress car parking demands through the limitation of on-site car parking.

4.4 Responsible Authority Considerations

Before granting a permit to reduce the number of spaces the responsible authority must consider the following, as appropriate:

- The Car Parking Demand Assessment.
- Any relevant local planning policy or incorporated plan.
- The availability of alternative car parking in the locality of the land, including:
 - Efficiencies gained from the consolidation of shared car parking spaces.
 - Public car parks intended to serve the land.
 - On street parking in non-residential zones.
 - Streets in residential zones specifically managed for non-residential parking.
- Access to or provision of alternative transport modes to and from the land.
- Any other relevant consideration.

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

Relevant Local Planning Policies

There is significant support within the Monash Planning Scheme and various Council strategies for developments which encourage the use of sustainable transport alternatives from the private motor vehicle, including those listed and discussed below.

MONASH INTEGRATED TRANSPORT STRATEGY

The main focus of the Monash Integrated Transport Strategy (Monash ITS) is to develop a highly accessible and sustainable transport network that supports the safety, health and prosperity of all members of the community.

The recommended policy goals and actions address a diverse range of factors, such as public safety, public transport service quality, road network efficiency, provision of effective and attractive walking and cycling routes, parking management, and transport demand management.

The MONASH ITS conducted a review of relevant state, local, and national policy and this gave guidance towards the following key relevant directions in relation to transport and land use for the Monash ITS:

- **Transport choice** is central to providing equitable access to employment and services and this requires that there are a number of viable and attractive options, such as walking, cycling, public transport or private vehicles. It is noted that transport choice is also intrinsically linked to urban form. Providing higher density development close to activity centres with a range of employment, retail, educational and community services means that people will have more transport choices.
- **Promoting sustainable transport** (walking, cycling and public transport) is considered best practice and can help recognise the following benefits:
 - Safety: Increased sustainable and active transport improves safety and perceptions of safety.
 - Healthy, active communities: There is a strong link between active transport and health.
 - Socially connected, liveable communities: Places where people walk, cycle and use public transport more often are likely to perform better on a range of social indicators.
 - Transport efficiency: Increased use of sustainable transport has environmental and economic benefits through reduced greenhouse emissions and reduced space required for vehicle movement and storage.
- **Planning for new development** must consider providing for and promoting sustainable and active transport modes in accordance with the road user hierarchy. This includes a requirement for major developments to integrate with the transport network, including public transport and cycling.

CLAUSE 21.06 – MAJOR ACTIVITY AND NEIGHBOURHOOD CENTRES

Council seeks more sustainable development in the Major Activity Centres of Glen Waverley and Oakleigh to create more vibrant centres that have improved access for walking, cycling and public transport.

Developments should be positioned in highly accessible locations to promote more sustainable forms of transport, particularly walking, cycling and public transport.

Availability of Car Parking in the Locality

The results of the parking surveys and observations outlined in Section 2.3 confirm that there is adequate on-street car parking in the vicinity of the site to meet the short-term (visitor/customer) parking needs generated by the proposed development.

There were observed to be a minimum of 102 spaces available during the afternoon school peak pick-up period at 3:00pm. During all other times there were at least 127 vacant car spaces available for parking. The time restrictions (1/2P, 1P, 2P & 4P during weekday business hours and during the day on Saturdays) for the on-street parking spaces in the surrounding area, encourage high turn-over and therefore are ideal for short-term users such as office visitors and retail customers of the proposed development.

On this basis, the on-street parking can readily cater for the expected short-term parking demand associated with office visitor and retail customers car parking demand.

Accessibility to Alternate Transport Modes

As discussed previously, the subject site has excellent accessibility by alternate transport modes (such as walking, cycling, public transport, car share, Uber and taxi services) which will allow the users of the proposed development (staff/employees and visitors/customers) to conveniently access the site without relying on a private vehicle.

4.5 Adequacy of the Proposed Car Parking Provision

It is proposed to provide 61 car parking spaces on-site to meet the parking demands of the users of the proposed development. This level of parking provision is considered adequate for the following reasons:

- The site is ideally located to take advantage of access to sustainable transport alternatives such as the metropolitan train, buses, bicycle & pedestrian network. This will enable users of the proposed development to travel to and from the site.
- The generous provision of bicycle parking will encourage the use of alternative transport modes and reduce the reliance on private vehicle use.
- The provision of two retail car parking spaces is expected to meet the long-term parking demand for staff/employees of the retail tenancies.
- The provision of 59 office car parking spaces is expected to meet the long-term parking demand for staff/employees of the office tenancies.
- It is expected that the retail/tenancies will operate, to some extent, as ancillary to the surrounding retail and commercial businesses in the area and will draw a portion of its patronage from nearby residents, commuters and customers of other businesses in the precinct.
- The parking surveys indicate that there is ample capacity within the surrounding on-street parking (including during peak weekday afternoon), which is generally subject to short-term parking restrictions. These on-street car parking spaces can easily accommodate the expected short-term demand of office visitors and retail customers of the proposed development.
- The proposed mixed-use development is in line with the Local and State Policies.

On the basis of the reasons discussed above it is considered that the proposed level of on-site car parking to be suitable for the nature and scale of the proposed development.

5.1 Clause 52.06-9 – Design Standard Assessment

The proposed access arrangements and car parking layout have been designed in accordance with the objectives and design requirements of Clause 52.06-9 of the Monash Planning Scheme, AS/NZS 2890.6:2009 and with the relevant sections of AS/NZS 2890.1:2004.

An assessment against the relevant design standards of Clause 52.06-9 of the Planning Scheme is provided below.

Design Standard 1 – Accessways

Vehicular access is proposed via a 6.1-metre-wide crossover located along Mill Road. The existing crossover will be modified to align with the proposed internal accessway.

Design Standard 1 of Clause 52.06-9 relates to the design of accessways. The requirements of Design Standard 1 are assessed against the proposal in Table 5.1.

Table 5.1: Design Standard 1 Assessment - Accessways

Requirement	Comments
Must be at least 3m wide.	<u>Complies:</u> All accessways have been provided with a minimum trafficable width of 3.3 metres.
Have an internal radius of at least 4m at changes of direction or intersection or be at least 4.2m wide.	<u>Complies:</u> Change of directions in the accessway has been widened appropriately.
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.	<u>N/A:</u> The car park is not a public car park.
Provide at least 2.1m headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8m.	<u>Complies:</u> A minimum headroom clearance of 2.2 metres has been provided along the ramps in accordance with the Australian Standard AS2890.1:2004. A minimum headroom clearance of 3.8 metres has been provided within the ground floor parking area and loading area.
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.	<u>Complies:</u> All vehicles are able to enter/exit the site to/from Mill Road in a forwards direction.
Provide a passing area at the entrance at least 6.1m wide and 7m long if the accessway serves ten or more car parking spaces and is either more than 50m long or connects to a road in a Road Zone.	<u>Complies:</u> The accessway at the entrance of the site is 6.1 metres wide and in excess of 7.0 metres in length which enables simultaneous two-way vehicular movements.
Have a corner splay or area at least 50% clear of visual obstructions extending at least 2m along the frontage road from the edge of an exit lane and 2.5m along the exit lane from the frontage, to provide a clear view of pedestrians on the footpath of the frontage road. The area clear of visual obstructions may include an adjacent entry or exit lane where more than one lane is provided, or adjacent landscaped areas, provided the	<u>Complies:</u> A pedestrian sight triangle is provided adjacent to the exit lane of the accessway at the entrance to the site, measuring 2.0 metres along the site frontage and extending 2.5 metres into the site as per the requirement of Design Standard 1. Any fixtures or landscaping in these areas will be below 900mm in height to ensure clear visibility. Since the accessway is double width at the

landscaping in those areas is less than 900mm in height.	entrance, pedestrian sight triangle is not required to be provided adjacent to the entrance lane of the accessway.
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 6m from the road carriageway.	<u>N/A</u> : Car spaces are not accessed directly to/from a road in a Road Zone.

Design Standard 2 - Car Parking Spaces

A total of 61 car parking spaces are proposed on-site for the proposed development. 14 of the 61 car parking spaces are proposed within car parking stacker systems and have been assessed against relevant design standards further in this report.

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

Table 5.2: Design Standard 2 Assessment – Car Parking Spaces

Requirement	Comments
Car parking spaces and accessways must have the minimum dimensions as outlined in Table 2 of Design Standard 2.	<u>Complies</u> : All of the car parking spaces have been provided with dimensions in accordance with Table 2 of Design Standard 2 to Clause 52.06 of the Planning Scheme.
A wall, fence, column, tree, tree guard or any other structure that abuts a car space must not encroach into the area marked 'clearance required' on Diagram 1 of Design Standard 2, other than: - A column, tree or tree guard, which may project into a space if it is within the area marked 'tree or column permitted' on Diagram 1. - A structure, which may project into the space if it is at least 2.1m above the space.	<u>Complies</u> : All car parking spaces are clear of any encroachment into the area marked on Diagram 1 of the Design Standard 2.
Car spaces in garages or carports must be at least 6m long and 3.5m wide for a single space and 5.5m wide for a double space measured inside the garage or carport.	<u>N/A</u> – No garages or carports are proposed within the development.
Where parking spaces are provided in tandem (one space behind the other) an additional 500mm in length must be provided between each space.	<u>N/A</u> – No car spaces are proposed in a tandem arrangement within the development.
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	<u>N/A</u> : No car parking spaces are proposed for residents. Notwithstanding, all of the car parking spaces are provided under cover.
Disabled car parking spaces must be designed in accordance with Australian Standard AS2890.6-2009 (disabled) and the Building Code of Australia. Disabled car parking spaces may encroach into an accessway width specified in Table 2 of Design Standard 2 by 500mm.	<u>Complies</u> – The single DDA space and the adjacent shared zone have been designed in dimensional accordance of AS2890.6:2009, each having a width of 2.4 metres and a length of 5.4 metres.

Design Standard 3 – Gradients

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

Table 5.3: Design Standard 3 Assessment - Gradients

Requirement	Comments
<p>Accessway grades must not be steeper than 1:10 (10%) within 5m of the frontage to ensure safety for pedestrians and vehicles. The design must have regard to the wheelbase of the vehicle being designed for; pedestrian and vehicular traffic volumes; the nature of the car park; and the slope and configuration of the vehicle crossover at the site frontage. This does not apply to accessways serving three dwellings or less.</p>	<p><u>Complies:</u> The first 5 metres into the site are flat.</p> <p>Both the basement ramps incorporate the following gradients and transition lengths:</p> <ul style="list-style-type: none"> • Initial 1: 8 gradient for 2.0 metres • Midblock gradient of 1:4 for 8.55 metres; and • Final 1:8 gradient for 2.5 metres.
<p>Ramps (except within 5 metres of the frontage) must have the maximum grades as outlined in Table 3 of Design Standard 3 and be designed for vehicles travelling in a forward direction.</p>	<p><u>Complies:</u> The proposed grades are in accordance with Table 3 of Design Standard 3, with grades no steeper than 1:4.</p>
<p>Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change, or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming.</p> <p>Plans must include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.</p>	<p><u>Complies:</u> Appropriate transition sections have been provided to prevent scraping or bottoming.</p>

Design Standard 4 - Mechanical Parking

It is proposed to provide seven Klaus SingleVario 2061-190 car parking stacker systems within the ground floor level of the development to cater for a total of 14 vehicles. Each system will provide two levels of dependent parking which will be allocated to the same commercial tenancy. A headroom clearance of 3.80 metres is proposed within the ground floor. These car stacker systems operate in a dependant manner i.e. vehicle parked on the lower level of the stacker system will need to depart and wait/queue on-site, in order to access the upper car parking space within the stacker system, which is suitable for office related uses that are part of the same tenancy.

Design Standard 4 of Clause 52.06-9 relates to the design of mechanical parking. The requirements of Design Standard 4 are assessed against the proposal in Table 5.4:

Table 5.4: Design Standard 4 Assessment – Mechanical Parking

Requirement	Comments
At least 25% of the mechanical car parking spaces can accommodate a vehicle clearance height of at least 1.8 metres.	<u>Complies</u> – All of the platforms within the system have been designed to accommodate a 1.8 metre vehicle height.
Car parking spaces that require the operation of the system are not allocated to visitors unless used in a valet parking situation.	<u>Satisfied</u> – Spaces within the car stacker systems are allocated to the staff of the retail and office components of the development.
The design and operation is to the satisfaction of the responsible authority.	<p>It is proposed to use seven Klaus SingleVario 2061-190 car stacker systems, to accommodate a total of 14 car parking spaces.</p> <p>Each system will have a single width platform for the upper level of parking with a minimum usable platform width of 2.5 metres and a length of 5.0 metres. The lower level of parking will have no platform and will be a standard at-grade car space, 2.8 metres in width and 5.2 metres in length. These dimensions will be encroached marginally by the mechanical installations for the stacker system and will not impact the access to the car space.</p> <p>Refer Appendix B for the generic specifications of the Klaus Stacker systems.</p> <p>The design and operation of the stacker systems is considered to be acceptable.</p>

5.2 Swept Path Assessment

An assessment of the accessibility to/from the site using the ‘Autodesk Vehicle Tracking’ software has been conducted. It was found that two opposing B99 design vehicles (99.8th percentile car), could pass at the site access in a suitable manner. Further, all vehicles will be able to enter / exit the site in a forwards direction.

An assessment of the accessibility to/from the parking bays was also undertaken using the B85 design vehicle (85th percentile car) and it was found that each of the critical parking space could be accessed (ingress and egress) in a satisfactory manner.

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

The swept path assessment has been provided within Appendix C.

6.1 Traffic Generation and Distribution

Retail Traffic Generation

The retail tenancies are expected to generate in the order of one trip per allocated staff space during the AM and PM peak hours, which equates to two trips per hour (excluding the accessible car space). During the AM commuter peak period, it is expected that every staff trip generated will be an arrival. Similarly, every staff trip generated during the PM peak will be a departing trip.

Office Traffic Generation

Based on surveys at other office developments in Melbourne, it is expected that the development will generate 0.5 vehicular trips per car space during the morning peak hour and 0.5 vehicular trips per car space during the afternoon peak hour. Employee trips will be mainly arriving in the morning peak and departing in the afternoon peak with approximately 90% of employees assumed to arrive in the morning and depart in the evening peak.

The office traffic generation for the AM and PM peak hours is shown below:

Table 6.1: Office Traffic Generation

	Morning Peak Hour	Evening Peak Hour
Arriving trips:	27	3
Departing trips:	3	27
Total trips:	30	30

Summary

A summary of the overall peak hour traffic generation for the proposed development is presented in Table 6.2.

Table 6.2: Overall Traffic Generation

	AM Peak	PM Peak
Arriving trips:	29	3
Departing trips:	3	29
Total trips:	32	32

6.2 Traffic Impact

The additional traffic generated by the proposed mixed-use development will flow directly onto Mill Road and then onto the surrounding road network.

Mill Road and the surrounding road network have the ability to accommodate the modest increase in traffic volume (in the order of 32 vehicle movements in AM and PM peak hours) associated with the proposed development and therefore is not expected to create any traffic safety or operational impacts.

7.1 Clause 52.34-5 – Bicycle Parking Requirements

Clause 52.34-3 of the Monash Planning Scheme outlines the requirements for bicycle parking for various uses. The bicycle parking requirements for the proposed mixed-use development are outlined in Table 7.1 below:

Table 7.1: Bicycle Parking Requirement

Use	User	Statutory Parking Rate	Statutory Requirement
Retail (272 sqm)	Employee	1 space to every 300 sqm of leasable area	1 space
	Customer	1 space to every 500 sqm of leasable area	1 space
Office (2990 sqm)	Employee	1 space to every 300 sqm of net floor area	10 spaces
	Visitor	1 space to every 1000 sqm of net floor area	3 spaces
TOTAL			15 spaces

Based on the above assessment, the proposed use of the site has a statutory requirement to provide 15 bicycle parking spaces on-site. It is proposed to provide a total of 21 bicycle parking spaces, in the following arrangement:

- 15 staff/employee spaces within wall mounted vertical bicycle parking rails (such as the Ned Kelly bicycle parking rails) provided within a secure bicycle parking room located on ground floor; and
- Six (6) visitor/customer spaces within three (3) double sided ‘hoop’ rails (such as the Arc De Triomphe bicycle parking rails).

Accordingly, the proposal exceeds the requirements of the Monash Planning Scheme which is considered to be appropriate bicycle parking provision.

7.2 Bicycle Parking Layout

Bicycle parking spaces have been designed in accordance with the dimensional requirements of AS2890.3:2015. More specifically, the following standards have been met:

- The proposed bicycle parking provides 29% bicycle parking spaces within ground level (horizontal rails), which exceeds the requirement outlined in AS2890.3:2015 that 20% of bicycle parking must be provided via ground level rails.
- Floor mounted horizontal bicycle rails are spaced at 1.0 metre intervals, with an envelope of 1.8 metres and accessed via an aisle with a width of at least 1.5 metres.
- Wall mounted vertical bicycle rails are spaced at 500mm intervals, with an envelope of 1.2 metres and accessed via an aisle with a width of 2.1 metres.

Accordingly, it is considered that the bicycle parking has been designed appropriately and in accordance with the relevant sections of AS2890.3:2015.

The bicycle parking specifications are provided within Appendix D.

7.3 End of Trip Facilities

In addition to bicycle parking, Clause 52.34-3 requires that showers and change rooms are provided for employee bicycle parking. The rates are applied in Table 7.2 below:

Table 7.2: End of Trip Facility Requirements

Component	Requirement	Number Required	Requirement
Showers	If 5 or more employee bicycle spaces are required, 1 shower for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter.	11 employee spaces	2 showers
Change Rooms	1 change room or direct access to a communal change room to each shower. The change room may be a combined shower and change room.	2 showers	2 change rooms

Based on the foregoing, the proposal has a requirement for two showers and two change rooms (or direct access to a communal change room).

The development proposes to provide three unisex combined showers and changing rooms near the bicycle parking room within the ground floor of the development. The proposal also includes a provision of 12 lockers.

Overall, the three combined showers/changerooms is considered to be adequate in catering for the intended users and thus the proposed provision is considered satisfactory.

8.1 Loading and Unloading Arrangements

Clause 65.01 of Monash Planning Scheme outlines the provision of loading facilities and states the following:

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

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

A loading bay has been provided on the ground floor of the proposed mixed-use development. The loading bay is 8.0 metres in length, 3.5 metres in width and has a headroom clearance of 3.8 metres. Vehicular access to/from the on-site loading bay is provided via the crossover located along Mill Road.

