

Report Prepared for
Goldman Johnson Pty Ltd

ratio:

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Proposed Mixed-Use Development

12-14 Johnson Street & 1 Mill Road,
Oakleigh

27 June 2022

transport:report

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1 Introduction:

Ratio Consultants was commissioned by the permit applicant (Goldman Johnson Pty Ltd) to assess the transport and parking implications of the proposed mixed-use development on the subject site located at 12 – 14 Johnson Street and 1 Mill Road, in Oakleigh.

The proposal seeks to construct a seven-storey building to include the following:

- Two retail tenancies on ground floor;
- Four commercial (office) tenancies on ground floor;
- 70 dwellings across the six levels above ground floor;
- A total of 82 car parking spaces and 88 bicycle parking spaces.

This report has been prepared to address the transport and parking matters associated with the proposal and is based on previous surveys and observations in the vicinity of the subject site and on the basis of similar developments elsewhere in Melbourne.

2 Existing Condition:

2.1 Site Location and Surroundings

The subject site for the proposed redevelopment comprises two adjacent properties, being 12-14 Johnson Street and 1 Mill Road, in Oakleigh, as detailed below:

- 12-14 Johnson Street is located north-eastern corner of the intersection of Johnson Street and Mill Road. The site is rectangular in shape with a frontage of approximately 25 metres to Johnson Street and a frontage of 37 metres to Mill Road. The site currently comprises a single storey building that accommodates four retail tenancies with a car park located at the rear of the site accessed via Mill Road.
- 1 Mill Road is located on the northern side of Mill Road approximately 30 metres to the east of its intersection with Johnson Street. The site is irregular in shape with a frontage of approximately 20 metres to Mill Road and an abuttal to Haughton Road of approximately 6.5 metres. The site currently comprises a single storey building located at the northern end of the site. Vehicular access to the on-site at-grade car park is provided via a single-width crossover located along Mill Road.

The two properties that form the subject site are shown in Figure 2.1 below:

Figure 2.1: Properties the form the Subject Site



The subject 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 subject site is residential to the south and commercial to the north and east, in addition to land for public use.

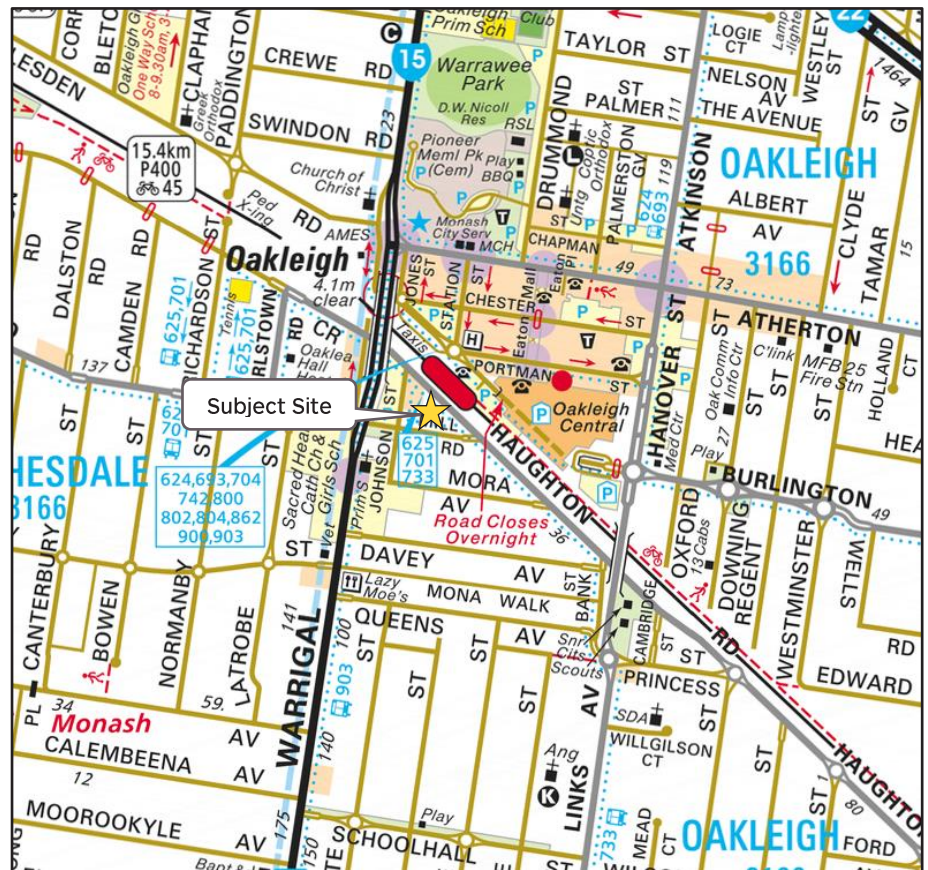
The subject site is located within the Oakleigh Activity Centre and is situated in close proximity to the Oakleigh Railway Station which is located directly opposite the subject site.

Some other key land uses nearby include:

- Sacred Heart Catholic Church located approximately 150 metres to the southwest of the subject site.
- Sacred Heart Girls College located approximately 200 metres to the south of the subject site.
- Sacred Heart Primary School located approximately 200 metres to the south of the subject site.

The location of the subject site relative to the surrounding road network is shown in Figure 2.2 below:

Figure 2.2: Site Location and Surroundings



2.2 Road Network

Johnson Street is a Council managed Local Road that essentially runs in a north-south alignment between Haughton Road and Mora Avenue. North of Mill Road, Johnson Street has an approximate carriageway width of 14.2 metres, accommodating 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 13.5 metres, accommodating 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 9.3 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.

Haughton Road is a Council managed Collector Road that runs in a northwest-southeast alignment between Warrigal Road and Coora Road. In the vicinity of the subject site, Haughton Road has a carriageway width of approximately 9.0 metres accommodating one traffic lane in each direction along with kerbside parallel parking along the southern side of the road. Haughton Road has a posted speed limit of 50 km/hr with footpaths provided on both sides of the road.

Warrigal Road is a Department of Transport (VicRoads) managed Transport Zone 2 (formerly Road Zone Category 1 prior to amendment VC205) 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 2.3 below shows the aerial photograph of the subject site relative to the surroundings:

Figure 2.3: Aerial View of the Site and Surroundings

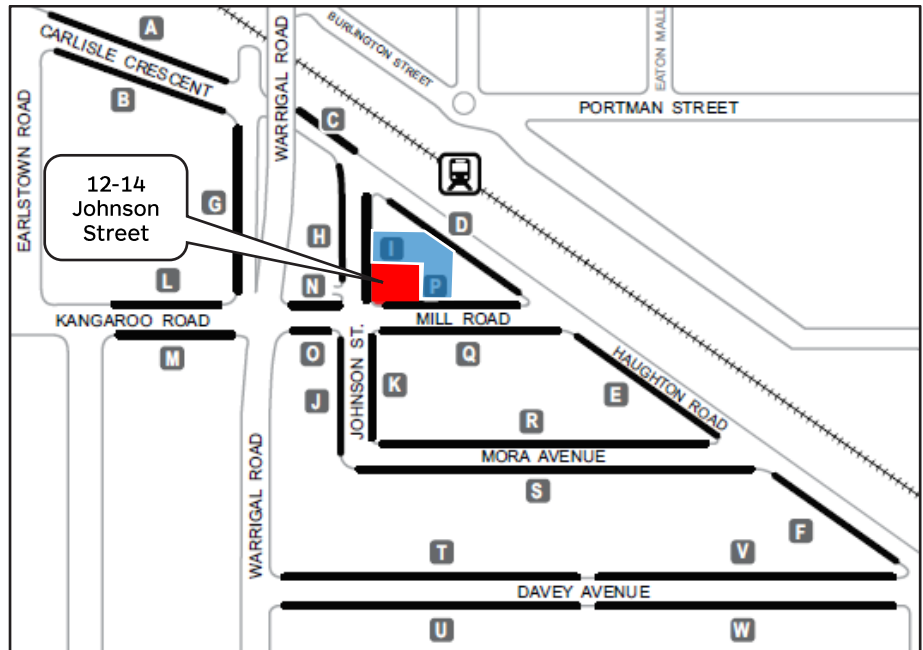


2.3 Parking Conditions

Ratio Consultants previously conducted parking occupancy surveys in the vicinity of the site on Thursday 7 November 2019 from 8:00am to 8:00pm during pre-COVID-19 Pandemic conditions.

The area surveyed is shown below in Figure 2.5, with the detailed results presented in Appendix A.

Figure 2.4: Parking Occupancy Survey Area



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 were not considered in the car parking occupancy survey as these car parks are specifically designated for the use of commuters.

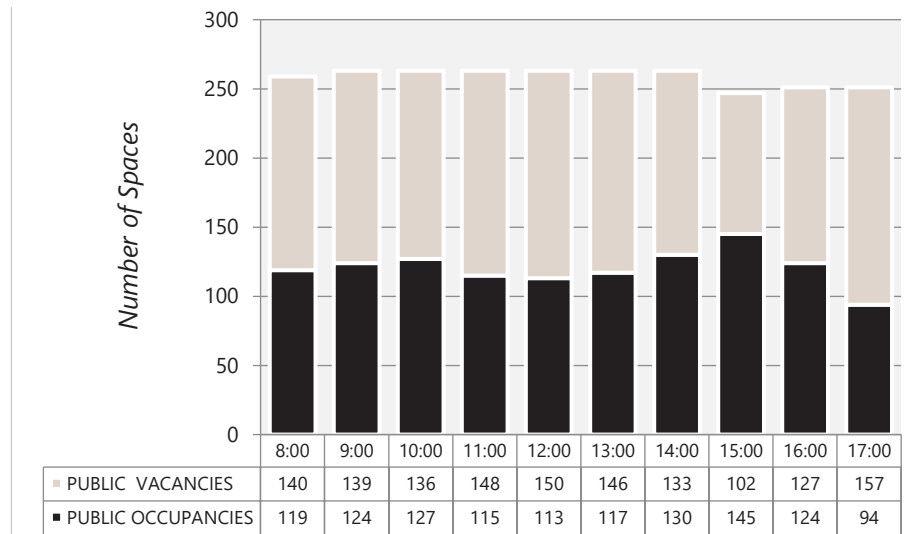
In summary, the survey results showed the following:

Thursday 7 November 2019

- There was a supply of between 247 and 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



In order to supplement this survey data and to determine the typical parking conditions in the vicinity of the site, aerial photographs provided by 'Nearmap' were utilised to undertake spot surveys within close proximity of the site during the period October 2019 (prior to the onset of the COVID-19 Pandemic) and at various times through to February 2022, by which time many of the Victorian Government enforced COVID-19 lockdowns and other associated restrictions had ceased. Notwithstanding this, many on-going changes such as a much greater use of hybrid employment models (mix of office based and WFH arrangements) have since become normalised.

The area surveyed is shown below in Figure 2.5, with the detailed results presented in Appendix A.

Figure 2.5: Parking Occupancy Survey Area



Source: Nearmaps

Parking Inventory

The parking survey inventory indicated a supply of 289 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.

Parking Supply and Occupancy

Table 2.1 summarises the results of the 'NearMap' spot surveys for the 289 publicly available on-street car parking spaces for a range of weekdays and times.

Table 2.1: Aerial Spot Parking Survey Results

Date	Day	Time	Capacity	Number of Occupied Spaces	Number of Available Spaces
4 February 2022	Friday	4:48 pm	256	48	208
22 November 2021	Monday	1:23 PM	268	59	209
29 April 2021	Thursday	2:16 PM	268	80	188

11 March 2021	Thursday	10:14 AM	268	60	208
17 February 2020	Monday	1:19 PM	268	87	181
24 October 2019	Thursday	9:23 AM	268	84	184
Average				70 spaces	196 spaces

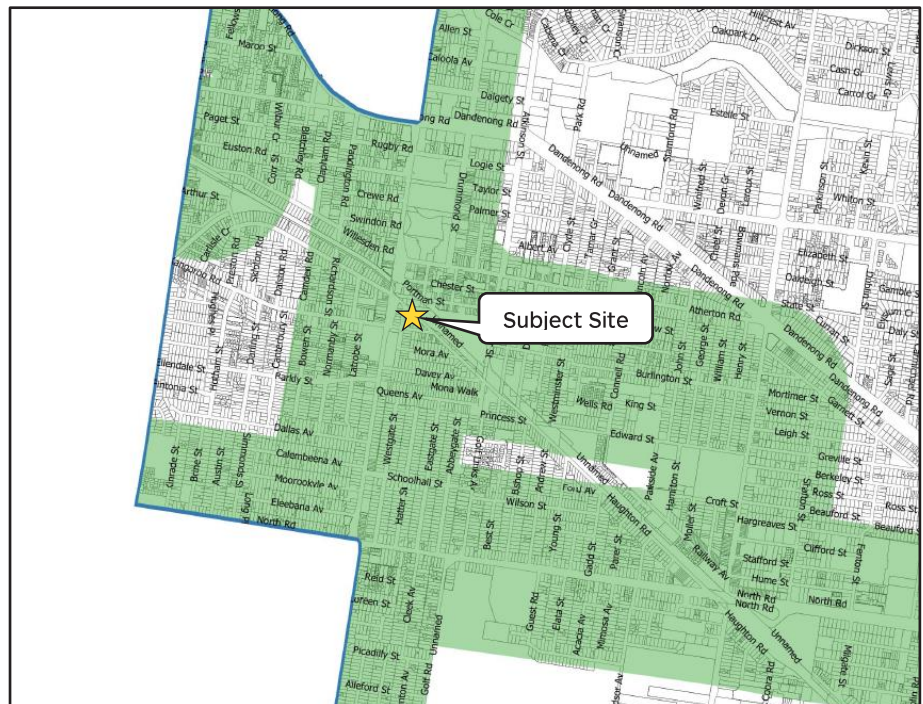
The survey results indicate a maximum of 87 spaces were recorded occupied within the survey area. Accordingly, there were a minimum of 181 car parking spaces available within the survey area. Further, as indicated in Table 2.1, the average availability of the on-street car parking spaces is 196 spaces out of a minimum supply of 256 car spaces within the vicinity of the subject site.

These vacant spaces could potentially be utilised by the future users of the proposed development, predominantly customers of the proposed retail tenancies during weekday periods and visitors to the proposed apartments and office tenancies.