A swept path assessment of access to/from the on-site loading bay was undertaken using the Autodesk Vehicle Tracking software. A 6.4 metre long Small Rigid Vehicle (SRV as defined in AS2890.2-2002) was used in the assessment and it was found that this vehicle is able to enter the site in a forwards direction, access the loading bay to load/unload items and then exit the site in a forwards direction via Mill Road in a suitable manner.

Accordingly, it is considered that loading and unloading associated with the proposal can suitably be undertaken via the on-site loading bay.

The swept path assessment for the loading bay has been provided within Appendix E.

8.2 Waste Collection Arrangements

Waste is proposed to be stored within the bin storage room provided within the ground floor level of the mixed-use development.

It is understood that waste will be collected from the on-site loading bay, by a private contractor via a 6.4-metre-long Mini Rear Loader Truck. A swept path assessment demonstrates the ability for this vehicle to enter the site in a forwards direction, access the loading bay, collect waste and depart the site onto Mill Road in a forwards direction.

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

The swept path assessment for the waste collection truck has been provided within Appendix F.

9 Conclusion:

It is proposed to construct a six-storey mixed-use development on the subject site located at 12-14 Johnson Street, in Oakleigh. The development will comprise of two ground floor retail tenancies and five levels of office use. A total of 61 car parking spaces (including one DDA space) are proposed within the ground floor and two levels of basement. Vehicle access is proposed to be provided directly to/from Mill Road, located in the south-east corner of the subject site. A total of 21 bicycle parking spaces are proposed on-site. Based on the assessment undertaken above, the following conclusions have been reached:

Car Parking Provision

- The provision of 61 car parking spaces for the proposed development is considered to be satisfactory for the following reasons:
 - The site is ideally located to take advantage of access to sustainable transport alternatives such as the metropolitan train, buses, bicycle & pedestrian network. This will enable users of the proposed development to travel to and from the site.
 - The generous provision of bicycle parking will encourage the use of alternative transport modes and reduce the reliance on private vehicle use.
 - The provision of two retail car parking spaces is expected to meet the long-term parking demand for staff/employees of the retail tenancies.
 - The provision of 59 office car parking spaces is expected to meet the long-term parking demand for staff/employees of the office tenancies.
 - It is expected that the retail/tenancies will operate, to some extent, as ancillary to the surrounding retail and commercial businesses in the area and will draw a portion of its patronage from nearby residents, commuters and customers of other businesses in the precinct.
 - The parking surveys indicate that there is ample capacity within the surrounding on-street parking (including during peak weekday afternoon), which is generally subject to short-term parking restrictions. These on-street car parking spaces can easily accommodate the expected short-term demand of office visitors and retail customers of the proposed development.
 - The proposed mixed-use development is in line with relevant Local and State Government policies.

Vehicular Access and Car Parking Layout

- Vehicular access to/from the site is proposed via a modified crossover located on the south-east corner of the site along Mill Road, which has been designed in accordance with the requirements of the Monash Planning Scheme.
- The proposed 61 car parking spaces (including 14 spaces within the car parking stacker systems and one DDA space) have been designed in accordance with the requirements of the Monash Planning Scheme and/or relevant sections of AS 2890.1:2004.
- Swept path assessments demonstrate that all critical car parking spaces (including critical bays for the car stacker systems) can be accessed in a satisfactory manner.

Traffic Generation and Impact

- The proposed development is estimated to generate up to 32 vehicular movements in the AM and PM peak hours of traffic which will access the directly via Mill Road.
- Mill Road and the surrounding road network have the ability to accommodate the modest increase in traffic volume and is not expected to create any traffic safety or operational impacts.

Bicycle Parking Provision & Layout and End of Trip Facilities

- The development provides a total of 21 bicycle parking spaces on-site to cater for the needs of the employees and visitors of the proposed development. This provision of bicycle parking spaces exceeds the statutory requirements of Clause 52.34 of the Monash Planning Scheme and is considered to be appropriate.
- The bicycle parking layout has been designed in accordance with the Australian Standard AS2890.3:2015 and is considered satisfactory.
- Provision of three unisex combined showers and change rooms near the bicycle parking room on ground floor of the development is considered satisfactory. The development also provides a provision of 12 lockers.

Loading and Waste Collection Arrangements

- A loading bay has been provided on ground floor for the loading and unloading activities associated with the proposed development. The swept path assessment demonstrates that a 6.4-metre-long Small Rigid Vehicle is able to access the loading bay in a suitable manner.
- Waste is proposed to be collected on-site by a private waste contractor. The swept path assessment undertaken demonstrates the ability for a 6.4-metre-long Mini Rear Loader Waste Collection Truck to access the site in a suitable manner.

Overall, based on the assessment undertaken above, the proposed mixed-use development is considered to be acceptable from the traffic engineering perspective and is not expected to create adverse traffic or parking impacts in the precinct.

Appendix A Survey Results



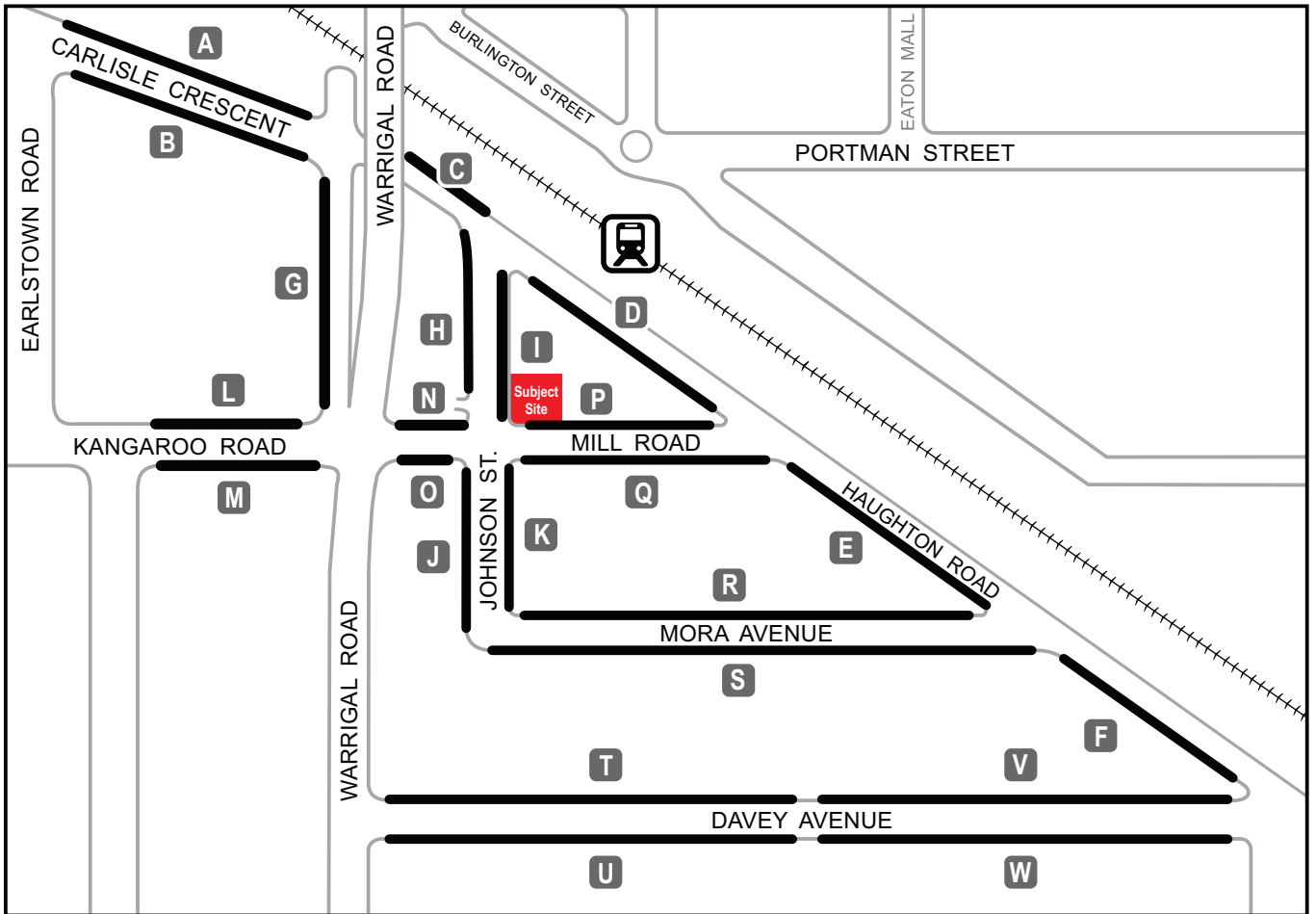


FIGURE 2.3
PARKING SURVEY AREAS

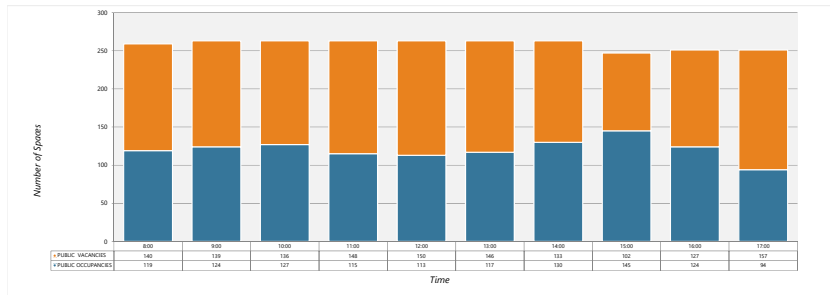


12-14 Johnson Street Oakleigh - Parking Survey

Parking Occupancy Survey	
Date	Thursday, 7 November 2019
Location	12-14 Johnson Street, Oakleigh
Weather	

Public Parking (L/O)	Map Ref	Street	Section	Side	Restriction	Clear Way	Capacity	Parking Occupancy									
								8:00	9:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
1	A	Carlisle Crescent	between Earlstown Road and Warrigal Road Service Road	N	2P		8	4	3	3	2	3	5	5	5	3	4
1	B	Carlisle Crescent	between Earlstown Road and Warrigal Road Service Road	S	2P		3	1	1	2	0	2	2	2	1	1	0
0					Bus Zone		0	0	0	0	0	0	0	0	0	0	0
1					1/2 P		5	0	2	2	2	2	1	0	3	1	1
0	C	Haughton Road	between Warrigal Road and Johnson Street	SW	No Stopping		0	0	0	0	0	0	0	0	0	0	0
0	D	Haughton Road	between Johnson Street and Mill Road	SW	No Stopping		0	0	0	0	0	0	0	0	0	0	0
1	E	Haughton Road	between Mill Road and Mora Avenue	SW	4P 8am-6pm Mon-Fri, 8am-12pm Sat		15	7	9	13	13	13	11	10	11	8	6
1	F	Haughton Road	between Mora Avenue and Davey Avenue	SW	2P 8am-6pm Mon-Fri, 8am-1pm Sat		6	3	5	5	4	4	4	4	3	3	2
1	G	Warrigal Road Service Road	between Carlisle Crescent and Kangaroo Road	W	1/2P		2	2	2	2	1	0	1	2	2	1	1
1					2P		5	4	4	4	5	4	4	5	3	3	2
0					Works Zone 7am-5pm Mon-Sat, 2P Other Times		6	5	4	3	3	4	4	4	4	2	0
0	H	Johnson Street	between Haughton Road and Mill Road	W	Bus Zone		0	0	0	0	0	0	0	0	0	0	0
1	I	Johnson Street	between Haughton Road and Mill Road	E	1P		3	2	3	3	3	3	3	3	2	1	1
1					2P		6	4	6	6	6	6	5	6	6	4	3
0					No Parking - Kiss & Ride 2 Min		3	0	1	1	1	1	1	1	1	0	0
1	J	Johnson Street	between Mill Road and Mora Avenue	W	4P 8am-5pm Mon-Fri, 8am-12pm Sat		13	10	11	11	11	12	12	12	12	8	7
0					Permit Zone 8am-5pm School Days		13	7	10	12	12	12	12	12	10	6	6
0	K	Johnson Street	between Mill Road and Mora Avenue	E	No Stopping		0	0	0	0	0	0	0	0	0	0	0
1	L	Kangaroo Road	between Latrobe Street and Warrigal Road	N	2P 8am-6pm Mon-Fri		3	1	1	2	2	2	3	3	3	2	2
1	M	Kangaroo Road	between Latrobe Street and Warrigal Road	S	Bus Zone 8am-9am, 3pm-4pm Mon-Fri, 2P 8am-3pm Mon-Fri		4	0	0	0	0	0	0	0	0	0	0
0	N	Mill Road	between Warrigal Road and Johnson Street	N	No Stopping		0	0	0	0	0	0	0	0	0	0	0
0	O	Mill Road	between Warrigal Road and Johnson Street	S	No Stopping		0	0	0	0	0	0	0	0	0	0	0
1	P	Mill Road	between Johnson Street and Haughton Road	N	2P Mon-Fri		10	5	6	8	8	7	8	8	6	5	5
1	Q	Mill Road	between Johnson Street and Haughton Road	S	Permit Zone 3pm-7pm Mon-Fri		12	8	9	9	7	7	8	6	6	8	8
1	R	Mora Avenue	between Johnson Street and Haughton Road	N	4P 8am-6pm Mon-Fri, 8am-12pm Sat		6	3	5	6	6	6	6	6	6	4	2
1					2P 8am-5pm Mon-Fri, 8am-12pm Sat		25	11	8	7	7	8	9	13	15	13	8
1	S	Mora Avenue	between Johnson Street and Haughton Road	S	2P 8am-5pm Mon-Fri, 8am-12pm Sat		27	10	11	11	8	9	9	11	14	16	13
1					P 2Min 8:30am-9:30am, 3pm-4pm School Days		6	3	2	2	0	0	1	2	5	5	3
0	T	Davey Avenue	between Warrigal Road and #19/21	N	Permit Zone		8	5	6	6	6	6	6	7	7	5	4
1					P 2Min 8am-9am, 3pm-4pm School Days		4	0	0	0	1	1	0	2	4	4	2
1					2P 8am-5pm Mon-Fri, 8am-1pm Sat		19	8	6	6	5	5	7	8	11	10	8
1	U	Davey Avenue	between Warrigal Road and #19/21	S	2P 8am-5pm Mon-Fri, 8am-1pm Sat		25	14	12	8	8	6	6	7	10	10	7
1	V	Davey Avenue	between #19/21 and Haughton Road	N	2P 8am-5pm Mon-Fri, 8am-1pm Sat		27	13	11	10	9	7	7	8	14	13	10
1	W	Davey Avenue	between #19/21 and Haughton Road	S	2P 8am-5pm Mon-Fri, 8am-12pm Sat		29	6	7	7	7	6	5	7	8	8	7
PUBLIC CAPACITY								259	263	263	263	263	263	263	247	251	251
PUBLIC OCCUPANCIES								119	124	127	115	113	117	130	145	124	94
PUBLIC VACANCIES								140	139	136	148	150	146	133	102	127	157
PUBLIC % OCCUPANCIES								46%	47%	48%	44%	43%	44%	49%	59%	49%	37%

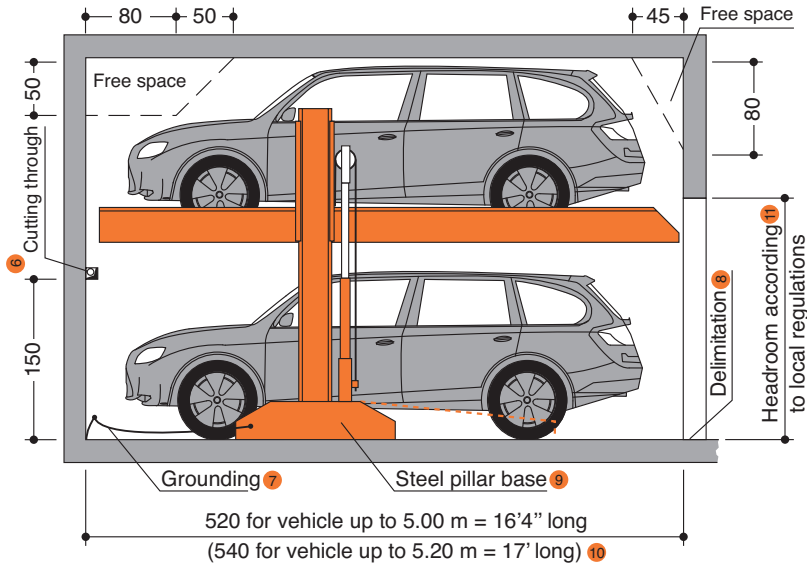
not available for public parking





Appendix B Car Stacker Specifications

Garage without door (basement garage)



Loadable up to 2600 kg! A system for all height! Subsequently adjustable!

Dimensions

All space requirements are minimum finished dimensions.

Tolerances for space requirements +³/₀. ³ Dimensions in cm.

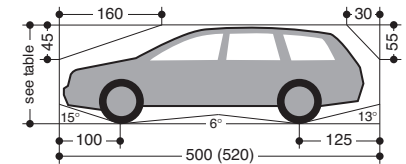
EB (single platform) = 2 vehicles

Suitable for

Standard passenger cars:
Limousine, station wagon, SUV, van
according to clearance and maximal
surface load.

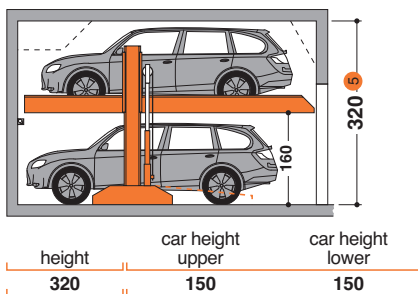
	Standard	Special ²
width	190 cm ⁴	190 cm ⁴
weight	max. 2000 kg	max. 2600 kg
wheel load	max. 500 kg	max. 650 kg

Clearance profile

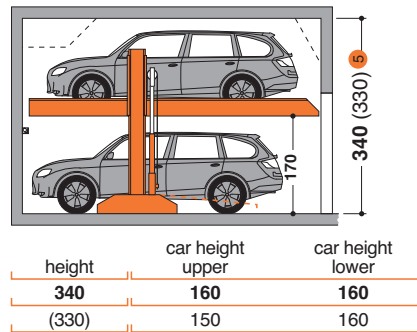


! Before lowering the platform, the vehicle parked on the lower parking space must be driven off!

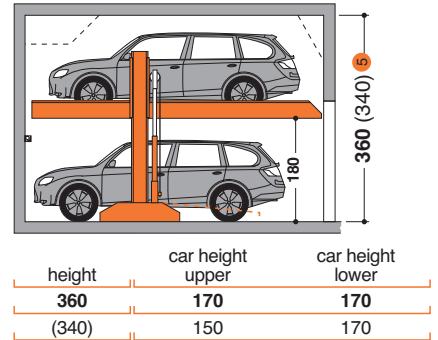
2061-160



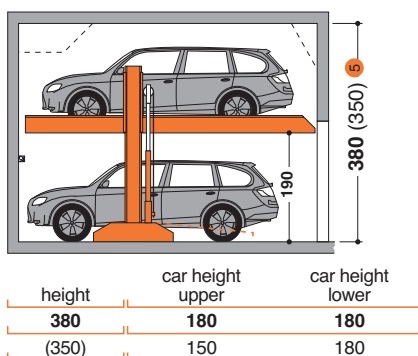
2061-170



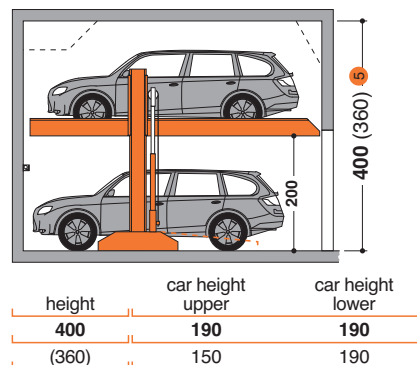
2061-180



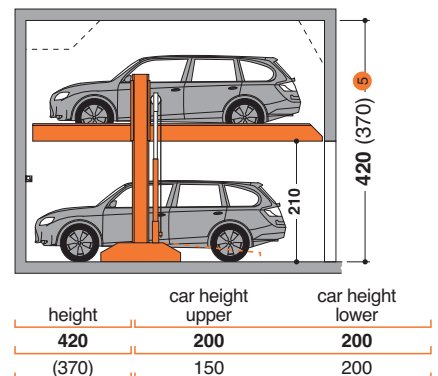
2061-190



2061-200



2061-210



- Standard type
- Special system: maximum load for extra charge.
- To follow the minimum finished dimensions, make sure to consider the tolerances according to VOB, part C (DIN 18330 and 18331) and the DIN 18202.
- Car width for platform width 230 cm. If wider platforms are used it is also possible to park wider cars.
- If a higher ceiling height is available higher cars can be parked.
- For dividing walls: cutting through 10 x 10 cm.
- Potential equalization from foundation grounding connection to system (provided by the customer).
- In compliance with DIN EN 14 010, 10 cm wide yellow-black markings compliant to ISO 3864 must be applied by the customer to the edge of the platform in the access area to mark the danger zone in front of the supporting surface of the upper platform edge (see „Load Plan“ Page 4)
- Variable steel pillar bases in two sizes (see „Load Plan“ Page 4).
- For convenient use of your parking space and due to the fact that the cars keep becoming longer we recommend a length of 540 cm.
- Must be at least as high as the greatest car height + 5 cm.

Page 1
Section
Dimensions
Car data

Page 2
Width dim.
without door

Page 3
Width dim.
with door
Function

Page 4
Approach
Load plan

Page 5
Installation
Electrical
installation

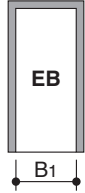
Page 6
Technical
data

Page 7
To be performed
by the customer
Description

Width dimensions for garage without door (basement garage)

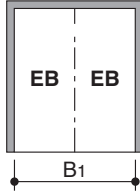
Dividing walls

Single Platform (EB)



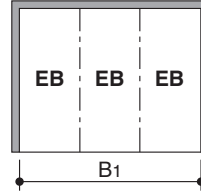
usable platform width	B1
230	260
240	270
250	280
260	290
270	300

Double arrangement (2 x EB)



usable platform width	B1
230	520
240	540
250	560
260	580
270	600

Tripple arrangement (3 x EB)

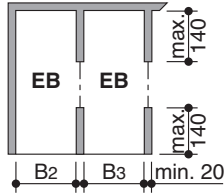


usable platform width	B1
230	780
240	810
250	840
260	870
270	900

Carriageway in accordance with local regulations

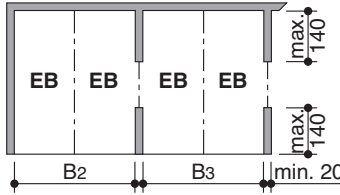
Columns in system zone

Single Platform (EB)



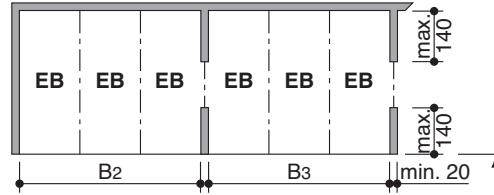
usable platform width	B2	B3
230	255	245
240	265	255
250	275	265
260	285	275
270	295	285

Double arrangement (2 x EB)



usable platform width	B2	B3
230	515	510
240	535	530
250	555	550
260	575	570
270	595	590

Tripple arrangement (3 x EB)

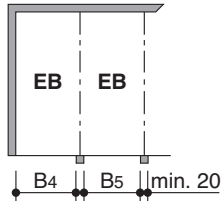


usable platform width	B2	B3
230	775	770
240	805	800
250	835	830
260	865	860
270	895	890

Carriageway in accordance with local regulations

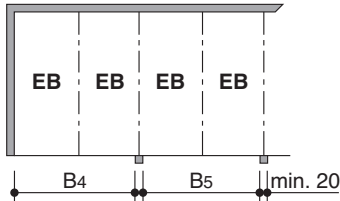
Columns outside of system zone

Single Platform (EB)



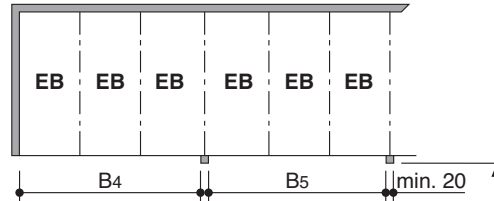
usable platform width	B4	B5
230	250	240
240	260	250
250	270	260
260	280	270
270	290	280

Double arrangement (2 x EB)



usable platform width	B4	B5
230	510	500
240	530	520
250	550	540
260	570	560
270	590	580

Tripple arrangement (3 x EB)



usable platform width	B4	B5
230	770	760
240	800	790
250	830	820
260	860	850
270	890	880

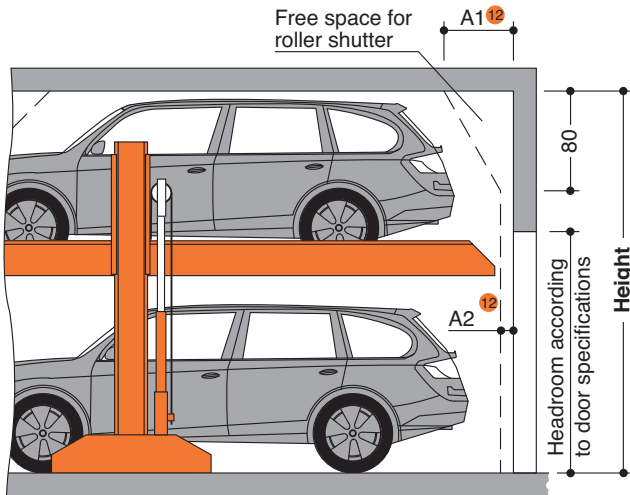
Carriageway in accordance with local regulations

! For parking boxes on the edges and boxes with intermediate walls we recommend our maximum platform width of 270 cm. Problems may occur if smaller platform widths are used (depending on car type, access and individual driving behaviour and capability).

For larger limousines and SUV wider driveways are necessary (in particular on the boxes on the sides due to the missing manoeuvring radius).

- Page 1
Section
Dimensions
Car data
- Page 2
Width dim.
without door
- Page 3
Width dim.
with door
Function
- Page 4
Approach
Load plan
- Page 5
Installation
Electrical
installation
- Page 6
Technical
data
- Page 7
To be performed
by the customer
Description

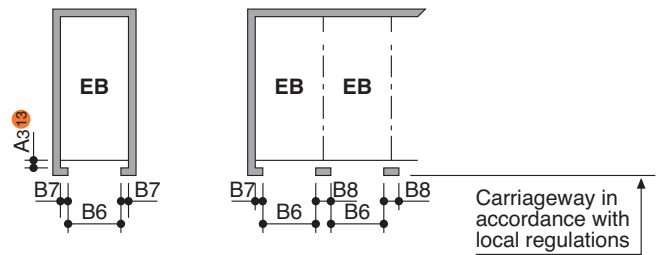
Garage with door



- 12** Dimensions A1, A2 and A3 must be coordinated with the door supplier (provided by the customer).
- 13** Seat-engaging surface (dimensions require coordination with door supplier.) Allround door dimensions require coordination between door supplier and local agency of KLAUS Multiparking.

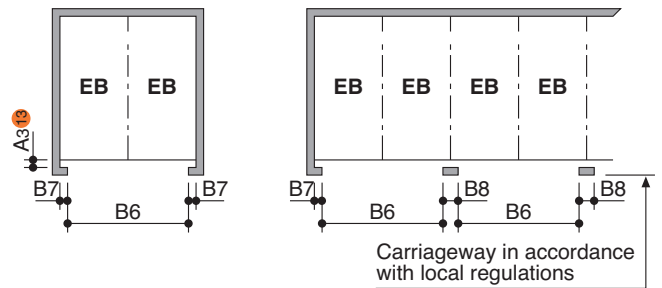
Width dimensions for garage with door

Single platform (EB)



usable platform width	door entrance width B6	B7	B8
230	230	15	30
240	240	15	30
250	250	15	30
260	260	15	30
270	270	15	30

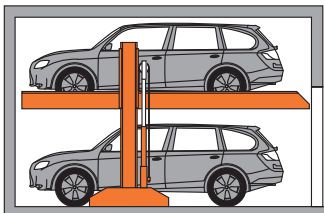
Double arrangement (2 x EB)



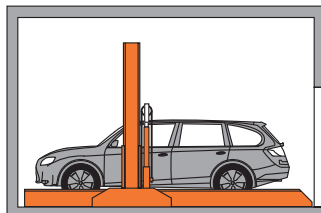
usable platform width	door entrance width B6	B7	B8
230	490	15	30
240	510	15	30
250	530	15	30
260	550	15	30
270	570	15	30

Function

System lifted

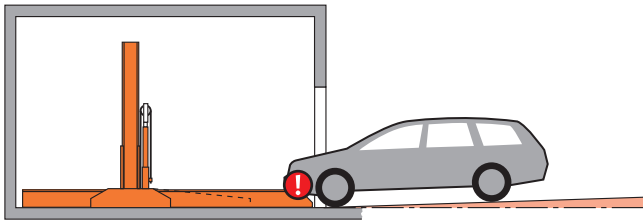


System lowered

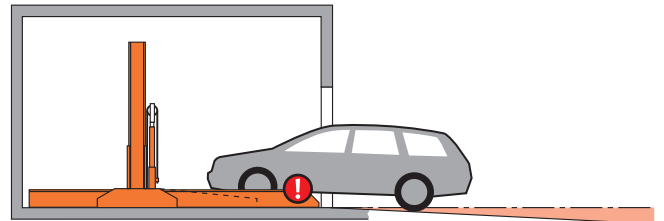


- Page 1
Section
Dimensions
Car data
- Page 2
Width dim.
without door
- Page 3
Width dim.
with door
Function
- Page 4
Approach
Load plan
- Page 5
Installation
Electrical
installation
- Page 6
Technical
data
- Page 7
To be performed by the customer
Description

Approach



maximum descending slope 4 %



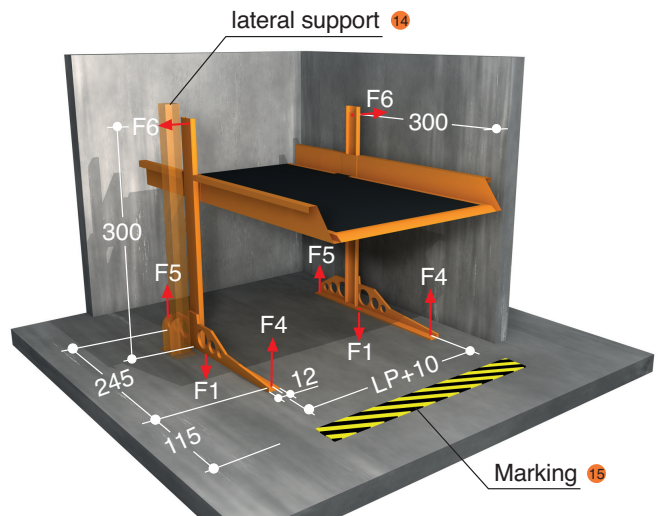
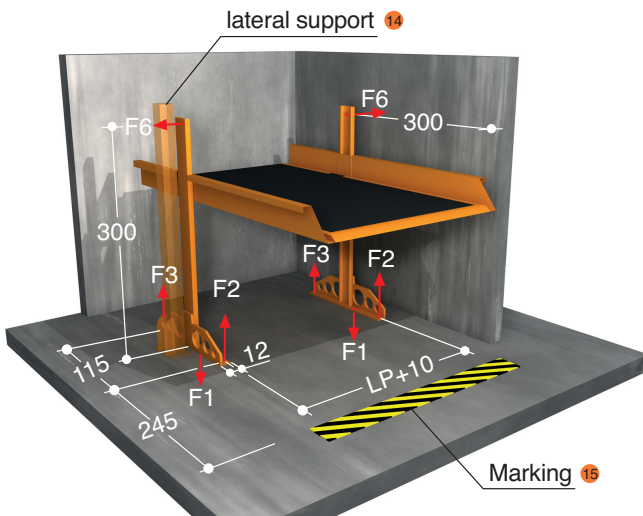
maximum ascending slope 14 %

! The illustrated maximum approach angles must not be exceeded. Incorrect approach angles will cause serious manoeuvring & positioning problems on the parking system for which the local agency of KLAUS Multiparking accepts no responsibility.

Load plan

Option 1: short steel pillar base

Option 2: long steel pillar base



platform load	F1	F2	F3	F4	F5	F6	¹⁶
2000 kg	30	1,1	7,4	0,5	7,7	±1	
2600 kg	36	1,4	9,3	0,7	9,8	±1	

! The steel pillar base can be selected optionally (short or long). Please make sure to note the corresponding forces that apply!

Units are dowelled to the floor. Drilling depth: approx. 15 cm.

Floor and walls are to be made of concrete (quality minimum C20/25)!

The dimensions for the points of support are rounded values. If the exact position is required, please contact KLAUS Multiparking.

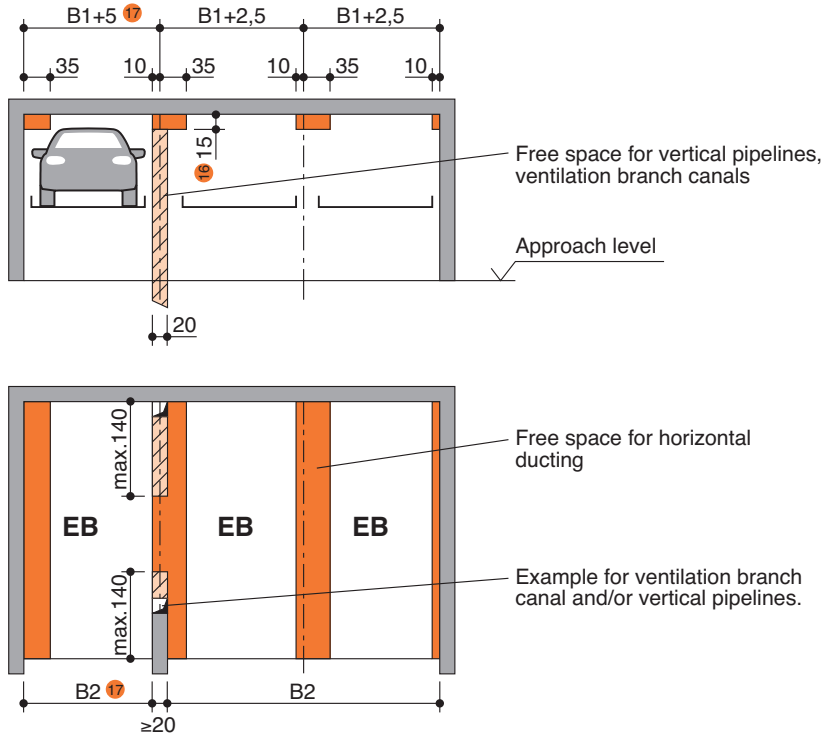
¹⁴ The system must be laterally supported on both sides. If there are no walls on the sides, an additional stand must be attached. For this stand, a base area of 40 x 25 cm is required (quality minimum C20/25).

¹⁵ Marking compliant to ISO 3864 (colors used in this illustration are not ISO 3864 compliant)

¹⁶ All forces in kN

- Page 1
Section
Dimensions
Car data
- Page 2
Width dim.
without door
- Page 3
Width dim.
with door
Function
- Page 4
Approach
Load plan
- Page 5
Installation
Electrical installation
- Page 6
Technical
data
- Page 7
To be performed by the customer
Description

Installation data – Free space for longitudinal and vertical ducts (e.g. ventilation)



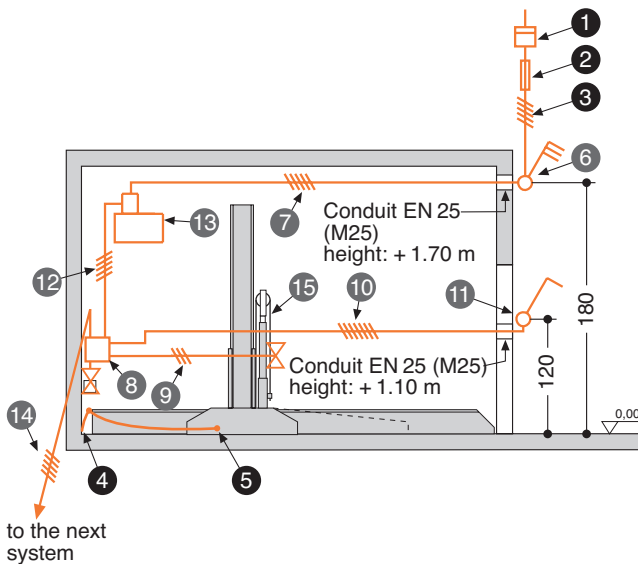
! Free space only applicable if vehicle is parked forwards = FRONT FIRST and driver's door on the left side.