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 2.6 below:

Figure 2.6: Subject Site with respect to the PPTN Area

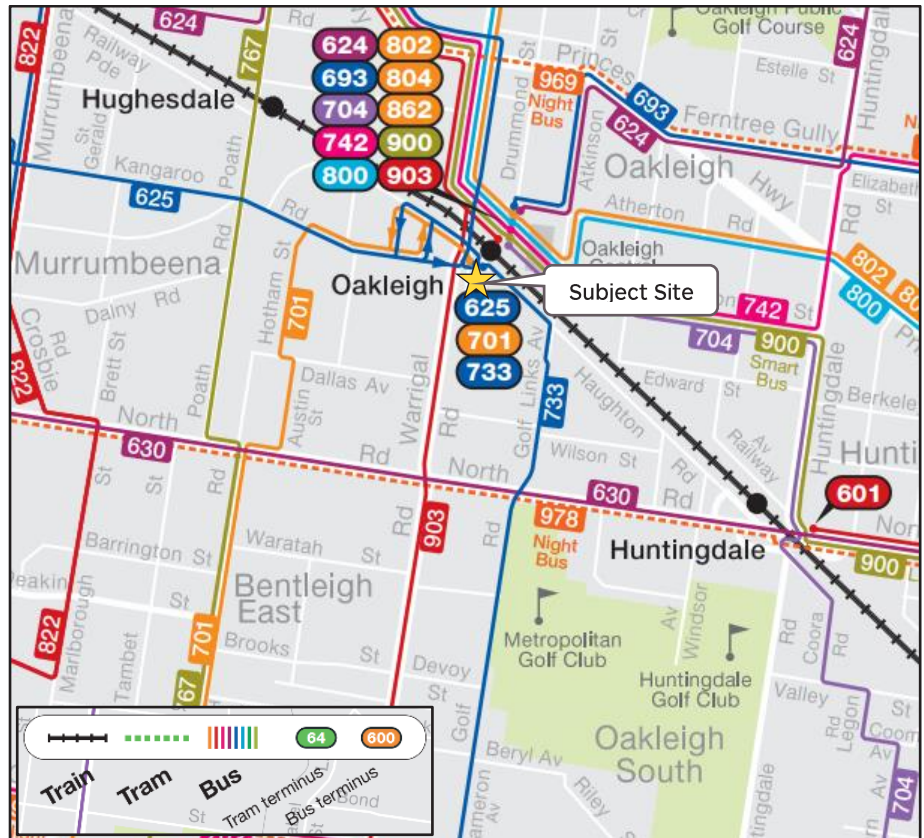


The subject site has excellent access to the public transport services primarily via Oakleigh Railway Station, located directly opposite to the subject site. The public transport services available in close proximity of the subject site are summarised in Table 2.2 and illustrated in Figure 2.7:

Table 2.2: Summary of Public Transport Services

	Route Number	Route	Nearest Stop	Distance
Train	Cranbourne and Pakenham Lines		Oakleigh	Site Frontage (~1 min 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 2.7: Public Transport Services in Close Proximity of the Site



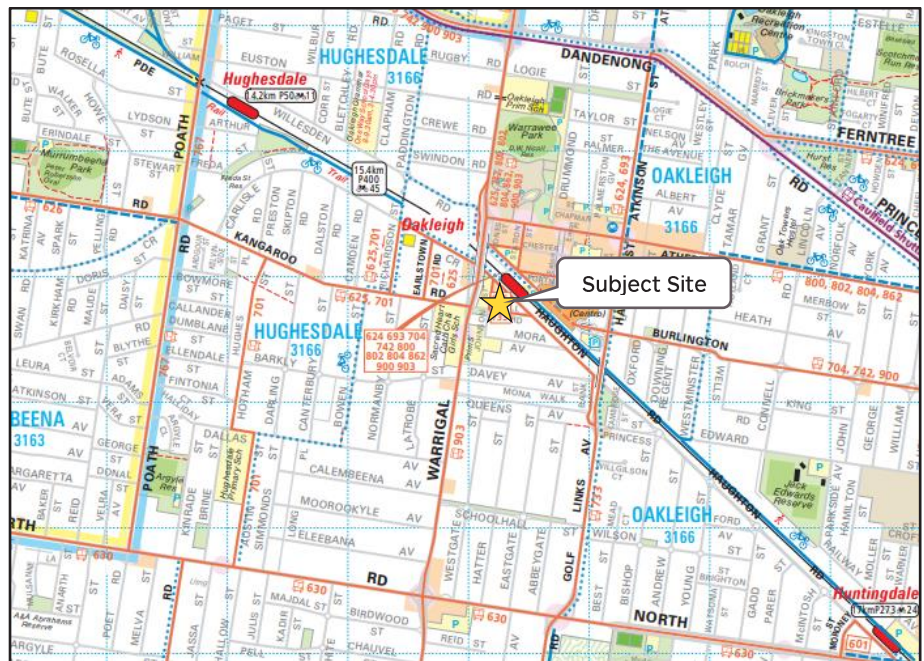
Bicycle Network

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 under the elevated railway line. 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 2.8:

Figure 2.8: Bicycle Routes - TravelSmart Map

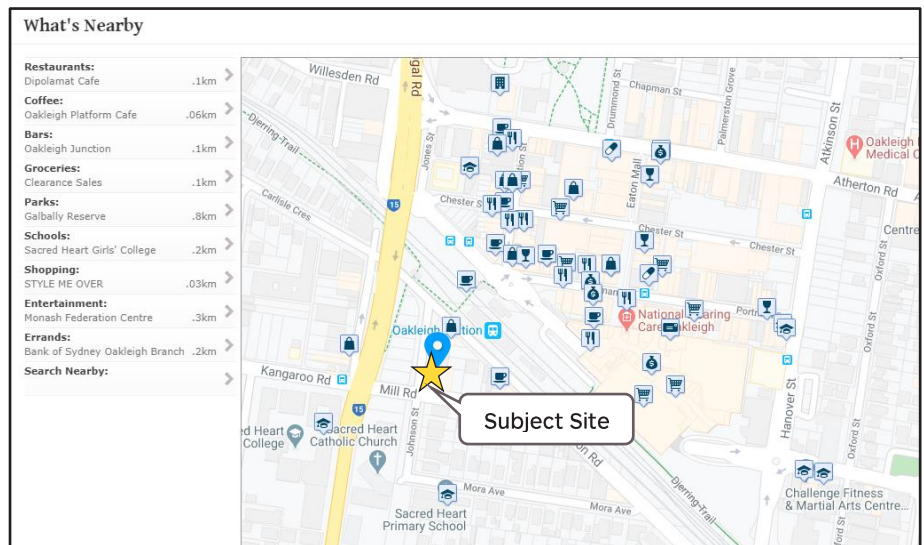


Pedestrian Facilities

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 30 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. below:

Figure 2.9: Walkable Services from the Subject Site



3 The Proposal:

3.1 Development Overview

The proposal involves demolition of the existing buildings on site to construct a seven-storey mixed-use development on the site located at 12 – 14 Johnson Street & 1 Mill Road, in Oakleigh. More specifically, the development will comprise the following:

- Two retail (shop) tenancies on ground floor with a combined leasable floor area of 219.3 sqm;
- Four commercial (office) tenancies on ground floor with a combined net floor area of 749.4 sqm;
- 70 apartments across six levels, including:
 - 13 x one-bedroom apartments;
 - 54 x two-bedroom apartments; and
 - 3 x three-bedroom apartments.

3.2 Parking Provision

The development proposes to provide the following parking provision within the two levels of basement parking:

- A total of 82 car parking spaces (including one DDA space); and
- A total of 88 bicycle parking spaces are proposed on-site to cater the needs of the residents, staff, visitors and customers of the proposed development.

3.3 Site Access

Vehicular access to the on-site car park is proposed via a new double width crossover located along Mill Road.

Pedestrian access to the development is provided via the Mill Road and Haughton Road frontages of the subject site.

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.

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	Type	Size / Number	Column B Rate	Statutory Requirement
Commercial	Office	749.4 sqm	3.0 spaces to each 100 sqm of net floor area	22 spaces
Retail	Shop	219.3 sqm	3.5 spaces to each 100 sqm of leasable floor area	7 spaces
Dwelling	One-bedroom	13	1.0 spaces per dwelling	13 spaces
	Two-Bedroom	54		54 spaces
	Three-Bedroom	3	2.0 spaces per dwelling	6 spaces
TOTAL				102 spaces

Accordingly, the proposed land uses on site have a statutory requirement to provide 102 car parking spaces on-site in accordance with the Monash Planning Scheme.

4.2 Car Parking Provision and Allocation

A total of 82 car parking spaces are proposed on-site allocated and according dispensation is summarised in Table 4.2:

Table 4.2: Car Parking Allocation and Dispensation

Land Use	Type	Size / Number	Requirement	Provision	Dispensation
Commercial	Office	Four tenancies 749.4 sqm	22 spaces	8 spaces	14 spaces
Retail	Shop	Two tenancies 219.3 sqm	7 spaces	2 spaces	5 spaces
Dwelling	One-bedroom	13	13 spaces	11 spaces	2 spaces
	Two-Bedroom	54	54 spaces	54 spaces	None
	Three-Bedroom	3	6 spaces	6 spaces	None
All	EV Charging	1	-	1 space	-1 space
TOTAL			102 spaces	82 spaces	19 spaces

On the basis of the above, car parking for each land use is provided at the following rates:

- **2** spaces allocated to staff of the two retail tenancies (one space per tenancy);
- **8** spaces allocated to the office use, at a provision rate of 1.07 spaces per 100 sqm (inclusive of the DDA parking space).
- **11** spaces allocated to the 13 one-bedroom apartments (0.85 spaces per apartment);
- **54** spaces allocated to the 54 two-bedroom apartments (1 space per apartment);
- **6** spaces allocated to the 3 three-bedroom apartments (2 spaces per apartment); and
- **1** car parking space shared amongst all land uses dedicated for EV charging.

Consequently, the proposed development seeks a total dispensation of 19 car parking spaces against the statutory requirements of Clause 52.06 of the Monash Planning Scheme.

In regard 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

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 residential and 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.

Parking surveys for retail developments in Melbourne have consistently demonstrated that staff of retail tenancies typically generate a parking demand rate of up to 1 space per 100 square metres of leasable floor area.

Application of the above rates to the retail tenancy with a leasable floor area of 219.3 square metres equates to a staff parking demand of up to 2 spaces. As a result, the proposed 2 on-site car parking spaces readily meet the expected staff parking demand.

OFFICE CAR PARKING DEMAND

Studies of car parking demands associated with office developments of varying sizes located in middle urban locations and within PPTN areas, have typically shown parking rates of between 1.0 and 3.0 spaces per 100 square metres.

In particular, the following approved car parking rates within middle urban locations range from 1.0 to 2.04 spaces per 100 square metres, namely:

- 12 – 14 Johnson Street, Oakleigh (2,957sqm): 1.0 space/100sqm
- 1 McNab Avenue, Footscray (20,500sqm): 1.2 spaces/100sqm
- 913 Whitehorse Road, Box Hill (19,400sqm): 1.55 spaces/100sqm
- 270 Clayton Road, Clayton (3,672 sqm): 1.85 spaces/100sqm
- 254-262 Burwood Road, Hawthorn (9,000sqm): 2.04 spaces/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 subject site located at 12 – 14 Johnson Street in Oakleigh received a permit approval on 12 May 2021 (TPA/51498 VCAT Directed) for a mixed use development including office and retail, with a reduction in car parking. The office component of the proposal had a floor area of 2,990 sqm across 5 levels, with 59 spaces of the total 61 car parking spaces allocated to office use. This equates to a car parking provision rate of approximately 1 car parking space per 100 sqm of office leasable floor area.

In comparison to the proposal in question, the leasable floor area of 749.4 sqm with the proposed allocation of 8 spaces equates to a car parking provision rate of approximately 1 space per 100 sqm. The scale of office use is significantly lower than the previous application at 12 – 14 Johnson Street however maintains an equivalent car parking provision rate. On this basis, it is considered that the proposed car parking allocation for the office use of the development is satisfactory.

Short and Long Stay Parking Demands

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 residents and employees/staff.

It is expected that majority of the overall parking demands generated by the development will be long-stay resident and staff parking, with the on-site car parking allocation seeking to accommodate majority of 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 0 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 88 bicycle spaces which is in excess of the statutory requirement for bicycle parking. The facilities are designed to support bicycle use by residents, employees, visitors and customers by providing end of trip facilities which complement the good access to the available bicycle connections.

Anticipated Resident Car Ownership Rates

Car ownership data for residents living in apartments within four or more storey blocks in the suburb of Oakleigh and the City of Monash was obtained from the 2016 Census of Population and Housing conducted by the Australian Bureau of Statistics. The average car ownership rates for one bedroom apartments within a four or more-storey blocks in Oakleigh and the City of Monash are given in Table 4.3 below:

Table 4.3: Existing Car Ownership in Oakleigh and City of Monash (ABS 2016)

Area	Average Car Ownership	Percentage of number of Cars Owned		
		No Cars	1 Car	2 Cars
Oakleigh	0.63	40%	57%	3%
City of Monash	0.68	38%	55%	7%

The above data indicates that one bedroom dwelling types in the vicinity of the site have an average car ownership that is below the statutory requirement of one space outlined in Clause 52.06-5 of the Monash Planning Scheme.

In addition, the data also indicates that 40% of one-bedroom apartments up to four or more storey blocks in Oakleigh have no cars. This indicates that there is demand for one bedroom dwellings with no on-site car parking, as proposed. The provision of two of the one bedroom apartments without any on-site car parking also assists housing affordability in the City of Monash.

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 previous 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 181 spaces available. 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 residential/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 residential/office visitors 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 82 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 ideal access to a range of sustainable transport options, in particular train services with the Oakleigh Railway Station located within the immediate vicinity of the site and its associated bus terminus, as well as a convenient bicycle and pedestrian network. This will enable users of the proposed development to travel to and from the site without relying on a private vehicle.

- 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 two retail tenancies.
- The provision of eight 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 supply in the vicinity of the site is generally subject to short-term parking restrictions, with the unrestricted parking supply is generally subject to high occupancy levels and therefore not suitable for long term parking. This will discourage users such as employees/staff of the proposed development without an on-site car parking space to drive to/from the site.
- 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 readily 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 vehicular 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 new double-width crossover located along Mill Road. The redundant crossovers currently located along the site’s frontages of Mill Road and Haughton Road will be removed and reinstated with kerb, channel and nature strip to the satisfaction of the Responsible Authority.

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>Satisfied</u> : All accessways have been provided with a minimum trafficable width of 5.5 metres.
Have an internal radius of at least 4m at changes of direction or intersection or be at least 4.2m wide.	<u>Satisfied</u> : Change of directions in the accessways have been provided with a minimum width of at least 4.2 metres.
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>Satisfied</u> : Vehicles parked in the end of aisle car parking spaces are able to exit in a forward direction with one manoeuvre.
Provide at least 2.1m headroom beneath overhead obstructions, calculated for a vehicle with a wheel base of 2.8m.	<u>Satisfied</u> : A minimum headroom clearance of 2.1 metres has been provided along the ramp and within the basement.
If the accessway serves four or more car spaces or connects to a road in a Transport Zone 2 or Transport Zone 3, the accessway must be designed so that cars can exit the site in a forward direction.	<u>Satisfied</u> : All vehicles are able to enter/exit the site to/from Mill Road in a forward direction.
Provide a passing area at the entrance at least 6.1 metres wide and 7 metres long if the accessway serves ten or more car parking spaces and is either more than 50 metres long or connects to a road in a Transport Zone 2 or Transport Zone 3.	<u>Not Applicable</u> : Whilst the accessway serves more than 10 spaces, it does not connect to a road in a Transport Zone 2 or Transport Zone 3 nor is it more than 50 metres long before passing can occur. Notwithstanding this, the accessway at the entrance of the site is 6.1 metres wide (inclusive of 300 mm kerbs on both sides) and in excess of 7.0 metres in length which enables simultaneous two-way vehicular movements.

Requirement	Comments
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 landscaping in those areas is less than 900mm in height.	<u>Satisfied:</u> Since the accessway is double width at the entrance, pedestrian sight triangle is not required to be provided adjacent to the entrance lane of the accessway. However, a pedestrian sight splay triangle cannot be provided adjacent to the exit lane of the accessway at the entrance to the site due to the proximity of the neighbouring property. However, in order to provide a view of the pedestrians walking along the footpath of the frontage road (Mill Road), a convex mirror will be installed on the western side of the accessway which provides a view of the footpath to the east of the accessway to drivers of the departing vehicle which is considered to be satisfactory.
If an accessway to four or more car parking spaces is from land in a Transport Zone 2 or Transport Zone 3, the access to the car spaces must be at least 6 metres from the road carriageway.	<u>Not Applicable:</u> Car spaces are not accessed directly to/from a road in a Transport Zone 2 or Transport Zone 3.
If entry to the car space is from a road, the width of the accessway may include the road.	<u>Not Applicable:</u> It is not proposed to access any car parking spaces from a road.

Design Standard 2 - Car Parking Spaces

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>Satisfied:</u> All of the at grade car parking spaces have been provided with dimensions in accordance with Table 2 of Design Standard 2 to Clause 52.06 of the Monash 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>Satisfied:</u> All the at grade 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>Not Applicable:</u> No garages or carports are proposed within the development.
Where parking spaces are provided in tandem (one space behind the other) an	<u>Satisfied:</u> Car spaces proposed in a tandem arrangement have been provided with an additional length of 500

additional 500mm in length must be provided between each space.	mm between them as required by this design standard requirement.
Where two or more car parking spaces are provided for a dwelling, at least one space must be under cover.	<u>Satisfied</u> : All of the car parking spaces are provided within two levels of basement parking therefore are 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>Satisfied</u> – The DDA space with and the adjacent shared zone has been designed in accordance with the dimensions outlined within 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
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.	<u>Satisfied</u> : The first 5 metres into the site are provided with a gradient no steeper than 1:10 and therefore in accordance with this design standard.
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.	<u>Satisfied</u> : The proposed grades are in accordance with Table 3 of Design Standard 3, with grades no steeper than 1:4.
Where the difference in grade between two sections of ramp or floor is greater than 1:8 (12.5%) for a summit grade change, or greater than 1:6.7 (15%) for a sag grade change, the ramp must include a transition section of at least 2 metres to prevent vehicles scraping or bottoming. Plans must include an assessment of grade changes of greater than 1:5.6 (18%) or less than 3 metres apart for clearances, to the satisfaction of the responsible authority.	<u>Satisfied</u> : Appropriate transition sections have been provided to prevent scraping or bottoming.

5.2 Swept Path Assessment

Site Access

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 forward direction.

In addition, a vehicle priority system, consisting of line marking and lanterns, will be installed on each level of the carpark to enable opportunities for passing of opposing vehicles.

Car Parking Spaces

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.

Summary

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 B.

6.1 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 6.1 below:

Table 6.1: Bicycle Parking Requirement

Use		User	Statutory Parking Rate	Statutory Requirement
Retail	219.3 sqm	Employee	1 space to every 300 sqm of leasable floor area	1 space
		Customer	1 space to every 500 sqm of leasable floor area	0 spaces
Office	749.4 sqm	Employee	1 space to every 300 sqm of net floor area (if area > 1,000 sqm)	0 spaces
		Visitor	1 space to every 1,000 sqm of net floor area (if area > 1,000 sqm)	0 spaces
Dwellings	70 apartments	Resident	1 space per 5 dwellings	14 spaces
		Visitor	1 space per 10 dwellings	7 spaces
TOTAL				22 spaces

Based on the above assessment, the proposed uses on site incur a statutory requirement to provide 22 bicycle parking spaces on-site. It is proposed to provide a generous provision of 88 bicycle parking spaces.

Accordingly, the proposal exceeds the requirements of the Monash Planning Scheme and is considered satisfactory.

6.2 Bicycle Parking Layout

The 88 bicycle parking spaces are provided within the following arrangement:

- 17 horizontal bicycle parking spaces within 9 ‘Arc de Triomphe’ type bicycle racks, located on the Ground Floor for use by staff and visitors;
- 24 horizontal bicycle parking spaces within 12 ‘Arc de Triomphe’ type bicycle racks, located on Basement Level 1 for use by residents;
- 40 vertical bicycle parking spaces within 20 ‘Cora E3VR Wall Mounted’ type bicycle racks, located on Basement Level 1 for use by residents;
- 7 horizontal bicycle parking spaces within 4 ‘Arc de Triomphe’ type bicycle racks, located on Basement Level 2 for use by residents.

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 sufficient horizontal bicycle parking spaces to exceed 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 500 mm intervals, with 1.2 metres of clearance and accessed via an aisle with a width of at least 1.5 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 C.

7.1 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.”*

Loading activities associated with the proposed on-site land uses is anticipated to occur via small vans or trucks (noting the nature and sizes of these tenancies).

It is considered loading and unloading via small vans or trucks associated with the proposed uses can be undertaken within on-site loading space (similar to the location used for waste collection vehicles) within the basement car park or using individual's car parking space as required.

In addition, loading/unloading which requires the use of larger vehicles, such as small and medium sized trucks, could be undertaken within the kerbside parallel parking along the surrounding streets (including Johnson Street, Haughton Road and Mill Road).

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

7.2 Waste Collection Arrangements

Waste is proposed to be stored within the bin storage rooms provided within the basement level of the mixed-use development.

It is understood that waste will be collected on-site by a private contractor using 6.4-metre-long Mini Rear Loader Trucks. A swept path assessment demonstrates the ability for this vehicle to enter the site in a forwards direction, access Basement Level 1 to 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 D.

8.1 Traffic Generation

The traffic generation for the different land uses on site are estimated to be as follows:

Retail Traffic Generation

The retail tenancies (combined floor area of 219.3 sqm) 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. 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.

Application of the above rates to the eight car parking spaces allocated to office use (floor area of 749.4 sqm) results in the AM and PM peak hour traffic generation as outlined in Table 8.1 below:

Table 8.1: Office Traffic Generation

	Morning Peak Hour	Evening Peak Hour
Arriving trips:	4	0
Departing trips:	0	4
Total trips:	4	4

Residential Traffic Generation

In consideration of the locality of the site and level of accessibility to public transport, it is expected that the residential component of the development will generate traffic at a daily rate given below:

- Four (4) vehicle movements per one and two-bedroom dwelling with an allocated car parking space; and
- Six (6) vehicle movements per three-bedroom dwelling.

Application of these rates to the proposed 70 dwelling development results in a daily traffic volume of 278 vehicle movements per day.

About ten percent of the total trips will occur in each of the morning and evening peak hours (approximately 28 vehicle movements). Residential trips will be mainly departing in the morning peak (80% depart and 20% arrive) and mainly arriving in the afternoon peak (40% depart and 60% arrive).

Accordingly, the residential traffic generation for the AM and PM peak hours are as shown in Table 8.2 overleaf:

Table 8.2: Residential Traffic Generation

	AM Peak	PM Peak
Arriving trips:	6 vph	17 vph
Departing trips:	22 vph	11 vph
Total trips:	28 vph	28 vph

Summary

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

Table 8.3: Overall Traffic Generation

	AM Peak	PM Peak
Arriving trips:	12 vph	17 vph
Departing trips:	22 vph	17 vph
Total trips:	34 vph	34 vph

8.2 Traffic Impact

The 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 expected level of traffic (in the order of 34 vehicles movements in the AM and PM peak hours) associated with the proposed development. The actual increase in traffic volume will be less than this figure given the removal of the existing land uses on the subject site.

Given the dispersed nature of traffic activity on the adjacent road network it is considered that the additional traffic volumes can be readily accommodated by the existing road network without creating adverse traffic safety or operational impacts.

9 Conclusion:

It is proposed to construct a mixed-use development on the subject site located at 12-14 Johnson Street and 1 Mill Road, in Oakleigh. The development will involve demolition of the existing buildings on site to construct a seven-storey building to include commercial (retail and office) and residential uses on site. A total of 82 car parking spaces (including a DDA space) and 88 bicycle parking spaces are proposed on site. Vehicle access to the basement levels is proposed to be provided directly to/from Mill Road, located in the south-east corner of the subject site.

Based on the assessment undertaken above, the following conclusions have been reached:

Car Parking Provision

- The proposed land uses on site have a statutory requirement to provide a total of 102 car parking spaces in accordance with the Monash Planning Scheme.
- It is proposed to provide a total of 82 car parking spaces (including 1 DDA space) within a two-level basement level car park. This requires a dispensation of car parking for 14 spaces against the office use, 5 spaces against the retail use and 2 spaces against the residential use for one bedroom apartments only.
- The assessment undertaken reveals that the dispensation in car parking sought is appropriate for the following reasons:
 - Empirical studies suggest that the provision of 1 space per 100 sqm of retail leasable floor area, equating to 2 car parking spaces for the proposed development, is sufficient to satisfy the car parking demands of retail staff.
 - Previously approved developments with office uses similar in size and nature demonstrate a variety of car parking provision rates, particularly aligned with the rate sought by the proposal of 1 space per 100 sqm.
 - The ABS Data from the 2016 Census reveals that there is a sufficient level of zero car ownership in Oakleigh and the City of Monash, therefore establishing a clear market demand for one-bedroom dwellings without a car parking space.
 - The subject site has excellent access to the public transport and bicycle network, which decreases the reliance of a private motor vehicle for staff and visitors of the future development.
 - Parking restrictions in the vicinity of the site discourage long-term parking behaviours and can cater for an unexpected overflow of visitor (short-term) car parking demand.
 - There is sufficient evidence in Council policies and strategies to indicate support of decreasing the reliance on private motor vehicles, in favour of more sustainable modes of transport within the locale.

Vehicular Access and Car Parking Layout

- Vehicular access to/from the site is proposed via a new double width 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 82 standard at-grade car parking spaces have been designed in accordance with the requirements of the Monash Planning Scheme, AS/NZS 2890.6:2009 and/or relevant sections of AS/NZS 2890.1:2004.
- Swept path assessments demonstrate that all critical car parking spaces can be accessed in a satisfactory manner.

Bicycle Parking Provision & Layout and End of Trip Facilities

- The development provides a total of 88 bicycle parking spaces on-site to cater for the needs of all the users of the proposed development. This provision of bicycle parking spaces readily 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.

Loading and Waste Collection Arrangements

- Loading activities associated with the proposed uses on site will predominantly be undertaken by vans and smaller trucks. It is considered that loading activities can suitably be undertaken undertaken within on-site loading space (similar to the location used for waste collection vehicles) within the basement car park or using individual's car parking space as required and/or within the on-street kerbside parallel car parking spaces within the surrounding streets of the site 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 Basement 1 via Mills Road, collect waste and depart the site in a suitable manner.

Traffic Generation and Impact

- The proposed development is estimated to generate in the order of 34 vehicular movements in each of the peak hours, with direct access via Mill Road.
- Mill Road and the surrounding road network have the ability to accommodate the expected increase in traffic volume and is not expected to create any adverse traffic safety or operational impacts.

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.

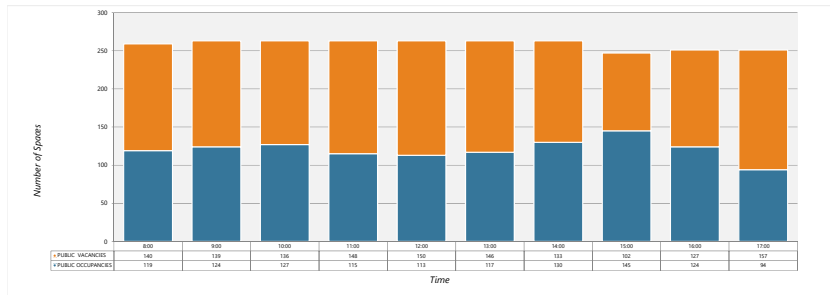
Appendix A Survey Results:

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	3	2	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	12	10	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 Swept Path Assessment





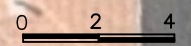
B85 Vehicle (AS/NZS2890.1:2004)	
	VEHICLE ENVELOPE (FORWARD)
4.91	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
0.92 2.8	300mm CLEARANCE (REVERSE)
Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	5.80m

B99 Vehicle (AS/NZS2890.1:2004)	
	VEHICLE ENVELOPE (FORWARD)
5.2	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
0.95 3.05	300mm CLEARANCE (REVERSE)
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

Proposed Mixed-Use Development 12-14 Johnson Street & 1 Mill Road, Oakleigh Swept Path Assessment

NOTE:
1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 1 of 13	SCALE 1:200@A3	DATE 03/06/2022
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Y:\180001-18500\18175T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SKETCH ADVICE (INCLUDING SWEEP PATHS)\SK07 - [2022.05.16]\18175T-SK07.DWG

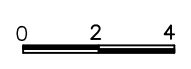
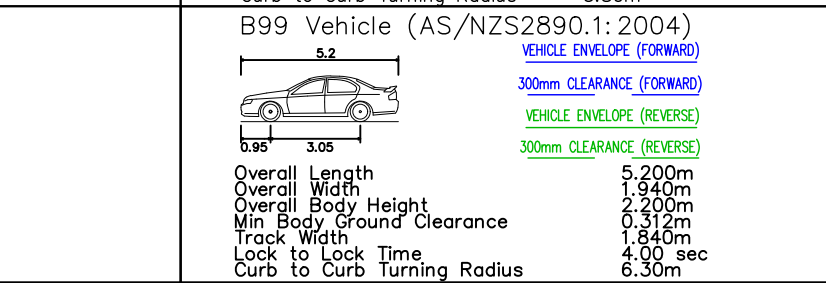
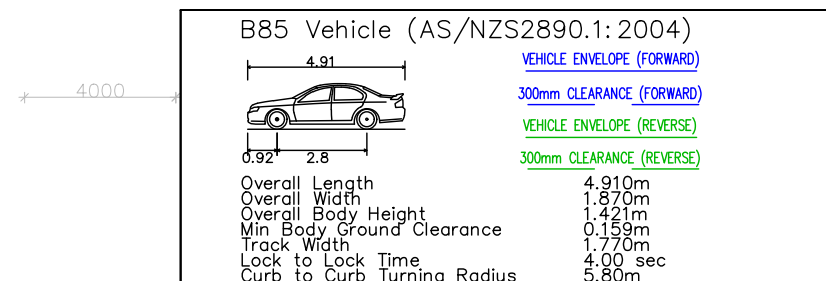
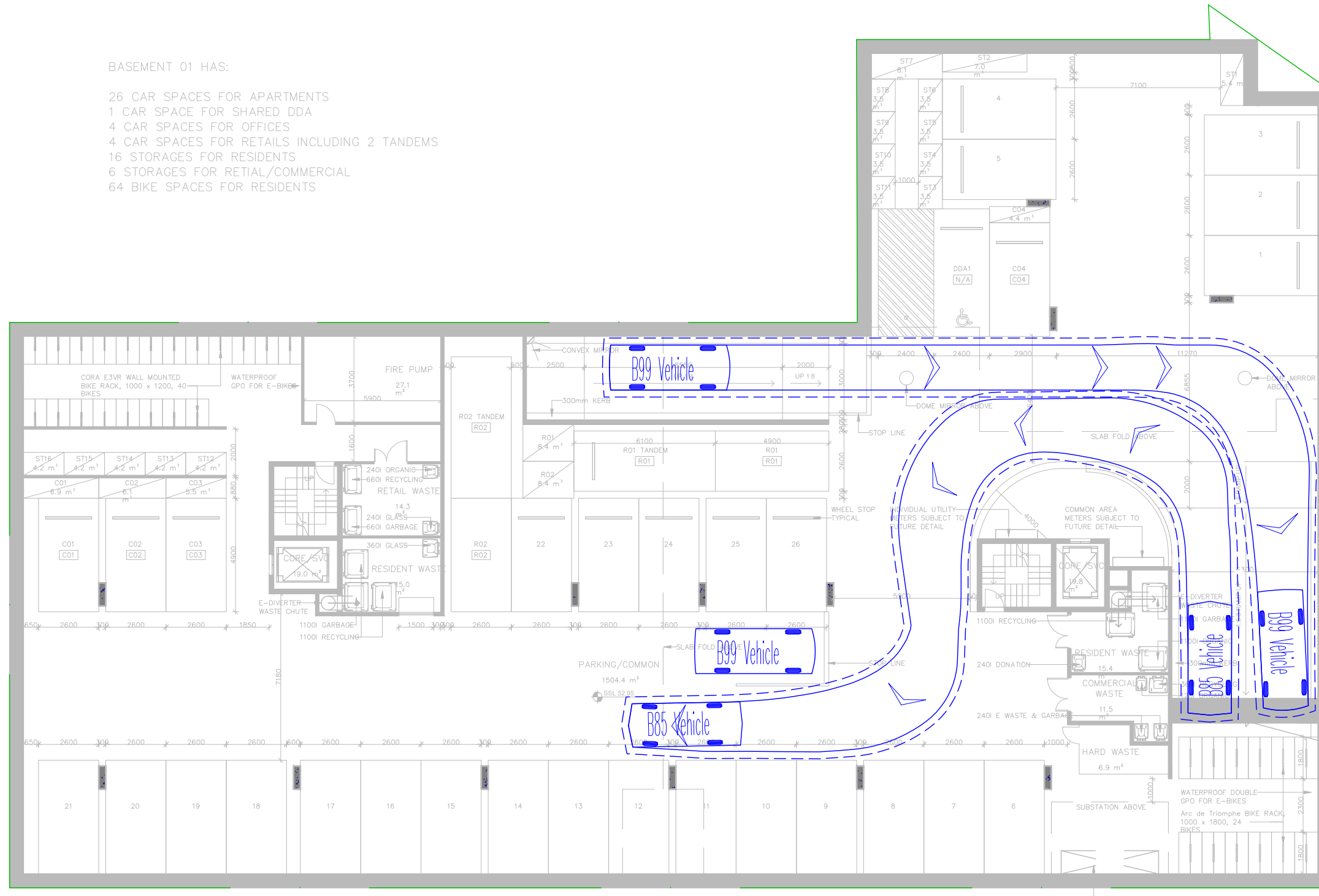
HAUGHTON RD OVER