16 Size 15 cm is reduced to 5 cm for type 2061-160.

17 Dimensions B1, B2 and B3 see page 2.

Electrical installation

Installation diagram



Electrical data (to be performed by the customer)

No.	Quantity	Description	Position	Frequency
1	1	Electricity meter	in the supply line	
2	1	Main fuse: 3 x fuse 16 A (slow) or circuit breaker 3 x 16 A (trigger characteristic K or C)	in the supply line	1 per unit
3	1	Supply line 5 x 2.5 mm ² (3 PH + N + PE) with marked wire and protective conductor	to main switch	1 per unit
4	every 10 m	Foundation earth connector	corner pit floor	
5	1	Equipotential bonding in accordance with DIN EN 60204 from foundation earth connector to the system		1 per system

Electrical data (included in delivery of KLAUS Multiparking)

No.	Description
6	Lockable main switch
7	Supply line 5 x 2,5 mm ² (3 PH + N + PE) with marked wire and protective conductor
8	Terminal box
9	Control line 3 x 0.75 mm ² (PH + N + PE)
10	Control line 7 x 1.5 mm ² with marked wire and protective conductor
11	Operating device
12	Control line 5 x 1.5 mm ² with marked wire and protective conductor
13	Hydraulic unit 3.0 kW, three-phase current, 230/400 V / 50 Hz
14	Control line 5 x 1.5 mm ² with marked wire and protective conductor
15	Chain control

Page 1
Section
Dimensions
Car data

Page 2
Width dim.
without door

Page 3
Width dim.
with door
Function

Page 4
Approach
Load plan

Page 5
Installation
Electrical
installation

Page 6
Technical
data

Page 7
To be performed by the customer
Description

Technical data

Field of application

By default, the system can only be used for a fixed number of users.

If different users use the system – only on the lower parking spaces – (e.g. short-time parkers in office buildings or hotels) the Multiparking system needs to be adjusted. If required, would you please contact us.

Units

Low-noise power units mounted to rubber-bonded-to metal mountings are installed. Nevertheless we recommend that parking system's garage be built separately from the dwelling.

Available documents

- wall recess plans
- maintenance offer/contract
- declaration of conformity
- test sheet on airborne and slid-borne sound

Environmental conditions

Environmental conditions for the area of multiparking systems: Temperature range -10 to $+40^{\circ}\text{C}$. Relative humidity 50% at a maximum outside temperature of $+40^{\circ}\text{C}$.

If lifting or lowering times are specified, they refer to an environmental temperature of $+10^{\circ}\text{C}$ and with the system set up directly next to the hydraulic unit. At lower temperatures or with longer hydraulic lines, these times increase.

Sound insulation

According to DIN 4109 (Sound insulation in buildings), para. 4, annotation 4, KLAUS Multiparkers are part of the building services (garage systems).

Normal sound insulation:

DIN 4109, para. 4, Sound insulation against noises from building services.

Table 4 in para. 4.1 contains the permissible sound level values emitted from building services for personal living and working areas. According to line 2 the maximum sound level in personal living and working areas must not exceed 30 dB (A).

Noises created by users are not subject to the requirements (see table 4, DIN 4109).

The following measures are to be taken to comply with this value:

- Sound protection package according to offer/order (KLAUS Multiparking GmbH)
- Minimum sound insulation of building $R'_{\text{W}} = 57$ dB (to be provided by customer)

Increased sound insulation (special agreement):

Draft DIN 4109-10, Information on planning and execution, proposals for increased sound insulation.

Agreement: Maximum sound level in personal living and working areas 25 dB (A). *Noises created by users are not subject to the requirements (see table 4, DIN 4109).*

The following measures are to be taken to comply with this value:

- Sound protection package according to offer/order (KLAUS Multiparking GmbH)
- Minimum sound insulation of building $R'_{\text{W}} = 62$ dB (to be provided by customer)

Note: User noises are noises created by individual users in our Multiparking systems. These can be noises from accessing the platforms, slamming of vehicle doors, motor and brake noises.

Building application documents

According to LBO and GaVo (garage regulations) the Multiparking systems are subject to approval. We will provide the required building application documents.

Care

To avoid damages resulting from corrosion, make sure to follow our cleaning and care instructions and to provide good ventilation of your garage.

Corrosion protection

See separate sheet regarding corrosion protection.

Railings

If there are traffic routes next to or behind the installations, railings compliant to DIN EN ISO 13857 must be installed by the customer. Railings must also be in place during construction.

CE Certification

The systems on offer comply with DIN EN 14010 and EC Machine Directive 2006/42/EC. Furthermore, this system underwent voluntary conformity testing by TÜV SÜD.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認 証 証 書 ◆ CERTIFICADO ◆ CERTIFICADO



Certificate concerning the examination of conformity

Certificate no:	KP 527
Certification body:	TÜV SÜD Industrie Service GmbH Zertifizierungsstelle für Produkte der Fördertechnik Gottlieb-Daimler-Str. 7 70794 Filderstadt - Germany
Applicant / Certification holder:	KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Altrach - Germany
Date of application:	2016-08-16
Manufacturer:	KLAUS Multiparking GmbH Hermann-Krum-Str. 2 88319 Altrach - Germany
Product:	Equipment for power driven parking of motor vehicles
Type:	SingleVario 2061 EB 2,000 kg SingleVario 2061 EB 2,600 kg
Test laboratory:	TÜV SÜD Industrie Service GmbH Prüflaboratorium für Produkte der Fördertechnik Prüfbereich Maschinen der Fördertechnik Gottlieb-Daimler-Str. 7 70794 Filderstadt – Germany
Date and number of the test report / mark of conformity:	2017-02-20 KP 527
Test specifications:	- 2006 / 42 / EC, Annex I - DIN EN 14010
Validity:	This Certificate is valid until 2022-02-28
Result:	The equipment fulfills the requirements of the test specifications for the respective scope of application stated in the annex (page 1) of this certificate, keeping the mentioned conditions.
Date of issue:	2017-03-01


 Achim Janocha



Certification body for lifts and cranes


Page 1
Section
Dimensions
Car data

Page 2
Width dim.
without door

Page 3
Width dim.
with door
Function

Page 4
Approach
Load plan

Page 5
Installation
Electrical
installation

Page 6
Technical
data

Page 7
To be performed by the customer
Description

To be performed by the customer

Safety fences

Any constraints that may be necessary according to DIN EN ISO 13857 in order to provide protection, for pathways directly in front, next to or behind the unit. This is also valid during construction.

Numbering of parking spaces

Consecutive numbering of parking spaces.

Building services

Any required lighting, ventilation, fire extinguishing and fire alarm systems as well as clarification and compliance with the relevant regulatory requirements.

Marking

According to DIN EN 14 010, a warning that identifies this danger area must be placed in the entrance area that conforms to ISO 3864. This must be done according to EN 92/58/EWG for systems without a pit 10 cm from the edge of the platform.

Wall cuttings

Any necessary wall cuttings according to page 1.

Electrical supply to the main switch / Foundation earth connector

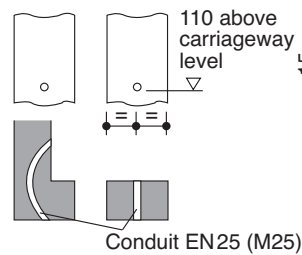
Suitable electrical supply to the main switch must be provided by the customer during installation. The functionality can be monitored on site by our fitters together with the electrician. If this cannot be done during installation for some reason for which the customer is responsible, the customer must commission an electrician at their own expense and risk.

In accordance with DIN EN 60204 (Safety of Machinery. Electrical Equipment), grounding of the steel structure is necessary, provided by the customer (distance between grounding max. 10 m).

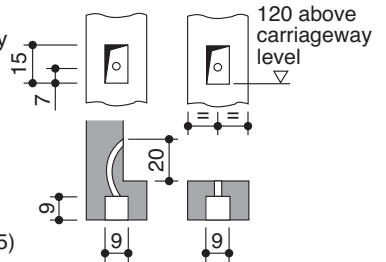
Operating device

Cable conduits and recesses for operating device (for double wing doors: please contact the local agency of KLAUS Multiparking).

Operating device exposed



Operating device concealed



If the following are not included in the quotation, they will also have to be provided / paid for by the customer:

- Mounting of contactor and terminal box to the wall valve, complete wiring of all elements in accordance with the circuit diagram
- Costs for final technical approval by an authorized body
- Main switch
- Control line from main switch to hydraulic unit

Description Single platform (EB)

General description

Multiparking system providing dependent parking spaces for 2 cars one on top of the other each. The lower vehicle parks directly on the floor plate. The vehicle parked on the bottom must be driven out before lowering the platform.

The height of the platform can be adjusted flexibly (even subsequently).

Adjustment of maximum load of 2,500 kg can be made subsequently. Dimensions are in accordance with the underlying dimensions of parking pit, height and width

The parking bays are accessed horizontally (installation deviation $\pm 1\%$).

Vehicles are positioned on the upper parking space using wheel stops on the right side (adjust according to operating instructions).

Operation via operating device with hold-to-run-device using master keys.

The operating elements are usually mounted either in front of the column or on the outside of the door frame

Operating instructions are attached to each operator's stand.

For garages with doors at the front of the parking system the special dimensional requirements have to be taken into account.

Multiparking system consisting of:

- 2 steel pillars with bases that are mounted on the floor (short or long steel pillar bases can be selected optionally).
- 2 sliding platforms (mounted to the steel pillars with sliding bearings)
- 1 platform
- 1 mechanic synchronization control system (to ensure synchronous operation of the hydraulic cylinders while lowering and lifting the platform)
- 1 hydraulic cylinder
- 1 automatic hydraulic safety valve (prevents accidental lowering of the platform while accessing the platform)
- Dowels, screws, connecting elements, bolts, etc.
- The platforms and parking spaces are end-to-end accessible for parking!

Platforms consisting of:

- Platform base sections
- Adjustable wheel stops
- Canted access plates
- Side members
- Cross members
- Screws, nuts, washers, distance tubes, etc.

Hydraulic system consisting of:

- Hydraulic cylinder
- Solenoid valve
- Safety valve
- Hydraulic conduits
- Screwed joints
- High-pressure hoses
- Installation material

Electric system consisting of:

- Operating device (Emergency Stop, lock, 1 master key per parking space)
- Terminal box at wall valve
- Electrical locking device
- Chain control

Hydraulic unit consisting of:

- Hydraulic power unit (low-noise, installed onto a console with a rubber-bonded-to-metal mounting)
- Hydraulic oil reservoir
- Oil filling
- Internal geared wheel pump
- Pump holder
- Clutch
- 3-phase-AC-motor
- Contactor (with thermal overcurrent relay and control fuse)
- Test manometer
- Pressure relief valve
- Hydraulic hoses (which reduce noise transmission onto the hydraulic pipe)

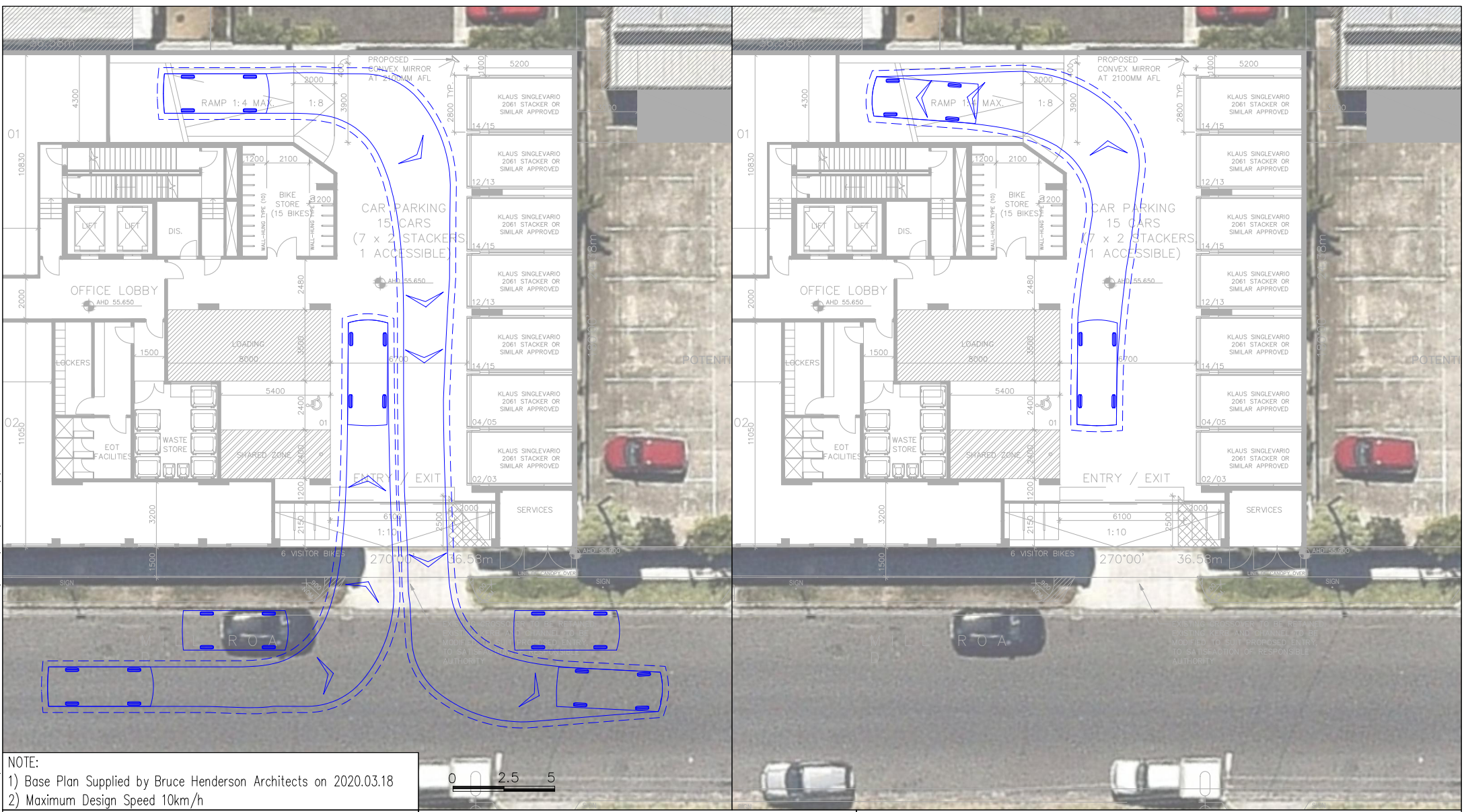
We reserve the right to change this specification without further notice

KLAUS Multiparking reserves the right in the course of technical progress to use newer or other technologies, systems, processes, procedures or standards in the fulfillment of their obligations other than those originally offered provided the customer derives no disadvantage from their so doing.

Appendix C Swept Path Assessment



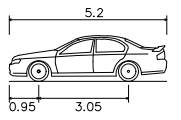
20/03/2020 10:28:02 AM Y:\16501-17000\16676T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

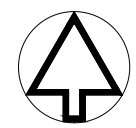
B99 Vehicle (AS/NZS2890.1:2004)



Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

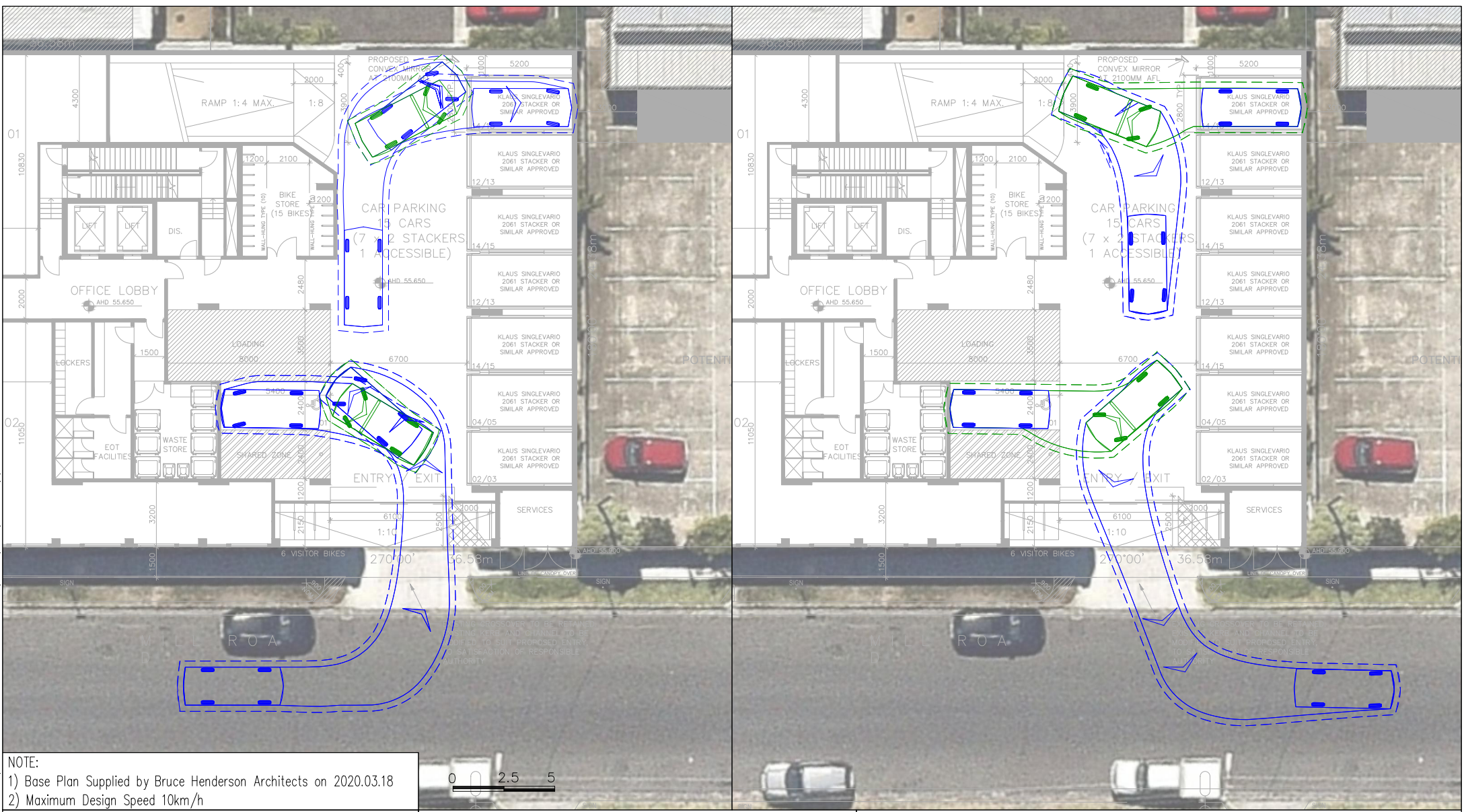
VEHICLE ENVELOPE (FORWARD)
 300mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 300mm CLEARANCE (REVERSE)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment

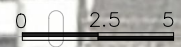


RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	1 of 13	1:250@A4	20/03/2020

20/03/2020 10:29:03 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG



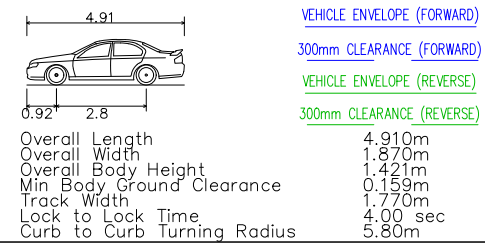
NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 2) Maximum Design Speed 10km/h



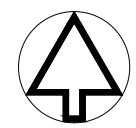
ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

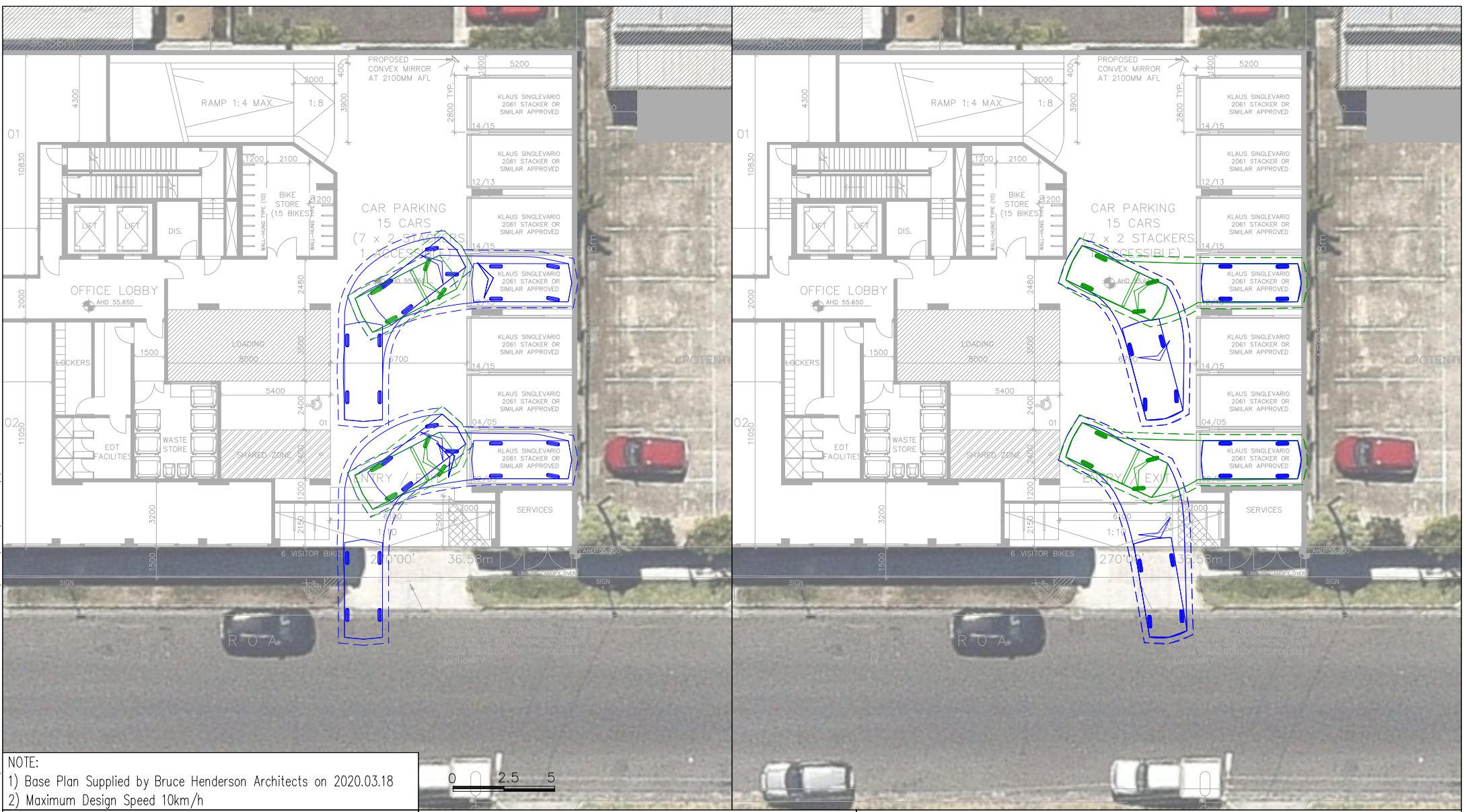


Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	2 of 13	1:250@A4	20/03/2020

20/03/2020 10:28:04 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG

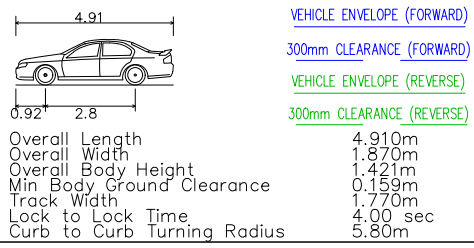


NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 2) Maximum Design Speed 10km/h

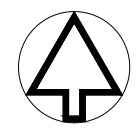
ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)

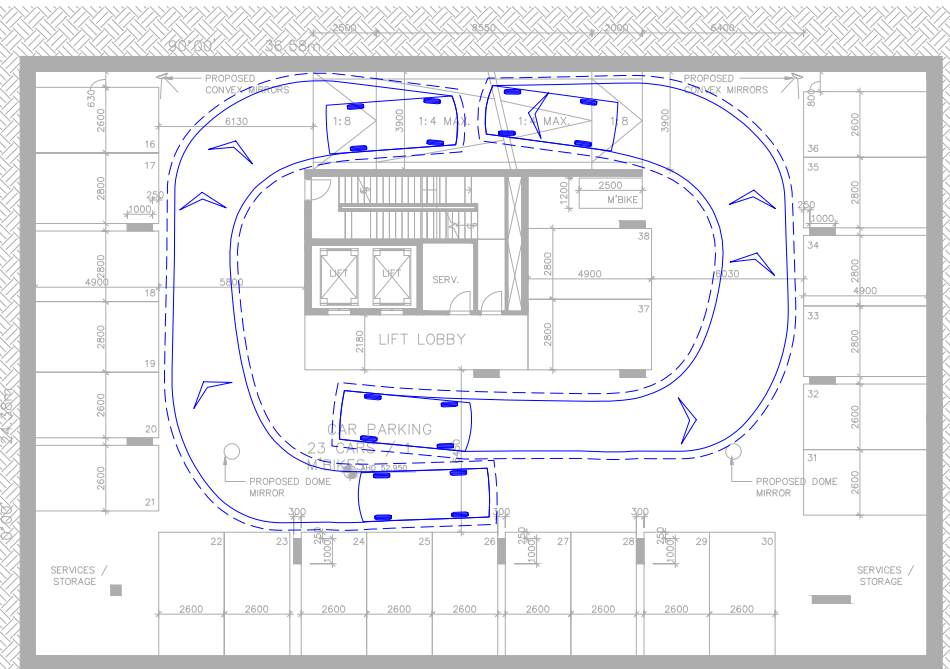
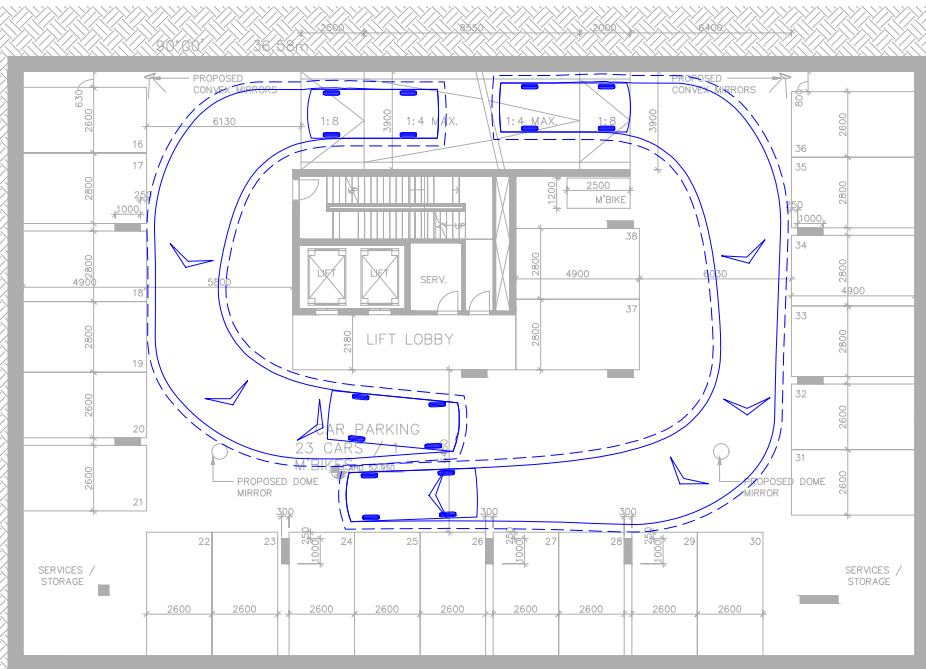


Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment

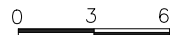


RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	3 of 13	1:250@A4	20/03/2020

20/03/2020 10:28:05 AM Y:\16501-17000\16676T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG



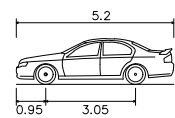
- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)



Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

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

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



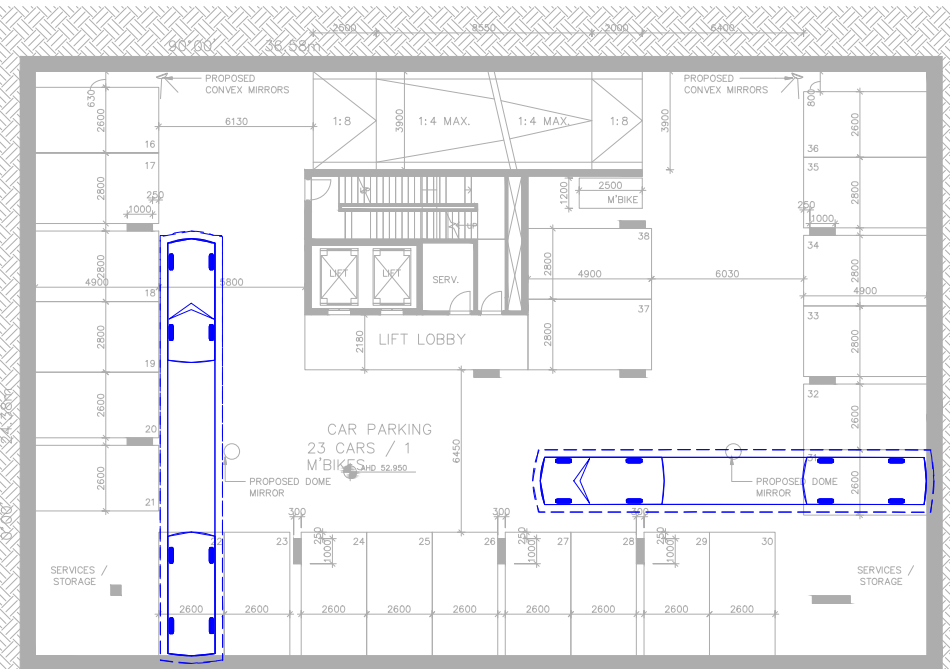
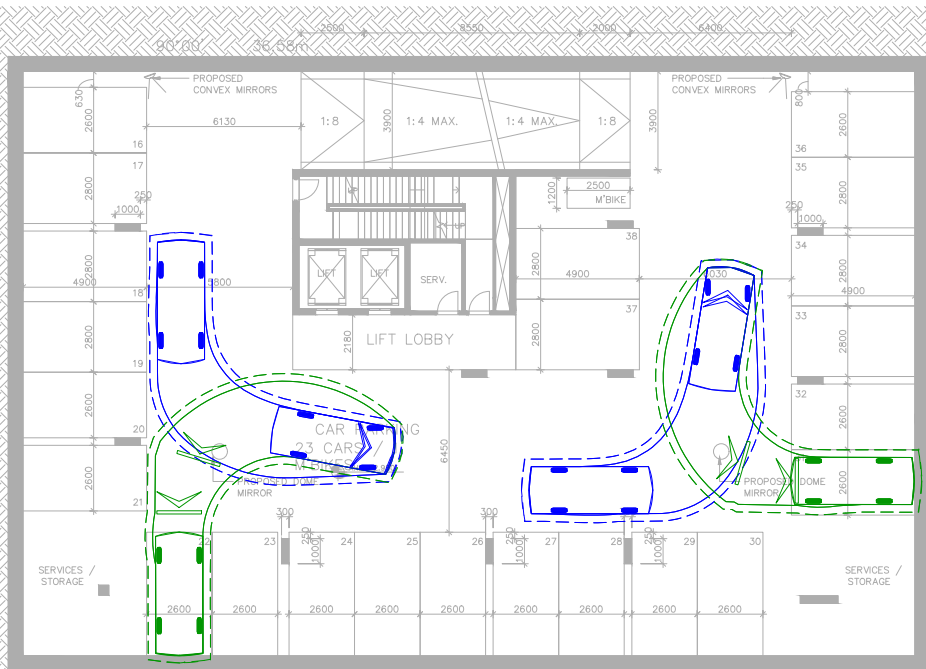
RATIO REFERENCE
 16676T-SK04/SN

SHEET No.
 4 of 13

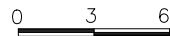
SCALE
 1:300@A4

DATE
 20/03/2020

20/03/2020 10:29:05 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG



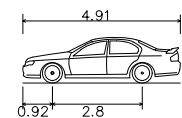
- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)



Overall Length 4.910m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.159m
 Track Width 1.70m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 5.80m

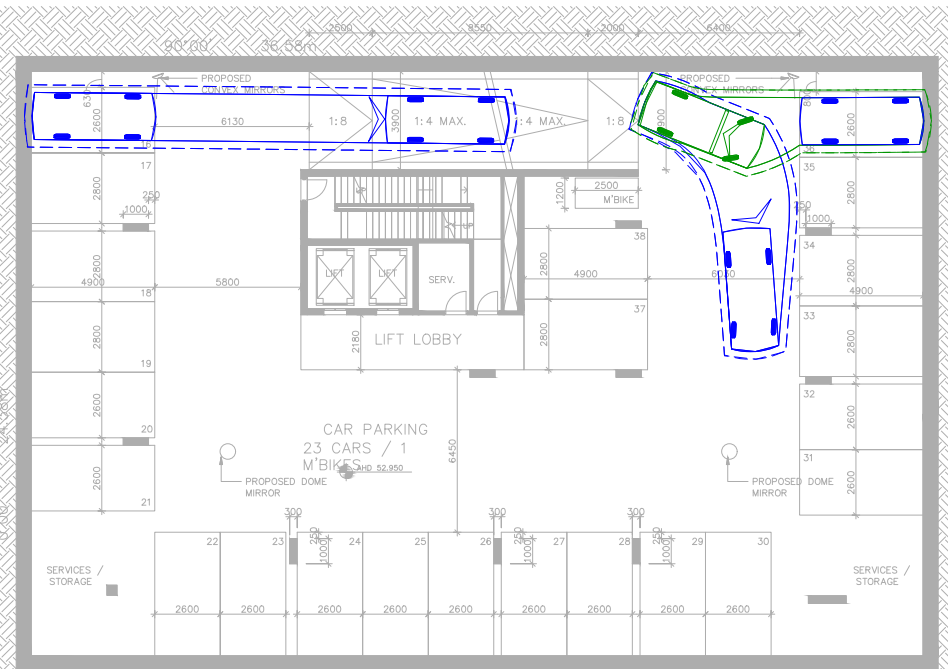
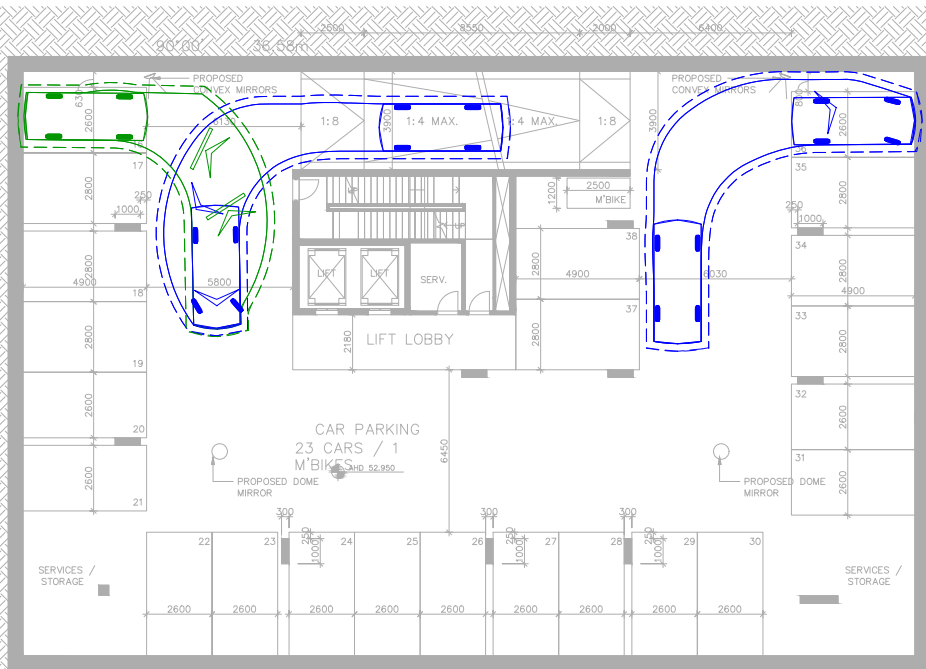
- [VEHICLE ENVELOPE \(FORWARD\)](#)
- [300mm CLEARANCE \(FORWARD\)](#)
- [VEHICLE ENVELOPE \(REVERSE\)](#)
- [300mm CLEARANCE \(REVERSE\)](#)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	5 of 13	1:300@A4	20/03/2020