BASEMENT 01 HAS:

- 26 CAR SPACES FOR APARTMENTS
- 1 CAR SPACE FOR SHARED DDA
- 4 CAR SPACES FOR OFFICES
- 4 CAR SPACES FOR RETAILS INCLUDING 2 TANDEM
- 16 STORAGES FOR RESIDENTS
- 6 STORAGES FOR RETAIL/COMMERCIAL
- 64 BIKE SPACES FOR RESIDENTS

70.50
51.50
39.30
6.70
6.70
70.50

JOHNSON ST OVER



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 & 1 Mill Road, Oakleigh
 Swept Path Assessment

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 2 of 13	SCALE 1:200@A3	DATE 03/06/2022
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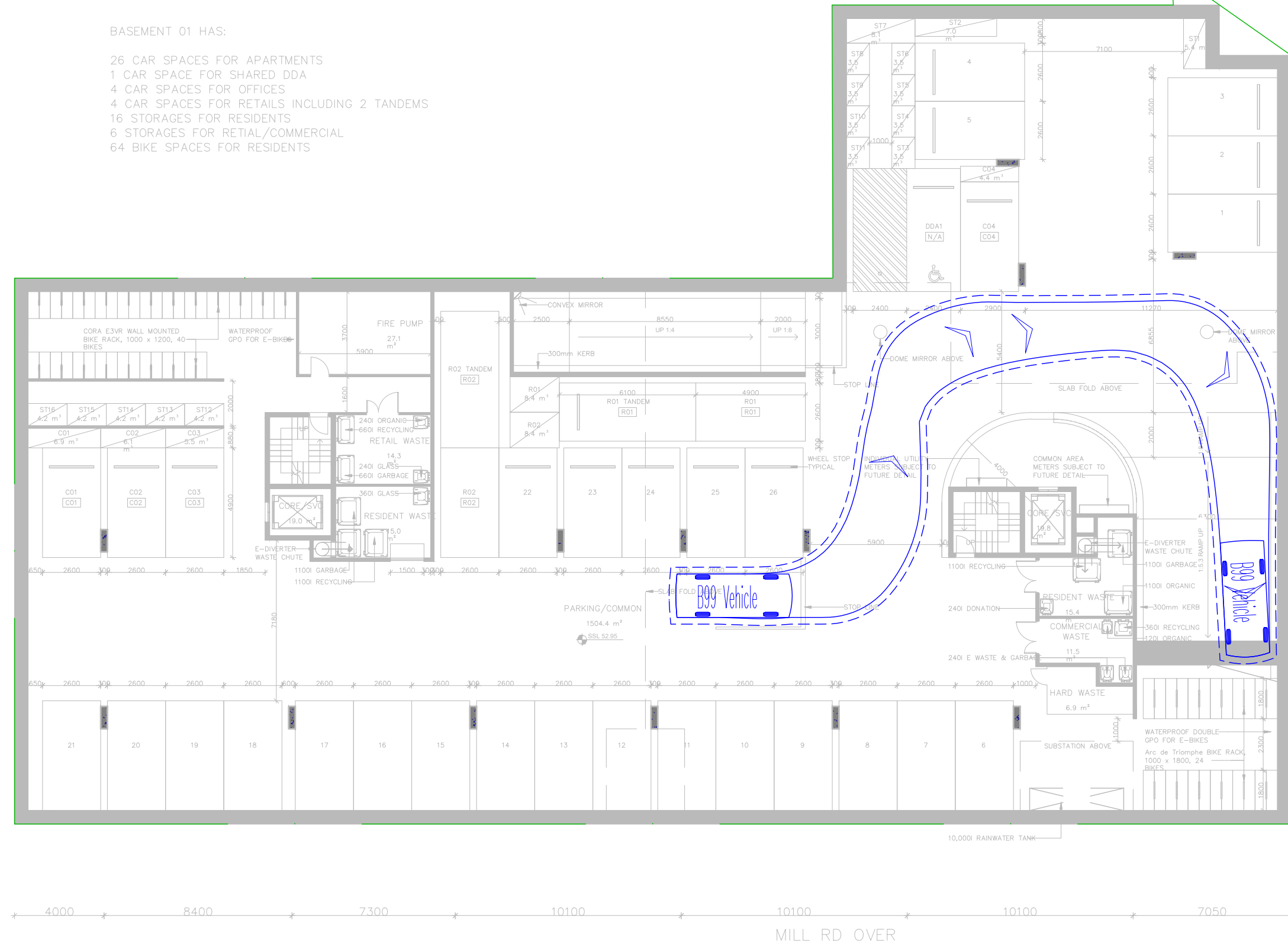
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HAUGHTON RD OVER

BASEMENT 01 HAS:

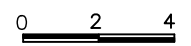
- 26 CAR SPACES FOR APARTMENTS
- 1 CAR SPACE FOR SHARED DDA
- 4 CAR SPACES FOR OFFICES
- 4 CAR SPACES FOR RETAILS INCLUDING 2 TANDEMS
- 16 STORAGES FOR RESIDENTS
- 6 STORAGES FOR RETAIL/COMMERCIAL
- 64 BIKE SPACES FOR RESIDENTS

7050
5150
3930
6700
6700
7050



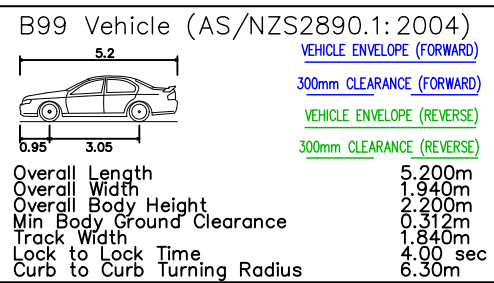
JOHNSON ST OVER

MILL RD OVER



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 & 1 Mill Road, Oakleigh
 Swept Path Assessment

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 3 of 13	SCALE 1:200@A3	DATE 03/06/2022
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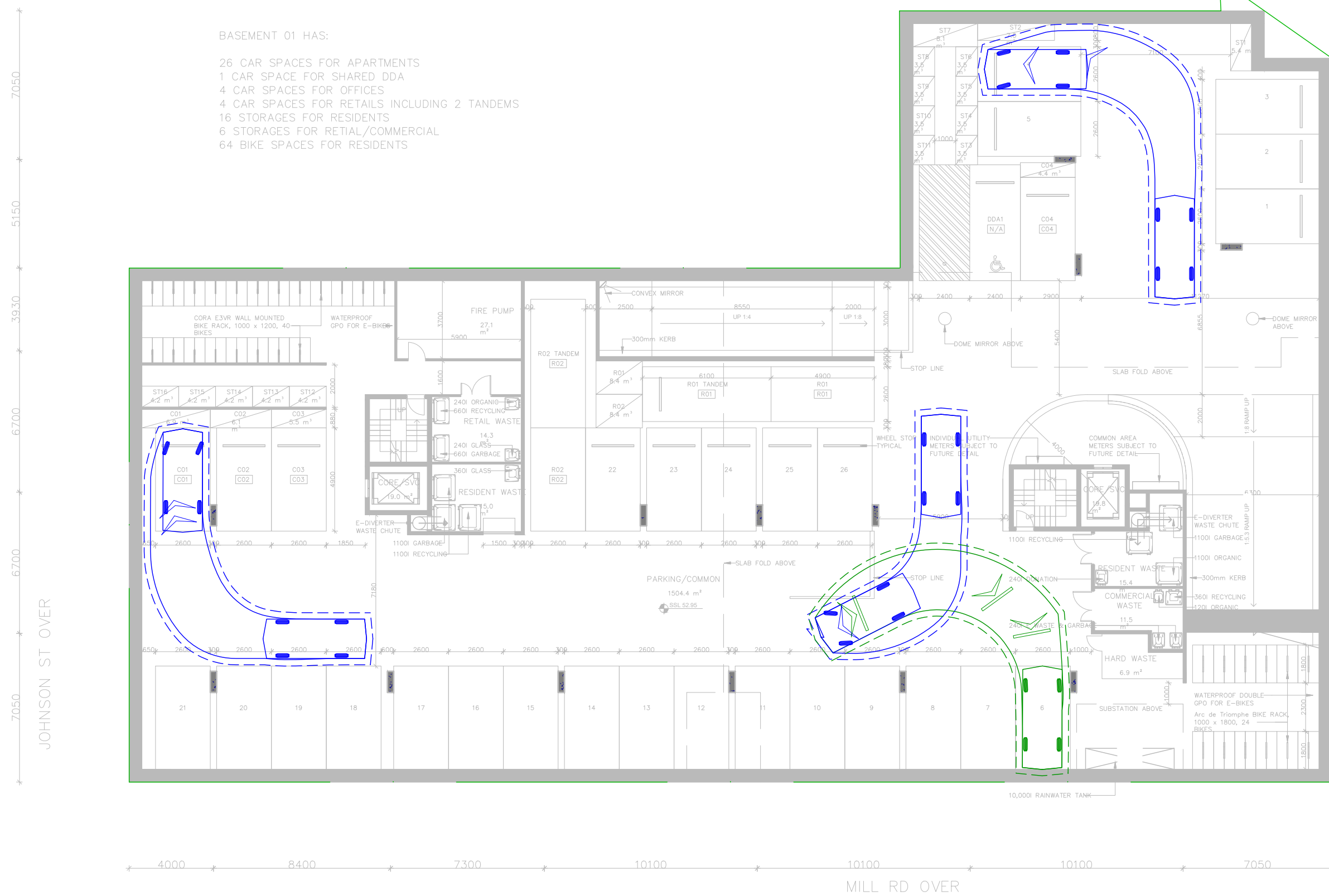


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HAUGHTON RD OVER

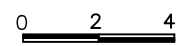
BASEMENT 01 HAS:

- 26 CAR SPACES FOR APARTMENTS
- 1 CAR SPACE FOR SHARED DDA
- 4 CAR SPACES FOR OFFICES
- 4 CAR SPACES FOR RETAILS INCLUDING 2 TANDEMS
- 16 STORAGES FOR RESIDENTS
- 6 STORAGES FOR RETAIL/COMMERCIAL
- 64 BIKE SPACES FOR RESIDENTS



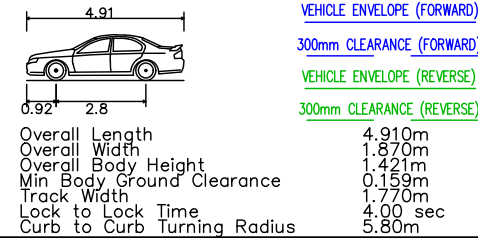
JOHNSON ST OVER

MILL RD OVER



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 8 GWYNNE STREET
 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
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B85 Vehicle (AS/NZS2890.1:2004)



Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Swept Path Assessment

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

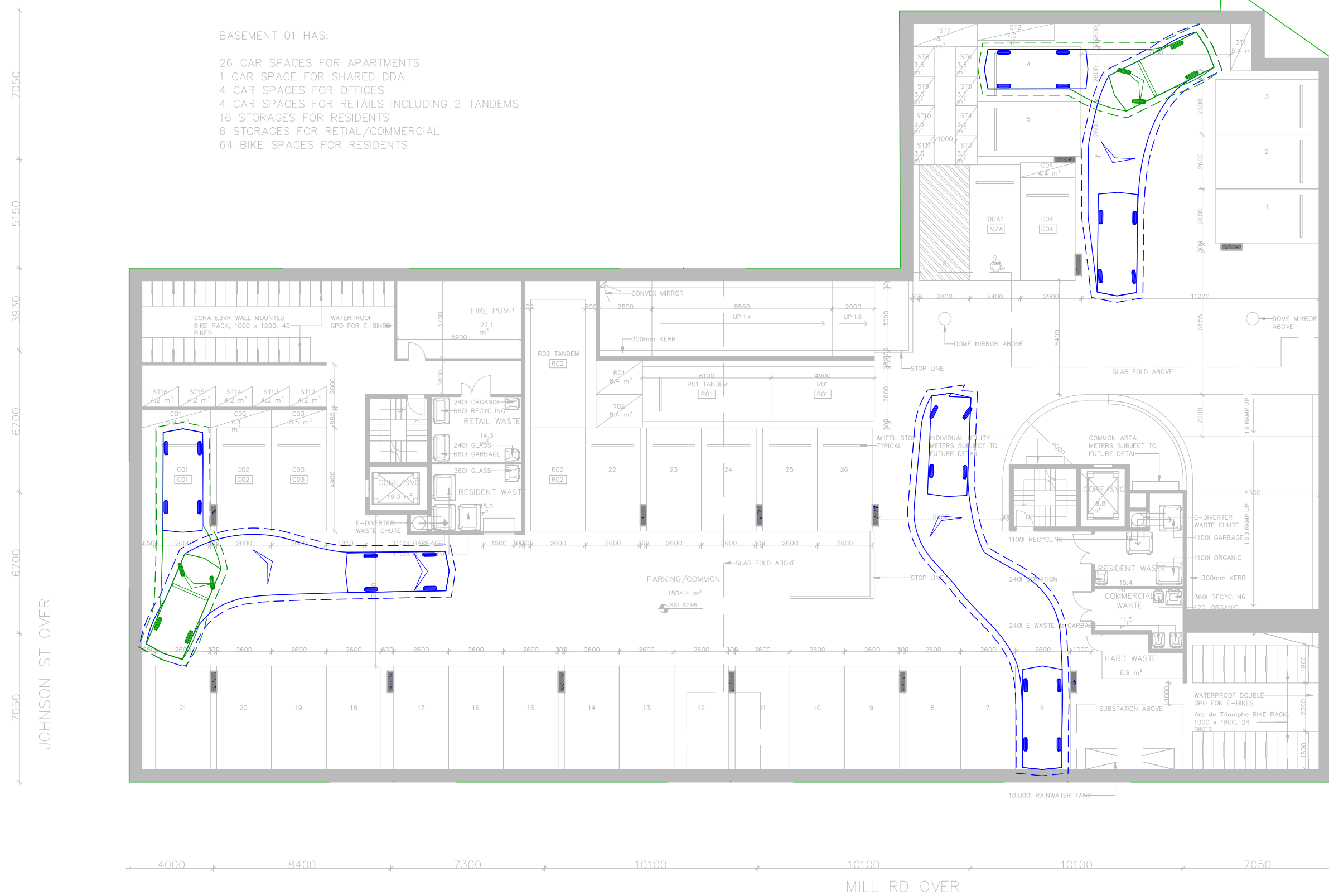
RATIO REFERENCE 18175T-SK07/SN	SHEET No. 4 of 13	SCALE 1:200@A3	DATE 03/06/2022
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HAUGHTON RD OVER

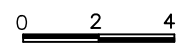
BASEMENT 01 HAS:

- 26 CAR SPACES FOR APARTMENTS
- 1 CAR SPACE FOR SHARED DDA
- 4 CAR SPACES FOR OFFICES
- 4 CAR SPACES FOR RETAILS INCLUDING 2 TANDEMS
- 16 STORAGES FOR RESIDENTS
- 6 STORAGES FOR RETAIL/COMMERCIAL
- 64 BIKE SPACES FOR RESIDENTS



JOHNSON ST OVER

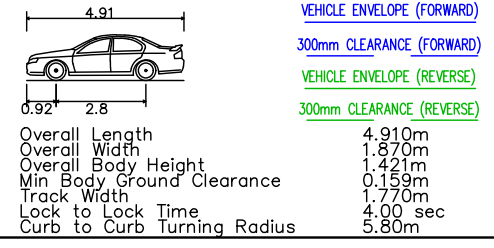
MILL RD OVER



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 & 1 Mill Road, Oakleigh
 Swept Path Assessment

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 5 of 13	SCALE 1:200@A3	DATE 03/06/2022
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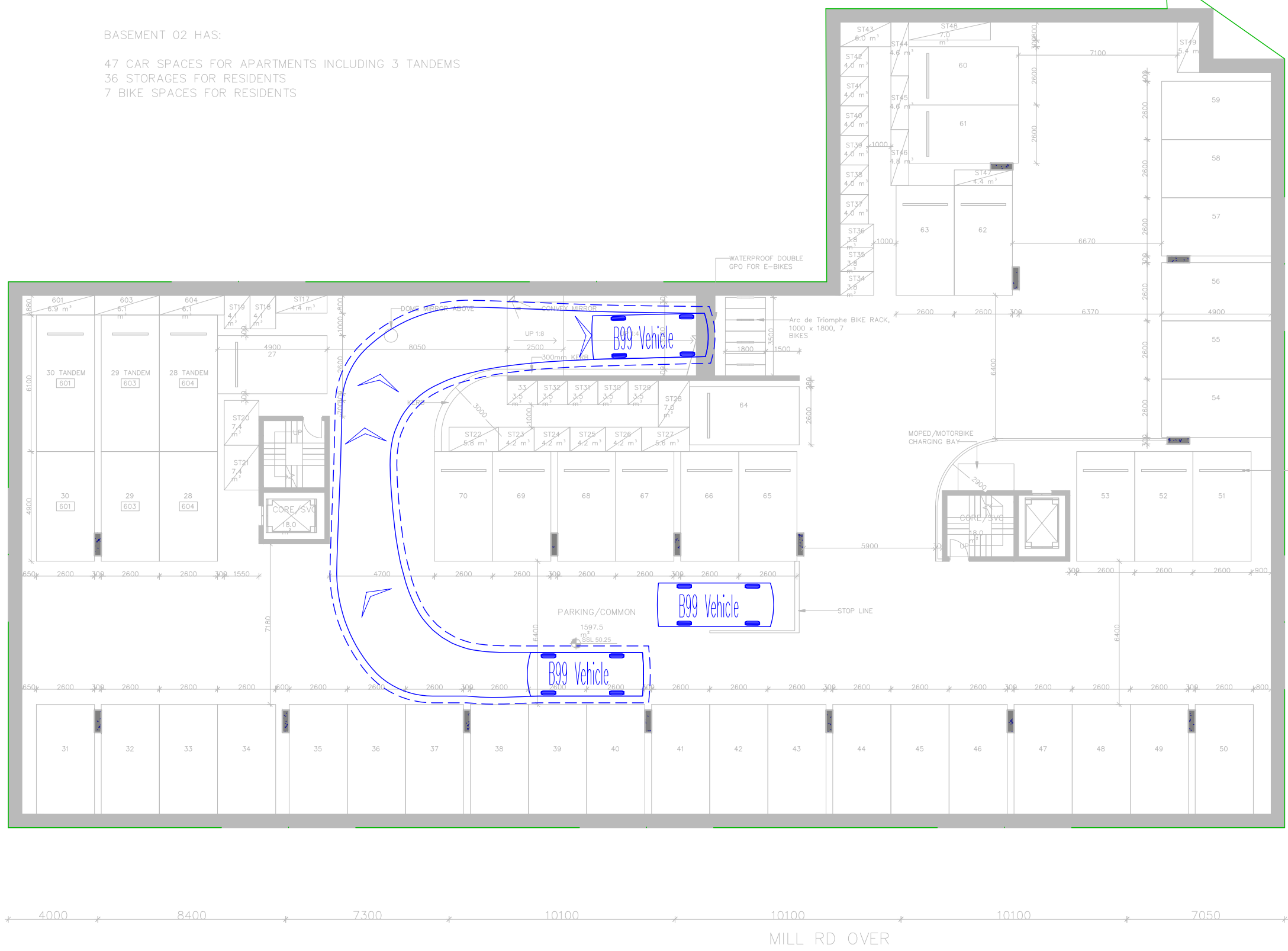


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HAUGHTON RD OVER

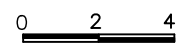
BASEMENT 02 HAS:

- 47 CAR SPACES FOR APARTMENTS INCLUDING 3 TANDEMS
- 36 STORAGES FOR RESIDENTS
- 7 BIKE SPACES FOR RESIDENTS



JOHNSON ST OVER

MILL RD OVER



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)	
	VEHICLE ENVELOPE (FORWARD)
5.2	300mm CLEARANCE (FORWARD)
	VEHICLE ENVELOPE (REVERSE)
0.95 3.05	300mm CLEARANCE (REVERSE)
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

Proposed Mixed-Use Development 12-14 Johnson Street & 1 Mill Road, Oakleigh Swept Path Assessment

- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 - 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 6 of 13	SCALE 1:200@A3	DATE 03/06/2022
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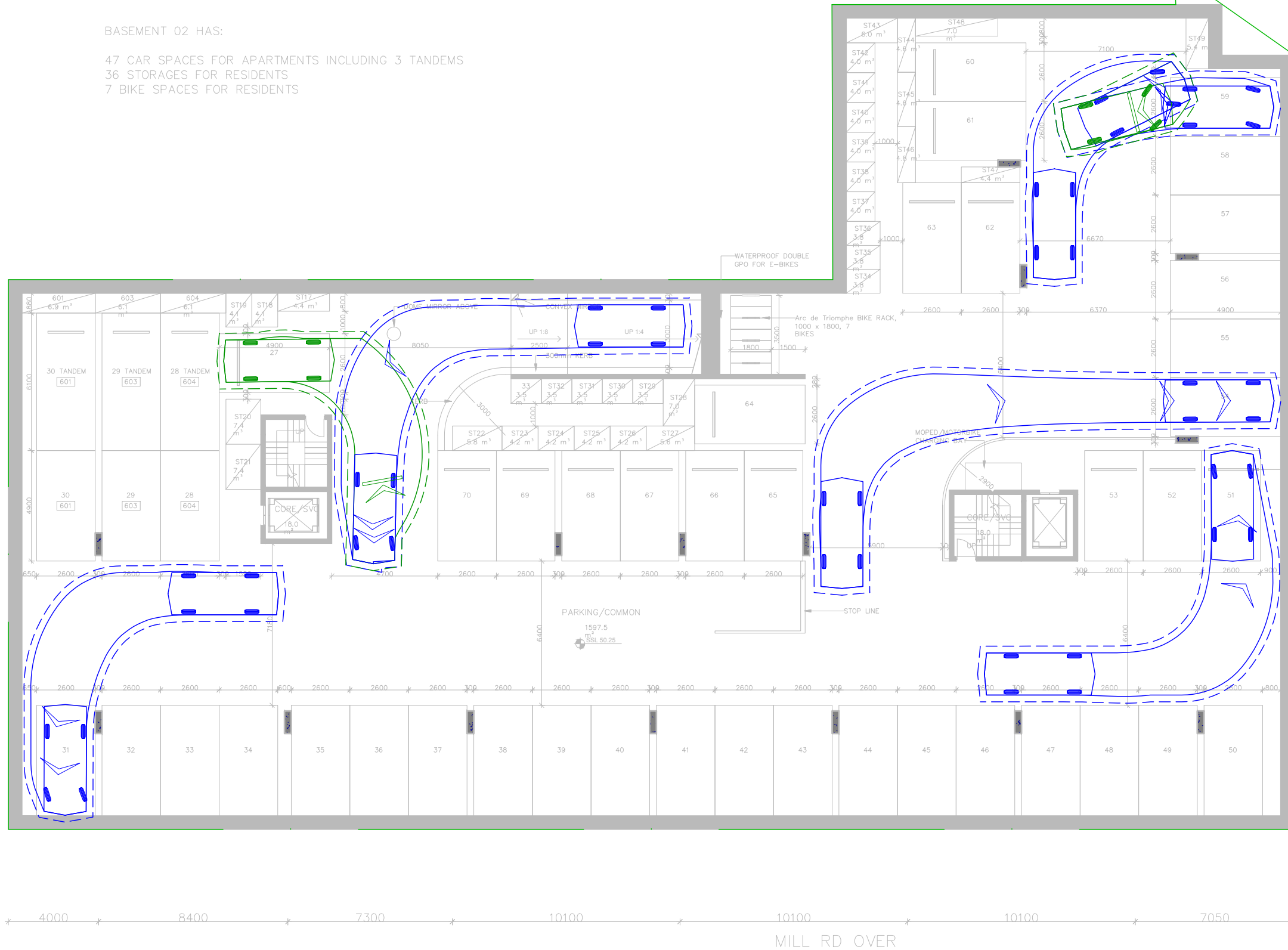
HAUGHTON RD OVER

BASEMENT 02 HAS:

- 47 CAR SPACES FOR APARTMENTS INCLUDING 3 TANDEMS
- 36 STORAGES FOR RESIDENTS
- 7 BIKE SPACES FOR RESIDENTS

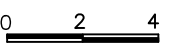
7050
5150
3930
6700
6700
7050

JOHNSON ST OVER



MILL RD OVER

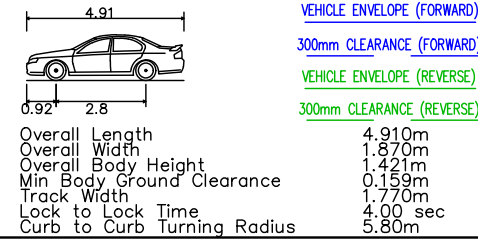
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ratio:

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 & 1 Mill Road, Oakleigh
Swept Path Assessment

- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 - 2) Maximum Design Speed 10km/h

RATIO REFERENCE
18175T-SK07/SN

SHEET No.
7 of 13

SCALE
1:200@A3

DATE
03/06/2022



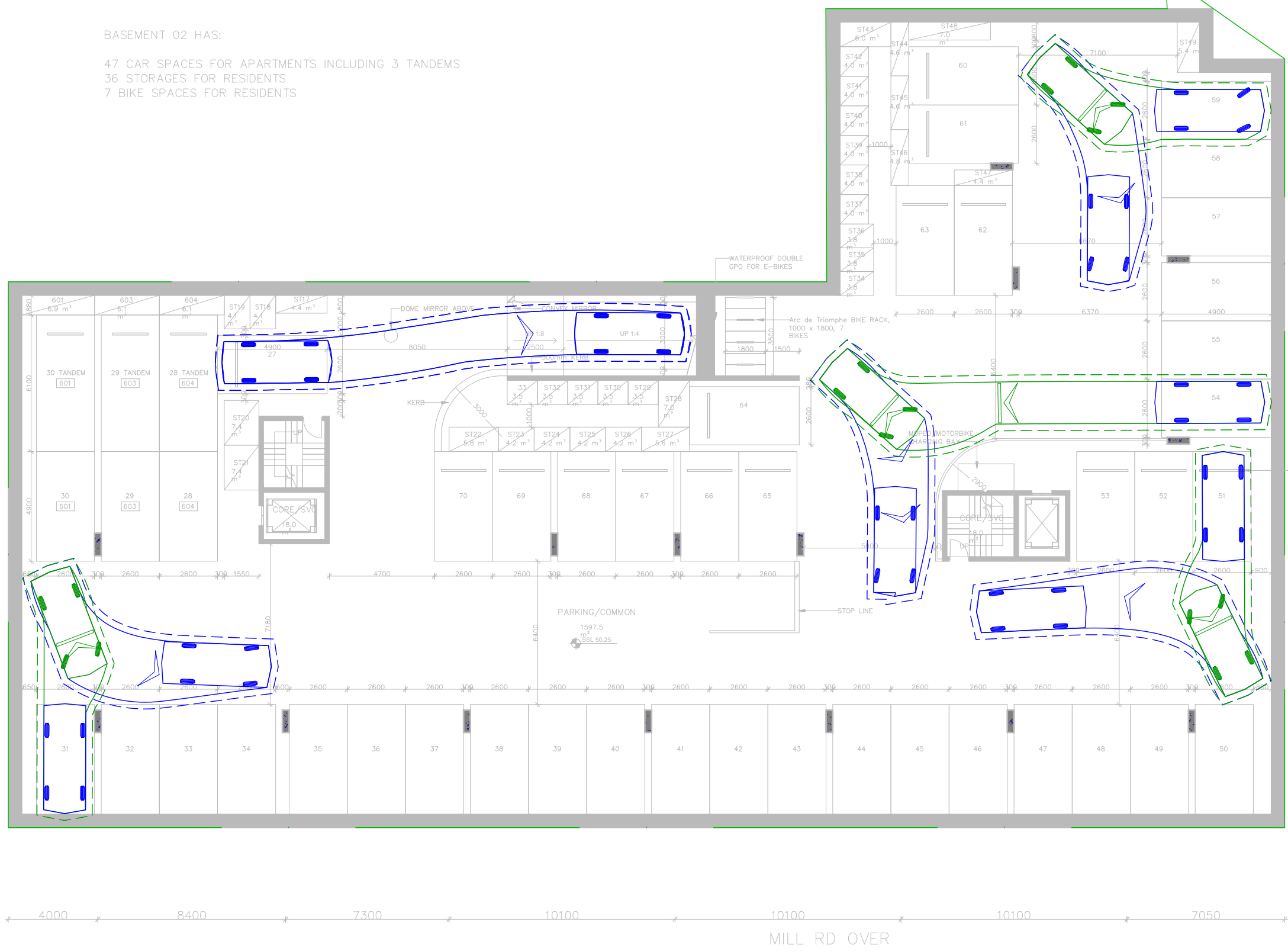
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HAUGHTON RD OVER

BASEMENT 02 HAS:

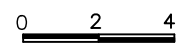
- 47 CAR SPACES FOR APARTMENTS INCLUDING 3 TANDEMS
- 36 STORAGES FOR RESIDENTS
- 7 BIKE SPACES FOR RESIDENTS