20/03/2020 10:28:05 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG

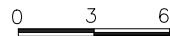


MILLER ROAD
D OVER

MILLER ROAD
D OVER

NOTE:

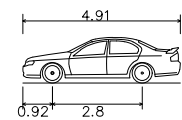
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
- 2) Maximum Design Speed 10km/h



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

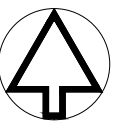
B85 Vehicle (AS/NZS2890.1:2004)



Overall Length 4.91m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.159m
 Track Width 1.70m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 5.80m

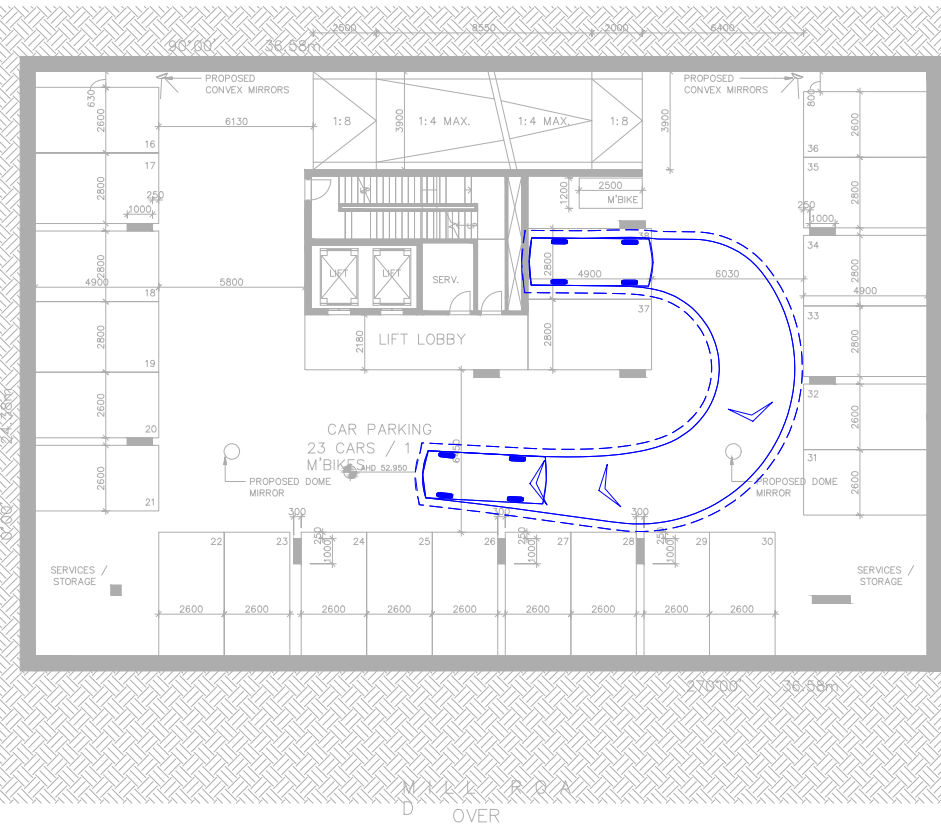
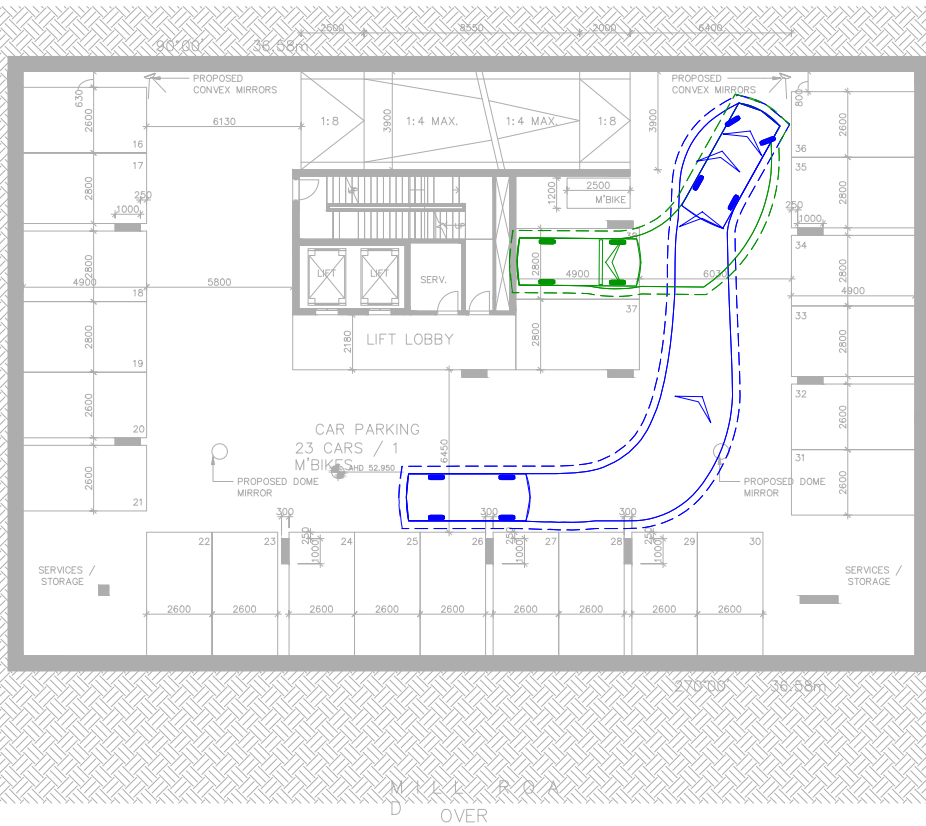
- [VEHICLE ENVELOPE \(FORWARD\)](#)
- [300mm CLEARANCE \(FORWARD\)](#)
- [VEHICLE ENVELOPE \(REVERSE\)](#)
- [300mm CLEARANCE \(REVERSE\)](#)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	6 of 13	1:300@A4	20/03/2020

20/03/2020 10:29:06 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG

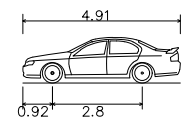


- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h

ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B85 Vehicle (AS/NZS2890.1:2004)



Overall Length 4.91m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.159m
 Track Width 1.70m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 5.80m

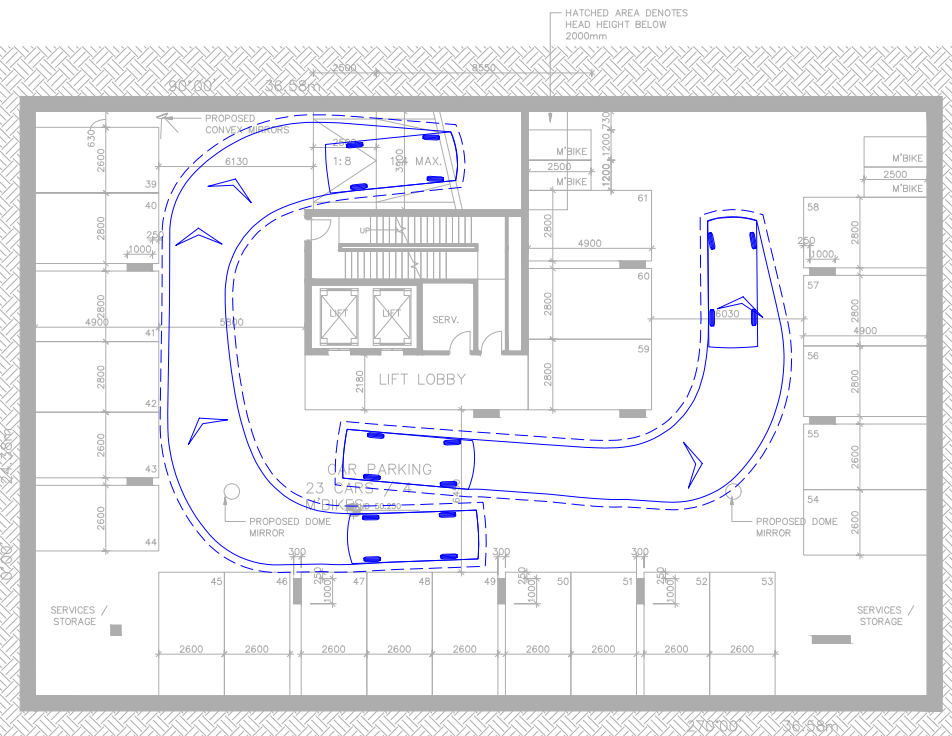
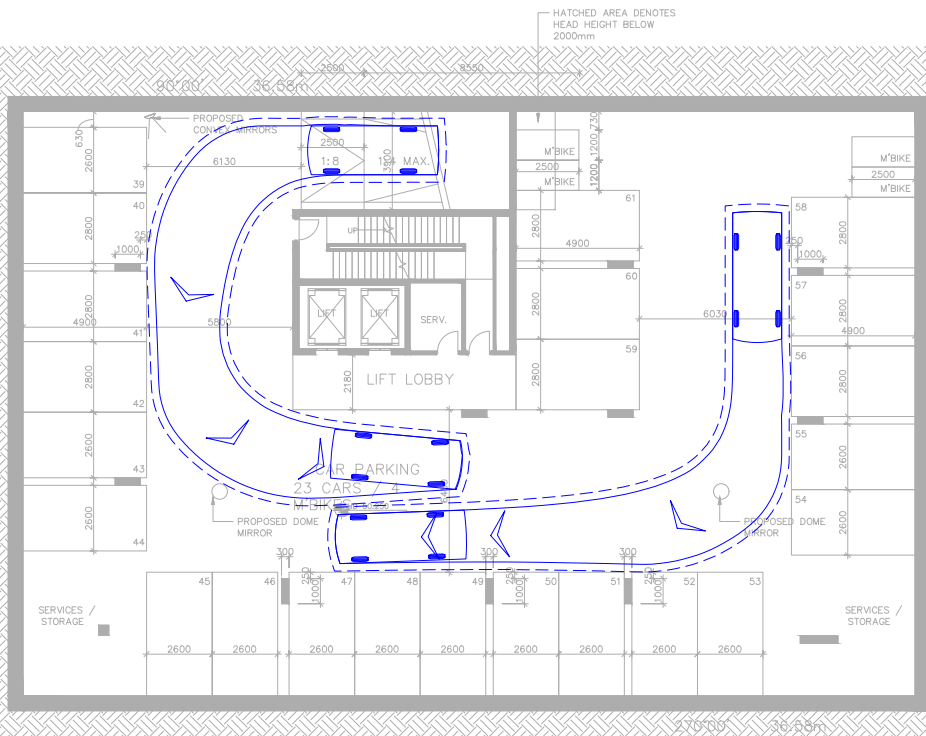
- [VEHICLE ENVELOPE \(FORWARD\)](#)
- [300mm CLEARANCE \(FORWARD\)](#)
- [VEHICLE ENVELOPE \(REVERSE\)](#)
- [300mm CLEARANCE \(REVERSE\)](#)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment

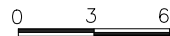


RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	7 of 13	1:300@A4	20/03/2020

20/03/2020 10:29:06 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG



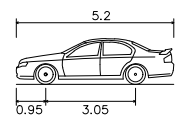
- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

B99 Vehicle (AS/NZS2890.1:2004)



Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

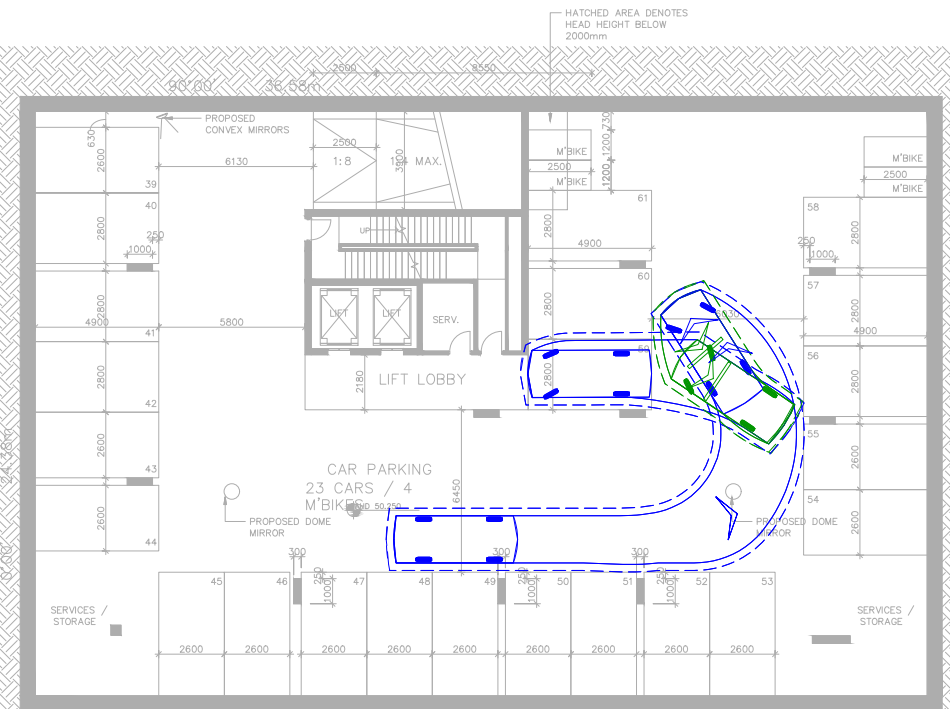
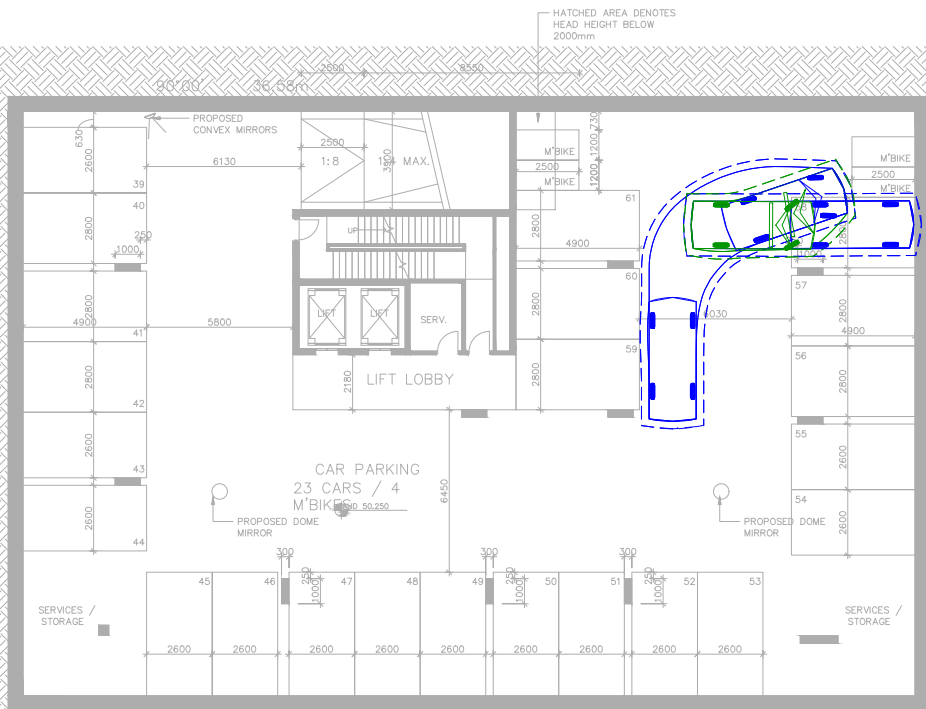
VEHICLE ENVELOPE (FORWARD)
 300mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 300mm CLEARANCE (REVERSE)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	8 of 13	1:300@A4	20/03/2020

20/03/2020 10:28:07 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG



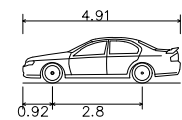
- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h



ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

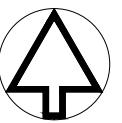
B85 Vehicle (AS/NZS2890.1:2004)



Overall Length 4.910m
 Overall Width 1.870m
 Overall Body Height 1.421m
 Min Body Ground Clearance 0.159m
 Track Width 1.70m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 5.80m