7050
51150
3930
6700
6700
7050



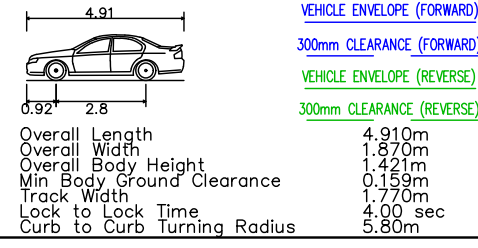
JOHNSON ST OVER

MILL RD OVER



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 & 1 Mill Road, Oakleigh
Swept Path Assessment

- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 - 2) Maximum Design Speed 10km/h

RATIO REFERENCE
18175T-SK07/SN

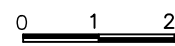
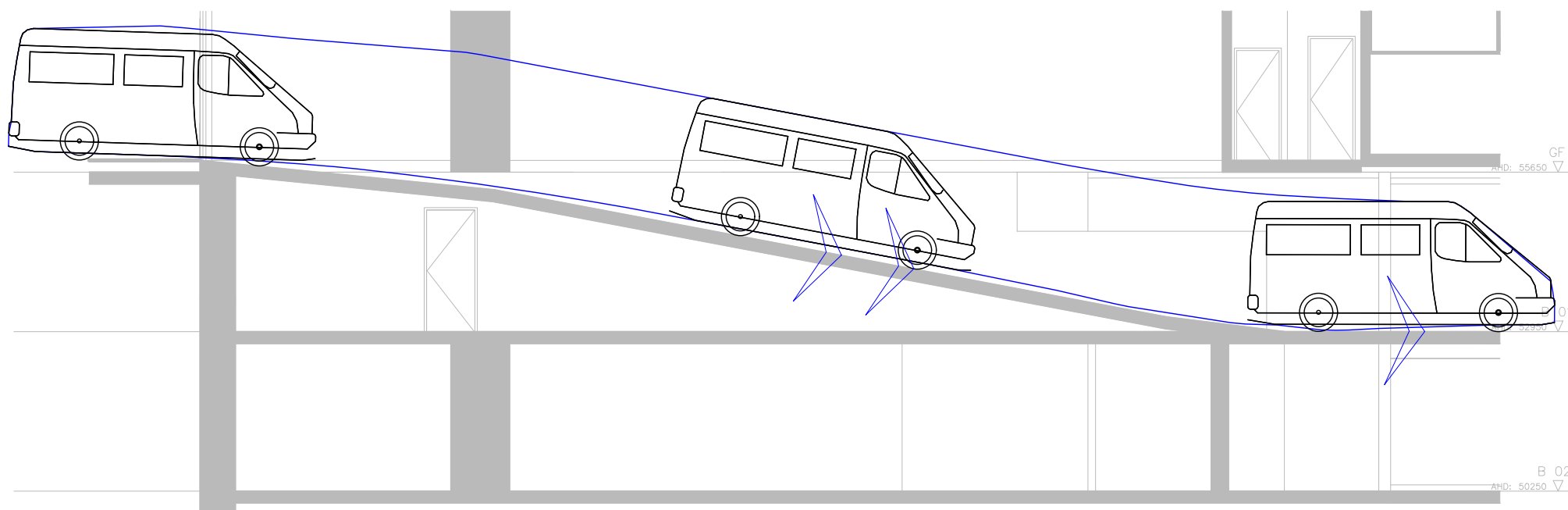
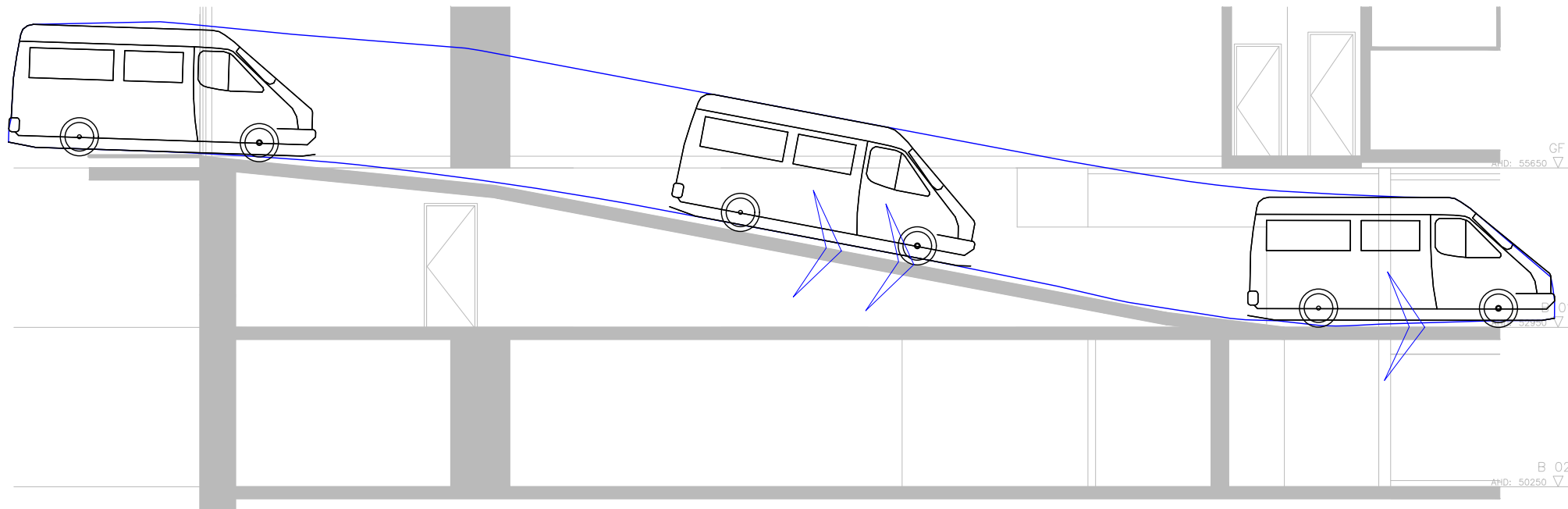
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8 of 13

SCALE
1:200@A3

DATE
03/06/2022



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ratio:

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

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



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

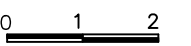
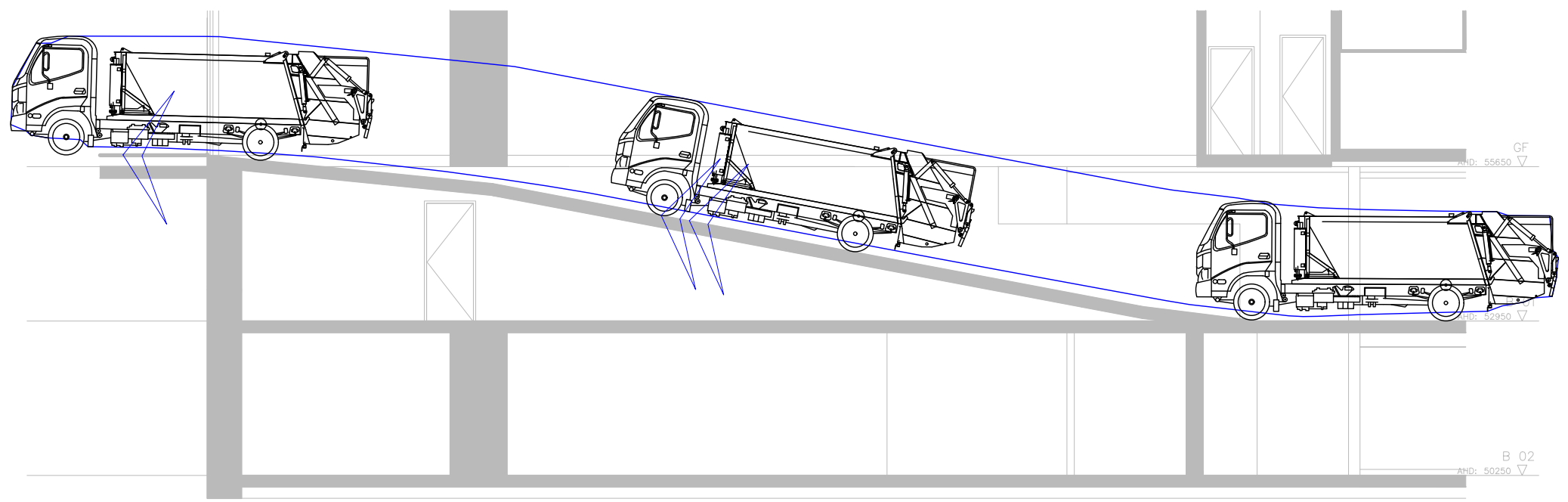
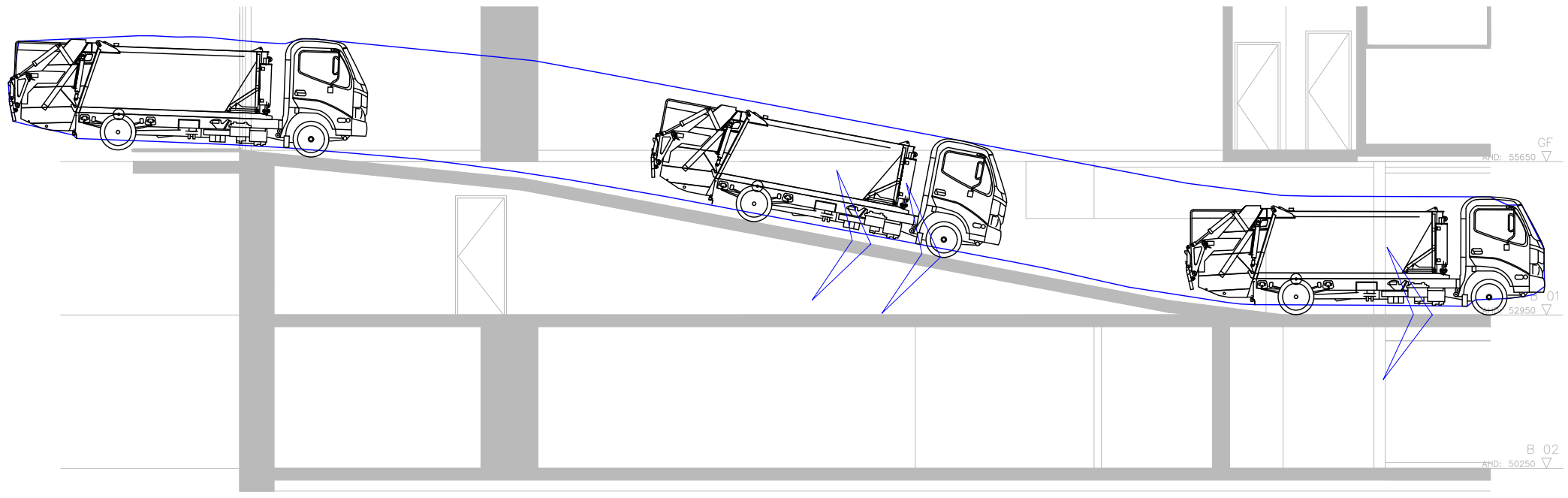
Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Vertical & Ground Clearance Assessment – Ground Floor to Basement Level 1

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 11 of 13	SCALE 1:100@A3	DATE 03/06/2022
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ratio:

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

Mini-Rear Loader Waste Collection Vehicle

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

Overall Length 6.345m
 Body Width 1.700m
 Overall Body Height 2.080m
 Min Body Ground Clearance 0.205m
 Track Width 1.670m
 Lock to Lock Time 4.00 sec
 Curb to Curb Turning Radius 6.450m

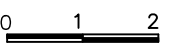
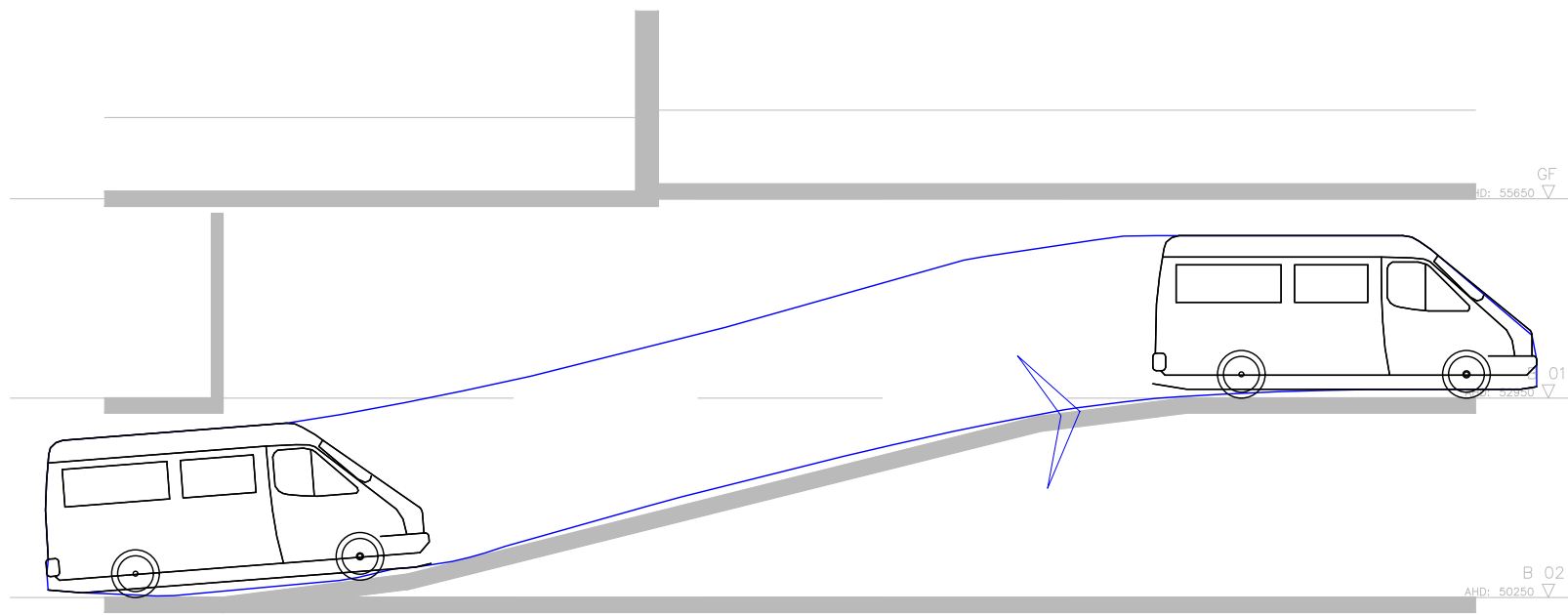
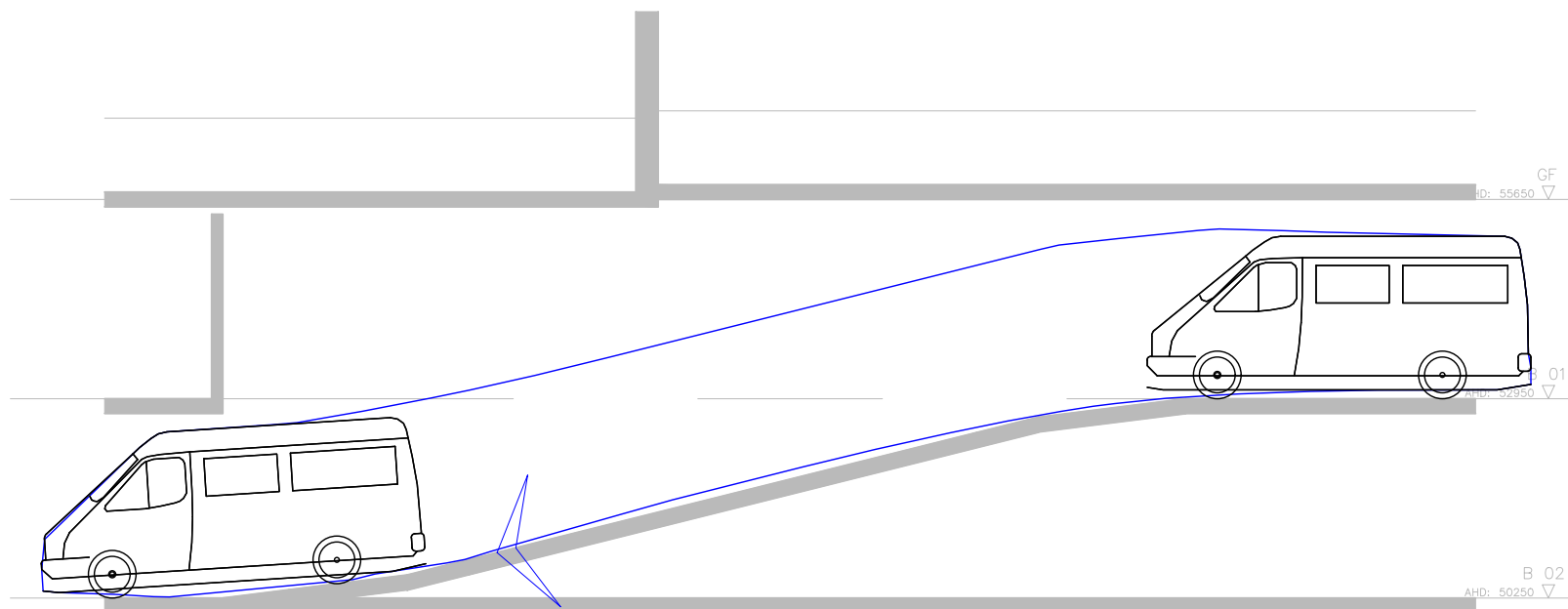
Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Vertical & Ground Clearance Assessment – Ground Floor to Basement Level 1