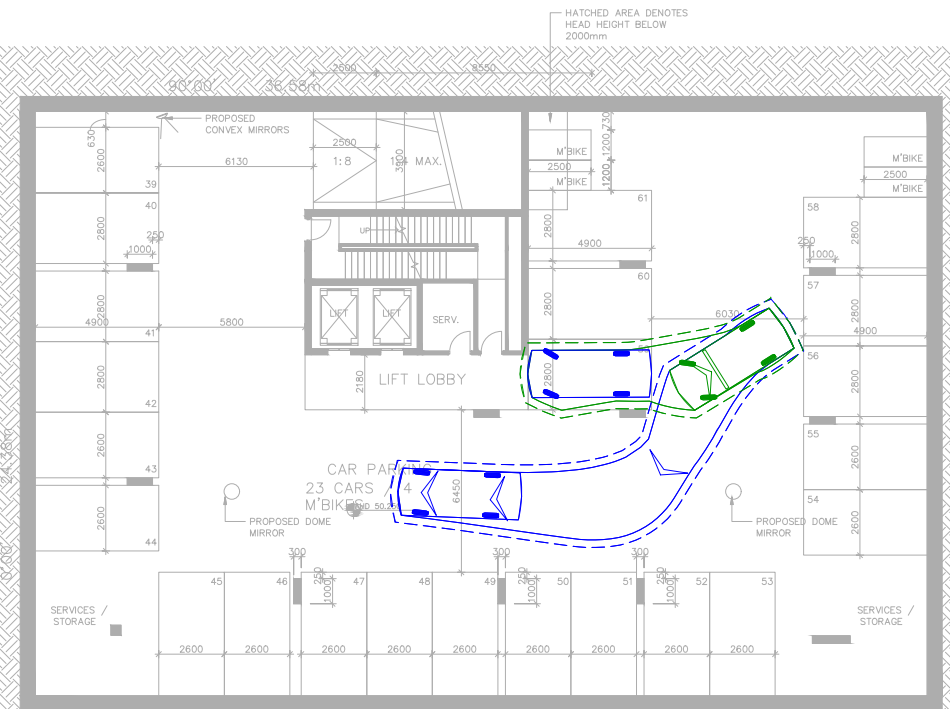
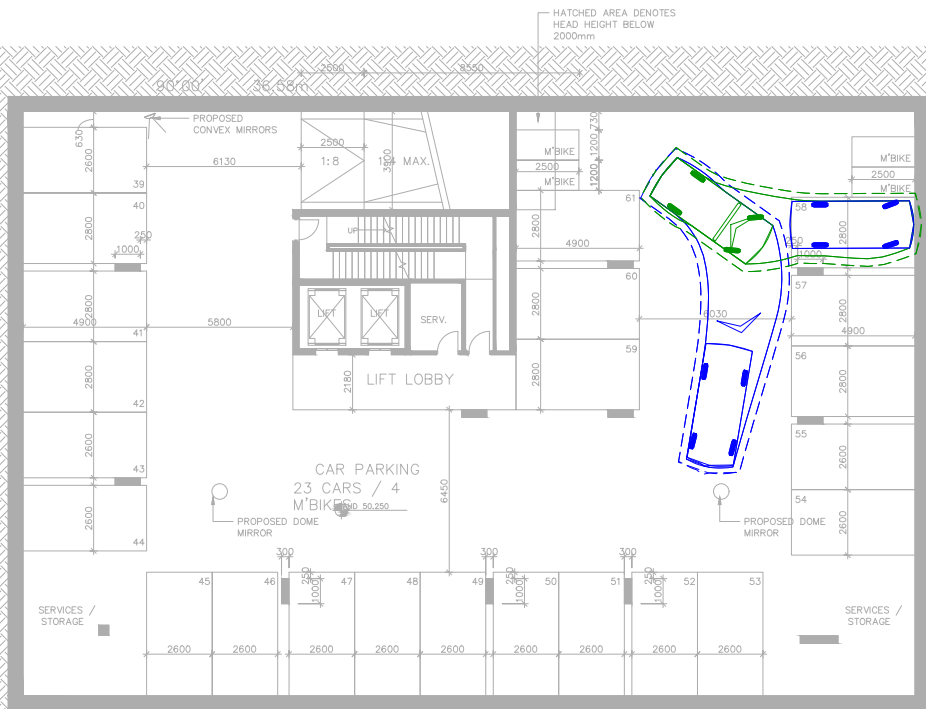
[VEHICLE ENVELOPE \(FORWARD\)](#)
[300mm CLEARANCE \(FORWARD\)](#)
[VEHICLE ENVELOPE \(REVERSE\)](#)
[300mm CLEARANCE \(REVERSE\)](#)

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	9 of 13	1:300@A4	20/03/2020

20/03/2020 10:28:07 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN SK04 (2020.03.18)\16676T-SK04.DWG

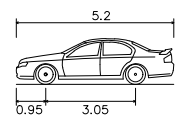


- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 - 2) Maximum Design Speed 10km/h

ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

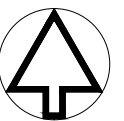
B99 Vehicle (AS/NZS2890.1:2004)



Overall Length 5.200m
 Overall Width 1.940m
 Overall Body Height 2.200m
 Min Body Ground Clearance 0.312m
 Track Width 1.840m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 6.30m

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

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE
 16676T-SK04/SN

SHEET No.
 10 of 13

SCALE
 1:300@A4

DATE
 20/03/2020

LEVEL 0
AHD: 59850

GROUND LEVEL
AHD: 55650

BASEMENT 0
AHD: 52950

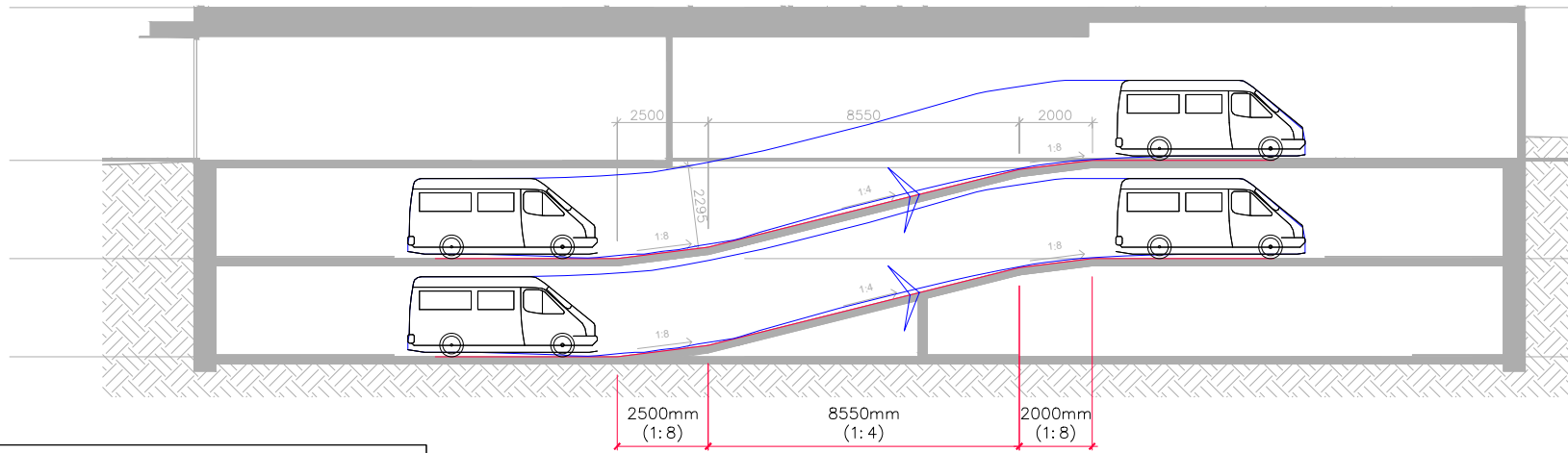
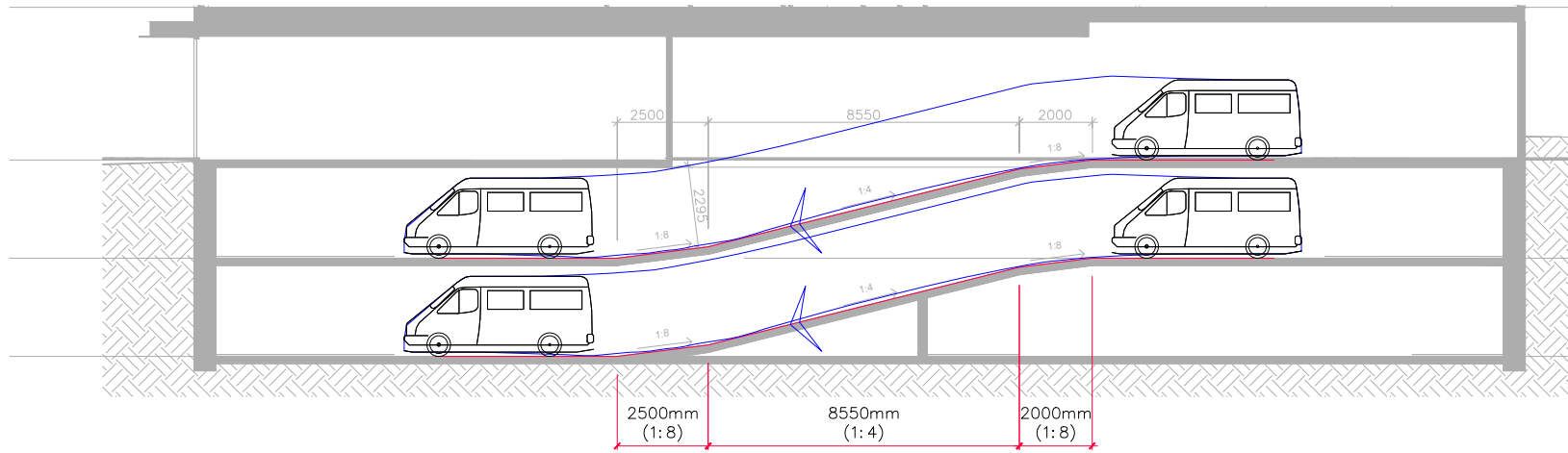
BASEMENT 1
AHD: 50250

LEVEL 0
AHD: 59850

GROUND LEVEL
AHD: 55650

BASEMENT 0
AHD: 52950

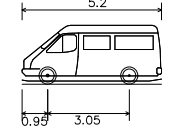
BASEMENT 1
AHD: 50250



NOTE:
1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
2) Maximum Design Speed 10km/h



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



Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.120m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	8.000m

Proposed Mixed-Use Development
12-14 Johnson Street, Oakleigh
Swept Path Assessment



ratio:

RATIO CONSULTANTS PTY LTD
ABN 005 422 104
8 GWYNNE STREET
CREMORNE, VICTORIA 3121
TELEPHONE (03)9429 3111
FACSIMILE (03)9429 3011

RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	13 of 13	1:200@A4	24/03/2020

24/03/2020 11:06:53 AM Y:\16501-17000\16676T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG



Appendix D Bicycle Parking Specifications

Arc de Triomphe™



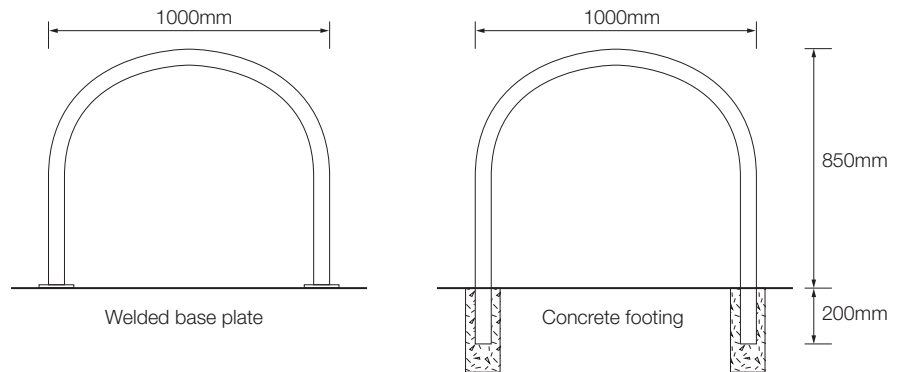
Galvanised finish / Stainless Steel finish

Features



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

Dimensions



Specifications

Material options

- Galvanised (Duragal)
- 316 Marine grade stainless steel

Fixing options

- Welded flange - Bolt on
- In situ

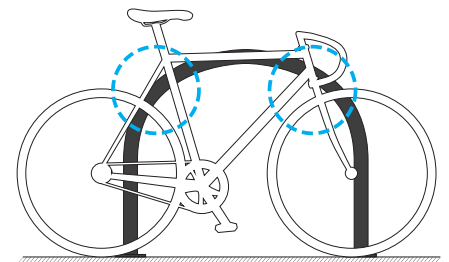
Recommended fasteners

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

Dimensions

1000mm [w] x 850mm [h]

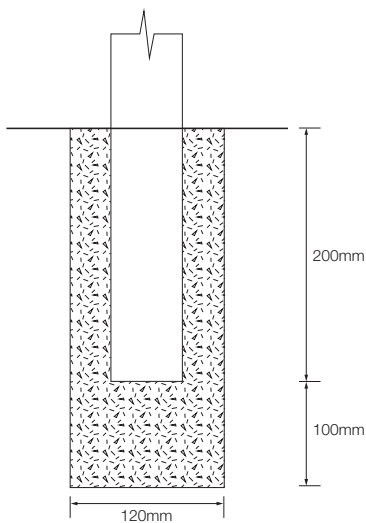
Locking Points



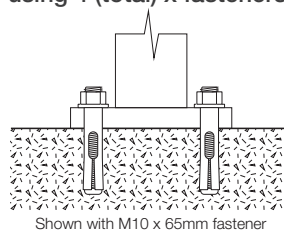
V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

Fixing options

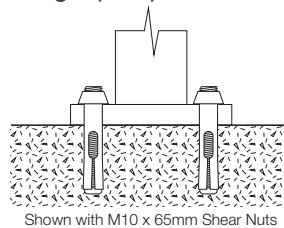
In situ (Concrete footing)



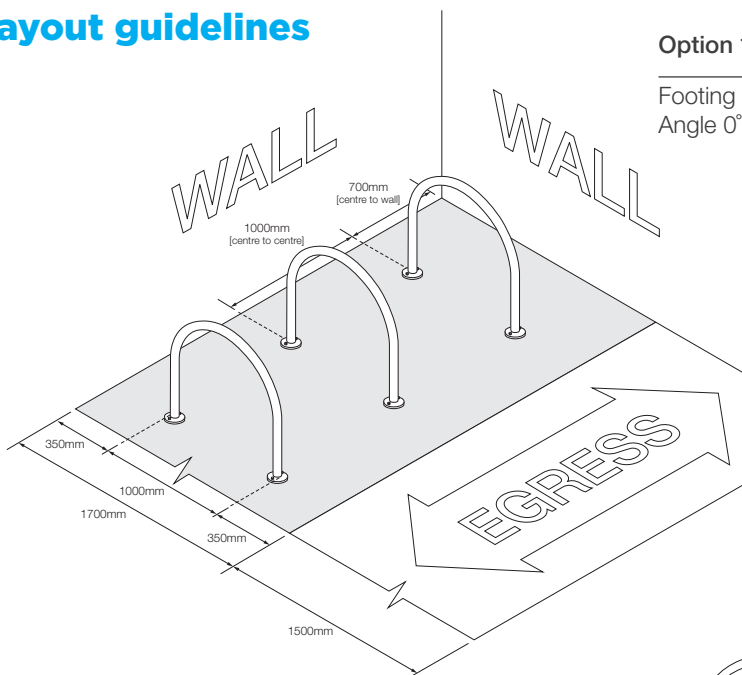
Welded flange (Bolt on)
using 4 (total) x fasteners



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



Layout guidelines

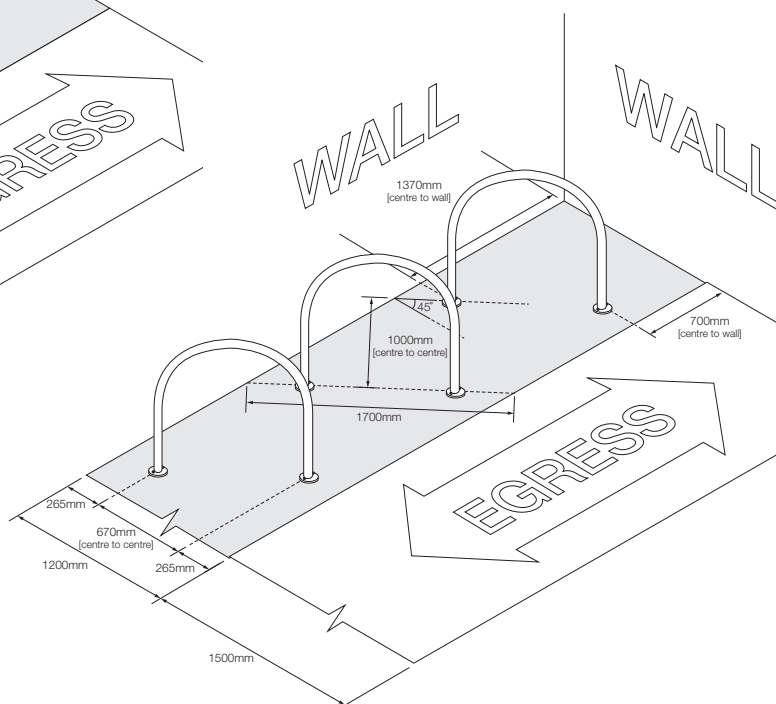


Option 1:

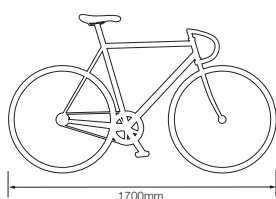
Footing Width 1700mm
Angle 0°

Option 2:

Footing Width 1200mm
Angle 45°



Typical Bicycle Length



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

Ned Kelly™



Zinc finish



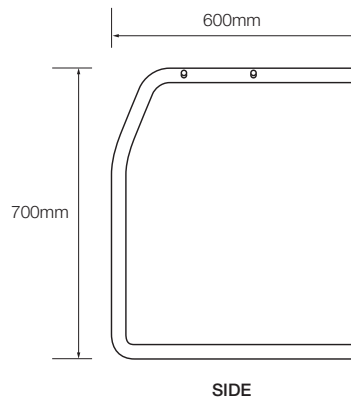
Black powder coat finish

Features



- Each rail provides storage for a single bike
- Suits bikes with full length mud guards
- Available in Zinc finish or Black powder coat over mild steel
- Provides the ability to lock the main frame and one wheel
- Support prongs with protective coating prevent damage to rim
- Can be used with custom framing - no wall needed

Dimensions



Specifications

Material options

- Zinc finish
- Black powder coat over mild steel
- Stainless steel - *Pre-order only*

Fixing options

- Bolt on to wall
- Fixed to support framing

Recommended fasteners - wall

- Dynabolts (M8 x 40mm)
- Shear Nut security fasteners

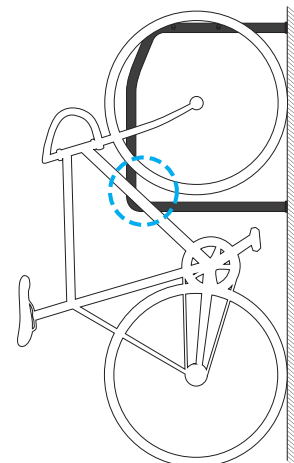
Recommended fasteners - framing

- Bolt and nut (M10 x 60mm)
- Tek screws

Dimensions

125mm [w] x 700mm [h] x 600mm [d]

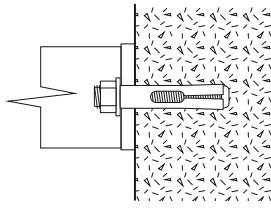
Locking Points



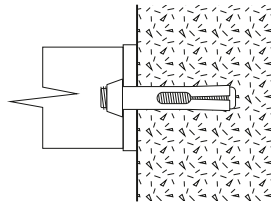
V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

Fixing options

Fix to a wall using 4x fasteners or Shear Nuts

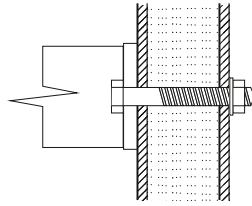


Shown with M8 x 40mm fastener

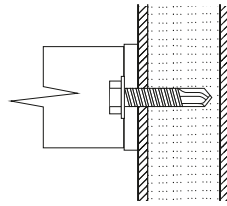


Shown with M8 x 40mm Shear Nuts

Fix to a frame using 4x bolts or Tek Screws



Shown with M10 x 60mm Bolt, Washer & Nut

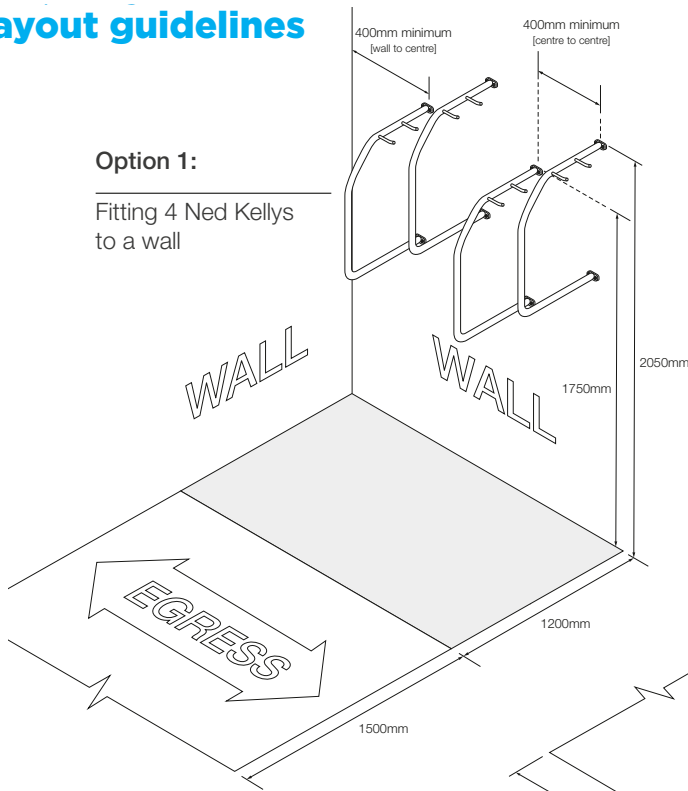


Shown with Tek Screw

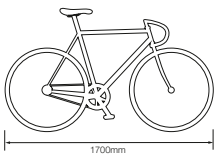
Layout guidelines

Option 1:

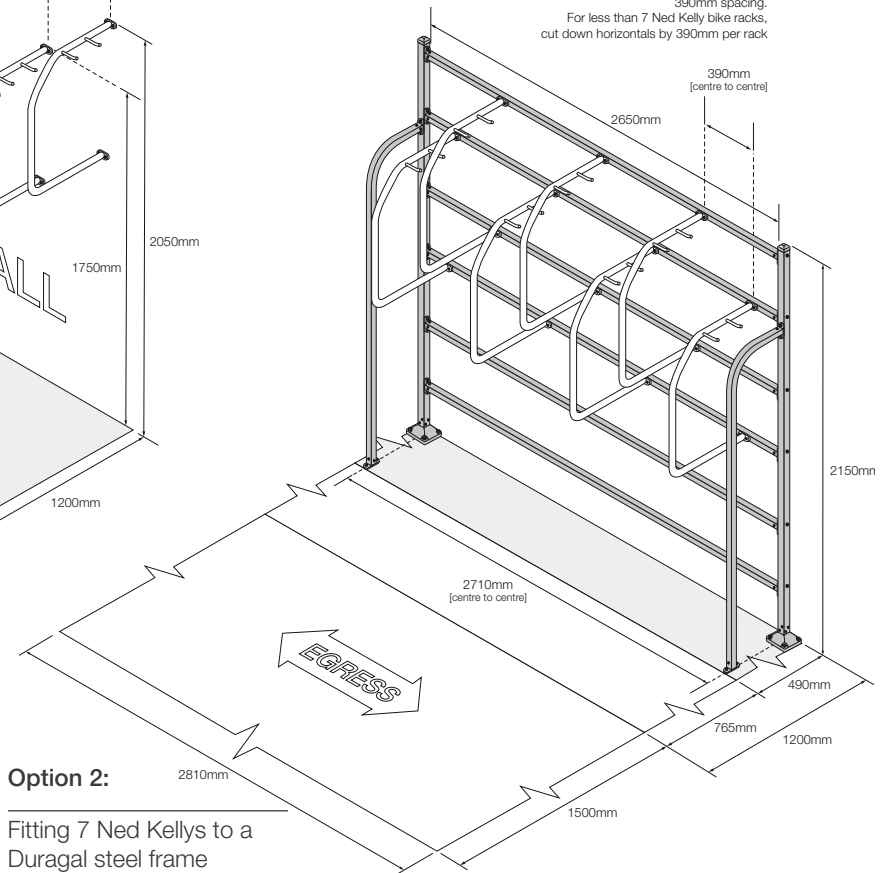
Fitting 4 Ned Kellys to a wall



Typical Bicycle Length



390mm spacing.
For less than 7 Ned Kelly bike racks,
cut down horizontals by 390mm per rack



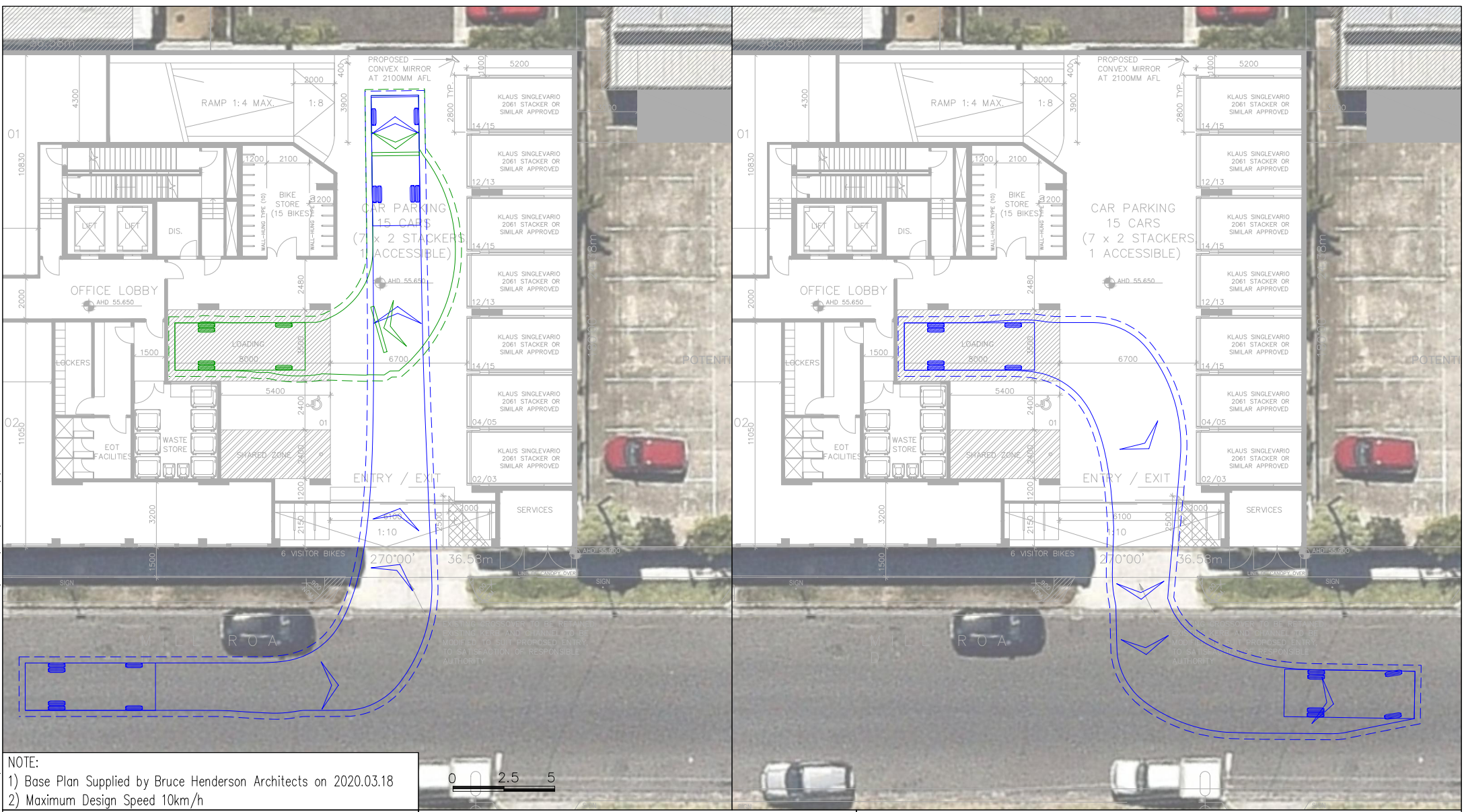
Option 2:

Fitting 7 Ned Kellys to a Duragal steel frame



Appendix E Loading Bay Swept Path Assessment

20/03/2020 10:29:08 AM Y:\16501-17000\16676T-12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG

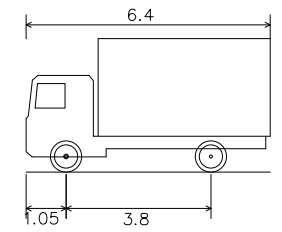


NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2020.03.18
 2) Maximum Design Speed 10km/h

ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

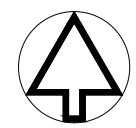
SRV – Small Rigid Vehicle (AS/NZS2890.2:2002)



VEHICLE ENVELOPE (FORWARD)
 500mm CLEARANCE (FORWARD)
 VEHICLE ENVELOPE (REVERSE)
 500mm CLEARANCE (REVERSE)

Overall Length 6.400m
 Overall Width 2.330m
 Track Width 2.330m
 Lock to Lock 4.00 sec
 Curb to Curb Turning Radius 7.100m

Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment

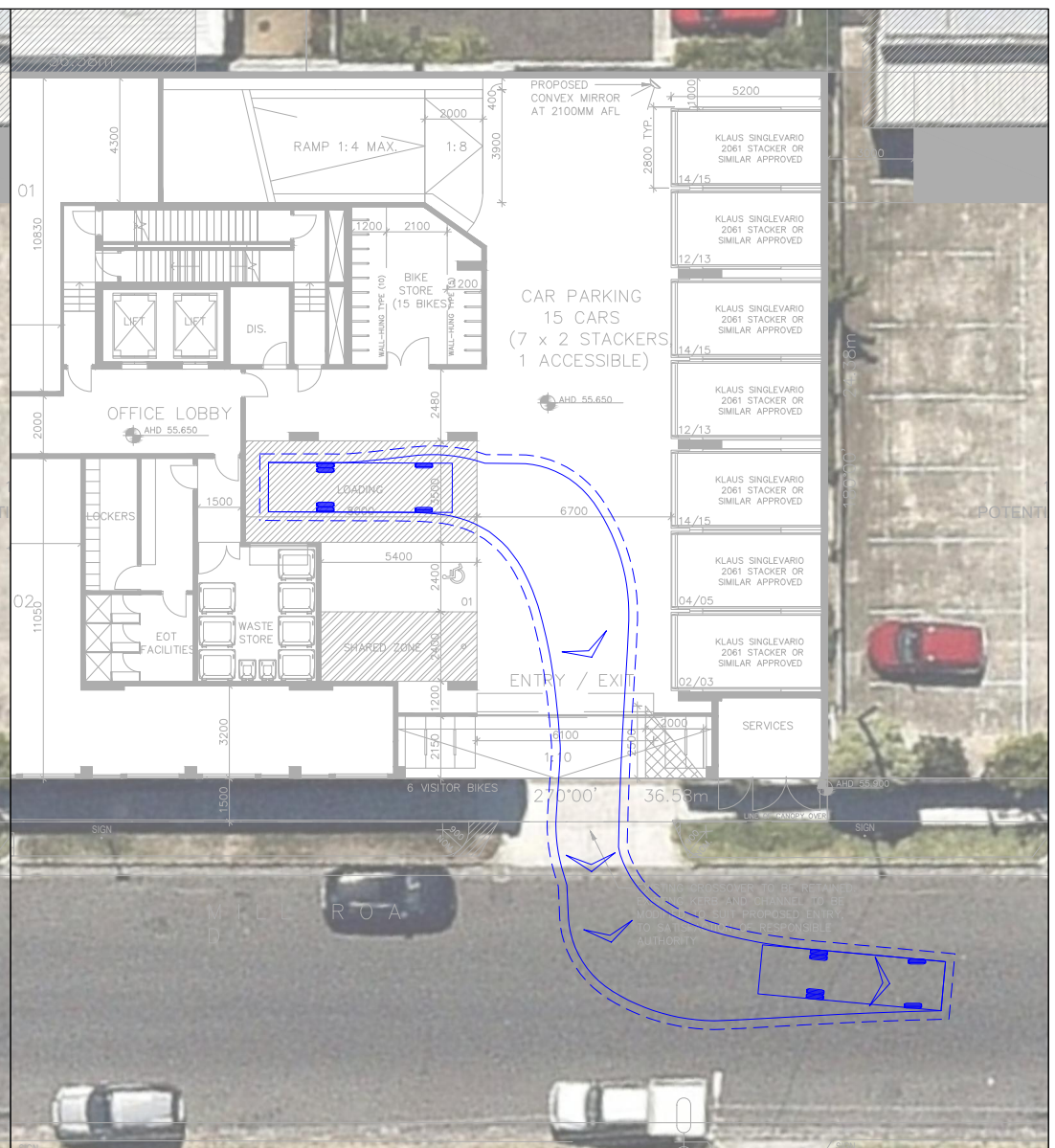
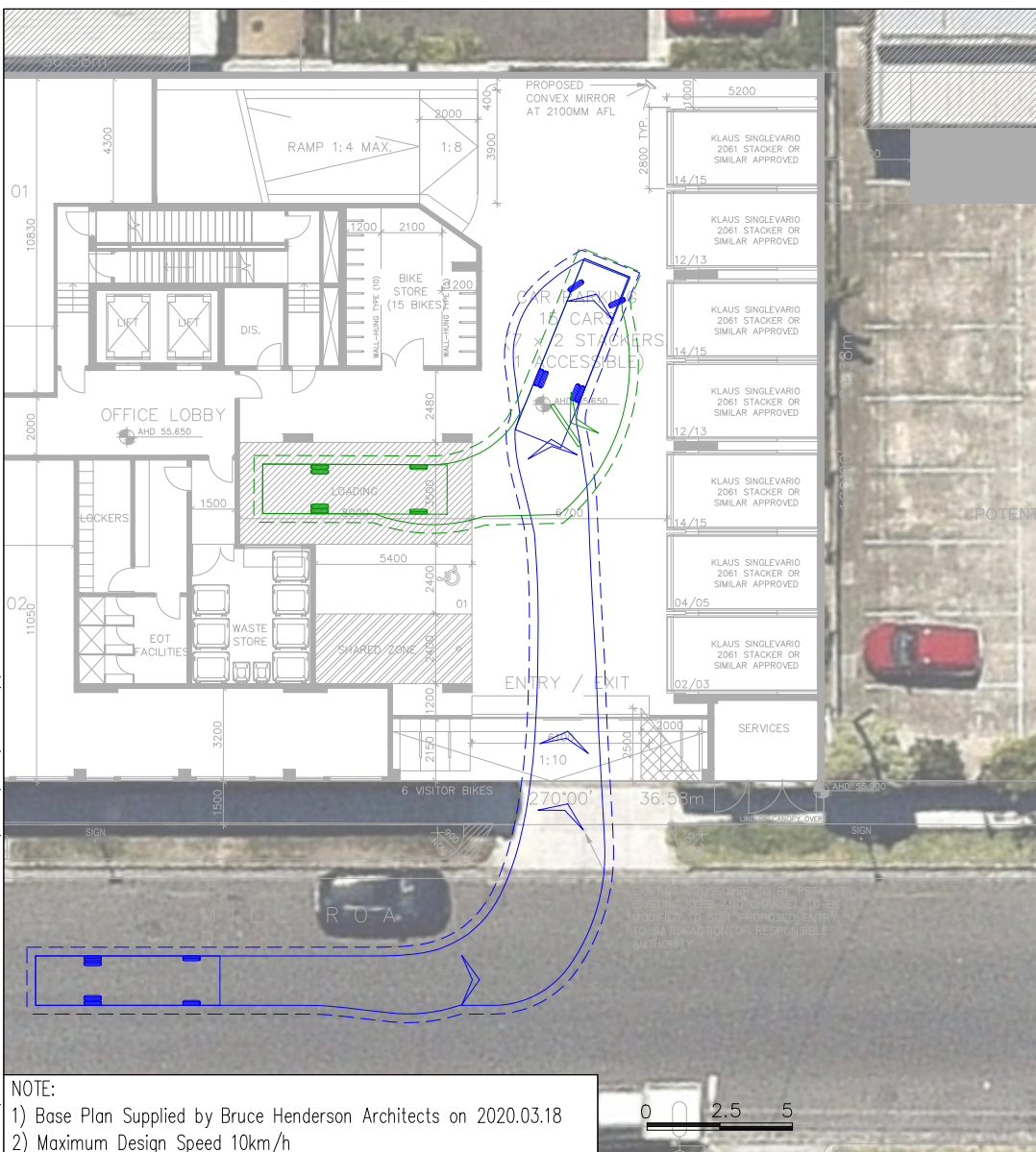


RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	11 of 13	1:250@A4	20/03/2020



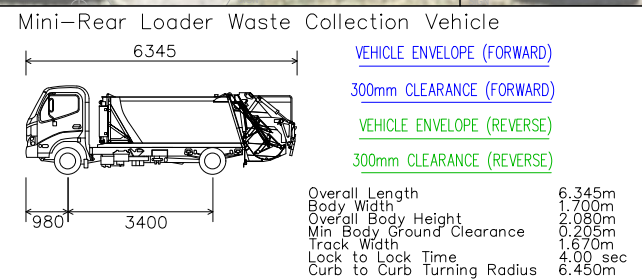
Appendix F Waste Truck Swept Path Assessment

20/03/2020 10:29:09 AM Y:\16501-17000\16676T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SK04 (2020.03.18)\16676T-SK04.DWG

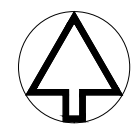


ratio:

RATIO CONSULTANTS PTY LTD
 ABN 005 422 104
 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011



Proposed Mixed-Use Development
 12-14 Johnson Street, Oakleigh
 Swept Path Assessment



RATIO REFERENCE	SHEET No.	SCALE	DATE
16676T-SK04/SN	12 of 13	1:250@A4	20/03/2020