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 12 of 13	SCALE 1:100@A3	DATE 03/06/2022
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ratio:

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

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



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

Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Vertical & Ground Clearance Assessment – Basement Level 1 to Basement Level 2

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 13 of 13	SCALE 1:100@A3	DATE 03/06/2022
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Y:\18001-18500\18175T - 12-14 JOHNSON STREET, OAKLEIGH\DESIGN\SKETCH ADVICE (INCLUDING SWEEP PATHS)\SK07 - [2022.05.16]\18175T-SK07.DWG



Appendix C Bicycle Parking Specifications

CORA BIKE RACK

PRODUCT SPECIFICATION SHEET

E3VR SERIES

E3VR VERTICAL WALL OR POST MOUNTED BIKE RACK

Cora's latest vertical bike rack design, the E3VR, is available in several innovative models: wheel hold, wheel hook (for fenders), 45° angled, and dynamic moving racks. The E3VR gently cradles the front wheel for safety of the bike and easy access parking.

The E3VR can be mounted directly to existing walls or to the E3VR-P mounting post.

Capacity

- 1 bike per rack

Construction

- Heavy duty high quality steel
- 16mm CHS x 1.2mm

Fixings

- 3 x M8 x 40mm pin head torx security screws with tool, washers and nylon wall plugs included

Finishes

- In Stock - Yellow Powder Coat
- Option - Galvanised
- Option - 304 Stainless Steel
- Option - Colour Powder Coat (Cora standard colour range)

Assembly

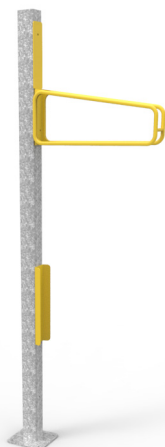
- Supplied fully welded and assembled. For pole mounted option, assembly to pole E3VR-P required

Compliance

- Rack is AS2890.3 (2015) compliant



SINGLE RACK
WALL MOUNTED



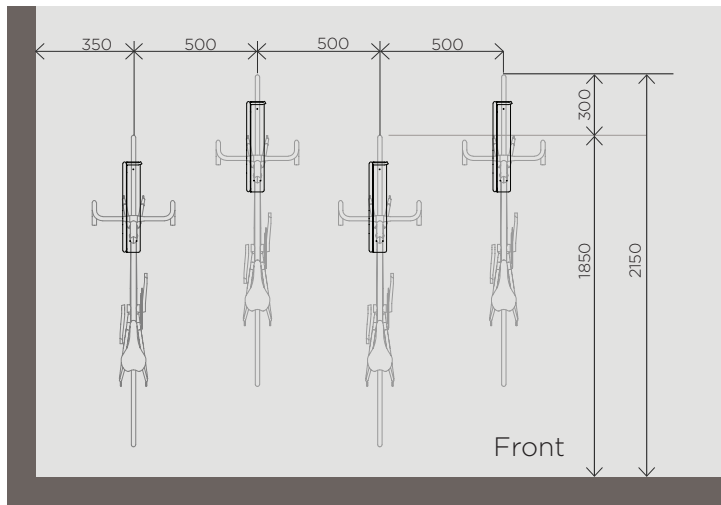
SINGLE RACK
POLE MOUNTED



DOUBLE RACK
POLE MOUNTED

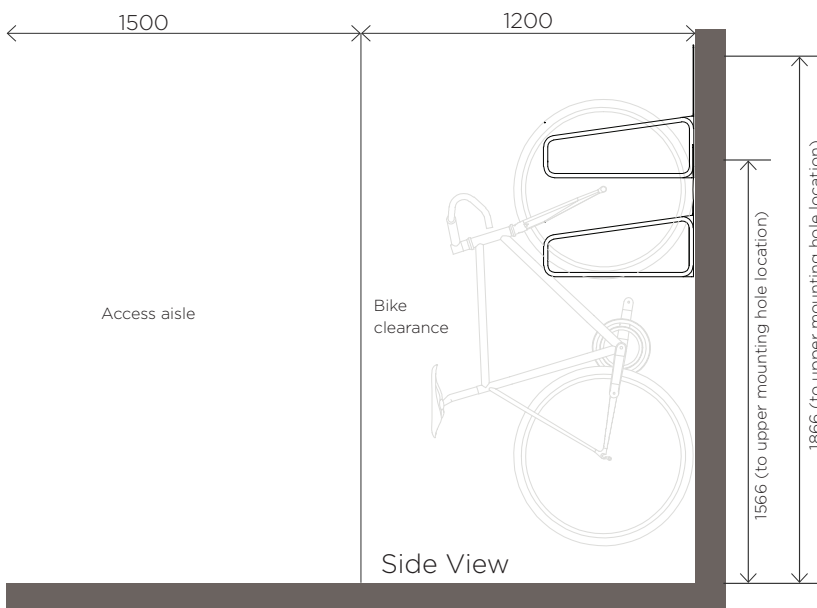
CORA BIKE RACK

PRODUCT SPECIFICATION SHEET



NOTE: If all racks are to be mounted at the same height, racks must be spaced at 700mm centres.

* Minimum ceiling height: Staggered rack heights- 2200
Single lower level rack heights - 1900



E3VR WALL MOUNT

LAYOUT GUIDE

To comply with AS2890.3 (2015), 500mm spacings are shown at alternating heights.

Spacings of 400-500mm are possible where compliance with AS2890.3 (2015) is not required. 700mm is required where racks do not alternate in height.

For specific assembly and installation instructions, please refer to individual instruction information sheets.

Racks should not be installed, based on the information on this sheet alone.



CORA
BIKERACK

PH 1800 249 878

sales@cora.com.au

www.cora.com.au

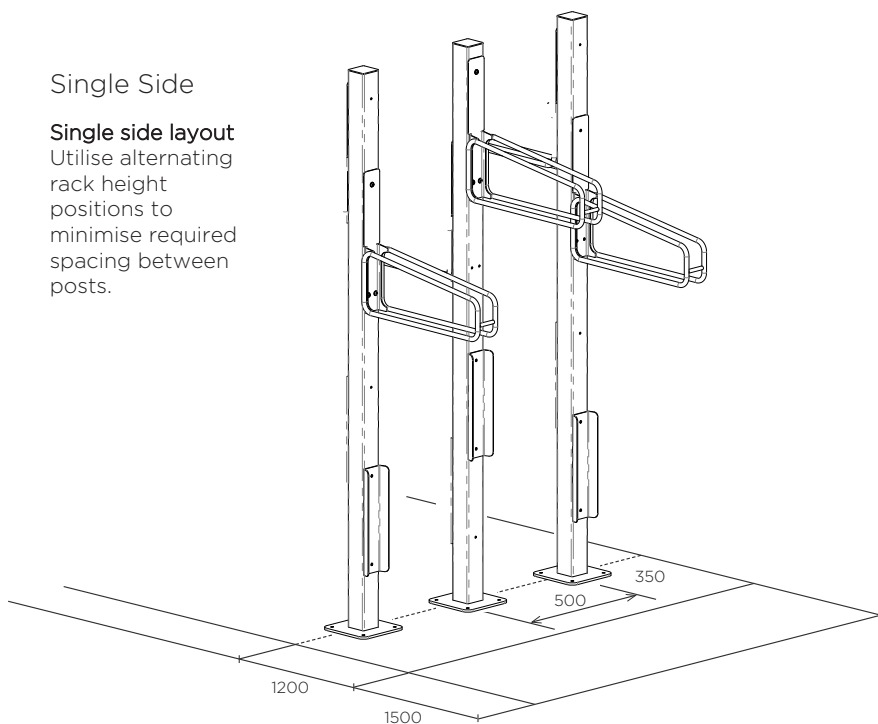
CORA BIKE RACK

PRODUCT SPECIFICATION SHEET

Single Side

Single side layout

Utilise alternating rack height positions to minimise required spacing between posts.



E3VR POLE MOUNT LAYOUT GUIDE

To comply with AS2890.3

(2015) minimum 500mm spacing between post centres and 350mm to walls or other obstructions is required. 400-500mm spacings are possible where compliance with AS2890.3 (2015) is not required. 700mm is required where racks do not alternate in height.

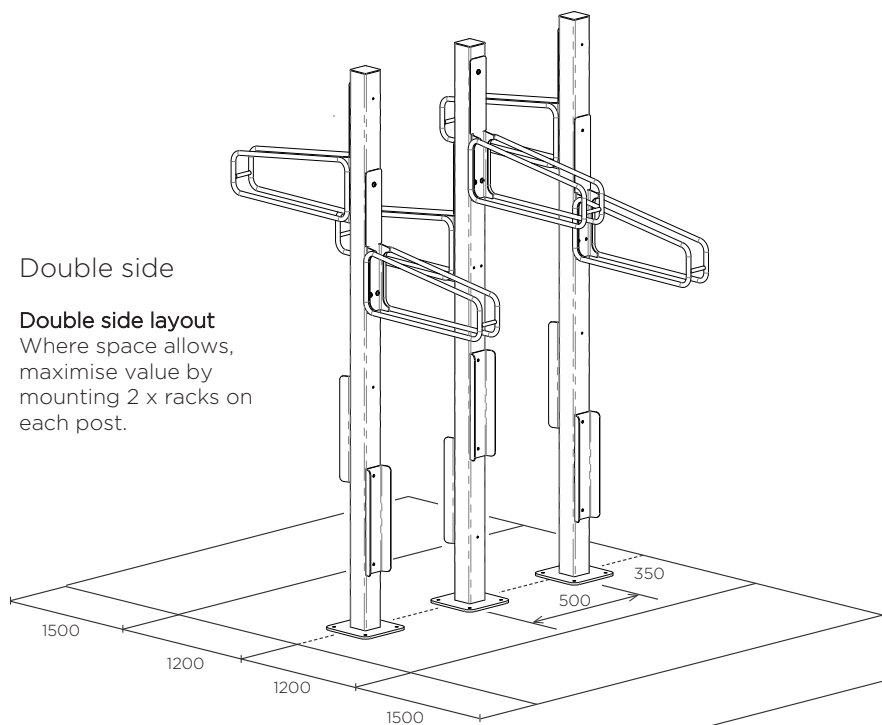
For specific assembly and installation instructions relating to E3VR Series racks, please refer to individual instruction information sheets.

Racks should not be installed, based on the information on this sheet alone.

Double side

Double side layout

Where space allows, maximise value by mounting 2 x racks on each post.

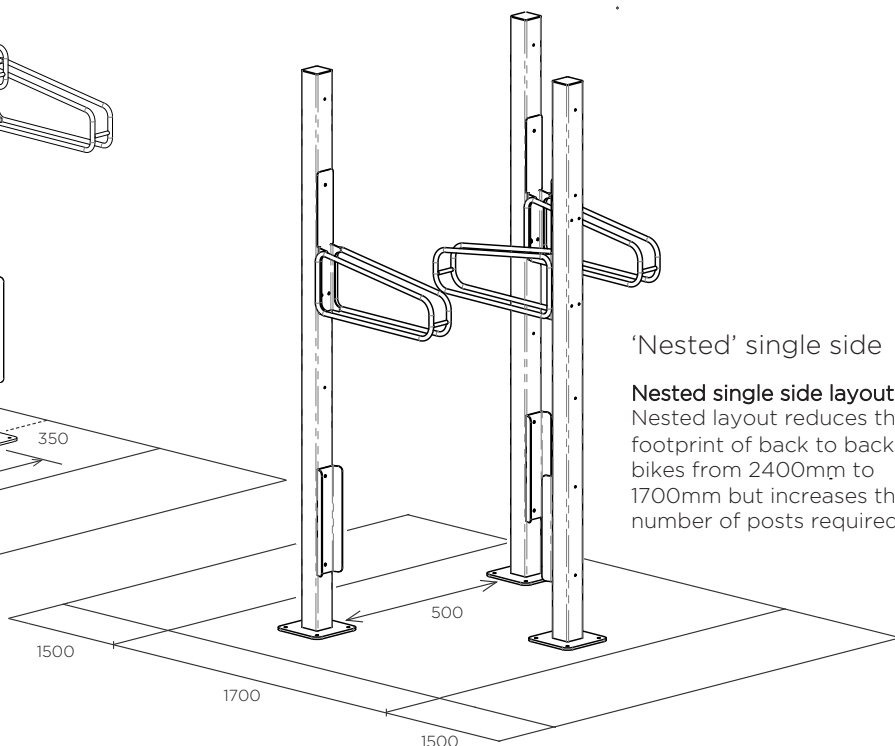


Access Aisle dimensions

Posts are to be mounted to allow for 1200mm bike footprints and 1500mm access aisles

'Nested' single side

Nested single side layout
Nested layout reduces the footprint of back to back bikes from 2400mm to 1700mm but increases the number of posts required.



Arc de Triomphe™



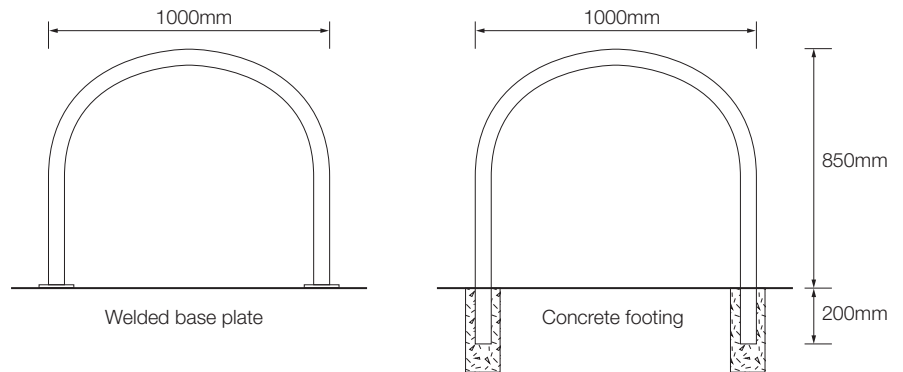
Galvanised finish / Stainless Steel finish

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

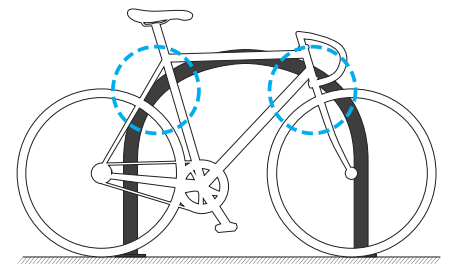
Recommended fasteners

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

Dimensions

1000mm [w] x 850mm [h]

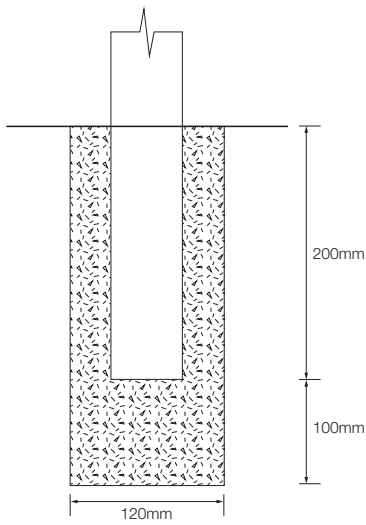
Locking Points



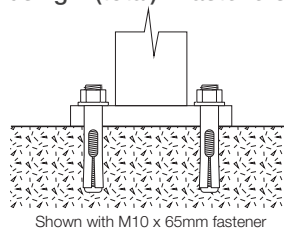
V4.1 - 1/05/2017 | Specification may be subject to change without notice. ©Bicycle Network

Fixing options

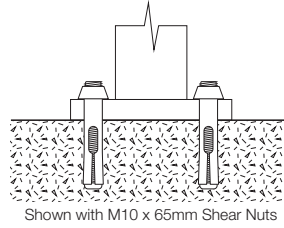
In situ (Concrete footing)



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



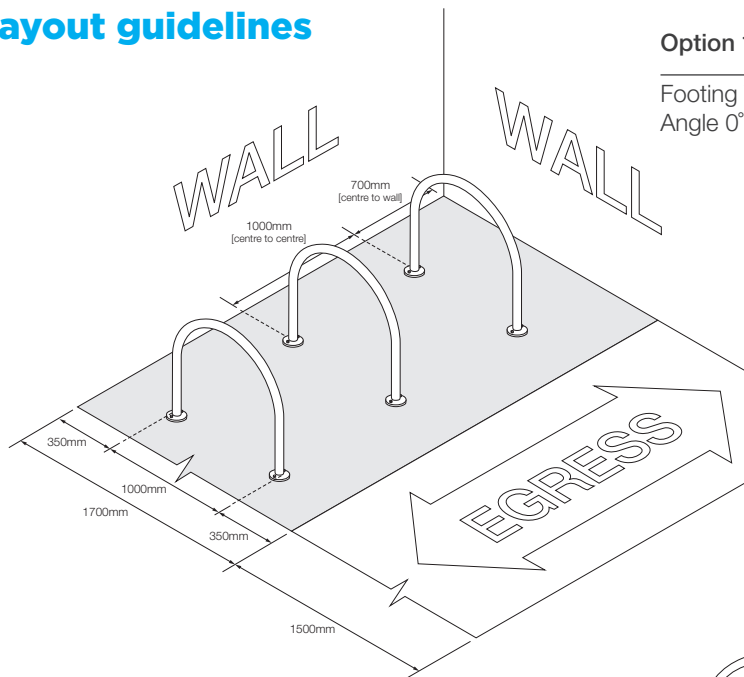
Welded flange (Security heads) using 4 (total) x fasteners



Layout guidelines

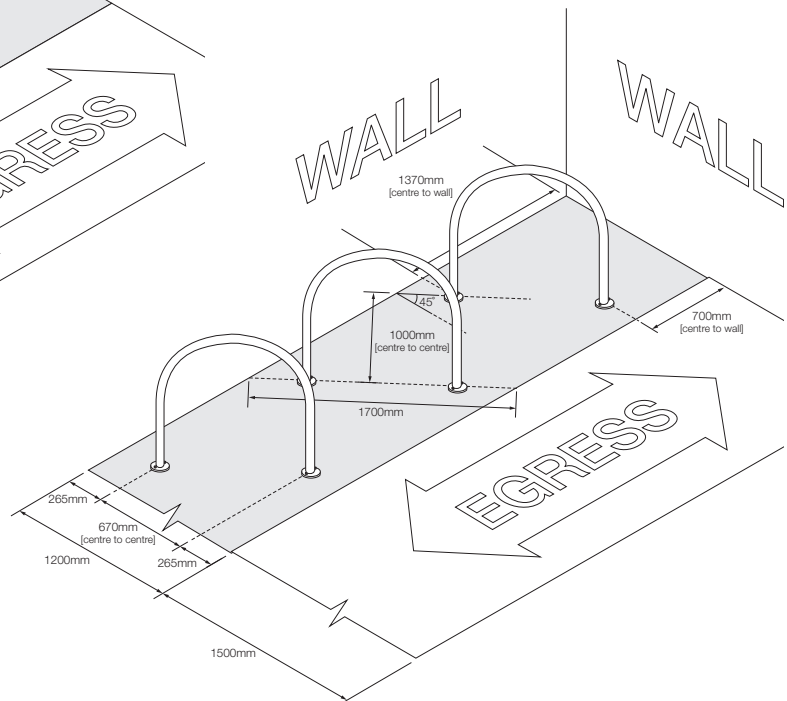
Option 1:

Footing Width 1700mm
Angle 0°

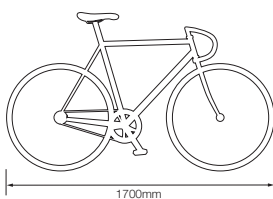


Option 2:

Footing Width 1200mm
Angle 45°



Typical Bicycle Length



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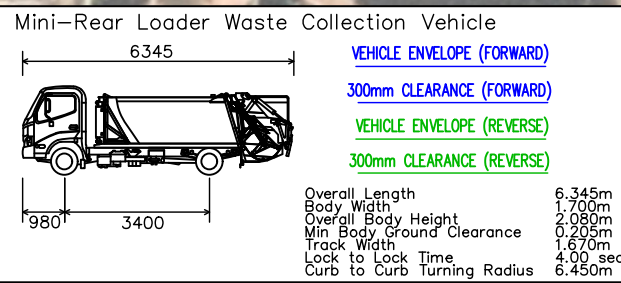


Appendix D Waste Truck Swept Path Assessment

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



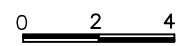
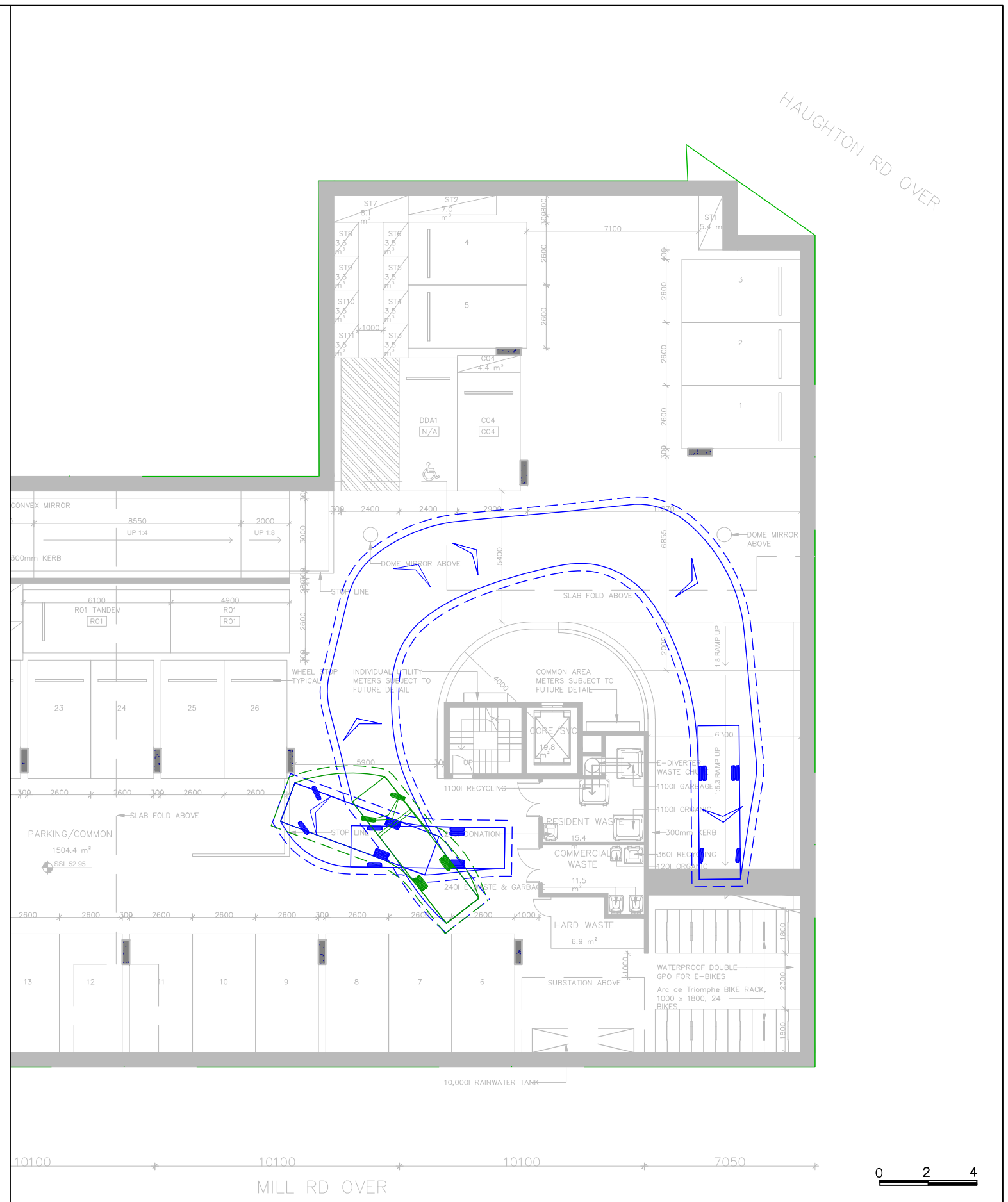
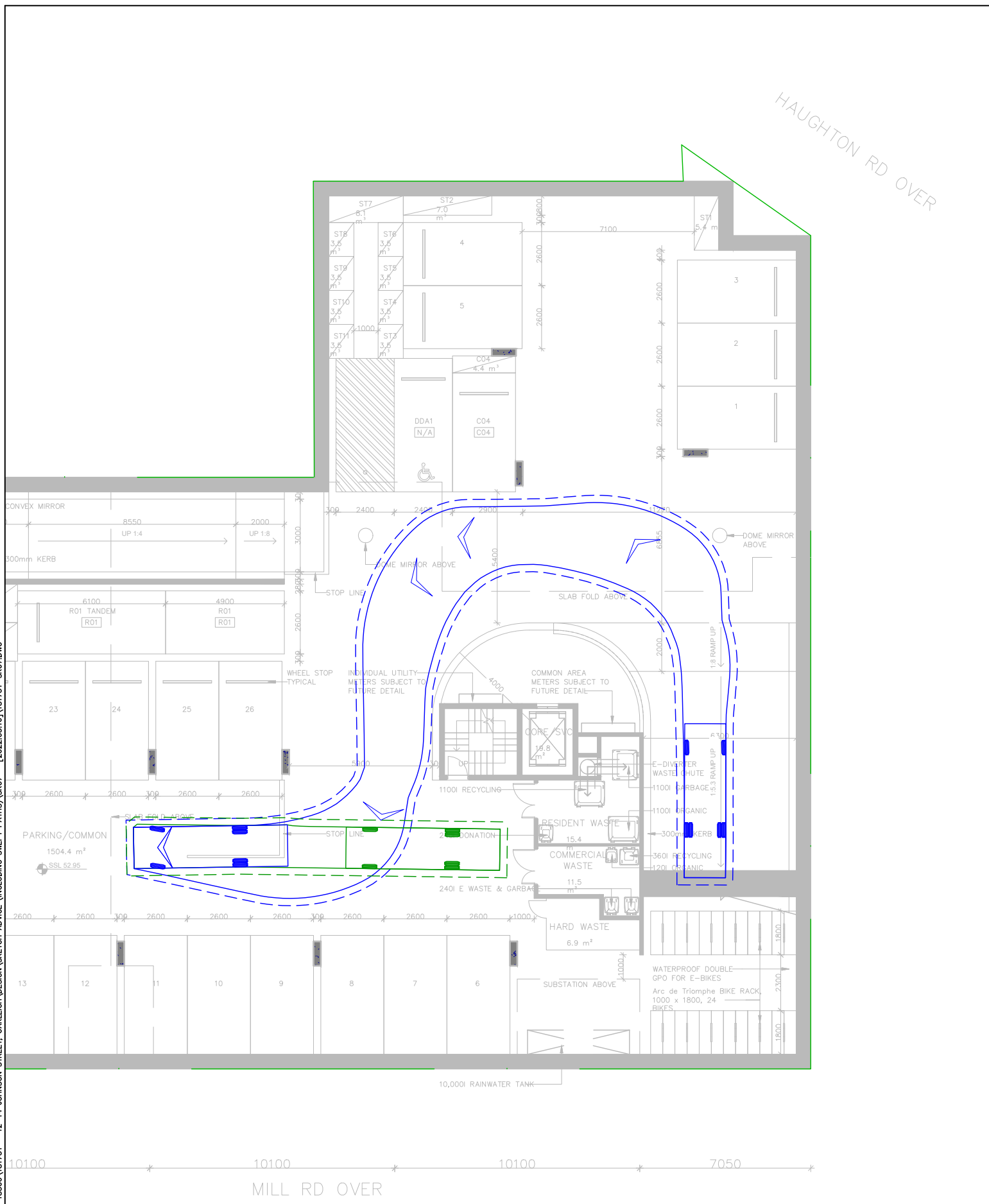
Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Swept Path Assessment

- NOTE:
- 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 - 2) Maximum Design Speed 10km/h

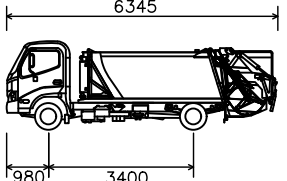
RATIO REFERENCE 18175T-SK07/SN	SHEET No. 9 of 13	SCALE 1:200@A3	DATE 03/06/2022
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ratio:
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 CREMORNE, VICTORIA 3121
 TELEPHONE (03)9429 3111
 FACSIMILE (03)9429 3011

Mini-Rear Loader Waste Collection Vehicle

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

Overall Length	6.345m
Body Width	1.700m
Overall Body Height	2.080m
Min Body Ground Clearance	0.205m
Track Width	1.670m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.450m

Proposed Mixed-Use Development
 12-14 Johnson Street & 1 Mill Road, Oakleigh
 Swept Path Assessment

NOTE:
 1) Base Plan Supplied by Bruce Henderson Architects on 2022.05.25
 2) Maximum Design Speed 10km/h

RATIO REFERENCE 18175T-SK07/SN	SHEET No. 10 of 13	SCALE 1:200@A3	DATE 03/06/2022
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